



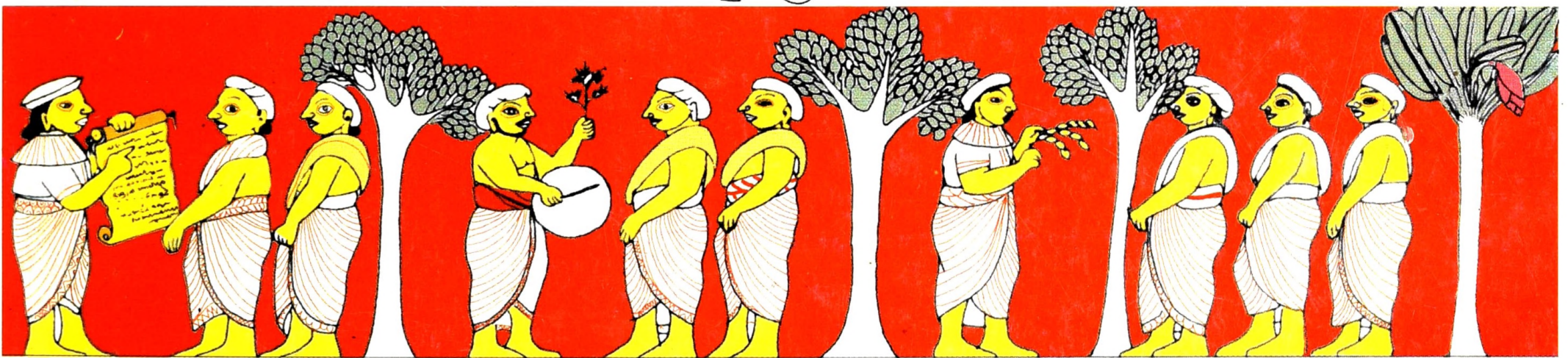
Annual Performance Report 2008



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ANNUAL PERFORMANCE REPORT 2008



**DEPARTMENT OF AGRICULTURE
PERADENIYA
SRI LANKA**

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FOREWORD

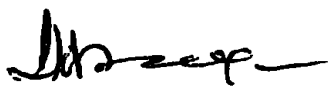
The Annual Performance Report of the Department of Agriculture (DOA) highlights all activities carried out by the six Technical Divisions and three Support Service Divisions during the year under review. Information presented in this publication gives a broad view of the current work and status of DOA resources and hence it is useful for the policy maker, the legislator and the research manager for planning future activities.

To achieve excellence in agriculture for national prosperity (vision of the DOA), several crop productivity programmes pertaining to rice, OFC, fruits and vegetables were implemented in year 2008. In addition to research and development programmes, significant gains were achieved in production and productivity enhancement of rice and other coarse grains including maize and finger millet, pulses, potato, oil seed crops, vegetables and fruit crops through '*Api wawamu rata nagamu campaign*' launched by the government in 2007.

A considerable volume of work has been carried out by the extension and mass media programmes for the promotion of home gardening, cultivation of barren or under utilized lands, with the active participation of the provincial extension system.

The DOA was constrained in implementing the planned programmes due to very limited availability of funds during the year and insufficiency of human resources for research and extension work which had a negative impact on the progress of technical activities. Inadequate technical staff in the engineering field hampered the progress of infrastructure development activities, which in turn had negatively affected in achieving the initially identified capital expenditure targets during the year. Action initiated to fill the void in this area is yet to be accomplished.

I appreciate the efforts of all officers of the DOA for their united endeavor in achieving the success contained in this publication and the editorial committee for their unstinted effort to complete this publication within a fairly reasonable period even though the work was entrusted to them rather late owing to reasons beyond their control.



Dr Jinadarie de Zoysa

Director General of Agriculture

ABBREVIATIONS & ACRONYMS

ac	- Acre
AER	- Agro Ecological Region
AVRDC	- Asian Vegetable Research and Development Centre
BLB	- Bacterial Leaf Blight
BPH	- Brown Plant Hopper
BSV	- Banana Streak Virus
bu	- Bushel
CABI	- Commonwealth Agricultural Bureau International
CARE	- Cooperative Assistance and Relief Everywhere
CARP	- Council for Agricultural Research Policy
CNLD	- Chilli Narrow Leaf Disorder
CRI	- Coconut Research Institute
CRVT	- Coordinated Rice Varietal Testing
CZP	- Crop Zoning Project
DAS	- Days After Sowing
DOA	- Department of Agriculture
DRF	- Dependable Rainfall
DUS	- Distinctness, Uniformity and Stability
ESCAP	- Economic and Social Commission for the Asia Pacific
FAO	- Food and Agriculture Organization
FSV	- Farmer Services Vote
FTF	- Farmer Trust Fund
GAP	- Granary Area Programme
GM	- Gall Midge
GPS	- Global Positioning System
ha	-

HERP	– High grade Eppawala Rock Phosphate
ICRISAT	– International Crop Research Institute for Semi Arid Tropics
IITA	– International Institute for Tropical Agriculture
INFORM	– Information for Agricultural Research Management
INGER	– International Network for Genetic Evaluation of Rice
IPM	– Integrated Pest Management
IPO	– Intellectual Property Office
IRFAON	– International Rice Fine and Aromatic grain Observation Nursery
IRRI	– International Rice Research Institute
IRSSTN	– International Rice Soil Stress Tolerance Nursery
ISCAP	– Implementation of Soil Conservation Act Programme
ISPM	– International Standards on Phytosanitary Measures
ISTA	– International Seed Testing Association
JICA	– Japan International Cooperation Agency
KKS	– Karyala Karya Sahayaka
KVSN	– Krushikarma Vyapthi Seva Niladhari
LCWZ	– Low Country Wet Zone
LSVAT	– Large Scale Varietal Adaptability Trial
MAI	– Moisture Availability Index
M.Ec.	– Master of Economics
mg	– Milli gram
ml	– Milli litre
mm	– Milli meter
mt	– Metric ton
M.Sc.	– Master of Science
MYT	– Major Yield Trial
NBPGR	– National Bureau of Plant Genetic Resources
NCB	– Non Calcic Brown

NCRVT	– National Coordinated Rice Varietal Trial
NCVT	– National Coordinated Varietal Trial
NEAP	– National Environmental Action Plan
NIAS	– National Institute of Agrobiological Sciences
OFC	– Other Field Crops
PECRODEP	– Perennial Crop Development Project
PET	– Potential Evapotranspiration
Ph.D.	– Doctor of Philosophy
ppm	– Parts per million
PGR	– Plant Genetic Resources
PTWG	– Provincial Technical Working Group
PYT	– Preliminary Yield Trial
RA	– Research Assistant
RAPD	– Random Amplified Polymorphism Detection
REAP	– Regional Economic Advancement Project
RSC	– Rooted Stem Cuttings
RTWG	– Regional Technical Working Group
RYP	– Red Yellow Podzolic
SLANRMP	– Sri Lanka Australia Natural Resources Management Project
SLUSDA	– Sri Lanka – United States Development Agency
SriLanKoRDAA	– Sri Lanka – Korea Rural Development Administration Allium Association
t	– Metric tonne = 10^3 kg
VAT	– Variety Adaptability Trial

EXECUTIVE SUMMARY

The DOA endured to pursue its commitment to the food and agricultural sector of the country through development of new technology through research and disseminating them to farmers and entrepreneurs for the purpose of enhancing agricultural production. The achievements made by different divisions of the DOA during the year 2008 are presented in this report.

In addition to the routine programmes, 41 special projects were conducted under DOA and Ministry votes with a total allocation of Rs 473.23 million.

The RRDI continued its research and development programmes through nomination of a new rice variety, Bg 2893 of 4 – 4 ½ month age class, moderately resistant to gall midge, brown plant hopper, bacterial leaf blight and blast, for the Varietal Release Committee for national release. A samba variety of 3 ½ month age class, Bg 06-985 with resistance to blast, bacterial leaf blight, gall midge and brown plant hopper, Bw 05-1621 (red pericarped, intermediate bold, 3 ½ month age class) and Bw 03-1073 (red pericarped, short-round, 3 month age class) were nominated for the NCRVT. In the hybrid rice development programme, a new early maturing hybrid rice combination, Bg CMS4A × Bg 4R (IR 28078-15-2-1-2-2R) which matures in 3 ½ months and with desirable plant characters was developed. For dissemination of new technology, 22 one day training programmes were conducted for over 1050 farmers. Preliminary evaluation of health promoting functional properties of rice cultivars and preparation of database was continued in collaboration with Industrial Technology Institute.

The research and development activities of the horticultural sector continued with the release of a new hybrid tomato variety with a yield potential of 61 t/ha, resistant to bacteria and with good fruit quality characters. Also 4 new guava hybrids, Horana sweet, Lanka giant, Red giant and Horana rosy were released. In addition, 2 promising brinjal hybrids, 3 capsicum hybrids, 4 bitter gourd hybrids, 3 luffa hybrids, 3 cucumbar hybrids, one bean variety and one amaranthus variety are in the pipeline for release. HORDI pioneered in re-introducing the home garden concept through various technology disseminating activities and the National Rupavahini/ HORDI joint programme, “Rividina arunella” was awarded as the best productive and creative TV programme in the media awarding ceremony 2008.

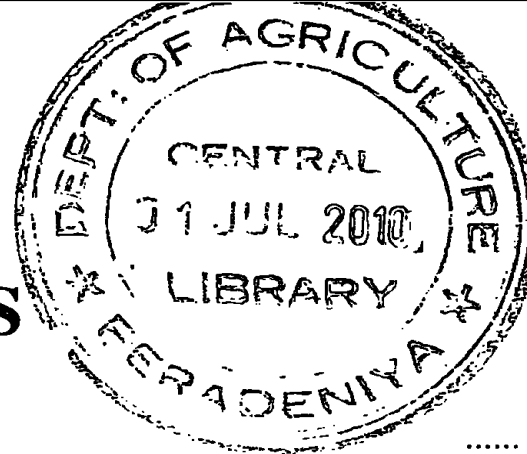
Research programmes of the other field crop sector also continued with significant gains. A new short age black gram variety, “Anuradha” giving an equal yield to that of the existing variety MI-1 and a high yielding new tomato variety KC-1, tolerant to high ambient temperature in the dry zone were released for general cultivation. Two serious fungal diseases, anthracnose and leaf spot of chilli were found to be effectively controlled by a new fungicide, Copper hydroxide 57.6% w/w and four new insecticides, Metaflumizone 24SC, Chromafenozide 5SC, Thiocyclam hydrogen oxalate 50 SP and Enamectin benzoate 5% SG which were found to be more effective in controlling pod borer in grain legumes have been identified for recommendation.

The SPMDC produced 9,863 bu of basic seed paddy in government farms and 22,556 bu of certified seed paddy were purchased from contract growers. The total quantity of quality guaranteed seed paddy production based on the amount of basic seed paddy issued by SPMDC was about 1,651,000 bu (33,000 mt). The quantity of OFC seeds issued was 28 mt which is lower than that of year 2007 due to the low demand for locally produced maize seeds since 533 mt of hybrid maize seeds had been imported during the year.

Quantities of seed paddy, OFC and vegetable seeds tested by the SCPPC were 5087 mt, 114 mt and 13.19 mt respectively. In addition, 247,165 No. of fruit plants in government and private nurseries were certified and labeled which is a 61% increase compared to year 2007. In year 2008, 2443 import permits were issued for importation of plant and plant materials.

The SEPC conducted several research and policy studies including economics of maize production in Mahaweli system H, a better pricing policy for paddy and subsidy for fertilizer.

The ETC which is responsible for conducting extension, training and communication activities carried out several extension programmes in provincial and inter provincial areas. “Saruketha yaya programme” was continued under the ‘Api wawamu rata nagamu’ programme and re-cultivation of abandoned paddy lands were implemented during 2007/08 Maha and 2008 Yala seasons under this programme. Preparing and broadcasting of TV and radio programmes were also continued in addition to printing and distribution of several newsletters, leaflets, booklets and posters.



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1. WEATHER REPORT

Meteorological data collected from 13 agro-meteorological stations representing different agro-ecological regions in Sri Lanka during 2007/2008 Maha (September – February) and 2008 Yala (March – August) seasons have been summarized in this report. The report was prepared by the Natural Resources Management Center (NRMC) of the Department of Agriculture.

The cumulative seasonal rainfall of both seasons is given in the Table 1.1. The monthly rainfall and corresponding 10-year averages of 13 stations are given in Tables 1.2 and 1.3, respectively. Monthly mean values of other important agro-meteorological parameters, namely, potential evapotranspiration (estimated from open pan evaporation), temperature, relative humidity, bright sunshine hours and wind velocity are given in Tables 1.4, 1.5, 1.6, 1.7 and 1.8, respectively.

Low Country Wet zone

Bombuwela (WL1b)

The both cumulative seasonal rainfall and monthly rainfall distribution of this region during 2007/2008 Maha season was up to the expectation compared to the long term average. However, the rainfall during November was about 44% below the expected amount while the rainfall during February was 57% above the expected amount. This erratic rainfall distribution should have caused some negative impacts on the agricultural production in the area, especially in fruit bearing habit of tree fruit crops. The cumulative seasonal rainfall during 2008 Yala was about 45% above the average mainly due to the positive anomalies of rainfall in March and August during the season. In general, the amount and distribution seasonal rainfall of this region was not up to the expectation during 2008 Yala season. Meanwhile, other supplementary agro-meteorological parameters, namely, potential evapotranspiration, wind speed, humidity and bright sunshine hours revealed that there was hardly any chance of developing soil moisture stress conditions in crops grown in this region during both growing seasons.

Mid Country Wet zone

Peradeniya (WM2b)

The cumulative Maha season rainfall was just below the expected amount of rains in this

region resulting about 13% negative anomaly. Except January, all other months of the season received over 100 mm of rains. Hence, there was hardly any chance of developing soil moisture stress conditions during 2007/2008 Maha season. Cumulative seasonal rainfall during 2008 Yala season in this region was about 10% above the expected amounts. However, monthly rainfall distribution was highly erratic recording above normal rainfall in both March and April months along with extremely below normal rainfall in the months of May, June and August. Nevertheless, the received rainfall during each month of the season was well in excess of the potential evapotranspiration except May and August.

Up Country Wet zone

Sita Eliya (WU3)

Cumulative seasonal rainfall of 2007/2008 Maha season in this region was about 1100 mm, which is almost approximates its long-term average with fairly good distribution. Given the situation of low evaporative demand of the atmosphere in this region, there was hardly any chance of developing soil moisture stress conditions during this season. Nevertheless, rainfall during January was over 90 % above the expected amounts and thus, it may have caused negative impacts on the high value crops grown in this region. The maximum temperature during the season was ranged from 18 °C to 23° while the minimum temperature was in the range of 11 °C to 14 °C with a few occurrences of ground frost in January.

The cumulative 2007 Yala season rainfall in this region was 905 mm, which is a 10% increase over the long-term average. The increase was mainly attributed to the above normal rains received during March and April due to strong convectional activity prevailed in the area.. However, distribution of rainfall within the season and other agro-meteorological parameters were remained at favorable combinations for a successful cultivation in this region. The maximum temperature during the season was ranged from 18 °C to 22 ° while the minimum temperature was in the range of 10 °C to 14 °C.

Low Country Intermediate zone

Batalagoda (IL1a)

The cumulative seasonal rainfall of 2007/2008 Maha season just approximates its long-term average with a favorable monthly distribution and was in excess of the potential evapotranspiration throughout the active growing period. Other agro-meteorological parameters were also remained at a favorable combination during the season ensuring a good fetch of harvest in all crops grown in the area.

The cumulative seasonal rainfall of 2007 Yala season was about 1012 mm, which is about 37% increase over the long-term average due to above average rainfall of March and May, attributing to strong convectional activity prevailed in this region. There was hardly any month in the season which reported rainfall below the cumulative potential evapotranspiration of the month. Hence, upland crop would not have exposed to any soil moisture stress conditions in this region during 2008 Yala season.

Low Country Intermediate zone

Monaragala (IL1c)

The 2007/2008 Maha season in this region has recorded about 25% above normal rainfall due to good rainfall received during throughout the season with a favorable temporal distribution. The cumulative potential evapotranspiration was remained well below the cumulative rainfall in each month of the season. Other agro-meteorological parameters were also conducive for a good growth and development any crop grown in the region.

The cumulative seasonal rainfall of 2008 Yala season was about 25% increase over its long term average in this region due to above normal rains received during March and August. However, the potential evapotranspiration was far above the average during the period of May to August, a common phenomenon in this region. Hence, soil moisture stress conditions must have been a common feature in the crops grown under rainfed conditions in this region during 2008 Yala season.

Girandurukotte (IL2)

The region has experienced expected amount rains during 2007/2008 Maha season having greater than 100 mm of rains in each month of the season except September ensuring a good performance of agricultural crops grown in this region even under rainfed conditions. The cumulative Yala season rainfall in this region was about 652 mm, which

is about 67% increase compared to its long term average. This was mainly attributed to the above normal rainfall received during the months of March and August. But, evaporative demand of the atmosphere was far above the rainfall received during the other months of the season and hence, a Yala season crop would not have survived unless supplementary irrigation was provided. Usually a Yala season does not exist in this region and weather records reveal that it is remained true for 2008 Yala season too.

Mid Country Intermediate zone

Kundasale (IM3a)

The cumulative rainfall of 2007/2008 Maha season was well above its long-term average with a fairly good distribution. However, rainfall during October and November was not up to the expectation. Despite this situation, potential evapotranspiration and other agro-meteorological parameters recorded in this region have revealed that soil moisture stress was an unlikely event in crops grown in this region.

The cumulative seasonal rainfall of the 2008 Yala season was about 20% increase over the long term average. The increase was mainly attributed good convectional activity prevailed in the area during the months of March and April. However, only those two months were managed to receive rainfall in excess of in excess of potential evapotranspiration. Therefore, it would have been impossible to raise a successful rainfed upland crop without supplementary irrigation in this region during 2008 Yala season.

Up Country Intermediate zone

Bandarawela (IU3c)

This region experienced an above normal seasonal rainfall during 2007/2008 Maha season. The potential evapotranspiration was remained well below the rainfall of each month during the season. The maximum temperature during the season was ranged from 22 °C to 27 °C while the minimum temperature was in the range of 13 °C to 18 °C. Availability of sunshine hours during the season was also fairly good throughout the season. In general, it can be concluded that the season was meteorologically conducive for a successful agricultural production in this region.

Cumulative rainfall of 2008 Yala season was about 94% increase over the long-term

average with above normal rainfall during October and December along with expected rainfall in all other months of the season. The potential evapotranspiration remained well below the rainfall during the season except July and August, the tail end of the season. The maximum temperature during the season was ranged from 25°C to 28 °C while the minimum temperature was in the range of 15 °C to 17 °C.

Dry zone

Maha-Illuppallama (DL1b)

The cumulative Maha season rainfall in the north-central part of the DL1b agro-ecological region was 1,138 mm, a value which about 10% increase over its long term average. The potential evapotranspiration was also remained well below the monthly rainfall during each month of the season. Even though, there was a small reduction of rainfall in December and January, it was sufficient to meet the evapotranspiration demand of the atmosphere during these two customary cool months and hence, no any negative impact would have occurred.

There was about 60% increase of cumulative seasonal rainfall during 2008 Yala season compared to its long term average of 395 mm. However, this increase was mainly attributed only to the increased rainfall received during March and April due good convectional activity prevailed in the area as in other parts of the country. The other months of the season was usually dry recording rainfall in deficit of evaporative demand of the atmosphere, a common agro-meteorological phenomenon to experience in this region.

Angunakolapelessa (DL1b)

The southern part of the DL1b agro-ecological region experienced about near normal cumulative rainfall during 2007/2008 Maha season. However, rainfall during October and November in this region was less than that of the expected amounts along with unusually high rainfall receipt of rainfall in December. Meanwhile, the cumulative monthly potential evapotranspiration of the season remained well below the monthly rainfall of each month of the growing season except in January and February, the tail end of the season. Thus, upland crops grown in this region may not have suffered any soil moisture stress conditions.

The cumulative 2007 Yala season rainfall in this region was about 50% increase compared to its long term average, receiving 598 mm of rainfall. The increase was mainly attributed to the very high rainfall received during March in this

area. However, the potential evapotranspiration remained well above the monthly rainfall during the rest of the months of the season. Hence, rainfed upland crops may have suffered soil moisture stress conditions during their maturity phase unless supplementary irrigation was not supplied

Aralaganwila (DL2b)

The region experienced a near normal rainfall with a favorable distribution. However, rainfall during December was well above the expected amounts. Atmospheric demand for water also remained well below the cumulative rainfall of each month during the season except September. Hence, there was hardly any chance of developing soil moisture stress conditions in crops grown on highlands in this region.

There was a 120% increase in cumulative seasonal rainfall 2008 Yala season in this region mainly due to the above normal rainfall received in March and August. But, evaporative demand of the atmosphere was far above the rainfall received during the other months of the season and hence, a Yala season crop would not have survived unless supplementary irrigation was provided. Usually a Yala season does not exist in this region and weather records reveal that it is remained true for 2008 Yala season too. The similar kind of weather was prevailed in the neighboring IL2 region during 2008 Yala season.

Weerawila (DL5)

Unlike in other agro-ecological regions of the Dry zone, this region experienced about 30% below normal cumulative rainfall during 2007/2008 Maha season compared to its long-term average of 720 mm. The reduction of rainfall was mainly in the October and November with highly erratic rainfall distribution. Potential evapotranspiration during the months of September, October and February was in deficit of the cumulative rainfall, a rare meteorological phenomenon for this region even though being flagged as country's driest region.

In contrast, the cumulative 2008 Yala season rainfall in this region was about 30% increase compared to its long term average of 318 mm, recording very high rainfall during the month of March. But, the cumulative potential evapotranspiration of each month of the season was much in excess of the cumulative rainfall except during March and April. A high temperature regime was also prevailed throughout the season along with intense radiation and high-speed winds. However, being the driest region of the country it is not an uncommon weather situation in this region during this time of the year.

Table 1.1. Total rainfall of 2007/2008 maha & 2008 yala seasons (mm)

Agro-met Station	Agro Ecological Zone	Maha 2007/08 Sep-Feb	Maha Ten Year Average (1995-04)	Yala 2008 Mar-Aug	Yala Ten Year Average (1995-04)
Bombuwela	WL _{1b}	1514.6	1541.9	1910.7	1312.1
Peradeniya	WM _{2b}	1171.4	1037.2	994.8	905.4
Sita-Eliya	WU ₃	1106.6	1116.2	905.4	821.2
Bathalagoda	IL _{1a}	1113.0	1039.1	1011.6	739.4
Makandura	IL _{1a}	1119.5	1033.3	1473.5	895.3
Moneragala	IL _{1c}	1580.6	1252.9	730.7	503.4
Girandurukotte	IL ₂	1741.2	1680.2	652.5	390.5
Bandarawela	IU _{3c}	1152.2	1036.1	1048.6	538.9
Kundasale	IM _{3a}	904.2	874.6	706.5	594.3
Maha-Illuppallama	DL _{1b}	1137.9	1029.1	634.8	394.9
Angunakolapellesa	DL _{1b}	746.1	753.4	597.7	403.0
Aralaganwila	DL _{2h}	1426.5	1418.6	682.8	309.5
Weerawila	DL ₅	556.0	720.7	422	318.2

Table 1.2. Monthly total rainfall 2007/08 (mm)

Agro-met station	2007						2008					
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug
Bombuwela	284.1	526.2	179.5	175.3	132.2	217.3	277.7	458.7	252.8	443.2	232.6	245.7
Peradeniya	269.8	346.9	171.2	197.3	89.3	96.9	307.4	356.7	10.1	98.9	172.4	49.3
Sita-Eliya	199.4	231.2	136.1	234.6	210.4	94.9	345.2	221.8	74.1	32.0	152.2	80.1
Bathalagoda	223.6	246.7	142	299.4	94.6	106.7	417.1	174	53.2	63.3	231	73
Makandura	216.6	326.8	115.2	146.7	35.7	278.5	475.2	308.7	272.8	184.5	152	80.3
Moneragala	299.7	277.9	281	405.8	232.7	83.5	206	196.8	75.6	38.6	72.7	141
Girandurukotte	46.7	61.2	243.2	788.8	332.9	268.4	233.6	184	8.7	8.4	85.8	132
Bandarawela	194.2	348.1	192.7	197.9	134.8	84.5	326.4	260.9	230.9	67	5.9	157.5
Kundasale	144.3	172.3	127.6	233.3	113.3	113.4	288	251.7	0	57.7	56.7	52.4
Maha-Illuppallama	129.1	338.2	283.1	257.4	60	70.1	375.5	212.7	0	8.4	14	24.2
Angunakolapellessa	145	116.3	162.8	209.7	55	57.3	314.7	73	33.2	40.2	73	63.6
Aralaganwila	33.1	256.2	171	648.7	200.4	117.1	290.1	69.4	1.5	2.7	41.9	277.2
Weerawila	94.4	89.5	180.7	133.5	28.2	29.7	256	120.9	8.5	15.9	9.5	11.2

Table 1.3. Monthly average Rainfall in mm (1994-2005)

Agro-met station	Month											
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug
Bombuwela	371.8	460.7	320.0	194.7	143.4	138.4	94.9	244.2	353.8	231.5	207.0	153.1
Peradeniya	172.6	262.5	247.4	138.2	84.0	65.0	95.4	246.9	140.3	131.1	122.3	109.2
Sita-Eliya	183.8	240.4	210.4	149.1	93.3	250.3	53.4	168.2	143.7	153.9	136.0	139.3
Bathalagoda	145.9	321.4	254.1	151.2	95.0	71.0	60.6	270.4	171.7	84.9	64.9	74.7
Makandura	181.9	340.0	291.8	91.5	71.1	69.4	67.7	253.2	213.2	138.3	106.1	89.7
Moneragala	108.5	299.0	358.6	230.0	198.5	124.4	67.5	177.9	90.3	31.2	55.4	73.5
Girandurukotte	78.3	186.5	380.1	324.7	362.3	177.1	59.5	162.9	66.2	21.6	30.8	48.7
Bandarawela	161.6	259.8	265.0	162.8	131.9	85.0	76.7	211.2	107.4	36.9	56.5	62.0
Kundasale	106.0	214.2	226.8	139.6	116.4	84.0	68.7	175.4	96.8	80.9	72.2	63.6
Maha-Illuppallama	108.4	260.8	283.4	165.1	109.1	117.1	33.8	185.4	78.7	23.5	21.8	31.4
Angunakolapellesa	111.0	163.9	244.4	100.4	62.2	74.7	71.1	107.5	90.1	44.0	47.3	40.2
Aralaganwila	78.3	234.7	384.1	312.7	274.7	162.9	36.1	122.8	74.2	20.7	34.6	31.8
Weerawila	67.5	124.1	275.7	143.7	79.0	63.7	41.3	120.8	67.2	18.3	28.9	36.7

Table 1.4. Monthly Potential Evapotranspiration - 2007/08 (mm)

Agro-met station	2007					2008						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug
Bombuwela	74	67	74	60	77	81	72	77	74	67	69	74
Peradeniya	60	57	77	77	79	90	74	70	94	72	64	77
Sita-Eliya	53	32	48	47	62	65	55	72	67	46	57	55
Bathalagoda	53	40	48	47	62	65	55	72	67	46	57	55
Makandura	84	69	77	72	67	90	92	82	84	58	69	77
Moneragala	79	74	67	57	77	74	79	65	112	86	112	104
Girandurukotte	94	72	60	52	*	63	77	82	94	96	109	92
Bandarawela	74	52	55	42	45	60	52	58	72	67	84	72
Kundasale	60	64	70	67	62	81	60	58	107	82	72	92
Maha-Illuppallama	89	72	60	45	52	63	57	67	97	91	97	99
Angunakolapellesa	89	89	89	79	92	104	97	94	109	103	112	112
Aralaganwila	137	112	72	50	64	74	82	89	144	149	149	131
Weerawila	82	79	79	74	77	90	92	67	119	113	139	119

Table 1.5. Maximum and Minimum air temperature – 2007/08 (°C)

Agro-met station	2007						2008					
	Sep		Oct		Nov		Dec		Jan		Feb	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Bombuwela	30.4	24.5	29.8	23.6	31.1	22.8	30.8	22.7	30.7	22.5	30.9	22.8
Peradeniya	29.1	21.6	28.8	20.9	30.4	20.0	28.4	20.4	28.9	20.1	30.7	19.3
Sita-Eliya	18.8	13.2	18.5	12.7	19.9	11.5	18.4	11.5	18.5	11.5	19.6	11.3
Batalagoda	30.9	23.6	30.4	23.2	31.1	22.0	29.6	21.8	29.6	21.4	31.4	20.9
Makandura	31.1	24.2	30.5	23.5	32.4	22.6	31.3	22.7	31.6	21.7	33.2	22.0
Moneragala	35.4	22.1	33.0	21.5	31.6	19.6	29.6	19.6	30.0	20.6	31.5	19.0
Girandurukotte	35.1	23.5	33.2	23.1	31.2	22.7	30.0	22.0	29.7	22.3	31.1	22.0
Bandarawela	26.6	17.0	25.4	16.6	24.9	15.6	23.1	15.2	23.5	14.9	25.0	14.5
Kundasale	29.1	21.1	28.6	20.4	29.6	18.5	27.8	19.2	28.0	18.9	29.6	18.5
Maha-Illuppallama	32.5	24.1	31.0	23.3	30.8	21.4	28.8	21.2	29.7	21.1	31.4	21.3
Angunakolapellesa	31.9	24.2	31.3	23.8	31.5	22.9	30.7	22.9	31.1	22.0	32.3	22.1
Aralaganwila	35.0	23.2	33.6	22.3	32.8	21.7	29.8	21.5	30.2	21.4	32.0	21.1
Weeravila	32.1	23.0	32.1	22.9	32.4	22.2	31.1	22.3	31.4	22.0	33.4	22.2

* - Data Not Available

Table 1.6. Relative Humidity – 2007/08 (%)

Agro-met Station	2007						2008					
	Sep		Oct		Nov		Dec		Jan		Feb	
	M	E	M	E	M	E	M	E	M	E	M	E
Bombuwela	90	85	89	83	82	71	86	77	88	88	71	87
Peradeniya	82	78	85	82	82	70	83	73	83	85	62	77
Sita-Eliya	93	89	90	93	78	86	90	91	91	92	92	83
Batalagoda	84	73	87	78	86	72	87	84	91	92	67	90
Makandura	91	87	90	85	86	77	91	83	91	89	77	89
Moneragala	87	83	65	59	85	83	88	83	87	88	76	85
Girandurukotte	68	55	77	63	87	76	91	79	93	88	69	89
Bandarawela	74	67	79	75	85	79	87	79	87	86	69	79
Kundasale	78	72	82	76	84	67	85	74	86	84	64	81
Maha-Iluppallama	79	60	85	69	85	66	90	75	91	90	63	89
Angunakolapellesa	84	76	84	77	84	74	87	77	87	86	73	83
Aralaganwila	66	55	75	68	81	68	90	76	88	85	70	87
Weeravila	86	76	81	76	81	74	82	73	84	88	67	81

M - Reading at 8.30 hours
 E - Reading at 15.30 hours
 * - Data Not Available

Table 1.7. Bright Sunshine Hours per day – 2007/08

Agro-met station	2007					2008							
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	
Bombuwela	6.3	4.7	7.7	5.7	6.6	7.3	6.1	6.6	6.4	5.4	6.3	6	
Peradeniya	4.3	3.9	6.6	4.4	5.2	7.2	4.9	5.5	8.5	5.3	5.3	6.3	
Sita-Eliya	2.9	2	5	3.2	4.5	6	3.8	5.6	6.4	3.6	3.7	4.6	
Batalagoda	5.4	5.1	7.5	4.9	5.9	7.8	5.5	6.4	8.5	6.3	5.9	6.7	
Makandura	*	*	*	*	*	*	*	*	*	*	*	*	
Moneragala	*	*	*	*	*	*	*	*	*	*	*	*	
Girandurukotte	5.3	5	5.6	2.9	3.4	5.8	4.9	5.4	8.1	5.3	7.1	6.5	
Bandarawela	5.1	3.6	4.6	3.1	3.7	5.9	4	4.9	6.5	5.8	7.3	6.5	
Kundasale	4.4	3.9	6.2	4	4.9	6.7	4.6	5.3	8.1	4.4	4.9	6.3	
Maha-Illuppallama	7.6	5.9	7.4	4.8	5.9	7.1	5.5	7.2	9.9	7.2	7.3	7.2	
Angunakolapellessa	*	*	*	*	*	*	*	*	*	*	*	*	
Aralaganwila	7.4	6.5	7.5	4.1	5.8	7.7	6	7	9.9	8	9.4	8.2	
Weeravila	6.8	5.4	7.4	*	7.3	7.9	6.8	5.9	8.7	6.7	8.1	7.5	

* - Data Not Available

Table 1.8. Wind Velocity – 2007/08 (km/hr)

Agro-met station	2007											2008			
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug			
Bombuwela	2.6	2.3	1.4	1.2	1.5	2.2	2.1	2.8	4.3	2.7	3.8	3.5			
Peradeniya	1.3	0.7	2	4.2	3.5	2.7	1.8	1	1.8	1.7	1.9	1.6			
Sita-Eliya	16.9	11.9	4.3	7.2	6.7	5.7	5.8	5	7.7	16.8	15.3	11.5			
Batalagoda	7.4	5.3	3.8	4.3	4.1	3.3	2.8	3.7	8.1	7.5	7.6	7			
Makandura	5.6	4.2	2.7	3.6	4.2	3.3	3.8	3.7	5.5	4.5	5.4	5.9			
Moneragala	1.5	1.7	1.6	1.9	1.9	1.8	1.4	1	1.6	1.3	1.9	1.9			
Girandurukotte	2.2	1.4	1.2	1.1	0.8	0.1	1	1.2	1.3	1.7	2.3	1.8			
Bandarawela	4.9	3.7	2.8	3.3	2.9	3.3	3.6	2.9	3	4.1	5.4	4.9			
Kuñdasale	2.3	1.5	1.3	1.5	1.1	0.8	0.9	0.9	1.7	2	2.3	1.7			
Maha-Illuppallama	8.4	5.3	3.6	4.9	4.5	4.3	3.7	3.9	8.1	8.1	8.5	7.3			
Angunakolapellesa	4.9	4.5	3.5	4.1	3.4	4.2	3.6	4.1	6.4	5.5	6.3	5.9			
Aralaganwila	4.8	3.7	2	2	2	2.1	2.1	2	3.1	4.3	4.5	3.2			
Weeravila	6.1	4.8	2.2	2.9	2.9	2.9	2.1	2.4	6.1	6	7.4	6.3			

2.1 FIELD CROP RESEARCH AND DEVELOPMENT INSTITUTE – (FCRDI) MAHA ILLUPPALLAMA

FCRDI, Mahailuppallama has been given the mandate of conducting research and development programmes related to other field crops in order to develop technologies and strategies for the enhancement of production in the other field crop sector. Crops, under the main stream include, condiments (chilli and onions), grain legumes (mungbean, cowpea, blackgram), oil seeded crops (groundnut, soybean, sesame and sunflower) and coarse grains (maize, Fingermillet, sorghum and other millets). FCRDI also caters to regionally important fruits and vegetables. Further FCRDI collaborates with government and non-government extension organizations to disseminate the new technologies to increase OFC production in the country with a particular reference to the Dry Zone.

Research programme of the Institute has been developed based upon the policy guidelines given in the “Mahinda Chinthana: Vision for a New Sri Lanka - A Ten Year Horizon Development Framework 2006 – 2016 (Department of Financial Planning, Ministry of Finance and Planning)”, and the research programme is mainly focused on the development of, high yielding good quality OFC

varieties, improved crop management practices, crop protection techniques, plant nutrition management strategies and planting material production, that eventually contribute to regionally equitable economic growth, rural livelihood improvement, improved agro-based industries and food security.

In addition to research programmes, FCRDI also undertakes the following programmes.

- Breeder seed production of 17 other field crops and two varieties of vegetable crops
- Soil testing and making site-specific fertilizer recommendations
- Conducting trainings and awareness programmes for farmers, seed producers and schoolchildren and providing advisory services for the end users involved in OFC production

BUDGET

Allocation received, expenditure and commitment under different votes and projects are given in the table 2.1.1.

Tab 2.1.1: Annual budget – 2008 (Rs.)

Programme / Project	Allocation	Expenditure	Commitment
Capital	5 485 800.00	3 936 430.20	165 000.00
Recurrent			
285-2-2-1405	19 185 000.00	18 041 463.38	0.00
Other Investment			
285-2-2-2502	651 000.00	215 890.50	0.00
“Api Wawamu Rata Nagamu”			
118-2-3-20-2502 (1)	7 682 000.00	1 995 074.82	4 652 213.95
Enhancement of Organic Fertilizer Production and Utilization			
118-2-3-21-2502	4 950 000.00	1 840 871.41	898 298.66
Organic Farming for Export			
285-02-03-3-2502	300 000.00	285 802.00	0.00
CARP Project			
12 / 667 / 500	70 000.00	68 496.48	0.00
CARP Project			
12 / 691 / 519	579 000.00	90 919.76	0.00
Hybrid Variety Development, Seed Production of Local Maize Hybrid “Sampath”			
285-02-02-3-2502	2 150 000.00	2 083 731.00	0.00
“Api Wawamu Rata Nagamu - Grapes”			
118-2-3-20-2502 (FC)/Grapes/MI	2 200 000.00	306 991.00	55 000.00
OFC Production in Mahaweli - 6000-0-0-3-42	450 000.00	345 202.10	0.00
Use of HERP on OFCs - 6000-0-0-3-42	200 000.00	165 140.65	0.00
Total	43 902 800.00	29 376 013.30	5 770 512.61

PROGRESS

CROP IMPROVEMENT

Coarse Grain

● Maize

Twenty-one quality protein maize hybrids were evaluated and five promising hybrids with a yield potential over 7 t/ha were selected for further studies.

Forty exotic hybrids (given bellow) were evaluated as per the request of Seed Certification & Plant Protection and Seed importers. Except Narai 3, all the other exotic varieties performed well giving yields similar to that of the local hybrid variety "Sampath" under the local conditions.

1. Pacific 390405	11. Pacific 690212	21. Pacific 690853	31. NT 6346
2. Pacific 490138	12. Pacific 690224	22. Pacific 690860	32. DK 414
3. Pacific 490167	13. Pacific 690879	23. Lot 79247	33. B = 30 N 11
4. Pacific 590217	14. Pacific 690817	24. Lot 79259	34. A = 30 D 55
5. Pacific 590198	15. Pacific 690822	25. Lot 79265	35. C = 30 B 80
6. Pacific 590205	16. Pacific 690824	26. Lot 79272	36. D = 30 Y 87
7. Pacific 690077	17. Pacific 690836	27. Lot 721114	37. E = 30 A 33
8. Pacific 690079	18. Pacific 690843	28. Lot 721115	38. Narai 1
9. Pacific 690156	19. Pacific 690846	29. NK 40	39. Narai 2
10. Pacific 690192	20. Pacific 690847	30. NT 632640.	Narai 3

Eleven 'Super Sweet'- Sweet Corn hybrids (given bellow) showed an appreciably high green cob yield (12 t/ha) with higher sweetness in AYT.

1. SSH 2 x SSH 3	7. SSH 3 x SSH 5
2. SSH 2 x SSH 5	8. SSH 3 x SSH 7
3. SSH 2 x SSH 6	9. SSH 3 x SSH 10
4. SSH 2 x SSH 7	10. SSH 10 x SSH 9
5. SSH 2 x SSH 9	11. SSH 10 x SSH 11
6. SSH 2 x SSH 11	

● Finger millet

Of the thirty-three finger millet accessions evaluated for yield, early maturity and pest & disease resistance, 28 accessions were selected for further evaluation.

Condiments

● Chilli

High yielding chilli variety (breeding line number 9874), suitable for both green and dry chilli production with a yield potential of 12-15 t/ha of green chilli and 3t/ha of dry chilli, was conditionally released. A decision was taken by the Variety Releasing Committee (VRC) to observe the performance of the variety prior to release for general cultivation.

Three chilli lines (MICH-1, MICH-6 and Galkiriyagama Selection) were identified as promising after consecutive evaluation for yield and other agronomic characters and these lines were handed over to the SCPPC of DOA for DUS testing. MICH-1 and MICH-6 lines had good consumer preference as green chilli while Galkiriyagama selection was found to be suitable for both green and dry chilli purposes.

● Big Onion

Big onion cultivar Pusa Red MI was tested at farmers' field and showed a better performance giving a yield of 29t/ha.

Grain Legumes

● Mungbean

Eight promising breeding lines with good yielding ability and other desirable agronomic traits were selected for evaluating under NCVT in five different locations.

Based on preliminary yield evaluation of elite breeding lines, three lines (MIMB 101 x V 2802, MIMB 159 x V 3476 and KPS 1 x NM 54) were selected for advanced yield evaluation.

● Blackgram

A new short age (65-70 days) blackgram variety "Anuradha", giving a parallel yield with the recommended variety MI-1 was released for general cultivation. This variety has high processing quality and hence promising for processing industry.

Three breeding lines with good agronomic traits and high yield were selected for advanced yield evaluation.

● Soybean

Seven cream seeded soybean germplasms were evaluated for human food production, and accession no.10966 and 10972 were selected for inclusion in NCVT trials.

Eleven black seeded soybean germplasms were evaluated with the objective of poultry feed production, and accession no. 2542, 2457 and 2452 were selected for inclusion in NCVT trials.

Oil Crop

● Groundnut

Four promising medium-duration confectionery-type groundnut lines ICGV97045, ICGV97049, ICGV98396 and ICGV93704 were evaluated in NCVT during yala 2008. Lines ICGV97045 and ICGV97049 showed high performances over the check varieties Indi and Tikiri.

Vegetables

● Tomato

A new tomato Variety, KC-1, giving high yield and exhibiting high tolerance to elevated ambient temperature in the dry zone, was released.

● Vegetable Cowpea

High yielding (18 t/ha-20 t/ha), early maturing and pest and disease tolerant vegetable cowpea line, Thai Selection 01, was selected for inclusion in NCVT trials.

Fruit Crops

● Papaya

Twelve crosses were made from nine inbred lines and F₁ generation is currently being evaluated in the field.

Plant Protection

Coarse Grain

● Maize

Thirty-seven hybrid maize varieties were screened for rust caused by *Puccinia polysora*.

Sampath, 30B80, 30Y87 and 30 A 33 were found to be moderately resistant to rust while Chinese variety Deng-Hi-Zing has been highly susceptible.

Two new insecticides, Fipronil 0.3%G and Thiocyclam hydrogen oxalate 0.4%G, were found promising to control the stem borer damage in maize, a serious pest for the expanding maize cultivation in the Island.

Condiments

● Chilli

Two serious fungal diseases, anthracnose (caused by *Colletotrichum capsici*) and leaf spots (caused by *Cercospora capsici*) of chilli crop during maha season, which are particularly affecting the quality of the dry chilli, were found to be effectively controlled by a new fungicide Copper hydroxide 57.6% w/w.

A program carried out on testing insecticides showed that Imidacloprid formulations were moderately effective while organic oil was not effective in controlling leaf curl damage of chilli.

Pod borer, a serious pest in chilli, was found to be effectively controlled by the two insecticides Tracer 45% SC and Methoxyfenozide 24 SC.

● Big Onion

Bio-efficacy of new herbicide formulation CONTROL240 (Oxyfluorfen 24 % EC) was found to be equally effective to that of the recommended formulation GOAL 2XL (Oxyfluorfen 24 % EC) on controlling weeds in onion cultivated fields, during early 2 – 3 weeks period of crop establishment.

Grain Legumes

● Blackgram

Four new insecticides, Metaflumizone 24SC, Chromafenozide 5SC, Thiocyclam hydrogen oxalate 50 SP and Enamectin benzoate 5% SG which were found to be more effective over the controlling of pod borers in grain legumes, have been identified for recommendation.

Oil Crops

● Groundnut

Pre-emergence application of Imazethapyr EC at the rate of 600 - 800ml/ha was found to be effective in controlling sedges and broad leaf weeds in groundnut cultivated fields.

Fruit Crops

● Grapes

A new fungal disease, Phomopsis cane and leaf spot disease caused by *Phomopsis viticola* has been identified for the first time in Sri Lanka and remedial measures were developed.

AGRONOMY

Coarse Grain

- **Maize**

Optimum plant density and N requirement for the local hybrid maize variety Sampath were identified as 55555 plants/ha and 150N kg/ha respectively under rain-fed condition while 88888 plants/ha and 200 N kg/ha under irrigated condition.

Condiments

- **Chilli**

Green chilli yield can be increased by 60% with increasing nitrogen and potassium levels up to 425 N and 90 K₂O kg/ha respectively.

Vegetables

- **Okra**

Higher yield and marketable fruit characteristics of variety "Haritha" can be obtained by adopting 45 cm x 45 cm spacing with two plants per hill.

Investigating the effect of removing of near by leaf with the fruit while harvesting of Okra revealed that, it leads to reduce the total yield by 23 %.

SOIL FERTILITY

Coarse Grain

- **Maize**

Research on organic crop production showed that the inorganic fertilizer requirement can be totally replaced by 30t/ha cow-dung or 40t/ha compost or a mixture of 10t/ha cow-dung with 10t/ha (air-dry weight basis) Gliricidia leaves as a mulch, without reducing yields in Open-pollinated varieties.

Condiments

- **Chilli**

Recommended nitrogen fertilizer levels for irrigated chilli can be cut down by 20 %, with 10t/ha gliricidia or cow-dung, without affecting chilli yields.

SOIL AND WATER MANAGEMENT

Condiments

- **Big Onion**

Water use efficiency in onion can be increased by 20% using black polythene (gauge 300) or rice straw (5 t/ha) as a mulch.

FOOD SCIENCE AND TECHNOLOGY

Coarse Grain

- **Minor millet**

Biscuits were prepared with 100% minor millet flour with acceptable sensory qualities.

Grain Legumes

- **Blackgram**

Newly developed blackgram varieties were evaluated for functional and food processing qualities and the results showed that the bulk density of the new variety Anuradha was significantly higher while other properties namely, form capacity, form stability, increase of volume after fermentation, water absorption capacity and oil absorption capacity were similar to those of the available variety, MI 1. Food processing qualities of all the tested varieties were in acceptable condition by sensory evaluation.

DEVELOPMENT ACTIVITIES

Breeder Seed Production

Following quantities of breeder seeds were produced and submitted to SPMDC to assist the seed production programme of the Department of Agriculture.

Table 2.1.2: Quantities of breeder seeds produced

Crop	Variety	Quantity (kg)
Maize	CML -20	
	(Parents of hybrid maize sampath)	250
	CML - 348 (Parents of hybrid maize sampath)	275
	Sampath F ₁	7000
Finger millet	Oshada	110
Chilli	MI -2	3
KA2	3	
Mungbean	Ari	10
MI-6	15	
Blackgram	MI-1	15
Anuradha	10	
Soybean	PB 1	37
PM 13	10	
Cowpea	Dhawala	28
MI-35	22	
Waruni	30	
Bombay	10	
Wijaya	10	
Groundnut	Walawa	20
Vegetable cowpea	BS-1	6.8
Bitter gourd	MC-43	1.5
Snake gourd	MI-short	3.5
Water melon	Thilini	11

Soil Testing Programme

Hundred and four (104) soil samples of upland and paddy soils from Provincial and Inter Provincial areas of Anuradhapura and Polonnaruwa districts and Mahaweli H area were analyzed and soil test based fertilizer and organic matter recommendations were made during 2008.

Technology Dissemination

Training programmes, Lectures, Workshops, Technical Advice, Plant clinics, Field days

The Institute conducted 14 training programmes on OFC production for farmers, 11 training programmes for school / University / Technical college students, and another 11 training programmes for officers from other institutes. The total number of participants was 1105.

A special training programme was conducted to train agriculture extension officers under "Api Wawamu Rata Nagamu - OFC Promotion Programme". A total of 12 training sessions were conducted and 391 officers from 14 districts covering 08 provinces were trained on OFC management towards better crop production.

The officers conducted about 60 training programmes other than the above, and participated, as resource persons, for 18 field demonstrations, with respect to OFC production.

The officers have made contribution, as resource persons, for about 145 lectures and workshops in the technology dissemination programmes conducted in the year 2008.

Number of diseased plant samples diagnosed was 67. Officers have visited around 15 farmer fields upon the request made by the extension staff and necessary advices on disease management were given. Over 35 cases of insect damages, reported by farmers, were diagnosed and control measures were given. Officers have visited about 18 farmer fields on the request and necessary advices on pest management were given. Besides, technical advices were given over 120 occasions on management practices with respect to Agronomy and Soil Fertility aspects on OFC production.

A "Field Day" programme was organized

for extension officers, farmers and private sector, under "Api Wawamu Rata Nagamu - OFC Promotion Programme" on 29-07-2008 to deliver the messages of ongoing research activities in the Institute. Over 75 participants were attended.

The Institute has also provided relevant information on OFC production to 174 persons including farmers, field officers and students. Free samples of OFC seeds were issued for 26 Institutes, which included Government schools, universities and schools of Agriculture.

Radio Programmes

Pest control in chilli crop & the recommended pesticides"- K.N.C.Gunawardena, "Rangiri Dambulu radio network, Dambulla"- 03.04.2008

Disease management in chilli - M.G.D.L. Priyantha, "Rangiri Dambulu radio network, Dambulla"- 03.04.2008

"Important factors to be considered in Maize cultivation during the yala season"- R.M.Ranaweera Banda, "Rangiri Dambulu radio network, Dambulla"- 03.04.2008

"Agronomic practices in Maize, cultivated in uplands during maha season, Potential of Maize cultivation in Rajarata area, local maize production & Imports"- R.M.Ranaweera Banda, "Rangiri Dambulu radio network, Dambulla"- 23.10.2008

"Ability of cultivating coarse grains in Rajarata area and its agronomic practices giving especial emphasis to the Kurakkan crop" - R.M.Ranaweera Banda, "Rangiri Dambulu radio network, Dambulla"- 23.10.2008

"New findings & on-going research conducted by Field Crops Research Institute, Mahalluppallama"- R.M.Ranaweera Banda, "Rangiri Dambulu radio network, Dambulla"- 23.10.2008

"Contribution of Field Crops Research Institute, Mahalluppallama to the API WAWAMU RATA NAGAMU Programme & the main crops considered for the programme"- R.M.Ranaweera Banda, "Rangiri Dambulu radio network, Dambulla"- 23.10.2008

PROJECTS CARRIED OUT IN 2008

Table 2.1.3: "Api Wawamu Rata Nagamu" - 118-2-3-20-2502 (1)

	Activity	Sub Activity	Output Target	Physical Progress
1	Training	Officer training	Conducting 11 training classes for 600 officers	12 training classes conducted for 393 officers
2	Technology dissemination	Leaflets on OFCs	Preparing 210 000 leaflets on 21 categories	210 000 leaflets prepared on 21 and categories distributed
3	Increasing seed and planting material production	Pre basic / Basic seed production	Producing 10 000 kg of Pre basic / Basic seeds	8500 kg of Pre basic / Basic seed produced
4	Technology generation	Research activities	Conducting research activities on variety improvement and improved agronomic management aspects	Experiments implemented for <i>maha</i> season

Table 2.1.4: Enhancement of Organic Fertilizer Production and Utilization - 118-2-3-21-2502

	Activity	Sub Activity	Output Target	Physical Progress
		Technology improvement on compost preparation in farmer fields	Improving technology on compost preparation in 10 villages	Activities completed in 10 villages
1	Technology improvement	Improving the compost production and regulating cattle manure production in the livestock unit	Increasing the compost production capacity up to 25 t / year and maintaining the cattle manure production at a rate of 50 t / year	Compost production capacity increased up to 25 t / year and the cattle manure production maintained at a rate of 50 t / year
2	Preparation of technical packages	Finding out appropriate IPNS package for Maize	Conducting a trial in Maha 2008/2009	The experiment implemented
		Finding out appropriate IPNS package for Chilli	Conducting a trial in Maha 2008/2009	The experiment implemented
		Use of readily available ex-situ green manure sources - Gliricidia, Ipil Ipil	Using 50 t of green manure in cultivation activities in the Institute	40 t of green manure used
3	Green manure cultivation	Cultivation of Gliricidia plant cuttings on conservation bunds and in fences in the Institute fields	Planting 10 000 stem cuttings of Gliricidia	8000 cuttings planted
		Cultivation of Sunhemp and Mukuna as in-situ green manure sources	Sunhemp cultivation in 1 ha of marginal lands in the Institute	0.5 ha cultivated
		Maintenance of the demonstration site of green manure crops	Maintaining the demonstration plot	The demonstration plot maintained

Table 2.1.5: Organic Farming for Export - 285-02-03-3-2502

Activity	Sub Activity	Output Target	Physical Progress
1	Generating new technologies and refinement of generated technologies on organic farming	Study the soil properties and crop response of OFCs in relation to organic manure levels	Conducting 2 experiments 2 experiments implemented
		Study the effect of gliricidia leaf extract on growth and yield of chilli	Conducting 2 experiments 2 experiments implemented
		Organic farming activities practiced in Alley cropping system	Conducting 2 experiments 2 experiments implemented
		Effect of Vermicompost on growth and yield of OFCs	Conducting 2 experiments 2 experiments implemented
2	Technology dissemination	Field demonstrations on organic farming activities	Demonstration plots in 4 villages Demonstrations completed in 4 villages
3	Development	Construction of cattle manure slab	Completing construction of the cattle manure slab Construction completed
		Maintenance of the cattle heard and grassland	Ensuring the continuous supply of cattle manure Ensured the supply of cattle manure

Table 2.1.6: CARP Project - 12 / 667 / 500

Activity	Output Target	Physical Progress
1 Development of an agronomic package for hybrid maize variety (Sampath) developed in Sri Lanka	Developing an agronomic management package	An agronomic management package developed

Table 2.1.7: CARP Project - 12 / 691 / 519

Activity	Output Target	Physical Progress
1 Evaluation of promising hybrids in NCVT and VAT	Conducting NCVT trials in 3 locations	Multiplied the seeds of promising hybrids
2 Quantification of amino acids in promising hybrids	Quantification of amino acids in 7 promising hybrids	Developed laboratory facilities for testing

Table 2.1.8: Hybrid Variety Development, Seed Production of Local Maize Hybrid "Sampath" - 285- 02-02-3-2502

	Activity	Output Target	Physical Progress
1	Parent seed production at FCRDI, MI and GLORDI, Angunakolapellessa	Producing 650 kg of parent seeds	825 kg of parent seeds produced
2	Hybrid seed production at Government farms and in private sector	Producing 6.7 mt of hybrid seeds	5 mt of hybrid seeds produced
3	Hybrid seed production at FCRDI, MI	Producing 3 mt of hybrid seeds	200 kg of hybrid seeds produced
4	Hybrid development	Developing 20 hybrids	Breeding programme implemented on developing 20 hybrids
5	Development of maize seed production field	Constructing the field fence	Construction completed
6	Development of seed storage facilities	Repairing the cold room	Repairing completed

Table 2.1.9: "Api Wawamu Rata Nagamu - Grapes" - 118-2-3-20-2502 (FC)/Grapes/MI

	Activity	Sub Activity	Output Target	Physical Progress
1	Increase production	Organizing awareness programmes for officers Conducting awareness programmes for officers	Organizing and conducting 12 awareness programmes Conducting 36 training programmes	6 programmes organized and conducted 19 programmes conducted
		Selecting farmers and sites	Selecting 10 ha of land	12 ha of land selected
2	Increasing availability of planting materials	Training nurserymen Distributing planting materials for nurserymen	Training of 2 nurserymen Distributing 360 plants	2 nurserymen trained 80 plants distributed
3	Media programmes		Conducting 3 programmes	1 programme conducted

Table 2.1.10: OFC Production in Mahaweli" - 6000-0-0-3-42

	Activity	Sub Activity	Output Target	Physical Progress
	Promotion of improved agronomic	Field demonstrations	Conducting 10 field demonstrations, each of 0.25 acre land area	20 field demonstrations, each of 0.125 acre, conducted on chilli, mung bean, cowpea, maize and black gram
1	package and practices of selected OFCs for increased productivity	Baseline survey to evaluate the present status and constraints (giving special attention to virus diseases) in selected OFCs at farmer level	Collecting data from 30 farmers in Mahaweli H area	Collected data from 26 farmers
2	Yaya programme	Organizing field days and plant clinics	Organizing 2 field days and 2 plant clinics	2 field days and 2 plant clinics organized

Table 2.1.11: Use of HERP on OFCs - 6000-0-0-3-42

Activity	Sub Activity	Output Target	Physical Progress
1 Find out agricultural sites having low soil Phosphorus levels in different farming systems in the Dry Zone	A soil survey to find out agricultural sites having low soil Phosphorus levels in Agro-well system, Rain-fed system and Major and Minor Irrigated system	Finding out a site having low soil Phosphorus level in each farming system	Found out sites having low soil Phosphorus level in each farming system
	A systematic soil survey along with the soil catherary sequence in each site with low soil Phosphorus	Conducting A systematic soil survey in each site with low soil Phosphorus	a systematic soil survey conducted in a site with low soil Phosphorus in Agro-well system
2 Generate new technologies with relevance to application of High Grade Eppawala Rock Phosphate (HERP) and Eppawala Single Super Phosphate on OFCs	An experiment in each site with low soil Phosphorus in each farming system for maize / chilli / onion crops	Conducting an experiment in each farming system for maize / chilli / onion crops	2 experiments implemented for maize and chilli in Agro-well system

Bringing unutilized arable lands under cultivation

A three-year programme (2007 – 2009) was implemented to bring the unutilized arable lands in the research station, under cultivation under “Api Wawamu – Rata Nagamu” programme. Out of 60 ha of identified unutilized arable lands in the station, around 28 ha of lands in *maha* 2007 / 2008 and, around 47 ha of lands in *maha* 2008 / 2009, were brought under cultivation with OFCs (maize, finger millet, mung bean, cowpea, blackgram and soya bean). About 470 kg of certified seeds of the OFCs were produced in *maha* 2007 / 2008 through this programme. Of the 47 ha cultivated in *maha* 2008 / 2009, 10 ha were exclusively allocated for certified seed production of OFCs.

PLAN FOR 2009

Research Plan – 2009

CONDIMENTS

- * Production of new crosses for chilli hybrids and evaluation of newly developed hybrids
- * Evaluation of chilli germplasm, selection, purification and seed multiplication of promising lines and regionally important chilli land races
- * Wide hybridization to incorporate thrips resistant/tolerant characters for promising lines
- * VAT for promising chilli breeding lines
- * Identification of hosts harbouring major chilli viruses (CLC, CMV)
- * Identification of causal organism involving in chilli NLD
- * Survey on present status of pest control to control leaf curl complex in chilli
- * Testing of insecticides for the control of pod borers in chilli
- * Effect of Chlorfluazuron and Thiodicarb insecticides on growth of chilli
- * Comparison of green chilli and dry chilli yield on the effect of flower induction and pod yield
- * Influence of chemical and mechanical stimulation on fruiting behavior of chilli
- * Testing of different Potassium rates for green chilli production under irrigated conditions
- * Application of gliricidia leaf meal to compensate the Nitrogen fertilizer for optimum green pod yield of chilli
- * Yield evaluation and adaptability testing of improved big onion variety in major growing areas

- * Evaluation of big onion var. Nasik -N 53 for yield, seed setting ability and storability
- * Development of an improved big onion variety from the mix variety Rampure
- * Development of seeds and bulbs for the above studies
- * VAT - red onion
- * Control of bulb rot disease in big onion
- * Studies on development of fungicidal resistance in onion major disease causing pathogens
- * Evaluation of onion varieties for diseases

- * Effect of sulphur and Calcium nitrate on yield, quality and storability of big onion

GRAIN LEGUMES

- * NCVT for promising mungbean breeding lines
- * Evaluation and selection of mungbean germplasm
- * Hybridization and selection programme for mungbean
- * Preliminary yield trial- Mungbean
- * Studies on improvement of quality (reduce hard seed content) of mungbean seeds
- * Evaluation of commercial mungbean lines
- * AYT for promising blackgram breeding lines
- * Germplasm evaluation, purification of blackgram
- * Hybridization and selection programme for blackgram
- * Hybridization and selection of cowpea
- * VAT of cowpea
- * Evaluation of cowpea germplasm received from IITA
- * Testing of insecticides against pod sucking bugs in grain legumes (cowpea)
- * Identification and management of mung bean diseases
- * Screening of germplasm against collar-rot of cowpea
- * NCVT of exotic soybean germplasm suitable for poultry feed production
- * NCVT of exotic soybean germplasm for yield and other agronomic characters.
- * Hybridization and selection of soybean
- * Seed multiplication of promising lines of chickpea.

OIL SEEDS

- * National Coordinated Variety Trial of confectionary- type groundnut
- * Seed multiplication of promising lines of confectionary type groundnut and the variety "Bambara"
- * Germplasm evaluation of groundnut

COARSE GRAINS

- * Evaluation of QPM hybrids NCVT
- * Evaluation of new maize hybrids
- * Evaluation of promising hybrids developed with local inbred lines
- * Seed multiplication of parents (Inbred Lines) and promising hybrids
- * Evaluation of super sweet hybrids of maize
- * Evaluation of exotic maize hybrids
- * OPV and inbred development of maize
- * Evaluation of QPM hybrids in VAT
- * Evaluation of exotic maize hybrids at farmer fields
- * Identification and control of causal agent involving hybrid maize diseases
- * Identification of plant diseases in sweet corn varieties
- * Screening of fungicides against rust of maize
- * Management of Erwinia stalk rot in maize
- * Testing of insecticides against stem borer in maize
- * Evaluation of new finger millet germplasm
- * Effect of direct seeding and row planting on growth and yield of finger millet (Oshadha and Ravi) under rainfed condition in upland farmer fields

- * Weed Control efficacy of MCPA 40% on broadcasted finger millet cultivation
- * Evaluation of mechanical weeding methods on row planted finger millet cultivation
- * Maintenance of promising Meneri germplasm
- * Maintenance of promising Foxtail millet germplasm
- * Evaluation of finger millet germplasm for stem borer resistance
- * Evaluation of Oshadha against Blast of finger millet

VEGETABLES

- * Varietal improvement of okra for resistance/tolerance to yellow vein mosaic virus (YVMV) with high yield and acceptable fruit quality
- * NCVT on promising lines of okra
- * Varietal evaluation of okra and selection of suitable varieties for hybrid development programme
- * Evaluation of newly developed brinjal hybrids under dry zone condition (NCVT)
- * NCVT on promising line of vegetable cowpea
- * VAT of pole-mae for yield and quality
- * Varietal screening of commercially cultivating varieties of cucurbitacea family for viral disease resistance/tolerance

FRUITS

- * Maintenance of grapes germplasm
- * Wood apple germplasm evaluation
- * Varietal evaluation of guava - Observational
- * Establishment and maintenance of mother plants of three grapes varieties
- * Varietal development of papaya
- * Maintenance of mango germplasm
- * Evaluation of grape vine training systems
- * Maintenance of a demonstration block of dragon fruit
- * Maintenance of a demonstration block of pineapple
- * Maintenance of a demonstration block of drumstick
- * Identification of suitable spacing for *Aloe vera* (Observational)

RICE

- * National Co-ordinated rice Varietal Trial for 3, 3.5 and 4 – 4.5 months age groups
- * VAT of rice varieties with different age groups in farmers' fields

BREEDERS SEED PRODUCTION

- * Breeders seed production of recommended varieties of chilli (MI2, KA2 and MI Hot)
- * Breeders seed production of recommended varieties of maize (Badra and Ruwan, Parental lines and Sampath)
- * Breeders seed production of recommended finger millet variety Oshadha
- * Purity maintenance and breeders seed production of mungbean varieties of MI 5, MI 6 and Ari
- * Purity maintenance and breeders seed production of black gram variety MI 1, Anuradha
- * Purity maintenance and breeder seed production of snake gourd (MI short)
- * Purity maintenance and breeders seed production of bitter gourd (MC 43)
- * Purity maintenance and breeder seed production of vegetable cowpea (BS 1)
- * Purity maintenance and breeder seed production of Tomato (KC 1)
- * Purity maintenance and breeder seed production of okra (MI 5, MI 7)
- * Breeders seed production of recommended varieties of groundnut (Walawa, Tissa and Indi)
- * Breeders seed production of recommended varieties of cowpea (Dhawala, MI 35, Wijaya, Waruni and Bombay)
- * Breeders seed production of recommended varieties of soybean (PB 1 and PM 13)
- * Breeders seed production of recommended varieties of melon (Thilini)

CROPPING SYSTEMS

- * Testing of different seed rates for black gram broadcasting under rain-fed in farmer fields

WEED SCIENCE

- * Population study of the bio-control agent (*Neochetina bruchi*) of water hyacinth (*Eichhornia crassipes*) under dry zone water bodies
- * National coordinated herbicide screening trial for wet seeded rice
- * Weed control efficacy of Imazethapyr EC on legumes
- * Weed control efficacy of MCPA 40% in broadcasted finger millet cultivation

SOIL FERTILITY, FERTILIZERS AND ENVIRONMENT

- * Study the soil properties and crop response of OFCs in relation to organic manure levels
- * Study the response of maize in relation to the application of HERP and ESP
- * Study the response of chilli in relation to the application of HERP and ESP
- * Study the response of onion in relation to the application of HERP and ESP
- * Finding out appropriate IPNS packages for maize
- * Study the effect of gliricidia leaf extract on growth and yield of chilli
- * Long term fertility monitoring programme in rice-OFC cropping system
- * Effect of Super Seed (Rhizobium) on growth and yield of black gram
- * Study the effect of available commercial fertilizer products on growth and yield of chilli
- * Technology dissemination on organic farming and organic manure production at farmer fields
- * Effect of rock phosphate on growth and yield of blackgram under organic farming situations
- * Identification of optimum level and time of Gliricidia application with nitrogen fertilizer for optimum yield of maize
- * Identification of optimum level and time of Gliricidia application with nitrogen fertilizer for optimum yield of chilli
- * Identification of suitable integrated plant nutrient (N) management system for chilli
- * Identification of suitable integrated plant nutrient (N) management system for onion
- * Effect of Bio-gold on growth and yield of greengram
- * Effect of Bio-phos on growth and yield of greengram
- * Long term soil fertility monitoring of organic farming field
- * Long term soil fertility monitoring of organic matter and chemical fertilizer added OFC cultivated RBE soil
- * Soil testing programme

WATER MANAGEMENT

- * Study of drip fertigation system for chilli and maize
- * Study of different mulches on crop water requirement for onion crop
- * Study of crop water requirements for hybrid maize
- * Evaluation of soil water distribution pattern in RBE soil under drip irrigation system

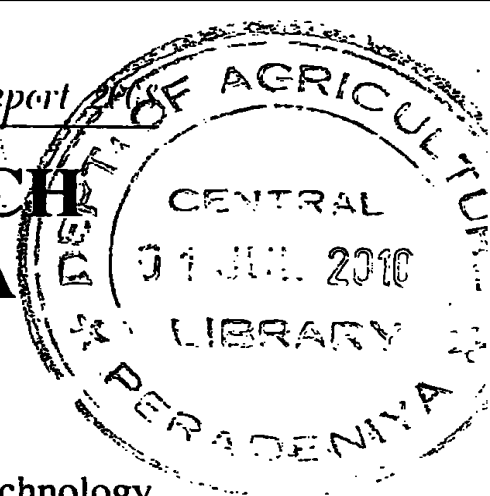
FOOD TECHNOLOGY

- * Select suitable varieties for production of 'Jumbo peanut' from large seeded varieties
- * Development of quick cooking pulses
- * Development of low cost package for hybrid maize seed storage
- * Determination of protein quality of quality protein maize varieties
- * Determination of protein and oil content of black and cream-seeded soybean varieties
- * Development of peanut butter
- * Development of snacks and bakery products from groundnut

Technology Dissemination Activities

- Exchanging information through PTWG meetings and other seasonal review meetings
- Technology dissemination by seminars, training programmes, workshops, plant clinics, field days, field demonstrations, exhibitions and technical advices
- Publishing scientific articles in newspapers and participation in TV and Radio programmes

2.1.1 FARM MECHANIZATION RESEARCH CENTRE (FMRC)-MAHAILLUPPALLAMA



Farm Mechanization Research Centre (FMRC) has been established to promote appropriate farm mechanization in Sri Lanka by introducing farm mechanization technology to reduce cost of production and improve quality and quantity of agricultural products. The Institute is presently attached to the Field Crops Research & Development Institute Maha Illuppallama. FMRC is the National Institute for Asia Pacific Centre for Agricultural Engineering and Mechanization (APCAEM) of UNESCAP and the Secretariat for the National Farm Mechanization Committee (NFMC) of the country.

FMRC carries out its unique pathway to introduce appropriate farm mechanization techniques to Sri Lanka. First, identify the requirements in Sri Lanka and prepare suitable technical drawings for a design, then carry out development activities and test it to evaluate and to justify the construction properties, functions, safety, economic and sociological consequence and analyze final results. If necessary, modifications are done to suit local conditions and test under farmers' conditions. Through proper technology transfer activities, promote final product among local communities and introduces it to large and small scale manufacturers by giving proper technical guidance to fulfill the demand of the machine.

In order to achieve intutional goals FMRC has six sections which are mentioned below.

1. *Research & Development Section (R & D)*

Design & prototype production of conceptual farm machinery.

2. *Adaptive Research section*

Adaptation trials of designed and fabricated models at different locations in order to ascertain their suitability and performance on different conditions of land against other factors and development of existing machinery for local farming.

3. *Industrial Extension Section*

Train & assist local manufacturers in production of successful FMRC designs.

4. *Testing & Evaluation Section*

Testing of machines developed by FMRC and commercial testing of imported and locally developed machinery.

5. *Agricultural Extension Section*

Familiarize farmers with the new technology through demonstrations, seminars, workshops and exhibitions etc.

6. *Analysis section*

Research and experiments to evaluate the impact and effect of machinery on both crops and users.

BUDGET

The allocations and expenditure under different votes for 2008 are given in table 2.1.1.1.

Table 2.1.1.1: Annual budget -2008 (Rs.)

<u>Vote</u>	<u>Allocation</u>	<u>Expenditure</u>
Recurrent	2,602,000.00	2,341,480.16
Capital	1,083,000.00	895,862.80
	3,685,000.00	3,237,342.96

PROGRESS

Research and development of Farm Machinery

● **Power weeder for rice cultivation**

This new introduction has been developed specially to reduce the drudgery and to increase the efficiency of weeding in rice cultivation with compared to manual mechanical weeders such as cono weeder.

● **Manually operated highland row seeder for small size seeds (sesame & finger millet)**

Row seeding of sesame and finger millet is becoming popular as it is effective; hence a manually operated highland seeder for small size seeds is designed and fabricated.

● **Development to the Ground nut decorticator powered by an electric motor**

Decorticating, seed separation and cleaning operations are automatically carried out at the same time by this machine and increase the decorticating process effectively when compared to previously introduce manually operated machine. Working capacity of this modified machine is 50 to 60 kg of ground nuts per one hour.

- **Two tractors coupled rolling injector planter for maize**

This injector planter is designed to do highland row seeding at rough field conditions or no tillage conditions.

- **High Capacity paddy thresher powered by 12HP, 2w tractor**

Four wheel tractor coupled high capacity threshers became popular among farmers as it replace higher amount of labour requirement at threshing and due to the high capacity. But majority of farmers own 12 HP 2 wheel tractors. A high capacity thresher is designed to power by the 12 HP 2 wheel tractors and the prototype is fabricated.

- **Modification of manually operated rice transplanter**

Six row manual transplanter which was introduced by the FMRC did not attracted by the farmers due to the drudgery. Hence this is converted to 3 or 4 row manual transplanter which need lesser amount of labour.

- **Fully motorized rice transplanter powered by a 4.2HP, small engine**

Although row transplanting is the best plant establishment method in rice cultivation, farmers practice manual broadcasting as shortage of labour and unavailability of appropriate machinery. A fully motorized rice planter is designed and is being fabricated to facilitate row transplanting in rice cultivation efficiently and effectively.

- **Modification of FMRC lowland drum seeder**

The lowland drum seeder introduced by FMRC has gained a good attraction. It is further developed to adjust the seed rate for various seed varieties and also to handle easily.

Adaptive Research Section

Adaptation trials were carried out in various parts of the country to finalize the general performance of machineries and to check the working capacity of the machines.

Industrial Extension

A small scale manufacturer from Anuradhapura district is trained to fabricate the groundnut decorticator powered by an electric motor. He has already sold one machine fabricated by him. Another manufacturer from Matara district is trained to fabricate the 12HP 2wheel tractor powered high capacity thresher. Two manufacturers, one from Kurunegala district and the other from the Kandy district if trained with the

assistance of JICA to fabricated FMRC lowland drum seeders. More than 50 seeders were sold by the end of 2008.

Agricultural Extension Section

Agricultural extensions were carried out in means of attending exhibitions, radio programmes, conducting seminars, trainings, workshops and lectures and conducting field demonstrations. More than 50 demonstrations were carried out throughout the country in year 2008. Other than that a large number of people visited to the Centre for study or training purposes. They are included university students, farmers, teachers, school students and technical college staff. Following are some of agricultural extension activities carried out by FMRC.

Radio Programs	- 03
Training Programs for Agricultural Extension Officers with JICA assistance (2 days)	- 02
Training programs for farmers with JICA assistance	- 02
Field Demonstration of FMRC lowland Drum Seeder	- 50
Field Demonstrations of Highland 2W tractor coupled maize seeder and Ground Nut Decorticator	- 07
Training programs for officers under MOU between China & Sri Lanka	- 01
Training programs under "Api Wawamu – Rata Nagamu"	- 10

Testing & Evaluation

Eleven Test reports have been issued after testing of following farm machinery.

Power Sprayer	- 01
Hand Sprayer	- 01
Bush Cutter	- 01
Four wheel Tractors	- 02
Two Wheel Tractors	- 03
Organic Chemical Production M/C	- 01
Paddy Reaper	- 01
Water Pumps	- 01

In addition, fuel consumption tests were carried out for 2w & 4 w tractors, motor cycles of FCRDI, Maha Illuppallama and one jeep belongs to plant protection service, Maha Illuppallama.

Analysis Section

Mixture of carbon dioxide and methane (bio gas) easily can be used as a fuel generator especially for the domestic purpose. A mobile metallic bio gas digester model (Total Volume 478.0 cubic inches) containing a small gas collector has been developed which is easy to handle.

Other Supporting Services

FMRC gives technical guidance to other institutes regarding vehicle repairs, purchasing machineries and vehicle parts and issues certificates including relevant repair recommendations, price estimation recommendations and justification of quotations. 129 recommendations were issued for repairing of vehicles of DOA and other government institutes. Also 05 vehicles were repaired during 2008.

12 number of technical Evaluation reports were issued with a technical committee approval to purchase suitable instruments / machineries for both government and private centers and departments.

PLAN FOR 2009

- Further development and improvement of high capacity thresher driven by 12hp two wheel tractor.
- Development of motorized rice trans-planter.
- Development of mechanized low land weeder.
- Development of high land seeder.
- Development of tractor coupled potato digger.
- Design and development of bund plastering machine.
- Development of low land conical –drum seeder.
- Development of mobile bio gas system.
- Design and development of high land drum seeder for sesame and kurakkan.
- Development of maize thresher.
- Development of hydro tiller.
- Development of low cost bio fuels using different plant materials.

2.1.2 GRAIN LEGUMES AND OIL SEED CROPS RESEARCH AND DEVELOPMENT CENTRE (GLORDC) – ANGUNAKOLAPELESSA

The mandate of GLORDC is to carryout research and development programmes on grain legumes and oil seed crops and to facilitate the dissemination of technology for their enhanced production. In addition, GLORDC has to cater the agriculture research needs of the farming community in southern dry and intermediate zones.

Crop improvement, agronomy, plant protection, soil and water management are the main research disciplines covered by the centre with respect to oil seed crops and grain legumes. It also conducts research and development activities on vegetable and fruit crops, covering its regional mandate.

In addition, centre performed development activities such as production of basic planting materials, recommendations on site specific fertilizer application and dissemination of technical information to field officers, farming community and other interested persons.

BUDGET

The total budget allocation and corresponding expenditure under different votes during the year 2008, are given in the table 2.1.2.1.

Table 2.1.2.1: Annual budget -2008 (Rs.)

Vote	Allocation	Expenditure
Capital	3,237,000.00	2,103,053.34
Recurrent	8,702,150.00	8,493,806.56
Projects		
Project 285/02/03/03/2502		
Organic Agriculture development	300,000.00	291,357.74
Project 118/02/03/21/2502		
1. Green manure cultivation & enhancement of organic manure production	2,050,000.00	356,215.77
2. – do- (Laboratory development)	2,500,000.00	999,988.00
Project 285/02/02/03/2502		
Development of hybrid rice, maize, fruit & vegetables	215,000.00	212,856.77
Project 118/02/03/20/2502		
Api Wawamu Rata Nagamu	500,000.00	419,889.11
Total	17504150.00	12877167.29

PROGRESS

INFRASTRUCTURE DEVELOPMENT

Several activities such as land clearing, land development, renovation of the soil science laboratory, and construction of part of the protective fence at the office premises were carried out during the year.

CROP IMPROVEMENT

Oil Seed Crops

Groundnut

- Short duration, (90 days) groundnut line having a red testa was developed. This line can be grown under rain fed condition and expected to be released in 2009.
- Selected 4 promising groundnut lines tolerant to bud necrosis disease.
- Conducted NCVT and VATT of medium duration, high yielding (>2t/ha) groundnut varieties.
- Conducted NCVT and VATT of large seeded, (>650mg) medium duration (105 days) and confectionary type groundnut varieties.

Sesame

- Multiplied the selected 4 mutant sesame lines having high yield and white seed color for NCVT.
- Sesame variety MI-3 was purified up to 75% purity.

Mustard

- Sixteen mustard lines having good performances were selected from the 31 accessions received from PGRC.

Sunflower

- Ten sunflower lines with promising characteristics were selected from a locally collected germplasm.

Soybean

- Conducted NCVT of soybean.

Grain Legumes**Cowpea**

- Evaluated F3 generation plants of cowpea crosses and advanced 302 lines for F4 generation.

Mungbean

- Twenty four accessions of mungbean were selected based on their agronomic characteristics and pest and disease tolerance.

Horse gram (Kollu)

- Eighteen Kollu (Horse gram) accessions were identified based on their performances.

Vegetables**Okra**

- Carried out NCVT of okra to test performances under southern dry zone condition.

Brinjal

- Carried out NCVT of brinjal to test performances under southern dry zone condition.

Vegetable cowpea

- Carried out NCVT of vegetable cowpea.

PLANT PROTECTION

- Double rows of banana established surrounding papaya has been identified as a suitable intercropping system to control papaya ring spot virus disease.
- Neemoil, Citronella oil, and Multineem have been observed to be effective in

controlling sesame leaf and pod webbers and thrips of groundnut. Controlling effects were similar to chlorfuazuron and imidacloprid.

- Use of neem oil and physical methods of pest management could effectively be combined to control pod borers in cowpea.
- Biological controlling agents (*Neochatinae ichorniae* and *Neochatina bruchi*) for water hyacinth (Japan jabara) were introduced.

MEDICINAL ARBORETUM

- Collected nearly 165 species of medicinal plants and established a 'Medicinal Arboriculture' to identify the plants having antifungal and anti-bacterial properties.

SOIL AND WATER MANAGEMENT

- Hybrid papaya did not show an increase in mean yield due to increase in the rate of fertilizer application.
- Experiment revealed that soil salinity level of 4.4 mS/cm as the threshold level for chili.
- Approximately seven tons of compost was produced using different raw materials such as Jabara, gunia grass, groundnut residues and rice straw.

AGRO - CLIMATIC DATA BASE

- Continued the work pertaining to maintaining the data base on agro climatic conditions, in collaboration with the Meteorological department.

SEEDS AND PLANTING MATERIALS**Breeder Seeds**

Following amounts of breeder seeds were produced.

Groundnut	Walawa	60 kg
	Tissa	97 kg
	Indi	30 kg
	Tikiri	15 kg
Sesame	Uma	5kg
Maize	Sampath	1800kg
	CML 20	734 kg

Certified seeds

Mungbean	MI 5	100 kg
Cowpea	Waruni	150 kg
	Dhawala	50 kg

Planting Materials (No of plants)

Banana	Agra	274
	Keshara	500
	Nadee	148
	Prasrad	22
	Pulathisi	12
	Kandula	14
Spine gourd	Visal	1000
	Parakum	548
	Male type	150
	Dragonfruit	200
	Grapes	200

TECHNOLOGY TRANSFER AND TRAINING**Field day**

A field day was conducted under "Api Wawamu Rata Nagamu" programme and 200 research and extension officers of DOA and farmers were participated. Seeds of several grain legumes and oil seed crops were distributed among the participants.

Farmer advice and services

The centre provided necessary advice and recommendations to about 100 farmers who visited the centre seeking advice. Forty soil samples were analyzed and fertilizer recommendations were given.

Visit of veddhas

A group of veddhas (local aborigines) visited the centre and seed samples of new varieties of grain legumes and oil crops were supplied to them.

Training and radio programmes

- Conducted two training programmes on other field crops for technical officers in the southern province.
- Resource persons from the centre attended the farmer field training programme of "Kesel Masaya" conducted by Mahaweli authority, Embilipitiya.
- Training workshop was held for farmers and field officers on sunflower cultivation.
- Conducted four radio programmes with Ruhunu Sevaya (Ruhunu gewaththa).
- Provided necessary information and guidance regarding soil fertility to students of Universities and Agricultural schools.

Publications

- Submitted the report prepared on livelihood development in salinity affected coastal areas to SAARC agricultural sector by Dr.H.D.Sumanarathne (RO).

International Training

D.P.P.Liyanage.(RO), participated a short term training on Mutation breeding approaches in to improving salinity, drought & heat stress tolerance organized by the IAEA, at Beijing, China.13.10.2008 – 22.10.2008.

PLAN FOR 2009**Groundnut**

- NCVT of bud necrosis disease tolerant and large seeded groundnut varieties.
- VAT of medium duration and large seeded groundnut varieties.
- Breeder's seed production of groundnut varieties Tissa, Indi and Tikiri.
- Certified seed production of variety Tikiri.
- Effect of earthling up and different land preparation method on yield.
- Effect of intercropping with different cereal crops on control of bud necrosis.

Sesame

- Seed multiplication of mutant sesame varieties.
- Varietal purification of MI 3.
- Breeder's seed and certified seed production of "Uma" variety.
- Screening of a suitable botanical for controlling sesame leaf and pod webber.
- Identification of a management package to control the stem and root rot disease of sesame.

Sunflower

- Yield evaluation of sunflower lines.
- Mustard
- Preliminary yield trial of selected mustard lines.

Soybean

- NCVT of soybean varieties.

Cowpea

- Evaluation of cowpea germplasm for yield and agronomic characteristics.
- Field evaluation of F4 cowpea progenies.

- Identification of applicable IPM techniques to control the pod borers in cowpea.

Mungbean

- Evaluation of mungbean germplasm for yield and agronomic characteristics.
- NCVT of mungbean varieties.
- Certified seed production of mungbean.
- Ecological study on arthropod diversity and abundance in mungbean.

Horse gram (Kollu)

- Field evaluation of eighteen PGRC accessions of Kollu (Horse gram) varieties.
- Ecological study on arthropod diversity & abundance in horse gram.

Banana

- Basic planting material production of recommended banana varieties through conventional methods.
- Micro propagation of banana variety "Nethrampalam".
- Estimation of the nutrient removal of different banana varieties

Dragon fruit

- Performances of dragon fruit in southern dry zone.

Pineapple

- Influence of the effect of shading on pineapple in southern dry zone.

Guava

- Evaluation of the performances of newly developed guava varieties in southern dry zone.

Grapes

- Planting material production of grapes.
- Standardization of spraying schedule and fungicides to control the grape Downey Mildew.

Wood apple

- Maintenance and evaluation of grafted wood apple.

Pomegranate

- Fertilizer recommendation for pomegranate.

Spine gourd

- Maintenance of mother plant stock of recommended Thumba Karavila varieties, Visal & Keshara.
- Planting material production of Thumba Karavila through stem cutting.
- Maintenance of Thumba Karavila germplasms.

Okra

- NCVT of okra.

Pumpkin

- Breeder's seed production of pumpkin 'Ruhunu'.

Vegetable cowpea

- NCVT of vegetable cowpea.

Maize

- Basic seed production of hybrid maize variety Sampath.
- Influence of nitrogen and potassium fertilizer on performance of hybrid maize – variety Sampath.
- Influence of phosphorus fertilizer on the performances of hybrid maize variety Sampath.
- Influence of groundnut intercrop on the nitrogen nutrition of hybrid maize.

Medicinal plants

- Collection, establishment and evaluation of medicinal plants.

Organic manure

- Cultivation and evaluation of different green manures for their performances.
- Identification of suitable sources of organic manures for mungbean, maize and sesame cultivation.
- Evaluation of the quality of compost produced by different raw materials.

2.1.3 REGIONAL AGRICULTURAL RESEARCH AND DEVELOPMENT CENTRE (RARDC) - ARALAGANWILA

Regional Agricultural Research and Development Center, Aralaganwila has responsibilities to develop relevant technologies and putting them in to practice in the mandated regions of the Mahaweli Systems B, C, D & G, Eastern province and inter-provincial areas. Other than the regional programs, the center collaborates in the nationally coordinated research and development activities. Though, the center administratively responsible for research and development activities of Other Field Crops, it deals with rice as well as fruits and vegetables considerably. The research program is executed under different disciplines such as Agronomy, Entomology, Genetics and Plant Breeding, Plant Pathology, Socio-economics and Soil & Water Management.

BUDGET

Table 2.1.3: Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Recurrent	46,79,142.73	45,48,054.37
Capital	33,76,050.00	17,78,748.69
Projects		
Allocation transferred from Papaya crop zone projects to 'Api Wawamu Rata Nagamu programme'	7,74,000.00	7,72,185.54
Experimenting on Compost production and utilization	45,50,000.00	10,80,036.00
TOTAL	133,79,192.73	81,79,024.60

PROGRESS

RESEARCH

AGRONOMY

Brinjal

Successfully completed evaluating six entries with Anjali & BW 111 standard check varieties and local hybrids under NCVT (National

Coordinated Varietal Trial) which was coordinated by the HORDI, Gannoruwa.

Rice

Agronomy trials for 3, 3.5 and 4 to 4.5 months age classes under NCVT and VAT (Varietal Adaptability Trials) were completed at the year end. Five entries belong to 3 months age class was tested with standard check varieties.

(At 307 and Bg 300) under NCVT coordinated by the RARDI. Average yields of at entries were

better than others and average yields of At 584 were 5.16 t/ha in Maha 07/08 and 5.62 t/ha in Yala 08.

Five entries with 3 standard checks (L/M grains) and 6 entries with 3 standard checks (samba) come under 3.5 months class were also evaluated, under NCVT coordinated by RARDI for their performances. Average yields in two seasons of At 05-1366 and At 06-361 were 5.15 and 5.50 t/ha respectively.

Eleven entries of short age class were tested with four checks under Varietal Adaptability Trials (VAT).

Okra

Six okra lines with standard checks; Haritha, MI-5 and MI-7 were evaluated under NCVT co-ordinated by the FCRDI for yield potential, fruit quality, pest & diseases & other agronomic characteristics.

Soy bean

Ten advanced breeding lines of soy bean with standard check of Pb 1 were tested under the NCVT coordinated by the FCRDI.

Vegetable cowpea

Three entries were evaluated with standard checks of Bushita under NCVT coordinated by the FCRDI. Thai selection was better than others over yield performances.

GENETICS AND PLANT BREEDING

Onion

Morphologically characterized 119 lines including 4 new entries. Selfed 19 F_1 s were made for development of inbreds to initiate hybrid varietal development program. Breeder planting materials (sets) of 119 lines were produced for research purpose.

Big onion

Completed morphological characterization of 4 local cultivars with the original 3 exotic varieties. The origin and relationships were confirmed through molecular characterization. Selected 2 cultivars and locally improved variety for recommendation.

Cluster (Red or Small onion)

Eleven lines were selected for preliminary yield trial and 5 for major yield trials. The NCVTs were conducted with 12 and 6 particularly under seeding and non seeding varieties at three locations. The VAT was conducted for two entries with 2 standard checks at 2 locations.

Okra

Collected and multiplied from local cultivar for varietal purification.

Other

Introduced and acclimatized several varieties of exotic crops of chili, cowpea, green gram, black gram, chick pea, brinjal, tomato, amaranthus, cucumber, bitter gourd, luffa, wing bean, wheat and barley.

Dioscorea

Maintained the field gene bank.

Finger millet

Twelve accessions including 3 Nepal (Kabre, Okhale, Dalle), 5 Indian (HR 911, BR 202, VL 149, GPU 28, GPU 48) were evaluated for the second season with local checks; Ravi and Ravana.

Underutilized crops

Collected and seed multiplied pulses; Bambara groundnut (*Vigna subterranea* L.), cowpea, leafy vegetable (*Cardiospermum halicobum*) for evaluation.

Tibbatu

Maintained the field gene bank of thibbatu and produced breeder seeds.

Spine gourd

Breeder seed (Planting material) production was continued in order to establish mother vines for assurance of quality planting materials.

HORTICULTURE

Banana

Rathkesel accession was selected for NCVT.

Dragon fruit

Two methods of multi shoot techniques for rapid multiplication were tested and developed.

Guvava

Four hybrids evaluated under NCVT coordinated by Fruit Crop Research and Development Institute (FCRDI). Two of these released by FCRDI.

Mango

Ten accessions were maintained in the field gene bank and selected 10 ACC was multiplied for NCVT.

PLANT PATHOLOGY

Onion

Seven fungicides were evaluated against purple blotch as bulb treatment and soil drenching.

Brinjal

The same species of stem borer was found to be attacking tibbatu stock which grafted on to brinjal root stock.

Rice

Selected seven fungicides were tested against grain discoloration. None of the fungicide showed significant management.

Amelioration of paddy husk charcoal did not show any significance on managing discoloration of kernal. But 625 kg/ac showed considerable managing of discoloration of grains.

SOIL AND WATER MANAGEMENT

The field structure dikes and ditches viz, vegetables on dikes and paddy on ditches was found as good land management technique to utilize poorly drained lands in irrigable uplands in the Mahaweli System B area.

WEED SCIENCE

Effect of density of Aswawaliga (*Leptochloa chinensis*) in rice fields in System B was evaluated. It was seen rapid vegetative and reproductive growth rate compared to rice causing severe effect on yields.

DEVELOPMENT

Papaya

Established 12 papaya zones including 62 villages. The project was completed successfully.

Developed papaya drainage system showed significant cropping improvement.

Spine gourd

Potted vines (584) were distributed to establish mother vines.

Tibbatu

Breeder seeds of *Bindu* variety (245g) and potted plants (177) were distributed among farmers on requests in all over the country.

PROJECTS AND OTHER PROGRAMES

Organic fertilizer production, utilization and development

The programme was started during mid 2008 and evaluated effectiveness of available materials and effectiveness of product. The project benefited to the station by providing organic fertilizer to trial fields.

DAFT (Diversified Agriculture Farming Technology) programme

Evaluation of effectiveness on organic farming under DAFT programme of Oxfam GB in Ampara district was started in April 2008 for technical validation. Technical solutions for farmers problems were also given to farmers while our technical team visited there.

Collaborative study with Soil Science Society a research project collaborated with Soil Science Society of Sri Lanka which is funded by Canadian government is implemented in Mahaweli system B and C. The aim is to develop soil management information in sciencesoil management information system for Mahaweli area. Two sites (Allewewa and Sewanapitiya) were selected and the work is in progress.

DISSEMINATION OF TECHNICAL KNOWLEDGE

Leaflets

Papaya

Five types of 2429 color leaflets viz. Papaya management practices, Effective drainage system for papaya, Problems and problem solving of papaya, Papaya ring spot virus eradication program and Papaya seedlings production were prepared and distributed.

Field days and Trainings

Training programmes: Officers from different disciplines; conducted training programmes for AOs, FAs, farmers and school children.

Crop clinics: Officers attended for 3 crop clinics as resource persons.

Other than these, technical solutions were provided to farmers field problems such as entomological, pathological, soil science and etc.

Provincial and Mahaweli Technical Group Meetings: Provided required technical assistance at preparatory meetings for Mahaweli B, C and G for both the seasons. Officers attended in Eastern and Uva PTWGs (Provincial Technical Working Group Meetings) too.

Provided technical solutions for field problems of the farmers specifically for Mahaweli Systems of B and C; more than 50 plant protection issues were based on field visits and many more based on sample analysis.

Services

Soil testing: Analyzed 1080 soil samples and recommendations were given accordingly.

PLAN FOR 2009

AGRONOMY

Banana

- Evaluation of available varieties

Dragon fruit

- Performance evaluation on NCB under dry and intermediate moisture conditions
- Further development of large scale planting material production technique identified by the Aralaganwila research centre.

Guava

- Evaluation of hybrids for pruning and training under dry and irrigated conditions.

Papaya

- Further evaluation of drainage system for papaya.

Onion

- Breeder seed production

Rice

- Management of yellowing and grain discoloration

Onion

- Advance management practices to improve yield, quality & storability

ENTOMOLOGY

Brinjal

- Evaluation of available *Solanum* species for shoot and pod borer damage under system B condition.

Chillie

- Management of sucking pests; thrips management in chillie under system B condition

Onion

- Management of thrips in onion under system B
- Varieties resistance for thrips.

GENETICS AND PLANT BREEDING

Rice

- Varietal development for DL_{2b} Agro ecological Zone

Brinjal

- NCVT for evaluation of yield potential, fruit quality and adaptability of promising breeding lines and local hybrids

Groundnut

- NCVT for evaluation of yield potential and adaptability of leading cultivars

Okra

- NCVT for evaluation of yield potential, fruit quality, pest & diseases and other agronomic characteristics.

Onion

- Characterization of germplasm
- Varietal development and improvement of cluster onion
- National Coordinated Varietal Trial of Cluster onion
- Varietal Adaptability Trial of Cluster onion
- Varietal development and improvement of big onion

Papaya

- Production of nucleus and breeder seeds of Rathna variety
- Evaluation of breeding lines

Rice

- NCVTs and NCHSTs coordinated by RRDI

Spine gourd

- Breeder seed (planting material) production

Soy bean

- NCVT for evaluation of advanced breeding lines.

Tibbatu

- Breeder seed production

Vegetable cowpea

- NCVT of vegetable cowpea for evaluation of yield potential, fruit quality, pest & diseases & other desirable agronomic characters.

Under utilized crops

- Characterization and evaluation of pulses (*Vigna subterranea* L. and *Phaseolus vulgaris* L.) leafy vegetable (*Cardiospermum halicobum*).

PLANT PATHOLOGY

Cluster onion

- Evaluation of Varietal Resistance

Onion -

- Screening of fungicides for bulb rot

Rice

- Screening of fungicides against grain discoloration

Spine gourd

- Development of mass production technique
- Development of field tolerance technique for wilt caused by fungi

SOIL AND WATER MANAGEMENT

Cluster onion

- Determination sulfur requirement for Cluster onion
- Development of IPNS packages for onion under in situ green manure

Rice

- Use of in situ organic residues at yala.
- Use of ex situ organic residue and chemical fertilizer on growth and yield
- Determination of sulphur requirement with NCB Soil

Other

- Utilization of ill drained land for crop diversification
- Water requirement for land preparation in non calcic brown soils with different drainage capabilities in yala season.
- Impact of Agriculture on heavy metals accumulation in soil

2.1.4 REGIONAL AGRICULTURAL RESEARCH AND DEVELOPMENT CENTRE - VAVUNIYA

The Regional Agricultural Research and Development Center (Northern Region) directly supervised by the Director, FCRDI, Mahailupplama is administrated by the Deputy Director (Research), Northern Region. It has five satellite stations, Thirunelvely, Paranthan, Vavuniya, Murunkan and Mullaitivu been carried out mandated Research and Development activities for the development of DL 1, DL 3 & DL 4 region's need fit research on Crop improvement, Soil Fertility, Plant Protection, Water management & Natural Resource Management. The year 2008 was not conducive to carryout researches in Kilinochchi, Paranthan and Mullaitivu areas. However fruitful research findings were arose in Thirunelvely, Vavuniya and Murrunkan areas. Kilinochchi and Paranthan research units were abandoned due to the mass exodus of the people in that area.

BUDGET

The budgetary allocations and expenditures under different votes are presented in the Table 2.1.4.1.

Table 2.1.4.1: Annual budget – 2008 (Rs)

Vote	Allocation	Expenditure
Capital	1,667,000.00	802,350.00
Recurrent*	2,419,000.00	2,356,272.80
Projects		
Special Project (2502)	1,650,000.00	1,075,563.15
Crop zoning	100,000.00	95,920.00

* Staff salaries not included.

PROGRESS

Research carried out in this year in satellite station under both rain-fed and irrigated condition showed satisfactory results. Some of the achievements reported during the year are as follows:

CROP IMPROVEMENT

Two Amaranthus lines selected with rapid growth and accepted palatability were included into NCVT.

Multiplier Onion

Natural hybrids originated from 04 types of multiplier onions were developed and tested for their agronomic traits. 16 lines found to be promising and those will be advanced for future development. Lines and single bulbs were harvested and stored for further improvement.

06 promising line developed from simple selection were tested under NCVT for both seasons in 5 locations. The promising lines TVS 1 & TVM 4 were suggested for VAT.

Varietals Adaptable trial in Onion tested in 6 locations, TVM 4 responded highly and promoted to DUST.

Shallot Onion

- Multiplication of selected cluster Onion lines

The selected 20 Onion lines were multiplied and stored for conducting PYT and 12 lines for NCVT in next season.

Hybrid Onion

- NCVT of hybrid multiplier Onion lines The highest bulb yield of 33 mt/ha received by OH 5.

Brinjal

16 farmer traditional land races in Brinjal were purified and few lines were developed, further evaluation under PYT, six high performing lines with moderate field tolerant to Shoot and pod borer were included into NCVT. Selected six lines were promoted to NCVT.

VARIETY ADAPTABILITY TRIALS, NCVAT, MULTI-LOCATION TECHNOLOGY ADAPTATION TRIALS

Rice

3 -Months, 3½ -Months, 4 -Months age group lines were tested in RARDC/Vavuniya, and Murunkan under both rain-fed and irrigated condition. Results were reported to coordinated center RRDI. Varietals Adaptability Trail in Rice was conducted to identify the suitable variety for the deferent locations in the Jaffna District.

A pure line assessed from locally popular land race of unknown origin was evaluated and found to be well adopted Red pericarp non lodging resistance to BPH with moderate duration of 105 days was developed. This will be included into NCRVT.

AGRONOMY

Several OFC s were evaluated for yield and economics under rain-fed in Jaffna district up lands. Among the crops Green gram gave a highest gross return followed by Black gram. The cost benefit ratio was highest for Green gram (1:2.5) followed by black gram (1:2)

Plant spacing and size of planting bulb on growth and yield of Red Onion were tested to minimize the cost of cultivation of Red Onion production. Adoption of medium size bulbs (5.3cm) with closer spacing (10 x 05 cm) and with shallow planting would be recommended for red onion production. Its help to cut down the labour, seed material cost and land requirement.

Suitable Planting time for grain legumes in Yala season was studied and results indicate May – June is the more suitable planting time for grain legume in Jaffna district.

Elongation of fruits without curling of fruits by different treatments in Snake gourd were studied, removal of distal end and paste it back gave better yield and quality fruits.

50% Departmental recommended NPK & Panchagovya recorded the highest yield in all crops.

Other Field Crops

- In a trial conducted at Thinnavelly for identifying better crop with low management under rainfed condition. Black gram, Green

gram and Finger millet gave significantly higher financial advantage than that of Cow pea.

ENTOMOLOGY

Brinjal

While evaluating the pure line developed by Thirunelvely station the Sanguvely collection, Madduvil purple, Kathypiddy and Indian muddy have some degree resistance to shoot and fruit borer in comparison

Chilli

Neem seed water extract was good to manage disease in chilli but during the yala season disease incidence was very low. So this trial will be continued to next season for further conformation.

Amaranthus

The highest yield and the percentage of leaves damaged by flea beetle also low in the *Lantana camera* treated *Amaranthus* plots.

Long bean

The performance of acetamiprid was better than others to manage yellowing in long bean caused by green leaf hoppers and bean fly.

The overall performance of *Lantana camera* was good in managing leaf miner, pod borer of long bean but these results will be confirmed to the next season.

Bitter gourd

Acetamiprid performed better than others with routine spaying (2 weeks interval) of these chemical, Field sanitation and veins training on trellis are important for the management of Bitter gourd yellowing.

Performance of *Allium sativum* was good to manage yellowing caused by green leaf hoppers and fruit fly attack on Bitter gourd

New pests reported in 2008

Stem borer *Euzophera perticella* was identified a serious problem in Brinjal during maha 2007/2008 season in the research field and farmers' field.

Nematode problem also very serious during 2007/2008 maha season.

SOIL AND WATER MANAGEMENT

Performance evaluation study of panchagovya liquid on nutrient improvement on Brinjal, Chilli and onion was carried out. The results indicated that, overall performance of panchagovya was very good in producing yield and growth parameters. 50% Departmental recommended NPK & Panchagovya recorded the highest yield in all crops.

HORTICULTURE

Maintenance of germplasm of Pomegranate (Nimali & Daya), Grapes (Istral blue & Tinta menda), Banana (9 local germplasm in kathali & Kolikkudu) and Lime were maintained.

BASIC SEED PRODUCTION

Produced one Kg of Bitter gourd breeder seed, quality certified by SCS and handed over to SPMPC.

Nuclear seed production

Brinjal, Chilli, Hawarimae, Bitter gourd, Snake gourd, Okra, Tomato, Amaranthus, Winged bean, Pumpkin, Melon and Ash pumpkin were maintained in-situ.

DEVELOPMENT ACTIVITIES

- A conference hall has been built at ARS, Murankan with the assistance of UNDP, Mannar and ceremonially opened in December 2008.
- A complete fencing and irrigation supply channels was constructed at ARS, Murankan with the assistance of UNDP, Mannar.
- An Agronomy lab cum green house and DDR'S quarters granted by NECORD and construction of both buildings has been completed.
- Research field bunds in the satellite stations, Thirunelvely, Murunkan and Vavuniya were rectified.

PLAN FOR 2009

Condiments

- Variety Adaptability Trial (VAT) in short-age and long age onion.
- Preliminary yield trial of selected superior

lines of multiplier onion.

- Evaluation and characterization of landraces for preliminary yield trial and NCVT (Short age group).
- DUST test evaluation on Red Onion lines
- PYT of Chilli resistance to trips in field conditions
- Effect of spacing, bulb size and depth of planting on growth and yield of red onion.
- Evaluation of eco-friendly insecticide against thrips in chilli.
- Screening of fungicides for onion leaf twister disease (Research & Farmer field).
- Screening onion land races for onion leaf twister disease.
- Investigation on mortar formation of Red Onion & formulate remedial measures.
- Feasibility study on Partial Rootzone Drying on Chilli

Grain legumes

- National Coordinated Variety Adaptability Trial (NCVT) in Cowpea.
- National Coordinated Variety Adaptability Trial (NCVT) in Black gram.
- National Coordinated Variety Adaptability Trial (NCVT) in Green gram.
- National Coordinated Variety Adaptability Trial (NCVT) in Hawarimae.

Oil crops

- Selection and purification of local germplasm (Mullaitivu selection) as well adapted table variety.
- National Coordinated Variety Adaptability Trial (NCVT) in Groundnut.
- Variety Adaptability Trial (VAT) in Groundnut.

Coars Grains

- National Coordinated Variety Adaptability Trial (NCVT) in Finger millet.
- Variety Adaptability Trial (VAT) in Finger millet.

Rice

- National Coordinated Rice Variety Trials (3, 31/2, 4 and 41/2 Months).
- Variety Adaptability Trial (3, 31/2, 4 and 41/2 Months).

- Large scale Variety Adaptability Trial.
- Seed production and purity maintenance.
- Evaluation of newly purified high yielding well adapted early mature red pericarp Rice lines in different location under research conditions.
- Promotion of selected well adapted short age non-lodging BPH resistance lines from farmers field into NCRVT.

Vegetables

- Evaluation of Brinjal lines for little leaf disease.
- Breeder seed production and purity maintenance in Long Bean (Hawarimae), Tomato (KC 1), Okra (TV 6 & TV 8) and Onion (TVS 1 & TVM 4).
- Inclusion of promising Brinjal lines into NCVT which were developed at Thinnavely.
- Submission of promising Red onion lines for DUST.
- Promotion of promising chilli lines to NCVT.
- Expansion of vegetable germplasm.
- Yield potential of local land races of Brinjal under minimum spraying conditions.
- Management of yellowing in Bitter Gourd.
- Management of yellowing in Long Bean.
- Assessment of shoot and fruit borer in the local cultivars of Brinjal.
- Evaluation of eco-friendly insecticide against shoot and fruit borer in Brinjal.
- Inclusion of two Amaranthus lines into NCVT
- Group planting of bitter gourd for water saving.

- Feasibility study on Partial Rootzone Drying on Tomato, Okra & Brinjal.
- Inclusion of two Okra lines into NCVT.

Fruits

- Evaluation of agronomical characters in dense planting of banana (Kappal)

Natural Resource Management

- Development of Mini valleri.
- Vegetable propagation of watermelon by stem cutting.
- Pesticide properties of Panchagoviya.

Factor Research and Analytical Services

- Evaluation of efficiency of different Organic manure Farming in Brinjal cultivation.
- Development of soil and water management strategies for sustainable crop production in Mannar district.
- Performance of Panchagoviya – Organic liquid manure on Onion, Chilli and Brinjal.
- Monitoring of salinity in farmer field.
- Investigation on uncounted practical problems on the use of micro irrigation systems in Vavuniya district.

Information Management

- Monitor and evaluate research projects-INFORM

Extension and Technology Transfer

- Farmer advisory services and Field days on Regional Crops

2.2 HORTICULTURAL CROP RESEARCH AND DEVELOPMENT INSTITUTE (HORDI) - GANNORUWA

The mandate of HORDI is to undertake demand-driven research on fruit, vegetable, root and tuber, mushroom and floriculture crops, which will be productive, eco-friendly, sustainable, economically viable and socially equitable. The research and development programmes conducted by HORDI scientists are aimed to accomplish this mandate. Other responsibilities include training of agriculture undergraduate and diploma students, and conducting awareness programmes to disseminate the new technologies developed to the farming community and other stake holders.

BUDGET

The total allocation and expenditure during the year 2008 for all institutes under preview of HORDI are indicated in Table 2.2.1.

diseases by using non chemical methods in organic fruits and vegetables growing systems.

- **Crop Zone**

Production planting material of recommended fruit varieties and supplied to provincial council to establish in crop zones. Training programs were arranged for extension officers and farmers.

- **Production & Promotion of Organic fertilizer**

The aim of the project was to increase the usage of organic fertilizer in farmers Fields. Funds were used to produce organic fertilizer, to grow organic manure crops and to improve laboratory facilities at Horticultural Crops Research & Development Institute

Table 2.2.1: Annual Budget (Summary of all HORDI institutes) - 2008 (Rs.)

Vote	Allocation	Expenditure
Capital	20,739,000.00	13,739,000.00
Recurrent	42,418,820.00	38,400,095.49
Project		
Crop Zone	16,000,000.00	12,045,357.82
CARP	1,072,780.00	762,745.88
Hybrid Seed production for fruit and Vegetables	1,850,000.00	1,276,268.68
Production & Promotion of Organic fertilizer	3,800,000.00	3,839,234.27
Organic Agriculture Development for Export	300,000.00	280,329.44
Api Wawamu – Rata Nagamu (Cultivation of uncultivated lands)	30,200,000.00	26,019,377.48
Crop Leader – Vegetable	18,210,000.00	3,158,870.60
Crop Leader – Fruit	15,610,000.00	4,778,123.33
DFID	49,325.00	44,250.00
IAEA	407,828.00	399,589.90
INIBAP	106,000.00	103,360.00

PROJECTS

- **Hybrid Seed Production for Fruit & Vegetable**

Development of Hybrid varieties of tomato, brinjal, luffa, capsicum, cucumber, yard long bean, and maintenance of parental lines of recommended varieties and production of hybrid seeds.

- **Organic Agriculture Development for Export**

Conducting research on soil fertility improvement and management of pests and

Gannoruwa, Agricultural Research Station - Seetha Eliya, Regional Agricultural Research and Development Center - Bandarawela and Fruit Crops Research and Development Center - Horana

- **“Api Wawamu – Rata Nagamu” Domestic Food Production Campaign 2008 – 2010- Cultivation of Uncultivated Lands.**

Improve fruit and vegetable production of the country according to three year “Api wawamu Rata Nagamu” work plan. Under the project vegetable and fruit production

were increased through cultivation of bare lands and development of Home gardens. In addition, infrastructure development of horticultural research farms and research centers were also under taken.

- **Crop Leader - Vegetable**

Increase the production of tomato, beans, potato, root & tuber, brinjal, cowpea, mae and winged bean, leafy vegetable, okra. and development of Home gardens

- **Crop Leader - Fruit**

Increasing the fruit production through planting material production of fruit plants such as pineapple, mango, avocado, banana, jack, pomegranate, papaya, and grapes, Mangosteen, Rambutan and Citrus.

- **CARP - Contract research**

Identification of *Tristeza* virus and greening bacteria in citrus germplasm using molecular techniques and development of healthy mother plant stock. (CARP/12/676/507)

Development of new ornamental plants from indigenous and introduced species using mutation – breeding techniques.

- **Department of International Development of British Government (DFID)**

Fund was channeled through AVRDC, Taiwan for the development of an integrated pest management strategy for the control of shoot and pod borer in egg plant

- **Small Scale Agriculture Research project (IAEA)**

Funds were utilized to control of Melon fly *Broctrocera Cucurbitae* by irradiation using gamma rays.

PROGRESS

VEGETABLES

Crop Improvement

- **Tomato-** One new F1 hybrid having high yield potential 61 t/ha, Bacterial resistance and good fruit quality characters was officially released. The pipeline varieties are M 65-1, M 127.
- **Brinjal-** Two promising F1 hybrids and one open pollinated variety are in the pipeline.
- **Capsicum-** Three promising F1 hybrids are in the pipeline.
- **Bitter gourd-** Four F1 hybrids are in the pipeline.

- **Luffa-** Three promising F1 hybrids are in the pipeline.
- **Bean-** Two open pollinated varieties are in the pipeline.
- **Cucumber-** Three F1 hybrids are in the pipeline.
- **Leafy vegetables-** One *Amaranthus* variety is in the pipeline.
- **Yard long bean-** Nine crosses were performed successfully.
- **Pumpkin-** One pumpkin variety HORDI-Pu-2 is under the DUS testing programme.

Breeder Seed Production

Breeder seeds quantities requested (Bitter gourd- Matale green 3.71 kg) by SPMDC were supplied successfully.

Parental materials of two tomato F₁ varieties and two brinjal F₁ varieties were also supplied.

Proected Agriculture

Spacing trial on tomato variety Volcano. 150 x 40 cm recorded the highest yield.

Agronomy

Spacing trial on Lanka Yellow Wax (*Capsicum* variety). 40x20 cm recorded the highest yield.

VAT trials on tomato, brinjal, capsicum, luffa, leafy vegetables were carried out. The tomato F₁ variety HF02 which was tested in VAT was officially released.

FRUITS

Banana

- Tissue culture Embon banana plantlets produced higher number of suckers (3-4) than conventional plants 8 months after planting.
- Tissue cultured plantlets and conventional suckers of banana (Embon) had same tendency for affecting diseases especially, Panama disease.
- Seventeen banana accessions (Seeni, Embul, and Anamalu) showing high yield, good quality and disease tolerant characters were collected and established in the field for evaluation.
- Thirty seven accessions of the variety Embon were collected and established for evaluation

Rambutan

- Rambutan (Malwana) buds were irradiated using different doses of gamma rays and LD₅₀ value was calculated as 0.8 Kr. However, survival after bud initiation was very low.

Papaya

- Ten germplasm of papaya were collected and established in the field for inbred production.

Jambu

- A Jambu (*Syzygium samarangense*) variety named Thai Jambu having red colour, sweet taste and bigger fruits, was recommended for cultivation.

ROOT AND TUBER CROPS

Sweet Potato

- Six salt tolerant sweet potato varieties gave more than 15 t/ha yield. These varieties will be tested in Advance yield trials.
- Nucleolus units with sweet potato varieties were established in research units, farms & farmer fields to distribute among farmers.
- Yaya demonstrations were conducted with sweet potato varieties to familiarize among farmers
- The cassava variety HORDI-6 with high yield quality (with neck, brown outer skin & reddish inner skin) and moderate branching habit suitable for mixed cropping was found to be promising in VAT trials.

Kiriala

- Intercropping Kiriala with maize and soil treatment with *Trichoderma* microbial pesticide gave significantly high yields with quality tubers by reducing leaf yellowing disease incidence

TISSUE CULTURE

Plant regeneration systems:

FRUITS

Tissue culture procedures were completed for *in vitro* establishment and micro propagation of 04 local banana varieties (var. Ambun, Rathambala, Nethrampalam, Seenikesel), 02 pineapple varieties (var. Mauritius, Kew) and 01 grape variety (var. Israel blue). Culture methods were also specified for strawberry and dragon fruit.

A plant regeneration system was developed

for beli crop (*Aegle marmelos*) using immature leaf tissues. This method is tested as an alternative propagation method to propagate seedless beli var. Supun.

Ornamentals

Efficient and reproducible plant regeneration systems were developed for the following ornamental plants.

- *Saintpaulia* – Leaf culture
- *Nephrolepis* fern – root tip culture
- *Tacca* (Bat plant) – Floral tissue parts
- Ground orchids – Ovary and seed culture

These plant cultures were subjected for induced mutations by Gamma irradiation and colchicine treatments. Currently they are grown in the plant house.

Vegetables

Callus - to - plant regeneration system, which is a pre-requisite for anther culture, was successfully developed for tomato (*Lycopersicon* spp.).

Foundation planting material production

- Foundation planting materials were produced from banana (1200 tissue cultured plants) and pineapple (4400 tissue cultured plants) under Crop Zone program. Tissue cultured ginger plants (var. Fiji) were produced and hardened in soil.
- A field plantation of tissue cultured Ambon banana plants were established at HORDI to evaluate the sucker production ability of tissue cultured plants.

Low-cost tissue culture

Mini tissue culture laboratory

A Mini tissue culture laboratory was designed and constructed under A'park theme in collaboration with AVC, Gannoruwa with the aim of introducing tissue culture technology to the public. Functioning of this lab will commence in the near future.

Low-cost alternatives for tissue culture

Experiments were conducted to simplify the tissue culture propagation protocols. Culture media were prepared with inexpensive alternatives such as commercial sugar, vitamin syrup etc. Plant growth was successful in these media indicating the possibility of simplifying this technology.

ENTOMOLOGY

An IPM package including protein baits, pheromone traps and a safer insecticide, to control melon fly on cucurbit crops was developed.

Data from a statistically designed experiment revealed that the two hybrid brinjal varieties, "Anjalee and Amanda" (% of fruit damage were 65.7 and 60.7 respectively) of DOA were highly susceptible to brinjal shoot and fruit borer (BSFB) and at the same time they showed a higher parasitism (34 and 32%) of *Trathala flavoorbitalis*, a larval parasitoid of BSFB compared with the other tested varieties (SM 164 and 558).

In experiments of screening safer insecticides it had been observed that Sparrow 888 (an organic insecticide) was effective in controlling Aphids. This insecticide can be used in organic farming.

The Invasive mealy bug that recently started to appear in the country at an epidemic level had been identified as *Paracoccus marginatus* which was not recorded previously in Sri Lanka. The pest attacked about 20 different plant species and out of these species, papaya and manioc were severely affected. However, immediate actions were taken to arrest the problem and presently, it is under controlled. In an observational experiment carried out in a farmer's field, the infested plants treated with insecticides, *Thiamethoxam* and *Imidacloprid* showed an acceptable level of reduction of the pest population.

PLANT PATHOLOGY

Detection of citrus *tristeza* virus (CTV) and fastidious bacteria in citrus germplasm (Project funded by CARP -12/676/507)

CTV is one of the serious problems in citrus cultivation in Sri Lanka. Over 95% of productive citrus plants were found as infected with CTV. Fastidious bacteria (*Xylella fastidiosa* and *Liberibacter asiaticum*) were rarely found even in citrus plants which showed yellowing symptoms on leaves. Twenty one orange germplasm established in insect proof net house for the production of healthy planting material. Twenty grafted orange plants were produced.

Identification of viruses associated with yellowing syndrome in cucurbitaceous crops in Sri Lanka

There were six viruses associated with yellowing syndrome of cucurbitaceous crops in Sri Lanka. These were Cucumber Mosaic Virus,

Cucumber Green Mottle Mosaic Virus, Papaya Ring Spot Virus, Tobacco Ring Spot Virus, Tobacco Ring Spot Virus & Zucchini Yellow Mosaic Virus.

Survey conducted on Collection and characterization of banana *Fusarium* wilt pathogen in Sri Lanka (Project funded by Bioversity International (INIBAP)- HORDI

Fusarium wilt is one of the serious diseases in banana cultivation in Sri Lanka. Identification of vegetative compatibility groups of *Fusarium* wilt pathogen was done in order to identify and develop resistant varieties of banana.

Development of variety screening method for anthracnose of capsicum (*Capsicum annum* L.)

Stimulatory effects of exudates of different varieties on conidia germination could be used to compare anthracnose susceptibility/resistance among the Capsicum germplasm as an *in vitro* test.

Identification of plant pathogens associated with imported seed potato (*Solanum tuberosum* L.)

Sri Lanka imports annually large quantity of seed potato tubers from various countries. As a result it is possible to introduce many pathogens to the local potato as well as other fruit and vegetables cultivation. Imported seed potato lots were laboratory tested for detection of pathogens associated with tubers and their occurrence was quantified to evaluate whether they fulfill the requirements stated in quarantine regulations in Sri Lanka. Seed potato frequently showed many diseases. However, severity of diseases in seed potato lots was within permit limits.

Aflatoxin production on seeds of different maize varieties ((Project funded by CARP -12/676/451)

Aflatoxin production of fungi in maize seeds is adversely affected on seed quality. Aflatoxins production in seeds was quantified by ELISA test after harvesting of maize seeds. Some germplasm showed resistant to aflatoxins production and cultivating varieties Sampath, N 40 and Pacific showed susceptibility to aflatoxins production by *Aspergillus* species.

Biological control of root diseases

Efficacy testing of three commercial *Trichoderma* bio control agents carried out and identified the suitability. Carrier material for bio

control agents was developed for commercial production of *Trichoderma* inoculum. Bio control agent *Trichoderma* spp. was introduced to control ginger rhizome rot in Aludeniya AI division participating 150 farmers

Management of diseases of leaf vegetables (Mukunuwanna, Gotukola and Kankun)

White rust disease caused by *Albugo* sp., *Cercospora* leaf spots, root rot disease caused by *Fusarium* spp., *Pythium* sp and *Sclerotium* sp., in Mukunuwanna, bacteria wilt caused by *Ralstonia solanacearum*, root knot nematode and cucumber mosaic virus in Gotukola were observed in most of the leaf vegetable cultivations. Diseases could be control by application of chemical disease control method and cultural practices.

Fungicide screening for disease management

● Banana leaf spot

The fungicide Fujione @ 18 ml/10 l effective control banana leaf spot diseases (Sigatoka)

● Cucurbits downy mildew

New formulations of Mancozeb 75% DF (20 g/ 10 l) and Mancozeb 42% SC (40 ml/10 l) found to be equally effective with recommended Mancozeb 80% WP in controlling downey mildew of cucurbits.

● Citrus scab

New formulation of copper fungicide "Champ DP" found to be equally effective with recommended Champion 50% WP in controlling scab disease of citrus

● Cucurbits powdery mildew

Difenoconazole 250g/1EC (6ml/10l) and new formulation of Thiophante methyl 500g/l (8ml/ 10 l) found to be equally effective with recommended Chlorothalonil 75%WP in controlling powdery mildew of cucurbits.

Varietal screening

● Avocado scab

Out of 11 avocado varieties, "Hass" variety showed low disease severity (3.4%) to scab disease.

● Studies on CGMMV of cucurbits

2a) Two local isolates were isolated. One from Dambulla area designated as CGMMV-D and the other one from HORDI research field designated as CGMMV-H and maintained separately in snake gourd "TA-2" in the insect proof green house.

2b) Out of 5 cucumber varieties "Champion" variety exhibited resistant to both local CGMMV isolates (CGMMV-D and CGMMV-H). Luffa varieties Asiri and LA 33 found to be susceptible to both CGMMV isolates under artificial inoculation.

● Studies on TSWV of tomato

Two local isolates were isolated. One from Anuradhapura (TSWV-A) and the other one from Matale (TSWV-M) and maintained in weed plant "Kadupahara" for resistance screening studies.

SOIL & FERTILITY MANAGEMENT

Use of Partially Burnt Rice Husk for vegetable cultivation

The effect Partially Burnt Rice Husk (PBRH) on growth of vegetables were tested and found to be useful in increasing the growth and yield of vegetable crops. Hence, PBRH application is recommended at the rate of 50 g per planting hole or 2000 kg per hectare in addition to normal fertilizer application for vegetable cultivation.

Vermicompost for organic farming

Studies have shown Cattle dung plus kitchen waste or Cattle dung plus crushed leaf litter are the very effective medium for culturing earthworms. These medium can be used to multiply earthworms for the purpose of quick multiplication.

A study conducted for the purpose of improving the quality of vermicompost showed incorporation of *Gliricidia* leaves together with grass litter and cow dung could produce very high quality vermicompost.

A preliminary Study conducted to improve the solubility of Eppawela Rock Phosphate (ERP) has shown that through vermicomposting process considerable amount of ERP can be solubilized to a plant available form.

Continuous Compost Application

During the period of 17 seasons, different vegetable crops were continuously grown in large plots treated with recommended NPK fertilizers, 40 t/ha compost and recommended NPK + 40 t/ha compost respectively. Integrated use of compost + NPK fertilizer gave higher yields than compost only application. Application of Inorganic fertilizer alone gave the lowest yield indicating the value of adding organic manure together with inorganic fertilizers.

Water Quality of Mahaweli river

Water qualities of Mahaweli River were tested for irrigation and drinking water purposes. from the selected 3 locations in and around Peradeniya and found pH, EC, dissolved oxygen, turbidity, N, P, K, Chloride, Fluoride, ammonium, iron, calcium, manganese, zinc and copper contents were less than WHO stipulated values.

Soil fertility improvement programme

Under the SRICANSOL-II project, soil fertility improvement programme by means of compost preparation and use of compost was introduced among Neelawela, Marassana farmers. Now there are about 40 farmers produce their requirement of compost from farm waste found in and around their farms.

Laboratory improvement

During the year 2008, an Atomic Absorption Spectrophotometer (AAS), a Microwave digester, a Fume hood, a Muffle furnace, Kjeldahl digestion system, Water purification system and Plant grinder were purchased and installed in the division for the purpose of improving the quality of analytical standard.

Analytical services

During the year 2008 about 386 soil, 13 chemical fertilizer, 168 water samples, 31 plant samples and 77 compost samples were analyzed and reports were submitted. It is noted that number of compost samples received for quality analysis is on the rise during the year 2008 as opposed to previous years. The revenue collected during the year from these analytical services amounts to Rs. 65,000 (Rupees sixty five thousand).

Students' projects

Two undergraduate students from the University of Rajarata have completed their final year project on the following topics:

1. The effect of different organic manures on dry matter yield of tomato.
2. Micronutrient status of soils in organic farming system.

MICROBIOLOGY & MUSHROOM

Testing of spawn production using sawdust

Preliminary studies for spawn production using sawdust were completed. Results revealed that sawdust can be used as an alternative medium for spawn production of Oyster (*Pleurotus ostreatus*)

mushroom.

Technology development for King Oyster (*Pleurotus eryngii*) mushroom cultivation

Grain spawns of King Oyster (*Pleurotus eryngii*) mushroom can be produced using tissue culture method

FLORICULTURE AND HOME GARDENING

Home gardening

HORDI pioneered in reintroducing home garden concept to the country through various technology dissemination activities such as Participatory technology dissemination, Electronic media, Establishing and maintaining of model home gardens, Printed media, Community participatory trainings and clinical workshops and Knowledge dissemination through letters telephone calls and direct meeting of public.

Participatory technology dissemination activities through Electronic media

- Television programmes
- National Rupavahini/HORDI jointed programme- Rividina arunella

This was a top ranked programme in Rupavahini and sponsored by Bank of Ceylon. It was awarded as best productive and creative TV programme in the media awarding ceremony 2008.

- Ran Aswanu Mangalya on home gardening 2008

The service of Mr. Udaya de Silva as a resource person for last 5 years was appreciated by awarding a special award in the first "Ran Aswanu Mangalya" From National Rupavahini Corporation.

- AVC/HORDI jointed programmes

"Govi Bimata Arunalu" 16 programmes were telecasted during year 2008 and all the necessary arrangements have been made to release CD on "Ape Gewatta".

- Video Programme

HORDI in collaboration with NITE prepared a video programme on home garden.

Radio programmes

Ten radio programmes on home gardening were telecasted in National service and Kandurata service of SLBC.

Technology dissemination through Printed media

Sixteen paper articles written by Mr. Udaya de Silva on Home Gardening were published in newspapers as follows.

- Sirikatha women's paper 2008.6.16 "Leafy vegetables and yams are essential to a complete home garden" (Sinhala)
- Sirikatha women's paper 2008.6.30 "Capsicum - an attractive vegetables that grows in any home garden" (Sinhala)
- Sirikatha women's paper 2008.7.14 "Cabbage can be grown in any area and economical in home gardens" (Sinhala)
- Sirikatha women's paper 2008.7.21 "Problems in preparation of a nutritive plot in the home garden" (Sinhala)
- Sirikatha women's paper 2008.7.28 "Art of cropping of a nutritive plot in the home garden" (Sinhala)
- Sirikatha women's paper 2008.8.18 "fruit is the sweetest friend in the home garden" (Sinhala)
- Sirikatha women's paper 2008.9.29 "Grow even one drumstick plant in the home garden" (Sinhala)
- Lankadepa ' paper " Govi Bima" supplement 2008.6.16 " Remedy to local food shortage" (Sinhala)
- Lankadepa ' paper " Govi Bima" supplement 2008.7.28 "Capsicum to the home garden" (Sinhala)
- Lankadepa ' paper " Govi Bima" supplement 2008.9.22 " A kathuru variety named "Haritha" that gives high yield in short period" (Sinhala)
- Lankadepa ' paper " Govi Bima" supplement 2008.9.22 "New kathuru variety with high leafy yield" (Sinhala)
- "Nuga Sewana" of SLRC publication 2nd Volume of 2008 - May "A successful Capsicum grow" (Sinhala)
- "Nuga Sewana" of SLRC publication 3rd Volume of 2008 - June. "For a successful cabbage yield" (Sinhala)
- "Nuga Sewana" of SLRC publication 4th Volume of 2008 – July "Planting facts of a sweet fruit" (Sinhala)
- "Nuga Sewana" of SLRC publication 5th Volume of 2008 – August – September "Latest kathuru variety introduced by the Rividina arunella" (Sinhala)

- "Nuga Sewana" of SLRC publication 6th Volume of 2008 – October- November. "The amazing capability of the common crop drumstick" (Sinhala)

Establishing and maintaining of model home gardens

Maintaining of model home garden at HORDI is continued for 11th year and 72806 people visited during 2008 and gathered practical knowledge on home gardening.

Home gardens were established in following locations during year 2008.

1. Weerapana agriculture farm
2. Gamunu regiment- Kuruvita
3. Home garden at ministry of Agriculture and agrarian services
4. Agriculture farm- Bata-atha

Community participatory trainings and clinical workshops

Thirty six training workshops on designing and development of home gardens were conducted during 2008 within the premises of HORDI and 2760 participants were trained. Forty four training programmes were conducted in the outside locations with the request of number of government and non government organizations and 9320 participants were trained in these training classes.

Knowledge dissemination through letters telephone calls and direct meeting of public

Six thousand seven hundred and fifty inquiries of growers in relation to home gardening were answered by corresponding via letters, telephone calls and direct meetings.

Collection, maintenance and evaluation of under-utilized crop varieties adaptable for home gardens

Hundred and twenty under utilized crops were collected, 71 were evaluated and one crop was recommended. (Haritha Kathuru murunga (*Sesbenia*) variety)

FLORICULTURE PROGRAMME

Floriculture Research programme of the Horticulture research and development institute, Gannoruwa is focusing on generating novel products to floriculture industry using potential native and indigenous plant species.

Improvement of endemic and indigenous flora having potential ornamental values as novel product for floriculture industry.

Exploration and collection of potential wild flora was continued during yala 2008. More than 360 accessions were maintained in the division and few new accessions were added to the collection during Yala 2008.

Development of new plant types through non conventional breeding

Seeds and rooted cuttings of seven plant species were subjected to gamma irradiation. Variations and performances of those plants are under evaluation.

Production of new begonia hybrid using wild begonia spp. (*Begonia hirtella*)

Several begonia cultivars and wild species were evaluated for their ornamental characters and reproductive ability and crosses were made among them. Selection and evaluation of F_1 was done. Selected F_1 plants were crossed with P_1 and experiment is continuing.

Display arrangements and Indoor landscaping

a. Development of models of value added display arrangements of floriculture and model of indoor gardening.

b. Perfection of dry flower techniques

Several common and wild flowers were tested to use in dry flower arrangements. *Saraka asoka* and *Antigonun* were identified as suitable filler flowers for dry flower arrangements.

Induction of *Gladiolus* blooming under Peradeniya climatic conditions

Flower initiation in exotic *Gladiolus* species in Peradeniya was tried using chemical flower induction tools. Different IBA and Gibberellic acid combinations and their concentrations were applied as foliar sprays. 2000ppm Gibberellic acid was identified as best treatment for flower induction of *Gladiolus*

Induction of early blooming of poinsettia to develop colorful pot plants during off season

The study was designed to develop busy potted plants of poinsettia through cultural practices and induction of blooming to obtain decorative

pot plants in year around. Plants were trained as potted bush using pinching techniques and applying growth regulators. Flower induction was tested using black cloth treatment. Best treatment is 500ppm cycocel+ 1000ppm B-9 +pinching for develop bush form and 14 hours short day condition was the best treatment for flower induction.

Knowledge dissemination through training programs

Five training programmes on floriculture were conducted during 2008.

Advisory services

Thirty one people who are interested in floriculture visited during 2008 to gather knowledge on floriculture. Thirty eight inquiries made over the telephone related to floriculture cultivation of public were answered.

EXTENSION & COMMUNICATION

Main objective of division is to transfer new technology to the stakeholders of HORDI as follows.

- Co – ordination of 25,350 visitors (in 1112 groups)
- Two Hundred and twenty nine written answers for technical inquiries
- Dissemination of new technology by issuing 7126 advisory leaflets.
- Technical advises for 2179 telephone inquiries
- Planning/creation of HORDI new broacher (printed 50,000 copies)
- Twelve awareness lectures in “Api Wawamu Rata Nagamu” in various locations
- Eighteen special trainings to upgrade the knowledge of officers in “1920” telephone service - Audio Visual Centre.
- Assistance for five agricultural exhibitions in various locations.
- Supportive activities to International Potato Symposium in preparation of video clips, brochure, invitation cards, presentations and photography
- Fourty one group trainings in Vegetable IPM including DOA, Mahaweli, and private sector and NGO groups.
- Four Hundred and Sixty eight Vegetables IPM farmers field demonstrations (Cucurbits, Okra, Brinjal, Tomato & Chili) in various locations in Sri Lanka.

- Four Radio and one Television programmes in Vegetable IPM.
- Preparation of a calendar (2009) related to Vegetable IPM.

CENTRAL LIBRARY

During 2008, 463 new books were added to the collection and total number of book collection is 10655. More than 200 foreign periodicals were received through the year as complimentary and exchange basis. In addition, like previous years, Library paid 3000 Sterling Pounds for annual subscription to Commonwealth Agricultural Bureau International (CABI).

More than 2550 users visited the library to get information facilities. About 300 books were circulated among library members. Regular reader services and Inter Library Loan Scheme were provided.

Over 40 retrospective searches were made as the request of the Research Officers. About 20 searches were done through the assistance of CARP.

About 530 Research Officers obtained information using Internet facilities. AGRIS CD-Rom System also helpful them to get current information.

AGRINET Content Pages Service (SDCP) was continued and more than 50 Content Pages were distributed among department users.

We have donated more than 150 Books to Aralaganwila, Bathalagoda and Plant Quarantine Stations during 2008. We have input more than 11500 articles and books to the PURNA Database.

DEVELOPMENT & TECHNOLOGY TRANSFER ACTIVITIES

Vegetables

- AWRN project activities to accelerate the production of tomato, brinjal, wing bean, mae, vegetable cowpea and leafy vegetables were carried out successfully. Initiation of tomato processed product development was carried out under this project.
- IUCN/HORDI project activities on popularization of new tomato varieties in Matale district was very successful. Introduction of new vegetable varieties such as carrot, beet, knobhol, radish, cabbage was highly accepted by the farmers in Udasiya region. Initiation of marketing channels with Cargills Food City also carried out under

this project.

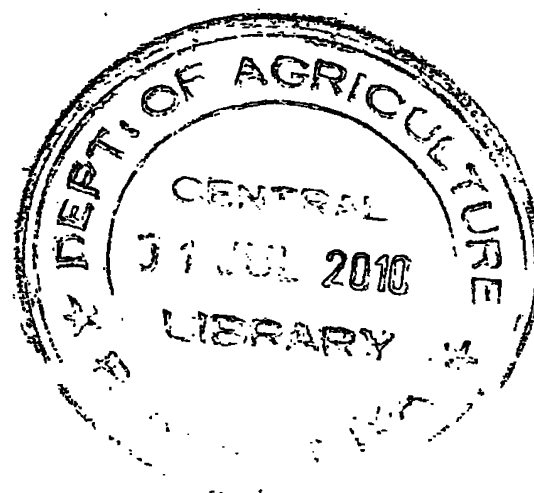
- Introduction of Apala stakes for bean cultivation.
- Promotion of seed production in Bull nose capsicum variety.
- Irradiation of planting materials for creating genetic variability (162 samples)
- Two Field days in Matale district.
- Publications-12
- Newspaper articles-15
- Leaflets on vegetables-07
- Radio and TV programmes-05
- Training for officers and farmers-37
- Supervision of Research projects of University and NDT students-12

Fruit

- Mother plant orchard of durian, jak fruit, mango and guava were established in Pasyala farm
- Ten thousand and two thousand five hundred bud grafted rambutan plants were produced at Pasyala and Eraminigolla farms respectively and distributed for establishment of fruit villages.
- Seven thousand grafted plants of rambutan, jak, durian, orange and mango were produced and issued from HORDI nursery, Ambaenna and Ulphagama farms for crop zoning programme
- Banana, Pineapple, Manioc, Kiriala and leafy vegetables were cultivated in all uncultivated lands in Pasyala farm for planting material production.

Root & Tuber Crops

- Genetic material of all root & tuber crops were maintained as field germplasm
- Basic planting material of recommended root & tuber crops were produced and distributed among targeted groups on request.



Tissue culture

Table 2.2.2: Distribution of tissue cultured plants as Foundation stock plants during the year 2008

Crop	Variety	Number of plants distributed	To whom	Purpose
Banana	Ambun	05	Wagolla farm, Rambukkana	Field planting
	Ambun	135	To Pasyala farm	Field planting
	Ambun	160	To Pasyala farm	Field planting
	Seeni kesel	05 <i>In vitro</i> cultures	Horana TC lab	To start cultures in the lab
	Ambun	20	Chemistry	Organic
	Pulathisi	20	div./HORDI	farming
Pineapple	Mauritius	850	Maduruketiya farm	Field planting
	Mauritius	1000	To Pasyala farm	Field planting
Ginger	Chinese ginger (Fiji)	200	Roots & tuber crops division	Field experiments

- One-day training programmes on Basis of Plant Tissue culture
- Supervision of research projects (02)
- Advisory services to general public

Entomology

An IPM programme including use of pheromone traps (one trap/ha) in collaboration with the Central province Dept. of Agriculture was carried out in Matale (400 ha), Kandy (945 ha) and Nuwara- Eliya (500 ha) districts for "Area wide Suppression of fruit fly spp". Awareness programmes including farmer trainings, displaying of banners in public places and distribution of hand outs among the residents of those three zones were also carried out. The farmers were highly taken up by the out come of the programme.

Beekeeping

An apiary was established at HORDI for research on year round honey production and training purposes. Two one day workshops were carried out for seventy five beekeepers from Horowpathana and Arachchikattuwa. Twenty five bee colonies in Putlam, Bandarawela and N'Eliya area were inspected for identifying the reasons for absconding of colonies by bees. Beekeeper groups were trained in Kurunagala, Kollonna, Bulathsinhala, Thangalle and Polonnaruwa areas. Replied to thirty three letters received from beekeepers in all over the country. Ten school children and twenty university students were assisted in their projects on bee-keeping.

Hundred and forty three affected samples of vegetable and fruit crops that were brought to the Entomology laboratories at HORDI were diagnosed and necessary advises were given. Nine trainings were conducted for the extension staff and IPM research projects of three university students were supervised by the Entomology researchers. Moreover, twelve field days, six plant clinics and three radio programmes were attended by the Entomology researchers.

About 300 telephone calls were answered on pest problems of horticultural crops, mealy bug epidemic and beekeeping by the Entomology staff.

Pathology

Disease diagnosis of crops and advisory service for disease management

Disease diagnosis of plants and advisory service for disease management provided by plant pathology division were continued. Over 450 disease affected plant samples including fruit crops, vegetables and tubers received from different sources were clinically tested for diagnosis of fungal, bacterial and virus diseases. Causal agent/s of diseases of plant sample were identified and advises were given to farmers, private companies and agriculture extension officers for management of disease problem of crops.

Dissemination of new technology

Six plant clinics were participated in different districts benefited about 1250 farmers. Training classes were conducted to train 450 extension officers, 40 Farmers, 14 A/L students, 24 Agriculture school student, and 48 University students on identification of diseases and management strategies. Twelve final year students (Agricultural school students (NDT) – 03 and University students- 09) completed their research projects in the division. Special service was conducted to protect disease affected sacred Bo trees and other conserve trees and eight trees were treated during this year. In site advises were given to six private nurseries and foliage companies and nine government farms.

Mushroom and Microbiology

Training, and education

Table 2.2.3: No. of training programmes conducted

Category	No. of programmes
Replies by post	66
Field inspection	02
Farmer visits to HORDI	220
Phone calls	658

Advisory Services

Table 2.2.4: Advisory services conducted

Category	No. of participants
At HORDI	896
DOA Officers	178
Other organizations	493
GCE (AL) students for their projects	38
University students	37
Seed training	44

Table 2.2.5: Exhibitions and radio programmes conducted

Category	No. of programmes
University exhibitions	
(University of Peradeniya)	01
School exhibitions	03
Radio programmes	
Kandurata Sevaya	
Rangiridambulu	
Rajarata Sevaya	06

Development activities

- Assistance to establish 04 mushroom seed units Ampare, Pothuhera, Kohilagedara and Kurunegala
- Creation of a new Microbiology and Mushroom Research section on 06.06.2008

Technology transfer

Initiated technology transfer programme for rice straw mushroom cultivation at Aralaganwila in collaboration with ISTI Aralagawila. Under this programme, 101 bags of rice straw spawns were supplied free of charge. 109 bags of rice straw spawns were supplied @ the rate of Rs. 20.00

Awards

Annual Symposium of the Department of Agriculture 2008 Award of promising Agriculturist in Agronomy.

PLAN FOR 2009

Vegetables

- Tomato varietal development via heterosis breeding
- Tomato varietal development via mutation breeding
- Evaluation of tomato introductions
- Pre-released multiplication of promising varieties/hybrids
- Breeder seed production of tomato varieties
- Awareness programme on new F₁ tomato hybrids and tomato varieties in Matale district
- Germplasm evaluation and Purification
- Hybridization
- Screening of hybrids
- NCVT Luffa
- Bitter gourd varietal development via heterosis breeding
- Develop high yielding (30t/ha) cucumber F₁ hybrid varieties with desirable characters (Fruit earliness, green & white colour and uniform shape)
- Study the performance of exotic cucumber F₁ hybrid varieties

- Develop high yielding (30t/ha) cucumber F1 hybrid varieties with desirable characters (Fruit earliness, green & white colour and uniform shape)
- Breeder seed production of bitter gourd variety

Root & Tuber

- Evaluation of salt tolerant sweet potato clones
- Establishment, multiplication & evaluation of high matter sweet potato clones
- Advanced yield trial of CIP sweet potato variety
- Maintenance of recommended sweet potato varieties & production of basic planting materials
- Field maintenance of sweet potato germ plasm
- Maintenance and production of basic planting material of released cassava varieties
- Advanced evaluation trials of cassava
- National coordinated varietal trial on cassava
- Varietal adaptability trial programme on cassava
- Production of basic planting material of released cocoyam varieties
- Maintenance of basic planting materials
- Maintenance and production of basic planting material of released kiriala variety
- Maintenance of kiriala germplasm
- Agronomic measure of controlling leaf yellowing in kiriala
- Maintenance of ginger germplasm and multiplication of varieties
- Collection & identification of ginger varieties
- Multiplication of ginger variety Fiji
- Maintenance of Innala

Fruits

- Study the compost requirement of fruit crops to replace chemical fertilizers. Nutrient requirements for high density Embon banana in different soil groups (RBL, IBL and RYP) in the MCWZ. Development of high yielding, good quality and disease resistant banana varieties through induced mutation.
- Selection of high yielding, good quality and disease tolerant banana germplasm.

Exploration, conservation and evaluation of Embon banana accessions to identify high yielding and quality varieties

- Development of high yielding, good quality rambutan varieties through induced mutation.
- Development of package of practices to improve yield and quality of rambutan
- Development of high yielding, good quality mango varieties through induced mutation.
- Effect of interstock and rootstock variety on dwarfing of mango
- Development of high yielding, good quality papaya varieties/hybrids.
- Development of papaw hybrids using available inbred lines and evaluation of hybrids for yield and other qualities
- Hybridization of Durian varieties to identify better combination of parents for high yield and quality
- Exploration, conservation and evaluation of jack fruits for high yield and quality
- Exploration, conservation and propagation studies on Uguressa in Sri Lanka
- Hybridization and selection of dragon fruit to develop quality high yielding varieties

Tissue Culture

- Development of plant regeneration systems for selected crops (Grapes, Citrus, Anthurium)
- Tissue culture of Banana to produce Foundation stocks (var. Kolikuttu and Rathambala)
- Field evaluation of tissue cultured banana (var. Nethrampalam)
- Development of a pathogen eradication system for banana by Meristem culture
- Crop improvement of banana by *In vitro* mutagenesis
- Anther culture technology for vegetables (Tomato, Bitter gourd)
- Low-cost tissue culture and Functioning of the Mini lab
- Extension & Training activities

Entomology

- Integrated Management of *Bactrocera* species on cucurbits and fruit crops
- Screening of safer insecticides for melon fly

- Screening of commercial protein baits and pheromone traps for melon and fruit fly species (*Bactrocera* species)
- Efficacy testing of promising treatments for the control of bean yellowing syndrome under farmers' field conditions in Kandy, Matale and N'eliya districts (Funded by Crop leaders' programme)
- Studies on causal factors of bean yellowing syndrome
- Preliminary investigations on conservation of larval parasitoid of brinjal shoot and fruit borer under cropping system environment
- Identification of safer chemical compound to replace carbofuran in present IPM package of banana weevil
- Screening of low toxic, selective novel insecticides for insect pests and mites; hoppers, white flies and mites (Pilot scale testing) (Funded by the Industry)
- Use of botanical and organic insecticides to control sucking pests on poly tunnel crops
- Identification of causal factors and control measures of bitter gourd leaf curling and yellowing
- problem occur in all over the country
- Development of an IPM package for major pests of citrus
- Preliminary studies on absconding of bee colonies by bees and establishing a system for year
- round honey bee production
- Development of Bio-pesticides from Sri Lankan plant sources
- Pest control for organic vegetable production
- Exploration and utilization of fruit fly parasitoids
- Area-wide suppression of melon fly using protein bait incorporated IPM package (Under IAEA)
- Area-wide suppression of fruitflies of economic importance under crop zoning project (Kandy District)
- Area-Wide suppression of fruit flies in the Central Region
- Area-Wide suppression of melon flies in the Central Region
- Control of Melon flies, *Bactrocera cucurbi-*

tae by irradiation using Gamma rays

- (IAEA Project)
- Screening of brinjal varieties and breeding lines for resistance to pests and mites
- Screening of capsicum varieties and breeding lines for resistance to pests and mites
- Screening of cucumber varieties and breeding lines for resistance to melon flies
- Testing the effect of vermicompost for the control of mites and insect pests damaging vegetable crops
- Development of a screening technique for resistance to banana weevils
- Development of an IPM programme to control pests of mushrooms

Pathology

- Management of *Fusarium* wilt of banana.
- Identification of resistant varieties for bacteria wilt, collar rot, and anthracnose.
- Virus indexing of fruits and vegetables.
- Evaluation of some fungicides for major diseases.
- Development of formulation of biological control agents.
- Management of nursery diseases of fruit crops.
- Testing of imported planting materials for quarantine diseases.
- Identification of resistant varieties for viruses.
- Management of yellowing syndrome of Cucurbits.
- Management of Avocado diseases.
- Management of Anthurium diseases.
- Disease control by induce resistance
- Disease diagnosis and advisory service.

Chemistry

- Preparation of different types of vermicompost and laboratory testing
- Use of vermicomposting process to improve ERP solubility
- Composition (Nutrient) of farm based compost samples
- Long term effect of compost application on vegetable yield and soil quality
- Soil fertility assessment and improvement programme at Marassana vegetable growing soils.

- Micro nutrient status of green manures
- Formulation and evaluation of fertilizer mixtures for polytunnel crops
- Investigation of heavy metal status in different cropping systems in Sri Lanka.

Floriculture

- Home garden Development Programme
- Development of novel genotypes from potential endemic & indigenous flora biodiversity having ornamental values for the local & export market through breeding and cultural practices
- Production of marketable display arrangements of un exploited floriculture plants as value added novel products
- Improving of locally available flower crop varieties via conventional and non conventional
- breeding tools , Gladiolus, Anthurium
- Introduction of cut foliage cultivation to Mahaweli G zone as export oriented crop

Mushroom

- Improvement of soil fertility and disease management through *Mychorhiza* and beneficial micro organisms
- Comparison of biological activities with organic farming site and non organic farming site
- Identification of suitable methods for opening of fully grown mushroom compost bags to enhance the mushroom productivity
- Selection of low cost substrate for commercial spawn production of Oyster mushroom
- Cultivation method for king oyster mushroom.
- Breeding of mushroom using single spawn culture method

2.2.1 PLANT VIRUS INDEXING CENTRE (PVIC) - HOMAGAMA

The Plant Virus Indexing Centre, Homagama functions under the administration of Horticulture Crop Research & Development Institute (HORDI), Gannoruwa. The mandate of this center is application of currently used advanced technologies for plant virus detection, Production of test kits for virus detection in laboratory and field, virus indexing for field samples, and for quarantine purposes, studies on virus epidemiology and weed virus associations, evaluation of possible control methods, development of virus free basic foundation stocks, investigations on virus coat protein mediated resistance, and detection of other pathogenic organisms (Fungal, Bacterial, Nematodes). Six main divisions consisted of Serology/ Virology unit, Virus epidemiology unit, Biotechnology unit, Tissue culture unit, other pathogenic organism unit and technology transfer unit were established in this center. This center is mainly focus to help farmers to maintain healthy cultivations in all agricultural crops including fruits, vegetables, root and tuber crops, foliage and flowers.

BUDGET

Allocations received and the expenditure incurred under different votes and projects are given in Table 2.2.1.1.

Table 2.2.1.1: Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Recurrent	1,896,100.00	1,813,782.43
Capital	678,200.00	351,187.50
CARP 12/618/465	375,000.00	266,690.29
CARP 12/672/503	506,160.00	464,383.98
Crop Zoning Project	500,000.00	415,138.44
Api Wawamu Rata Nagamu	1,000,000.00	987,868.73
Crop Leader -Jak	1,000,000.00	839,846.00

PROGRESS

Conventional Plant Virology Purification of Phytoplasma to produce Polyclonal Antiserum for the detection of Weligama Coconut Leaf Wilt Disease

The disease causing phytoplasma was purified from tender leaf tissues of diseased palms by differential centrifugation and Percoll-Discontinuous Density Gradient Centrifugation (PDDGC). A single turbid zone was observed at the top of the 30% step gradient of diseased leaf samples at PDDGC while it was not seen in healthy leaf samples. Purified phytoplasma fraction in turbid zone was checked by ultra violet absorption spectrum between 200-310nm. Maximum absorption of purified fraction was shown at 280nm. Fractionated protein and nucleic acid components of phytoplasma showed absorption peak at 280 and 260nm respectively indicating the presence of phytoplasma organism in purified preparation.

Identification and confirmation of virus diseases in Dragon fruit (*Hylocereus undatus* (Haw.) Britton and Rose) varieties using Enzyme Linked Immunosorbent Assay (ELISA)

Viruses were detected by different versions of ELISA methods for Cactus Virus X and Cucumber Mosaic virus. Results revealed the presence of Cactus Virus X in samples taken from

several locations in different districts. However Cucumber Mosaic Virus was not detected in the tested samples.

Identification of virus disease in selected orchid cultivations

The study was carried in two steps as a survey and a laboratory experiment. The information of the survey was conducted through a questionnaire. Fifteen orchid nurseries were selected randomly for the survey representing Colombo, Gampaha, kandy and Kaluthara districts. Samples collected were studied for their symptomatology and were subjected to Double Antibody Sandwich ELISA (DAS –ELISA) for viruses like Cymbidium Mosaic Virus (CymMV), Cymbidium Ring Spot Virus (CyrSV) and odontoglossum ring Spot Virus (ORSV). The study revealed that CymMV was the most distributed virus among viruses tested in all orchid growing districts . and CyRSV was found to be less important under Sri Lanakan condition. Highest disease incidence of ORSV was affected by age and size of the nurseries, place of origin of the plantlets and advisory services.

Symptomatology of Papaya Ring Spot Virus (PRSV) and mite damage and its relationship to ELISA values

According. to symptomatology, samples were collected from different locations. Fifteen samples were analyzed by ELISA using locally produced PRSV polyclonal antiserum. Symptoms with downward curl of leaves and prominent vein gave negative results to ELISA tests which were therefore proved as mite damage. This study will be continued

Production of Polyclonal antisera for important virus diseases

Virus was purified from diseased plants according to the relevant purification method and immunization programme was followed. Using the produced antisera , indirect ELISA was performed to check the optimization of suitable extraction buffer, dilution of antiserum and the conjugate. It revealed that the locally produced antisera were suitable for Banana bunchy top virus , Banana bract mosaic virus, Banana streak virus and Cucumber mosaic virus indexing.

Routine Indexing of viruses

Twenty six samples of Pineapple wilt virus 458 samples of Banana bunchy top virus 156 samples of Banana bract mosaic virus, 53 samples of Cucumber mosaic virus, 45 samples of Banana streak virus, 15 samples of Cymbidium mosaic virus, 15 samples of Odontoglossum ring spot

virus, 15 samples of Cymbidium ring spot virus, 18 samples of Citrus greening bacteria, 24 samples of Papaya ring spot virus, 63 samples of PVX and 04 samples of Dasheen mosaic virus were indexed using ELISA kits produced locally by direct and indirect methods.

MOLECULAR VIROLOGY

A suitable methodology to detect Banana Streak Virus (BSV) in tissue cultured banana.

Polymerase Chain Reaction (PCR) and Immuno Captured Polymerase Chain Reaction (IC-PCR) methodologies were compared to detect integrated form and episomal BSV in banana produced through tissue culture. Twelve different varieties having genomic configuration A and B were tested for BSV. All the cultivars with B genome were positive with PCR and only plants showing specific symptoms were positive for IC-PCR. Furthermore PCR and IC-PCR results were compared with expression of symptoms in field grown tissue culture banana. Study revealed that IC –PCR methodology can be used to detect the episomal BSV and which could be successfully applied during the tissue culture process in order to produce BSV free planting material.

Economy and usefulness of novel methodology of RNA extraction for RNA viruses and its usefulness for virus detection by RT-PCR.

Lysis buffer containing Guanidine thiocyanate was used for the crushing of samples, after centrifugation fractionated silica was mixed to the supernatant and kept for 5 mint. to incubate. Silica was pellet out by centrifugation and after washing steps were followed, the RNA was eluted by heating at 56C. This methodology is time saving and cost effective.

Routine virus indexing by PCR methodology

For the optimization of PCR conditions 30 samples for BSV, 25 samples for BBTV, 55 samples for PMWV, 20 samples for PRSV, 15 samples for CMV and 15 samples for BBrMV were tested. As for the routine indexing programme 110 samples of banana were tested for all four viruses (BSV,BBTV,CMV and BBrMV) and 90 pineapple sample s were tested for PMWV1 and V2.

TISSUE CULTURE

Effect of heat therapy and tissue culture technique to eliminate Banana Bunchy Top(BBTV) from infected banana

Heat therapy was given as hot water treatment and hot air treatment. Virus indexing was done before and after heat therapy using indirect ELISA. Reduced virus titers were observed from both hot water and hot air treatments.

Successfulness of banana tissue culture programme at PVIC and potential production

For the initiation disease free sward suckers were taken. For shoot proliferation, different BAP concentrations were tested and an optimum BAP level was used at one month intervals. Optimum sub culture level was identified as 5. Beyond the BAP optimum subculture and BAP levels induction of BSV could be observed in B genomic varieties. For root formation IAA at 0.1mg/l concentration was ideal.

Effect of different fertilizer concentrations on growth of tissue cultured banana plants in net pots

Different fertilizer concentrations were applied for the plants at different application durations as daily, one day intervals and two days intervals. Plant growth was measured using plants height and number of leaves. Number of leaves is higher when apply 1g albert/liter daily and 1g urea /liter at one day intervals and the plant height is maximum with 1g albert / liter, daily application. This study will be continued.

Effect of different potting mixtures on growth of tissue cultured banana plants in poly pots

Coir dust, sand, top soil, quarry dust, burned paddy husk and compost were used at different ratios as potting mixtures. Albert solution 2 g /liter was applied at one day intervals. Plant height was higher in coir dust : sand 3:7 and coir dust only. Number of leaves were higher in coir dust and coir dust : sand 1:1 ratio mixture. This study will be continued.

Pest and disease incidence of field grown cultured banana with special reference to variety

Cavendish, Embon, Pulathisi, Kolokuttu, Ambul, Seeni kesel, Ranel, Anamalu and Alukesel were evaluated. Major pests are Banana Weevil Borer (*Cosmopolites sordidus*) and Banana Stem boring weevil (*Odoiporous longicollis*) and they mostly prefer Anamalu and Embon varieties. Panama, Sigatoka leaf spot, Codana leaf spot and Anthracnose were the diseases that occurred. Kolokuttu, Embon and Alukesel were infected

with Panama and Sigatoka and codana were very common in many banana varieties. Two viral disease were reported BBTv and BSV. BBTv was the most common and destructive and BSV was common in tissue cultured banana plants specially Cavendish.

2881 virus free tissue culture plants were produced under Crop Zone project and distributed among 93 farmers

VIRUS EPIDEMIOLOGY

Identification of viruses of low country vegetables and root and tuber crops in weeds and other alternative hosts in order to develop control methods

Detection of viruses in weeds in the low country vegetables and cassava fields. Weeds with disease like symptoms were collected from cultivations and adjacent areas and subjected to sap transmission and ELISA tests. From ELISA test *Sphaeranthus indicus*, *Peuraria phaseoloides*, *Mimosa pudica* and *Sida rhombifolia* were identified as alternative host for Bean Common Virus, *Centrosema pubescence*, *Nicandra physalia*, *Capsicum frutescens*, *Amaranthus tricolor*, *Ameranthus aspera*, *Ipomea sp.*, *Alternanthera sp.*, *Argyria populifolia*, *Salvia splendens*, *Ipoea pes-tigridis* and *Phyllanthus oreophilu* for Cucumber Mosaic Virus and *Acalypha ciliate*, *Acalypha indica*, *Mikania cordata*, *Balainvillea acmella*, *Ageratum conizoides* and *Jatropha curcas* for Indian Cassava Mosaic Virus. From sap transmission studies, weeds such as *Oxalis barrelieri*, *Aerva lantana*, *Cardiospermum halicacabum*, *Fleuragya interrupta*, *mirabilis jalapa* and *Stachytarpheta indica* were identified harboring viruses. Other alternative hosts were Wild tobacco (Strawberry streak virus), Tamberia (Potato virus Y) and Vinca rosea, Thibbatu (Brinjele little leaf mycoplasma disease)

Symptomatology and Pineapple wilt virus (PWV) titre in MG3 pineapple cultivar

Wilt symptoms were not observed externally. At initial stage, 3, 6 and 12 months after planting negative results were given at ELISA tests but absorbance values were gradually increased with time. However PCR results revealed the presence of two viruses (PBV and PMWV1). Further negative results were observed for PMWV2 when tested by PCR.

Eradication of virus through heat therapy

Dasheen mosaic virus infected Kiriala and PMWV infected pineapple suckers were subjected

to hot air and hot water treatments. Kiriala tubers subjected to 45° C for 16 hrs with light and 30° C for 8 hrs in dark for 2 wks using Biotron gave negative results when tested for the virus. Pineapple suckers were negative for the virus when subjected to hot water at 60 °C for 30 mints. and hot air for 30 mints.

Pest and disease incidences and their non chemical control in selected low country vegetables

Long bean (bush type) , Bitter gourd, Snake gourd, Luffa, Leafy vegetables (Kankun, Thampala, Spinach), Radish, Brinjal, Okra, and Chillie were selected for cultivation. Bean mosaic virus in long bean and Vein net mosaic virus in okra were the major diseases that occurred and they were controlled by early detection and destruction of diseased plants. Shoot borer in Long beans was controlled by removing the damaged shoots , fruits of gourd family were covered with polybags to avoid contact with fruit fly, leaf minor and pod and soot borer of brinjal and plant hoppers in chillie were controlled by applying neem and citrus oil extractions.

Find suitable screening method to check the resistancy of Okra hybrids to Okra Vein net Mosaic Virus

Thirteen okra hybrids were subjected to the screening procedure, initially they were planted in okra field 100 % infected with Okra vein net mosaic virus and observed for the appearance of disease. As for the control Haritha variety was selected. Five hybrids were found 100% infected with the disease. Those which were free of the disease, grafted with disease okra shoots and observed for disease symptoms but The disease was not transferred . This observation will be continued during the next season.

Study on little leaf disease in brinjal and control of its spread

Study revealed this disease reduces a considerable amount of the final harvest and use of disease free planting material, plant with recommended spacing , removal of alternate hosts, apply insecticide during high vector population ,crop rotation , apply recommended fertilizer rates and use of cleaned farm tools would reduce disease spread

Maintain a Cassava cultivation free of Cassava mosaic virus (CaMV) disease

Three recommended varieties (BM1, BM2,BM14) were maintained free of CaMV by applying following practices. Use of disease free

planting materials, removal of infected plants , field sanitation , removal of alternate hosts (*Acalypha ciliate*, *Acalypha indica*, *Mikania cordata*, *Balainvillea acmella*, *Ageratum conizoides* and *Jatropha curcas*) and application of insecticides when vector population (*Bemisia tabacci* and *Aleurodicus* spp.) was high .

OTHER PATHOGENIC ORGANISMS

Identification of other pathogens (fungi and bacteria) in Agricultural crops collected from farmers and providing instructions to control the pathogen

More than 280 diseased samples were diagnosed using disease symptoms and culture methods . Major crop samples were tested as Banana 75, Guava 07, Papaya 31, Mango 12, Avacado 13, lime 05, pineapple 08, passion fruit 03, Jak fruit 06, Yam02, Cucumber 04, Okra 07, Capsicum 07, Tomato 12, ginger 03, Rice 02, Beetle 03, Phyllanthus 06, Rambutan 04, Brinjal 05 Luffa 02, Rose 03, Birds' nest 03, Cypress 03, Orchid 10 and Anthurium 20.

Isolation and culture of Bacterial blight pathogen in Anthurium (*Anthurium andereanum*)

Samples were collected from 20 nurseries selected from Gampaha and Kaluthara districts. The pathogen was isolated using standard isolation procedure. The isolated pathogen was inoculated to healthy Dieffenbachia cane stem and small healthy Anthurium plants. Symptoms were first developed in cane cuttings while leaves took three days for symptoms development. As further studies pathogen will be assessed with an indirect -ELISA pathogen specific detection method and serological applications will be made to develop the antiserum.

Occurrence of Avacado malformation and its impact on fruit formation

Visual symptoms of this condition are shortening and thickening of inflorescence, developing of leaves within the inflorescence (phyllody) and finally reduce fruit formation. To control further spread of this disease, removal and destruction of totally unproductive trees, cutting and removing the unproductive branches and use of healthy scion for grafting..

Find efficacy of locally produced antiserum for Citrus Greening bacteria

A polyclonal antiserum was produced and a detection kit was developed for ELISA in the

year 2004. Its testing ability was assessed using different citrus samples and results revealed its maximum efficacy.

TECHNOLOGY TRANSFER DIVISION

Training classes for different government and private sector organizations

Twenty seven training classes were held for extension officers in Dept. of Agriculture, farmers, private sector organizations on Api Wawamu Ratanagamu Programme 8 classes for Agriculture teachers from NIE – Maharagama on specific topics, 01 class for students that were following a course in Landscaping at National Youth centre – Maharagama on general agriculture.

Demonstrations for private and public sector organizations

Seven demonstrations were conducted for private and public sector officers on modern virus detection techniques.

Enhancement of per capita consumption of jak and its pest and disease control under Api Wawamu Tara Nagamu Programme

Work shops, training classes and demonstrations were held on proper cultivation, increase of quality of yield, proper utilization of harvest, introduction and popularization of value added products of jak. Special attention was given for pest and disease control by using Chemjet and Tree injector.

Training

Mrs. B. M. V. S. Basnayake, Research officer was selected to follow PhD programme on Molecular Pathology under the open scholarship sponsored by Chinese government in 2006. Presently she is reading for her PhD in the university of Zhejiang, Republic of China.

Mrs. S. R. Amarasinghe, Programming Assistant was selected to follow PhD programme on Agricultural Irrigation under the open scholarship sponsored by Japanese government in 2008.

Collaborative studies

Collaborative research programme was initiated with Coconut Research Institute – Lunuwila to develop suitable detection method for leaf wilt disease in Coconut.

Under graduate research Projects

Center has offered five undergraduate projects to university of Wayamba, Ruhuna and University of Kelaniya Microbiology Department

Industrial Training was offered for 04 undergraduates.

Plant Virology Course and Demonstration on Modern virus detection technologies

“Plant virology course” was conducted to undergraduates of Department of Microbiology, Department of Botany, University of Kelaniya. Demonstrations were undertaken to above students and undergraduate from University of Ruhuna.

PLAN FOR 2009

Conventional Plant Virology

- Production of RIPA kits for virus identification in farmer level
- Production of antiserum for coconut root wilt disease and standardization by ELIZA.
- Production of antiserum to detect dasheen mosaic virus.
- Identification of virus diseases in Dragon fruit.
- Relationship between mite damage and papaya ring spot virus symptoms.
- Studies on viroid diseases in citrus.

Molecular Virology

- Study the spreadability of PMWaV1 and PMWaV2 clostero viruses in mealy bug wilted pineapple by using RT-PCR.
- Development of duplex IC-RT-PCR system for BBrMV and CMV.
- Optimization of RT-PCR for detection of PRSV.
- Development of multiplex RT-PCR system to detect citrus viroids.
- Study the optimum conditions to detect phytoplasma disease by PCR.
- Study on optimum condition to detect selected DNA Viruses (BSV, BBrMV, CMV) by PCR and IC-PCR

Tissue Culture

- Effect of different fertilizer concentrations on growth of tissue culture banana plants in net pots.
- Effect of different potting mixtures on growth of tissue culture banana plants in polythene bags.
- Find out optimum conditions for tissue culture of Kolikuttu banana variety.
- Production of tissue culture banana.
- Effect of different ratios of organic fertilizer and chemical fertilizer to growth of tissue culture banana plants.
- Multiplication of new banana variety using tissue culture methods.
- Multiplication of papaya using tissue culture methods.

Virus Epidemiology

- Evaluation of different herbal preparations in control of pests in selected crops (Chillie, Okra, Brinjal).
- Identification of weeds that act as an alternative host for some important viruses.
- Confirmation of spiraling White fly as a potential vector for the transmission of Cassava Mosaic Virus.
- Eradication of Banana Bunchy top virus and Dasheen Mosaic virus through heat therapy.
- eradication of pineapple wilt virus through heat therapy.
- Symptomatology and pineapple wilt virus titre in MG-3 pineapple cultivar.

- Identification of virus transmission ability through plant parasitic nematodes in Banana cultivation.(Eg: Platilenchus & Helicotilenchus sp.)
- Pest and disease incidence of field grown TC banana with special reference for different varieties.
- Field evaluation of TC banana which are grown in the PVIC and the farmer fields.
- Control of papaya ring spot virus (PRSV) in research field and farmer fields by using herbal sprays.

Other Pathogenic Organisms

- Find the detection ability of Citrus Greening bacteria by locally produced Antiserum
- Occurrence of Avocado Malformation disease and its impact on fruit formation
- Study on efficacy of tree injectors to control diseases in tree crops.
- Isolation and culturing of bacterial blight pathogen in Anthurium
- Production of a Anti serum for identification of Anthurium Leaf Blight disease.
- Identification of other pathogens in agricultural crops collected from farmers and providing instructions to control the pathogens.

Technology Transfer Division

- Coordination of awareness and training programmes at PVIC
- National Food Drive Program – 2007-2010, under Api Wawamu Rata Nagamu.
- Jak Crop Development Programme.

2.2.2 FRUIT CROPS RESEARCH & DEVELOPMENT CENTRE (FCRDC) - HORANA

The mandate of the Fruit Crop Research and Development Centre (FCRDC) is to develop appropriate technology for enhancing the productivity and production of fruit crops in the country. The FCRDC gives a special emphasis on the crops adapted to the low country wet zone (LCWZ). The present research programs are focused on relevant aspects, particularly on the development of high yielding good quality fruit crop varieties, improved crop management practices, crops protection, plant nutrition, organic fruit culture and planting material production. The Centre also works on research and development activities on vegetables adapted to the conditions of Low country wet zone in fulfilling the needs of the farmers in the region.

BUDGET

Annual allocation and expenditure under different votes are given in Table 2.2.1.

Table 2.2.1.1: Annual Budget – 2008 (Rs.)

Item No	Name of the Project	Allocation	Expenditure
1.	Capital expenditure	2,256,206.00	2,044,397.60
2.	Recurrent expenditure	5,116,000.00	4,709,243.18
3.	Domestic Food Production drive (“API WAWAMU RATA NAGAMU”)-Mangosteen	1,100,000.00	562,310.86
4.	“Api Wawamu Rata Nagamu” Program 2008	1,000,000.00	788,759.97
5.	Crop zoning program – 2008	1,700,000.00	1,672,321.97
6.	Development of technology for fertility management in organic farming	470,000.00	133,190.72
7.	Promotion of production & usage of organic fertilizer Improvements to the laboratory facilities	2,500,000.00	1,584,947.21
8.	Promotion of production & usage of organic fertilizer Cultivation of green manure crops & production of organic manure	1,200,000.00	760,202.63
9.	Domestic Food Production Drive (“API WAWAMU RATA NAGAMU”)- Okra	307,500.00	277,409.57
10.	Domestic Food Production Drive (“API WAWAMU RATA NAGAMU”)- Citrus	100,000.00	52,354.72
Total		15,749,706.00	12,585,138.43

PROGRESS

CROP IMPROVEMENT

Selection of Banana varieties from local germplasm

Selected 11 most promising accessions (Embul 1, Kolikuttu 2, Seeni kesel 4 and Suwadel 4) have been maintained at FCRDC, Horana. They have been identified to include in NCVT trials. Selected 4 Suwadel accessions are being further evaluated at the same place.

Varietal development of Passionfruit

Passionfruit varietal development program was initiated in 2006 at FCRDC, Horana with the objectives of developing high yielding, good quality passionfruit varieties through selection and hybridization. Nine yellow passion fruit accessions

were collected, evaluated and most promising three accessions were selected according to the fruit size, fruit weight, juice content and juice quality.

These accessions were multiplied vegetatively to conduct a replicated trial. One selected female was hybridized using six compatible male parents. 25 plants each from 6F₁ progenies are being evaluated to estimate F₁ progeny performances.

Development of hybrids of Guava

Released four guava hybrids namely Horana Sweet, Lanka Giant, Red Giant and Horana Rosy in 2008. These hybrids yielded 35-52 MT/ha from the second bearing year. They also bear large fruits and have good taste.

Development of hybrids of Papaya

Stability of the characters of the two developed inbred lines in G5 was confirmed. Therefore, these two lines will be used as parents for the production of Papaya hybrids in future programmes.

Selection of promising Rambutan varieties

Nine accessions selected from existing population at farmer fields were established at FCRDC, Horana and are being evaluated for growth and fruit characters. According to growth and characters most of them showed similar growth rate but in leaf characters some differences were observed. According to the fruit characters two accessions were out – standing in taste.

Conservation and varietal improvement of mango

Ten exotic mango varieties (Carrie, Early gold, Irwin, Joe Welch, Kent, Mulgoa, Namdoc Mai, Pope summer, Sensation) have been planted in Cement Pots since September 2004 for conservation and for initiation of cross breeding program. Some quantitative and qualitative inflorescence characteristics of five accessions that flowered in 2008 were recorded. Percentage of hermaphrodite flowers showed a great variation among the accessions. Fruit set was occurred. Only in four accessions fruit yield was recorded. Variety, Willard had the highest number of mature fruits.

Selection of Promising Variety of Durian

A total of 4 durian (*Durio zebethinus*) accessions collected from different areas in Sri Lanka including two Thailand accessions are being evaluated to select well adapted, high

yielding varieties with good quality. Seven accessions flowered after four years of planting. Two promising accessions were selected (HOD 10 and HOD 20)

Variety development in citrus Spp.

Variety development program on citrus was initiated in 2002 with the objectives of developing high yielding good quality citrus varieties (mandarin, Orange and Pummelo) through selection hybridization and mutation breeding.

At present 27 mandarin (*Citrus reticulata*) 11 heen naran (*Citrus crenatifolia*) and 09 pumelo (*Citrus grandis*) accessions are being evaluated. Three promising mandarin accessions (Hocr 19, Hocr 25 and Hocr 23) which gave high yields (34, 10 and 6 kg/tree/season respectively) with good quality and eight citrus germplasms which introduced from Japan in 2007 under Ehime/Sri Lanka Agriculture exchange program were planted and are being evaluated at eight locations.

Mutation breeding program started in 2008 with highly adaptable high yielding citrus spp viz. Nasnaran (*Citrus japonica*) to improve its fruit quality characters with less seeds. Six hundred bud woods irradiated by gamma rays are being evaluated and a few desirable mutants were identified for further evaluation.

Selection of Promising Avocado Varieties

Twenty four Avocado accessions collected and established at FCRDC, Horana are being evaluated. Out of 24 accessions established in 2002, one local accession (H OAVA) gave fruits for second time at 61 months after establishment. Accession number 10 planted in 2003 gave 1st harvest at 50 months after planting.

Germplasm collection, Conservation, Characterization and Evaluation of Under utilized fruit crops

This program was initiated in late 2002 and by the end of 2008, 303 accessions were established in the field gene banks in an area of 3.73 ha. These gene banks comprised with 24 accessions of Beli, 47 accessions of citrus. 05 accessions of Lavulu, 04 accessions of Lovi, 32 accessions of Jak, 17 accessions of Weralu, 22 accessions of Uguressa, 33 accessions of Goraka, 13 accessions of Gaduguda, 35 accessions of Durian, 17 accessions of Sapota, 14 accessions of Anona, 26 accessions of Wax apple, 07 accessions of Strawberry guava, 07 accessions of Wild guava, Characterization and Evaluation is being continued to identify promising varieties for recommendation.

CROP PROTECTION

Development of control method to minimize fruit rot diseases of guava through plant Extracts

An experiment was conducted at the Fruit crop Research and Development Centre, Horana to study the fungi associated with the fruit of guava and to evaluate several control measures. The most common pathogenic fungi isolated were *Colletotrichum gloeosporioides*, *Pestalotiopsis psidii*, *Botryodiplodia theobromae* and *Phomopsis psidii*. Pathogenicity of fungi was confirmed and the symptoms of each pathogen were recorded as Anthracnose, Canker, Soft rot and Styler end rot respectively.

The treatments consisted of a control, three plant extracts, Cinnamon oil and recommended levels of three fungicides. The efficacy of leaf extracts *Cinnamomum zeylanicum* (Cinnamon), *Mimosa Pudica* (Nidikumba), neem seed extract and cinnamon oil and selected fungicides in suppressing the growth of pathogenic fungi were evaluated in vitro.

Cinnamon leaf extract showed the highest reduction of growth of all four fruit rot pathogens. Neem seed extract reduced the growth of mycelium of anthracnose and canker pathogens. Mimosa leaf extract had moderate effect on the reduction of some pathogenic mycelial growth while the cinnamon oil had little effect. Chlorothalonil reduced the growth of anthracnose, styler-end rot and soft rot pathogens while Carbendazim effectively controlled the styler-end rot pathogen (more than 80% reduction of growth of mycelium). None of the fungicides controlled the canker pathogen. Thiovit had shown the moderate effect on reducing the mycelial growth. Cinnamon leaf extract can be used to control all four fruit rot diseases compared to fungicides. Neem seed extract can be used to control anthracnose and canker diseases.

The plant extracts do not produce health hazards to human beings and in addition it is environment friendly, therefore it can be successfully applied to reduce fruit rot of guava.

Development of Integrated pest management package for guava

- **Evaluation of insecticides against leaf eating caterpillar**

Different insecticides were evaluated against leaf eating caterpillar in guava (Horana Red) and among them the trees which

were sprayed with Tebufenozide 200 g/l EC showed lowest damage percentage and larval incidence.

- **Evaluation of guava varieties against leaf feeding insects**

Five guava varieties, Kanthi, Pubudu, Horana Red (HR), Horana White (HW) and Bangkok Giant were evaluated against leaf feeding insects, mainly beetles and caterpillars at FCRDC, Horana. Results revealed that "Pubudu" and "HW" are less susceptible, whereas variety "Kanthi" showed the highest damage of leaf feeding insects.

- **Population studies of fruit flies and their common species**

The three year study revealed that the fruit fly population was highly fluctuated over the year and it became to peak from March to May, may be due to availability of fruits as sources for oviposition. *Bactrocera kandensis* and *B. dorsalis* were the most common fruit fly species and *B. correcta* and *B. zonata* were also present among the population.

- **Effect of time of bagging on fruit fly management**

The experiment showed that the bagging should be done between 2 ½ -3 months after flowering when fruit diameter about 4-6 cm.

Development of pest charts

This helps for timely identification of insect pests in the crop for proper management. Charts were developed for citrus and guava through observation and information collected. About 10 major insect pests were identified and displayed on chart with pictorial demonstration of damage and insects.

Insect pests in under utilized fruit crops, Uguressa, Veralu and Gaduguda

There are 12 Veralu accessions, 11 Gaduguda accessions and 22 Uguressa accessions at FCRDC, Horana. Evaluation study of accessions against their major pests is being carried out in these three fruit crops. Few major insects were identified yet, Veralu – leaf roller and leaf eating caterpillar (unidentified), Gaduguda – leaf eating caterpillar (*Cyclosia panthana*) and Uguressa – leaf eating caterpillar (*Atella phalantha*)

SOIL NUTRIENT MANAGEMENT

Study on Vermi composting

Vermicomposting at two different moisture levels were tested. Reduction in earthworm population during vermicomposting was observed when vermifood, as cattle manure and grass at 1:1 ratio, was added only at the beginning. The reduction in earthworm population was lower by 7.5% at higher moisture level and the amount of vermicompost produced was higher by 3% at higher moisture level.

Internal browning of Banana

This disorder was observed in Kolikuttu and Ambul banana and experiments are being conducted to study the effect of boron and calcium on the problem. It was observed that foliar sprays of B (as 0.5% Borax) or Ca (as 0.5% Calcium Nitrate) applied at 3, 5, 7 months after planting reduced the problem by 80%.

Internal hardness of citrus

Internal hardness of citrus results in cork formation of the pulp and low juice content. This condition is suspected to be due to deficiency of boron. It was observed that only some varieties were susceptible to the problem. Fruit samples were analyzed for Micro and it was found that B content of affected fruits were lower (20ppm) than that of the normal fruits (74ppm). Experiments are being carried out to find out the suitable methods of application of B to minimize the problem.

Stem bulging of passion fruit

Stem bulging is the swelling and cracking of vines of passion fruit. Weakening and the death of the vine beyond the affected area occur due to this disorder. Nutrient deficiency is one of the suspected reasons for the problem. Among the nutrients tested, boron and calcium seemed to reduce the severity. Replicated experiments are being carried out for further studies.

CROP MANAGEMENT

Mangosteen - Performance of double root stocked Mangosteen grafts.

The possibility of enhancing the slow growth rate in Mangosteen grafts by provision of an additional root stock was studied

Double root stocked grafts showed higher vegetative growth performances over ordinary grafts and initiated fruits at the 3rd year after field

establishment with an average of 8-10 fruits per plant. However at the age of 4 years, they flowered profusely. However fruiting parameters was yet to be taken as fruit set was in progress.

Sour sop (*Annona muricata*) -

Identification of suitable root stocks and their impact on yield parameter

Evaluation of 7 root stocks indicated that sour sop can successfully be propagated on its own root stock sour sop and *A. reticulata* (Weli anoda). Further more, seed plants of sour sop and that of grafts on sour sop and *A. reticulata* initiated fruits by 15-22 months after establishment. There was no significant difference either in time taken for 1st bearing or total fruit yield (0.69-0.77 t/ha) in the second year. Thus, sour sop can efficiently be propagated by means of seeds or vegetative propagation.

Wax apple - Collection, Conservation and Evaluation

Out of 25 cultivars evaluated, 2 high yielding cultivars of high quality were identified. These were recommended for cultivation as "Lindula Green" and "Golden Pink".

Guava - Evaluation of seedling population of guava Var. Pubudu

Seed plants of Pubudu initiated flowers and set fruit early, at 4 - 4½ months after field planting. This shows similar fruiting behavior as in grafts of Pubudu. However yield performances of seed plants need to be studied.

Performance of Dragon fruit at Horana

The Third crop of dragon fruit was harvested from May to November 2008 with peak harvests taken in August and September. The yield of vines varies greatly (3.0kg to 29kg). Weight of harvested fruits ranged from 205g - 790g and number of fruits harvested per plant ranged from 5-58.

FRUIT DEVELOPMENT ACTIVITIES

Production of planting materials

During 2008 the centre sold 14,313 budded/grafted plants and 5243 seedlings of rambutan, mango, durian, jak, avocado, star fruit, sapodilla, garcenia, lime, mangosteen, jambu, lovi, annona, guava, orange, beli, weralu, mandarin, passion fruit, strawberry guava, wood apple, etc. for Rs. 19,84,010.00.

Crop Zoning Program - 2008

Establishment of fruit villages were initiated in 2005 in western province and the program was continued and extended to Ratnapura, Galle and Mathara district as "Crop Zoning Program". During this year 16 fruit villages were established comprising 10 mangosteen (1595 plants) 04 durian (725 plants), 26 Rambutan (488 plants) and 13 Guava (1030 plants) 1625 Jak, 200 Avocado and 700 Gaduguda by the end of 2008.

Training programs

The following training programs were conducted in 2008.

- Fifteen (15) programs on organic manure production, vermi composting and vermi wash were held with the participation of 297 trainees.
- Another 19 programs on fruit cultivation, crop protection and home garden were conducted for 373 trainees. Fourteen (14) special programs were conducted on cultivation of Mangosteen in 7 districts and 493 personals were trained.
- In addition to that, 12 training programs for school children and one training program for university students were conducted inclusive 1236 students and 59 teachers.

Farmer Advisory programs

- 68 disease samples received from farmers and extension officers were examined and cultured identified the diseases and recommendations were given for their control.
- 152 field problems submitted by farmers pertaining to pests and diseases, dragon fruit, durian and pineapple cultivation were attended during the year.

Development and Maintenance of established home garden

Different vegetable crops, herbs and fruit crops were grown in the garden throughout the year, pests and diseases were controlled by environmentally safe methods like cultural practices and application of Neem products. Farmers, school teachers, students and Agriculture extension officers visited the home garden.

Mass Media

Officers from FCRDC participated in 05 radio programs on fruit cultivation, pests and diseases and home garden.

PLAN FOR 2009

Crop Improvement

- Development of high yielding, good quality passion fruit cultivars through selection and hybridization
- Variety development of avocado through selection from local germplasm for table and industrial purposes.
- Development of promising durian varieties for commercial cultivation
- Development of high yielding good quality banana varieties through collection, evaluation and selection of banana germplasm.
- Selection of rambutan varieties from existing seedling population at farmer fields
- Development of hybrids of Guava (*Psidium guajava*):- Evaluation of promising hybrids at different agro-ecological regions. Continuation of the Project
- Collection of mango germplasm in WZ and IZ and selection of good quality Giraamba and Pettiamba and other promising varieties for cultivation in LCWZ & IZ
- Development of high yielding, good quality citrus varieties through selection, hybridization & mutation breeding
- Development of hybrid of papaya using newly developed inbred lines. (continuation)
- Exploration, collection, conservation, characterization and evaluation, and development of plant propagation techniques for under-utilized fruit species (Continuation)
- Development of hybrid varieties of okra with desirable characters
- Purity maintenance of varaniya green chilli variety.
- Breeder seed production of red tampala and spinach variety – yoda (continuation)

Crop Management

- Development of a crop management package for grafted durian cultivation (continuation)
- Development of flower induction techniques through horticultural practices and chemical application for off season production of Rambutan.
- Effect of plant density and pruning height on growth and yield of rambutan

- Growth enhancement in mangosteen grafts and seedlings through provision of an additional root system and decapitation
- Effect of decapitation and defoliation on crop regulation in guava
- Development and maintenance of the established home garden- continuation
- Effect of cutting height of the parent *Pseudostem* on yield and time of production of the following sucker in banana.
- Improvement of productivity in sour-sop through identification of a compatible root-stock and development of a suitable training and pruning systems.

Plant Nutrition and Organic Fruit Production

- Micronutrient studies to overcome disorders in selected fruit crops.
- Internal browning of banana.
- Stem bulging of passion fruit.
- Internal hardness of citrus
- Gamboge disorder of mangosteen.
- Study the effect of different sources and rates of potash fertilizer on marginal scorching and yield of Rambutan.
- Evaluation of vermiwash as a foliar liquid fertilizer for growth & yield of fruit crops (dragon fruit & passion fruit) & leafy vegetables.
- Effect of different organic material on vermicomposting.
- Testing effect of different levels of Eppawala Rock Phosphate (ERP) incorporated fruit peel waste compost (FWC) on growth and yield of *Capsicum frutescens* L.

Plant Pathology

- Management of fruit rot diseases of guava through fungicides and herbal extracts in the field.
- Management of guava wilt disease through *Trichoderma viridii*.
- Development of integrated disease management package through chemical, biological, and using resistant root stocks to control fusarium root rot of passion fruit.
- Control of phytophthora root disease in durian.
- Studies on gall formation and scaly bark disease in sapota trees and budded plants in the nursery.

- Advisory services for farmers on disease diagnosis and control of popularly grown fruit crops, vegetables and other crops (flowers, bo-trees, root and tubers) in the wet zone.

Entomology

- Assessment of damage, study the biology and evaluation of control methods for Neem Mosquito bug (*Helopeltis antonii*) in guava
- Evaluation of botanical extractions against sucking insects in pineapple
- Studies on insect pest and their damages in rambutan
- Identify insects and their damage assessment in uguressa, Weralu and gaduguda

Pre & Post-harvest

- Value addition to underutilized fruits
- Improvement of quality and shelf life of guava by applying pre and post harvest techniques and treatments

Socio Economics

- Upgrade maintenance of database on fruit crops (Extent & production imports & exports retail wholesale & farm gate prices)
- Cost of cultivation of passion fruit at research level (FCRDC/Horana)

Development Program

- Establishment of fruit crop zones (Durian, Rambutan, Mangosteen, Jak, Guava) in western province, Galle & Matara district & Rathnapura districts and fruit villages on Avocado, Gaduguda, Pineapple.

Planting material production in fruit crops

Tissue culture

- Initiation of Tissue culture activities at FCRDC, Horana.
- Micropropagation of selected banana cultivars (Amban, Parakum (Sinikesel), Nadee and sweet orange - variety Bibile Sweet)

2.2.3 FOOD RESEARCH UNIT (FRU) - GANNORUWA

The Food Research Unit functions under the administration of Horticultural Crop Research and Development Institute (HORDI). The major tasks undertaken by this unit include research on post harvest technology, product development and quality evaluation of samples derived from crop improvement programmes and conducting technology transfer activities. The FRU also has collaborative programmes with other crop research institutes of the DOA, the provincial agricultural system, other government and non-government organizations and the private sector on technology development and transfer. In addition the Unit provides the necessary facilities and guidance for under-graduate and post-graduate students to conduct their research on diverse aspects of post harvest and processing technology.

BUDGET

The annual allocation and expenditure under different votes are given in Table 2.2.3.1

Table 2.2.3.1: Annual Budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Capital	712,700.00	686,362.75
Recurrent	1,077,000.00	935,889.00
Projects		
Project 1 118-2-3-20-2502 (FRU 1)	3,000,000.00	2,056,579.00
Project 2 118-2-3—20-2502 (FRU 2)	3,000,000.00	2,521,239.00
Project 3 118-2-3-20-2502 (FRU 3)	3,000,000.00	1,654,811.00
Project 4 118-2-3-20-2502 (PLP)	500,000.00	377,841.00
Project 5 118-2-3-20-2502 (FC) Jak	200,000.00	185,774.00
Project 6 118-2-3-20-2502 (FC) Mango	1,500,000.00	939,391.75
Project 7 118-2-3-20-2502 (Leafy vegetable)	100,000.00	7,500.00
Project 8 118-2-3-20-2502 (1) Root and tuber	250,000.00	17,500.00
Project 9 285-02-2-4-2502 (13 FRU)	196,000.00	171,787.00

PROJECTS

Project 1

Improve the facilities available at Hadabima Sale outlet at Gannoruwa and the Food Processing and Training Unit at ISTI Angunakolapelassa. under AWRN.

Project 2

Postharvest loss reduction through improved handling of fresh produce under AWRN.

Project 3

Upgrading small scale food processors to improve the quality of fruits, vegetables cereals under AWRN.

Project 4

Enhancement of Local Products under AWRN.

Project 5

Upgrading small scale food processing to promote Jak fruit and processing under AWRN.

Project 6

Mango Crop Development : Increasing production under AWRN.

Project 7

Increasing the Utilization of Leafy vegetables under AWRN.

Project 8

Introduction of processed products of Root and Tuber Crop under AWRN.

Project 9

Post harvest disease control of mango and banana through natural defence mechanism.

PROGRESS

Research

- Technology package to export leafy vegetables has been developed. Harvesting of leafy vegetables either in the morning or evening and precooling and packing them vertically increase the shelf life of them.
- Fruit blend yogurt has been developed. The technology required to mix 10% of mango juice to already prepared yogurt has been developed. Quality and safety of the product showed that the product can be stored for 7 days at refrigerated condition.
- Development of low sugar desert using Bael fruit. A desert has been prepared using ripe Bael fruit adding low sugar sweeteners. This product can be popularized among diabetic patients.
- Processing technologies have been developed for Dragon fruits such as fruit Drink (RTS) and Frozen Dragon fruit. Dragon fruit can also be preserved in sugar syrup. Quality and Organoleptic and keeping qualities have been studied in all above products. Products were highly acceptable by consumers.

- Minimal processing package for bell peppers has been developed. Shelf life of bell peppers can be extended up to 25 days by using shrink wrap packaging and storing at 8°C. 50% ripe sliced fruits with sealed shrink-wrap showed the best performance.
- Internal browning of pineapple can be reduced by split application of CaCl_2 on to immature fruits.
- Research on improvement of rice pudding is being continued to increase its acceptability and shelf life

Development Programmes

- Thirty six awareness programs to reduce post harvest loss of fruit and vegetables have been conducted for farmers, traders and agriculture related officers.
- Two thousand plastic crates have been purchased and 1000 has been distributed among fruit and vegetables traders.
- Narahenpita wholesale market was opened and all fresh produce come to the market using plastic crates.
- Corrugated fiberboard packages (2000) were purchased to be distributed among exporters to promote their quality of produce.

2.2.4 NATURAL RESOURCES MANAGEMENT CENTER (NRMC) - PERADENIYA

The Natural Resources Management Center (NRMC) strives to optimize use of land and water resources on a scientific basis to improve national productivity in a sustainable manner. Activities of this centre include research on soil conservation and watershed management, land suitability evaluation, crop monitoring and forecasting, agro-meteorological and climatic change studies, productivity enhancement, soil and water quality studies and on - farm irrigation management. Other responsibilities of the centre are maintenance of the agro-meteorological observation network of the country, implementation of the Soil Conservation Act, technology dissemination and provision of technical assistance to clients on related subjects.

BUDGET

Table 2.2.4.1: Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Capital	1,324,000.00	664,636.00
Recurrent	1,316,500.00	1,179,135.78
Projects:		
CZP	300,000.00	132,577.30
CWRCP	300,000.00	290,141.51
WHP	500,000.00	257,455.05
ISCAP	1,600,000.00	1,315,239.29
SPEDP	198,100.00	165,447.46
OMPUPP	42,500.00	22,500.00
Total	5,581,100.00	4,027,132.39
CZP	-	Crop Zoning Project
CWTCP	-	Crop Wild Relatives Conservation Project
WHP	-	Water Harvesting Project
ISCAP	-	Implementation of Soil Conservation Act Project
SPEDP	-	Small Plantation Entrepreneurship Development Project
OMPUP	-	Organic Manure Production and Use Promotion Project

PROGRESS

RESEARCH

Variations of soil temperature in Non Calcic Brown soils

In spite of its physiological importance, studies on soil temperature are meager on NCB soils. The flow of heat through the soil influences

the plant growth by affecting various processes such as seed germination, root development, water and nutrient absorption, nutrient losses, microbial activity, and crusting and hardening of soil etc. Soil temperature also affects pesticide degradation rates in the soil. Therefore, how the soil temperature varies at different soil depths, especially in climatic regions where high ambient temperature prevails during most of the year was studied. The study was undertaken for NCB soils in DL2b agro-ecological region where the potential occurrence of soil temperature is high. Daily soil temperature values measured at 5, 10, 20 and 30 cm depths for 10 years at the Aralaganwila agro-meteorological station were computerized. Analysis is in progress to ascertain as to how the soil temperature regime varies down the soil profile through out the year and to look for any possible relationship with other weather parameters such as ambient temperature and rainfall.

Study on impact of climate change on Crop Wild Relatives

Crop Wild Relatives (CWR) are an important source of genetic diversity for crop improvement. However, the survival of some of these Wild plant species could be threatened because of climate change, in particular to increasing ambient temperature. Hence, the vulnerability of some selected CWRs in Sri Lanka, namely wild relatives of *Oryza*, *Vigna*, *Musa*, *Cinnamomum* and *Piper* species to climate change was evaluated. This study was carried out with the financial assistance of CWRs project of UNEP/GEF program. Preliminary analysis has shown that almost all the CWRs studies are surviving in the local environment at a temperature regime of upper margin in their optimum temperature range for plant growth. Increasing ambient temperature trend of about 0.01 to 0.03 °C per year range that the country currently experiences is likely to increase the vulnerability of CWRs to climate change.

Development of recommendations for enhancing productivity in irrigated rice in the dry zone: A case study at Thuruwila village

A field experiment initiated in 2006 was continued in 2008 to identify the causes for low rice yield and mitigation options for enhancing yield of rice in the dry zone. In 2008, soil found to be deficient in Zn, Cu and S were applied with zinc sulfate, copper sulfate and ammonium sulfate. A 30 % yield increase was observed in demonstration

plots. In addition, training on compost making and partial burning of rice husk for soil application were conducted. Quality seeds of paddy were distributed among farmers. Further, a study tour was arranged for farmers to visit the Rice Research and Development Institute, Batalagoda. This study will be continued for consecutive five years.

Development of recommendations for enhancing agricultural productivity in Kandyan home gardens: A case study at Wattappola village

A field experiment initiated in 2007 was continued in 2008 to identify measures for enhancing productivity of fruits and vegetables in Kandyan home gardens. In 2008, application of essential plant nutrients, adoption of soil and water conservation measures and addition of dolomite were practiced. In addition, planting materials of fruits (Mango, Rambutan, Durian and Avacado) were provided to home gardens. Structures were provided for practicing over knee cropping technologies in vegetables for selected farmers. This study will be continued for consecutive five years.

Development of recommendations for sustainable management of land resource base in irrigated rice in the dry zone: A case study at Kadurugasdamana, Rajanganaya and Nelliya villages

This study was initiated in 2008 to develop recommendation on soil management at farmer plot level for irrigated rice in the dry zone. Soil survey was completed. Soil samples were collected on a 100 m grid and analyzed for pH, electrical conductivity, available phosphorus, exchangeable potassium, available zinc and copper, and organic matter. Spatial variability maps were prepared for soil parameters in the Kadurugasdamana site. Based on spatial variability maps, site specific soil management recommendations were prepared and given for 150 farmer plots in the village.

TECHNOLOGY DISSEMINATION

Trainings on soil and water conservation, and related areas

- Ten trainings on soil conservation, watershed management and land management were conducted. A total of 490 officers/farmers participated.
- Six one day trainings were conducted on rainwater harvesting in coconut lands for Coconut Cultivation Officers in Coconut Cultivation Board and 165 officers participated.

Demonstrations on soil and water conservation

● **Soil conservation demonstration at Agriculture Park at Gannoruwa**

This demonstration established in 2004 was maintained with the aim of demonstrating presently available soil conservation and watershed management technologies for the benefit of different categories of end users in the country. Accordingly 516 day-to-day visitors of the park visited the site.

● **Soil conservation demonstrations at other locations**

Six demonstration sites established at the Angunakolapellessa Research Farm, Kundasale Agriculture School, Seethaeliya Research Farm, District Agriculture Training Centres at Ambepussa and Kuruwita, and Inservice Training Centre at Bindunuwewa were improved and maintained. Terraces, lock and spill drains, stone bunds and earth bunds were laid as conservation measures in these demonstrations. Various structures meant for conserving gullies were also laid.

Field programs

- Seven field extension programs were conducted on soil conservation at Medabedda, Walmoruwa, Dambawa, Salagama, Jambugaspiya, Mawathagama in Matale DS division and Uduweralla in Gampola DS division. 76 farmers were involved in the program.

Awareness programs

- Thirteen programs were conducted on soil conservation and natural resources management for school teachers in Kandy, Matale and Nuwara Eliya districts and 547 teachers participated in these programs.
- Two programs were conducted for provincial agriculture departments and 140 officers participated.

Radio programs

- Six radio programs were conducted on soil conservation, watershed management and water management.

Workshops

- A workshop was conducted on Water Quality and Rural Sanitation on the World Water Day 2008 with the participations of 60 department officers. Four technical papers were presented in the workshop.

Technical Assistance

One of the main activities of the centre is to provide expertise technical assistance for different clients and the centre provided the following during the year.

- Under the Crop Zoning Project, the activity entrusted to the NRMCM was to prepare maps indicating crop zones for selected priority fruit crops. The data with respect to locations were obtained through HORDI and those locations were mapped on Grama Niladhari Division basis. A report containing 22 maps indicating crop zones for each fruit crop with respect to the year 2008 was prepared.
- Further, mapping of potential areas for priority fruit crops at a detailed scale was started. Existing distribution of each fruit crop and their approximate boundaries were studied through field activities and these were interpreted in terms of soils and ecological suitability. During the above exercise, series level soil distribution, rainfall amount and distribution patterns, elevation, existing landuses etc. were considered. Subsequently, potential areas for fruit crops such as Rambutan, Papaya, and Banana were prepared on provincial basis. However, this exercise is continuing and final output is yet to be prepared.
- Preparation of maps for the Smallholder Plantations Entrepreneurship Development Project indicating landuse recommendations for smallholder plantations in selected Grama Niladhari Divisions of Mid Country region was started. Accordingly, 200 ha were surveyed and maps indicating crop diversification recommendations were prepared.
- Maps showing the cultivated extent of fruits and flowers were prepared using the data of the Census and Statistics Department and provided to Socio Economic and Planning Centre, Department of Agriculture for the report 'Enterprise Budget of Fruits and Flowers'.
- A lift irrigation system and a water supply system for Udaradella seed farm, and a sprinkler irrigation system for Mahalluppallama seed farm were designed.
- Technical assistance was provided to the Provincial Department of Agriculture, Western Province to establish soil conservation measures in a half of 5 ha crop demonstration land at Homagama farm together with storage structures to catch up run off

water. The program is still continuing and the remaining work will be completed in 2009.

- Technical assistance was provided to carry out field activities in rainwater harvesting project implemented in Hambantota and Ratnapura districts by respective provincial departments.

OTHER ACTIVITIES

Implementation of Soil Conservation Act

- The work on getting approval for the new amendment act was continued by providing necessary information to the concerned parties.
- The work on developing new regulations was completed. Accordingly a draft order and regulations were finalised and submitted to the Ministry of Agriculture Development for further actions.
- A program of awareness creation on Soil Conservation Act was undertaken. Accordingly, 18 Agrarian Development Centre (ADC) level awareness sessions were conducted in selected ADC in Badulla and Kegalla districts. 296 field level officers from various government institutions and 283 farmers participated in this program.

Maintenance of database

The database on agro-climate, land and water resources was maintained to provide information to various clients.

Maintenance of Agro-meteorological observation network

Agro meteorological observation network consisting of 11 agro-meteorological observation stations scattered throughout the island was maintained according to the WHO standards.

Representations in technical committees

During the year 2008, the staff of the NRMCM served in the followings as representatives of DOA.

- Environmental Monitoring Committees of National Environmental Authority for Upper Kothmale Hydropower Project
- Committees for granting Environmental Clearance for various projects i.e. land blocking out projects (30), metal quarries (10), hotel projects (7), irrigation projects (Moragahakanda, Kaluganga and Handa Oya), mini hydropower projects (15) and timber harvesting projects (40).

Publishing a text book on “Rainfall & agro-ecological regions of Sri Lanka”

A text book in Sinhala titled “Rainfall and agro-ecological regions of Sri Lanka” with 130 pages and 7 colored maps was published as a Department of agriculture publication. This book serves as a user-guideline for the Agro-ecological Map of Sri Lanka which was published in 2003.

PLAN FOR 2009

Research

- Development of recommendations for enhancing productivity in irrigated rice in the dry zone: A case study at Thuruwila village
- Development of recommendations for enhancing agricultural productivity in Kandyan home gardens: A case study at Wattappola village
- Development of recommendations for enhancing productivity in large scale rain-fed maize-sesame rotation in the dry zone: A case study at Mawathawewa village
- Development of recommendations for sustainable management of land resource base in irrigated rice in the dry zone: A case study at Kadurugasdamana, Rajanganaya and Nelliya villages
- Preliminary investigation on chronic renal failure among farmers in the dry zone
- Evaluation of impact rainwater harvesting techniques on soil moisture storage and distribution
- Study on salinity status in selected irrigation projects
- Identification and mapping of spatio-temporal variability of seasonal characteristics in the Dry and Intermediate Zones
- Mapping of moisture availability indices (MAI) and agricultural suitability zones for agricultural planning

- Study on variations of soil temperature in Non Calcic Brown Soils
- Study on impact of climate change on Crop Wild Relatives
- Study on recent climatic variations in the Up Country of Sri Lanka

Technology dissemination

- Training of officers and farmers on soil and water conservation, and natural resources management
- Demonstration of recommended soil conservation measures
- Workshop on rainwater harvesting for agriculture (World water day workshop)

Technical assistance

- Preparation of soil conservation and storm water drainage management plans for development projects
- Provision of technical assistance on soil and water conservation to various agencies

Other

- Implementation of Soil Conservation Act
- Maintenance of database on agro climate, land and water resources
- Maintenance of agro meteorological observation network
- Representation in technical committees such as Committees for Granting Environmental Clearance for Development Projects and Environmental Monitoring Committees

2.2.5 REGIONAL AGRICULTURAL RESEARCH AND DEVELOPMENT CENTRE (RARDC) - BANDARAWELA

The RARDC, Bandarawela, with its satellite stations, at Rahangala and Maduruketiya and experimental farms at Bibile and Muthukandiya, conducts need based research and development of appropriate technologies to cater the farmers in the Uva Region and Balangoda Segment of the Sabaragamuwa Province. Its mandate area includes agro ecological regions of IU₂, IM₂, IM₃, WM₃, IL₂, and WM₃. Other than the research activities carried out during the period under review, the centre handled many agriculture development programmes using the funds provided from the Ministry of Agriculture and Agrarian Services. This programmes included production and distribution of high quality planting materials of Pear, Citrus, Avocado, Mango and Potato. The main target of this programmes are to establish production zones of each crops.

BUDGET

The annual allocation and expenditure under different votes are given in the table 2.2.5.1.

Table 2.2.5.1: Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Recurrent	5,023,800.00	4,949,722.12
Capital	1,941,000.00	1,405,817.96
Projects		
Organic fertilizer production	2,100,000.00	955,298.03
Citrus virus indexing	560,000.00	254,013.62
Organic vegetable production	600,000.00	319,204.05
Crop Zoning	1,940,000.00	1,506,475.21
Api wawamu-Rata nagamu	4,150,000.00	2,848,639.37
Local food production programme	475,000.00	418,132.20
Breeder seed production programme	400,000.00	306,568.26
Crop Leader (Potato)	500,000.00	285,327.02
Total	17,689,800.00	13,209,197.84

PROGRESS

Research and development activities carried out during the year under review were focused on mandated crops which include bean, carrot, cabbage, tomato, sub tropical and temperate fruit crops, as sweet orange, mandarin, apple, pears, peaches, and strawberry and floricultural crops of roses, gerbera, chrysanthemum, anthurium, aster, Madonna lily, carnation and super daisy.

CROP IMPROVEMENT

- Eighty two Chrysanthemum accessions collected from Badulla and Nuwara Eliya Districts are being maintained at RARDC, Bandarawela for future studies. From these, 22 accessions were identified for cut flower production.
- Selected superior lines (13) of Gerbera were multiplied to distribute among farmers.
- Temperate fruit crops viz; Apple, Peach, Pear, Chinese guava, Nectarine, Avocado Carombola etc; mother plants are maintained at RARDC research field.

AGRONOMY

- Experimental results revealed that maximum yield from Capsicum can be obtained using 30 x 10 cm inter and within row spacing. This spacing provided pod yield of 18.26 mt/ha.

- Spacing of 40 x 30 cm is identified as the most suitable for cut flower production in Gerbera cultivation.
- It was observed that, early, high quality and uniform flowering can be obtained using rotted shoot tips as planting materials in *Chrysanthemum*.
- Density of 11.11 plants/m² is selected as most appropriate for the production of cut Madonna lily (*Lilium longiflorum*)

- Pinching of terminal buds four weeks after planting can be used to produce more flower bunches as well as good quality flowers.
- In organic vegetable cultivation weed management is one of the biggest problems. An experiment was conducted to evaluate the suitability of different locally available mulching materials for weed management in capsicum cultivation. It was found that Straw, Straw + newsprint layers or seven layers of newsprint can use to manage weeds effectively.
- Initial study revealed that soft and hardwood cuttings are equally suitable for propagation of Pear.

PLANT PROTECTION

- A laboratory and greenhouse experiment was conducted to evaluate the response of commercial potato varieties to Soft Rot (*Erwinia* spp.) diseases. Twenty six varieties were evaluated and it was found that variety "Hillstar" showed good tolerance against the disease however; popular varieties Desiree and Granola are highly susceptible.
- Root and collar rot (*Fusarium oxysporum*) of Bush bean can be effectively reduced by the application of *Trichoderma harzianum* in to the planting hole before seeding.
- An experiment was conducted to study the application of $\text{Ca}(\text{NO}_3)_2$ as a fertilizer for potato cultivation to reduce the soft rot disease. First season results revealed that, it has some positive effect in reducing the disease problem.

TISSUE CULTURE

- Murashige & Skoog (MS) medium supplemented with 0.1 mg/l Naphthalic Acetic Acid (NAA) and 1 mg/l Kinetin is selected as the best medium for callus induction from petal portions of ray and disk florets of Chrysanthemum.
- Best medium for callus induction from leaf disks of Gerbera is MS supplemented with 4 mg/l NAA and 0.4 mg/l Benzyl Aminopurine.

SPECIAL PROJECTS

There were many special projects have been conducted to uplift the living standard of farmers during the year under review. Most of such projects were funded by the Ministry of Agriculture and Agrarian Services.

Api Wawamu, Rata Nagamu Programme

- Nearly 15 ac. of uncultivated land at RARDC, Bandarawela have been cultivated with fruits and vegetables.
- Orange mother plant orchard has been established with 100 plants at the Research Centre.
- Ten thousand Philippine Red Lime seedlings are raised for the production of budded Orange plants.
- A programme of small scale seed potato production in farmers fields have been continued during the year 2008. Under this programme, 2600 in-vitro plants were produced to obtain the disease free RSC and Mini tubers. Nearly 42,000 RSC and Mini tubers have been produced and 41,500 were distributed among 50 farmers to produce their own basic seeds. Two thousand potato mother plants were issued to the net house at Keppetipola, which is maintained under the Provincial Department of Agriculture, Uva, to produce RSC for farmers.

SERVICES

Breeder seed production

Produces DOA-SCS certified breeder seeds of bean varieties Keppetipola nil (75 kg.), Balangoda nil (40 kg.), Sanjaya (15 kg.) and Wade (15 kg).

Soil test based fertilizer recommendation programme

Ninety five soil samples received from the farmers of Uva province were tested and fertilizer recommendations were given accordingly. Other than that, 125 samples were tested for research purposes.

TECHNOLOGY TRANSFER ACTIVITIES

- Officer of the RARDC participated in 04 PTWG meetings held in Uva and Sabaragamuwa Provinces. They also provided technical training to extension officers in pre-seasonal training programmes.
- Conducted several training programmes for farmers on cultivation of potato, pear and avocado. Some of those training were held at farmer fields.
- Provided plant protection advices to farmers who cultivate vegetables, fruits, flower crops and potato.

- Conducted training programmes for university students (120), and Scholl children (1500).
- Presented research papers on International potato symposium (three papers), ASDA 2008 (one paper) and national Symposium 2008, University of Ruhuna (four papers).

Seminar programme

Officers of the RARDC delivered 06 seminars based on new research findings during the year.

Foreign training

Three officers at RARDC, Bandarawela participated training programmes in Japan, India and Sweden during the year under review.

PLAN FOR 2009

Vegetables

- Development of high yielding Bean varieties with wide adaptability.
- NCVT & VAT on Pole bean and Tomato.
- Evaluation of different mulching materials for cabbage and capsicum production under organic farming.
- Plant density studies on Capsicum.
- Organically acceptable growth media studies on Capsicum in poly-tunnels.
- Evaluation of different pruning methods for Cherry Tomato production under poly-tunnels.
- Selection and evaluation of new Carrot lines.
- Variety evaluation of Cauliflower

Seed production

- Breeder seed production of bean varieties Keppetipola nil, Balangoda nil, Lanka Butter, Wade and Sanjaya.

Potato

- Production of quality seeds through Rooted Stem Cuttings.
- Intercropping studies with maize.

Plant Protection

- Fungicides and insecticide screening for disease and pests of vegetables, fruits, potato and Flower crops.
- Testing of Ca based fertilizer mixtures to reduce soft rot disease in potato

- Identification of effective soil sterilization methods for container media in tomato cultivation in poly-tunnels.
- Studies on White rust (*Puccinia horiana* Henn.) disease in Chrysanthemum (*Chrysanthemum morifolium*)
- Determination of the effectiveness of new chemicals to control Citrus rust mites & Scale insects

Floriculture

- Evaluation of different growing media with and without soil for the production of cut Gerber.
- Plant spacing studies of Super Daisy.
- Post harvest studies of Super Daisy.

Tissue culture

- *In-vitro* propagation of Gerbera using different explants.
- Protocol perfection and planting material production of Anthurium through indirect organogenesis.
- Planting material production of Potato, Anthurium, Madonna lily, Oriental Lily and Gerbera through tissue culture.

Soil Science

- N fertilizer recommendation for seed potato production
- Fertilizer management package for shot age cauliflower varieties.
- New low cost soluble fertilizer formula for cultivation of crops in protected system based on soil media
- IPNS package for citrus, tomato and bean
- Fertilizer management package for carrot and tomato cultivation in organic farming

2.2.6 REGIONAL AGRICULTURAL RESEARCH & DEVELOPMENT CENTRE (RARDC) - MAKANDURA

The Regional Agricultural Research and Development Centre (RARDC) at Makandura caters to the agricultural research and development (R & D) needs of the Gampaha, Kurunegala and Puttalam districts. The two Agricultural Research Stations (ARS) at Kalpitiya and Vanathavilluwa, the four Adaptive Research Units (ARU), at Tabbowa, Inginimitiya, Wariyapola and Walpita and the one Horticultural Research Farm (HRF) at Walpita, come under the purview of the RARDC, Makandura. These stations / units strengthen the R & D network in handling location specific R & D programmes. While catering to the R & D needs based on national priorities in the RARDC network of the Department of Agriculture (DOA), research efforts are being also directed at the specific needs of the Provincial Councils. The Centre has also established linkages with the other Institutes and Centres of the DOA and outside organizations such as the Faculty of Agriculture and Plantation Management, University of Wayamba, Makandura, Lanka Phosphate Ltd., Industrial Technology Institute (ITI) etc. to carry out commodity and factor research and extension and communication.

The R & D activities of the centre are focused mainly on developing and integrating technologies for coconut based cropping system to sustain crop productivity in the coconut lands. The technologies are developed for the mandated fruits, vegetables, root and tuber and condiment crops. The other areas of R & D focus are compost production, organic farming, vegetable Breeding and breeder seed production, fruit crop planting material production, farmer-field crop productivity demonstrations, on-farm trials, soil-test based fertilizer recommendation programme, Provincial Technical Working Group (PTWG) focused farmer-problem driven research, location specific research activities etc.

BUDGET

The budgetary allocations and expenditures under different votes are presented in the Table 2.2.5.1.

Table 2.2.5.1: Annual budget - 2008 (Rs. million)

Vote	Allocation	Expenditure
Capital	2.629	1.337
Recurrent*	3.650	3.140
Council of Agriculture Research Policy	0.243	0.185
Organic Farming for Export	0.900	0.945
Crop Zoning	2.700	1.772
Eppawala Rock Phosphate	0.062	0.055
Production of Compost & Promotion of Integrated Plant Nutrient System	23.00	9.085
Special Crop production training	2.000	0.667
Apiwawamu Ratanagamu	5.400	3.512
TOTAL	40.584	20.698

* Permanent staff salaries are not included.

PROGRESS

RESEARCH HIGHLIGHTS

Soil science

- Single super phosphate prepared using local Eppawala rock phosphate could be used as a source of Phosphorus for vegetable cultivation.
- Efficient and effective methods of compost production technologies were developed.
- A number of packages were developed for vegetable cultivation under the organic farming system.
- Integrated use of organic and chemical fertilizers were identified as a most suitable soil fertility management practice to achieve high yield as well as to maintain good soil fertility.

Fruit Crops

- Seenikesel "Marthamalu" variety was selected as a promising cultivar.
- New pomegranate variety was selected as a promising cultivar with high fruit quality.
- It was found that ability of storage of fruit-lets of pomegranate in sealed polythene bags up to 2 weeks under low temperature.
- Seedless mango variety was selected.

Under utilize fruit crops

- New grafting method was successfully developed for Garcinia and those plants produced fruits within 3 – 4 years compare with normal plants.
- Wedge grafting was found as successful method to produce grafted tamarind.
- Wedge grafting method was successful to produced grafted jack plants on root stock of vela or varaka

Vegetable Crops

- Selected and purified 3 different pumpkin lines of A,B,C from local pumpkin variety. Purified Ruhunu variety for further breeding purposes.
- Produced green chilli F₁ hybrid
- Considering yield parameters selected 45 promising lines for further evaluation.
- NCVT – Tomato out of eight tomato varieties, Maheshi was showed the best performance in intermediate zone. Therefore, it was selected best tomato variety for intermediate zone.

- NCVT – Brinjal out of 6 treatments, variety Anjalee showed best performance in intermediate zone. It was selected best variety for intermediate zone.

Roots & Tuber crops

- New plant management package was developed for cassava to increase the tuber and stem cutting yields.
- Sweet potato yield was increased significantly by application of 3 new fertilizer mixtures (N:55 P:110 K:120)

Pathology and Mushroom Division

- Control of red rust and white rust disease in Mukunuwenna (*Alternanthera sessilis*) using garlic spray under the organic farming system.
- Introduced a new technology package for yield improvement of straw mushroom.
- Introduced a new growing media for oyster mushroom.

Floriculture

- Shade level 85% could be recommended for healthy and better growth of anthurium under sunny day.
- Combination of disinfected 5 mm size coconut husk chips and compost in the ratio 2:1 is the best alternative growing media for anthurium cultivation.
- Incorporation of compost when application of granular or controlled release fertilizer improves growth of anthurium on coconut husk chips growing media.
- Protocol development for Anthurium

PLANTING MATERIAL PRODUCTION

Table 2.2.5.2: Planting material production - 2008

Institute	Plants Sold	No. of plants
Horticulture Farm – Walpita	Rambutan (Budded)	6342
	Mango (Budded)	3059
	Guava (Budded)	117
	Jak (Budded)	676
	Sapadilla	29
	Others (Budded)	2657
	Lemonine	394
	Others	590
	Rooted cutting plants	210
	Seedlings	2393
ARS -Kalpitiya	Crop Zoning - Pomegranate	5000
	Apiwawamu Ratanagamu- Pomegranate	5147
	- Grapes	654
	Guava	28
	Papaya	132
RARDC-Makandura	Crop Zoning - Pineapple	57260
	- DragonFruit	1782
	Idda(Stem cuttings)	200
	Pichcha(Stem cuttings)	100
	Mango (Budded)	589
ARS-Eluwanulama	Orange (Budded)	188
	Lemonime	390

SOIL TESTING

- Twenty samples received from farmers in the region were analysed and site- specific fertilizer recommendations were given.

- 01 field day of floriculture for 93 farmers and 01 officer .
- 10 field days for School children
- 02 field days for farmers

TECHNOLOGY DISSEMINATION

Training Programmes

Table 2.2.5.3: Training programmes conducted in 2008

Topic of the training Programme	No.of Programmes	No. of Participant
Compost & Organic farming	247	12,344
Mushroom Cultivation	05	246
Pineapple cultivation	03	69
Home garden	17	764
Foriculture	05	265

Field days

- 06 field days of compost production for 280 participant 197 officers and 83 university students separately.

Table 2.2.5.4: Advisory services conducted in 2008

Field	No.of advisory during the year 2008
Pineapple	13
Dragon fruit	44
Banana	04
Root and tuber	02
Pomegranate	01
Ginger	07
Green chilli	02
Papaya	03
Rice	04
Compost	97
Vermi Compost	02
Vegetable	05
Floriculture	02
Pathology	21
Fruits	02
Entomology	02
Mushroom	06

Seminars conducted in 2008

- Production of Compost Dr. J.D.H. Wijewardena, D.D.R. on 31-01-2008
- Leave System of Government officers , W.A.Matilda Administration Office on 27-02-2008
- Cryopreservation of Plant Genetic Resources Mr. W.S.Priyantha, AMO. on 27-02-2000
- Ancient farming system for better livelihood Mrs. D.M.P.S.Dissanayake, PA on 27.02.2008
- Dragon fruit of 21 Century Mr. H.L. Dayananda, RO on 26.03.2008
- Bamboo Shoot Production , Mr. R.P.Nimal Gunarathne on 26.03.2008
- Effect of Bio Gold and Bio Phos , Mr. Piya Gunarathne, RO ,on 29.05.2008
- Contribution of Hybrid technology on increment of crop production in Sri Lanka, Mr. W.A.C.K.Wickramasinghe, PA on 29.05.2008

DEVELOPMENT WORK

Following construction works and development works were completed.

RARDC, Makandura

- Colour washed Lab 1,2 and 3 at Makandura
- Roof repairs ARU Wariyapola – Completed
- Colour washed circuit bungalow –Completed
- Kitchen for Circuit Bungalow – 80% completed
- Construction of Mushroom Unit -70% completed
- Construction of potting shed – Nearing completion

PLAN FOR 2009**FRUITS****Pineapple**

- Hybridization programme.
- Fertilizer studies
- Protocol development for hybrid pineapple
- Production of different size of pineapple fruits using hormones.
- Germplasm collection of pineapple

- Planting material production under Crop leader project

Banana

- Performance of tissue cultured plants
- Maintenance germplasm collection and characterization
- Organic fertilizer application
- IPNS studies

Mango

- Germplasm collection and evaluation

Pomegranate

- Hybridization programme
- Chemical fertilizer studies
- Comparison of pruning systems

Dragon fruit

- Fertilizer studies
- Organic farming studies
- Plant density studies

UNDER UTILIZED FRUIT CROPS**Garcinia**

- Chemical fertilizer response studies

Tamarind

- Growth performance studies
- Chemical fertilizer response studies

VEGETABLE RESEARCH

- Development of Pumpkin F1 hybrid
- Development of Green Chilli Variety
- Capsicum, Bitter gourd and Brinjal and Tomato NCVT trials
- Study the effect of Eppawala single superphosphate
- Organic fertilizer studies
- Studies on compost mixtures
- Broiler litter and broiler litter compost for substitution of chemical fertilizer
- IPNS studies

Plant Pathology

- Testing the effectiveness of bio-pesticides and botanical pesticides to control Anthracnose in chilli (*Capsicum annum*).

MUSHROOM

- Low cost spawn production method for oyster mushroom

- Testing of cultivation media for oyster mushrooms.
- Evaluation of new mushroom varieties

ROOT & TUBER CROPS

Sweet potato

- Chemical fertilizer studies
- Planting material production

Cassava

- Plant management studies to improve crop and stem yield
- Maintenance of germplasm
- Testing the effect of application of root inducing hormones on crop performances
- Planting material production

FLORI CULTURE

Anthurium

- IPNS and Fertilizer studies for improvement of quality and yield
- Evaluation of growing media
- Breeding Programme
- Malignance of Germplasm collection and breeding

Idda and Pichcha

- Fertilizer studies
- Germplasm evaluation

2.2.7 AGRICULTURAL RESEARCH STATION (ARS) - SITA ELIYA

Research and development activities of Agriculture Research Station, Sita Eliya, focus on productivity improvement of potato, up country vegetables, selected temperate fruit, floricultural crops and need based research for protected agriculture. This station is also responsible for producing initial planting material of Potato, Strawberry and Gerbera for the national requirement. In addition, provides training and technical advice to government farms, farmers and extension staff and students of different categories.

BUDGET

Allocations received and the expenditure incurred under different votes and projects are given in the table 2.2.7.1.

Table 2.2.7.1: Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Capital	1354800.00	857693.98
Recurrent	2558500.00	1605397.92
Crop Leader	3000000.00	1745531.01
Api wawamu- Rata nagamu	3200000.00	2763567.81
	200000.00	176803.00
Crop Zone	3600000.00	512358.13
Compost project		

PROGRESS

Tissue culture

- An experiment was carried out to identify the effect of age of *in-vitro* plants and the media composition on maturity and the performance of mother plants in net house
- Suitable medium to establish potato *in-vitro* mother plants to get highest number of good cuttings was Half Burnt Paddy Husk: Tea waste 1:1
- Age of *in-vitro* plants to get highest number of good cuttings was 5-6 weeks

Plant Breeding

- Five locally developed high yielding, late blight resistant / tolerant potato lines namely 99-02, 99-05, 99-06, 01-5-4 and 01-8-10 were selected for DUS Testing.
- Sixty one locally developed lines were evaluated for yield, late blight resistant/ tolerant and other desirable traits.

Agronomy

- Fifteen commercial potato varieties imported from Europe were evaluated for their yield performance and 5 varieties were found to be suitable for local conditions.
- Research has been initiated to find out a media for RSC and mini tuber production as a substitute for coir dust as it is expensive and availability is limited.
- It has been found that aeroponically produced mini tubers can be harvested at 15-20 days interval.
- Low rates of nitrogen application reduce the deformed mini tubers in aeroponic system.

Plant Pathology

- Compost tea could be used to manage late blight of potato as a non chemical treatment.
- Mancozeb 42 DF @ and IR-5885 @ 3g/l were effective for late blight management.
- Out of 36 commercial potato varieties Cicero, Red lady and Fabula were found to be highly tolerant to late blight in the up country wet zone.
- The fungicide Champ 57.6% at the rate of 1000ppm was found to be effective in controlling Black Rot in Cabbage.
- Cultivation of Shiitake mushroom is possible under UCWZ condition using rubber wood saw dust.
- Compost based on tea refuse and paddy straw is not suitable for button mushroom production.

- Forking of carrot is found to be severe in soils infected with *Fusarium spp.*
- Cabbage variety SCS-6 (Tikila) was found to be highly resistance to club root. Head of this variety is bulb shaped.

Entomology

- Screening of 23 new insecticides for the control of sucking pest complex; aphids, thrips and white flies of potato was carried out. Imidacloprid 70% WG @ 50g/ha, Thiacloprid 240 OD @ 100ml/ha, Ethiprole 100 SC @ 500ml/ha, Thiacyclam 50%SP @ 100g/ha and Dinotifuran 20WP @ 375g/ha were found to be effective in controlling sucking pest complex of potato.
- Screening of 23 new insecticides for the control of sucking pest complex aphids, thrips and white flies of Beans was carried out. Imidocloprid 70% WG @ 60g/ha, Thiacloprid 240OD @ 75-100ml/ha, Ethiprole 100SC @ 375-500ml/ha, Thiacyclam 50%SP @ 100g/ha and Dinotifuran 20WP @ 375g/ha were found to be effective in controlling sucking pest complex of Beans.
- Mass rearing of *Diglyphus isae* is being continued and 6000 parasites were released to Polytunnels and open field.
- Identification and rearing of natural enemies of aphids were initiated. Identified predators; Syrphid fly, Lady Bird and Lace wings. Identified parasites; *Aphidius spp.*, and *Syrphophaguys spp.*

Soil Science

- Application of Biophos (*Bacillus megath-erium*) to Eppawala rock phosphate (ERP) gave better growth than the application of TSP in terms of leaf weight, root weight and root length of cabbage.
- Application of Biogold (*Azotobactor chro-coccum* and *Pseudomonas fluorescens*) gave higher leaf weight and canopy diameter in cabbage.
- Use of compost to cut down chemical fertilizer by 25% for potato cultivation is being studied.

Vegetables

- 17 kg of green peas and 8.7 kg ball radish seeds were produced through vegetable seed production program.

- Production of breeder seeds of Lanka Ball radish was initiated.

DEVELOPMENT ACTIVITIES

Tissue culture

Disease free potato in-vitro plant production

During the year 2008, 7328 of *in-vitro* plants of potato variety Granola for formal seed potato production programme, 3092 plants of Granola, Desiree and other varieties for informal seed production programme, 1530 number of plants for experimental purposes and 250 plants for a private seed potato producing company, Hayleys were issued.

Strawberry

200 number of *in-vitro* plants and 300 number of *in-vitro* derived planting materials were issued for private growers and 2000 plants were issued for Provincial DOA, Nuwara Eliya for distribution among the growers.

Floricultural crops

Planting material production of *Gypsophyla spp.* and madona lilies through micropropagation was started.

Fruits/Crop Zone

Pears

80 number of budded pear plants were produced and issued for the farmers through Provincial DOA, Nuwara Eliya under Crop Zoning programme.

Agronomy

- Planting material production: 460,000 RSCs and mini-tubers were produced for further multiplication by informal seed producers.
- Commercial scale production of mini-tubers using aeroponic technique was successfully commissioned.
- Seven training classes were conducted on seed production and storage of potato and the number of participants were as follows
Farmers 560
All and other officers 57
- Total number of farmers seek advises for agronomic problems were 20.

Plant pathology

Diagnosis and Advisory Services

1. Total numbers of farmers seek advises for pathological problems were 78.

These were Vegetables 39, Potato 20, Flowers 8, Fruits 8 and others 3.

2. One hundred and one Potato plants and leaf samples were tested for the Potato Virus X, Y, S, M and PLRV
3. 1198 soil samples were tested for the Bacterial wilt and 46 samples were found to be contaminated with bacterial wilt pathogen.
4. Mushroom spawn production
Button mushroom – 2 kg
Oyster mushroom – 2.75 kg

Soil science

- Soil testing for fertilizer recommendations

pH	-	281
Phosphorus (P)	-	226
Potash (K)	-	10

Total	-	517
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- 55 mt of compost was produced
- Seven training classes were conducted on production of compost and the number of participants were as follows.

Farmers	-	510
All and other officers	-	28

Entomology

- One thousand two hundred and three soil samples were tested for Potato Cyst Nematode in Government Seed Potato Farms 16 samples were found to be infested with PCN.

Special activities

- International potato symposium to mark the International Year of Potato 2008 was organized and inaugurated by the Hon. Minister for Agriculture Development and Agrarian services on 3rd April 2008. The proceedings of the symposium were published on 3rd of April 2008.
- Research Station publications.
 - Potato News Annual publication
 - Diseases management of potato
 - Bacterial wilt in potato cultivation

- Pest management of Potato
- Biological control agents for major pests
- Fertilizer recommendation for potato cultivation
- Cultivation of Up Country vegetables – Compact Disk
- The model farm established in 2007 under the SriLanKoRDAA funds is being continued with an extended area of 2ha. This facility is used for farmer training as well.
- A workshop was held for farmers to identify the problems on protected agriculture system.
- Establishment and maintenance of demonstration on soil conservation in collaboration with NRMC.

Trainings

- **B.Sc. specialization projects**

Two undergraduate students from University of Peradeniya carried out their research project on aeroponics.

- Training on Nematode management in Guava – A staff member of FRI, Horana was trained.

- **Other Training Programs**

Farmers (Potato seed production, Compost production, Floriculture, Soil Conservation, crop production, Protected Agriculture) : 847.

University students	: 60
Agriculture diploma Students	: 200
All and AR&DA	: 94
Vocational Training Students	: 40
School Children	: 200

Publications

Seven publications in Global Potato Conference 2008 India, eleven publications in International Potato Symposium 2008, Sri Lanka Four News paper articles on Potato cultivation and seed production, Tree tomato and strawberry planting material production were published.

Presentations

Effect of climatic Change on potato cultivation

PLAN FOR 2009

Tissue Culture

Research

- Identification and collection of Bacterial Wilt resistance/tolerance *Solanum* species
- Development of Bacterial wilt resistant potato line/s through induced mutation
- Identification of suitable media and culture conditions for anther culture of potato
- Effect of age of *in-vitro* plants and the media composition on maturity and the performance of mother plants in net house
- Effect of different propagules derived from tissue culture on the performance of strawberry variety Chandler
- Development of novel type flowers through induced mutation

Development activities

- Production of disease free potato *in-vitro* plants to cater the demand of local seed potato production
- Production of disease free potato *in-vitro* plants of the varieties to be released by the station.
- *In-vitro* conservation of potato germplasm
- Production of disease free strawberry plants through micropropagation
- Production of *Gypsophyla* spp. and Madonna lilies through micropropagation for the growers

Pathology

- Screening of new fungicides against late blight
- Studies on biological agents for control potato late blight
- Evaluation of new potato lines against common diseases
- Evaluation of imported potato varieties against common diseases
- Development of comprehensive club root management technology
- Study on seed born diseases of cruciferous crops
- Management of root deformation in carrot
- Studies on mushroom media and spawn production techniques
- Testing chemicals against diseases in Chrysanthemum and Gerbera

- Management of bacterial wilt in seed potato farms
- Investigation of disease problems in protected agriculture

Entomology

- Improvements in the mass production programme of *Diglyphus isae*
- Biology and mass rearing of bio agents (Parasitoids, Predators and microbials) of aphids, white flies, thrips, mealy bugs, and some lepidopteran pests.
- Management of PCN in government seed potato farms
- Management of Root Knot Nematode on guava
- Screening of new insecticide against potato tuber moth, cut worm, potato leaf miner and sucking pests

Plant Breeding

- Development of high yielding, late blight resistant / tolerant desirable potato varieties.
- Development / Introduction of heat tolerant potato varieties.

Agronomy

- Evaluation of imported potato varieties
- Performance of spent tea based media as a substitute for coir dust on pre-basic seed potato production
- Effect of different types and sizes of pot on pre-basic seed potato production
- Strengthening of on-farm seed potato production

Soil Science

- Study of quantity and time of N fertilizer application on seed yield of potato
- Studies on compost production techniques suitable for UCWZ under the national project on organic fertilizer production.

Vegetables

- Evaluation of imported temperate vegetables
- Breeder seed production of ball radish
- Seed production of green pea, radish, cauliflower, broccoli and lettuce
- Technology development for seed production of cabbage, carrot and beet

2.2.8 AGRICULTURE RESEARCH STATION (ARS) - TELIJJAWILA

Agriculture Research Station, Telijjawila a sub station of HORDI, Gannoruwa responsible for conducting research activities to address the field problems particularly in Galle and Matara districts. The major areas of research are crop improvement, agronomy and plant protection for fruits, vegetables and root & tuber crops. In addition special developmental programmes including Crop zoning, Api wawamu- Rata nagamu, Productivity enhancement of banana are implemented. The priorities are given to develop appropriate technologies for southern wet region and disseminate them among extension staff and farming community, production of planting materials and conductance of demonstrations.

BUDGET

The budget allocation and expenditure incurred in year 2008 are in Table 2.2.8.1.

Table 2.2.8.1: Annual budget – 2008 (Rs.)

Vote particulars	Allocation	Expenditure
Recurrent	Rs. 19,02450.00	Rs. 18,68184.35
Capital	Rs. 905,400.00	Rs. 883,328.00
Projects – Crop Zoning	Rs. 750,000.00	Rs. 739,747.88
“AWRN”–Expansion of kiriala cultivation	Rs. 125,000.00	Rs. 116,961.72
“AWRN” - demonstration of proper management package for mango	Rs. 200,000.00	Rs. 109,558.08
“AWRN”-Leaf oriented banana cultivation	Rs. 125,000.00	Rs. 93,964.73
“AWRN”- Expansion of pineapple cultivation	Rs. 125,000.00	Rs. 111,223.89
“AWRN”Banana varieties for Industrial Uses	Rs. 125,000.00	Rs. 81,157.24
“AWRN” - Expansion of mushroom cultivation	Rs. 600,000.00	Rs. 105,501.00
“AWRN” - Special Project	Rs. 500,000.00	Rs. 458,302.31
Production of Organic Manure	Rs. 300,000.00	Rs. 253,208.22
- Productivity Enhancement of Banana	Rs. 300,000.00	Rs. 292,613.23
- Expansion of Leafy Vegetable	Rs. 180,000.00	Rs. 175,039.35

PROGRESS

PROJECTS

Crop Zoning Projects

Rambutan

- Established a crop zone at Walasmulla area in Hambantota district with 200 budded plants issued from the nursery at ARS,
- From the private nursery initiated by ARS, Thelijjawila in 2007, in farmer field issued 100 budded plants to Katuwana area in Hambantota district to establish a crop zone.
- Made arrangements to get registered a nursery initiated by ARS in a farmer field at Kamburupitiya in 2007.

- Unable to meet the anticipated target of 1000 budded plants due to unsuccessful budding performed by a budder who was lacking experience.

Pineapple

- Expected target of 50000 suckers were produced and 45850 suckers were issued to establish crop zones in Matara, Embilipitiya, Hambantota, Galle, and Ampara,

Banana

- Easily produced the targeted amount of 5000 suckers by conventional mean of propagation. Total of 7570 suckers were produced and a mother plantation has been established at ARS, Thelijawila with 4000 suckers.

AWRN Projects

Pineapple

- Two demonstrations were started at Godagama and Kamburupitiya in Matara district with 2000 (1000 suckers at each location.) suckers.
- About 1500 plants were used for research purposes by NRM, Peradeniya and ARS, Thelijawila.
- To start a demonstration at Athuraliya in Matara district 1000 suckers were given to the extension division.
- About 3500 suckers were given to "Vidatha" and extension division in Ampara district.
- Two commercial nurseries initiated at Godagama in Matara district by ARS, Thelijawila had produced 3000 suckers and established cultivations themselves using these suckers.
- At ARS, Thelijawila about 100 stumps have been established aiming 5000 suckers in March 2009.

Mango

- Demonstrations of proper management package for mango were started at Galle and Matara district with 165 grafted mango plants. However, the expected target of 210 plants were unable to establish due to existed severe drought in Hambantota district.
- About 25 farmers were practically trained to rehabilitate the unproductive mango trees in Galle and Matara districts.

Banana

- Established 3000 banana plants at three locations : Sulthanagoda in Matara district, Embilipitiya and ARS Thelijawila to demonstrate the proper management package for leaf oriented banana cultivations.
- Four commercially grown banana varieties were identified as potential varieties for industrial uses.
- Conducted 12 training programmes to produce industrial products using banana fibre with the help of Shilpa Sabawa.

Mushroom

- Produced 500 packets of spawned composts bags and used to enhance the productivity in the region.
- Conducted 04 training programmes for 250 farmers and 120 school children.
- Three posters depicting important aspects of mushroom cultivation were prepared.

Kiriala

- About 46000 propagules were produced and issued for 125 Samurdhi beneficiaries, Eastern province via VIDATHA, Agricultural Research Stations, Government farms and for personal growers on requests.
- Initiated three commercial scale nurseries at ARS Thelijawila, Kotapola and Yakka-lamulla with 5500 kg of mother corms.

FC projects

Productivity enhancement of banana

- Conducted 08 demonstrations on industrial uses of banana at Embilipitiya
- Annual planting system of banana was introduced in 5000 ha of new and replanted fields in the left bank, Udawalawa, Embilipitiya, Monaragala and Hambantota district.
- Information handouts were prepared in Tamil medium to conduct awareness programmes in the Eastern province.

Productivity enhancement of leafy vegetables

- Established ten demonstrations by providing planting materials in Matara district.
- Conducted workshops for extension officers and growers in Matara district.
- Produced a leaflet on leafy vegetables and distributed among growers.

Special projects

- Glirecedia was established in 0.5 ha at ARS Thelijjawila.
- About 6000 kg of composts have been produced.

TECHNICAL ACHIEVEMENTS**Pineapple**

- Though crowns and slips are not recommended for using as planting material they successfully can be used as mother plants to produce quality suckers. Resulted suckers performed equally after the field planting without affecting the subsequent performances.
- Ash mulching promoted the vegetative growth and dry matter of pineapple plants and suppressed the presence of ants in favour of controlling mealy bugs. Sand mulching suppressed weeds throughout the growing period.
- Estimation of leaf area of pineapple leaves by non destructive method was developed using the function of

$$LA = 0.7726 (L) (W) - 10.528 \quad (r^2 = 9659)$$

LA = Leaf area, L = Leaf length, W = Leaf width at the widest point.

Mango

- Densely planted and in – situ grafted mango plants trained in “Y” shape were identified as suitable technique for wet zone. They perform well under coconut cultivation too. Therefore these plants are much suitable for home gardens and commercial cultivations in the wet zone.

Banana

- Harvested mother corms of banana can be used to induced dormant buds to develop as more vigorous suckers by application of 1.5 lt of 1% urea solution on to the cut surface of the corms.
- Banana cultivation was introduced as a profitable cultivation which mainly can be grown aiming leaves while obtaining fruits. Torn and damaged leaves too can be used to fabricate bio plates. Unproductive and marshy lands can profitably be occupied with leaf oriented banana cultivations.

- Two fibre extracting techniques and hand operated devise to separate fibre from banana pseudostem were developed. Ten kg of pseudostem yields about one kg of fibre on dry weight basis.

Root and Tuber crops

As a technique to induce more propagules in Kiriala, 1% urea solution can be applied. Immersion of 01 kg of mother corms in urea solution for 24 hours induced 18 – 30 vigorous propagules in three weeks time.

With multi locational evaluation during two seasons sweet potato introductions of 396 – 4, 1990718, 187017 – 1 and 199062 – 1 performed better in acid sulphate soil. These varieties resulted 250 – 300 g /vine compared to the recommended variety Dhavala wich resulted 66 – 75g/vine in acid sulphate soils of Nilvala basin in Matara district.

Mushroom

There was a significant reduction in coleopteran pest infestation in oyster mushroom cultivation when citronella leaf powder was used as an amendment to prepare the compost substrate.

Developmental Achievements

- Encouragement of farmers to start 05 nurseries of pineapple, and 02 nurseries of Kiriala, and assistance of marketing there products.
- Conductance of about 12 awareness programmes on mandated crops .
- Conductance of demonstrations in farmer fields on mandated crops.
- With the financial assistance if peoples bank organized a workshop on mushroom at Gunarathna Mahavidyalaya, Palatuwa. Matara.
- A programme was held in collaboration with University of Ruhuna, CARP, and Common Wealth of Learning to develop mushroom production activities in the southern region.
- Provided a resource person in mushroom village development project on Rathnapura district.
- Contributed to 04 exhibitions in Colombo, Galle and Matara.
- Marketed 25 packets of mushroom spawns.

Other services

- Answered more than 250 questions and instructions were given for about 150 farmers who visited the research station and made inquiries by mail and on phone.
- About 500 people including farmers, NGOs, private sectors, school children, university students, visited the station to seek technical assistance and to collect planting materials.
- Students were assisted to conduct projects required as partial fulfillment of their study programmes.
- Supervised two students from university of Ruhuna and a student from Higher National Diploma in Agriculture, Niwala.

Infrastructure development

- Fencing around the research field was partly completed due to certain practical problems faced during fencing.
- Proceeding to get acquired the land to the DOA from LRC.
- An access road to the field was established as a concrete foot path.
- A two story building of 15' x 20' was nearly completed.
- A watcher hut was established at the main gate.
- Three net houses were built.
- Existing mushroom shed was renovated.
- Mushroom spawn production unit was equipped.
- A mini laboratory was established aiming basic soil testing facilities.
- In an area of 11 acres jungle clearing and land development was completed.
- The name board of the research station was renewed with a digital print.

Radio Programmes

Conducted radio programmes on:

- Mushroom pest management
- Planting material production in Pineapple
- Industrial uses of banana
- Propagation of Kiriala.
- Cultivation of underutilized fruit crops

TV programmes

- Propagation of papaya.
- Banana cultivation and disease management

Newspaper articles / Presentations and Publications

- About 13 newspaper articles as a series on fruits and vegetables.
- One article in magazine of School of Agriculture, Angunakolapalassa.
- Three research messages in Ag Tech Newsletters
- One research presentation in ASDA

Conferences / Seminars attended

- Mrs. J. C. Kariyawasam attended a seminar on "Application and dissemination of edible fungi" PR of China and presented a paper on "The present status of mushroom cultivation of Sri Lanka."
- Mrs. J.C.Kariyawasam made a presentation at International Symposium held at Sabaragamuwa University of Sri Lanka.
- Mrs. J.C.Kariyawasam made a presentation at a seminar organized by CARP/SL on mushroom sector development.

PLAN FOR 2009

- Continuation of the ongoing research programme on mandated crops of banana, pineapple, mango, papaya, kiriala, sweet potatoes, mushroom and leafy vegetables.
- Establishment of 500 peper vines with Glirecedea.
- Production of 50000 pineapple suckers aiming the Eastern province.
- Production of 50000 banana suckers by conventional propagation mean
- Completion of the protecting fence.
- Completion of the construction of the office building.

2.2.9 AGRICULTURAL RESEARCH STATION (ARS) - GIRANDURUKOTTE

The Agriculture Research Station, Girandurukotte was established in 1980 by the Mahaweli authority of Sri Lanka to address the problems of the farming community in Mahaweli system "C". The research station was taken over by the Department of Agriculture (DOA) in 1984 and functioned under the administrative control of Field Crop Research and Development Institute. In the year 2000, station came under the purview of Horticulture Crop Research and Development Institute (HoRDI).

The station focused on research and development activities to improve productivity of vegetables, fruits tuber crops and planting material production. Rice research and development programme was initiated and expanded to produce hybrid seed paddy. This programme alone covers nearly 5 ha.

In addition to research and production programmes the centre serves farming community in Mahaweli system "C" by conducting regular training programmes for farmers, school children and other organizations.

Under the programme of *Api Wawamu Rata Nagamu*, a sprinkler irrigation system was established to cultivate 4 acres of fallow highlands which have been already allocated for field experiments of vegetables.

BUDGET

The allocation received and the expenditure incurred under deferent votes and projects during year 2008 are given in the table.

Table 2.2.9.1: Annual budget - 2008 (Rs.)

Vote	Allocation	Expenditure
Capital	1,072,200.00	956,105.90
	1,038,515.00	1,004,891.59
Recurrent		
Projects		
• Hybrid Rice project	1,700,000.00	1,590,678.24
• Crop Zone project	500,000.00	436,396.89
• Api Wawamu Rata Nagamu	4,277,492.75	4,168,764.16
• Banana Productivity Enhancement	200,000.00	151,445.22
• Organic Fertilizer Production and Promotion Project	500,000.00	451,590.32

PROGRESS

SEED PRODUCTION PROGRAMME

Capsicum: Breeder seed production

Lanka Yellow Wax, a cross between capsicum varieties CA 8 and *Hungarian Yellow Wax*, was recommended and the programme of breeder seed production of the new variety is being carried out.

Hybrid Maize

Hybrid Maize seeds production programme was established in 02 acres and produced 280 kg of F1 seeds of variety "*Sampath*"

Hybrid Seed Paddy Production

During Yala 2008, a quantity of 315 Kg s of good quality seeds of hybrid variety Bg 407H were produced and distributed.

Certified Seed Production of Papaya var. *Rathna*

0.1 ha of Papaya were established to produce Papaya seeds in year 2009

Rice

- Rice Varietal adaptability trails were conducted in farmer's fields. Several promising rice varieties under 3 and 3 ½ month age classes were tested in farmer's fields at 7 locations to select suitable rice varieties for the region.

- National Co- ordinate Rice Varietal Trails (NCRVT) were conducted at this station in year 2008

PLANTING MATERIAL PRODUCTION

Banana :

Flowing planting materials were produced and distributed.

Seenikesel	-	4362
Ambul kesel	-	2820
Kolikuttu	-	523
Ash plantain	-	872
Kandula	-	528
Others	-	35

Pineapple

During year 2008, 9153 Pineapple suckers were produced and distributed.

Mango

150 Grafted Mango plants and 5000 rootstocks were produced.

Root crops

Stem cutting production of Cassava and planting material production of Sweet potato were continued during 2008 and production figures appeared as 2809 meters and 118 kg respectively.

Papaya

761 plants were raised and distributed.

Pineapple

NCVT- Pineapple programme was conducted and 4 hybrid varieties were compared with *Kew* and *Mauritius*.

AGRONOMY

Banana

Following experiments were started during 2008.

- Initiation of low cost rapid multiplication system to generate uniform suckers, (Experiment is in progress)

- Qualitative and Quantitative analysis of Banana plants, originated from spilt corms as a fast propagation technique (Experiment is in progress)
- Estimation of quality parameters of regenerated Banana suckers (Experiment is in progress)

Rice

- Comparison of different planting methods of Hybrid rice in order to identify a suitable planting technique to reduce production cost. Three methods were compared and pollination through bamboo stakes showed high seed setting.

Soil Science

- Effect of deferent organic and chemical fertilizer combinations on growth performance of papaya. (Experiment is in progress)

NCVT – PROGRAMME

- Varietals evaluation of introduced and local citrus varieties. (Experiment is in progress)
- National Co-ordinated varietal trials were completed in following crops and data been submitted to co-ordinates for further evaluation
 - Okra (9 varieties)
 - Brinjal (5 varieties)
 - Cucumber (6 varieties)

TECHNOLOGY DISSEMINATION

Several training programme were conducted at ARS Girandurukotte during this year.

- Mushroom production (03 programmes for 60 participants)
- Home garden (06 programmes for 503 participants)
- Organic fertilizer production (03 programmes for 71 participants)
- Banana cultivation (01 programmes for 185 participants)

Also, more than 800 people, including school children, teachers, undergraduates, postgraduate students and farmers visited the station for training, collection of information and for other services, during this period.

A field day was organized with the intention of disseminating of new information and technology generated through research to the farmers of Mahaweli system C

Training

Mr. W.M. Ekanayaka Agriculture Instructor under went training on Hybrid Rice technology for developing countries in China. (4 months)

PLAN FOR 2009

- Hybrid Rice seed production of BG 407 H
 - Organic Fertilizer Production and Promotion programme
 - Basic and standard seed production of Papaya.
 - Seed paddy production of variety BG 300
- National coordinated variety trails of selected vegetables.
 - Production of seed and planting materials such as root and tuber crops, fruits and vegetables.
 - Extension and training programmes for school children and farmers.

2.3 RICE RESEARCH AND DEVELOPMENT INSTITUTE (RRDI) - BATALAGODA

Sri Lanka could produce adequate quantities of rice to meet its demand despite uncertainties in the world rice market in the year 2008. The total rice production in the island in 2008 was 3.87 million tons of which 54.8% was produced in the 2007/2008 Maha season. In 2008, rice contributed 1.8 % to the GDP and the contribution from rice to total agricultural GDP was 14.8%. National average paddy yields in Maha 2007/2008 and in Yala 2008 were 4.18 t/ha and 4.20 t/ha respectively with an annual average of 4.21 t/ha. Cultivated extent of paddy lands in 2008 increased to a record level of 1,049,093 ha from 816,714 in 2007.

World paddy production in 2008 was 683 million tons, which was 3.5% or 23 million tons greater than that of 2007. World cultivated extent under rice also has been increased by about 2.2%. However, world average rice price was increased by an average of 42% in May 2008 compared to the beginning of 2008. With the increase in production, world rice prices decreased towards latter part of 2008 but still it remained higher than that of the beginning of 2008.

During the crisis period there was no rice freely available in the world market. However this situation did not adversely affected the rice consumer in Sri Lanka as we were near self sufficient in our rice requirement. Further, to overcome the crisis in the rice market, government of Sri Lanka introduced a price ceiling for rice while encouraging growing more rice through the "Api Wawamu Rata Nagamu" program supported with the fertilizer subsidy schemes. With the recommended high yielding rice varieties and available technologies, farmers were able to increase rice production by 19% in 2008 compared to year 2007. There is a need for further increase of rice production from all rice growing ecosystems.

Increasing rice production could be achieved through bridging the yield gap between actual farmer yield and the field potential. Further, abiotic stresses such as water scarcity, salinity, alkalinity and other soil toxicities are becoming limiting factors in rice farming. Rice grain sterility due to both increased and decreased air temperature reported from many parts of the island, affected rice yields. Partly due to lapses in initial field management, heavy use of weedicides in rice cultivation continued to be at a higher level while use of pesticides however decreased. Continuous break down of tolerance/ resistance of

rice varieties with increased insect and pathogen pressure and due to changes in biotypes and weather patterns is becoming a serious threat to rice farming. Increased demand for water for domestic and industrial needs and for hydro power generation would lead to decrease the quantity of water for irrigated rice cultivation from Mahaweli river. In addition, drought condition would lead to inland salinity. With climate change, the impact of these abiotic and biotic stresses would be more pronounced and will have a major negative impact on the food security in the island

Therefore, the research program at RRDI focused in finding solutions to current and impending challenges such as degradation of edaphic environment, low fertilizer use efficiency, break down of genetic resistance to pest and diseases, inadequacy of good quality water at important crop growth stages, high temperature stress and heavy dependency on weedicides while continuing the development of high yielding pest and disease resistant inbred and hybrid varieties.

RRDI continued to collaborate with International Rice Research Institute (IRRI), Philippines. IRRI played a major roll in supplying improved germplasm through INGER program. IRRI Deputy Director General, Dr Achim Dorbaman and International Program Manager Mr J. Lapitan visited Sri Lanka and signed a Memorandum of Understanding between DOASL/ RRDI and IRRI. Director, RRDI, Dr Nimal Dissanayake was appointed as the IRRI-Sri Lanka liaison officer. Mr S.W. Abeysekara, rice breeder assumed duties as the Deputy Director (Research) of RRDI. JAICA continued its support for the dissemination of biological test based nutrient management system for rice at farmer level.

In 2007, the government of Sri Lanka provided much needed funds in strengthening the infrastructure for research and training activities at RRDI. Construction of laboratory and training buildings and other facilities were started as planned. The construction of the Rice Production Technology Training Center was completed as scheduled. The new Rice Production Technology Training Center was ceremonially inaugurated by the Hon. Minister of Agriculture, Mr. Hemakumara Nanayakkara, Hon. Minister of Agrarian services Mr Siripala Gamlath with the participation of IRRI representatives and other distinguished invitees in January, 26th 2009.

BUDGET

RRDI received its funding needs from annual budget, special projects and foreign funded projects as presented in Table 2.3.1.

Conventional Breeding Program - 4 - 4 ½ month age class

Four to four and half months maturity rice varieties were cultivated in 85,800 ha in 2008, which is 8.2 % of the total annual rice crop extent

Table 2.3.1: Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Capital	10,325,250.00	6,608,418.53
Recurrent	21,070,000.00	20,324,538.27
Special Project	110,000,000.00	76,111,162.01
Foreign funded projects		
SLUSA (1)	98,600.00	93,191.00
SLUSA (2)	519,000.00	137,117.59
SLUSA (3)	459,360.00	207,755.58
Weed Science – IRRI	300,000.00	275,070.16
FAO hybrid rice project	\$ 329,000	\$ 191,911.80
Crop Wild Relative - 1	300,000.00	296,546.09
Crop Wild Relative - 2	300,000.00	284,785.13
Projects (Local)		
Organic Farming (1)	1,200,000.00	1,175,669.78
Organic Manure	1,400,000.00	797,381.66
NSF	780,280.05	307,049.93
CARP (12/680/510)	450,900.00	270,687.75
CARP (12/673/505)	2,015,480.00	1,678,054.89
Api Wawamu Rata Nagamu	520,000.00	507,561.46
Hybrid seed production (Girandurukotte)	1,170,000.00	

PROGRESS**VARIETY IMPROVEMENT**

RRDI continued its effort to increase the genetic potential of rice varieties through conventional and heterosis breeding. Increasing yield potential over that of presently highest yielding variety of a particular age class and incorporating durable resistance to major pest and diseases is becoming extremely difficult as varieties are fast approaching a yield ceiling. Despite these challenges, substantial gains were achieved through conventional and heterosis breeding techniques as presented below.

Abiotic stresses such as water stress, high temperature stress, salinity and soil toxicities are considered very critical in rice cultivation in Sri Lanka. Nutritional quality, cooking and eating quality of rice should be acceptable for both local and international market. Therefore, new promising rice lines are being developed continuously at RRDI to incorporate these important transferable traits along with the high yielding ability.

in Sri Lanka. This age group is predominantly cultivated in Kegalle, Kandy, Matale, Badulla districts, Mahaweli systems and Northern Province especially in Maha season where water is not a limiting factor. Longer maturity duration of this age class permit exposure of rice to different climatic and other environmental hazards, especially during early growth stages with less effect on yield. There is still room to increase genetic potential for yield of this age class compared to 3 – 3 ½ month age class. Therefore, 4 - 4 ½ m rice breeding program was focused to develop high yielding, pest and disease resistance rice varieties with desired grain quality which are adaptable to diverse eco systems.

During 2008, 28 F₁ generations, 36 early segregation populations and 632 progenies of 28 advance populations were selected for further evaluation of their maturity age, agronomic traits, pests-diseases reaction and yield potential. Eighteen elite lines were tested in comparison to standard variety Bg379-2 for their yield potential.

Two new rice lines, white pericarped long medium Bg07-997 (Jasmine rice/Bg357) and White pericarped samba Bg07-1350 (Bg379-2/

Suduru Samba) were nominated to the National Coordinated Rice Variety Testing Program. Bg 3026, a high yielding rice line resistant to Brown Plant Hopper (BPH), Gall Midge (GM), Bacterial Leaf Blight (BLB) and Blast (BL) was nominated for testing in the large scale varietal adoptability trial (LSVAT) program to evaluate its performance under farmer's condition.

Bg2893 satisfactorily completed all field testing programs and will be nominated for national release through Variety Release Committee. This line is moderately resistant to GM, BPH, BLB and BL. Required amounts of genetically purified breeder seeds of Bg403, Bg379-2, Bg450, Bg454 and Bg406 were produced according to the seed certification standard of the DOA.

Conventional Breeding Program - 3 ½ months age class

About 724,600 ha or 69% of the rice land were cultivated to 3 ½ month duration rice varieties. This age group of varieties in Sri Lanka has reached very high yield potential compared to 4 - 4 ½ month varieties. Further this category of varieties fits with the short growing season in most part of rice ecosystems in Sri Lanka. Variety improvement program of this maturity group continued to identify high yielding better quality rice lines with durable resistance for Brown BPH, RGM, BLB and BL.

In the 3 ½ month variety improvement program, 32 single, double and multiple crosses were made in 2008. Based on the phenotypic characters and maturity age, 12 combinations were selected for further advancement. Thirty eight segregating population from F_2 to F_4 developed in 2007/2008 Maha season were evaluated in the field using modified bulk method and thirty population were selected for further advancement. In 2008, 750 progenies from F_5 generation onward were also established and evaluated and 120 progenies were selected for further advancement. Eight Samba and non Samba lines were tested in preliminary yield trails (PYT) and nine lines were tested in Major Yield Trails (MYT). Based on the results, nine entries showed significantly higher yield than the standard varieties. Bg 06-985, white pericarped line with long medium size grain and Bg3R, a samba line with white pericarp were nominated to National Coordinated Rice Variety Testing Program (NCRVT). Required quantities of breeder seeds of Bg 94-1, Bg 352, Bg 357, Bg 358, Bg359, and Bg 360 were produced.

Conventional Breeding Program - 3 months age class

About 225,948 ha or 22% of the rice

lands is cultivated with 3 month duration rice varieties. This category of varieties fits well with the short growing season and more suited for ecosystems with limited water availability. Variety improvement program of this ix lines (Bg06-2270, Bg06-2343, Bg06-2112, Bg07-950, Bg07-1299 and Bg07-1301) were selected as promising lines for further advancement.

In the program to pyramid genes for resistant to BLB into new improved rice varieties, two BLB resistant genes, Xa-21 and Xa-5 from the resistant source IRBB 60 were successfully transferred through back cross breeding into line 1033 utilizing Bg 360 as a recurrent parent. However, grain yields of these lines were not superior to standard varieties, thus these lines will be used as parents in the future.

Bg06-985 which is resistant to blast, BLB, Gall midge and BPH was nominated for the NCRVT program. Bg 02-465 which is intermediate bold with white pericarp having resistance to BL, BLB, GM and BPH was nominated for VAT.

Required amounts of genetically purified breeder seeds of Bg300, Bg304 and Bg305 were produced according to the seed certification standards of the DOA.

Conventional breeding program 2 ½ months age class

The ultra short age variety, Bg250 which was released in 2005 was planted to 864 ha in 2007/2008 maha and 1271 in 2008 yala which is 0.20% of the total rice area in the country. This variety which matures in 80 days fits well into rainfed ecosystems where 3 months varieties cannot be grown due to water shortage. Breeding program to develop 2 ½ months age new rice lines continued with the objectives of selecting ultra short days maturity rice lines with acceptable grain yield and resistant to BPH, GM, BLB, Rice Blast and thrips. Five F_1 , 10 bulk populations and 106 progenies were advanced.

Required quantities of breeder seeds of Bg 250 was produced and distributed for further multiplication.

Improvement of traditional varieties through mutation- Continuation

The program to improve Suduru samba and Suwanda samba with lodging resistance using gamma rays while maintaining grain quality continued. Out of five lines advanced from the previous year, seed multiplication and purification of three elite lines, SSR 8, SSR 26 and SW 27

were started. SSR8 and SSR 26 are resistant while SW 27 is moderately resistant to blast. Yields of those selected lines were superior than traditional Suduru samba and Suwanda samba, but similar to Bg 360. Lines selected from the above will be nominated to CRVT program in 2010.

Wide hybridization studies of wild rice (*O.nivara*) with *O.sativa*

O. nivara possesses genes resistant to BPH. Therefore in 2002, wide hybridization program was started to incorporate the new resistant genes to BPH from accessions of *O. nivara* to improved varieties. The new BPH resistant gene from *O. nivara* (Acc number 9864) was successfully incorporated to Bg 379-2. Nine progenies of F_{13} generation established in Maha 2008/09 were resistant or moderately resistance to BPH. These lines will be used as parents with different BPH resistant genetic background in future breeding programs.

A separate program was initiated to incorporate BPH resistant gene from a different accession of *O.nivara* (WR AC 04) to Bg 380, a high yielding BPH susceptible variety. Crosses were successful and plants of F_4 generation with BPH resistance were established in the green house for screening against BPH resistance during early stage of growth.

Germplasm multiplication, characterization and conservation

Rice germplasm collection at RRD I gene bank comprising about 1500 accessions including traditional cultivars, introductions and improved lines were maintained under medium and short term storage conditions. Nine hundred accessions were multiplied and conserved in 2008. Seed samples in small quantities were also supplied to interested farmers.

Morphological characterization of wild rice species collected from Sri Lanka

Thirty three wild rice accessions collected from different locations were added to the wild rice collection. Eighty four accessions available in the collection were morphologically characterized according to the IRRI descriptor and preparation of catalogue is in progress.

Breeder seed production of photo period sensitive long maturity age varieties

Breeder seed of Bg 38, Bg 745, Bg 3-5 and Bg 407 were produced for distribution among seed farms for further multiplication.

HYBRID RICE

Hybrid rice has the ability to produce 15-20% higher yields over the best inbred grown under similar environmental conditions. Therefore cultivation of hybrid rice would be a very good option to increase the rice production in the country.

Early maturing hybrid rice combination

First rice hybrid variety, Bg 407H released by RRD I in 2005 need about 4 months to mature. Therefore this age class does not fit into many rice growing ecosystems. A new early maturing hybrid rice combination, Bg CMS4A x Bg4R (IR28078-15-2-1-2-2R), which matures in 3 ½ month with desirable plant characters was developed. Small scale seed production program was initiated. This would fit into most of the irrigated rice ecosystems. This new hybrid will be tested in different rice ecosystems for testing its adaptability in farmers fields during 2010.

Development of new hybrid combinations

Ten new hybrid combinations were developed and four combinations were promising. Further testing is in progress.

Parental line improvement

Development of restorers is one of the important steps in hybrid rice development. We have found that frequency of occurrence of restore line is very low compared to that of maintainer line. We were able to develop five restores, Bg 1R, Bg 2R, Bg 3R, Bg 4R, and Bg 5R and these will be used to develop new hybrid combinations in future.

Development of CMS line with high out crossing rate

F_1 seed production is the most important step in hybrid rice production. However the low out crossing percentage resulting low F_1 seed yield is a recurrent problem in Sri Lanka. Development of CMS lines with high out crossing rates (30-40%) was initiated with the collaboration of Yaunnan Rice Research Institute and Guancy Academy of Agriculture in P.R.China.

FAO/TCDC on strengthening national capacity for hybrids rice development and use for food security and poverty alleviation

Thirty one officers and 126 farmers were trained on hybrid rice cultivation and F_1 seed

production under the above program at RRDI. Two seed production plots with an area of about 500m² were established in farmer field at Devahuwa and Rajanganaya to study the feasibility of producing F₁ seeds in farmer fields. Two Chinese hybrid rice scientists as TCDC consultants on F₁ seed production worked at RRDI for one month. Their suggestions are now being implemented in improving the F₁ seed production and hybrid rice breeding programs.

Combining ability analysis and DNA to identify and purify parents for development of heterotic rice hybrids

Combining ability analysis is important in identifying the best parent or parental combinations in hybridization program. General Combining Ability (GCA) is associated with additive genetic effects while Specific Combining Ability (SCA) is associated with non-additive genetic effects. Few restorers were identified for GCA for grain yield, number of spikelets and length of panicle which could be useful for the future breeding programs. DNA study revealed that some hybrid combinations have shown high level of heterosis than that of parental lines. This method could be used to identify new promising hybrid combinations with high level of heterosis in 2-3 week in comparison to season long testing under conventional method.

Hybrid rice under direct sowing

Over 94% farmers in Sri Lanka cultivate rice as a direct seeded crop. Therefore popularization of hybrid rice technology is difficult as it requires transplanting due to high cost of seeds. As an alternative to save seeds of hybrid rice, it is recommended to practice parachute methods of establishment. However the high cost and limited access to seedling trays also limits their adoption. Therefore, possibility of adopting direct seeding of Bg 407H with very low seed rate in hybrid rice cultivation was studied. Results revealed that low seed rate at 20-30 kg/ha could be adopted for hybrid rice cultivation compared to 100 kg/ha for inbred rice. This would help to lower the seed requirement and thereby reduce cost of cultivation of hybrid rice.

Establishment of large scale F₁ seed production plot

A large scale F₁ seed production plots with an area of 4 ha was established at the government seed farm, Mahalluppallama with the collaboration of SPMDC. However, seed yield was very low as the crop was subjected to water stress during flowering period.

DISEASE MANAGEMENT

Screening for rice blast resistance

Rice blast caused by *Magnaporthe grisea* has been an important fungal disease in Sri Lanka. It causes considerable yield loss in certain rice growing area. Therefore, breeding for blast resistance is one of the major breeding objectives since the inception of rice breeding program in Sri Lanka. About 2100 rice lines in 2007/2008 Maha and 2060 lines in 2008 Yala comprising yield trials, NCRVT, VAT and advanced progenies from Batalagoda, Bombuwela, Labuduwe and Ambalanthota were screened against blast disease. Among the lines tested, 1729 lines in 2007/2008 Maha and 1185 lines in 2008 Yala were categorized into resistant or moderately resistant level.

Screening for bacterial blight resistance

Bacterial blight caused by *Xanthomonas campestris* pv. *oryzae* is the only economically important bacterial rice disease in Sri Lanka. Any rice variety released for cultivation should be at least moderately resistant for BLB. Therefore lines in the yield trials, NCRVT and VAT were screened against BLB. One hundred and two lines in 2007/2008 Maha and 108 lines in 2008 Yala were screened and 37 entries in 2007/2008 Maha and 43 entries in 2008 Yala were categorized into resistant or moderate resistant level.

Fungicide screening against rice diseases

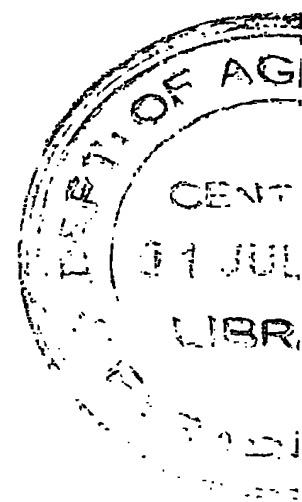
New fungicide "Topsin M ULV" which contain thiophanate methyl 500g/l ULV(SC) was not effective in controlling rice leaf blast disease compared to unsprayed control treatment.

Tribasic copper sulphate and Thiophanate methyl 500g/l ULV (SC) were not effective in controlling grain discoloration of rice compared to unsprayed control treatment.

PEST MANAGEMENT

Screening for Rice Brown Plant Hopper (BPH) resistance

Brown Plant Hopper (*Nilaparvata lugens*) is a serious pest for rice cultivation in Sri Lanka. Cultivating resistant varieties is the most suitable and environmentally friendly method to control BPH incidence in rice cultivation. Therefore, rice line must be resistant to BPH before release. One thousand five hundred and seventy four rice lines and 1816 rice lines of yield trials, NCRVT, VAT,



INGER varieties and advanced progenies were screened during Maha 2007/2008 during Yala 2008 respectively using Bg379-2 as the resistant check and TN-1 as the susceptible check. Among the lines screened, 1204 and 1549 lines were categorized into resistant and moderately resistant group.

Screening for Gall Midge resistance

Gall Midge (*Orseolia oryzae*) is another major rice pest in Sri-Lanka. New rice lines in the yield trials, NCRVT, VAT and advance progenies were screened using Ob 2552 as the resistant check and Bg379-2 as the susceptible check. One thousand eight hundred thirty nine and 1716 rice lines were screened during maha 2007/2008 and yala 2008 respectively. Among the lines tested, 1205 and 1154 lines were categorized into resistant and moderate resistant group in Maha 2007/2008 and Yala 2008 respectively.

Insecticide screening against rice pests

Paddy bug (*Leptocoris oratorius*) is a serious rice pest that causes considerable yield loss in rice farming. To identify new insecticide against paddy bug, Dinotefuran and Actara (Thiamethoxan 25%WG) were tested to control paddy bug. Actara (Thiamethoxan 25%WG) and Dinotefuran 20%WP were effective against paddy bug. Therefore they were recommended for further testing under the pilot scale testing program.

Rice Leaf Folder (*Cnaphalocrosis medinalis*) is an important rice pest during the vegetative and reproductive stages. There is no resistant line identified against Rice Leaf Folder. Therefore, it is important to identify new insecticide to control rice leaf folder. Five new insecticide, Indoxacarb, Acephate 97DF, Nimbecidin 1%EC, Metaflumizone, Flubendiamide 480SC, Flubendiamide 240WG were tested with one standard control and untreated control. Acephate 97DF 460g/ha was identified as a promising insecticide against rice leaf folder and recommended for pilot scale testing.

WEED MANAGEMENT

Bio efficacy of Glyphosate 65% (a.e) SG for selected tough weeds

Perennial weeds are difficult to control and are called as tough weeds. Some of these perennials are becoming problematic in rice cultivation. Therefore selecting an effective pre-plant herbicides and rate of application is important to control such weeds. Glyphosate 65% (a.e)SG could be effectively used to control these weeds under non crop situations as well as during land

preparation in paddy cultivation. However the rate of application varies with weed species. To control *Cyperus rotundus* (Kalanduru) and *Imperata cylindrical* (Illuk), 3-3.5 Kg /ha and *Panicum repens* (Athora), 2.5-3 kg/ha of Glyphosate 65% (a.e)SG could be effectively used.

Grass Weed Control Efficacy of Cyhalofop Butyl 10EC (Clincher)

Currently *Leptochloa chenensis* is the dominant grassy weeds in most rice fields. Continuous application of some herbicides created problems by increasing population of this weeds species. Therefore new herbicides with different mode of actions are necessary. It is recommended that Cyhalofop Butyl 10EC could be applied at 7-10 DAS as an early post emergence herbicide to control grass weeds. It was observed that Cyhalofop Butyl 10EC showed different control efficacies when applied at different time intervals. When Cyhalofop Butyl 10EC was applied at 12-DAS, 18 DAS and 25 DAS the controlling efficacy of *Leptochloa chenensis* were 82 %, 77%, and 60% respectively suggesting that Cyhalofop Butyl 10EC has a broad application window with the ability of controlling *Leptochloa chenensis* at different time intervals.

Impact of weedy rice in rice cultivation

Weedy rice infestation is becoming a serious threat to direct seeded rice culture in Sri Lanka. Weedy rice is an undesirable off type of rice, which is morphologically very similar to cultivated rice. Highly infested weedy rice fields with more than 50 weedy rice panicals/m² were located in farmers rice fields of Matara, Hambanthota, Rathnapura, Pollonaruwa, Anuradhapura, Ampara, Kurunegala and Kandy Districts.

Reasons for spreading weedy rice in paddy field in Sri Lanka were, direct seeded rice culture, poor cultural management practices, increased use of farmers own seed paddy, sharing threshing implements such as combine harvesters which move from one rice growing area to another and lack of knowledge on weedy rice among farmers and extension officers.

Yield losses due to weedy rice in Mathara, Pollonnaruwa and Anuradhapura varied with the level of infestation. In highly infested field with 50 weedy rice panicles per m² could loose yield by 70-100%. Moderately infested field with 30 -50 weedy rice panical per m² could loose 58 to 64% while less infested field with less than 30 weedy panicles per m² could loose 20 to 40% of the yield. Some farmers did not cultivate highly infested rice fields highlighting the seriousness of weedy rice problem in Sri Lanka.

Morphological diversity of weedy rice

Large variation of morphological characters of weedy rice was identified in different rice eco system in Sri Lanka. There were 34 types of weedy rice in Matara, 8 in Anuradhapura 9 in Pollonaruwa 7 in Ampara, 12 in Kurunegala and 8 in Kandy.

Many of the weedy rices are similar to wild rice or traditional varieties. There were lines with high degree of seed shattering, long seed dormancy, red/ white pericarp color, black hull with and without awn and different grain types.

Competition study of weedy rice

Weedy rice plants are generally taller with more tillers and produce more biomass than cultivated rice. These characteristics could increase competitiveness of weedy rice to cultivated rice. Therefore experiments were conducted to determine the competition ability of weedy rice to cultivated rice under green house conditions. Four different type of weedy rice plants were evaluated with cultivated rice Bg 379-2 at the combinations of 5:0, 4:1, 3:2, 2:3, 1:4, 0:5 (Bg379-2:weedy rice) plants/pot. Bg 379-2 was less competitive with all tested weedy rice bio types and reduced growth and yield. The average plant height of Bg 379-2 was 79.48 cm while in weedy rice it varied between 130 to 163 cm.

Seed dormancy of weedy rice

Weedy rice seeds showed a variable degree of dormancy. The duration of the dormancy in weedy rice samples varied between 0- 120 days. However majority of weedy rice types had a dormancy period between 17- 20 days.

Development of integrated control package for weedy rice

Following management practices were recommended to control weedy rice effectively

- Identification of weedy rice at the initial stage.
- Proper land preparation
- Application of the preplant herbicides; Glyphosate or paraquate and the number of applications and time is dependent on the level of infestation.
- Use of quality seed paddy
- Transplant or seedling broadcast (parachute method) instead of broadcasting
- Use of seeders for row seeding and weeders for controlling weeds.
- Practice water seeding establishment method

- Application of pre- emergent soft herbicide
- Manual weeding at vegetative period.
- Practice Busta wiping method at panical initiation
- Rouging of panicles
- Crop rotation
- Avoid using harvested seeds from infested field as seed paddy.

During the year, 34 training programs were conducted (20 for officers and 14 for farmers) in different rice growing areas. National committee was appointed by Director General of Agriculture to identify and develop the national activity plan and to manage the weedy rice problem.

SOIL SCIENCE

Experiments conducted to develop salinity tolerance rice lines of different age group have identified 17 rice lines with salinity tolerance. Six lines were tested under natural salinity condition at Nelumwewa in Puttalam and Polonnaruwa. 3 lines (Bg 5-110, Bg 4-91 and Bg 11-139) have been identified as high yielding with resistant to BPH, GM, BLB and BL. Performances of these lines are being tested under preliminary yield trials.

Studies conducted to find the suitable technological package to overcome higher salinity levels at Nelumwewa showed that improving drainage, land leveling, seedling transplanting, application of organic manure and better water management helps to reduce salt stress. With these practices it was possible to increase rice yield from 2 t/ha to 5 t/ha.

Rice varieties differ in their response to added nutrients. We screened varieties that do well under no fertilizer conditions in the no fertilizer block that had not received fertilizer for the last 29 years (58 seasons). Bg 352, At 354 and At 362 have the ability to give higher rice yields both under no fertilizer and fertilized conditions. Further there was no difference in the quality of grains except head grain yield where it increases in fertilized plots.

Lower solubility of Eppawela Rock Phosphate (ERP) is a major drawback in using ERP for rice cultivation. We studied the suitability of *Bacillus megatherium* as a solubilizing agent to enhance the solubility of ERP to use ERP as a source of phosphorus in rice cultivation. Initial studies in pots revealed that ERP treated with *Bacillus megatherium* can be used as a source of phosphorus in wet land rice cultivation. However these findings need verification under field condition.

We studied the long term productivity of rice fields in Abanganaga yaya in Polonnaruwa. It is revealed that declining soil fertility is a reason for low rice yields under farmer managed conditions. Introduction of organic manure and correct amounts of fertilizer not only increase the crop yields but also improved the soil fertility as well. Shortage of water and difficulty in managing weeds in these fields hindered the real effect of fertility on rice yields.

Effect of some micronutrient based stimulant on grain yield of rice

Micronutrient based yield stimulants, Power I/II, Amino micro power and SMC express and 1% ZnSO₄ foliar spray with DOA recommendation of NPK fertilizer were compared with NPK alone and "site specific fertilizer" level on rice in Batalagoda soil series. All treatment significantly increased grain yield over NPK treatment alone but the highest increase was shown by site specific fertilizer recommendation.

Impact of Mg and S on rice yield in LCIZ

Mg and Sulfur deficiency symptoms in the rice plant have been observed in LCIZ. We studied the Mg and S requirement for inbred rice in Batalagoda soil series in Low Country Intermediate Zone. Application of S@ 10kg/ha as ammonium sulphate increased grain yield of Bg352 by 0.65 t/ha which is 12% yield increase over the no S treatment. However, addition of Mg had no significant impact on grain yield.

Biological soil fertility test kit

The biological soil kit developed by RRDI in 2006 for the easy identification of nutrient deficiencies in rice soils was demonstrated among farmers. One hundred and eighty farmers in Hambantota district were given these test kits and farmers identified nutrient deficiencies in their fields using these test kit. This test also showed N, P, K, Ca, Mg and S are the most deficient in LHG soils in Low country wet zone. Other micronutrients are in sufficient range.

Fertility status in RRDI farm

Soil fertility status in two soil series namely Kurunegala and Batalagoda soil series at the Batalagoda rice farm was evaluated in order to help breeders to conduct breeding programs at optimum fertility levels. Two soil series showed different soil fertility problems. Batalagoda soil series showed low in N, P, K, Mg and Zn levels while Kurunegala soil series showed low in N, P, K, S and Zn levels. In future, rice breeding experimental sites will be fertilized accordingly.

WATER MANAGEMENT AND IDENTIFICATION OF SUITABLE LAND CLASSES

Soil Moisture Stress on Rice at Different Growth Stages

Experiments conducted earlier concluded that there is no significant difference in grain yield between plants grown in standing water and saturated conditions suggesting that similar yields could be obtained with less water in rice. However, a yield reduction was observed when rice varieties of short maturity duration were subjected to mild stress. The timing of stress affects the magnitude of the reduction in the yield. We studied the impact of soil moisture stress at different growth stages of rice for 3 ½, 3 and 2 ½ month age groups. The highest yields of 8 t/ha (Bg 359), 7 t/ha (Bg 300) and 4.6 t/ha (Bg 250) were recorded under saturate conditions. Irrespective of the variety, severe water stress through the whole growth period results no grain yield. The yield reduction was 50 % when the soil moisture stress was imposed from sowing to 50% flowering or from PI to maturity. Mid day wilting started in all three varieties when the volumetric soil moisture content was 20%. When the soil moisture reduces by 5% from the saturated condition (volumetric water content of 33 %), twenty percent yield reduction could be observed in Bg 359 and Bg 300 while it was 13 % for Bg 250.

Mapping of Agro-ecological Suitability for Paddy Cultivation

Rice production in Sri Lanka fluctuates between location and the season due to the erratic changes in climatic over the years. We studied the land productivity potential for rice in different agro-ecological zones considering the collective effect of climatic factors (rainfall, temperature, and relative humidity). Fifteen agro-ecological regions were classified as follows. The WM2b agro-ecological region was Highly Suitable for rice cultivation in both yala and maha seasons. IU3e and WU3 regions were not suitable for rice cultivation because of the minimum temperature was in critical level (<19 C). Rest of the regions classified was suitable for rice cultivation in maha season. DL3, IL1a, WL1a, WL2a, WL3 and WM3b were classified as suitable and DL1b, DL1c, DL4, DL5, and IL3 were classified as marginally suitable for rice cultivation in the yala season.

ORGANIC RICE FARMING

Before green revolution, majority of rice lands in Sri Lanka were under traditional rice varieties with no synthetic fertilizer application.

With the green revolution, traditional rice varieties were replaced by fertilizer responsive new improved rice varieties. These improved varieties increased the national rice production, but with added cost on organic fertilizer, chemicals for the controlling of weeds, pests and diseases. At present due to growing concern on human health and environment, organic rice production is becoming an important component of the rice production system. We studied the yield potential of different rice varieties under organic farming. With the incorporation of 10-15 t of green manure, 4t rice straw and 350 kg. Eppawala Rock Phosphate per ha and with foliar application of leaf extract as nutrient supplement and neem extract for controlling of pest, rice yields between 4 – 5 t /ha was recorded from improved lines such as Bg 360, Bg 300, At 306 and Bg 358. Yield of traditional rice varieties such as Herathbanda, Gonabaru, Suduheeneti and Kahatawee was around 3.5 t per ha. Optimum plant spacing for organic rice culture while facilitating rotary weeding was determined as 20 x 10-15 cm.

AGRONOMY

Variety screening for moisture stress

Scarcity of water for rice cultivation is becoming a serious issue. In year 2007/8 maha season, about 0.43 million ha and 0.15 million ha were cultivated to rice under irrigated and rainfed conditions respectively. However the extents cultivated to rice under irrigated and rainfed conditions during 2008 yala season decreased to 0.38 million ha and 0.08 million ha respectively. Further, due to scarcity of water a significant area cultivated to rice is also not harvested. It is expected that the demand for water for both domestic, industrial and for hydro power generation will increase which would lead to decrease the quantity of water available for irrigated agriculture especially for rice cultivation. In addition, with climate change, the impact of these abiotic stresses will be more pronounced and will have a major impact on the food security in the island. Therefore we started developing technologies to increase water use efficiency and screen varieties for both aerobic and saturated field conditions.

Large scale field demonstrations conducted with the collaboration of JAICA further confirmed that maintaining saturated to semi dry conditions could increase grain yield by around 20% while reducing the amount of irrigation water use. Even though there was no significant yield increase under saturated field conditions compared to flooded condition in large plots at Batalagoda, the saving of irrigation water under saturated condition was about 49%. A field study at RRDI, Batalagoda to compare flooded and saturated soil

conditions which were maintained from 3 weeks after planting until late booting of 3 ½ month rice revealed that with saturated condition the water productivity which is the grams of paddy produced per kg of water applied, increased from 1.077 to 1.455 and 2.829 to 12.65 during yala and maha seasons respectively.

We screened over 160 rice lines for drought tolerance identified from traditional germplasm, recommended varieties and from the INGER program. Severe drought condition destroyed all lines tested. Therefore screening of lines was done from blocks which were with moderate drought stress. About 23 lines were selected based on the reaction to water stress. Out of these lines, 7 lines were identified for the 4 month breeding program while 16 lines are being used in the 2 ½ month breeding program. Better lines were also identified for testing under aerobic conditions.

Identification of rice lines for aerobic and saturated environments continued. Altogether 100 rice lines including 61 rice lines received through the INGER program were tested under Aerobic, Saturated and Flooded conditions. Seven lines with very good phenotypic acceptability and 3 lines with moderate acceptability were selected from the aerobic nursery. In addition, under aerobic conditions, 5 lines were selected based on grain yield. Altogether seven lines were selected under saturated conditions. These lines will be used in the future breeding programs.

We studied the seed dormancy of recommended popular rice varieties which were harvested from the maha crop. Except Bg 94-1 and Bg 359, all varieties tested attain 80% germination around 42 days after harvest. Bg 94-1 attained 80% germination at 28 days while Bg 359 took 35 days to attain 80% germination.

National Coordinated Rice Variety testing program

During 2008, NCRVT program continued with 3, 3 ½ and 4 month maturity classes. Four new rice lines of 3 month and 5 new lines of 3 ½ months non samba and 5 new lines of samba rice were tested with standard check varieties in 12 different location in both Yala and Maha seasons under complete researcher management conditions. A white samba rice line, At 06-486 and a high quality white long slender At 05-1382, were selected for testing in the Variety Adaptability Program (VAT). From the 3 ½ month age class, three new rice lines, At 06-650, a red samba line, Ld 3-6-12, white samba line and Bg 3R, a white samba line were nominated for testing in farmers field under the VAT program.

Variety Adaptability Program

Variety adaptability program was conducted over 60 locations for 3 months and 3/12 month age classes in the dry, intermediate and wet zones. Ten new elite lines of different age of both samba and non samba rice lines were tested for adaptability. Two lines of 3 month age class, 2 lines with long slender grains of 3½ month age class, two lines of white samba of 3 ½ month age class and 4 red samba lines of 3 ½ month were tested with standard check varieties in both maha and yala seasons.

Large Scale VAT program

In 2007/8 maha season one 3 month white intermediate bold line, At 584, one 3 ½ month line At 570 and one 4 month white pericarped line Bg 3026 selected from VAT was tested in over 50 locations under the LSVAT program. In 2008 yala, two white samba lines, Ld 1-5-15 and At 605 and Bg 3026 was tested in over 40 locations in farmers fields under the LSVAT program. Results revealed that At 605 and Bg 3026 are superior and acceptable over the standard check varieties

SEED PRODUCTION

Breeder seed production of recommended varieties for all maturity classes, 2 ½ month, 3 month, 3 ½ month, 4 – 4 ½ month and the 5-6 month photoperiod sensitive foundation seeds for the long age “Mawee” program continued as planned. In addition seeds of some new recommended rice varieties were produced and distributed among farmers for seed paddy purpose (Table 5). About 11,100kgs in 2007/8 maha and 11,500 in 2008 yala of commercial and foundation seed paddy of new improved varieties were supplied to farmers. Foundation seeds of long age “Mawee” varieties, Bg 745, Bg 3-5, Bg 38 and Bg 407 were also produced and distributed for *maha* 2007/8. About 1350 kgs of seed paddy of 21 rice varieties were distributed as “mini kits” among farmers for the self seed production program.

Hybrid rice seed production program at Agriculture Research Station, Giradurukotte produced 322 Kg of F₁ seeds of Bg 407H and 15820 kg of restorer.

Table 2.3.2: Breeder seed produced (kg) during 2007/2008 Maha and 2008 Yala

Variety/ maturity in days	Breeder seed (kg) Maha 2007/08	Yala 2008
<u>150 - 180 days (photoperiod sensitive)</u>		
Bg 3-5	40	not cultivated
Bg 40	80	(photoperiod sensitive)
Bg 745	80	
Bg 38	80	<u>120 d - 135 days</u>
Bg 379-2	100	120
Bg 450	120	120
Bg 403	80	100
Bg 454	-	100
<u>105 days</u>		
Bg 94-1	140	160
Bg 352	100	100
Bg 357	40	80
Bg 358	220	220
Bg 359	180	120
Bg 360	-	100
<u>90 days</u>		
Bg 300	140	200
Bg 304	180	120
Bg 305	120	140
<u>80 Days</u>		
Bg 250	40	40

TECHNOLOGY DISSEMINATION

Dissemination of proven technologies to relevant stake holders is considered an equally important activity for the development of rice sector in Sri Lanka. During this year 22 full day training programs for over 1050 farmers and trainees were conducted. Each season, RRDI conducted one week field exhibition on both 2007/2008 maha and 2008 yala to demonstrate research and development activities of RRDI. Accordingly over 6000 visitors comprising field officers from DOA and other government institutes and departments, university students, private entrepreneurs, teachers, school students and farmers participated for the field weeks during maha and yala seasons. Comprehensive training programs for groups were also conducted according to their background and educational needs. Further, long term training programs of 3 to 6 month duration were also conducted for university and technical college students for the fulfillment of their degrees or diplomas.

Future Programs of RRDI

RRDI will continue to lead the Rice Research and Development program of island to fulfill the present needs of the rice consumer and the producer. RRDI is also geared to meet the future rice food security in the island. The challenges in achieving these targets are very much different to the past. Rice cultivation in the island will face shortages of water, new pest and diseases complexes, high temperature stress, depleting soil nutrient supplying capacity and threats from weeds. Further extreme weather events would increase flash floods which expose rice plants for both short and long term submergence. A novel plant types with different physiological and morphological mechanisms which yields better and could withstand all biotic and abiotic stresses and having high resource use efficiencies are needed for the future. A well defined crop improvement program for all maturity ages with the support through biotechnological tools such as marker aided selection will be established. New hybrid varieties with a maturity age of 3–3½ month will be developed. Possibility of introducing characters of wild perennial rice lines into cultivated rice is also a necessity. Technologies would be developed to overcome weedy rice incidence and new less toxic agro chemicals will be introduced. New sources of resistance to all major pest and diseases will be in cooperated new rice lines.

With the establishment of the training center, new short and long term rice cultivation training programs will be introduced.

RICE RESEARCH STATION, AMBALANTOTA

Objectives of Rice Research Station, Ambalantota are the development of improved red pericarped rice varieties, salinity tolerant varieties and high yielding short age varieties. Improvement of grain quality and incorporation of resistant to insect pests and diseases are emphasized. The station also has other responsibilities such as producing breeder seeds of recommended "At" varieties, conducting Co-ordinated trials and finding solution to field problems of rice farmers in the region.

Varietal Improvement

About 78 crosses were made with above objectives during the year. About 97 bulk populations were evaluated and 84 were selected for further evaluation. From F5 generation onwards about 1464 advanced progenies were established and 180 were selected for further evaluation as progenies and in yield trials. About 35 lines were selected for preliminary yield trials (PYT) and 28 lines were selected from preliminary yield trials to evaluate in major yield trials (MYT).

Two newly developed lines, At 668, At 676 were selected from CRVT for further evaluation in Varietal Adaptability programme. At 632 and At 584 were selected from VAT programme to further evaluate in Large Scale Varietal Adaptability Trial programme (LSVAT).

The promising line, At 632 were nominated for Distinctness Uniformity and Stability Test (DUST).

Three Co-ordinated Rice Varietal Trials (one 3 month and two 3 ½ month trials- Short round & Long medium) were conducted and supplied the data. Varietal Adaptability Trials were conducted at 10 locations in Matara and Hambantota districts in two seasons.

Introduced Germplasm Evaluation

Six nurseries of International Network for Genetic Evaluation of Rice programme (INGER) were evaluated at three locations with five scientists. Several useful germplasm were identified and seeds of those varieties were supplied to rice breeders to use in their breeding programmes. Out of them the nursery of IRFAON was conducted at rice research station, Ambalantota and four lines have been selected for further evaluation.

Rice Variety Released for General cultivation

At 308, white peicarped, samba type 3 month rice variety. This is resistant to blast, bacterial leaf blight, brown plant hopper and moderately resistant to gall midge and sheath blight. Appearance of milled rice and cooked rice is good. The yield is about 6 t/ha and ratoon crop gives about 25% of the major crop yield.

Breeder Seed Production

Required quantities of breeder seeds, At 303, At 306, At 307, At 308, At 353, At 354, At 362, and At 402 were produced for the national seed paddy programme.

Technology Dissemination

One student from technical colleges underwent four month training was guided at the station. About 650 visitors including school children visited the station for training and information collection on rice cultivation. Research Officers in the station participated as resource persons to few training programmes.

RICE RESEARCH STATION, SAMMANTURAI

Main objective of research programs at Rice Research Station, Sammanturai was to identify knowledge gaps encountered with the rice cultivation in the Eastern Province, especially in the Ampara and Baticaloa districts and to propose suitable remedial options, selection of varieties suitable for the Eastern region and to act as a primary center for dissemination of rice technology to the region. The NCRVT, VAT and LSVAT were conducted both in research station and farmer fields. Large scale Hybrid Rice adaptability studies were conducted in farmer fields.

2.3.1 REGIONAL AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER (RARDC) - BOMBUWELA

The Regional Agricultural Rice and Development Center (RRRDC) and its two sub stations, Agricultural Research Stations (ARS) at Bentota and Labuduwa continued with their research programmes to develop and disseminate technologies to increase rice productivity in the five administrative districts of Kalutara, Colombo, Gampaha and part of Galle and Ratnapura in the Low Country Wet Zone (LCWZ). The RRRDC Bombuwela emphasizes to develop high yielding both red and white rice varieties particularly tolerant to iron toxicity whereas the ARS, Labuduwa emphasizes to develop mainly red pericarped samba type rice varieties which are in high demand in the southern region of LCWZ. The ARS, Bentota emphasizes to develop rice varieties for the flood prone and saline areas launching station and field research activities as farmer participatory programmes conducted in farmers' fields. In addition, organic seed production programme using both selected traditional and new improved short aged rice varieties are conducted in the RRRDC, Bombuwela. This programme further emphasizes to create appropriate technologies on organic fertilizer packages for different farming situations for better crop yield as well as pest and diseases management experiments for crop sanitation. Furthermore, special attention has been given to initiate a commercial seed production programme to multiply several rice varieties recommended by the Department of Agriculture, (DOA) which are in high demand among farmers in the region, but are in short supply.

BUDGET

Annual budget during 2008 and expenditure under capital and recurrent votes and projects are given below.

Table 2.3.1.1: Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Capital	3,800,250	1,134,545
Recurrent	9,310,000	8,785,235
Projects		
Infra-structure development Project	5,000,000	3,864,469
Organic rice seed production	1,025,000	983,178
Organic rice research Bo1	900,000	874,153
Production and Promotion of		
Use of organic matter	326,500	170,072

PROGRESS

VARIETAL IMPROVEMENT

Testing of Varieties under NCRVT and VATT Programmes

Bw 04- 2015, a red samba line of 3 ½ months age group was tested in the NCRVT. This breeding line showed adequate resistance to major pests and diseases and tolerance to iron toxicity. The line also showed a lower incidence of neck blast disease which is an advantage for the region. Bw 04-992 (white samba, 3 ½) was tested in the VATT programme. Two lines viz. Bw 05 – 1621 (red pericarped, intermediate bold, 3 ½ month) and Bw 03 – 1073 (red pericarped, short – round, 3 month) were selected as suitable candidates for the NCRVT.

Breeder seed production

The following quantities of breeder seed conforming to the SCS standards were produced and handed over to the Seed and Planting Material Development Centre for the production of foundation seed.

Table 2.3.1.2: Breeder seed production

Variety	Production (kg)
Bw 272-6b	61.5
Bw 351	61.5
Bw 361	61.5
Bw 363	61.5
Bw 364	61.5

Rice Varieties for Organic Farming

The seed production programme for organic farming was continued during the year. Molligoda, Murungakayan, Beheth heenati, Sudu heenati, Herath Banda, Kahata wee, Sulai and Madathawalu were identified suitable for organic cultivation and following quantities of seed material were produced from them:

Table 2.3.1.3: Production of seeds for organic cultivation

Variety	Production (kg)
Sudu Heenati	165.3
Beath Heenati	80.5
Kahata Wee	157
Molligoga	4.3
Sulai	122.5
Madathawalu	176
Gonabaru	30.5
Bw 267-3	384
Mawee	254
Unakola samba	20.5
Mixed	51
Murungkanyan	40.3

Health promoting functional properties of rice

Preliminary evaluation of health promoting functional properties of rice cultivars in collaboration with Industrial Technology Institution (ITI), Colombo continued on the preparation of a data base.

AGRONOMY**Direct sowing of hybrid rice**

LCWZ records a lower yield as compared to the Dry Zone because of unfavourable weather conditions. One way of increasing yield in the region is by introducing hybrid rice to the high potential areas. In hybrid rice, transplanting is always advocated because of the high seed cost. However, transplanting is not a practice adopted by farmers in the region because of the high cost involved. Studies have been underway to test direct seeding of hybrid rice which has proven to be as effective as transplanting the crop. Direct sowing @ 30kg/ha gave 5.2t/ha compared to the row transplanting (4.3t/ha). Studies are now in progress to assess the economics of adopting this practice.

Agronomy package for organic rice cultivation

Development of an agronomy package is now almost completed and is nearing the stage of recommendation. Organic matter added at the rate of 20t/ha can be recommended for the LCW Region. Organic matter either from compost or from green matter can be used. It has been seen that any existing weed cover is as good as any cover crop that may be grown for this purpose. Organically grown paddy gave a productivity of 3.6 t/ha as compared to the inorganically grown rice which gave a productivity of 3.85 t/ha b/ac.

It was also seen that with 5 t/ha of organic matter given as a basal, the DOA inorganic fertilizer could be reduced down to 75% of the recommendation (4 t/ha).

A new methodology for making compost in 3 weeks as compared to the 3 months required in the traditional method has also been found. There was no difference in the quality of the composed made as well as in its contribution to the yield. Compost made of rapid method gave a yield of 2.3 t/ha compared to the 2.1 t/ha from the conventional method. The final verification trial is in progress.

A third technology on how to cultivate paddy organically under iron-toxic conditions has also been developed. In this instance addition of 25 t/ha of organic matter helped overcome the ill effects of iron toxicity and gave a yield of 2 t/ha as compared to the DOA recommendation (2.7 t/ha). A verification trial is in progress.

Seed paddy for organic rice cultivation

A project funded by the Ministry of Agriculture Development was conducted to produce commercial seed paddy needs under organic conditions during Yala 2008. Many problems as mentioned above were encountered and were successfully overcome by promptly attending to them and a total of 740 kg of seed paddy was produced using Madathawalu, Bw 364, Suduheenati, Bw 272-6b and Bg 250. Nearly 13 tons of compost was prepared during the year.

Commercial Seed paddy production

The programme on the production of quality commercial seed paddy was also carried out during 2008. The main objective was to ease out the shortage of seed paddy of recommended Bombuwela varieties for the LCWZ. A total of 2.73 tons of different varieties of seed paddy listed below were produced and distributed among farmers in collaboration with the Farm Division from the varieties:

Table 2.3.1.4: Distribution of seed paddy

Variety	Quantity (kg)
Bw 267-3	328
Bw 361	779
Bw 272-6B	554
Bw364	882
Bg 250	185
Total	2727

NCRVT and VATT Programmes

This programme was carried out in 3 month and 3 ½ month (samba and long – medium grain) age groups. A total of 52 nominations (island wide) were evaluated and reported to RRD, Batalagoda. In the VATT programme a total of 10 promising lines (island wide) were tested in the Colombo, Gampaha, Kalutara and Ratnapura districts. Ld 1-5-15 (3½ month white samba) showed resistance to neck blast under LCWZ conditions.

SOIL SCIENCE

The Division started its research activities under the guidance of a visiting Soil Scientist from the RRD, Batalagoda. Both glasshouse and field experiments were initiated during 2008 to cater to the needs of the Region. A total of 520 soil samples and 375 plant samples were analyzed during the year.

PLANT PROTECTION

Weed Science

Non chemical weed management

Trials conducted on the use of organic mulches i.e. *Lantana camara* (Gadapana) and *Gliricidia maculata* (Gliricidia) showed that the efficacy of weed suppression of organically grown rice could be achieved by repeated mulch application done at about 03 weeks after seeding.

In another experiment when pre germinated seeds were sown and 14 day old seedlings of Bg 300 were parachuted to water impounded fields it was seen that water could be used to reduce weed emergence at the early stage of the crop.

Entomology

Level of resistance for brown plant hopper

Two new formulations of Imidacloprid (70 WG and 200OD), viz., Thiocyclam hydrogen oxalate (50 SP & 4 G) and Ethiprole 100SC were recommended for the control of rice brown plant hopper (*Nilaparvata lugens*).

Table 2.3.1.5: Chemical recommendations for rice brown plant hopper

Chemical	Dilution rate (Fp/10 l)	Application rate (ml/ha)
Imidacloprid 200g /l OD	5ML	180ml
Imidacloprid 700g/l WG	1.5g	60g
Thiocyclam 50SP (Evisect S)	25g	1000kg
Thiocyclam 4G (Evisect S)	-	25kg
Ethiprole 100g/1SC 10-15ml (Curbix)		500ml

For the control of paddy bug Thocyclam 50SP (Evisect S) could be recommended at the rate of 800-1000g Fp/ha with a dilution rate of 20-25g Fp /10 liters of water.

As for the rice sheath (panicle) mite a methodology was developed to estimate its damage by using a scale prepared on the basis of the damaged lesion length.

Plant Pathology

Varietal screening for rice blast

450 lines and rice varieties from Bombuwela, Ambalantota and Labuduwa were screened out of which 200 lines were identified as blast resistant. This information was passed on to the respective breeders.

IRBN 2008

The 27th International Rice Blast Nursery (IRBN 2008) conducted under the International Network of Genetic Evaluation of Rice (INGER) was established at RRRDC, Bombuwela. 18 blast resistant varieties were identified. After characterization of these varieties seed multiplication was done and distributed among breeders of the rice sector. Seeds samples of these varieties were also handed over to the PGRC for conservation.

Sheath blight Disease

A varietal screening technique was developed which will be used in future to select tolerant varieties to this disease.

A leaflet on sheath blight disease was prepared for distribution among extension officers and farmers in the island.

RICE RESEARCH STATION, LABUDUWA

The Rice Research Station, Labuduwa is responsible for developing technology for high potential rice lands in the southern region of the Low Country Wet Zone.

Breeding

The Ld 99-17-4 (3½ months, red samba) tested in the VATT programme last year was released for commercial cultivation in the LCWZ as LD 365. This variety is moderately resistant to brown plant hopper, rice gall midge, rice blast disease and resistant to lodging and is an advantage to areas where mechanical harvesting is done.

NCRVT and VATT Programmes

Ld 3-6-12 (3 ½ month white samba) was tested in the NCRVT while Ld 1-5-15 Ld 3-12-50 and Ld 3-12-16 were tested in the VATT programme. It was reported that Ld 1-5-15 was seen to be resistant to neck blast disease under LCWZ conditions.

Breeder Seed Production

The requirement of 82 kgs of breeder seed of the recommended variety Ld 356 was produced and distributed among government farms for multiplication.

PEST CONTROL

Paddy Bug

Having physical barriers (Luffa grown on bunds and 5' polythene cover round the plots) were seen to be effective in controlling the paddy bug.

AGRICULTURAL RESEARCH STATION, BENTOTA

Varietal screening programme for flood tolerance was continued. Studies on the seven promising lines already selected for these particular farming situations were carried out. The NCRVT and VAT programmes were also continued in representative field conditions in farmers' fields.

TECHNOLOGY TRANSFER

About 500 extension officers were trained during the year in pre seasonal programmes; In two special programmes on 'sheath mite' about 50 field officers from Galle and 25 from Mahaweli Authority, Embilipitiya were trained in the two respective places. About 90 farmers were trained on organic agriculture in three farmer training programmes. 04 students from the NAITA and two university students were also trained. Another 230 students from various schools too were trained on all aspects of wet zone rice farming. There were also two TV programs on 'sheath mite, including one live programme that were conducted.

In an impressive monthly Seminar Programme a total of 44 papers (consisting of 11 from ROO, 01 from an AO, 06 from PAA, 04 from AMOO, 09 from RAA and 13 from AII) were presented on related topics.

RESPONSIBILITIES HELD BY OFFICERS

- J.B.D.S. Kahandawela, RO

Link Scientist, District Agricultural Committee, Kalutara

Project Coordinator, Animal Component in Organic Rice Production in LCWZ

- A.P. Bentota, RO

Coordinator for plant breeding working group of DOA.

Collaborator of the project on "Health promoting functional properties of rice" conducted with Industrial Technology Institution (ITI), Colombo

Co-ordinator of organic rice seed production programme in RRRDC, Bombuwela

- J.D.K.M. Jayawardena, RO,

Coordinator, Weed Science Working Group Meeting

Coordinator, Training Programmes, RARDC, Bombuwela

- A.S. Pushpakumari, RO,

Coordinator, Seminar Programme and Staff Meetings, RARDC, Bombuwela

PLAN FOR 2009

The research programme currently being implemented will be carried forward with appropriate modifications. Work under the two Organic Projects will be further continued. The programme on the production of commercial seed paddy in short supply to the farmers will be further strengthened so that recommended varieties for the Region will not be in short supply to the farmers. Infra structure development activities

will be further carried out with the support of the Infrastructural Development Project currently functioning at the RRDl, Batatlagoda. Technology dissemination will be further strengthened by conducting field days with the participation of farmers and extension personnel in the region. The ongoing seminar programme will be extended to cover up the entire Western Province thus strengthening the collaboration with the Extension setup of the Province.

3.1 SEED CERTIFICATION AND PLANT PROTECTION CENTER (SCPPC) – GANNORUWA

Seed Certification and Plant Protection Center (SCPPC) has a multi disciplinary mandate to provide a wide array of services to achieve excellence in Agriculture. The centre encompasses seven major units under its administration, namely, Seed Certification Service (SCS), Plant Protection Service (PPS), National Plant Quarantine Service (NPQS), Plant Quarantine Station –Seaport (PQSSP), Plant Quarantine Station-Airport (PQSAP), Registrar of Pesticides (ROP) and Plant Genetic Resources Center (PGRC). As a signatory to the International Plant Protection Convention (IPPC) and Sanitary and Phytosanitary Agreement of World Trade Organization (SPS/WTO), and hence Sri Lanka is obliged to ensure the successful implementation of the terms of these agreements. In this context, Seed Certification & Plant Protection Center (SCPPC) serves as the National Plant Protection Organization (NPPO) of Sri Lanka which has to comply with the conditions in these agreements. SCPPC plays regulatory role under the Plant Protection Act No.35 of 1999, Control of Pesticides Act. No33 of 1980 and the Seed Act No 22 of 2003. Issuance of Import permits for plant and plant materials is handled at the Center itself.

The achievements of the SCPPC during the year are given below.

BUDGET

Allocation given and expenditure incurred under recurrent and capital are given below.

Table 3.1.1: Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Capital	2,704,650	1,334,879
Recurrent	3,037,000	2,751,044

PROGRESS

Plant Quarantine Activities:

Import Permits

Details of the import permits issued during the last year for the importation of plant and plant materials are given in the following table.

Table 3.1.2: No. of import permits issued

Permit type	Year 2008
Vegetable seeds	715
Fresh fruits	564
Plant and Planting materials	791
Plant Products	242
Seed Potato	19
Animal feed	78
Cut flowers for religious purposes	10
Products for human consumption	22
Biological agents	02
Total	2443

Entry point inspections

Testing of samples and release of imported seed potato are co-ordinated by this Center. Prior to release the consignments, laboratory tests are conducted at HORDI, Gannoruwa and NPQS, Katunayaka.

Twelve (12) such potato consignments with a total of 675 Mt belonging to 06 varieties were released during this period. One consignment containing fifteen 15Mt of imported seed potatoes were rejected during the year at the entry points inspection due to non-compliance of phytosanitary requirements.

Facilitation of Trade

Export of large volume of plant and plant products from Sri Lanka to several countries of the world is facilitated through cargo inspection, nursery inspection and issuance of phytosanitary certificates on behalf of agricultural export to satisfy plant health requirements of the recipient countries.

In-order to provide a better deal for farmers it was decided to import seed potatoes from United States of America as well, in addition to the European sources as prevailing at present. This decision was arrived after rigorous examination by a panel of specialists after giving due consideration.

to the phytosanitary conditions in the country of origin.

Although the volume of exports of plant and plant product has increased during the last few years non compliance interceptions has not showed a corresponding increase which reflects the efficacy of the export certification system.

Permission was granted for importation of seed potato from USA conditionally. The decision was made after careful study of the production histories and economic benefits that farmer receive through the deal

Regulatory activities

- (a) Action has been taken to gazette the regulations under Plant Protection Act No.35 of 1999 to combat the Coconut Leaf rot disease in the Southern province.
- (b) Finalizing the regulations made under the Plant Protection Act No.35 of 1999
- (c) Initiating the registration of seed handlers under the implementation process of the Seed Act. No.22 of 2003
- (d) Presenting and defending successfully matters pertaining to the Plant Protection Act No.35 of 1999 during legal proceedings.

PLANT QUARANTINE STATION (SEAPORT)

Main objectives of Plant Quarantine Station, Seaport are inspection and issuance of phytosanitary certificates to facilitate pest free international trade. It also carries out inspection of export and import cargos of plant and plant products and factories that produce them for ensuring phytosanitary requirements. Post entry quarantine is conducted by observing plants and plant material of questionable health under isolated condition thereby, facilitating import of restricted materials. It also supervises fumigation treatment conducted for quarantine and preshipment purposes. PQS seaport assists SCPPC of DOA in promoting international trade which leads to the development of agriculture to improve the national economy.

No. of PSC issued – 35,588

Income out of Issuing PSC – Rs.427,056.00

Income out of cargo inspection – Rs. 5,216,850.00

Total Income – Rs. 5,643,906.00

Table 3.1.3: Major Agricultural commodities exported in year 2008

Commodity	Quantity (Mt)
Tea	301,801.39
Rubber	6014.00
Coconut products	299,019.96
Fruits, Vegetable & live plant	13,899.67
Miscellaneous Items	285,926.33

Table 3.1.4: Agricultural commodities imported in year 2008

Commodity	Quantity (Mt)
Fresh fruits	28138.03
Ground Nut	4995.793
Pop Corn	245.1
Vegetable seeds	275.55
Hybrid Maize (for Planting)	826.63
Seed potato	1290.03
Onion seed	27.79
Sun hemp seed	30.00
Yellow maize. (For Animal feed)	81145.8
Palmyrah fibre	1085.9

PLANT QUARANTINE STATION (AIRPORT)

Main objective of Plant Quarantine Station Airport are ensuring exports of pest free material by inspection and certification for the building up of the image of nation. Prevention of the entry of restricted and prohibited plants, plant materials and interception of quarantine pests are conducted by this unit to prevent entry of pests that could be a threat to Sri Lanka. PQS Airport plays an important role in dissemination of information useful to international travelers and other stake holders on plant quarantine matters.

No. of PSC issued.- 28,046

Income out of Issuing PSC – Rs.336,352.00

Income out of cargo inspection – Rs. 4,142,250.00

Total Income – Rs. 4,478,802.00

PLAN FOR 2009

Overall objectives

Implementing relevant regulations to facilitate safe imports and exports of plant and plant products which will enhance the contribution from agriculture to gross domestic product. (GDP)

Formulation of appropriate plans and policy decisions related to the production of high quality seeds and plant materials

- Development of seed enterprises in the country
- Strengthening National Phytosanitary capabilities
- Upgrading technical capabilities
- Harmonization of regulatory measures
- Promotion of most effective and safe pest control strategies

3.1.1 SEED CERTIFICATION SERVICE (SCS) - GANNORUWA

The seed certification service (SCS) performs regulatory functions pertaining to assuring the quality of seeds and planting materials available to farmers.

Responsibilities:

- Certification of the quality of basic seeds and planting materials before multiplication.
- Certification of the quality of commercial seeds and planting materials of Rice, Vegetables, Other Field Crops (OFC), Potatoes and Fruit plants.
- Laboratory testing of germination, viability, purity and moisture of local and imported seeds.
- Post control grow out trials for quality testing of imported and locally produced seeds.
- Conducting tests on Distinctness, Uniformity and Stability (DUS), prior to release of new crop varieties
- Training Seed growers, Nurserymen, Seed men and Officers on quality seeds and planting material production and Seed Act.
- Conducting research on various aspects of seed technology.
- Implementation of Seed Act.
- Find out solutions for overcome field problems on quality seed and planting material production by conducting applied seed research activities.
- Quality assurance of imported vegetable seed programme.
- Seed development and quality promotion activities.
- Database management and monitoring.

BUDGET

Allocations received and expenditure incurred under different votes and projects are given in Table 3.1.1.1.

Table 3.1.1.1: Annual budget - 2008 (Rs. Mn.)

Vote	Allocation	Expenditure
Recurrent	10.06	9.90
Capital	5.21	4.06
Projects - Api Wawamu Rata Nagamu	2.75	2.75
Projects - Orange	0.45	0.42
Projects – Crop Zone	0.30	0.20
Total	18.77	17.33

PROGRESS

- Certified 3769 ha of rice, 330 ha of OFC, 137 ha of vegetables and 107 ha of potato for seed production.
- Quality certification of 5087 mt of seed paddy, 114 mt of OFC seeds and 13.2 mt of vegetable seeds and 1207 mt of seed potatoes.
- Laboratory testing of 6476 seed samples.
- Registration and technical assistance to 211 horticulture nurseries for certified planting material production.
- Certified 247165 grafted fruit plants
- Evaluated 4 rice, 5 OFC, 24 vegetable and 10 fruit varieties, under DUS testing program.
- Testing of 460 post control samples of rice, OFCs, vegetables and potatoes.

Seed Paddy Certification

During 2007, DOA farms, Cooperative Societies, Provincial Councils, Govi Jana Kendra, Mahaweli Authority, Irrigation Department, Farmer Organizations, Private Companies, NGOs and individual farmers were registered for certified seed paddy production.

Total registered extent to produce certified seed paddy was 3769 ha of which the share of private sector was 73% percent. Extents registered for certified seed paddy production under different sources and seed classes are given in Table 3.1.1.2. There was a 11% decrease in the extent registered for certified seed production of rice when compared to the year 2007. This was due to reduction of participation of both private and contract growers in certified seed production.

During 2008, a total of 5087-mt of seed paddy was produced of which the quality standards of 3465 mt of seed paddy were accepted by laboratory tests (Table 3.1.1.3). DOA farms with contract grower programme produced 2260 mt (44%), and Private growers 2821 mt (55%).

Table 3.1.1.2: Extents under seed paddy production in 2007 and 2008

Source	Seed class	2007		2008		
		Extent registered (ha)	Extent accepted (ha)	Extent registered (ha)	Extent accepted (ha)	Accepted %
Research stations	Breeder's	5.7	5.7	5.4	5.4	100.0
Govt. farms	Foundation	43	37	33.5	32.1	98.4
	Registered	434	401	453.2	451.1	100.0
	Certified I	103	87	97.8	92.2	95.2
	Certified II			15.2	15.2	100.0
Contract growers	Registered	8	5	3.6	3.6	100.0
	Certified I	470	396	344.8	321.2	90.5
	Certified II	17	9	70.6	69.2	88.6
Private growers	Registered			2.8	2.8	100.0
	Certified I	3080	2442	2422.0	2148.6	85.6
	Certified II	98	68	320.2	287.4	82.6
Total		4258.7	3450.7	3769.1	3428.88	

Table 3.1.1.3: Quantities of seed paddy tested and % accepted in 2007 and 2008

Source	2007		2008	
	Quantity tested (mt)	Accepted %	Quantity tested (mt)	Accepted %
Research stations				
Breeders seed	7.3	87	6	92
Foundation seed				
Govt. farms	2213	78	1960	81
Contract growers	439	88	300	92
Private growers	4042	62	2821	57
Total	6701.3		5087	

Certification of Other Field Crops (OFC) seeds

The total registered extent under OFC seed production was 330 ha of which contract growers accounted for 80%. Maize, mung bean, ground nut, sesame, cowpea, finger millet, black gram, soybean and pigeon pea were included in the OFC seed production programme. Extents registered for seed production under different sources and classes are given in Table 3.1.1.4. There was a 7.6% increase in registered extent for OFC seed production when compared to 2007.

Table 3.1.1.4: Extents under OFC seed production 2007 and 2008

Source	Seed class	2007		2008		
		Extent registered (ha)	Extent accepted (ha)	Extent registered (ha)	Extent accepted (ha)	Accepted %
Research stations	Breeders	1.2	1.2	2.7	2.5	100.0
Govt. farms	Foundation	15	9	15.8	14.6	100.0
	Registered	24	22	28	23.0	100.0
	Certified I	6.5	5.6	20.4	20.4	100.0
Contract growers	Registered	30	26	52.9	48.3	97.1
	Certified I	213	194	175.9	151.1	92.4
	Certified II	16	14	34.3	31.4	98.2
Private growers	Certified I	1	1			
Total		306.7	272.8	330.0	291.3	

During the year 2008, total OFC seed production was 114 mt of which 87% were certified. Quantities tested and percent accepted from different sources are given in Table 3.1.1.5.

Table 3.1.1.5: Quantities of OFC seed tested in 2007 and 2008

Source	2007		2008	
	Quantity tested (mt)	Accepted %	Quantity tested (mt)	Accepted %
Research stations	0.5	100	1.3	100.0
Govt. farms	26.2	82	31.5	81.8
Contract growers	78.5	90	81.2	90.7
Private growers	0.87	100		
Total	106.07		114.0	

Certification of vegetable seeds

Extent registered for vegetable seed production was 137 ha of which private growers accounted for 42.5%. Registered land extents under different sources and seed classes are given in Table 3.1.1.6. Tomato, Okra, Chilli, Snake gourd, Bean, Brinjal, Bitter gourd, Radish, Luffa, Capsicum, Yard long bean, Cucumber, Pumpkin, Amaranthus, Vegetable cowpea, Water melon, and Winged bean were included in the vegetable seed production programme. There was a 12 % decrease in extent registered for vegetable seed production compared to the year 2007.

Table 3.1.1.6: Summary of Vegetable seed production extents (ha) by class and source in 2007 & 2008

		2007		2008		
Source	Seed class	Extent registered (ha)	Extent accepted (ha)	Extent registered (ha)	Extent accepted (ha)	Accepted %
Research stations	Breeders	0.78	0.58	0.93	0.89	100
Govt. farms	Basic	10	6	12.2	10.3	100
	Standard	13	12	30.7	29.1	99
Contract growers	Basic					
	Standard	14	6.5	37.8	28.0	96
Private growers	Standard	109	76	55.2	37.0	96
Total		146.78	101.08	136.83	105.29	

Table 3.1.1.7: Quantities of Vegetable seed production in 2007 and 2008

Source	2007	2008		
	Quantity tested (mt)	Accepted %	Quantity tested (mt)	Accepted %
Research stations	0.14	99	0.09	100.0
Govt. farms 2	97	6.1	94.7	
Contract growers	4.7	94	2.5	92.0
Private growers	33	78	4.5	84.0
Total	39.84		13.19	

During the year, total vegetable seed production was 13.2 mt of which 12 mt were certified. Quantities tested and percent accepted from different sources are given in table 3.1.1.7.

Seed Testing

A total of 6476 seed samples were tested for quality certification at the DOA seed testing laboratories at Peradeniya, Mahalluppallama, Aluttarama and Batata.

Seed Potato Certification

Cultivated extents for different seed potato classes are given in the Table 3.1.1.8. The total extent under seed potato was 107.25 ha and a total of 1207 mt of seed potato of 3 popular potato varieties (Desiree, Granola, Raja,) was certified. 23700 rooted stem cuttings and 46533 mini tubers was certified under special seed potato programme in poly tunnels.

Certification of Planting Material

A total of 247165 fruit plants in government nurseries and private nurseries, were certified and labeled (Table 3.1.1.9). This is 61 % increase when compared to the year 2007.

Table 3.1.1.8: Extents under seed potato production in 2007 and 2008

Source	Seed class	2007		2008		Accepted %
		Extent registered (ha)	Extent accepted (ha)	Extent registered (ha)	Extent accepted (ha)	
Govt. farms	Pre-basic	0.25	0.24	1.8	0.40	
	Basic	14.38	14.38	42.7	25.80	
	Certified	8.96	7.46			
Private growers	Certified	45.34	34.56	62.75	57.71	
	Total	68.9	56.64	107.25	83.91	

Table 3.1.1.9: Number of grafted fruit plants certified in 2007 and 2008

Species	No. of plants certified		% increase
	2007	2008	
Mango-grafted	52135	102223	96
Rambutan-grafted	33049	81985	148
Orange-grafted	68168	62957	
Total	153352	247165	

Registration of nurseries

The totals of 211 nurseries were registered during 2008.

Mother plant certification

A total number of 282 mother plants of mango, rambutan and orange, were selected and registered during the year 2008.

Post Control Testing

Post control tests were conducted to evaluate 460 seed samples. These include DOA-certified seed samples and imported seeds of different crop varieties. Number of post control tests conducted, under different crop categories are given in Table 3.1.1.10.

Table 3.1.1.10: Number of post control samples tested

Crop group	No. of lots tested
Rice	125
OFC	120
Vegetables	211
Fruit	4
Total	460

Distinctness, Uniformity, and Stability (DUS) Testing

Four rice varieties, (At 605, Bg 3026, Ld-3-12-50, At 632) were tested for DUS at post control field at Gannoruwa and 24 vegetable varieties, 5 OFC varieties, 2 root and tuber varieties, 10 fruit varieties were also tested. DUS testing of 2 Rice, 3 vegetables, 1 OFC and 5 fruit varieties were completed during the year.

Research and Development

Research studies were conducted in following areas;

1. To find out expiry date for vegetable seed packaging.
2. To find out scientific solution for day to day field problems of fruit plant certification program.
3. To study the risk associated with imported seed lots.

Training Programmes

SCS continued to conduct training programmes to enhance the knowledge of officers on production of quality seeds and planting materials. During the year about 496 officers were trained in 13 training classes.

SCS Information System

Development of the database on Seed Certification was continued by linking 22 Seed Certification Service regional stations, 4 seed testing laboratories and 4 post control stations, through out the country for easy data retrieval and analysis on information management. Furthermore we have designed new database system on personal data of all the staff members in all categories including headquarters, regional units, laboratories and post control stations.

Foreign Training

Rice Production Technology, Korea, 26th August – 11th September 2008 (One Officer)

PLAN FOR 2009

1. Establishment of Seed Act implementation unit

A Seed Act implementation unit will be established commencing from 1st January 2009, comprising a Research Officer and an Agricultural Instructor. During the year (2009) registration of all seed handlers covering agricultural crops, plantation crops, export agricultural crops and ornamental plants who are involved in production locally, importation of seed and planting materials, packaging, storage, transportation etc., will be registered for next two years. In addition, it is planned to conduct awareness programmes for officers, private sector seed handlers, general public and farmers on importance of Seed Act during the year. As a further step, to make aware seed handlers and to expedite registration under the Act, the final date, a media campaign will be launched in February 2009.

2. Establishment of Seed Research unit (will commence on 2nd April 2009)

This will be located at the Seed testing laboratory, Peradeniya under a senior Research officer. He will undertake to carryout 5 applied research studies during 2009 on;

1. To find out expiry dates of seeds packed in different packaging materials
2. To find out suitable bagging materials for grafted plants
3. Study on various potting mixtures
4. Comparative study to find out discrepancies in laboratory seed testing
5. Comparative study to find out difference between field standards and lab standards of ODV

3. Seed Health testing (Will Commence on 03rd August 2009)

At present, SCS does not test seed for its health. This is a vital area under seed quality assurance programme. Due to the future trend of

Hybrid seed production and other related issues occurred during rooting seed testing, it is high time to initiate a seed health testing facility under Seed testing laboratory, Peradeniya. Initially this unit will be established under one foreign trained officer.

4. Seed Development And Promotion (Will commence on 2nd February 2009)

This unit was active during 1998-2002 and due to unforeseen reason it was not functioning now.

This is another important area which will exposure the seed quality assurance activities and seed development work to the Farmers and public. Furthermore, Production of training material such as technical video films, organize training programmes, Production of TV and Radio programmes are some of the function hope to carry out under this division.

5. Establishment of Model fruit plant nurseries

As we are registering and handling approximately 250 fruit plant nurseries island wide

We do not have a way of showing a model class nursery for our nurserymen during our training sessions. According to our field experiences not a single registered nurseries is practicing perfect nursery management system. Therefore we hope to establish 5 model nurseries in following locations with immediate effect.

1. Post control field 1 Gannoruwa
2. SCS regional unit Pelwehera
3. SCS regional unit Batatha
4. SCS regional unit Nikaweratiya
5. SCS regional unit Alutharama

3.1.2 PLANT PROTECTION SERVICE (PPS) - GANNORUWA

Plant Protection Service is entrusted with the responsibility of promoting pest control methods that are environmentally sound, economically viable and practically feasible in agricultural crops under farmer conditions.

These broad objectives are expected to reach through implementation, monitoring and evaluation of field level integrated pest management (IPM) programs while upgrading the existing pest management techniques

Plant Protection Service also plays a supplementary role in implementing the Pesticide Act of 1981 through evaluation of new herbicides at pilot scale in farmer fields. Apart from that, revalidations of pesticides are also being carried out under this programme to re-affirm their continued and consistent efficacy.

Control of pest and disease outbreaks, seed and soil fumigation and management of some noxious invasive weeds including alien invasive species in agricultural and aquatic habitats are mandatory functions assigned to PPS.

Providing advisory services on pest control on specific pests are also undertaken. These activities encompass a major sector of the mandate of Plant Protection Act No: 35 of 1999.

BUDGET

The annual budget for the year 2008 is given in the table below.

Table 3.1.2.1: Annual Budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Recurrent	1488150.00	1392935.19
Capital	980000.00	671006.76
Projects:		
FAO/IPVM	295000.00	219436.12
“Api wawamu rata nagamu”	60000.00	29055.00
Total	2823150.00	2312433.07

PROGRESS

Promotion of Integrated Pest Management (IPM)

● Integrated Pest Management in Rice

The broad objectives of the program has been to provide technical support for sustainable rice production in the major rice growing areas through adoption of low cost and environmentally sound pest management strategies while minimizing the use of synthetic pesticides.

Farmer Field School was conducted in Mahaweli system C in collaboration with the extension officers of that area.

● Integrated Pest Management in Vegetables

A Farmer Field School programme was conducted at Thalatuoya area for tomato growers in collaboration with the extension officers of the area.

Twelve training sessions were conducted following FFS approach to train about 12 farmers during the season. Observations made at end of the season revealed that these farmers were able to reduce the pesticide application over 60% without making any yield loss, compared to non –IPM farmers in the adjoining villages.

● Integrated Pest Management on leafy vegetables

Continuation of the introduction of IPM methods on leafy vegetable growers in Colombo district (52 ac)

Integrated Pest and Vector Management in rice eco-system (IPVM)

Plant Protection Service is responsible for the implementation and management of the IPVM programme while Mahaweli Authority and Anti Malaria Campaign (AMC) of the Health Department act as collaborators.

During 2008, ten FFS sites were selected from Matara, Hambantota, Monaragala, and Kurunegala districts in the provincial DOA areas and Systems C, and Udawalawa in the Mahaweli areas. There were about 200 farmers participated

in those Farmer Field School programmes. In addition to that a training of trainers programme was conducted for field officers selected from the above areas to use them as field trainers during this project.

Apart from that three farmer visits were also been organized to share the experiences and ideas among those farmer groups.

In addition to that, a two day workshop was also conducted during the latter part of 2008 to review the progress and plan the activities for the next year.

Pilot Scale Testing of pesticides

Following new herbicides were evaluated under farmer field conditions for bio-efficacy. These herbicides have the added advantages over recommended herbicides that they are more target specific and applied at relatively low rates.

- **Herbicides for weed control in rice:**

Fenoxaprop-p-ethyl + Isoxadifen-ethyl
-for controlling grass

Azimsulfuron 50% DF
- for grass, sedges and broad leaves

Flucetosulfuron 10% WG
- for sedges and broad leaves

Orthosulfamuron + Propanil
- for grasses, sedges and broad leaves

- **Herbicides for weed control in B-onion**

Pendimethalin 30% EC from a new source as a pre emergent herbicide for control of annual weeds during first three to four weeks.

Control of Invasive species

- **Biological control of Salvinia**

Plant Protection Service maintains a culture of the biological control agent *Cyrtobagous salviniae* and has introduced the insect to salvinia infested water bodies throughout the island with successful results.

Followed by awareness programs for farmer organizations, the bio control agent *Cyrtobagous salviniae* was introduced into 29 tanks in Puttlam, Matale, Kurunegala, Anuradhapura and Colombo districts during 2008.

Some farmer organizations have reported

back that the insect has successfully controlled the weed within few months.

- **Biological control of Water hyacinth**

Plant Protection Service also maintains cultures of two bio control agents *Neochetina bruchi* and *Neochetina eichhorniae*.

These insects were also introduced into 14 tanks infested with water hyacinth in Matale, Anuradhapura, Kurunegala, Polonnaruwa and Puttlam districts during 2008.

- **Training on Aquatic Weed Management**

Plant Protection Service extended the collaborative support to the Ministry of Fisheries & Aquatic Resources, Ministry of Irrigation and Ministry of Public Estate Management & Development to conduct six training programmes to train more than 200 officers on control and management of invasive aquatic weeds and use of biological control agents.

- **Training programme on implementation of regulations of the Plant Protection Act. No: 35, 1999**

With the objective of implementation of legal provisions through authorized officers, a two day training workshop was held for 60 authorized officers, to make them aware of the legal aspects in implementing the Plant Protection Act No 35 of 1999. Those officers were appointed by DGA as authorized officers under the Plant Protection Act, in 2007.

Seed Fumigation

Following amount of seed materials in Govt. farms in, Kundasale, Pelwehera, Polonnaruwa, Ambalantota and Bataatha was fumigated to protect from stored pests.

Seed paddy	221 mt
Paddy for consumption	29 mt
Seeds of other field crops (maize, cowpea etc)	35 mt
Vegetable seeds	1 mt

In addition, following amounts of food items belong to Government food stores of the District Secretary, Puttlam was also fumigated.

Sugar	0.2 mt
Rice	15 mt
Dhal	6 mt
Vegetable oil	03 mt
Wheat flour	16 mt

Termite and Rat Control

Actions were taken to control termite infestations in several government complexes. These included several office buildings of Department of Agriculture in Peradeniya, Gannoruwa and Batalagoda and the "Deputy Surveyor General's Office – Central Province" in Gannoruwa.

In response to a request made by the Ministry of Cultural Affairs and National Heritage, action was taken to control termite infestations in, Ramba Raja Maha Viharaya in Mamandala, Hambantota, Rajopawanaramaya, Getambe and Cultural Museum at Kataragama. Apart from that, an archeological furnace at Cultural triangle complex in Sigiriya, with heavy infestations of termites was also successfully treated.

Field rats in rice fields have been reported to be a severe problem in several farming areas in Matale district. Therefore, a training programme on control of field rats was conducted for the extension officers in Matale district.

Coconut leaf rot disease and leaf wilt disease

Spread of coconut leaf rot disease caused by some fungi identified as *Ceratocystis paradoxa*, *Colletotrichum gloeosporioides* and *Fusarium spp.* and leaf wilt disease caused by phytoplasma in coconut cultivation and other plants of palm species were reported from southern part of the country.

In response to a request made by the Director, Coconut Research Institute and the Chairman, Coconut Cultivation Board, action was taken to control those two diseases under the Plant Protection Act No 35 of 1999 by gazette extraordinary No. 1542/7 of 24.03.2008 and to appoint 36 Authorized Officers from Coconut Cultivation Board.

Mealy bug (*Panococcus marginatus*)

During 2008, the incidence of above pest, tentatively identified as "Papaya Mealy Bug" reached epidemic levels in Gampaha, Colombo and Kalutara districts.

Plant Protection Service with the collaborative assistance from HORDI and Provincial DOA staff of the area, surveyed the affected area, prepared training materials for the awareness programmes and initiated control measures.

Other Activities

Spreading of powdery mildew in some of the major Rambutan growing areas of the country was detected and action was taken to suppress the disease.

Actions were taken to treat number of b-trees belonging to several historic temples on there request.

● Articles published in Newspapers

Integrated rat management in rice fields – published in Divayina by Mrs. Chamari Ariyadasa

● Presentations made by officers

Biological control of aquatic invasive weeds – Training programme for government officers of various departments in Anamaduwa by Mr.W.M.P.T.Bandara

Impacts of aquatic invasive plants and control methods – Seminar organized by Ministry of Public Estate Management & Development at Divisional Secretariat, Mahawewa, Dankotuwa and Wennappuwa. by Mr W.M.P.T.Bandara

Biological control of major alien invasive weeds in aquatic habitats – Training programme organized by NAQDA at Wilgamuwa AGA office by Mr W.M.P.T.Bandara

PLAN FOR 2009

- Implementation of the Plant Protection Act
- Implementation of Integrated Pest Management Programme (IPM) for rice
- Implementation of Integrated Pest Management Programme (IPM) for vegetables
- Implementation of Integrated Pest Management Programme (IPM) for leafy vegetables
- Adoption of chemical and biological control methods to eradicate/control invasive alien weeds in agricultural and aquatic habitats.
- Evaluation of new herbicides for bio efficacy at pilot scale in farmer field conditions.
- Fumigation of seed stores in government farms.
- Domestic pest control in government buildings.

3.1.3 NATIONAL PLANT QUARANTINE SERVICE (NPQS) - KATUNAYAKE

The mandate of the National Plant Quarantine Service of Sri Lanka is to facilitate the import and export of pest free plants and plant products, for the development of agriculture and related industries in the country. To achieve this, emphasis were given to both research and service oriented quarantine activities.

Phytosanitary certification, inspection and treatment of import and export plants and plant products, dissemination of knowledge on all aspects of plant quarantine via training and awareness programmes for interested groups are the main activities of NPQS. Furthermore, NPQS collaborates frequently in its activities with national research institutes, universities and institutes and centers of DOA. This report gives the achievements made on financial, technical and service oriented activities carried out during 2008.

BUDGET

Allocation given and expenditure incurred under recurrent, capital and projects are given in Table 3.1.3.1.

Table 3.1.3.1: Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Capital	2,145,700.00	748,090.92
Recurrent	4,522,500.00	3,958,853.45
Project (CARP)		
12/629/472		
(2008 January – April)	22,300.00	0.00
12/629/478		
(2008 January-June)	153,840.00	84,535.27

PROGRESS

PLANT QUARANTINE OPERATIONS

Table 3.1.3.2: Activities carried out in 2008

	Activity	Achievements
01	Registration of interceptions	254
02	Number of interception reports sent	244
03	Registration of inspections	515
04	Number of inspection reports sent to entry points	484
05	Registration of coir products for testing	64
06	Reports for tested coir products	57
07	Registration of submitted samples for testing	42
08	Number of training programs conducted	17
09	Number of questionable consignments destroyed	836

DIVISION OF ENTOMOLOGY

Table 3.1.3.3: Testing of export foliage samples for insect pests, mites and plant parasitic nematodes

	Description	Number of Tested samples	Number of Contaminated samples
01	Foliage samples for plant nematodes	8625	1176- retested
02	Foliage samples for insects and mites mites	1005	64 - rejected 01- insects 10-mites
03	Strawberry	40	None
04	Coir for insect pests, mites and plant parasitic nematodes	61	11 - Soil 01- insects

Table 3.1.3.4 : Testing of imported plant samples for insect pests, mites, and plant parasitic nematodes

	Items	No. of Samples	Country of origin	Pest Detections
01	Foliage plants	52	Netherlands, India, Japan, Taiwan, Israel, Papua new guinea, Thailand, U.S.A.	Free
02	Fruit plants	27	Thailand	Aphids, mealy bugs
03	Dried fruits	03	U.S.A.	None
04	Seed potato	67	Germany, U.S.A., India Netherlands	None
05	Seeds			
	Cashew	02	India	<i>Sitophilus</i> spp., <i>Carphophilus</i> spp
	Maize	152	India, Thailand, South Africa, Australia	<i>Tribolium</i> spp., Mites <i>Sitophilus</i> spp, <i>Cryptolestus</i> spp
06	Groundnuts	52	India	None
07	Fiber	02	Mexico	None

Inspections

- (1) Ten export foliage nurseries were inspected to promote the production of pest free export foliage products.
- (2) Monitoring of plant parasitic nematode status in export foliage nurseries.
 Number of nurseries inspected – 15
 Number of soil samples tested – 692
 Number of contaminated soil samples - 191
 Contaminated information on contaminated was given to nursery managers to eradicate the plant parasitic nematodes.

Experiments

- (i) Completed the research on “Study of the effect of botanicals to control mealy bugs of export Chrysanthemum” Treatments
 Wara leaf extraction (50g leaves/ / 250ml water / 1ml teapol)
 Fresh garlic extract (50g fresh garlic / 250ml water / 1ml teapol)
 Neem oil (5ml oil / 250ml water / 1ml teapol)
 Citronella oil (5ml oil / 250ml of water & 1ml of teapol)
 Ardothoda fresh leaf extraction (50g leaves / 250ml water / 1ml teapol)

All the above treatments were significantly effective to control mealy bugs of export Chrysanthemum and Citronella oil treatment could be applied as a quarantine treatment.

- (ii) Maintenance of mass culturing of two fruit fly spp. for irradiation treatment.
- (iii) Completed island wide survey of export potential pineapple fields to detect the pest and disease status for fulfilling the plant quarantine requirements of Australia

Other Activities of Entomology Division

Twenty three new insect specimens were collected and the insect reference collection was maintained

Thirty two samples of plants were tested for insect pests, mites and plant nematodes

DIVISION OF PATHOLOGY

Table 3.1.3.5: Finding of the intercepted plant materials

Material	No. of samples	Country of Origin	Pest detected	Remarks
Potato	67	Netherlands	<i>Streptomyces scabies</i> <i>Helminthosporium solani</i> <i>Fusarium</i> sp. <i>Erwinia</i> sp. <i>Rhizoctonia solani</i> <i>Streptomyces reticuliscabies</i>	10 t of potato sample was rejected due to high amount of Netted scab.
Maize	142	China, Thailand, South Africa, Australia, India	<i>Aspergillus</i> spp. <i>Mucor</i> spp. <i>Fusarium</i> spp. <i>Penicillium</i> spp. <i>Colletotrichum</i> spp. <i>Nigrospora</i> spp. <i>Rhizopus</i> spp. <i>Curvularia</i> spp.	
Ground Nut	54	India	<i>Aspergillus</i> sp., <i>Penicillium</i> spp, <i>Mucor</i> spp. <i>Rhizopus</i> spp. <i>Colletotrichum</i> spp.	
Cashew nuts	19	Ivory coast	<i>Rhizopus</i> spp., <i>Penicillium</i> spp., <i>Mucor</i> spp <i>Aspergillus</i> spp.	
Cardamom	02		<i>Penicillium</i> spp.	
Jatropha carcas seeds	01		<i>Aspergillus</i> spp. <i>Rhizoctonia</i> spp.	
Tomato seeds	01	India	-	
Okra seeds	01	India	-	
Soya been seeds	01	India	<i>Rhizopus</i> spp.	
Beet seeds	01	U.S.A		
Carrot seeds	01	New Zealand	<i>Mucor</i> spp. <i>Alternaria</i> spp. <i>Erwinia carotovora</i> <i>Aspergillus</i> spp	
Seed potato	05	U.S.A	<i>Mucor</i> spp. <i>Colletotrichum</i> spp. <i>Alternaria</i> spp. <i>Fusarium</i> spp. <i>Nigrospora</i> spp.	
Strawberry plants	01	U.S.A	-	
Carnation plants	01	Holland	<i>Mucor</i> spp	
Flower bulbs	01	Netherlands		
Strawberry plants	03	Netherlands	-	
Gladiolus bulbs	01	Thailand	-	
Lilium bulbs	01	Netherlands		
Iris bulbs	01	Netherlands	-	
Tampico fiber	02	Maxico	-	
Root fibers	02	Maxico	-	
Copra	01	Indonesia	<i>Penicillium</i> spp. <i>Aspergillus</i> spp.	
Mushroom spawn	01	India	-	
Strawberry fruits	01	U.S.A.	<i>Aspergillus</i> spp. <i>Mucor</i> spp.	
Fruit tea	01	U.S.A.	-	
Sunflower fruits	01	U.S.A.		
Blue berries	01	U.S.A.	<i>Penicillium</i> spp	

Table 3.1.3.6: Materials Tested for Phytosanitary certificate for additional declaration

Material	No. of sample	Checked for	Country of Destination
Coir products	16	Fungi and bacteria	Turkey, Egypt, South Korea, Zimbabwe, France, Australia, New Zealand, Palastine.
Foliage plants	123	harmful fungi, bacteria, pests and soil organisms	Korea, Japan, Holland, Netherlands, Germany, U.A.E., Dubai, Zurich, Singapore
Foliage plants	18	<i>Synchytrium endobioticum</i> , <i>Clavibacter michiganensis</i> , <i>Xylella fastidiosa</i> , <i>Corynebacterium sepedonicus</i>	Greece, Holland
Foliage plants	15	Tissue culture plants in agar media	Denmark
Foliage plants	20	Process of transferring of tissue culture plants into sterilized containers	Australia, Denmark
Cocoa	2	Black pod of cocoa, Chestnut downy mildew	India
Anthurium flowers	2	Bacterial Blight	India

Table 3.1.3.7: Other samples tested for pathogens

Sample	No.	Fungus	Bacteria
Orchid Plants	03	<i>Fusarium</i> spp.	
Onion plant	01	<i>Aspergillus</i> spp.	
Livistonia plants	12	<i>Fusarium</i> spp.	Unidentified bacteria
		<i>Colletotrichum</i> spp.	Erwinia spp.
Nepenthus spp.	30	<i>Colletotrichum</i> spp.	
		<i>Curvularia</i> spp.	
Copra	01		
Dracaena spp.	16	<i>Fusarium</i> spp.	
		<i>Colletotrichum</i> spp.	
Cordium spp.	01	-	
Straw pots	14	<i>Rhizopus</i> spp.	Unidentified bacteria
Diffenbachia spp.	03		<i>Xanthomonas campestris</i>
Euphobia plants	01		
Polyscias spp.	10	<i>Fusarium</i> spp.	
Anthurium spp.	09		<i>Xanthomonas</i> spp.
Brinjal plants	01		
Paddy plants	01		
Castor oil cake	03	Sporeless fungus	

DIVISION OF WEED SCIENCE

ACHIEVEMENTS:

Sixteen Consignments were tested and three consignments were contaminated with weed seeds. Among them *Polygonum* spp. and *Galium trifidum* are of quarantine importanted

Reference collection of weed seeds has been developed during the year 2008. The total number of weed seed species collected so far is 433 and during this year 23 new weed species have been added to the collection.

Twelve farmer fields where the big onion crop had been established using imported seeds were insfected in ibbagamuwa area during

June- July 2008 and two plants of *Parthenium hysterophorus* were found in two different fields.

Experiments:

Allelopathic effects of selected invasive / quarantine important weeds (*Lantana camera*, *Wedelia trilobata*, *Parthenium hysterophorus*, *Panicum repens*, *Panicum maximum*) on the germination and seedling growth of different crop species (Capsicum, Radish, Tomato and Bean) were studied .Percentage of germination, the length of hypocotyle and radical was measured.

Elongation of hypocotyle, radical and germination of bush bean (*Phaseolus vulgaris*), raddish (*Raphanus sativus*) were affected by leaf litter of above invasive weeds.

TREATMENT TECHNOLOGY

Following activities have been carried out in the Division of Treatment Technology during the year 2008.

Fumigation

Commercial fumigations

A total of 165 consignments of plants and plant products, exported by different companies and individuals were fumigated at NPQS (Tables 1). Two consignments of assorted flowers imported from India and intercepted by the Plant Quarantine Unit at the Air Port also were fumigated.

Table 3.1.3.8: Commercial fumigations conducted at NPQS Katunayake during the year 2008

Commodity type	No. of fumigations
Foliage plants	29
Cut flowers	03
Wood/wooden items	28
Coir products	89
Cerbera	09
Powdered herbs.	05
Miscellaneous	02
Total	165

Supervision of Quarantine Treatments

Thirty two (32) commercial fumigations carried out by private companies on export commodities such as wooden pallets, wooden boxes, wooden skids, wooden crates and cardboard boxes- were supervised for certification purposes.

TECHNOLOGY DISSEMINATION

Table 3.1.3.9: Training and awareness programmes conducted in 2008

	Date	Group	Category	Training period	No. of Trainees
01	10.01.2008	University of Sabaragamuwa	Under graduate	01 day	20
02	04.01.2008	Crop wild relatives conservation project, HORDI (DOA)	Post graduate	01 day	15
03	03.03.2008	University of Jayawardenapura	Under graduate	01 day	25
04	22.04.2008	Sri Lanka School of Agriculture - Kundasale	Diploma	03 months	06
05	28.04.2008	University of Sabaragamuwa	Under graduate	15 weeks	02
06	28.04.2008	University of Peradeniya	Under graduate	01 week	08
07	08.05.2008	University of Jayawardenapura	Under graduate	01 week	02
08	23.06.2008	Advanced Technological Institute -Naiwala	Diploma	04 months	04
09	18.09.2008	University of Wayama	Under graduate	01 day	26
10	03.10.2008	Bacilica college -Ragama	School	03 months	01
11	03.11.2008	University of Sabaragamuwa	Under graduate	04 months	01
12	03.11.2008	Advanced Technological Institute -Naiwala	Diploma	3.5 months	01
13	17.11.2008	Advanced Technological Institute -Naiwala	Diploma	04 months	01
14	17.11.2008	Advanced Technological Institute -Naiwala	Diploma	04 months	01

PLAN FOR 2009

01. Testing of export samples
02. Testing of intercepted samples
03. Entry port inspection of seed potato consignments
04. Testing of seed potato samples
05. Collection of soil samples to study the Plant Parasitic Nematode status in export foliage nurseries
06. Control of Plant Parasitic Nematodes of export foliage nurseries using environment friendly methods
07. Development of γ -radiation treatments to eradicate local fruit fly species in export potential fruits (Mango, Papaya, Rambutan)
08. Field visit for the insect reference collection
09. Insect reference collection
10. Study on identification of thrips in ornamental plants
11. Study the repellent effect of some botanicals for scale insects
12. Identification of pathogens in samples submitted to NPQS
13. Preparation of permanent slides for fungi
14. Maintenance of pure cultures of plant pathogen
15. Improving laboratory manuals to identify plant pathogens
Photocopying of books, Photographs and print-outs
16. Maintaining seed potato samples for future use
17. Identification of viruses/bacteria adopting ELISA procedure
Potato samples (Viruses) 200, Potato samples (Bacteria) 200
Maize samples (Bacteria) 400, Other samples 200
18. Identification of quarantine important diseases on export of coir products
19. Identification of diseases in aquatic plants in export oriented nurseries in Sri Lanka
20. A study on present status and management strategies for Anthurium leaf blight
21. Maintenance of weed herbarium (No. of weed species expected to be collected)
22. Maintenance of weed seed reference collection
(No. of seed species expected to be collected)
23. Maintenance of live aquatic plant collection
24. Study of alleopathic effects of leaf litter of 05 different invasive weeds on crop and endemic species
25. Studying of establishment of alien weeds associated with imported vegetable seeds in farmer fields
26. Study of quarantine important weeds and the effect of parasitic weeds on the growth and yield of different crops
27. Commercial fumigations at NPQS
28. Fumigation supervisions
29. Visits to fumigation companies for inspection and auditing
30. Development of treatment standards
31. Reports on export foliage plants and coir products
32. Reports on intercepted samples
33. Post entry quarantine aspects
34. Training of undergraduates and diploma students
35. Training and awareness programs for the stake holders
36. Participation at seminars, workshops, conferences and meetings
37. Preparation of leaflets and posters
38. Pest Risk Analysis (PRA)
39. Issue of Phytosanitary Certificates
40. Testing of submitted samples
41. Destruction of commodities imported violating plant protection act

3.1.4 OFFICE OF THE REGISTRAR OF PESTICIDES (ROP) – PERADENIYA

The mandate of the Office of the Registrar of Pesticides is to execute statutory provisions of the Control of Pesticides Act No. 33 of 1980. The pesticides registration is the key provision in the course of life cycle management of pesticides in the country from importation through marketing of crops treated with pesticides. During the year 85 new registrations and 174 re-registrations have been completed conforming to the international guidelines and test protocols ensuring acceptability on safety, efficacy and environmental grounds. A sum of Rs. 2.7 million have been collected as revenue through registration and re-registration fees. The issuance of import approvals is entertained on certain quality assuring protocols for pesticide products entering in to the country. Apart from procedural control measures 1333 number of formulation analyses have been carried out, prior to marketing, covering 1118 of import consignments during the above period. Under the National Organic Standard Certification Project, the laboratory was upgraded with a number of

analytical and ancillary instruments at a cost of Rs. 15.65 million. Further, Rs. 11.3 million was contracted for lab space expansion which is under construction. Regulatory decisions were taken to phase out two insecticides (viz., dimethoate and fenthion) and a weedicide (viz., paraquat) based on unacceptable risks, especially acute poisoning associated with liberal use of these pesticides within the country. All of our outreach activities have been integrated to cater the requirement of effective regulation of pesticides under which 02 technical seminars, 05 school programs, 25 dealer trainings and 11 officer training were conducted. Approval of pesticide labels (651), advertising materials (93) and publishing a quarterly newsletter ("Surekemu") were also efficiently utilized as information management and exchange option to ensure better management of pesticides in the field.

BUDGET

The annual allocation and expenditure under different votes are given in following Table 3.1.4.1.

Table 3.1.4.1: Annual Budget – 2008 (Rs.)

Vote	Allocation	Expenditure	Income
Capital	1,241,750.00	715,030.00	-
Recurrent	1,693,850.00	1,643,320.11	-
Special project National Organic	149,00000.00 (Commitments 113,00000.00)	323,8714.00	
Registration &			
Re- Registration fees	-	-	2,397,950.00
Dealer Certification Fees	-	-	817,099.00
Total			3,215,049.00

PROGRESS

Registration of Pesticides

In this process, relevant information and documents are evaluated upon submission by the Registrant. If the outcome of assessment is satisfactory registration is granted with approved label and containers. The registration fee is then submitted in order to allot a registration number and issue the Certificate of Registration. During the year, 85 applications were received of which 72 registrations were granted while rejecting 13 applications as a result of thorough scrutinizing process in evaluation of pesticides. The total revenue collected in this activity was Rs. 142,7650.00.

Re-Registration of Pesticides

The registration of a product is valid only for 3 years after which the product status is reassessed based on new standards, findings and safety issues. During the year, 174 applications were processed under this category. Total revenue realized under this category was Rs. 970,300.00.

Product Assessment and Registration of New Molecules

Safer and environmental friendly pesticides were identified and promoted during the pre-evaluation of products for local trials, which facilitate the phase-out of hazardous products available in the market. Steps were taken to introduce a seminar type approach in evaluation of pesticides registration dossiers in order to have efficient and expedient evaluation of documents. One of the advantages expressed over this approaches were to share the knowledge among diverse disciplines for effective assessment of pesticides. More than 80 formulations were evaluated during the year and two were registered.

1. Alverde - agro
2. Cabrio (phyraclostrobin) - agro

Thorough and comprehensive assessment of registration dossiers for efficacy, quality and safety aspects on general use pesticides were carried out and further streamlined with respect to data requirements by improved guidelines. Twenty six (26) pesticides product including commodity active ingredients and household pesticides were registered during the year.

Import approvals

This process ensures that products are imported from the correct source of supply

conforming to the required quality standards and prevents importing excess volumes. During the year, 756 Quality Certificates submitted by the importers were assessed for this purpose prior to issue of import approvals.

Screening of Labels and Advertising Materials

Label approval procedure enables dissemination of proper information to the end user. To facilitate this process, label templates for all categories of agricultural pesticides were developed to improve the quality of label contents. More than 650 labels and more than 90 advertising materials have been screened during the year. The number of corrective attempts placed on label approvals were doubled during the year due to recent upgrade of the pesticide recommendations. Accordingly more user-friendly directions on the "dosage Section" were introduced in pesticide labels.

Field enforcement

As an on going programme, the office of the ROP continued to coordinate with the Provincial, Inter Provincial and Mahaweli Authority field enforcement staff to implement the Pesticide Dealer Certification Scheme. 25 one - day training classes were conducted for pesticide dealers on certification of sales outlets under the law. Pesticide dealer certificates are valid for one year unless cancelled for specific reasons. A fee is charged as a part of the regulator requirements for issuing a certificate. Total revenue realized under this category was Rs. 817099.00

Training and Awareness Programmes

Several training classes were held during the year for dealers (25), officers (011) and school children (05). About 899 training certificates and 1465 dealer certificates were issued in 2008.

Laboratory Activities

● Pesticides Residues in Treated Crops

In response to some field complaints highlighted in recent Regional Technical Working Group Meetings of the Department of Agriculture on possible high levels of Carbofuran residues in cultivated mushrooms, a research study was conducted on analysis of Carbofuran in market-samples. This research was accomplished (n=8) with an exhaustive method validation procedure for Carbofuran residue analysis. The research is on-going for further sample testing island wide.

● Pesticide Formulation Analysis

Quality of pesticide is a major factor determining the efficacy and the impact on the environment and human health. All registered pesticides should conform to the physico-chemical standards set out by International Agencies such as FAO and WHO. Accordingly each consignment is cleared for marketing if the local tests are satisfactory. In the year 2008, 1333 formulation analysis has been conducted on 862 batches and thereby cleared a total of 1210520 kg and 2094214 ltrs. for marketing. Six batches consisting 43,000 ltrs of pesticides have been re-shipped, due to non compliance to the standards.

Also during the year 21 pesticide formulations were fully analyzed for the purpose of investigation of field complaints.

Special Activities

● Establishment of Rapid Investigation Unit

For the purpose of effective and efficient delivery of justice to farmers on acts by

unscrupulous elements a Rapid Investigation Unit was established on the directives by the Hon. Minister of Agriculture Development & Agrarian Services with a field officers network and given a special training on Investigation and prosecution aspects.

● National Organic Standards and Certification Project

As a continuation of the improvement of laboratory facilities of the Office of the Registrar of Pesticides, Rs.14.9 mn. was allocated to this office under the National Organic Standards and Certification Project. Under this program, Rs. 11.3 m. was allocated for an extension of the building to accommodate a new laboratory and further Rs.0.75 mn. was allocated to purchase ancillary equipments and chemicals in order to smooth functioning of laboratory mandates. It is anticipated to have supplementary funds through provisions for the year 2009.

Publications

- "Surekemu" the newsletter, Office of the registrar of Pesticides

Table 3.1.4.2: Achievements – 2008

Item	Sub Activity	Total Annual Physical Target	Achievement up to End of the Year	%
1	Evaluation of original Registration applications	50	85	170
2	Evaluation of third- party Registration applications	100	84	84
3	Evaluation of Re-registration applications	130	174	134
4	Evaluation of data for local trials	40	33	83
5	Issue of import approvals	800	1118	140
6	Evaluation of Pesticides Quality Certificates	800	756	95
7	Screening of labels for approval	470	651	139
8	Screening of advertising material for approval	50	93	62
9	Inspection of factories	12	14	117
10	Inspection of approved repacking facilities and stores	02	05	250
11	Inspection of premises for fumigation operations	12	01	08
12	Inspection and Certification of Pest Control Operators	15	01	07
13	Inspection of sales outlets	100	06	06
14	Publish of Newsletter	04	03	75
15	Officer Training Classes	05	11	200
16	Seminars for school children	08	05	63
17	Dealer training classes	20	25	125
18	Issue of dealer Training Certificates	1500	899	60
19	Issue of dealer certificates	2000	1465	73
20	Field Complaints	02	07	350
21	Legal Prosecutions	03	00	00
22	Technical Advisory Committee Meeting	06	05	83
23	Formulation analysis	550	1333	242
24	Residue analysis	225	121	54
25	Disposal of obsolete stocks	04	00	00
26	Other activities such as field surveys	04	00	00

3.1.5 PLANT GENETIC RESOURCES CENTRE (PGRC) - GANNORUWA

Plant Genetic Resources Centre (PGRC) continues its efforts to ensure the conservation of the country's Plant Genetic Resources (PGR) and to promote their utilization for the benefit of present and future generations. To achieve this, the PGRC explores, collects, introduces, conserves, evaluates and documents the genetic diversity of food crops and their related species. The biotechnology facilities of the centre are mainly used to undertake advanced research in PGR evaluation and enhancement.

This report presents a summary of the progress achieved by PGRC in the year 2008.

BUDGET

The annual budget for the year 2008 is given in Table 3.1.5.1.

Table 3.1.5.1 : Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Recurrent	6,542,850.00	6,448,261.99
Capital	1,710,000.00	378,997.25
Projects		
SL / USA*	6,900,000.00	4,700,000.00

*SL/USA – Sri Lanka- USA cooperative germ-plasm development project

PROGRESS

Exploration and Collection of Plant Genetic Resources (PGR)

Exploration and collection of germplasm

Exploration and collection unit of the Plant Genetic Resources Centre (PGRC) is continuing collection of traditional cultivars of all edible crops and their wild relatives from various sources. During the year 2008, a total of 244 samples (21 rice, 27 coarse grain, 96 grain legumes, 20 vegetable legumes, 38 solanaceous vegetables, 9 other vegetables, 10 root and tuber crops, 23 medicinal plants and other vegetable species) were collected through field exploration and collection missions. Collections were made in Kurunegala, Puttalam, Ratnapura and Badulla districts.

Gap areas and areas needed need to recollection were identified using FLORA map software with passport data, herbarium data and other information of respective crop groups. During the year 2008, a total of 328 entries of passport data were sent to data management unit.

Acquisition of PGR from other institutes and introductions

A total of 18 rice samples were received from Regional Agricultural Research Center, Bombuwela.

Introduction of PGR from other countries

Two samples of Adzuki bean were received from abroad.

Seed Conservation

The activities and the achievements of the seed conservation division is given below. During 2008 we have been able to conserve 483 accessions in the genebank. Table 3.1.5.2 shows the number of accessions presently conserved in the genebank.

Table 3.1.5.2: Gene bank holding updated on 31.12.2008

Crop group	No. of Accessions
Rice & related species	4467
Other cereals & related spp.	1534
Grain legumes & related spp.	1904
Vegetable legumes	1175
Solanaceous vegetables & condiments & related spp.	1150
Cucurbit vegetables	744
Brassicaceae vegetables	31
Alliums	17
Other vegetables	370
Leafy vegetables	151
Root & Tubers	09
Mustard & related spp.	124
Oil crops	401
Fiber crops	66
Medicinal plants	27
Fruits	167
Total	12333

Germplasm Exchange

During 2008, the seed conservation division received 24 accessions of vegetable soybean from AVRDC.

Distribution of seeds

The gene bank distributed 448 seed accessions and details are given in the Table 3.1.5.3.

Table 3.1.5.3: Distribution of seeds from the gene bank during 2008

Crop	No. of Accessions	Issued to
Rice	294	RRDI, Makandura, Farmers
Maize	53	FCRDI, SCS, Farmers, University of Peradeniya
Sesame	06	AVC
Groundnut	03	AVC
Sorghum	10	AVC
Pumpkin	01	RARDC- Makandura
Cowpea	28	FCRDI
Tomato	03	HORDI, PGRC
Amaranthus	24	VRI
Capsicum	01	Farmer
Cucumber	01	Farmer
Kekiri	01	Farmer
Foxtail millet	01	AVC
Soybean	20	FCRDI, Farmers
Winged bean	01	FCRDI
Chick pea	01	AVC

Characterization, multiplication and rejuvenation of Plant Genetic Resources

During 2008, 850 accessions were characterized, rejuvenated and multiplied in PGRC field. The preliminary evaluation work was carried out to ascertain the response of chickpea for wilt causing pathogen *Fusarium*. Fourteen chick pea accessions showed more than 60% survival under inoculated condition with *Fusarium oxysporum*. These accessions will be further evaluated in 2008/2009 Maha season.

Selected banana germplasm accessions (Alukese, Bin kesel, Rath kesel, Gal kesel, Kadhali, Kannoru, Muwanethi kesel, and Nethrampalam) were established in field genebank for characterization purposes.

Though field establishment of bean accessions was failed due to yellowing problem, several accessions were successfully multiplied in a PGRC green house.

Biotechnology

Standardization of protocols has been perfected for molecular marker assisted breeding for bacterial wilt resistance in rice and transferring yellow vein mosaic virus (YVMV) resistance from wild species to cultivated species in okra. Molecular diagnostic protocols were perfected for YVMV, bacterial wilt pathogen (*Ralstonia*) and for *Erwinia*. Population genetic structure of wild banana (*M. acuminata*) was studied by using molecular techniques.

It was also able to identify 48 rice accessions resistant to Brown Plant Hopper, 69 thrip resistant accessions and a heat tolerant tomato accession.

In the *in-vitro* conservation laboratory, 96 sweet potato, 60 yams (*Dioscorea*) and 02 potato accession were maintained duplicating the same in the plant house. Five banana accessions were incorporated to *in-vitro* conservation.

PGR Information Management System

Installation and configuring oracle database

Oracle 9i Database Standard edition (9.2.0.1.0.1) was installed in IBM eserver and configuring was completed. Oracle 9i Developer suite was also installed and necessary configurations were done.

Data tables were created with Oracle 9i Database Standard edition. Oracle 9i Developers suite was used to develop required forms for the system. The database was populated with already assembled data.

A web based multi-user information system was developed using Oracle 9i. A major advantage of such a system is that the ability to access database and other applications using common web browsers (eg. Internet explorer, Mozilla firefox etc).

Development of Network infrastructure

The required infrastructure for the network was established to network computers together to form a local area network (LAN). A star topology is maintained via a 12 port 10BaseT CentreCom 3012SL Hub. All the cabling has been done using 100BaseT category 5UTP cables

PGR database

The improvement and incorporation of data into the database have been continued. Presently database contains passport data of 12,328 accessions and characterization data of 25 crops including rice, maize, finger millet, foxtail millet, sorghum, soybean, black gram, cowpea, mung bean, pigeon pea, groundnut, amaranthus, bean, winged bean, yard long bean, brinjal, tomato, capsicum, okra, pumpkin, snake gourd, bitter gourd, smooth luffa, mustard, and sesame.

Database of Crop Wild Relatives

To develop the database for in situ conservation of crop wild relatives, descriptors developed by Bioversity International were used. Entity relationship modeling method was used to define logical structure of the data. MySQL 5.0 was selected as DBMS. All Necessary tables were created using MySQL 5.0. Eco geographic survey data collected by PGRC and University of Ruhuna were inserted into the database.

Establishment of a National Information Sharing Mechanism on the Implementation of the Global Plan of Action (GPA) for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (PGRFA)

The Global Plan of Action (GPA) for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture was formally adopted by representatives of 150 countries including Sri Lanka during the Fourth International Technical Conference on Plant Genetic Resources, held in Leipzig, Germany in June 1996. The plan contains the priority activities identified, at local, national, regional and international levels and provides a framework for putting conservation and utilization activities on a solid foundation.

Information on activities pertaining to the GPA from 34 stakeholder institutes was collected in 2006. In 2007 the database was constructed by the data management unit of the PGRC to establish the GPA-NISM. The database is presently maintained at the PGRC.

SL-USDA Cooperative Germplasm Development Programme: Joint exchange, Research and Training

This project initiated its activities in 2002 and was terminated in June 2008. During 2008, the programme funded 13 projects of which 5 projects were undertaken at PGRC. All the project activities concentrated mainly on the use of advance biotechnology and molecular tools in developing varieties resistant to biotic and abiotic stresses. The final workshop of the project was held on 17th –18th June 2008 at PGRC.

Training and awareness programme

PGRC conducts public awareness programmes on importance of PGR management and conservation. Target communities for awareness include farmers, students of schools, agricultural schools and universities. During the year 2008, 112 programmes were completed for 67 schools, 13 universities, 6 agricultural schools, 02 teachers group, 06 other groups, (officers from department of wild life and forestry), 06 farmer groups. In-plant training facilities were given to 6 students. PGRC supported 6 advanced level students to carry out their project assignments on PGR conservation.

Awards and trainings

Awards:

- Dr. W.L.G. Samarasinghe, RO, PGRC was awarded The Promising Agriculturist in Biotechnology of the year Award 2008 at the Annual symposium of the Department of Agriculture, Sri Lanka
- A paper on 'Pyramiding of bacterial leaf blight resistant genes *Xa-21* and *xa-5* in rice by molecular marker assisted breeding' by Samarasinghe and et. al was awarded the Best paper of the year Award 2008 at the Annual Symposium of the Department of Agriculture, Sri Lanka

Trainings:

- Mr.P.G.Sunil Shnatha- Conservation and Sustainable Use of Plant Genetic Resources 07th May –31st October, 2008 National Institute of Agro biological Science –Japan

- Mr.K.M.G.Kulatunga-International training course on in vitro and cryopreservation techniques for conservation of plant genetic resources 17-29th November 2008. National Bureau of Plant Genetic Resources, New Delhi - India)

PLAN FOR 2009

- Continuation of exploration, collection and introduction of germplasm
- Continuation of on-farm conservation of indigenous and traditional crop varieties
- Establishment of protected area for wild rice
- Preparation of an atlas for crop wild relatives in Sri Lanka
- Continuation of conservation of genetic resources in the seed genebank, *in vitro* form, in green houses and in the field genebank
- Continuation of exchange of germplasm
- Characterization, multiplication and evaluation of germplasm accessions (rice, maize, okra, millets, capsicum, brinjal, tomato, pumpkin, sorghum, mustard, chick pea, bean and red onion)
- Selection of yellow mosaic resistant Okra lines using wide hybridization and back cross breeding procedure
- Molecular detection of somaclonal variation in micro propagated Embul bananas
- Evaluation and characterization of rice germplasm for resistance to rice brown planthopper (BPH), *Nilaparvata lugens* (Stål)
- Characterization of genes of rice germplasm for resistance to rice brown planthopper, *Nilaparvata lugens* (Stål) in Sri Lanka
- Molecular markers assisted screening and selection of the progeny developed through gene pyramiding for rice BPH resistance
- Characterization of the populations of rice brown planthopper (BPH), *Nilaparvata lugens* collected from epidemic fields in rice cultivated areas in Sri Lanka
- Evaluation of rice germplasm for resistance to thrips, *Stenchaetothrips biformis*
- Molecular characterization of salinity tolerant inbred lines of rice
- Estimation of population genetic structure of Musa balbisiana (Wild Banana)
- Hybridity testing of Sampath maize variety.
- Development of protocols for cryopreservation of banana
- Risk assessment of genetically modified organisms (GMOs), food, feed and processed products
- Maintenance and improvement of the present information management system
- Conducting awareness programme on PGR conservation and GMO for students, farmer groups and other organizations

3.2 SEED AND PLANTING MATERIAL DEVELOPMENT CENTRE (SPMDC) - PERADENIYA

Introduction

High quality seed is the easiest to introduce input for increasing yield and reducing production costs. The Seed and Planting Material development Centre (SPMDC) plays a vital role in seed production in the country. Basic seed of all locally recommended crop varieties produced on 15 government seed production farms attached to this centre. However, certified seed are produced through selected contact growers mainly in rice, vegetable and other field crops. The SPMDC at present operates its functions through 12 Assistant Directors of Agriculture (Seed), one for each region.

Mission of the SPMDC is to provide an assured supply of quality seed and planting material at competitive prices to Sri Lankan farming community.

Objectives:

To ensure production, processing, storage and distribution of basic and certified seed and planting materials.

- 1.To provide technical assistance and support for developing a seed & planting material industry in the state and private sector.

- 2.To provide necessary training facilities and information on all aspects of seed & planting material to stakeholders.
- 3.To achieve the seed & planting material security in the country

The following activities were conducted during the year 2008, which include Maha 2007/08 and Yala 2008 seasons in order to fulfill the objectives of the centre.

- Production of basic & certified seeds and Planting materials in government farms.
- Supply of basic seeds to seed producers.
- Multiplication of certified seeds through contract growers and supply for commercial cultivators.
- Management of government farms.
- Seed enterprise development and co-ordination.
- Maintenance of buffer stocks of seed.
- Co-ordination of seed & planting material supply.

BUDGET

Table 3.2.1: Annual budget – 2008 (Rs.)

Vote /Project	Total Provisions (Rs.million)	Total Expenditure (Rs.million)	% Exp
Normal Capital (Consolidated Funds)	14.28	10.82	75.8%
Normal Recurrent (Consolidated Funds)	39.66	38.19	96.3%
Seed Production Purchasing & Storage	66.09	62.86	95.1%
Maize Hybrid Seed Production	0.368	0.314	85.3%
Vegetable Hybrid Seed Production	0.81	0.778	96.0%
Farm Development under "Api	11.0	8.4	76.4%
Wawamu- Ratanagamu"			
"Api Wawamu- Ratanagamu"	0.375	0.359	95.7%
Improvement of Paddy Cultivation			
"Api Wawamu- Ratanagamu"	0.749	0.25	33.4%
Improvement of OFC Cultivation			
Compost Production	1.0	1.82	182% *
Jak Fruit Development	0.2	0.218	109 % *
Avacado Development	0.12	0.12	100%
Total	134.7	124.1	92%

*Utilized balance allocations of other divisions.

PROGRESS

PRODUCTION AND SUPPLY OF SEED PADDY

Basic seed paddy production in government seed farms

Foundation seed paddy (FSP) and registered seed paddy (RSP) of 27 recommended rice varieties were produced in seven government seed farms. Foundation seed produced using breeder seed supplied by Rice Research and Development Institute (RRDI), Batalagoda, Regional Agricultural Research and Development Centre (RARDC), Bombuwala, Rice Research Station (RRS), Ambalantota and Agricultural Research Station (ARS), Labuduwa. In addition to that, 9863 bushels (202.2 mt) of certified seed paddy (CSP) also produced in SPMDC seed farms by cultivating the rice fields, which were not used for basic seed paddy production.

To increase the use of quality seed paddy in commercial cultivation, SPMDC has conducted a collaborative quality seed production programme with the participation of several agencies including private sector organizations. Under this programme, RSP was issued to the relevant agencies. The resulting crops and the seed were certified through Seed Certification Service (SCS) of the Department of Agriculture (DOA). Furthermore, RSP was also issued to farmers under the secondary seed farm programme to ensure the production of quality seed paddy.

Quantities of certified seed produced by various public and private sector organizations are given in Table 3. The actual quantity produced by the private sector was higher than the amount given because some companies did not participate in the official seed certification programme but they had their own quality control systems. Quantity of CSP produced under the official certification programme was 11,038.4 mt. (538,460 bu.) during the year 2008 (Table 3.2.4) and equivalent to 12.5% of the total seed paddy requirement of the

Table 3.2.2: Basic Paddy Production in government seed farms during 2008

Seed Farm	2007/08 Maha (mt)			2008 Yala (mt)			Total (mt)		
	FSP	RSP	CSP	FSP	RSP	CSP	FSP	RSP	CSP
Aluttarama	3.4	93.1	3.3	15.6	83.3	2.5	19.0	176.4	5.8
Ambalantota	1.7	15.9	30.3	3.9	24.0	16.8	5.6	39.9	47.1
Bata ata	—	17.2	2.9	1.5	15.3	8.9	1.5	32.5	11.8
Kantale	18.3	182.9	—	7.9	237.7	—	26.2	420.6	—
MI	9.6	120.3	4.6	11.1	47.3	15.1	20.7	167.6	19.7
Malwatta	8.2	118.9	37.8	7.6	150.3	21.2	15.8	269.2	59.0
Polonnaruwa	15.7	161.3	53.4	5.2	254.9	5.4	20.9	416.2	58.8
Total (mt)	56.9	709.6	132.3	52.8	812.8	69.9	109.7	1522.4	202.2
Total (bu)	2776	34615	6454	2576	39649	3410	5351	74263	9863

Certified seed paddy production through contract growing programme

Certified seed paddy production is mainly conducted through contract growers. Under this programme, SPMDC had a target to purchase 60,000 bu. in 2007/08 maha and 2008 yala seasons (30,000 bu. per season). Due to unfavorable weather conditions prevailed during the harvesting period of 2007/08 Maha and 2008 Yala seasons, and high farm gate price offers by traders only 22,556 bu. (37.6% of the target) were purchased. Table 3.2.3 shows the certified seed paddy purchased during the year of 2008 in eight ADA regions. It was not possible to conduct this programme in Vavuniya region due to the civil unrest prevailed in this area.

country. There was a decrease by around 2.5% when compared with what was produced during favorable weather conditions.

Use of certified seed around 15% of the total seed requirement is considered as a satisfactory situation. In addition, a quality assured seed paddy production programme with help of extension staff of DOA and Mahaweli Authority of Sri Lanka was implemented in this year. For which also SPMDC supplied registered seed paddy. It was estimated that this quantity produced under this programme to be around 1354 mt. Hence total quality guaranteed seed paddy production based on the amount of basic seed paddy issued by SPMDC was about 33,900 mt. (1,651,000 bu.).

Table 3.2.3: Quantity of certified seed paddy purchased

ADA Region	Quantity		Total (mt.)	Total (bu.)
	2007/08	2008		
	Maha (mt.)	Yala (mt.)		
Aluttarama	26.2	29.7	55.9	2727
Ampara	41.4	105.5	146.9	7166
Bata ata	0	12.9	12.9	629
Kantale	15.2	37.7	52.9	2580
Maha Illuppallama	13.6	28.3	41.9	2044
Nikaweratiya	46.1	91.6	137.7	6717
Pelwehera	0	4	4	195
Polonnaruwa	10.2	0	10.2	498
Total (mt)	152.7	309.7	462.4	
Total(bu)	7449	15107		22556

Table 3.2.4: Collaborative Certified Seed Paddy Production

Institute	2007/08 Maha		2008 Yala		Year 2008		Production	
	Qty. Issued	Extent Certified	Qty. Issued	Extent Certified	Qty. Issued	Extent Certified	Mt.	Bu.
	by DOA (Mt)	(Ac.)	by DOA (Mt)	(Ac)	by DOA (Mt)	(ac)		
DOA							462.4	22556
Prov.	74.9	591.5	47.4	487.5	122.3	1079.0	2101.4	102505
IF	44.8	293.5	19.9	365.0	64.7	658.5	1282.4	63
Ag.Ser.	12.8	8.5	6.4	31.0	19.2	39.5	76.9	3753
Mahaweli	10.0	7.0	9.98	125.5	19.98	132.5	258.0	12588
Coop	14.5	146.0	9.2	176.5	23.7	322.5	628.1	30638
Farmer Or.	42.7	654.0	41.2	541.5	83.9	1195.5	2328.2	113573
Individual Farmers	114.4	771.0	81.2	736.0	195.6	1507.0	2934.9	143165
Private Companies	18.5	166.0	11.9	270.0	30.4	436.0	849.1	41420
Total	332.6	2935.0	227.2	2733.0	559.8	5668.0	11038.4	538460

Issue of Seed Paddy

Total seed paddy issued by the DOA for seed production and commercial cultivation for the year 2008 is given in Table 3.2.5. Foundation Seed produced from breeder seed in the previous season was used to produce registered seed in government seed farms. Registered seed was supplied to the contract growers as well as to private seed growers including private sector organizations to produce certified seeds. Total supply of registered seed during the year 2008 was 1383 Mt (67,463 bu). Supply of Certified seed paddy was 700 Mt (34,146 bu).

Table 3.2.5: Quantities of Seed Paddy Issued by the DOA (mt)

Season	Program	Foundation	Registered	Sub Total	Certified	Grand Total	
						Mt.	Bu.
2008 Yala	Farm	20.6	0.5	21.1	0.4	21.5	1049
	Cont.Growing	0	25.2	25.2	9.5	34.7	1693
	Private	0	178.5	178.5	24.7	203.2	9912
	Extension	0	225.9	225.9	196.0	421.9	20580
	Sub Total (mt)	20.6	430.1	450.7	230.6	681.3	
	Sub Total (bu)	1005	20980	21985	11249		33234
2008/09 Maha	Farm	22.9	3.8	26.7	0.7	27.4	1336
	Cont.Growing	0	36.3	36.3	1.4	37.7	1839
	Private	0.2	307.6	307.8	27.2	335.0	16341
	Extension	0	605.2	605.2	440.9	1046.1	51029
	Sub Total (mt)	23.1	952.9	976.0	470.2	1446.2	
	Sub Total (bu)	1126	46483	47609	22936		70545
Issues for the year 2008	Farm	43.5	4.3	47.8	1.1	48.9	2385
	Cont.Growing	0	61.5	61.5	10.9	72.4	3532
	Private	0.2	486.1	486.3	51.9	538.2	26254
	Extension	0	831.1	831.1	636.9	1468.0	71609
	Total (mt)	43.7	1383.0	1426.7	700.8	2127.5	
	Total (bu)	2131	67463	69595	34185		103780

PRODUCTION AND DISTRIBUTION OF OTHER FIELD CROPS (OFC)

Basic (Foundation & Registered) Seed Production

There are 30 DOA recommended Other Field Crop (OFC) varieties of nine OFC crops grown in the country. Total quantities of Foundation and Registered OFC seed produced during year 2008 in government seed farms and under contract growing are given in Table 3.2.6. Total production of basic seeds (Foundation & Registered) is slightly higher than that of the year 2007. However, chillie, groundnut, maize and soybean showed lower production during this year than that of year 2007. This was due to unfavorable weather conditions prevailed during this year.

Certified Seed Production

Certified OFC seeds were mainly produced through contract growing programme. However, hybrid maize variety "Sampath" was produced only in government seed farms at Bata Ata,

Aluttarama and Maha Illuppallama . Total amount of certified seed produced in this year was around 11MT (11.2%) higher than that of year 2007 (Table 3.2.7). However, certified seeds of blackgram, sesame and groundnut were lower than that of the previous year. Contract grown Sesame crops were damaged due to drought prevailed during Yala 2008. Although sufficient extent of certified groundnut crop was established, farmers sold their products as consumption seed at a higher price. Therefore, purchased amount of groundnut was much lower than that of the year 2007.

Issue of OFC seed during year 2008

The amount of OFC seed issued during the year 2008 for seed production and commercial cultivation is given in Table 3.2.8. Total seed issued during this year was around 28MT, lower than that of year 2007. This is mainly due to lower issues of maize, groundnut and sesame seeds. There was a lower demand for the locally produced maize seeds during this year because 533mt of hybrid maize seeds have been imported during this year.

Table 3.2.6: Basic Seed Production (Kg) of OFC- Year 2008

Crop	Foundation				Registered						Total Production of Basic Seed			
	Govt. Farms				Govt. Farms				Contract Programme					
	2007/08		2008		2007/08		2008		2007/08			2008		Sub Total
	Maha	Yala	Maha	Yala	Maha	Yala	Maha	Yala	Maha	Yala				
Black gram	282	167	449	193	490	683	285	3,266	3,550	4,233	4,682			
Chilli seed **	187	286	473	0	0	0	0	0	0	0	473			
Cowpea	72	344	415	517	705	1,223	508	1,413	1,921	3,143	3,558			
Sesame	0	0	0	157	622	779	0	164	164	943	943			
Green gram	305	395	699	880	880	1,760	1,132	5,030	6,162	7,922	8,621			
Groundnut	764	715	1,479	597	0	597	1,032	755	1,786	2,383	3,862			
Finger millet	215	1,167	1,382	510	888	1,398	0	0	0	1,398	2,780			
Maize seed (OPV)*	1,452	0	1,452	0	188	188	1,926	848	2,774	2,962	4,413			
Soybean	24	163	187	219	394	613	0	702	702	1,315	1,502			
Total	3,299	3,235	6,535	3,074	4,167	7,240	4,882	12,177	17,059	24,299	30,834			

(OPV* = Open pollinated varieties)

(** = Basic seed)

Table 3.2.7: Certified and commercial seed production (Kg.) in government seed farms and under contract growing - Year 2008

Crop	Contract Programme										Seed Farm					Grand Total
	2007/08 Maha					2008 Yala					Sub Total					
	2007/08 Maha					2008 Yala					2007/08 Maha					
	Cer.	Com	Total	Cer.	Com.	Total	Cer.	Com.	Total	Cer.	Com.	Total	Cer.	Com.	Total	
Black gram	8,089	95	8,184	1,775	2,975	4,750	12,934	0	0	0	0	0	0	0	0	12,934
Chilli seed	0	0	0	3,507	400	3,907	3,907	0	0	0	0	0	0	0	0	3,907
Cowpea	3,347	1,780	5,126	4,683	852	5,535	10,661	0	130	130	0	0	0	0	130	10,791
Sesame	61	0	61	315	163	478	538	0	0	0	0	0	0	0	0	538
Green gram	4,254	2,065	6,319	12,511	1,182	13,693	20,012	23	0	23	0	0	0	0	23	20,035
Groundnut	2,390	364	2,754	3,763	639	4,402	7,155	0	0	0	433	0	433	433	433	7,588
Finger millet	0	0	0	77	0	77	77	3,456	0	3,456	0	0	0	0	3,456	3,533
Maize seed (OPV)	16,103	0	16,103	11,613	0	11,613	27,716	763	0	763	0	0	0	0	763	28,478
Maize seed (Sampath)	0	0	0	0	0	0	0	1,378	0	1,378	5,334	0	5,334	6,711	6,711	6,711
Soybean	602	0	602	5,145	9,782	14,927	15,828	0	0	0	0	0	0	0	0	15,528
Total	34,844	4,304	39,147	43,388	15,992	59,380	98,527	5,619	130	5,749	5,767	0	5,767	11,516	110,043	110,043

Table 3.2.8: Issue (kg) of OFC seeds during Year 2008

Crop	2008 Yala						2008/09 Maha						Year 2008					
	Br.	Fou./ Basic	Reg.	Cer/ Std	Com.	Total	Br.	Fou./ Basic	Reg.	Cer/ Std	Com.	Total	Br.	Fou./ Basic	Reg.	Cer/ Std	Com.	Grand Total
Black gram	12	154	551	7,889	67	8,673	30	186	2,712	1,990	2,857	7,775	42	340	3,263	9,879	2,924	16,448
Chilli Seed	2.35	193		676		871	2	30		599		631	4	223	0	1,274	0	1,501
Cowpea	32	311	965	3,440	1,780	6,527	54	296	1,315	3,282	470	5,416	86	607	2,280	6,722	2,250	11,943
Sesame	0	145	386	131	0	661	0	45	409	158	136	747	0	190	794	289	136	1,408
Green gram	28	669	1,464	3,290	2,428	7,879	25	211	2,906	11,427	844	15,414	53	880	4,370	14,717	3,272	23,292
Groundnut	91.5	661	2,376	1,824	339	5,291	188	1,331	943	3,639	439	6,540	279	1,992	3,319	5,463	778	11,831
Finger millet	3.3	5	26	2,033	0	2,068	3	582	742	1,319	39	2,685	6	588	768	3,352	39	4,753
Maize seed (OPV)	79	115	1,031	5,092	0	6,317	24	407	2,922	15,667	0	19,020	103	522	3,953	20,759	0	25,336
Maize seed (Sampath)				1,583		1,583				2,765		2,765	0	0	0	4,348	0	4,348
Soybean	20.6	270	1,143	2,034	0	3,468	0	409	482	1,945	7,165	10,000	21	679	1,625	3,978	7,165	13,468
Total	269	2,522	7,941	27,990	4,614	43,336	325	3,498	12,430	42,790	11,950	70,992	594	6,020	20,371	70,780	16,564	114,328

PRODUCTION AND SUPPLY OF VEGETABLE SEEDS

Basic seed production

There are 54 DOA recommended varieties in 18 vegetable crops grown in the country. Production of basic seed of some varieties was carried out in seven government seed farms (Table 3.2.9). Total quantity produced was much higher than that of year 2007.

**Table 3.2.9: Basic Vegetable Seed Production
in Government Farms -2008**

Crop	Quantity Produced (kg)		Total
	2007/08	2008 Yala	
	Maha		
Bean	446.3	438.5	884.8
Bitter gourd	12.0	—	12.0
Bushy okra	78.4	20.8	98.8
Mea	25.3	154.8	180.1
Okra	—	255.9	255.9
Pumpkin	18.4	11.8	30.2
Capsicum	—	13.3	13.3
Sweet Melon	1.6	—	1.6
Tomato	0.4	6.1	6.5
Winged	26.7	—	26.7
Bean			
Spinach	—	23.7	23.7
Total	609.1	937.3	1546.4

Standard Vegetable Seed Production

Both public and the private sector organizations are involved in production of standard seed. The quantities produced by SPMDC in government farms and under contract growing program are indicated in Table 3.2.10. The total production in 2008 was also higher than that of previous year, which was similar trend in basic seed production. Standard seed production in government farms was remarkably higher than the previous year whereas production under contract growing programme was lower than that of year 2007. Lower production in contract growing was mainly due to lower quantity of bean seed purchased because farmers preferred to sell their green pods due to high price.

Table 3.2.10: Standard Vegetable Seed Production (kg) by DOA -2008

Crop	Farm Programme			Contract Programme			Grand Total
	2007/08	2008		2007/08	2008		
	Maha	Yala	Total	Maha	Yala	Total	
Bean	—	—	—	706.0	—	706.0	706.0
Bittergourd	260.9	364.8	625.7		469.0	469.0	1094.7
Brinjal		63.9	63.9				63.9
Bushitavo		443.1	443.1				443.1
Capsicum		93.5	93.5		3.8	3.8	97.3
Cucumber		155.5	155.5		81.6	81.6	237.1
Luffa	295.9	80.8	376.7				376.7
Mae	371.1	65.8	436.9		130.3	130.3	567.2
Okra	341.6	855.4	1197.0				1197.0
Pumpkin				18.0	13.8	31.8	31.8
Spinach	222.7		222.7	11.8		11.8	234.5
Sweet Melon		54.8	54.8	12.4		12.4	67.2
Tomato	68.9	309.6	378.5				378.5
Amaranthus	108.1	111.0	219.1				219.1
Winged bean	658.7	120.0	778.7	636.8	291.1	927.9	1706.6
Total	2327.9	2718.2	5046.1	1385.0	989.6	2374.6	7420.7

Hybrid Vegetable Seed Production

F1 hybrid seeds of two Brinjal varieties and one tomato variety were produced successfully in seed farms (Table 3.2.11). Brinjal was produced in Kundasale, Ambepussa and Alutharama while tomato was produced in Kundasale.

Table 3.2.11: Hybrid Vegetable Seed Production (kg)

Crop	2007/08	2008	Total
	Maha	Yala	
Tomato	0.36	6.02	6.38
Brinjal	21.75	40.65	62.4
Total	22.11	46.67	68.78

Vegetable Seed Distribution

Vegetable seeds were distributed through the DOA sales outlets and registered dealer network. These dealers include Agrarian Service Centres (ASCS), Cooperative societies, Farmer organizations, Provincial DOA and private registered seed merchants. Quantities of vegetable seeds supplied by DOA are given in Table 3.2.12.

Basic seed supply in 2008 was slightly higher compared to the year 2007 (104.5%). However, supply of standard seed was remarkably lower in 2008 by 62% due to shortage of bean seed whereas supply of home garden packs was higher than in year 2008.

Table 3.2.12: Vegetable Seed Supplied by DOA – 2008

Crop	Quantity Supplied (kg)						Grand Total
	Basic			Standard			
	Yala 2008	Maha 2008/09	Total	Yala 2008	Maha 2008/09	Total	
Amaranthus	18.5	1.1	19.6	100.7	135.1	235.8	255.4
Bean	154.8	1085.1	1239.9	884.9	591.4	1476.3	2716.2
Bittergourd	41.6	69.5	111.1	568.1	420.6	988.7	1099.8
Brinjal	26.4	25.5	51.9	240.4	121.6	362.0	413.9
Bushitavo	66.8	96.7	163.5	695.4	994.9	1690.3	1853.8
Capsicum	4.1	14.1	18.2	235.0	10.3	245.3	263.5
Cucumber	4.5	5.3	9.8	154.7	186.5	341.2	351.0
Luffa	97.9	119.5	217.4	201.3	234.1	435.4	652.8
Mea	72.3	110.3	182.6	750.7	512.3	1263.0	1445.6
Okra	169.5	152.5	322.0	959.0	1661.3	2620.3	2942.3
Pumpkin	1.6	3.4	5.0	11.4	9.6	21.0	26.0
Raddish		5.0	5.0	297.9	328.3	626.2	631.2
Snake gourd	44.9	36.9	81.8	568.5	617.7	1186.2	1268.0
Spinach	1.2	1.2	2.4	13.4	169.9	183.3	185.7
Sweet Melon	0.5	1.9	2.4	19.9	22.3	42.2	44.6
Tomato	48.6	33.2	81.8	318.0	134.8	452.8	534.6
Winged Bean	51.7	52.4	104.1	158.6	499.7	658.3	762.4
Total	804.9	1813.6	2618.5	6177.9	6650.4	12828.3	15446.8
Home Garden Packs 151,785							

Production and Issues of Seed Potato

Pre-basic and basic seeds of different seed classes from G0 to G3 and certified generations of C1 and C2 were produced in 2008 and amounts are shown in Table 3.2.13.

Pre basic seed and basic seeds produced were used for multiplication programme in five seed potato farms in Nuwara Eliya district. Excess amounts were issued to seed growers in the areas, especially in Badulla district and also for commercial cultivation.

Certified seeds produced in the farms were issued to commercial cultivation. Due to unfavorable weather condition prevailed in 2008; the seed potato production was decreased compared to the year 2007.

All classes of seeds of granola variety which has a high demand were produced in five farms. Granola seeds were issued to farms of the National Livestock Development Board (NLDB) at Ambewela and Bopaththalawa for the production of certified seed potato.

Table 3.2.13: Production of Pre-basic (Go) and Basic (G1, G2 & G3) seed potato (mt) during year 2008

Variety	Pre-basic Seed			Basic-Seed		
	2007/08Maha	2008Yala	Total	2007/08Maha	2008Yala	Total
Granola	0.29		0.29	19.9	143.1	163.0
Total	0.29		0.29	19.9	143.1	163.0

Table 3.2.14: Production of Certified Seed Potato (mt) during year 2008

Variety	2007/08	Maha	2008	Yala	Total
Granola		73.5		120.4	193.9
Total		73.5		120.4	193.9

Table 3.2.15: Seed Potato Supplied by DOA (MT)

Variety	2008	Yala	2008/09	Maha	Total
Granola		57.0		130.0	187.0

Production and Supply of Planting Material

SPMDC produces high quality fruit plants also in its farms. At the same time SPMDC provided financial assistance to produce high demand fruit plants in Research Farms of Horticultural Research and Development Institute (HORDI) and also in the Horticultural Crop Training and Development Farm at Bibile.

Planting materials of more than 30 species including 18 varieties of fruit crops were produced in these farms. Certification programmes were carried out for mango, rambutan, jak fruit, guava, avocado, durian, mandarine, orange, pomegranate, passion fruit, grapes and pears by the Seed Certification Service (SCS) of DOA.

SPMDC obtained funds from "Apiwawamu Ratanagamu", and Crop Leaders' projects to increase the planting material production. A remarkable increase in planting material production of mango and rambutan was achieved in year 2008 when compared to 2007.

Collaborative production programmes on banana and pineapple suckers were conducted with other institutes of DOA. In 2008, production of planting material of root crops was also carried out in small scale in SPMDC farms.

Table 3.2.16: Production and Supply of Planting Material in DOA Farms-2008

Crop	Prod.	Issues
Budded Plants		
Avacado	10980	7393
Beli	1434	1202
Durian	6974	5161
Guava	2715	2124
Jack	8715	5648
Jambu	1816	1524
Lime	3456	2387
Mango	92114	55712
Mandarin	1069	673
Mangusteen	777	653
Orange	6629	5408
Apple	134	
Pears	1647	
Rambutan	32335	25700
Sapadilla	633	458
Starfruit	2154	1634
Woodapple	1900	1150

Goraka	367	264
Other	5318	3474
Sub Total	181167	120565
Rooted Cuttings		
Grapes	2151	1289
Jambu	3224	2658
Permogranate	386	393
Lemanine	5278	3082
Pepper	1876	1677
Guava	156	134
Other	2224	1700
Sub Total	15295	10933
Crop	Prod.	Issues
Seedlings		
Amberalla	15236	12736
Anoda	1495	875
Goraka	1029	230
Papaya	17733	16955
Permogranate	21299	18726
Guava	9991	4063
Beli	249	316
Jambu	1960	1211
Kathuru	5786	5158
Passionfruit	7487	6928
Mangusteen	8267	6050
Lime	14419	8949
Other	23926	16189
Sub Total	128877	97386
Suckers		
Banana	5378	5390
Pine apple	732	732
Gotukola	248	202
Sub Total	6358	6324
Vegetable plants	57590	57805
Sub Total	57590	57805
Grand Total	389287	293013

Production of Papaya seed

Six point seven kg of seeds of Ratna papaya variety were also produced in Bataata farm.

Table 3.2.17: Production of Other Commodities

Product	Quantity
Banana (kg)	37879
Mango (kg)	6339
Papaya (kg)	22936
Orange (kg)	21
Guava (kg)	140
Passion Fruit (kg)	59
Pineapple (kg)	40
Water melon (kg)	236
Pears (kg)	98
Dragon Fruit (kg)	16
Pomegranate (kg)	59
Consumption Potato (kg)	85609
Consumption Vegetable (kg)	16680
Consumption Paddy (kg)	37359
Leafy Vegetables (bundles)	160
Cassava (kg)	7588
Amberalla (kg)	2206
Coconut (Nuts)	29494
King Coconut (Nuts)	4601
Arica nut (Nuts)	6425
Bread Fruit (Fruits)	506
Product	Quantity
Animal Products	
Milk (L)	30862
Cured (Pots)	283
Animal Fertilizer(kg)	63000
Compost (mt)	278
Consumption OFC	
Maize (kg)	4500
Maize (Green Cobs) (nos.)	4261
Dry chilli (kg)	465
Green gram (kg)	547
Cowpea (kg)	386
Sesame (kg)	93
Groundnut (kg)	84
Soya (kg)	2273
Kurakkan (kg)	544
Blackgram (kg)	880

SPECIAL PROJECTS IMPLEMENTED IN YEAR 2008**Cultivation of uncultivated lands in government farms**

In order to achieve the goals of "Apiwawamu-Ratanagamu" programme twenty five hectares of uncultivated lands were cultivated with perianials (15 ha), vegetables (5 ha) and paddy (5 ha).

Compost production

Two hundred eighty tons of compost was produced in government seed farms. A new Gliricidia plantation was also established in SPMDC farms covering of 4.0 ha for green manure production.

PERFORMANCE OF THE ADVANCE ACCOUNTS

The production of seed and planting material was carried out under the Advance Account.

Performance of the advance account during the year is given in Table 3.2.18.

Table 3.2.18: Performance of the Advance Accounts in Rs.

Farm	Loss/Profit (Rs.)
Aluttarama	
Ambalantota	520,516.50
Bataata	(9,684,487.11)
Kantale	10,445,553.16
Maha-Illuppallama	(2,433,356.66)
Malwatte	3,367,370.13
Polonnaruwa	5,521,313.39
Ambepussa	(4,433,500.88)
Kundasale	(4,480,729.38)
Middeniya	(5,658,512.89)
Piduruthalagala	(4,485,521.63)
Sita Eliya	(7,521,003.37)
Uderadella	(9,608,816.60)
Meepilimana	(7,444,440.64)
Kandapola	(3,987,475.71)
Total	(39,883,091.69)

3.3 SOCIO ECONOMIC AND PLANNING CENTRE - PERADENIYA

Vision: Uplifting the living standard of farming community through socio-economic research and policy analysis

Mission: To function as the National Centre in carrying out socio economic research and policy analysis in relation to the production, and marketing of mandated food crops, to ensure economic and social development of the farmers as well as other stakeholders.

Mandate: The mandate of the Centre is to conduct socio economic research and policy analysis to meet the emerging challenges within the food crop and ornamental plants sector and formulate policy options pertaining to the food and nutrition security to enhance rural family income.

BUDGET

Table 3.3.1: Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Capital	1,513,000	925,968
Recurrent	2,274,173	2,163,790

PROGRESS

SOCIO ECONOMIC RESEARCH AND POLICY STUDIES

Prompt payments for contract seed growers

The payment for contract seed growers usually get delayed due to standard procedures of the SCS and payment is approved based on the second report or B report. The possibility of the using the indicators of the preliminary report of seed certification service to make prompt payments to contract seed producers of groundnut is investigated by looking at the relationship between the criteria of the preliminary report (report A) on the yield of seeds and the amount of wastages during seed processing of ground nut .

The percentage of insect and mechanical damages is the most significant factor which determines the percentages of seed yield and wastage. The yield of grade-1 seed shows an inverse relationship with percentage of insect and mechanical damages. A positive linear relationship

is observed between the yield of grade-2 seed yield and the wastage. The chance of rejection percentages of “B” report after passing from the “A” is very low and it is 2.3 and 1.2 per cent on sample basis and quantity basis respectively. Therefore, purchasing ground nut seed based on accepted “A” report is financially feasible and it would lessen the time taken for the payment.

Incentives for local true seed production of big onion

The demand for quality big onion seeds is very high and one of the best ways to assure the quality of seeds is promotion of domestic production of onion seeds. The cost disadvantage of domestically produced seeds could justifiable only with adequate returns from onion production vis a vis the returns from onion production using imported seeds. Data collected from Dambulla, Kimbissa and Galewela area reveal that significant yield difference exists between two sources of seeds. Average yields of big onion using local true seed and imported true seed were 10,621 kg and 7,607kg and profits were Rs. 331,074 and 132,613 per acre respectively. Average true seed yield per 1 kg of mother bulb is 80g. The cost of producing 1kg of local true seed was 3,255 (including imputed cost) and profit of producing of local true seed was Rs 3,297 per kg (including imputed cost). The local production of true seed provides substantial incentives for both seed producers and farmers who utilize locally produced true seeds

Economics of maize production in Mahaweli System H

Cost and returns of maize cultivation under irrigation in yala season and the share of green cob and dry cob production and factors influencing on the productivity are assessed using the data from Mahaweli system H. The average yield of maize is 1,744 kg per acre. The cost of cultivation and profits (including imputed cost) are Rs. 34,291 and 18,502 respectively. Green cobs account only 2% of harvest and average farm gate price was Rs.6.35 per green cob. Variety, spacing used, no. of man days used irrigation and harvesting and amount of fertilizer used are the significantly influenced the land productivity of maize.

Better pricing policy for paddy and subsidy for fertilizer

The Government of Sri Lanka has been providing incentive for paddy production through

various policy measures. The major input policy, fertilizer subsidy, has become a heavy financial burden on the Government budget with the escalation fertilizer prices. No empirical evidence are available to ratify the Government's policy on fertilizer subsidy and therefore, this study attempted to analyze the impact of fertilizer subsidy on paddy supply and fertilizer demand. The factor demand for paddy cultivation was derived using trans-log profit function and thereby input demand and supply response elasticities were estimated for four different districts representing various agro climatic regions. According to the estimated elasticity values, it can be concluded that the fertilizer demand as well as paddy production in the country depend more on paddy price than fertilizer prices. Moreover, the results indicate that the paddy supply and fertilizer demand in non-commercial farming area is more responsive to the fertilizer price than the commercial farming area. These findings suggest that consistent output price policies are more important than the fertilizer subsidy to enhance the national paddy production.

Food prices escalation and nutrition

The trade and price policies in the country play a vital role in determining of food prices and thereby calorie intake. Rice is the major diet of Sri Lankan which along provides about 44% of daily calorie requirement as one of the cheap calorie source where as wheat provide 10% as a close substitute for rice. But recently the world cereal prices are increasing due to prevailing world fuel crisis and climatic change that adversely affect on developing countries. Hence this study attempts to simulate the impact of price changes and different trade policies on calorie intake.

Needs for Focused Technological Dissemination for Agriculture Development

The geographical differences in management practices and productivity and the determinants of the regional differences in productivity of potato in Nuwara Eliya and Badulla districts are investigated using the ASC level data. The results show that the productivity of potato is significantly influenced by seed rate, farm size, labor utilization, rate of chemical and organic manure application, pests and diseases and seasonality effects. All farmers use fertilizer mixtures and addition of excessive chemical fertilizers reduces the potato productivity while application of poultry manure or cow dung results considerable improvement in productivity. The lower seed rate results reduction in yield and the differences in seed rates contribute to the larger share of yield differences among farmers. The extension activities should be focused more on lagging sub regions of districts for the improvement of overall productivity of the district.

An Evaluation on Adoption of Forward Sales Contracts by Paddy, Maize and Onion Farmers in Anuradhapura and Matale District of Sri Lanka

Although Forward Sale Contracts System (FSCS) offers a mechanism to reduce price risk, few percentages of farmers have joined the program. The factors effecting the adoption of FSCs are evaluated using a sample of rice, maize and onion growers Anuradhapura and Matale districts. The analyses indicate that scale of operation, contacts with village extension agents, participation in social activities positively influence adoption decision while farmers with off-farm income and higher household income are most unlikely to participate in the FSCs. The results indicate that FSCS provide a reasonable hedging mechanism to farm households which depend more on agricultural income and those who have invested more on agricultural activities. Albeit the lower share of contracts compared to the farmer population, FSCS has provided to reduce the risk of more vulnerable groups. Promotional campaign of FSCS would effectively be carried out through the agricultural extension system. The higher capital requirement and price instability may act as main barriers for further promotional effort of the system and the system's sustainability.

POLICY DOCUMENTS AND CONCEPT PAPERS

Improving Marketing Systems for Major Food Commodities in Sri Lanka

Effective and efficient agricultural markets play a vital role in economic development and it was already an important gain in the perception of policy making. This recognition evokes the need to evaluate performance and efficiency in marketing systems looking at the relationship between food marketing systems and food security. It is necessary at first to identify the influence of system currently functioning on production and consumption. Secondly, potential means of reducing disincentives in production must be identified. Further, to improve household food security, various methods of sustainable agricultural production of food need to be promoted and to ensure this task an effective and efficient marketing system; and various steps along the food chain need to be considered. Therefore, It is necessary to estimate the total demand for major food items including fruits and vegetables, analyze the marketing function that include handling, transportation, trading, finance in marketing channels and availability of market information, Identify volumes of food flowing through consumer, producer markets and strengthening institutional capabilities and infrastructure facilities.

Hence underlying rational activities should be implemented to improve agricultural marketing: Improving physical and supportive marketing infrastructures, establish effective network to generate information among farmers, traders, wholesalers, retailers and processors/millers, develop public-private partnership to improve commercial linkages to improve welfare of rural communities, employment and income, interface Sri Lankan food market as well as global market in addressing regional trade agreement, decentralize market support services to ensure food security

Food Security and Vulnerability

Sri Lanka has been undergoing unprecedented hikes in food prices during the past few years. The prices of most important food items such as rice, wheat flour, pulses, milk powder and coconut have gone up 100-300% during the period of 2006 to 2008. The main reasons for the price change are increase in world market prices of commodities, soaring oil/energy prices and associated increase in processing and other costs in the value chain and export bans of other countries. Sri Lanka has shown higher level of economic growth during the past decade despite many economic and social constraints. Though, the per capita GDP level reached lower middle income country level, the more than 45% of the population depend on less than 2 US\$ of income per day. Eight out of ten live in rural areas and about half of the rural households represent the poorest. The majority of the rural sector depends on agriculture but the majority of them are net buyers of food. The changes in the economy, therefore, could severely affect the majority of rural and urban households' food security levels and this project intends to investigate on the effect of food price and income change on food security of the poor in Sri Lanka.

SEMINARS, WORKSHOPS AND TRAINING PROGRAMMES

Intellectual Property Management in Agriculture and Benefit Sharing

Organized by Socio-economics and Planning Center. Date: 7th March 2008, Place ISTI, Gannoruwa.

An awareness workshop was conducted on the issues of intellectual property management related to plant varieties via a vis WTO's TRIPS agreement. Various stakeholders of agriculture participated in the forum and mechanism for strengthening of intellectual property rights was discussed and the role of the DOA in establishing

the IPR policy for Sri Lanka was highlighted. It was decided to have further discussion on IPR issues with the stakeholders particularly the research organization for developing a suitable mechanism to enforce an IPR system for plant varieties.

Agricultural Policy Dialogue, 9th April 2008, PGRC, Gannoruwa

Current agricultural policy of food crop sector was subjected to a dialogue by public, private, NGOs and other sector stakeholders. The themes discussions highlighted the need of greater role of DOA in agricultural sector development and the need of a consistent agriculture policy. The agricultural trade policy was discussed and it was indicated that Sri Lanka still not utilize the opportunities generated through trade liberalization optimally. It was highlighted that severe decline in investments in research and development and human resource development could hamper the long term development of the sector.

An Introductory Course on Environmental and Natural Resource Economics

Date: 05th – 23rd May, 2008, AIT Conference Centre, Bangkok, Thailand. Sponsoring agent: South Asian Network for Development and Environmental and Natural Resource Economics (SANDEE)

The aim of SANDEE is to capacity building on Environmental and Natural Resource Economics within South Asian Countries. The environmental and natural resource economics is emerging as an important area with prevailing climatic change to assure food security in the world. Therefore the training would be beneficial to address current agricultural issues in environmental and natural resource management angle. Also the knowledge and experience I gathered would be useful in current research activities related food crop sector.

Second Annual Research Forum, Organized by: Agricultural Economics Association

Date: 03rd October, 2008, Place: PGIA, Peradeniya

Four papers were presented at the research forum organized by Sri Lanka Agricultural Economics Association by officers of SEPC on the themes of efficiency of rice production, export sector performance and trade liberalization, fertilizer subsidy, impact of Pakistan-Sri Lanka free trade agreement. The paper on efficiency of rice production highlighted the potential for further improvement of rice productivity in rainfed areas and the need of more R&D efforts. The study

on fertilizer subsidy indicates that policy focus on output prices would results better production responses than the fertilizer prices. The paper that examined the export sector performance and trade liberalization policies of Sri Lanka indicates that country's export performance has come to a momentum after 15 years of major reforms in 1977.

INFRASTRUCTURAL FACILITIES

The following items purchased during year 2008.

i.	Computers	-	02
ii.	Printers	-	02
iii.	UPS	-	02

TRAINING PROGRAMMES ATTENDED BY OFFICERS

Table 3.3.2: Training programmes attended by officers

Name of the training	Conducted Organization/Institute	Place	Duration	Acquired benefits from the training
Training on Macro Economic modeling, need assessment and costing	Department of National planning with the collaboration of UNDP, Colombo office	Ahungalla Heritance Hotel, Ahungalla.	19.06.2008 - 21.06.2008	Relevant knowledge on calculation of GDP by means of Eviews statistical package.
Training on Macro Economic modeling, need assessment and costing	Department of National planning with the collaboration of UNDP, Colombo office	Ahungalla Heritance Hotel, Ahungalla.	19.06.2008 - 21.06.2008	Relevant knowledge on calculation of GDP by means of Eviews statistical package.
Training on Statistical package for data analysis	Applied Statistics Association of Sri Lanka(ASASL), Colombo	Office of ASASL Colombo,07	03.10.2008 -31.10.2008	Knowledge on theory and practical aspects of Minitab and SPSS packages.
Training on new technologies on farm mechanization	FMRC, Mahailuppallama with the collaboration of Chinese Agricultural Mechanization Science(CAMS)	ISTI, Mahailuppallama	20.09.2008 -02.10.2008	Knowledge on latest technologies on farm mechanization(Crop and animal husbandry)

3.3.1 PROGRESS MONITORING AND EVALUATION UNIT (PMEU) – PERADENIYA

The PMEU is responsible for monitoring and evaluation of activities and programmes of the different Institutes, Centres and Units of the DOA and preparing relevant reports for the Ministry of Agricultural Development and Agrarian Services. The PMEU also plays an important role in streamlining the functions of the DOA through a process of performance appraisal. Monthly progress review meetings are also convened for effective utilization of funds allocated to different units.

BUDGET

Allocations received and expenditure incurred under different votes for the year 2008 is given in table 3.3.1.1.

Table 3.3.1.1: Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Capital	946,250	356,659
Recurrent	1,285,000	1,107,000

PROGRESS

Progress monitoring of Capital and Recurrent expenditure

Monitoring the physical and financial progress of capital work and recurrent expenditure was continued during 2008.

Progress monitoring of Special Projects

Progress of the following special projects was monitored during the year.

Special projects under DOA votes

- Uplifting orange cultivation in Moneragala District
- Organic product export development programme
- Media programme
- Strengthening crop production and training facilities at Horticultural Training & Development Institute, Bibile
- Training and capacity building
- School farm development programme
- Infrastructure development of Rice Research

& Development Institute

- Hybrid seed production programme
- Seed production and purchasing programme
- Sri Lanka – United States Development Agency germplasm development programme
- Small scale agricultural research projects
- Special projects under Ministry votes
- District agricultural coordination programme
- Agro Park – Gannoruwa (One stop shop) & Bata atha
- Uplifting national bee honey production
- Productivity enhancement of selected other field crops (Maize, Kurakkan, Green gram, Soy bean, Onion)
- Establishment of ‘Krusha seva piyasa’
- Popularizing local food production & consumption through increased contribution of women
- Strengthening small farmer entrepreneur groups under ‘Kethata aruna’ programme through ‘Gama neguma’ concept
- Training on special crop production programme
- Media programme + ‘Deyata kirula’ exhibition
- Implementation of Soil Conservation Act
- Rain water harvesting programme
- Popularization of organic agriculture
- Enhancement of fruit productivity through micro irrigation
- Establishment of Agricultural Resource Centres at government schools
- Reduction of postharvest losses
- Crop forecasting programme
- Crop zoning programme
- “Api wawamu Rata nagamu” programme
- Fruit crop production programme
- Rice cultivation programme
- OFC production programme

- Vegetable production programme
- Potato production programme
- Seed Production programme
- Home garden development programme
- Seed and planting material development programme
- Production and promotion of organic fertilizer

Monitoring studies

Crop zoning programme

Monitoring activities under crop zoning and “*Api wawamu Rata nagamu*” programmes were continued for the year 2008.

Achievements of DOA

Achievements of DOA in the year 2008 were compiled and submitted to the Ministry of Agricultural Development and Agrarian Services for inclusion in the progress report for the parliamentary budget speech and for the annual report of the Central Bank.

Administration report

Administration report of the DOA for the year 2007 was prepared in Sinhala, Tamil and English languages and distributed to all relevant Ministries, Universities, libraries and other relevant institutions.

Monitoring and updating of physical resources database

Data on physical resources such as land, buildings, vehicles and equipment of the different Institutes, Centres and Units of the DOA for the year 2008 were compiled.

Participation of PMEUE staff in training programmes

Mr K.A.N. Kurukulaarachchi (DD) participated a training course on ‘Integrated rural development’ from 10th July to 25th September 2008 at the Egyptian International Centre for Agriculture, Egypt.

PLAN FOR 2009

- Prepare monitoring plans for DOA programmes
- Monitor the progress of Capital and Recurrent work and special projects
- Conduct monthly physical and financial progress review meetings
- Provide information for the Central Bank report and the budget speech.
- Monitoring and evaluation of important programmes such as ‘*Api wawamu, Rata nagamu*’

3.4 EXTENSION & TRAINING DIVISION PERADENIYA

The goal of the Extension & Training Division is to achieve highest level of productivity in the food crops sector to ensure food security of the country as well as improve living standards of the farming community. Achieves of the division are focused on four main areas: extension, training, communication and, agricultural education & examination. Following activities are conducted to achieve the objectives of the division by the respective units.

- Direct extension programmes under major irrigation schemes conducted by six inter provincial units
- Collaborative extension programmes with provincial and Mahaweli areas.
- Conduct training programmes for extension staff, farmers, entrepreneurs and others at three in-service training centers, two District Agricultural Training Centers and Farm Mechanization Training Center.
- Conduct two-year Diploma course in Agriculture at Kundasale, Pelwehera, Angunakolapelessa, Vavuniya and Karapincha Schools of Agriculture.
- Collect, manage and disseminate information using electronic and print media carried out

by four Farm Broadcasting Units, Audio Visual Centre, Press and Information Centre.

- Conduct mobile extension programmes and Young Farmers Club activities.
- Conduct agriculture development work at two Bee Development Units.
- Conduct Organic farming programmes by Fertilizer Unit.
- Conduct agriculture Enterprise Development OFC development programs and women's Agricultural Extension work.
- Horticultural Crops Development training and development activities at Bibile Horticultural Crops Training & Development Institute.
- Conduct training programs for Agriculture Research and Production Assistants' at Wariyapola, Anuradhapura, and Labuduwa School of Agriculture, and Horticultural crops Training & Development Center, Bibile.
- Planning & Monitoring.

BUDGET

Table 3.4.1: Annual budget – 2008

	Head Allocation in Rs. million	Expenditure in Rs. million in year 2008	Outstanding Payments for year 2008
Capital	31.178	16.797	2.53
Recurrent	97.85	89.585	
Special Capital Projects			
Funds Under DOA Vote			
Training and capacity building	7.44	7.055	0.236175
Improvement of citrus cultivation in Bibile and Moneragala	4.405	4.405	0.
Agricultural Training Farms	16.275	11.596	2.7426
Organic product export development programme	15	13.16	0.078431
Media Programme	13.95	13.54	
Strengthening crop production and training facilities at HTDI Bibile	5.776	4.973	2.48
Funds Under Ministry Vote			
"Api Wawamu Rata Nagamu Program"			

Strengthening small farmer entrepreneur groups	4	1.46	0.0968
Popularizing local foods through farm women groups	2.5	2.225	
District/Provincial Agricultural coordination	4	3.709	0.29
Establishment of Agri. resource centers at govt. schools	4.019	4.019	0.014011
Enhancement of bee honey production in Sri Lanka	2.5	2.375	
Productivity enhancement program of selected OFC (Maize, Green Gram, Kurakkan, Soy bean, Onions)	5	3.214	0.557
Establishment of Agricultural supply points known as "Krusha Seva Piyasa" at district level.	1	0.656	
Media programs under "Api Wawamu Rata Nagamu" program	8	6.47	
Techno Parks Gannoruwa and Bata-Atha	26	25.484	
Other Projects Under Ministry Vote			
Establishment of micro irrigation systems for achieving higher yield from fruit cultivation	9.11	8.786	0.01414
Promotion of organic fertilizer production & use	9.3	6.851	1.889794
Popularization of organic agriculture	11.3	3.723	0.0010681

PROGRESS

SPECIAL PROJECTS

1. Training and capacity building

Three sub projects were conducted under this project.

- **One year training for Agricultural Research & Production Assistants**

One year training was given for 256 Agricultural Research & Production Assistants under this project. No of beneficiaries from this project are 256 ARPAs and 52,000 no of farm families

- **Training & capacity building at schools of Agriculture**

Rs.2.241 million valued new equipments were provided to improve the quality of teaching for agriculture diploma course. 409 no of diploma students were directly benefited from this project.

- **Improvement of capacity and facilities at ISTI and FMTC**

Improvement of training facilities for mushroom cultivation, development of facilities for improvement of quality and capacity of the hostel, development of lecture hall facilities and efficient use of training aids. 13773 no of trainees were benefited from this project.

2. Improvement of citrus cultivation in Bibile and Moneragala

184.4 acres of new orange plantations were established and reinstating 25 acres of existing orange cultivation was done during this year.

80850 no of orange plants were distributed among farmers. 3234 no of farmers were directly benefited from this project.

3. Agricultural Training Farms

Agricultural training farm lands at agricultural schools, In-service Training Institutes, and District agricultural Training centers were improved under this project. 484 no of diploma students & 13773 no of trainees were benefited by this project in year 2008.

4. Organic product export development programme

Organic researches were conducted at 4 research centers, and also 4 new organic villages, 10 organic demonstrations, and an organic resource center were established under this project. 1554 no of trainees, and 750 no of farmers (30 villages) were benefited from this project.

5. Media Programme

Production, editing, & telecasting of 172 of TV programs, Production, editing, & broadcasting of 3732 of radio programs, conducting 5 no of agricultural exhibitions/stalls, preparation, printing and distribution of 283 595 no of technical publications were done under this project. General public were benefited from this project.

6. Strengthening crop production and training facilities at HTDI Bibile

Strengthening & upgrading training facilities, providing training aids, office equipments, & farm machineries for the institute. Rehabilitation of drinking water system, Establishment of micro irrigation system for 12 acres, and 3 poly tunnels were rehabilitated under this project. All the

trainees trained in this unit were benefited from this project.

7. Strengthening small farmer entrepreneur groups through Gama Neguma Program

112 projects were planned and implemented to solve identified problems of farm families by this project. 1000 no of officer trainees and 112 farmer groups were benefited from this project.

8. Popularizing local foods through farm women groups

Under this project 4 sales centers were established, 168 workshops on local food promotion were conducted, and 4000 flip charts & 3000 books including food recipes related to yams were printed and distributed. 8477 no of farmer trainees and consumers of 8 sales centers established in year 2008 were benefited from this project.

9. District/Provincial Agricultural coordination

Toll free agricultural advisory service "Govi Sahana Sarana Sevava" was conducted under this project and 46634 no of farmer problems were replied through this service. Establishment of 9 cyber units (8 agricultural training institutes of central government & provincial council), special training programs were conducted for staff officers of the provincial councils. 46634 no of farmers under toll free advisory service, 1300 no of members of young farmers clubs, were directly benefited from this project. About 4000 farmers were also provided agricultural technological knowledge and about 2500 farmers were indirectly benefited from this project.

10. Establishment of Agri. resource centers at govt. schools

This program was implanted in 109 selected schools. Agricultural information was provided to establish the agriculture unit of the school as an agricultural resource center. Interactive multimedia CDs and DOA publications were provided for these schools and also 28 training programs were conducted for DOA officers and school teachers. 1400 no of trainees (DOA officers & School teachers), and school children in 109 schools were benefited from this project.

11. Enhancement of bee honey production in Sri Lanka

18 bee honey producing villages were established under this project. Special trainings also were conducted for 70 officers and bee keepers. 6000 no of farmer trainees, and 540 no of farmers in established bee keeping villages were benefited from this project.

12. Productivity enhancement program of selected OFC (Maize, Green Gram, Kurakkan, Soy bean, Onions)

78 no of farmer production groups were established to enhance the productivity of OFC. 40 Tarpaulin sheets, 4 multi crop milling machines and inputs such as fertilizer & seeds were provided for 45 farmer groups. Farmers in 78 farmer groups were directly benefited from this project.

13. Establishment of micro irrigation systems to achieve higher yield from fruit cultivation

To increase fruit productivity through introduction of micro irrigation technology, 46 micro irrigation systems were provided to farmers at concessionary rate. 1000 Guava plants were distributed among guava farmers with the objective of enhancing guava production with drip irrigation. Around 120 farmers are successfully cultivating guava fruit crop under micro irrigation technology and guava production will be significantly high. Papaya cultivation also significantly increased as commercial farms throughout the Island. Popularizing of papaya was indicated about 500 ha in extent during the period of year 2008. 480 no of farmers and 137 commercial level farms were benefited from this project.

14. Establishment of Agricultural supply points known as "Krushi Seva Piyasa" at private level

This project was implemented with the objective of establishing "Krushi Seva piyasa" at district level. It was expected to supply service to farmers on agricultural information, and inputs by these units. 17 No of "Krushi Seva Piyasa" were opened in year 2008.

15. Agro Technological Parks – Gannoruwa & Bata atha

Agro parks are maintaining for,

- Technology transfer to the farmer through live specimens
- Demonstration of new & old agricultural technologies
- Promotion of agro tourism for local & foreign tourists
- As a centre to distribute agriculture technology information & instructions.

During the year 2008, Number of visitors visited the Gannoruwa A-Park was 45426 and 35860 no of visitors visited the Bata Atha A-Park.

EXTENSION ACTIVITIES**Inter-Provincial Area - Ampara****2007/2008 maha****RICE**

The number of Yaya carryout in the year was 615 (57340ha) and the no of Saruketha Yaya under Revolving funds was 278 (6158ha).

Straw application (36750ha), use of paddy husk charcoal (1075 ha), use of balance fertilizer (organic and inorganic) (37500ha) were done under promotion of organic fertilizer usage programs.

37 IPM Yaya were conducted and 4213 ha were cultivated under certified seed paddy production programme.

OFC

Under other crop cultivation Chilli,(715 ha), Maize (5115 ha), Ground nut (115 ha) , Kurakkan (28 ha) , Green Gram (305 ha) , vegetables (1515 ha) and fruits (4165 ha) were cultivated.

TRAINING

1536 No of training Programmes were conducted on paddy, OFCC, vegetables and fruits.

FARMER PRODUCTION SOCIETIES

1477 no of Farmer production societies are established.

2008 yala**RICE**

The number of Yaya carryout in the year was 617 (10115 ha) and the no of Saruketha Yaya under Revolving funds was 379 (7855ha).

18 IPM Yaya were conducted and 3756 ha were cultivated under certified seed paddy production programme.

Straw application (43500ha), use of paddy husk charcoal (750 ha), use of balance fertilizer (organic and inorganic) (32500 ha) were done.

OFC

Under other crop cultivation Chilli,(17 ha) Maize (75 ha), Ground nut (08 ha) , Kurakkan (05 ha) , Gingelly (08 ha) , Green Gram (25 ha) , vegetable (218 ha) and fruits (8130 ha) were

cultivated.

TRAINING

2103 no of training Programmes were conducted on paddy, OFCC, vegetables and fruits.

FARMER PRODUCTION SOCIETIES

952 No of Farmer production societies are established.

Inter-Provincial Area - Polonnaruwa**2007/2008 maha****RICE**

The number of Yaya carryout in the year was 531 (13125ha) and the no of Saruketha Yaya under Revolving funds was 126 (1843ha).

Straw application (9710ha), use of paddy husk charcoal (1038 ha), use of balance fertilizer (organic and inorganic) (2400ha) were done under promotion of organic fertilizer usage programs.

12 IPM Yaya were conducted and 67 ha were cultivated under certified seed paddy production programme.

OFC

Under other crop cultivation Chilli,(46 ha), Maize (386 ha), Ground nut (178.5 ha) , Kurakkan(7.5 ha) , Green Gram (26 ha) , vegetables (243 ha) and fruits (300 ha) were cultivated.

TRAINING

262 No of training Programmes on paddy, 12 programmes on OFCC, 03 programmes on vegetables and fruits were conducted. 122 field days were conducted on Paddy, OFC, vegetables fruits and others.

FARMER PRODUCTION SOCIETIES

365 no of Farmer production societies are established.

2008 yala**RICE**

The number of Yaya carryout in the year was 524 (13120ha) and the no of Saruketha Yaya under Revolving funds was 131 (1887ha).

20 IPM Yaya were conducted and 17.5 ha were cultivated under certified seed paddy production programme.

Straw application (10600ha), use of paddy husk charcoal (1355 ha), use of balance fertilizer (organic and inorganic) (3650 ha) were done under promotion of organic fertilizer usage programs.

OFC

Under other crop cultivation Chilli, (18.5ha) Maize (41.5 ha), Ground nut (35 ha) , Kurakkan (02 ha) , Gingelly (02 ha) , Green Gram (20 ha) , vegetable (174.5 ha) and fruits (310 ha) were cultivated.

TRAINING

445 no of training Programmes were conducted on paddy, OFCC, vegetables, fruits and others.

FARMER PRODUCTION SOCIETIES

371 No of Farmer production societies are established.

Inter-Provincial Area - Anuradhapura

2007/2008 maha

RICE

The number of Yaya carryout in the year was 292 (2767.8ha) and the no of Saruketha Yaya under Revolving funds was 38 (269ha).

Straw application (6146ha), use of paddy husk charcoal (356 ha), use of balance fertilizer (organic and inorganic) (8213ha) were done under promotion of organic fertilizer usage programs.

32 IPM Yaya were conducted and 88.5 ha were cultivated under certified seed paddy production programme.

OFC

Under other crop cultivation Chilli, (444.6 ha), Maize (4133 ha), Ground nut (186.1 ha) , Kurakkan (245.5 ha) , Green Gram (246.2 ha) , vegetables (1515 ha) and fruits (02 ha) were cultivated.

TRAINING

278 No of training Programmes on paddy, 127 programmes on OFCC 31 programmes on vegetables and fruits were conducted.

FARMER PRODUCTION SOCIETIES

315 no of Farmer production societies are established.

2008 yala

RICE

The number of Yaya carryout in the yala was 143 (1370 ha) and the no of Saruketha Yaya under Revolving funds was 30 (243 ha).

37 IPM Yaya were conducted and 72.8 ha were cultivated under certified seed paddy production programme.

Straw application (4532 ha), use of paddy husk charcoal (472 ha), use of balance fertilizer (organic and inorganic) (4898 ha) were done under promotion of organic fertilizer usage programs.

OFC

Under other crop cultivation Chilli, (85.5 ha), Red onion (5.5 ha), Maize (117.6 ha), Ground nut (23.2 ha) , Kurakkan (4.2 ha) , Gingelly (567 ha) , Green Gram (18.6 ha) vegetable (1187 ha) and fruits (41.75 ha) were cultivated.

TRAINING

445 no of training Programmes were conducted on paddy, OFCC, vegetables, fruits and others

FARMER PRODUCTION SOCIETIES

247 no of farmer production societies were established.

Inter-Provincial Area - Hambantota

2007/2008 Maha

RICE

The number of Yaya carryout in the year was 267 (10467 ha) and the no of Saruketha Yaya under Revolving funds was 56 (1115.6ha).

Straw application (11951ha), use of paddy husk charcoal (713 ha), use of balance fertilizer (organic and inorganic) (8256ha) were done under promotion of organic fertilizer usage programs.

504 ha of paddy were cultivated under IPM program and 34 ha were cultivated under certified seed paddy production programme.

OFC

Under other crop cultivation Chilli, (117.9 ha), Maize (231 ha), Ground nut (95.5 ha), Kurakkan (67.4 ha), Onion (47.9 ha), Green Gram (460.95 ha), Vegetables (1369 ha) and fruits (2098 ha) were cultivated.

TRAINING

578 No of training Programmes on different crops were conducted.

FARMER PRODUCTION SOCIETIES

296 no of farmer production societies were established.

2008 yala

RICE

The number of Yaya carryout in the year was 255 (9432 ha) and the no of Saruketha Yaya under Revolving funds was 60 (1403 ha).

Straw application (11640ha), use of paddy husk charcoal (538ha), use of balance fertilizer (organic and inorganic) (7557ha) were done under promotion of organic fertilizer usage programs.

217 yaya was cultivated under IPM program and certified seed production program certified seed production (44.7 ha), self seed production (1519 farmers) were done.

OFC

Under other crop cultivation Chilli,(48.5 ha) Maize (26.05 ha), Ground nut (6.15 ha), Gingelly (9.45ha), Vegetable (123.5 ha) and fruits (266 ha) were cultivated.

TRAINING

624 No of training Programmes were conducted on Paddy, OFC, vegetables fruits and others.

FARMER PRODUCTION SOCIETIES

Total No of Farmer production societies established were 330.

Inter-Provincial Area - Kandy

2007/2008 maha

The number of Saruketha Yaya conducted under Revolving funds was 37 (1085 ha).

Straw application (4264 ha), use of paddy husk charcoal (36.5 ha), use of balance fertilizer (organic and inorganic) (415 ha) were done under promotion of organic fertilizer usage programs.

9 ha of paddy were cultivated under IPM program and 109 ha were cultivated under certified seed paddy production programme.

Under other crop cultivation Chilli, (161 ha), Maize (118 ha), Kurakkan (16 ha), Green Gram (13.3 ha), Vegetables (100.5 ha) and fruits (13 ha) were cultivated.

TRAINING

125 No of training Programmes on different crops were conducted.

FARMER PRODUCTION SOCIETIES

Total No of Farmer production societies established were 42.

2008 yala

RICE

The number of Yaya carryout in the year was 50 (736 ha) and the no of Saruketha Yaya under Revolving funds was 64 (2141 ha).

Straw application (2292ha), use of paddy husk charcoal (30 ha), were done under promotion of organic fertilizer usage programs.

04 (110 ha) yaya was cultivated under IPM program and certified seed production program certified seed production (26.6 ha), self seed production (185 farmers) were done.

OFC

Under other crop cultivation Chilli,(10.1 ha) Maize (885 ha), Vegetable (30 ha) and fruits (114 ha) were cultivated.

TRAINING

227 No of training Programmes were conducted on Paddy, OFC, vegetables fruits and others.

FARMER PRODUCTION SOCIETIES

Total No of Farmer production societies established were 11.

Inter-Provincial Area - Moneragala**2007/2008 maha****RICE**

The number of Yaya carryout in the year was 79 (1766.5 ha) and the no of Saruketha Yaya under Revolving funds was 6 (60.4 ha).

Straw application (1421ha), use of paddy husk charcoal (415 ha), were done under promotion of organic fertilizer usage programs.

85 ha of paddy were cultivated under IPM program and 33.7 ha were cultivated under certified seed paddy production programme.

OFC

Under other crop cultivation Chilli, (32.5 ha), Maize (72.5 ha), Kurakkan (14 demonstrations), Green Gram (10 demonstrations), Vegetables (2 demonstrations) and fruits (6.5 ha) were cultivated.

TRAINING

191 No of training Programmes on different crops were conducted.

FARMER PRODUCTION SOCIETIES

Total No of Farmer production societies established were 76.

2008 yala**RICE**

The number of Saruketha Yaya under Revolving funds was 60 (610 ha).

Straw application (868ha), was done under promotion of organic fertilizer usage programs.

OFC

Under other crop cultivation Ground nut (12 farmers), Green gram (20 farmers), and fruits (30 farmers) were cultivated.

TRAINING

16 No of training Programmes were conducted on Paddy, OFC, vegetables fruits and others.

FARMER PRODUCTION SOCIETIES

25 no of farmer production societies were established.

RICE SECTOR DEVELOPMENT PROGRAMME

The objective of the Rice sector development program under the "Api Wawamu Rata Nagamu" was to increase the production by 30% in three years (2008-2010). This program was implemented in all provincial council areas and in the Inter-provincial areas. Several activities such as Yaya production program, "Saruketha yaya" program and Re-cultivation of abandoned paddy lands were implemented during 2007/08 Maha and 2008 Yala seasons under this program.

During the year 2008 annual extent of 1,053,097 ha paddy lands were cultivated, producing ever highest recorded production of 3.875 million mt. The increased extent was reported as 26% and production increase was 23.8% compared to previous year.

Total of 4008 Rice production yaya programs covering extent of 90723 ha and 160 "Saruketha yaya" programs covering 1754 ha with the revolving funds were established during 2008. In year 2008 total extent of 12373 ha of abandoned paddy lands were brought under cultivation. 36296 bushels of emergency seed paddy were also purchased and supplied for the special paddy cultivation program in the eastern province. The extension staffs of Ampara, Anuradhpura & Polonaruwa were also engaged in providing services such as seed paddy, agricultural implements & Zinc sulphate for cultivation of 3600 ha of paddy lands under the FAO Project on Productivity Enhancement in flood and conflict affected areas.

IN-SERVICE TRAINING INSTITUTE, GANNORUWA

- This is the main agricultural training institute at national level and is responsible to improve knowledge skills and attitudes of agricultural officers, entrepreneurs, farmers and others interested in agriculture.

A total of 255 training programmes were

undertaken in 2008 (16491 man days) of which 84 were for officers (7021 man days), 21 for farmers (854 man days) and 38 of field training programmes (941 man days). Also 107 of work shops / seminars / meetings / discussions, (8403 man days) and 5 outdoor training activities (328 man days) were conducted.

IN-SERVICE TRAINING INSTITUTE, ANGUNAKOLAPELESSA

This Institute offers in-service training for officers in agriculture sector and farmers in Galle, Matara, Hambantota Provincial Districts and Hambantota Inter Provincial area. During the year a total of 173 training programmes were undertaken (7445 man days) and this included 85 for officers (4131 man days) and 73 for farmers (2585 man days). And also 2 work shops/seminars/meetings/discussions (132 man days), 07 field training programmes (390 man days) and 13 outdoor training classes (446 man days) were conducted,

IN-SERVICE TRAINING INSTITUTE, HANSAYAPALAMA, ARALAGANWILA

This Institute offers services especially for farmers and officers of Mahaweli B, C. & G zones, Ampara, Polonnaruwa, Mahiyangana and Batticaloa areas. In 2008; 74 no of programmes (2530 man days) training programmes were conducted of which 19 no of programmes (703 man days) were for officers, 04 programmes for farmers (123 man days), and 48 field training programmes (1514 man days) and 02 of outdoor training programmes for farmers (155 man days) have been conducted.

FARM MECHANIZATION TRAINING CENTRE

Farm Mechanization Training Center (FMTC) located in Anuradhapura is the sole national level training institute for providing farm machinery trainings. FMTC offers training sessions on tractors, water pumps, plant protection equipments, paddy reapers, paddy threshers, paddy combine harvesters and hand implements. In addition to above trainings, FMTC too make an effort to popularize micro irrigation techniques among the farming community of Sri Lanka. Generally, the service of the FMTC is provided to farmers, officers in the agricultural sector, university undergraduates of faculties of agriculture, students of the schools of agriculture, technical colleges and general schools, private sector personnel involved in farm mechanization etc. During the year 2008, FMTC conducted 24 training programs (1197 man days) for officers, 12 programs for farmers (853

man days), 36 field training programmes (3700 man days) and 01 outdoor training programme (32 man days) for farmers.

FMTC grants its support to the field extension staff in carrying out extension activities related to farm mechanization. Apart from that, FMTC provides advisory services on farm mechanization for the necessary institutions.

DISTRICT AGRICULTURAL TRAINING CENTRE - WEERAWILA

During the year 2008, this training center provided 4 officer trainings (105 man days), 38 farmer trainings (757 man days), and 6 trainings for school children (362 man days).

DISTRICT AGRICULTURAL TRAINING CENTRE - AMPARA

During the year a total of 68 training programmes were undertaken (4247 man days) and this included 05 for officers (407 man days), 23 for farmers (737 man days), 26 work shops/seminars/other trainings (2583 man days) and 14 outdoor trainings (520 man days).

WOMEN'S AGRICULTURAL EXTENSION PROGRAMME (WAE)

The mandate of this Programme in 2008 was to improve the standard of living of farm families and community through enhanced contribution of women to agricultural production, human nutrition and marketing of agricultural commodities. (fresh and value added). The major emphasis in 2008 was to establish organized farm women's organizations to promote agro based entrepreneurship to develop capabilities of farm women on resource management, (capital, labour, time, etc.) to improve family food system and nutrition. This was strengthened by officer training and dissemination of relevant technology.

This programme was implemented in 26 districts by 26 officers. The achievements in year 2008 (as reported only by 18 districts) are given below.

154 trainings were conducted for extension staff on WAE activities (1920 trainees), 389 no of awareness programs were conducted on preparation of foods using local food crop produce (8061 trainees), 355 no of Agric Women's organizations were established (6611 members), 559 no of trainings were conducted for development of entrepreneur skills (9625 were trained & 622 trainees started self employments).

615 no of trainings (11383 trainees) were conducted on improvement of Family Food System & 4516 no of home gardens were established. 327 training programs (6202 trainees) were conducted on development of skills on resources management

As media programmes 70 Television programmes, 20 Radio programmes, 51 No. of Field days (2254 participants), 10 study tours (9448 participants, 40 Magazines/newspapers, 1782 types of leaflets, and 05 types of booklets were produced. Also and 10 No. of exhibitions (9448 participants).

SPECIAL ACTIVITIES

- Eight sales outlets to popularize traditional foods through women's organizations (with 25% farmer contribution) were opened in 7 identified districts.
- Two types of food recipe books "Food from Local Yams and "Nutritional Daily Menus " were printed and distributed. (5000 copies from each one)
- Two flip charts on Home Gardening for trainers were prepared and distributed (3000 copies).
- 164 workshops were conducted at grass root level for local leaders to promote production and consumption of local foods.

AGRO ENTERPRISE DEVELOPMENT & INFORMATION UNIT

The mandate of AgEDIS is to provide information and services required to start new

Agro-enterprises or to develop existing agro-enterprises. In year 2008 AgEDIS has undertaken training & awareness programs on agricultural enterprises, farm development advisory services, technical awareness programs (06), exhibitions (01), and field days (3). Three day skill development programme (01).

In addition to these routine works the division has undertaken the task of coordinating two special projects funded by Ministry of Agriculture; Establishment of "Krushi Seva Piyasa" and "Productivity Enhancement of Selected Other Field Crops". Under the project Krushi Sewa Piayasa which is a public private collaborative program to offer services to agro entrepreneurs; 17 Krushi Sewa Piayasa were opened at district level. 78 no of farmer producing groups were established under the project "Productivity Enhancement of Selected Other Field Crops". Inputs for cultivation

crops were provided fro 45 farmer groups, 4 multi crop milling machines were provided for value addition of the products, and 40 tarpaulin sheets were also provided for established farmer groups. 126 no of farmer trainings were also provided for farmer groups.

BEE DEVELOPMENT UNIT, BINDUNUWEWA, BANDARAWELA

The Main bee keeping unit is in Bandarawela and there are subunits in Colombo, Ratnapura, Buttala and Mawathagama. Activities conducted during the year comprised, production of bee keeping appliance, production and processing bees honey, conducting training on bee keeping and equipment manufacture, maintenance of colonies for marketing, certification of bee keeping equipments produced by private sector manufactures, coordinating with private and government organizations, Assisting research programs on bee development.

During the year the unit produced 213 kg bees' honey, 343 bee Hives, and 858 bee boxes were produced.

Also conducted training programs on Bee Keeping (04 programs for officers (249 man days) & 11 programs for farmers (472 man days) and training programs on manufacture of bee keeping equipments (03 programs & 52 man days)

YOUNG FARMERS CLUB (YFC) & MOBILE, EXTENSION SERVICE UNIT

Vision of the YFC is to uplift the living standard of the youth by motivating them to enter the agriculture sector and participate in the development activities of the country.

Objectives of the YFC is to establish sustainable organizations at village level, produce youth who can sustain themselves, create a farmer generation knowledgeable on new technologies, uplift entrepreneurial abilities of youth and reduce unemployment through agriculture.

During the year 2008, Island wide programs were conducted to create the participation of young farming generation for agricultural extension.

191 new YFCs (3120 members) were formed. A total of 44 training programs for officers and 181 training programs for farmers were conducted.

The special project "Strengthening Small Farmer Entrepreneur Groups" was coordinated by this unit. 112 no of projects were implemented to solve identified agricultural problems of selected farmer groups under this project.

72 no of field training programs under the special project "Organic farming for export" were conducted for farmer awareness by the Mobile extension unit during the year. 2816 farmers, 136 students and 199 officers were participated in these programs.

IRRIGATION MANAGEMENT AND ADVANCED AGRICULTURAL TECHNOLOGY UNIT

In the year 2008, the division has implemented a number of programmes at provincial and inter provincial levels with a view to popularizing advanced technologies such as micro irrigation, solar powered drip irrigation and advanced technology for nursery management, fertigation, green houses and poly house design & management among farmers.

Training programmes

During the period under review, conducting training classes for officers and farmers was a major activity carried out by the division. A number of 70 training programmes on micro irrigation management was conducted for officers (Agriculture Instructors, Agrarian Development Officers, and other field officers.) and farmers. The division has also been able to successfully conduct 15 awareness programmes on protected agriculture for officers and farmers who have already adopted and wish to adopt the technology.

SMALL FARM DEVELOPMENT PROJECT THROUGH SOLAR POWERED DRIP IRRIGATION (SPDI) TECHNOLOGY

In consequence of the success of pilot cultivation projects implemented adopting solar powered Drip Irrigation Technology in the year 2002, the government of Australia agreed to provide 5000 Solar Powered Drip Irrigation Systems on credit basis in the year 2005. The main objective of the project implemented since the year 2005 is to provide a Solar Powered Drip Irrigation Systems for small scale vegetable grower to enable to use for the land in extent of 1/2 an acre. On completion of 5000 systems of solar powered drip irrigation systems, the 2nd stage also considered to provide amounts 5000 systems to the farmers. The success of the 1st stage was revealed to implement 2nd stage of the project. Sri Lanka Samurdhi Authority will undertake the farmer selection of 2nd phase of the 2nd phase.

National level officers and farmers were trained by the division with a view to imparting required technical knowledge. During the year 2008, 400 officers and 2000 farmers have undergone the relevant training programme and 5000 irrigation system have also been provided to selected farmers and first step of distributing 500 system was completed in 2nd stage. The project is continued for the next two years. farmers have been able to increase their yield in 2-3 fold by adopting the technology. For instance, they have gained 16000 Kg and 11500 Kg of yield per acre per season from Big Onions and Chilly respectively. 40 farmers were selected to conduct demonstrations (5 farmers in each 8 districts) and necessary seeds and fertilizers were given to make their demonstrations successes.

Protected Agriculture and Hydroponics

With a view to popularizing the above technology among farmers, training of officers and farmers, providing of leaflets, awareness on the market were carried out in the year 2008.

High value vegetable crops (i.e. Bell Pepper, Slicing Cucumber, Cherry Tomato, Squash, China Cabbage, Cauli Flower) under protected culture are highly popularizing among the growers.

Thereby they were able to increased the cultivated extent under protected culture in 25% as compared to year 2007.

Statistically no. of green houses are varied 6000-7000 with a extent of 75 ha were increased to 100 ha in the year of 2008.

National Level Co-ordination

In this unit, provided the services of micro irrigation, protected culture, establishment of large scale commercial farms and worked as main resource center for micro irrigation, protected culture and other advanced agricultural technologies.

PLANNING AND PROGRESS MONITORING UNIT

The Planning and progress monitoring unit focuses on preparing action plans, monitoring and evaluating financial and technical activities, and special projects conducted by the Extension & Training Division. The unit is also involved in preparation of indicative targets for annual implementation programme, providing information for Administration report of the Department of Agriculture, Central Bank report and Budget Speech and disseminating information to relevant agencies.

RUPAVAHINI & FARM BROADCASTING SERVICE

The main objective of this unit is creating awareness on agricultural technologies market places price of agricultural goods current affairs & demand in agriculture, government policies and to motivate people to use these information to enhance their incomes and to solve the farmers and growers problems to achieve their goals. The farm broadcasting programmes are available through out the country via different radio channels.

The main Farm Broadcasting unit is situated at Narahenpita, Colombo and three subunits at Anuradhapura, Kandy and Angunakolapellessa (Ruhuna).

This service broadcast radio programs mainly in Sinhala, Tamil and English as required. The main unit at Colombo is also dealing with the television programs in sinhala and tamil when necessary. This is variety of programs produced by these services. To popularize the programs and to get feed backs we have introduced the "Srawaka Samaja" concept and there are more than 1500 listeners in these organizations throughout the island. The listeners are awarded with many facilities and training programs to make the programs popularized.

Colombo Unit

- Sunday - Saraboomi at 6.45 to 7.00 p.m. on Swadeshiya sevaya
- Fridays - Govi Gedara at 6.45 to 7.00 p.m. on commercial services
- Tuesdays - Sanhinda at 6.45 to 7.00 p.m. on commercial services
- Monday - Govi kamata Payak at 8.45 to 9.45 a.m. on Swadeshiya sevaya
- Onece in Two Days - Bulath Hurulla (Short messages) at Mornings and afternoons on Swadeshiya sevaya and commercial services and city FM. sevaya
- Daily - "Andaharaya" at 6.10a.m. and 6.10 p.m.. evenings on Swadeshiya sevaya, commercial services and city FM
- Saturday - "Govi Pana" quiz at 7.00 to 7.00 p.m. on Swadeshiya sevaya
- Sunday - "Young Farmers" quiz at 7.00 to 7.30 p.m. on commercial services
- Saturday - "Seilama" at 6.45 p.m. on Swadeshiya sevaya and Sandya sevaya
- Friday - "Guwaqn Siphala" at 6.35 p.m. on Swadeshiya sevaya and Sandya sevaya

- Thursday - "Govigedarin Mahagedarata" at 6.35-7.00 p.m. on Swadeshiya sevaya Sandya sevaya
- Daily - Short messages -Swadeshiya sevaya and Adyapana Sevaya

Tamil Programmes

- Tuesdays - Witta Thottam at 7.30 to 8.00 a.m. on Tamil Services
- Wednesdays - Wayalodu Wasanthum at 10.00 to 10.15 p.m. on Tamil Services
- Fridays - Wannaratham at 7.00 to 7.30 p.m. on Tamil Services

Kandy Unit

Sinhala Programmes

- Fridays - Govibima at 6.45 to 7.00 p.m. on Sandya sevaya
- Friday - Aswenna at 8.00 to 9.00 a.m. on Kandurata sevaya
- Tues. /Friday - Ape Govithena at 5.45 to 6.00 p.m. on Kotmale sevaya
- Daily - Kalavita (Short messages) at 7.00 to 7.30 a.m. on Kandurata sevaya
- Wednesdays - Isurusoya at 7.00 to 7.10 p.m. on Sandya sevaya
- Wednesdays - Rasamusuwa at 7.20 to 7.25 p.m. on Sandya sevaya
- Thursdays - Kankariya at 6.45 to 7.00p.m. on Sandya sevaya

Tamil Programmes

- Sundays - Muhadukal - Agricultural drama at 5.30 pm to 6.00 pm on Tamil service - Kandurata sevaya
- Wednesdays - Kurinchi Malaralhal - Tamil service - at 5.30 pm to 6.00 pm on Kandurata sevaya

Anuradhapura Unit (Rajarata Sevaya)

- Wednesdays - Saruketha at 6.45p.m. to 7:00 p.m. on Sandya sevaya
- Fridays - Illama at 7.00p.m. to 7.07 p.m. on Sandya sevaya
- Mondays - Gewatta at 9.00a.m.to9.30a.m. on Rajarata sevaya
- When necessary-Live Discussion 15 minute on Rajarata sevaya
- Twice a Day- Adaberaya on Rajarata sevaya
- Twice a Day- Hela Supa on Rajarata

Rangiri Dambulla

- Saturdays- Thunaththa at 9.30p.m.to8.00p.m. on Rangiri Sri lanka Guwanviduli sevaya
- Daily – Athwala (Short messages) at 6.55a.m. on Rangiri Sri lanka Guwanviduli sevaya

Ruhuna Unit (Angunakolapelessa)

- Wednesdays - Ruhunubimai Govi dethay at 5.45 to 6.00 p.m. on Ruhunu sevaya
- Thursday - Ruhunu Gewatte at 9.00 p.m. to 9.30a.m. on Ruhunu sevaya
- Saturday - Divimangata Athwelak at 3.00 to 3.15 p.m. on Ruhunu sevaya
- Saturday - Kadamalla Sandya sevaya
- Wednesday - Salupaliya at 7.00 p.m. on Swadeshiya sevaya and Pradeshiya sevaya
- Friday - Kavikolaya at 6.30-7.30 p.m. on Ruhunu sevaya

AUDIO VISUAL CENTRE

Maintenance of two Agro Technological parks Gannoruwa & Bata Atha is done by Audio Visual center.

Gannoruwa agricultural complex transformed to a tropical agricultural theme park /agricultural science garden /live crop museum in 2004 continue to draw large crowd, students, farmers, agricultural entrepreneurs and general public.

Bata Atha Agro Technological park was Ceremonially Opened on 07th January 2008 by His Excellency the President Mahinda Rajapaksha.

A project proposal was submitted to establish an agro technology park in Trincomalee on request of minister and secretary, Ministry of Agriculture, Eastern Province.

“Gambare” the new television program on ITN was introduced in year 2008.

NATIONAL AGRICULTURAL INFORMATION NETWORK (CYBER AGRICULTURAL EXTENSION)

Objective of this program initiated in 2004 is to establish a quick information exchange mechanism in the agricultural sector of Sri Lanka. The project will establish Cyber extension units (Rural Knowledge Centers) at all Govijana Kendraya with links to Research centers, Extension and Training center of the DOA and also to private

sector organizations. As an initial stage only the CDROM based information dissemination system was implemented.

The pilot project was implemented with assistance of CARP and IRRI at 35 Govijana Kendras in 2004. Where as an AI manages the Cyber Extension unit. These centers were provided with a computer, scanner, printer, digital still camera, and a web camera. Interactive multimedia CDROMs were also provided. CARP will fund the production of CDROMs for all agricultural crops during the next two years.

CDROMs already produced by the Audio Visual Center of the DOA on flip chart technology will enable village level extension workers to produce low cost audio visual aids at village level which could be used in training classes. Farmers can also bring live samples to the cyber extension unit and send pictures through e-mail to Research Centers.

After realizing the value of cyber extension Ministry of Agriculture of Eastern Province funded to establish 31 cyber units. A new concept was introduced to cyber extension by establishing data base on commercial level farmers as a supportive measure for agricultural marketing activities. Name of the farmer, types of crops cultivated, crop extent and crop forecast were included in this Data Base.

Other Activities performed/material produced by the Audio Visual Center during 2008 are listed below.

Video / Radio

Mihikatha Dinuwo (Sinhala)	-	54
Govibimata Arunalu	-	46
Other documentaries	-	06
TV spots	-	13
Recording / Editing for Radio	-	06
Recording / Editing for Video	-	120

Graphic Communication

Technical books	-	16
Cover pages	-	21
Leaflets/Folders/Handouts etc.	-	63
Instructional Posters(digital)	-	154
Hording (digital)	-	09
Name Boards (digital)	-	512
Banners	-	59

Training

5 day programmes	-	04
No of Participants (man days)	-	390
Cyber Training programmes	-	11
No of Participants (man days)	-	346

Information Technology

Updating DOA Website (No of pages)	- 1257
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AV Aids

Desktop slide presentation	- 24
Photography digital	- 9756
VCD	- 806
DVD	- 50
AV assistance for presentation	- 52

Exhibitions & performing Arts

Stalls/exhibits	- 07
Street drama	- 01
IMM CD ROM Production	- 06

Toll free advisory service

Advisory service (over the phone)	- 45,638
Advisory service (written replies)	- 996

INFORMATION CENTER

The responsibility of this unit is to distribute printed publications of the DOA. The main sales center is located at Peradeniya and 34 sub sales centers are located island wide. A new sales center was established in July, 2007 at Gannoruwa to cater the visitors of Agro-Technology park of DOA.

DOA PRESS

Following publications were printed in the year 2008.

Agtec.	- 10010
Booklets	- 127376
Leaflets	- 601675
Posters	- 16505
Paper supplements	- 546395
ASDA Books	- 499
Administration reports	- 611

AGRICULTURAL EDUCATION

The five Schools of Agriculture located at Kundasale, Pelwehera, Angunakolapelessa Vavuniya and Karapincha are offering two year program leading to Diploma in Agriculture. The Schools of Agriculture at Labuduwa, Wariyapola and Anuradhapura function as special training centers and offer short term courses in agriculture. 191 students underwent the second year training program for Diploma in Agriculture at five Schools of Agriculture. The number of students in the different SOA is given in the table 3.4.2.

Table 3.4.2: No. of Students in the Schools of Agriculture 2008

Agriculture School	Year	Medium						Total	General Total
		Sinhala		Tamil		English			
		Boys	Girls	Boys	Girls	Boys	Girls		
Kundasale	1 st	35	25	6	14	12	8	100	196
	2 nd	27	24	10	10	10	15	96	
Angunakollpellessa	1 st	24	14					38	79
	2 nd	31	10					41	
Pelwhera	1 st	16	15					31	53
	2 nd		16	6				22	
Vavuniya	1 st	5	24		7			29	41
	2 nd	5	7		11			12	
Karapincha	1 st	21						21	41
	2 nd	20						20	
Total		200	125	16	42	22	23	410	410

One year practical agriculture training course for Agricultural Research & Production Assistants (ARPA)

Target group of this course is ARPA attached to the Department of Agrarian Services. This course was started in eight training centers in 2005 and continues till all the ARPA are completed the course. The first group, 670 ARPA completed

the training in 2006. Details of ARPA trained in 20007/2008 are given below.

Table 3.4.3: Training progress in 20007/2008

Training Center	District	Number of ARPA trained		Total no of ARPA trained
		Batch I	Batch II	
School of Agriculture Anuradhapura	Anuradhapura	07	00	07
	Kurunegala	11	01	12
	Polonnaruwa	11	04	15
	Kandy	09	05	14
	Matale	10	14	24
Sub Total		48	24	72
School of Agriculture Wariyapola	Kurunegala	15	20	35
	Gampaha	05	02	07
	Puttlum	06	02	08
	Colombo	07	02	09
	Kandy	01	00	01
Sub Total		34	26	60
School of Agriculture Labuduwa	Kalutara	19	23	42
	Galle	06	07	13
	Matara	14	09	23
Sub Total		39	39	78
Horticultural Training & Development Center Bibile	Badulla	05	03	08
	Moneragala	01	06	07
	NuwaraEliya	11	04	15
	Kandy	08	03	11
	Ampara	05	00	05
Sub Total		30	16	46
Grand Total		151	105	206

Also 24 ARPA trainees of were 2006/ II Batch were passed out in February 2008.

EXAMINATION UNIT

Exams conducted by the Examination unit in year 2008 are mentioned below.

- New admission for schools of agriculture
- Exams of diploma course
- Sri Lanka Agriculture Service officers
- Departmental exams for Agriculture Instructors
- Efficiency bar exams for drivers
- Oral exams for language proficiency (Sinhala & Tamil)
- Exams for recruitment of drivers
- Efficiency Bar exams Programme Assistants & Research Sub Assistants

PLANT NUTRIENT & ORGANIC AGRICULTURE UNIT

In the year 2008 the major extension activities done by the Plant Nutrient & Organic Agriculture Unit were, Coordination of three Special Projects "organic farming for export", "National organic standardization & certification" and "Promotion of Organic fertilizer production & use"; Printing and distribution of IPNS manual, and collection of soil test data.

- **Organic Farming for Export**

Conducting research on organic farming, Establishment of organic villages, organic seed production, conduction demonstrations on organic farming at training Centers, media programs on organic farming and establishment of organic resource center were done under this project.

- **Promotion of Organic fertilizer production & use**

Activities of this project were implemented in 6 interprovincial areas. Promotion of cultivation of Gliricidia for production of organic fertilizer, IPNS Demonstrations (use of organic fertilizer, use of recommended chemical fertilizer, use of Eppawala Rock Phosphate) were done under this project.

- **National organic standardization & certification**

Improvement of training facilities, Establishment of organic farming system, conducting seminars on organic agriculture, organic food processing, Establishment of sales outlet for organic foods, were done under this project.

- **Other achievements of the unit**

- Printing and distribution of following publications, "Thirasara Sarubima" News letter, Training Manuals for seminars, Booklet on organic vegetable certification with research findings.

- Participated as resource persons, for radio programs, and training of officers.

4.1 ADMINISTRATION DIVISION - PERADENIYA

The carder and other employers attached to the Department with a view to achieving the objectives set - out in the mission of the DOA consist of SLAgs, SLTS' and other departmental grades and labour grades the carder out of them who are engaged in the execution of various tasks related to matters of the establishment concerning all categories of officers and other employees of the DOA, are attached to the division. The carder of the administration Division belongs to officers of various grades in Sri Lanka Administrative service and combined service.

The role of the Administration division can briefly be defined as the performance of various matters of establishment during the period from an appointment to the retirement. Matters involving grant of study leave and general conduct are also included in the tasks of the division. The division has to deal with organizational such as Public Service Commission, Human Rights Commission, Attorney General's Department, Parliamentary Advisory Committee, office of the commissioner of Parliamentary Affairs regarding varies appeals and also with other ministers and departments. Coordination of this overall process in accordance with guidance and instruction of the ministry of Agriculture is visited with the division the important data and statistics pertaining to the year 2008 are presented herewith.

BUDGET

Table 4.1.1: Annual budget – 2008 (Rs.)

Vote	Allocation	Expenditure
Capital	11,767,000	9,358,988
Recurrent	12,370,000	10,679,047
Total	241,370,000	20,038,035

PROGRESS

Appointments

Public Management Assistant Service, (supra)	17
Public Management Assistant Service, Class 111	10
(Appointments made by the Director General of Combined Services)	
Seed technician	03
Research sub Assistant	07
Driver Class 111	41
Earth Mover Operator, Class 111	03
Store man, Class 111	02
Carpenter, Class 111	02
Filter Class 111	01
Plant Attendant Class 111	02
Machinist, Class 111	10
Lorry cleaner Class 111	03
Watcher	33
Budder	02
Cook	02
Labour	178

- Applications have been called for recruitment to 01 post of welder.

Promotions

SLAgS 11/1	12
Agricultural Instructor,	76
Agricultural Instructor, Class 1	03
Research Assistant, Class 1	01
PMAS, (supra)	15
PMAS, Class 1	06
PMAS, Class 11	15
K K. S Class 1	01
K K. S Class 11	02
Driver Class 1	10
Driver Class 11	22
Earth Mover Operator, Class 1	12
Plant yard operator Class 1	01
Machinist, Class 11	01
Machinist, Class 1	02
Pump operator Class 11	03
Labour	1216

Retirement from the service

SIAGs	27
Agricultural Instructor	33
Research sub Assistant,	02
Farm Machinery Instructor	01
P M A S (Supra)	03
P.M.A.S Class 1	21
P.M.A.S 11	08
K.K.S, Class 1	01
Welder	01
Pump operator	02
Machinist	03
Electrician	01
Store man	01
Driver	08
Lorry Cleaner	01
Earth Mover operator	03

Deaths

Agricultural Instructors	-	03
Farm Clerk	-	01
Store man	-	01

Releases to other posts

Agricultural Instructor	-	01
PMAS (SUPRA)	-	02
PMAS	-	02
Agricultural Monitoring Officer	-	01
Programme Assistants (Agriculture)	-	08
Media Assistant	-	02

Officers released to Provincial Councils

Agricultural Instructors	-	15
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Officers Attached from provincial Council

Agricultural Instructors	-	05
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Vacation of Posts

Agricultural Instructors	-	01
PMAS	-	03
Agricultural Monitoring Officers	-	04
Programme Assistants (Agriculture)	-	03

Resignation from Posts

PMAS	-	02
Programme Assistants (Agriculture)	-	03
Agricultural Instructors	-	02

Reinstatement in the Appointment

Agricultural Instructors	-	01
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Number of officers Abroad

Absorption into post of research sub Assistant	-	10
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From the post of special labour

**No. pay leave taken for foreign
Employments**

Agricultural Monitoring Officers	-	05
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**Overseas visits to Study in Post Graduate
Degree**For M.Sc.

Research Officers	-	01
Lecturers	-	01

For Ph.D

Research Officers	-	02
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● **Returned after completing Post-graduate
Degree**For M.Sc.

Research Officers	-	01
Lecturers	-	01

For Ph.D

Research Officers	-	03
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● **Release of officers to study in BSc and
MSc Degree within island****BSc Degree**

Agricultural Instructors	-	12
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MSc Degree

Assistant Director of Agriculture	-	01
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Lecture - 02

Agricultural Officer - 01

Research Officer - 01

● **Overseas visits abroad for training, workshops and other conferences**

DGA - 04

Directors - 07

Deputy Directors - 09

Asst. Director of Agriculture - 07

Agricultural Economists - 04

Agricultural Officers - 03

Research Officers - 40

Research Assistants - 01

Registrar of Pesticides - 02

Lecturers - 03

Agricultural Monitoring Officers - 08

Programme Assistants - 03

Agricultural Instructors - 06

Local Training

- A computer data analysis training program was conducted by education center Gurudeniya for 20 days.

- Training in matters relating to establishment and accounting for officers of class 11 of the public management Assistant service.

- "Labour training" for labours engage in office work.

- Workshop on "Productivity improvement through proper management"

- Computer hardware training (conduct by the university of Peradeniya for 3 officers)

Recoveries

The total recoveries to the Government in 2008 from officers those who breached the agreements is Rs.1,785,735.18.

Agrahara Insurance Scheme

Value of bills Submitted for reimbursement of hospital charges and eye glasses is
- Rs. 6,518,928.00

II Number of Applications - 797

III benefits for natural death - 08

IV Number of accidental death - 02

Security Deposits

Number of persons whose security deposits were released after retirement - 67

Amount released - Rs.12,28,988.00

Amount of loans granted and types of salary advance

Distress loans

Number of vouchers approved

Amount Paid 622 Rs. 66,842,317

Bicycle loans

Number of vouchers approved

Amount Paid 08 Rs. 48,000

Property loans (Bank)

Number of Application recommended

Amount Paid 07 Rs. 6,234,800

Motor bicycle loans

Number of Application recommended

Amount Paid 10 Rs. 800,000

Inquiries

● **Disciplinary Inquiries**

- Number of inquiries Pending at the beginning of the year 2008 - 72

- Number of inquiries initiated during the year 2008 - 24

- Number of inquiries completed during the year 2008 - 24

- Number of inquiries Pending as at 31.12.2008 - 72

● **F.R. 104 Inquiries**

- Number of FR 104 inquiries Pending as the beginning of the year 2008 - 596

- Number of FR 104 inquiries initiated during the year 2008 - 149

- Number of inquiries completed during the year 2008 - 178

- Number of inquiries Pending as at 31.12.2008 - 567

Pensions

Files of the payment of pensions received
as follows

● For payment of pensions-	197
● For death gratuity -	13
● For ex - gratia payment-	41
● For reversion of pensions -	74

Number of payments made in the year
2008

● Pensions	-	187
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● Death gratuity	-	08
● Ex - gratia payments	-	12
● Revised pensions payments -		68
● Released of security deposits-		22
● Released of minority receipts -		18
● Released of money with held		
● In the general deposits account for FR inquiries	-	12
● The cases uncompleted but to be completed in the future (inquiries are being conducted now un 2009) -		50

RECURRENT EXPENDITURE PROGRAMME - 2009

Object code	Description Allocation (Rs. Mn)	Work Plan - 2009												
		Cumulative Financial target by month												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1002	Over time & Holiday pay	2.500	0.208	0.416	0.624	0.832	1.040	1.248	1.456	1.664	1.872	2.080	2.288	2.500
1101	Traveling (Domestic)	0.500	0.042	0.084	0.125	0.168	0.210	0.252	0.294	0.336	0.378	0.420	0.462	0.500
1102	Traveling (Foreign)	0.500	0.000	0.125	0.125	0.250	0.250	0.250	0.375	0.375	0.375	0.500	0.500	0.500
1201	Stationary & office requisites	0.600	0.000	0.300	0.300	0.300	0.300	0.600	0.600	0.600	0.600	0.600	0.600	0.600
1202	Fuel	0.800	0.067	0.134	0.201	0.268	0.335	0.402	0.459	0.536	0.603	0.670	0.737	0.800
1203	Diets & Uniforms	0.070	0.000	0.035	0.045	0.055	0.065	0.070	0.070	0.070	0.070	0.070	0.070	0.070
1205	Other	0.050	0.004	0.008	0.012	0.016	0.020	0.024	0.028	0.032	0.036	0.040	0.044	0.050
1301	Vehicles	0.600	0.050	0.100	0.150	0.200	0.250	0.300	0.350	0.400	0.450	0.500	0.555	0.600
1302	Plant machinery & Equipments	0.050	0.004	0.008	0.012	0.016	0.020	0.024	0.028	0.032	0.036	0.040	0.044	0.050
1303	Building& Structures	0.015	0.002	0.004	0.006	0.008	0.010	0.012	0.014	0.015	0.015	0.015	0.015	0.015
1402	Postal & Communication	0.950	0.079	0.158	0.237	0.316	0.395	0.474	0.553	0.632	0.711	0.790	0.869	0.950
1403	Electricity & Water	3.250	0.271	0.542	0.813	1.084	1.355	1.626	1.897	2.168	2.439	2.710	2.981	3.250
1404	Rent & Local Taxes	0.500	0.300	0.400	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
1405	Other	0.600	0.050	0.100	0.150	0.200	0.250	0.300	0.350	0.400	0.450	0.500	0.550	0.600
	Total	10.985	1.077	2.414	3.301	4.213	5.000	6.082	6.984	7.760	8.535	9.435	10.210	10.985

Action Plan of Capital Expenditure - 2009
Department of Agriculture - Administration Division

Activities Under Each Object code	Allocation
Rehabilitation & Repairs	
2001 Maintenance of Building & Str.	4,930,000
2002 Plant Machinery & Equipment	127,500
2003 Vehicles	765,000
Total For Repairs of capital Assets	5,822,500
Acquisition of capital Assets	
2102 Furniture & office equipment	765,000
2401 Training & capacity Building	170,000

4.2 ENGINEERING DIVISION – PERADENIYA

The main functions of the Engineering division include Civil Engineering work pertaining to maintenance and construction of buildings, procurement of vehicles, machinery and equipment and disposal of unserviceable vehicles, machinery and equipment. The operation and maintenance of the drinking water supply scheme in Kundasala, maintaining of records of DOA vehicles, acquiring and assigning of vehicles are other important services performed by the division. The division also provides engineering advisory services to all Divisions of DOA.

In order to improve and expand the service of the division, regional mechanical workshops have been planned to be established island wide in the near future. As an initial step one workshop has been temporarily established with minimum facilities at the engineering stores in July 2008. The main jobs carrying out in this workshop is repair and maintenance of vehicles.

BUDGET

The budgetary allocations and expenditure under different votes for year 2008 are given in Table 4.2.1.

Table 4.2.1: Annual Budget Capital Votes – 2008 (Rs.)

Vote	Allocation	Expenditure
2001 - Construction / Maintenance of Buildings	930 000.00	275 025.70
2002 - Maintenance of Machinery	93 000.00	91 715.00
2003 – Repairing of Vehicles	465 000.00	146 661.00
2102 – Procurement of Office Equipment	279 000.00	102 187.50
2103 – Procurement of machinery and Equipment	69 750.00	-
Total	1 836 750.00	615 589.20

Table 4.2.2: Annual Budget Recurrent Votes – 2008 (Rs.)

Vote	Allocation	Expenditure
Recurrent Total	5 390 000.00	4 608 855.83

PROGRESS

Progress of Civil Engineering Works

The progress of the year 2008 can be categorized as follows:

- **New construction and repairs:-**

This includes preparation of estimates, following tender procedures and awarding contracts, work supervision and approval of payments

- **Preparation of Estimates:-**

Because of the limitations of handling total work by the engineering division, especially the shortage of technical staff, only the estimates were prepared by the engineering division on requests of the directors.

Acceptance of the requests for civil engineering works was stopped by the end of June due to lack of technical staff to attend all the requests.

The summary of the Civil Engineering works done by the division are listed below.

No. of Requests Received : 220

Repairs	: 145
New constructions	: 75

Summary of the activities carried out:

- Estimates sent to relevant divisions : 164
- Work completed : 24
- Work in progress : 17
- Work abundant due to unavoidable reasons : 15

Table 4.2.2: The value of the civil Engineering works (completed and work in progress) carried out during the year:

Division	Completed Rs	Work in progress Rs	Total Rs
Engineering Division	250110.00	65000.00	315110.00
Administration Division	749562.87		749562.87
SPMDC	2331283.45	14413150.25	16744433.70
Ex & T	9867084.70	2374586.00	12241670.70
D.D.(Inter Province)		6430640.00	6430640.00
HORDI	1161680.54	1376588.00	2538268.54
SCPPC	161807.88	952493.60	1114301.48
RRDI	906239.33		906239.33
Total	15427768.77	25612457.85	41040226.62

Progress of Electrical & Mechanical Engineering works

The progress of the year 2008 can be categorized as follows:

- Procurement of new machinery and Equipment
- Procurement of works: Repairing and servicing of machinery and vehicles
- Repairing of vehicles

The value of new machinery equipment procured by the Engineering Division for all the divisions of DOA is given in Table 4.2.3.

Table 4.2.3: Value of New Machinery and Equipment procured by the Engineering Division

Division	Expenditure Rs
Engineering Division	272 937.50
Administration Division	1 557 912.50
Finance Division	801 500.00
SPMDC	3 735 697.50
SEPC	1 378 912.50
Ex & T	5 191 635.80
HORDI	2 193 775.00
SCPPC	1 061 679.50
RRDI	1 567 822.30
FCRDI	886 375.00
ASDA	183 250.00
Total	18 831 497.60

Vehicle repairs and maintenance

- No. of vehicles in which repairs completed, inspected and recommended : 595
- Number of vehicles repaired in **Mechanical** Workshop from August to December 2008: 164

Water Supply Scheme at Kundasala

This scheme pumps approximately 200 000 gallons of water from the Mahaweli river. The pumping station works 18 hours per day and the power consumption is 60KW approximately.

This water is supplied to the various institutions under DOA as well as non-DOA premises. Chlorinated water is supplied for drinking and domestic usage throughout the year while non chlorinated water is supplied to the lake of the agriculture farm during drought period according to the requirement. List of beneficiaries of this water supply scheme is follows:

- School of Agriculture – Kundasala
- Seed Farm – Kundasala
- Poultry Farm – NLDB
- Office of ADA(seeds)
- All government quarters in Agriculture premises
- Vivekananda Tamil school

Other Services:

The Engineering Division assisted many Institutes, Centers and Units of the DOA by preparing estimates for building construction and repairs, supervising the work and scrutinizing and recommending of estimates for repair of vehicles, equipment and machinery. Inspection and valuation of condemned vehicles, machinery and equipment also carried out by the division. The division actively participated in technical evaluation and provided advisory services to the tender boards.

Staff of the Engineering Division:

The working capacity, the efficiency and the performance of the Division were seriously affected due to lack of trained technical staff in the Division. There exist a number of vacancies in the cadres of technical staff. Owing to this constraint, numerous difficulties have been encountered in carrying out new civil engineering work as well as routing work such as operation of water supply scheme, Kundasala etc. At present, the division does not have a sufficient number of Inspectors of Work, Building Overseers and Draughtsman to handle the work load in the Civil Engineering section. Also, Engineering Assistants, Technical Officers and Electricians are not available to handle Mechanical or Electrical work. Number of retired officers is re-employed in contract basis in order to carry out the activities without disruption.

Considering the volume of work to be completed annually in the civil, mechanical and electrical disciplines, the non availability of technical staff is a severe constraint, which hampers the efficient performance of the Engineering Division.

PLAN FOR 2009

Vote	Allocation (Rs)	Expecting Time
2001 – Repairing of staff quarters	850 000.00	July 2009
2102 – Office Furniture and equipment	425 000.00	May 2009
2103 – Machinery	85 000.00	May 2009
22401 – Training Capacity Building	42 500.00	Oct 2009

4.3 FINANCE DIVISION – PERADENIYA

The main objective of the Finance division

Establishment and operation of a sound financial management system to achieve the objectives of the Department of Agriculture such as,

- Preparation of annual revenue and expenditure estimates.
- Maintenance of Bank accounts.
- Allocation of Departmental and Ministry provisions.
- Collection and accounting of revenue of the Department.
- Make all recurrent and capital expenditure including personal emoluments.
- Performing internal audit activities.
- Preparation of financial progress reports and evaluation.
- Co – ordination of financial activities with local, and foreign, government and non-government Organizations.
- Foreign payments.
- Implementation of farm advance account activities.
- Preparation of final accounts including appropriation and Revenue accounts.
- Conducting annual Board of Survey.
- Payment of loans to employees.
- Training of personnel on computer application and financial management.

Table 4.3.1: Capital Expenditure – 2008 (Rs.'000)

Project	Project Description	Estimate Rs.'000	Expenditure Rs.'000	Progress as a %
285 – 1 – 1	Administration & Establishment Services	20,050	12,146	61
285 – 2 – 2	Agriculture Research & Development	169,700	119,933	71
285 – 2 – 3	Agriculture Extension & Training	108,800	91,482	84
285 – 2 – 4	Seed Certification & Plant Protection	114,740	78,752	69
Total		413,290	302,315	73

**Table 4.3.2: Recurrent Expenditure – 2008
Rs'000**

Project	Project Description	Estimate Rs.	Expenditure Rs.	Progress as a %
285 – 1 – 1	Administration & Establishment Services	191,834	174,932	91
285 – 2 – 2	Agriculture Research & Development	638,323	570,779	89
285 – 2 – 3	Agriculture Extension & Training	466,437	425,183	91
285 – 2 – 4	Seed Certification & Plant Protection	460,587	310,270	67
Total		1,757,181	1,481,166	84

Table 4.3.3: Operation of Advance Account Activities

Description	Approved limit Rs.	Actual Receipts Rs.	Actual Expenditure Rs.
1. Maintenance of Agricultural Farms			
Maximum limit of Expenditure	265,000,000.00		253,466,269.03
Minimum limit of receipts	190,000,000.00	268,330,291.13	
2. Public Officers Advance Account			
Maximum limit of Expenditure	135,000,00.00		88,285,084.00
Minimum limit of receipts	95,000,000.00	98,065,920.18	

Table 4.3.4: Allocation Received under Department votes for Special Projects

Index No	Name of the project	Name of the Project	Allocation Rs.	Actual Expenditure Rs.	Progress as a %
01	285- 2- 2 -2-2502	Infrastructure Develo	110,000,000.00	54,271,957.94	38.76
		pment needs to improve			
		rice research &			
02	285-2-2-3-2502	development(RRDI) Development of Hybird, Rice, Maize,	7,000,000.00	5,931,829.12	84.74
03	285-2-2-4-2502	Fruit and Vegetables Small scale Agricultural	2,200,000.00	2,171,725.59	98.71
04	285-2-3-1-2502	research project (US) Improvement of Citrus Cultivation in Bibile &	5,850,000.00	4,820,108.96	82.39
05	285-2-3-2-2105	Monaragala Agriculture school farms	17,500,000.00	11,570,340.37	66.11
06	285-2-3-3-2502	Organic product export Development	25,000,000.00	13,632,031.62	54.52
07	285-2-3-4-2502	Media programme	15,000,000.00	13,950,000.00	93.00
08	285 - 2 - 3 - 5 - 2502	Strengthening crop production & training facilities at HDTI Bibile.	6,200,000.00	3,287,542.68	53.02
09	285-2-3-6-2401	Annual Symposium of Department of	2,500,000.00	2,127,360.41	85.09
10	285-0 -4-1-2502	Agriculture. (ASDA) Seed production &	70,000,000.00	56,929,099.32	81.32
11	285-02-4-2-2502	purchasing programme Germplasam Development project (USDA)	6,970,000.00	4,716,183.88	67.66

Table 4.3.5: Progress of Special projects allocated under Ministry Vote at 31.12. 2008

Vote	Activity	Allocation 2008 Rs.	Actual Expenditure Rs.	Progress as a %
118 - 2 - 3 - 20	To Develop bee Keeping	2,500,000.00	2,374,872.00	94.99
- 2502	Field crop productivity	5,000,000.00	3,213,784.00	64.27
- Do -	"krusi SevaPiyasa"	1,000,000.00	658,559.00	65.85
- Do -	To Develop Special Crops	2,000,000.00	1,065,547.00	53.27
- Do -	Crop Zoning pr.	16,000,000.00	15,857,739.00	99.11
118 - 2 - 3 - 20	Promotion of local fo.	30,000,000.00	21,473,607.00	71.57
- 2502	Media programme	7,000,000.00	5,533,042.00	79.04
- Do -	"Deyata Kirula" Exhibition	1,000,000.00	935,918.00	93.59
- Do -	Agriculture Technology	26,000,000.00	25,483,942.00	98.01
- Do -	park - Bataatha gannoruwa			
- Do -	Food Research Unit	9,000,000.00	6,118,033.00	67.97
- Do -	Provincial/District	4,000,000.00	1,900,878.00	47.52
- Do -	Agriculture coordination			
- Do -	School Home garden	4,000,000.00	4,019,151.00	100.47
- Do -	Development			
- Do -	Fruit Crop Development	11,300,000.00	8,756,041.00	77.48
- Do -	Observation Tour of Pri	22,000.00	22,000.00	100.00
- Do -	Minister Seed Potato Farms			
- Do -	To print Certificates for	65,000.00	0.00	0.00
	home garden competition			
	Total	125,387,000.00	101,097,388.00	80.62
118 - 2 - 3 - 3 - 2502	Crop Forecasting	2,100,000.00	2,033,507.00	96.83
118 - 2 - 3 - 4 - 2502	Programme Tree Felling and Soil	1,600,000.00	1,567,939.00	97.99
118 - 2 - 3 - 15-2103	Conservation Act. Micro Irrigation Training	1,520,000.00	396,605.00	26.09
118 - 2 - 3 - 5 - 2502	Programme Micro Irrigation	9,110,000.00	8,786,162.00	96.44
- Do -	Development Rain Water - Har.	500,000.00	240,583.00	48.11
	Total	9,610,000.00	9,026,745.00	93.93
118 - 2 - 3 - 21	Usage of Organic Fertilizer	25,000,000.00	24,701,896.00	98.80
- 2502	Production			
118 - 2 - 3 - 20	National Policy of local			
- 2502-1	Production Campaign			
	1. Rice Cultivation	11,000,000.00	6,193,155.0	56.30
	2. OFC Production	8,125,000.00	11,222,058.00	138.11
	3. Productivity of Vegetable	4,375,000.00	1,889,725.00	43.19
	4. Production of Potato	2,500,000.00	1,818,312.00	72.73
	5. Seed production	2,750,000.00	2,677,303.00	97.35
	6. Home Garden Dev.	1,250,000.00	868,957.00	69.51
	7. Development of SPM	11,250,000.00	4,731,506.00	42.05
	Total	41,250,000.00	29,596,744.00	71.74
118 - 2 - 3 - 9	To popularize organic	9,300,000.00	3,661,176.00	39.36
- 2502	Agriculture			
	Grand Total	215,767,000.00	172,082,000.00	79.75

Table 4.3.6: Collection of Revenue

Revenue Heads	Category	Actual Receipts Rs
20 – 02 – 02 - 02	Loan Interest	14,465,584.00
20 – 06 – 20 - 00	Sale of Capital assets	5,027,543.00
20 – 03 – 90 - 00	Other receipts	60,145,386.00
20 – 02 – 10 - 10	rent	15,987,747.00
20 – 03 – 20 - 18	Department Sale & Other charges	52,301,976.00
Total		147,928,236.00

5 PUBLICATIONS AND PRESENTATIONS

RESEARCH PUBLICATIONS

- Abayawickrama, A.S.M.T. and A. Toyoaki (2008). Optimization of in vitro plant regeneration of several indica rice cultivars to facilitate Agrobacterium- mediate transformation. Annual Symposium of the Department of Agriculture, Sri Lanka. 10:09-17.
- Abayawickrama, A.S.M.T. and A. Toyoaki (2008). Use of dCAPS markers in grain quality improvement of indica rice varieties. Annual Symposium of the Department of Agriculture, Sri Lanka . 10:01-08.
- Abeysekara, A.S.K. (2008). Utilization of weeds in Sri Lanka; Utility of weeds and their relatives as resources. Kyungpook National University, pp 123-133.
- Abeysekera W.K.S.M., Somasiri H.P.P.S., Premakumara G.A.S., Bentota A.P., Rajapakse d., Ediriweera N. (2008). Cooking and eating traits of some Sri Lanka traditional rice varieties across *yala* and *maha* season. Tropical Agricultural Research Vol. 20:168-176 (2008).
- Abeysekera W.K.S.M., Somasiri H.P.P.S., Premakumara G.A.S., Bentota A.P., Rajapakse D. (2008). Seasonal effect on cooking and eating quality traits of some improved Sri Lankan rice varieties. Sri Lanka Association for the Advancement of Science Proceeding of the 64th Annual Sessions-2008, Part 1-Abstracts.
- Abeysekera W.K.S.M., Somasiri H.P.P.S., Premakumara G.A.S., Bentota A.P., Rajapakse D., Ediriweera N.(2008). A comparison of traditional and improved Sri Lankan rice varieties for cooking and eating quality traits. Proceeding of the 28th Annual Session of the Institute of Biology, Sri Lanka-2008.
- Abeysekera W.K.S.M., Somasiri H.P.P.S., Premakumara G.A.S., Bentota A.P., Rajapakse D., Ediriweera N.(2008). Cooking and eating quality traits of some Sri Lankan traditional rice varieties across *yala* and *maha* seasons. Twentieth Annual Congress of the PGIA, 20-21, Nov.2008.
- Alahakoon, P.W., N.H. Jayawardana and H.G.K. Kalphashika (2008). Development of environment friendly control method to minimize fruit rot diseases of guava (*Psidium guajava*) through plant extracts. Annals of the Sri Lanka Department of Agriculture. Vol. 10. P19-29.
- Arasakesary, S.J. and K. Jeganathan (2008). Performance of four newly introduced potato (*Solanum tuberosum*) varieties in Jaffna district. International Potato symposium 2008: 167.
- Arasakesary, S.J., S. Sivatheepan, S. Sivapalasundram and K. Sivakumar (2008). Mother plant selection of promoting Jak trees. Proceeding of the Vavuniya campus Annual Research Session 2008, 11.11.2008, pp 25.
- Ariyaratne, H.M. (2008). Mysterious Bean Yellowing in Sri Lanka, Bean Improvement Cooperative. 52: 164-165
- Arulmaheshwaran, S.(2008). Effect of method of planning and time of weeding on growth and yield of row sown Gingerly (*Sesamum indicum* L.) Var. Malee under cropped with Coconut (*Cocos nucifera* L.) International Forestry and Environment symposium on 27-28 December 2008. PP 71.
- Arulmaheshwaran, S and I.M.N. Chandrasiri (2008). Effect of seed size on growth & Development of Sunflower (*Helianthus annuus* L.) 2nd International Symposium of Sabaragamuwa University of Sri Lanka on 2008.07.10. Pp23.
- Arulmaheshwaran, S., D.K.N.G. Pushpakumar and S.P. Nishanka (2008). Effects of cultivation practices on Biomass partitioning of *Boerhavia diffusa* L 20th Annual Congress PGIA on 2008.11.21. Journal of Tropical Agriculture vol. 20: 336-375.
- Atputhachandran, P.and S.Sivachandran (2008). Influences of storage condition on bitter gourd seeds. J. Sc. and Agriculture, Vol. 15 No 1, 35

- Bentota, A.P., G.D.A. Priyantha, E.A.S. Rohini and H.G.J. Chandana (2008). Variability among mutants derived from the rice variety Bw361. *Annals of the Sri Lanka Department of Agriculture*. 10:31-36.
- Chithranayana, R.D. and B.V.R. Punyawardena (2008). Identification of drought prone agro-ecological regions in Sri Lanka. *Journal of the National Science Foundation Sri Lanka*. 36(3):117-123
- Dassanayake, E.M., M. Bulathkandage and W.G.S. H.G.J. Perera (2008). Methodology to Control Cassava Mosaic Virus (CamV) in Cassava (*Manihot esculanta*). *Annals of the Sri Lanka Department of Agriculture* Vol. 10: Pp 341.
- Dassanayake, M.P., W.G.S. Perera, E.M. Dassanayake, and D.P.S.T.G. Attanayake (2008). Production of Polyconal Antiserum and Development of Enzyme Linked Immunosorbent Assay for detection of Banana Bract Mosaic Virus. *Proceedings of 64th Annual Scessions 1st-6th December 2008*. Sri Lanka Association for the Advancement of Science. 128/B
- Eriyagama, A.M.K.I, M.M. Nugaliyadda, G. Chandrasena and S.K. Dissanayake (2008). Use of sugar cane bagasse, as soil amendement, for seed potato production. *Proceeding of the International Potato Symposium*. 3-4 April 2008. 169 P.
- Fonseka, H.H.D, W.A.Y.S.P. Weerasinghe, D.C. Bandara and R.M. Fonseka (2008). Effect of temperature on yield, vitality and storability of pollen of brinjal and capsicum. *Sri Lanka J. of Agric. Science* (Accepted).
- Gunasekara, D.M.I.P., R.M. Fonseka, H.H.D. Fonseka and S. Samita (2008). Studies on seed germination and storability of bittergourd (*Momordica charantia* L.) *Proc. Of the final year student research session 3rd April 2008*. 35p.
- Gunasinghe, W.A.D.S.K., W.K.A. Madushani, E.M. Dassanayake and N.M. Ubesekera (2008). A suitable methodology to detect Banana Streak Virus (BSV) in tissue cultured banana. *Annals of the Sri Lanka Department of Agriculture* Vol. 10: Pp.37-44.
- Gunewardena, K. N. C. (2008). Efficacy of emamectin benzoate and metaflumizone for the control of onion caterpillar. *Annals of the Sri Lanka Department of Agriculture*. 10: 315 – 321.
- Hafel, R.F., T.V.S.C. Jayasekara, E.M.R.D. Edirisinghe and D.N. Sirisena (2008). Variety difference in grain quality attributes of rice. *Annals of the Sri Lanka Department of Agriculture* 10:323-329
- Hemachandra, P.V. (2008). Collection of wild rice germplasm. *SLAAS Proceedings part 1*:216
- Hemachandra, P.V., N.M. Anoma Nawarathne, D.W.A. Dissanayake and W.M.U.S. Geethika (2008). Wide hybridization studies between *O. sativa* (cultivated Asian rice) and *O. nivara* (wild rice). *Annals of the Sri Lanka Department of Agriculture*. 10 :343.
- Hettiarachchi, D.N. and D.P. Prematilake (2008). Micro propagation of grapes (*Vitis* spp.) variety Israel blue through shoot tip culture technology. *Annals of the Sri Lanka Department of Agriculture*. 10:345 – 346 Thesis - Supervised undergraduate projects – 01 (Univ. of Ruhuna)
- Jayasundara, J.M.P.B. (2008). Effect of K and Mg on yield and fruit quality of pineapple. *Journal of Soil Science Society of Sri Lanka* (In press).
- Irshadh, A.R.M., A.L.M. Niwas, S. Arulmaheshwaran and I.M.N. Chandrasiri (2008). Effects of Method of Establishment; population density on growth & yield of paddy (*Oryza sativa*) Bg 250. *National symposium of University of Ruhuna, Sri Lanka on 2008.10.23*
- Kalani, N.G.A., L.G.I. Samanmalee, E.M. Dassanayake, and D.P.S.T.G. Attanayake (2008). Effect of Heat Therapy and Tissue Culture Technique to Eliminate Banana Bunchy Top Virus from Infected Banana. *Proceedings of 8th Agricultural Research symposium 13th and 14th August 2008*. Faculty of Agriculture and Plantation Management. Wayamba university of Sri Lanka. Pp 212-216.
- Kalubowila, I., M.S. Uma and N. Yenagi (2008). Nutritive value and cooking quality of some genotypes of cowpea (*Vigna Unguiculata* L.) *Journal - Environment*

- and Ecology 26 (2A) 751-754, 2008 M.K. K. Publications, India.
- Karthika, V., S. Sivachandiran, L. Piratheepan and N. Selvanathan (2008). Effect of storage period of bulbs on vigor, growth and yield of red onion. Proceeding of the Vavuniya campus Annual Research Session 2008, 11.11.2008, pp 27
- Karunananda, D.P., U.D.K. Yapa, A.D. Kulasinghe and K.N. Yapa (2008). *In vitro* propagation of *Lilium* Asiatic hybrid "Prato" through bulb scale culture. Annals of the Sri Lanka department of Agriculture 2008.10:55-65
- Karunananda, D. P., H. M. I. K. Herath and U. D. K. Yapa (2008). Detection of anthurium bacterial blight infection based on colony characters of *Xanthomonas axanopodis* (Campestris) pv. *dieffenbachiae* in Yeast extract sucrose peptone agar and Glucose yeast chalk agar, Proceedings of First annual symposium on National floriculture research (Abstract) 20p.
- Karunananda, D. P., R. M. Kamala Manike and U. D. K. Yapa (2008). Effect of environmental conditions on thrips (*Chaetanaphothrips orchidii*) injury of anthurium and identification of susceptible growth stages of anthurium flower, Proceedings of First annual symposium on National floriculture research (Abstract) 16p.
- Ketipearachchi, Y and D. D. S. S. Dissanayaka (2008). Identification of new rice accessions as resistant to rice Brown planthopper, *Nilaparvata lugens* Stål. in Sri Lanka. Accepted to Proceedings of the 64th Sri Lanka Association for Advancement of Science. Section B.
- Kirija, K., S. Sivachandiran, L. Piratheepan and N. Selvanathan (2008). Growth and yield response of maize incorporated with different crop densities of green gram. 7th Annual Research Session on Eastern University, Sri Lanka pp 9.
- Kularathne, R.J.K.N., C.K. Wickramathunga, R.M.I.G.I. Rajasinghe (2008). Yield improvement of greenhouse tomatoes (*Lycopersicon esculentum*) through plant density management. Annals of the Sri Lanka Department of Agriculture, 2008; Vol-10. Pg 81-95.
- Kularathne, R.J.K.N. and D. Ariyaratne (2008). Evaluation of propagule types of potato for pre-basic seed production. Potato. Proceedings of the International Potato Symposium. 2008. Department of Agriculture Sri Lanka. Pg 59-69.
- Kularathne, R.J.K.N., K.V.D.T.I. Perera, U.R. Sangakkara, C. Premarathne and E.R. Chandimal (2008). An Approach to address seed potato (*Solanum tuberosum*) issues through hydroponically produced minitubers: An Economic Analysis. Potato. Proceedings of the International Potato Symposium. Department of Agriculture, Sri Lanka 2008. Pg 71-86.
- Kularathne, R.J.K.N., Soyza and E.R. Chandimal (2008), Effect of plant density on external quality and yield of cut Chrysanthemum in Up Country Wet Zone of Sri Lanka. Abstracts of the National Symposium on Floriculture Research. The Department of National Botanic Gardens, Sri Lanka. 2008. pg 6.
- Kumari, H.M.P.S., D.N. Sirisena, P.V. Hemchandra, U.N.D. Silva, E.M.A.S. Ekanayake and I.W.M.K.N.K. Yatawara (2008). Production of Salt Tolerant rice breeding lines through doubled haploid using anther cloture technique. Annals of the Sri Lanka Department of Agriculture. 10:347-349
- Liyanage, A.S.U., W.M.D. Wasala (2008). Use of prediction maps for survey, exploration and collection, Proceedings part 1, Thirteen International Forestry and Environment Symposium, pp 67-68, 27-28 Dec. 2008, Sri Lanka.
- Liyanage, L.C.S., E.M. Dassanayake, W.G.S. Perera and D.P.S.T.G. Attanayake (2008). Identification and Confirmation of Virus Disesaes in Dragon Fruit (*Hylocereus undatus*(Haw.)Britton and rose) Varietie Using Enzyme Linked Immunsorbent Assay (ELISA). Proceedings of 8th Agricultural Research symposium 13th and 14th August 2008. Faculty of Agriculture and Plantation Management. Wayamba university of Sri Lanka. Pp 193-196.
- Liyanagedara L.G.N.H.K., W.L.G. Samarasinghe and D.P.S.T.G. Attanayake (2008). Development of culture establishment Media for *In vitro* conservation of banana (*Musa* spp.) cultivars; 'Alukesel' and 'Suwandel'. Proceedings of 8th Agricultural Research Symposium,

- Wayamba University of Sri Lanka, 13-14th August, 2008: 208-211
- Liyanagedara, L.G.N.H.K., W.L.G. Samarasinghe and D.P.S.T.G. Attanayake (2008). Development of Culture Establishment media for in vitro conservation of Banana (*Musa spp.*) Cultivars; *Alukesel and Suwandel*. Proceedings of 8th Agricultural research symposium 13th - 14th August, Wayamba University of Sri Lanka: 208-211
- Madhushani, W.K.A., E.M. Dassanayake and D.L. Jayaratne (2008). Detection of Banana Streak Badnavirus (BSV) in Tissue Culture banana clones. Dissertation submitted to the University Kelaniya in partial fulfillment of the requirement for the B.Sc. (Special) Degree in Microbiology. Department of Microbiology, Faculty of Science, University of Kelaniya.
- Madurangi, S.A.P., G. Samarasinghe, S.G.J.N. Senanayake, P.V. Hemachandra and D. Ratnasekara (2008). Investigation of Brown Plant Hopper resistance in *Oryza nivara* and *Oryza eichingeri* derived lines. Proceedings of the National Symposium of the Faculty of Agriculture University of Ruhuna, 23rd- 24th Oct. 2008: 121-123
- Madurangi, S.A.P., W.L.G. Samarasinghe, S.G.J.N. Senanayake, P.V. Hemechandra and D. Ratnasekera (2008). Investigation of Brown Plant Hopper resistance in *Oryza nivara* and *Oryza ecichingeri* derived lines. Proceedings of National Symposium faculty of Agriculture university of Ruhuna Sri Lanka: 122-123
- Mapa, Ranjith B., I.N.P. Jayawardane and W.M.U.K. Rathnayake (2008). Mapping of soil texture and depth to hardpan in the command area of Girithala irrigation scheme, The fifth National Symposium on Geo-Informatics, Geo-Informatics Society of Sri Lanka, Pp 55-60.
- Malathy, P. (2008). Status of true potato seed research and development activities in Sri Lanka- A review report. Proceedings of International Potato Symposium 2008:87-91
- Malathy, P. and D.D.I. Kapugama (2008). HPS II/67: A promising hybrid potato for Sri Lanka. Proceedings of International Potato Symposium 2008: 93-102.
- Malathy, P., H.K. Kumudini, M.M. Nugaliyadde, P.K.S. Jayathilake, M.G.B.
- Hemachandra and H.M.P. Pushpika. (2008). Development of potato varieties suitable for Sri Lanka. Proceedings of International Potato Symposium 2008:103-110
- Malathy, P. and M.M. Nugalliyadde (2008). Re- introduction of TPS in Sri Lanka: Opportunities and Challenges. In: Abstracts, Global Potato Conference, 2008. (eds.) J.Gopal, D.Pattanayak, D.Kuamr, P.M.Govindakrishnan and B.Singh. December 9-12, 2008, New Delhi, India. P:71-72
- Malaviarachchi, M.A.P.W.K. (2008). Plant density and nutrient management on hybrid maize grown on rainfed uplands. ASDA. 105 -116.
- Malaviarachchi, M.A.P.W.K. (2008). Potential of maize and chilli intercropping under supplementary irrigation. ASDA. 97 - 103.
- Mohotti, A.J., K.M. Mohotti, S.P.C. Lankika, W. Weerakoon and U.R. Sangakkara (2008). Carbon Dioxide evolution levels in soil and root environment in organic and conventional tea growing systems. Proceedings of the International Forestry and Environment Symposium, University of Sri Jayawardenapura, Sri Lanka, 27 - 28 December 2008.
- Peiris, R., S.P. Indrasena, D.S. Hewa Bandula, K.N. Samarakoon and T.K. Wickremesinghe (2008). Development of Tomato Hybrid, Maheshi with Bacterial Wilt Resistance, and Good Fruit Quality Characters, In proceedings of 5th International Crop Science Congress & Exhibition, Korea. P.104.
- Perera, K.D.A., R.H.W. Dissanayake and H.D. Jayawickrama (2008). Studies on development of hermaphrodite inbred lines and their maintenance in F1 hybrid production of papaya. Annals of Sri Lanka Department of Agriculture. Vol. 10. P 117-128.
- Peiris, R. and S.P.Indrasena (2008). Development of a pumpkin variety hordi-pu -1 having good fruit quality attributes, In proc. Sri Lanka. Ass. Admt. Sci., 64(1).
- Peiris, R., T.K. Wickramasinghe and S.P. Indrasena

(2008). M 127- A Promising Tomato

Variety Developed through Induced Mutation Technique, *In* proceedings of FAO/IAEA International Symposium on Induced Mutations in Plants, Austria. P 174.

Peiris, R., T.K. Wickremesinghe and S.P. Indrasena (2008). HF 02 A promising tomato

hybrid with Bacterial Wilt Resistance, and Good Fruit Quality Characters, *Annals of the Sri Lanka, Department of Agriculture – (ASDA)* Vol. 10, P 351.

Pradeepika, K.K.S.D. and D.P.P. Jayakody (2008). Studies on allelopathic activity and weed suppression by leaf litter leachates of three invasive weed species. *SLASS proceedings of the 64th Annual Sessions-2008, Part 1- Abstracts.*

Prematilake, D.P., H.M.S. Heenkenda and A. Hettiarachchi (2008). Field performance of tissue cultured banana (*Musa acuminata*) cultivars 'Ambon' and 'Rathambala' (AAA group) Book of abstracts (P-AG-66) in proceedings of the International conference of banana and plantain, Kenya (in press).

Premathilake, A.K. Devika (2008). Effect of different levels of organic & inorganic fertilizers on growth & yield of sweet potato. *In* proc. ICSC 2008 5th International Crop Science Congress Jeju, Korea.

Priyantha, M.G.D.L., J.R. Sharma, M.R. Manrao and T.S. Thind (2007). Antifungal potential of 3-ethoxy-4-hydroxybenzal derivatives. *Journal of Mycology and Plant Pathology.* (Accepted)

Priyantha, M.G.D.L., J.R. Sharma, M.R. Manrao and T.S. Thind (2007). Antifungal potential of 4-chlorobenzal derivatives. *Indian Journal of Agricultural Chemistry.* (Accepted)

Priyantha, M.G.D.L., J.R. Sharma, M.R. Manrao and T.S. Thind (2007). Evaluation of 4-hydroxy-3-methoxybenzal derivatives as antifungal agents. *Plant Disease Research.* (Accepted)

Rajapakse, R. G. A. S., Wickramaarchchi W. A. R. T., Ekanayake, R., Wijesekara, S. and

I. Sakalasooriya (2008). Plant pathogens associated with imported seed potato (*Solanum*

tuberosum L.). *Proceeding of the international potato symposium, DOA, Sri Lanka, 3-4 April 2008.* 135-142.

Rajapakse, R. G. A. S., R. Wickramaarchchi, S. Wijesekara, S., I. Sakalasooriya and J. Kahawatta (2008). Development of variety screening methods for anthracnose disease of capsicum (*Capsicum annum* L.). *Annals of the Sri Lanka Department of Agriculture, Vol. 10,* 129-136.

Samaranayake, J. (2008). Identification of suitable earthworm species for introduction of vermicompost production in Sri Lanka. *Proceedings part1, Thirteen International forestry and Environment Symposium,* pp 31-32, 27-28 Dec. 2008, Sri Lanka.

Samarasinghe W.L.G., A.L.T. Perera, and I.P. Wickramasinghe and S. Rajapakse (2008).

A Poster, Morphological and Molecular Characterization of *Musa* Germplasm in Sri Lanka and Selection of Superior Genotypes. *Banana and Plantains in Africa: Harnessing International Partnerships of Increased Research Impact.* Mombasa, Kenya.

Samarasinghe W.L.G., A.H. Gunadasa, M.R.P. Kurukulasooriya, C.B. Herath, R.M.T. Rajapakse and K.K.S. Fernando (2008). Pyramiding of bacterial leaf blight resistant genes *Xa-21* and *xa-5* in rice by molecular marker assisted breeding. *Annals of the Sri Lanka Department of Agriculture,* 10:157-164

Samarasinghe, W.L.G., A.H. Gunadasa, M.R.P. Kurukulasooriya, C.B. Herath and K.K.S. Fernando (2008). Pyramiding of bacterial leaf blight resistant genes *Xa-21* and *xa-5* in rice by molecular marker assisted breeding. *Annals of the Sri Lanka Department of Agriculture* 10:157-164.

Samarasinghe, W.L.G., S.L.D. Jayaweera, M.R.P. Kurukulasooriya, A.S.U. Liyanage and K.V.W. Darshana (2008). Occurrence, morphological characteristics and genetic diversity of wild banana, *Musa acuminata* and *Musa balbisiana* *Annals of the Sri Lanka Department of Agriculture* 10:165-176.

Samarasinghe, W.L.G., A.L.T. Perera, S. Rajapakse and I.P. Wickramasinghe (2008). Morphological and Molecular

- Characterization of Musa Germplasm in Sri Lanka and Selection of Superior Genotypes. International Banana Conference in Kenya Oct 2008 (Full paper accepted for Acta Horticulturae)
- Samarasinghe W.L.G., S.L.D. Jayaweera, M.R.P. Kurukulasooriya, A.S.U. Liyanage and K.V.W. Darshana (2008). Occurrence, morphological characteristics and genetic diversity of wild banana, *Musa acuminata* and *Musa balbisiana*. *Annals of the Sri Lanka Department of Agriculture*, 10:165-176.
- Sarananda, K.H. (2008). Pre-harvest calcium spray in incidence of internal browning in pineapple CV. Martius during cold storage. *AGRIEAST* 7:1-8.
- Senevirathna, J.G.D.T., K.A. Mettananda and S. Bogahawatta (2008). A study on the present status of seed paddy production in Sri Lanka. *Annals of the Sri Lanka Department of Agriculture*. 2008.10:177-189.
- Senevirathna, J.G.D.T. and Takayuki Aoki (2008). Morphological and molecular identification of *Fusarium verticillioides* in maize. *Annals of the Sri Lanka Department of Agriculture*. 2008.10:191-198.
- Shashiprabha, H.M.G., S. Arulmaheshwaran and I.M.N. Chandrasiri (2008). A study on cauliflower (*Brassica oleracea* var *Btrytis*) production practices and profitability in Kalpitiya area of Puttlum district in Sri Lanka. National symposium of University of Ruhuna, Sri Lanka on 2008.10.23
- Shesha Parami, J.T.M., I.M.N. Chandrasiri and S. Arulmaheshwaran A study on post harvest losses of Potato (*Solanum tuberosum* L.) in Welimada area of Badulla district in Sri Lanka. National Symposium of university of Ruhuna .Sri Lanka on 2008.10.23. Pp 33.
- Sirisena, D.N., N.P. Jayawardana, W.M.A.D.B. Wickramasinghe, W.M.U.K. Rathnayake and R.B. Mapa (2008). Spatial variability of some soil fertility parameters in rice fields of Girithale irrigation scheme. *Annals of the Sri Lanka Department of Agriculture*, Vol. 10:199-211.
- Sirisena, D.N., N.P. Jayawardane, W.M.A.D.B. Wickramasinghe, W.M.U.K. Rathnayake and R.B. Mapa (2008). Spatial variability of some soil fertility parameters in rice fields of Girithale irrigation scheme. *Annals of Sri Lanka Department of Agriculture*, 2008.
- Sugitharan, M., B. D. Bhakare, M. S. Nijamudeen and S. R. Shelke (2008). Effects of soil salinity on growth characteristics of maize (*zea mays*): a review. *An Asian Journal of Soil Science, India*. 3(1): 197 – 203.
- Sumanaratne, H.D. (2008). A case study on the effect of rising perched water table to root zone of grape vines at Angunakolapelessa. Symposium of water professional's day October 01. 2008, University of Peradeniya.
- Sumanaratne, J.P. (2008). Evaluation and advancement of maintainer gene pool in rice for evelopment of improved hybrids. *ASDA Vol.10*.
- Thantirige, M.K., C.K.D. Wellala and M.S. Karunaratna (2008). Indentification of suitable root stocks for soursop (*Annona muricata*) and their impact on yield parameters. *Annals of Sri Lanka Department of Agriculture*. Vol. 10. P 245-253.
- Tharani, B., S. Sivachandiran, L. Piratheepan and N. Selvanathan (2008). Effect of different packages of practices on organic leafy vegetable production. Proceeding of the Vavuniya campus Annual Research Session 2008, 11.11.2008, pp 23
- Vijayaratnam, S., B. Balasingam, S. Kulendran and P. Balakrishnan (2008). Effects of poultry manure on chilli yield and incidence of thrips in calcic Red Yellow Latosol. *Proceedings of the ASDA* 10.
- Wasala, S. K., B. M. Prasanna, D. Dubey, S. K. Gularia, V. Mahajan, J. C. Sekhar and R. Prasad (2008). Phenotypic and molecular characterization of selected maize landraces from the non – North Eastern Hemalayan regions in India. *Biotechnology Tools and Uses. Proceedings 10th Asian Regional Maize Workshop, Indonesia*.

- Warnakulasooriya, M.G.D.K., H. Fonseka, S.G.T.N. Senanayake and D. Rathnasekara (2008). Effect of extended pollination time on fruit and seed development and storage temperature on viability and storability of pollen of eggplant (*Solanum melangena* L.) Proc. Of the Nat-symposium of faculty of Agriculture, University of Ruhuna. 111
- Warshamana, I.K., I. Medagoda, W.A. Wijithawarna, S. Ekanayake and C.K. Ranaweera (2008). Distribution, exploration and conservation of mango genetic diversity in Sri Lanka. Annals of the Sri Lanka Department of Agriculture 10 : 273-282.
- Weerasekera, K.I., E.M. Dassanayake and K.L. Wasantha Kumara (2008). Identification of Selected Viruses in Weeds and Other Alternative Hosts in Fruits, Vegetables, root and tuber crop cultivations in the wet Zone. A Research Report Submitted in Partial Fulfillment of the Requirements of the Advanced Course in Applied Biology. Department of Agricultural Biology, Faculty of Agriculture, University of Ruhuna.
- Weerasooriya, J.D., V.K. Peries and S.M.G. David (2008). Effect of cattle manure and fruit waste compost on the performance of organic passion fruit (*Passiflora edulis* F. Flavicarpa) cultivation. Annals of Sri Lanka Department of Agriculture. Vol. 10. P. 293-301.
- Wellala, C.K.D. (2008). Value addition to wax apple (*Syzgium samaran genes*) and lovi (*Flacourtia incremis*) by osmo - air dehydrator. Annals of Sri Lanka Department of Agriculture. Vol.10. P. 329-335.
- Wijeratne, P.A.T.M., E. M. Dassanayake, W.G.S. Perera and D.P.S.T.G. Attanayake (2008). Purification of Phytoplasma to Produce Polyclonal Antiserum for the Detection of Weligama Coconut Leaf Wilt Disease. Proceedings of 8th Agricultural Research symposium 13th and 14th August 2008. Faculty of Agriculture and Plantation Management. Wayamba university of Sri Lanka. Pp 188-192.
- Weerakoon, W.M.W. (2008). Future of rice with limited water in Sri Lanka, Proceedings of the Soil Science Society symposium, May 2008.
- Weerakoon, W.M.W. (2008). Impact of climate change on rice cultivation in Sri Lanka. National workshop on climate change on Agriculture, ISTI, Gannoruwa, May 22, 2008.
- Weerakoon, W.M.W., A. Maruyama, K. Ohba (2008). Impact of humidity on temperature induced grain sterility in rice (*Oryza sativa* L.) *J. of Agro. and Crop Sci.*, pp 135-140.

PUBLICATION IN NON REFEREED JOURNALS AND BULLETINS

- Jayasundara, J.M.P.B. (2008). Cracking of fruits and their remedial measures. *Krusha* (In Press).
- Karunananda, D.P. (2008). Cultivation of lilies, in the magazine Garden living, published by Hill country horticultural society and friends of Botanic Gardens, Vol 06
- Malathy, P. (2008). Radish Cultivation. *Saubhagya*. Published by Seed Producers' Association of Sri Lanka. pp: 14-16
- Peiris, R. (2008). Big demand for Maheshi and Bhathiya. *Arana Magazine*; ISSN 1800-3834; Vol.39 (09) P. 17
- Premathilake, A. (2008). Self employment with turmeric cultivation. *Govikamsangarawa*, 42:2.
- Punyawardena, B. V. R. (2008). Rainfall and Agro-ecological Environments of Sri Lanka (In Sinhala), Department of Agriculture.
- Senavirathna, K.G.S. and K.T.M. Sudarshani Perera (2008). Dragon Fruit Cultivation. STC Plus. Standard Trust Consulting Pvt. Ltd. November 2008.
- Somadasa, L.P., I.A.D.A.T Appuhami and G.D.S.S.S. Dissanayake. (2008). Field problems for Mango cultivation in Sri Lanka. *Saubhagya*. Vol.13 p17-19
- Somadasa, L.P., S.G. Piyadasa, R.D.M. Kanthi and Pemachandra (2008). Melon Cultivation *Saubhagya*. Vol.13 p 39-41
- Wijewardena, J.D.H. (2008). Importance factors for Compost Production *Saubhagya*, vol.13 p27- 32

PUBLICATION OF BOOKS

Jayasundara, J.M.P.B. (2008). Integrated Plant Nutrient Management System. A handbook for agriculture extension officers- 2008 Fruit section. Extension Division, Department of Agriculture.

Piyasena, K. (2008). Status of the Implementation of Integrated Pest Management (IPM) activities in SAARC Countries – Sri Lankan Chapter

NEWSPAPER ARTICLES

Alwis, A.J.S. (2008). Nutrient deficiencies of pineapple, December 16th "Divaina Sarubima"

Amaranthus heals *Rattaya and pitta*. (Sinhala), "Silumina" 27th April 2008. Pg 34.

Anona apt for those devoid of sickness too. (Sinhala), "Silumina" 28th September 2008. Pg 34.

Arasakesary, S.J. and B. Balasingam (2008). Preparation and application of natural pesticides. (Tamil), "Valampuri" Tamil daily, 24.05.2008, Page 07.

Arasakesary, S.J. and P. Atputhachandran (2008). Rapid multiplication of Red Onion by using immature laterals. (Tamil), "Uthayan" Tamil daily 26.12.2008.

Balasingam, B. Leaf twister disease in Onion. (Tamil), "Uthayan" Tamil daily 30.12.2008.

Balasingam, B., S. Vijayaratnam, P. Balakrishnan. Incidence of Nematodes and its management. (Tamil), "Uthayan" Tamil daily 28.06.2008

Balasingam, B., S. Vijayaratnam, P. Balakrishnan. Incidence of stem borer attack in brinjal. (Tamil), "Uthayan" Tamil daily 05.07.2008

Bordeaux mixture for fungi control. (Sinhala), "Silumina" 9th March 2008. Pg 34.

Budded Sapota plants flower early. (Sinhala), "Silumina" 27th April 2008. Pg 34.

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Dissanayake, D.M.P.S (2008). A prosperous country from fertile soil, (Sinhala), "Divaina Sarubima" 11th November.

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Eriyagama, A.M.K.I. (2008). Importance of application of fertilizer – Potato cultivation (Sinhala), "Lankadeepa" 22nd September.

Higher yield from removing excessive branches. (Sinhala), "Silumina" 9th March 2008. Pg 34.

Home garden with hydroponic system for flats. (Sinhala), "Silumina" 6th January 2008. Pg 34.

Karunananda, D. P. (2008). Higher income from potted cultivation of Poinsettia (Sinhala), Lankadeepa "Govi bima" supplement, 28th January 2008.

Karunananda, D. P. (2008). Problems faced in Gerbera cultivation. (Sinhala), "Lankadeepa Govi bima" supplement, 10th March.

Lime seedlings take longer to flower. (Sinhala), "Silumina" 18th May 2008. Pg 34.

Mint good for wormy diseases. (Sinhala), "Silumina" 22nd June 2008. Pg 34.

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18th May 2008. Pg 34.

Pushpakumari, A.S., Enemies in rice cultivation.
(Sinhala), "Wijaya"

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Rose apple. (Sinhala), "Silumina" 30th
March 2008. Pg 34.

Seed potato within a short time. (Sinhala),
"Lankadeepa", 15th Dec. 2008

Shade necessary up to three weeks after planting.
(Sinhala), "Silumina" 1st June 2008. Pg
34.

Thantrige, Malkanthi. Guava full of taste and
nutritive value. (Sinhala), "Saubhagya".
Seed Producers Association. April 2008.
Vol. 13: 64-68.

The bunch can contact diseases even after its
removal from the plant. (Sinhala),
"Silumina" 17th February 2008. Pg 34.

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(Sinhala), "Silumina" 10th February
2008. Pg 34.

Uproot wild tobacco plants grown around
Strawberry cultivation. (Sinhala),
"Silumina" 6th July 2008. Pg 34.

Wijewardena, J.D.H. (2008). Compost fertilizer
application. (Sinhala), "Lankadeepa
Govibima"

Wijewardena, J.D.H. (2008). Compost fertilizer.
(Sinhala), "Divaina Sarubima"

Wijewardena, J.D.H. (2008). Compost for
chemical free farming. (Sinhala),
"Divaina Sarubima" 18th March "Divaina
Sarubima"

Wijewardena, J.D.H. (2008). Way to Increase
the Soil Fertility (Part one). (Sinhala),
"Divaina Sarubima" 30th September
"Divaina Sarubima"

Wijewardena, J.D.H. (2008). Way to Increase
the Soil Fertility (Part two). (Sinhala),
"Divaina Sarubima" 30th September
"Divaina Sarubima"

Wind unfavourable for pepper cultivation.

(Sinhala), "Silumina" 20th April 2008.
Pg 30.

LEAFLETS

Bentota, A.P., Identification of some traditional
rice varieties. (Sinhala) Technical
News Bulletin: "Thakshana Luhudin".
Department of Agriculture, Vol 10. No 3.
May-June, 2008.

Encouraging consumption of Jack fruit. (Sinhala)
Let us cultivate tissue cultured banana
plants. (Sinhala)

Mithrasena, Y.J.P.K., Sheath Blight Disease

Plant Virus Indexing Centre. (Sinhala)

Plant Virus Indexing Centre. (English)

Viral diseases in Passion fruit cultivation.
(Sinhala)

Viral diseases in Potato cultivation. (Sinhala)

PRESENTATIONS

Amarasinghe, A.A.L. Presentation on "Research
contribution for increasing the
productivity of maize cultivation"
organized by the "National Task Force
for Maize" at HARTI on 28-04-2008.

Jayasundara, J.M.P.B (2008) Nutrient management
in major fruit crops in Sri Lanka.
Conference on Fertilizer Day, Wattala,
Colombo.

Karunathilaka, W.A.K. Rainwater harvesting in the
Dry Zone of Sri Lanka. Paper presented at
Annual Sessions of Soil Science Society
of Sri Lanka, March 2008 Peradeniya

Punyawardena, B. V. R., Climate change in
Walawa basin: Is it a myth or reality?
Paper presented at the Workshop of the
World Water Assessment Programme:
Case study in Walawa basin. October
3-4, 2008. Centauria Tourist Hotel,
Embilipitiya

Punyawardena, B. V. R., Greenhouse gas
inventory preparation. Paper presented
at the Inception workshop of the Project
on preparation of Second National
Communication on Climate change.
July 24-25, 2008. Kukuleganga Holiday
Resort, Kukuleganga

Punyawardena, B. V. R., Health impacts of Climate Change in Sri Lanka. Paper presented at the Regional workshop on Climate Change and Human health in Asia: From evidence to action. December 10-12, 2007. Bali, Indonesia

Punyawardena, B. V. R., Impact of climate change on food security in Sri Lanka. Paper presented at the Advocacy seminar on World Health Day – 2008. April 7, 2008. Health Bureau, Ministry of Healthcare and Nutrition, Colombo

Punyawardena, B. V. R., World Food Security: the Challenges of Climate Change and Bio-energy. Paper presented at the “World Food Day – 2008” seminar. October 16, 2008. Peradeniya

Upali Yapa, W.S.P. (2008). Storability of Aster seeds – A paper presented at the National floriculture workshop held at the Royal Botanical Gardens, Peradeniya -April 2008.

Wasala, S. K. Presentation on “Variety performances of new blackgram variety Anuradha” in varietal release committee meeting on 24-07-2008.

Wasala, S. K. Presentation of Ph.D. research organized by Plant Breeding Working Group Meeting on 20-08-2008.

Weerakoon, D.A.W.W. Farm Mechanization 2008.08.26 DATC Trincomalee, Held by PEACE project.

Weerakoon, D.A.W.W. “Situation of Farm mechanization Sri Lanka”. 2008.09.22, Central Institute of Agricultural Engineering at Bhopal – India held by SAARC Agriculture Center.

POSTER PRESENTATIONS

Kulathunga, M.D.R.L., S.H.A. de Silva and U.R. Sangakkara (2008). Impact of moisture on growth, yield, nodulation of mung bean (*Vigna radiata* (L) growing in yala season on Non-Calcic Brown soils.

Pushpakumari, A.S. (2008) Poster on ‘A potential pest of rice in Sri Lanka. Annals of the Sri Lanka Department of Agriculture.

Upali Yapa, W.S.P. (2008). Need for a soil test based fertilizer recommendation for potato cultivation – A poster presented at the GPC, Delhi, India, December.

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H.V.A. Hewavitharana *B.Sc., Agricultural Economist, Socio Economic Research, Marketing in relation to OFC*

Nirosha Ayoni *B.Sc., Agricultural Economist, Production Economics, Marketing Systems*

PROGRESS MONITORING & EVALUATION UNIT, PERADENIYA

D.T. de S.L. Bogahawatta *M.Sc., Senior DD*
 K.A.N. Kurukulaarachchi *B.Sc., DD, Monitoring & Evaluation*

H.U. Warnakulasooriya *M.Phil., AE, Agricultural Economics*

A.T. Sooriyaarachchi *B.Sc., AE, Production Economics, Agric. policy, Trade*

G.D.L.D. Sajeewani *M.Ec., AE, International Trade, Econometrics*

EXTENSION & TRAINING CENTRE, PERADENIYA

HEADQUARTERS, PERADENIYA

K.N. Mankotte *M.Sc., Actg. D, Communication*

G.A.M.S. Emitiyagoda *M.Sc., DD, Extension*

K. Nagathanan *M.Sc., DD, Education*

P.K.K.R. Perera *Postgrad. Dip., DD, Extension*

S.K. Yasakethu *M.Ed., ADA, Adult Education*

W.G.M.G. Dayawansa *M.Ed., ADA, Adult Education*

R. Samuel *M.Sc., ADA, Extension*

A.G.R. Jayasinghe *M.Sc., ADA*

N.P.C. de Silva** *M.Sc., ADA, Extension*

S.S.W.M.A.P. Senanayake *B.Sc., ADA, Education*

R.S. Wijesekara *M.Sc., ADA, Micro Irrigation*

P.B.H. Chandralatha *B.Sc., ADA, Communication*

M.D.R. Tissera *B.Sc., ADA, Education*

S.A. Arunapriya *M.Sc., ADA, Agricultural statistics & project formulation*

J.P. Athapaththu *Ph.D., ADA, Extension*

S.B.S.K. Semasinghe** *M.Sc., DD, Extension*

H.M.J. Ilankoon Manike *M.Sc., ADA, Extension*

K.B. Gunaratne *M.Sc., ADA, Communication*

M.H.B.P.H. Madana *M.Sc., ADA, GIS & RS*

M.S. Mannapperuma *B.Sc., ADA, Extension*

W.M.S.B. Nissanka** *B.Sc., ADA, Extension*

H.M.T.B. Herath *Dip. in Agric., AO, Extension*

INTER PROVINCIAL EXTENSION, ANURADHAPURA

K.A.D. Athula Kithsiri *B.Sc., Lecturer (Acting DD), Extension*

N.H. Wimalaratne *B.Sc., ADA, Extension*

I.W.K. Imbulgoda *M.Sc., ADA, Soil fertility Management*

M.D.S.A. Chandrasekera *M.Sc., ADA, Agricultural Extension & Crop Science*

INTER PROVINCIAL EXTENSION, AMPARA

P.M.N. Dayaratne *M.Sc., DD, Extension*

A.R.A. Latheef *B.Sc., ADA, Extension*

M.S. Abdul Kalees *B.Sc., ADA, Extension*

G.N.A. Arunathilaka *B.Sc., ADA, Extension*

INTER PROVINCIAL EXTENSION, HAMBANTOTA

W.L. Hiran Peiris *B.Sc., Actg.DD, Field Crops*

M.B. Weerasooriya *B.Sc., ADA, Horticulture*

N.M.A. Dharmapriya *B.Sc., ADA, Economics*

INTER PROVINCIAL EXTENSION, KANDY

A.S. Dissanayake *Dip. in Agric., DD, Extension*

J.R. Sudasinghe *B.Sc., ADA, General Agriculture*

G.A.P. Wimalarathna *M.Sc., ADA, Extension*

INTER PROVINCIAL EXTENSION, MONARAGALA

A.B.M. Wijethunga *M.Sc., Acting DD, Extension*

H.D.K. de J. Sriwardhane *B.Sc., ADA, Extension*

**INTER PROVINCIAL EXTENSION,
POLONNARUWA**

P. Sisira Kumara *M.Sc., ADA, Agricultural Extension
& Water Management*
 W.M.S. Wanninayake *M.Sc., ADA, Extension*
 U.K.D.N.N. Ranathunga *M.Sc., ADA, Extension*

**AGRICULTURAL ENTERPRISE
DEVELOPMENT & INFORMATION
SERVICE, PERADENIYA**

K.E. Karunatilake *M.Phil, DD, Extension*
 D. Abeysuriya *M.Sc., ADA, Extension*

YOUNG FARMERS CLUB

H.A. Athapattu *M.Sc., ADA, Extension*

**BEE KEEPING DEVELOPMENT
UNIT, BANDARAWELA**

A.M.D. Athapaththu *Dip. in Agric., ADA, Extension*

**RUPAVAHINI & FARM
BROADCASTING SERVICE**

Hemantha Amarasinghe *M.Sc., OIC, Extension*
 Jayanthi Abegunasekara *M.Sc., ADA, Broadcasting &
Telecasting*
 D.N. de Silva *M.Phil., SMS, Development
Communication*
 G.G.D. Lalani *B.Sc., AO, Communication*
 G.G.P.P. De Silva *B.Sc., Lecturer*
 Arundathi Valesivanadan *B.Sc., Lecturer, Nutrition*
 Ranjith Nanayakkara *Dip. in Agriculture, ADA,
Extension*

**AUDIO VISUAL TRAINING
CENTRE, GANNORUWA**

R.R.A. Wijekoon *Ph.D., ADA, Communication*
 R.D. Siripala *M.A., SMS, Communication*
 J.K.A. Hettiarachchi *M.Sc., SMS, Communication*
 W.A.G. Sisira Kumara *M.A., SMS, Communication*
 M.M. Weerakoon Banda *B.Sc., AO, Agricultural
Economics*

**AGRICULTURAL PRESS,
GANNORUWA**

S.Periyasamiy *M.Sc., ADA, Communication*

**INSERVICE TRAINING INSTITUTE,
ANGUNAKOLAPELESSA**

A.W.P. Leelananda *B.Sc., ADA, Education & training*
 M.G. Ajith Pushpa Kumara *M.Sc., Lecturer,
Environmental Economics*
 R.C. Jayasinghe *B.Sc., AO, Plant Protection*

**INSERVICE TRAINING INSTITUTE,
GANNORUWA**

S. Waththuhewa *M.Sc., ADA, Training*
 R.P. Kasthuriarachchi *B.Sc., AO, Training*

G.D. Amarasena
 D.S. Ratnasinghe

M.Sc., AO, Training
M.Sc., SMS, Training

**FARM MECHANISATION
TRAINING CENTRE,
ANURADHAPURA**

I.G. Thilakaratne *B.Sc., ADA, Machinery*
 S.M.A. Priyadharshani *B.Sc., AO, Soil Science*
 D.A.W. Weerakoon *B.Sc., Engineer, Mechanical
Engineering*

**SCHOOL OF AGRICULTURE,
ANGUNAKOLAPELESSA**

P.C.Peris *M.Sc., ADA / Principal,
Agricultural systems*
 H.L. Thenuwara *M.Sc., Lecturer, Food Science and
technology*
 G.C.A. Gunawardhene *M.Sc., Lecturer, Water
resource & Environmental Management*
 I.R.N. Abeydheera *B.Sc., Lecturer, Plant Protection*
 M.A.U. Ranasinghe *M.Sc., Lecturer, Food Science &
Technology*
 W.L.O. Manel *B.Sc., Lecturer, Agric. Engineering*
 M.P. Thamara *M.Sc., Lecturer, Horticulture*
 I.P. Liyanage *B.Sc., Lecturer, Agric. Economics*

**SCHOOL OF AGRICULTURE,
ANURADHAPURA**

B.M. Thilakeratne *B.Sc., ADA /principal, Agricultural
Engineering*
 U.D.D. Damayanthi *B.Sc., Lecturer, Soil Science*

**HORTICULTURE DEVELOPMENT
& TRAINING INSTITUTE, BIBILE**

C. Kodithuwakkuarachchi *B.Sc., Actg. DD, Education*
 H.M.U.A.G.J. Bandara *B.Sc., Lecturer, Education*

**SCHOOL OF AGRICULTURE,
KARAPINCHA**

K.N.S. Ranathunga *B.Sc., ADA / Principal, Extension &
Training*
 I.A.D.C.T. Kumari *B.Sc., Lecturer, Education &
Training*
 A.R.W.M.M.U. Amarakoon *B.Sc., AO, Education &
Training*
 G.A.D. Rajapaksha *B.Sc., AO, Education & Training*

**SCHOOL OF AGRICULTURE,
LABUDUWA**

I.D. Gunawardena *B.Sc., ADA / Principal,
Plant Protection*
 T.H. Somadasa *B.Sc., AO, Plant Protection &
Agricultural Extension*
 D.A. Palihawadana *M.Sc., Lecturer, Agricultural
Extension*
 G.G.V. Shyamalee *M.Sc., Lecturer, Horticulture*

SCHOOL OF AGRICULTURE, PELWEHERA

H.M.R. Bandara	<i>B.Sc., ADA / Principal, Education</i>
I.G. Thilakarathne	<i>M.Sc., Lecturer, Education</i>
A.L. Siriwardhana	<i>B.Sc., Lecturer, Education</i>
K.G.W. Gunawardena	<i>B.Sc., Lecturer, Education</i>
K.M.V.B.G. Pamunuwa	<i>B.Sc., Lecturer, Education</i>
K.Seetha Violet	<i>B.Sc., Lecturer, Education</i>
B.M.A.P. Basnayake	<i>B.Sc., Lecturer, Education</i>
M.A. Chandanie	<i>M.Sc., Lecturer, Education</i>

SCHOOL OF AGRICULTURE, VAVUNIYA

S.Kaileswaran	<i>M.Sc., ADA / Principal, Food Science</i>
L.Pirunthavaeswaran	<i>B.Sc., Vice Principle, Horticulture</i>
K. Chandrakanthan	<i>B.Sc., Lecturer, Engineering & Paddy</i>
R. Sivaneshan	<i>M.Sc., Lecturer, Soil Science & Crop science</i>
S.Senthilkumaran	<i>B.Sc., Lecturer, Crop Science</i>

SCHOOL OF AGRICULTURE, WARIYAPOLA

N.C. Edirisinghe	<i>B.Sc., ADA / Principal, Farm Machinery</i>
S.B.A.M.A. Maneldevi	<i>B.Sc., Lecturer, Food Science</i>

SCHOOL OF AGRICULTURE, KUNDASALE

K.G. Sriyapala	<i>M.Sc., ADA / Principal, Education</i>
P. Varatharajah	<i>M.Sc., Lecturer, Plant Physiology & Horticulture</i>
H.S. Kuruwita	<i>M.Sc., Lecturer, Crop science</i>
A.H.C. Bandara	<i>M.Sc., Lecturer, Crop science</i>
W.T.G. Ranjini	<i>M.Sc., Lecturer, Plant Protection</i>
B.A.H. Bamunuarachchi	<i>M.Sc., Lecturer, Soil physiology</i>
K. Rohana Thilakasiri	<i>B.Sc., Lecturer, Agriculture Engineering</i>
R.R. Senerath	<i>B.Sc., Lecturer, Horticulture & Water Management</i>
S.D.K. Priyadarsani	<i>B.Sc., Lecturer, Plant Physiology</i>
I.M.N. Chandrasiri	<i>B.Sc., Lecturer, Agriculture</i>
A. Manikrama	<i>M.Sc., Lecturer, Natural Resource & Sustainable Agriculture</i>
T.M.P.G.S.P. Tennakoon	<i>B.Sc., Lecturer, Horticulture</i>
M.A. Sandya Kumari	<i>B.Sc., Lecturer, Genetics & Plant Breeding</i>
K.G. Ranjini	<i>B.Sc., Lecturer, Plant Breeding</i>
A.K. Jayawardena	<i>M.Sc., Lecturer, Natural Resource & Sustainable Agriculture</i>
P.G. Yasamalee	<i>B.Sc., Lecturer, Crop Science</i>
A.G. Karunarathna	<i>M.Sc., Lecturer, Paddy Cultivation & Water Management</i>
R.M. Gunawardhene	<i>B.Sc., Lecturer, Education</i>
A.M.U. Pinnalanda	<i>M.Sc., Lecturer, Agricultural systems</i>
I.S.M. Haleemdeen	<i>M.Sc., Lecturer, Agricultural Economics</i>

PDOA- SABARAGAMUWA PROVINCE

M.B. Dissanayake	<i>M.Sc., PD</i>
K.P. Karavita	<i>B.Sc., DD, Extension</i>
W.A.H.B. Werasagoda	<i>M.Sc., ADA, Food Technology</i>
J.M.D.J. Bandara	<i>B.Sc., ADA, Plant Pathology</i>
V.P. Wimalasena	<i>Dip. in Agric., ADA, Training</i>
B.M.U.B.S. Chandrasiri	<i>Dip. in Agric., ADA, Training</i>
Y.K. Bamunuarachchi	<i>B.Sc., ADA, Extension</i>

PDOA, NORTH WESTERN PROVINCE

W. Palitha	<i>M.Phil., PD, Soil & Water Management</i>
H.M. Sirimewan Herath	<i>B.Sc., DD, Extension</i>
O.P. Kithsiri	<i>M.Sc., ADA, Natural Resource Management</i>
B. Wijeratne	<i>M.Sc., DD, Rural Agric. Development</i>
D.M.M. Dissanayake	<i>B.Sc., ADA, Agronomy</i>
W.A. Seelaratne	<i>Dip. in Agric., ADA, Extension</i>
K.K. Jayasinghe	<i>Dip. in Agric., ADA, Extension</i>
H.A.V.T. Nawaratne	<i>Dip. in Agric., ADA, Extension</i>
K.M.A. Sukur	<i>Dip. in Agric., ADA, Extension</i>
B.L. Gunathilake	<i>M.Sc., DD, Extension</i>
J.A.R. Damayanathi	<i>B.Sc., ADA</i>
A.M.K. Samarakoon	<i>B.Sc., ADA</i>
A.H.M.B. Wadigamangawa	<i>B.Sc., ADA</i>
H.V.A.T. Navarathne	<i>B.Sc., ADA, Extension</i>

PDOA, WESTERN PROVINCE

R.S. Abesekara	<i>M.Sc., PD, Extension</i>
R.V. Edirisinghe	<i>Dip. in Agric., Ag. PD, Extension</i>
N.G.K.D. Pererea	<i>B.Sc., DD, Ag. Education</i>
H.S.A.P. Peiris	<i>Dip. in Agric., DD, Extension</i>
U.L. Wickramasinghe	<i>M.Phil., DD, Seed Technology</i>
U. Lakshman	<i>M.Sc., ADA, Forestry</i>
I.U. Mendis	<i>M.Sc., ADA, Training</i>
L.W.R.A. Nimal Shantha	<i>Dip. in Agric., ADA, Extension</i>
K.V.A.U. Kumarasinghe	<i>Dip. in Agric., ADA, Extension</i>
W.M.M. Warjirakanthi	<i>B.Sc., ADA</i>
W.N.C. Weerakoon	<i>B.Sc., ADA</i>
S.J. Liyanage	<i>B.Sc., ADA</i>

PDOA, NORTH CENTRAL PROVINCE

W.M. Jayasena	<i>Ph.D., PD, Rural development</i>
A. Jayathilake	<i>M.Sc., DD, Irrigation & Water Management</i>
R.P. Mahindapala	<i>M.Sc., DD, Training & Ext.</i>
H.M. Gammanpila	<i>B.Sc., SMS, Vegetable</i>
B.G.S.W. Pathirana	<i>B.Sc., ADA, Plant Protection</i>
E.M. Dharmasena	<i>B.Sc., ADA, Extension</i>
A.M.B.N. Abesinghe	<i>B.Sc., ADA, Extension</i>

PDOA, UVA PROVINCE

D.M. Nimal Banda	<i>M.Sc., PD, Extension</i>
R.M. Nandasiri	<i>M.Sc., DD, Education</i>
S.G. Gamage	<i>M.Sc., DD, Extension</i>
H.K.P. Jayalath	<i>B.Sc., ADA, Extension</i>

PDOA, NORTHERN PROVINCE

K. Subramaniam *M.Sc. (Agric.), PD, Agric. Extension*
 M. Jeganathan *M.Sc. (Agric.), DD, Forestry*
 J. Jeganathan *M.Sc. (Agric.), ADA, Plant Protection*
 M. Kugathan *B.Sc. (Agric.), ADA, Agric. Extension*
 S. Sivakumar *B.Sc. (Agric.), ADA, Agric. Extension*
 S. Anantharajah *Dip. in Agric., ADA, Agric. Extension*
 R. Kokulathasan *B.Sc. (Agric.), ADA, Agric. Extension*
 A. Selvarasa *B.Sc. (Agric.), AO, Agric. Extension*
 K. Sribalasundaram *Dip. in Agric., AO, Agric. Extension*
 V. Kamalanathan *Dip. in Agric., ADA, Agric. Extension*

PDOA, EASTERN PROVINCE

K. Pathmanathan *M.Sc. (Agric.), PD, Extension*
 S.M. Hussain *M.Sc. (Agric.), DD, Extension*
 A.S.M. Haris *B.Sc. (Agric.), DD, Agric. Extension*
 P. Uganathan *Dip. in Agric., DD, Agric. Extension*
 R. Hariharan *M.Sc. (Agric.), DD, Agric. Extension*
 T. Vetharaniyam *B.Sc. (Agric.), ADA, Agric. Extension*

PDOA-CENTRAL PROVINCE

T.B. Herath *M.Sc., PD, Extension*
 W.G.D.A. Wimalaratna *M.Sc., Deputy PD, Extension*
 S.M.K. Dissanayake *B.Sc., ADA, Crop Science*
 W.S.C. Perera *M.Phil., DD, Crop Science*
 P.R.P.Y. Pallemulla *Postgrad. Dip., DD, Soil Science*
 P.K. Senewiratne *B.Sc., ADA, Horticulture*
 S.M.B. Weerasekara *Dip. in Agric., ADA, Ext.*
 D.M.H. Dissanayake *Dip. in Agric., ADA, Horticulture*
 M.P.K. Dodamwala *B.Sc., ADA, Animal Husbandry*
 V.N. Egodawatta *Dip. in Agric., ADA, FWAE*
 D.G.N. Sandamalee *B.Sc., ADA*
 C.S.B. Udangamuwa *B.Sc., ADA*

PDOA-SOUTHERN PROVINCE

S. Rathnasiri *B.Sc., Actg. PD, Extension*
 L.B. Nimalaratna *B.Sc., DD*
 R.M.U. Gunawardhana *B.Sc., ADA, Extension*
 K.S. Sri Lal *Dip. in Agric., DD*
 S.K.N. Rubasinghe *B.Sc., ADA*
 Mahesh Subasinha *Dip. in Agric., ADA*
 I.M.T. Pushpalatha *Dip. in Agric., ADA*
 M.M. Senanayake *Dip. in Agric., ADA*
 P. Abeysinha *Dip. in Agric., ADA*
 M.W.S.A. de Silva *Dip. in Agric., ADA*
 C. Nanayakkara *Dip. in Agric., DD*

ADMINISTRATION DIVISION

W. Gamage Wickramasinghe *Director (Administration)*
 L.A.D. Geetha Indrani *B.A., DD, (Administration)*
 H.A.R. Wickramaratne *B.A., Asst. Director, (Administration)*
 S.W. Siriwardana *B.A., Asst. Director (Administration)*

ENGINEERING DIVISION

C.L. Rajapakse *B.Sc. Eng., C.Eng., M.Phil., MIESL, Chief Engineer*
 K. Anpini *B.Sc. Eng., C.Eng, MIESL, Civil Engineer*
 P. Rajapakse *B.Sc. Eng., C.Eng, MIESL, Civil Engineer*
 B.M.W.L. Balasooriya *B.Sc. Eng., AMIESL, Mechanical Engineer*
 A.K.S.P.S. Wijayasoma *B.Sc. Eng., Electrical Engineer*
 M.B.F. Rizwana *B.Sc. Eng., Civil Engineer*

FINANCE DIVISION

P.G. Weeratunga *B.A., DPFM, DCS, Director (Finance)*
 A.M.I.B. Adikari *B.A, DA, DPFM, DPA, DD (Finance)*
 K.M. Kularathna *ICA (Lic.), AD Public Service, DD (Finance Management)*
 M.F.M. Fais *B.Com., Pg.Dip., DD (Internal Audit)*
 E.G. Siriwardana *DPFM, Diploma in PFM, DD (Farm Accounts)*
 C.K. Rajapathirana *B.Com. HNDA, ICA, DD (Salaries – II)*
 Daya Disanayaka *B.Com. (Special), DD (Other Payments)*
 W.A.G. Weerasinghe *B.B.Mgt. (Business Management), AAT, IPFD, DD (Engineering Accounts)*
 E.R.M.S.H. Ekanayake *B.Com. (Special), LICA, Assistant Director (Development)*
 U.G.C. Aberathna *B.B.Mgt. (Special) Business Admin., Professional Part I – ICASL, Assistant Director (Projects)*
 K.L.P. Rajakaruna *B.B.Mgt. Business Admin.(sp) Professional Part I – ICASL, Assistant Director (Project)*
 M. Sridharan *Diploma in PFM, Assistant Director (Salaries – I)*
 J.H.H. Chandani *B.B.Mgt. Human Resource (Sp), Assistant Director (Advance Accounts)*

• On study leave

** On no pay leave

7 STAFF POSITION (As at 2008.12.31)

Cadre Post	FCRDI										HORDI										RRDI		ETC	SCPPC	SPMDC	SEPC	ADM	ENG	FIN	TOTAL
	FCRDI	FMRC	GLORDC	RARDC/ARL	RARDC/VAV	HORDI	FCRDC	FRU	NRMIC	PVIC	RARDC/BAN	RARDC/MK	ARS/SE	ARS/TW	ARS/GK	RRDI	RARDC/BWW													
Sri Lanka Agricultural Service																														
Director General of Agriculture																											1			
Director of Agriculture	1					1											1										5			
Adtl. Director of Agriculture						1	1		1																		4			
Deputy Director of Agriculture	1			1		1						1					1	1	5	2	3						16			
Asst. Director of Agriculture																		28									28			
Registrar of Pesticides																			1								1			
Asst. Registrar of Pesticides																														
Agricultural Officer	17								4								2	1	13	16	19						72			
Research Officer			11	4	9	31	11	4	8	3	9	7	6	2	2	16	12		20	2							157			
Lecturer																		61									61			
Subject Matter Specialist									1									16									17			
Agricultural Economist	1																							10			11			
Curator																														
Mechanical Superintendent																														
Superintendent of Press																														
Administrative Officer			1			2					1					1	1	2	3	2	5	2					20			
Sri Lanka Administrative Service																														
Director (Administration)																								1			1			
Deputy Director (Administration)																								1			1			
Assistant Director (Administration)																								2			2			
Sri Lanka Accountancy Service																														
Director (Finance)																											1			
Deputy Director (Finance)																											1			
Assistant Director (Finance)																											7			
Accountant																											5			
Sri Lanka Engineering Service																											1			
Chief Engineer																											1			

7 STAFF POSITION (As at 2008.12.31)

Cadre Post	FCRDI				HORDI										RRDI		ETC	SCPPC	SPMDC	SEPC	ADM	ENG	FIN	TOTAL
	FCRDI	FMRC	GLORDC	RARDC/ARL	RARDC/WAV	HORDI	FCRDC	FRU	NRMC	PVIC	RARDC/BAN	RARDC/MK	ARS/SE	ARS/TW	ARS/GK	RRDI	RARDC/BWW							
Engineer (Civil)																						3		3
Engineer (Mechanical)		3																1				1		5
Engineer (Electrical)																						1		1
Translator (English)																		1		2	1	1		5
Translator (Tamil)																			1	1				2
Economist Assistant		2					1				1	1							13					18
Statistical Assistant																								
Graduate Assistant																								
Agricultural Monitoring Officer			2	1		2		3		5	1	3				7	5	27	15	2	1			74
Librarian						2																		2
Programme Assistant	8	1	8	2		22	7	3	5	8	9	5	3	3	1	9	8	36	19	3	10	2		172
Legal Assistant																		1			1			2
Media Assistant																		3						3
Audio Visual Assistant																		5						5
Development Assistant							1										2	1						4
Cartographer									1															1
Agricultural Productivity Enhancement Officer							1																	1
Middle Level Technical Service																								
Agricultural Instructor	15	3	11	6	9	55	16	2	7	8	19	30	7	7	7	27	13	346	144	97	2			834
KVSN																		1						1
Research Assistant	6	1	1	1	2	14	1	2	2	1	3	5	2	3		6	10	2	10					71
Agricultural Research & Productivity Officer																								
Instructor																								
Engineering Assistant																								
Farm Machinery Instructor		1															1		1			1		4
Soil Surveyor								5																5
Building Overseer/ Work Inspector											1											4		5
Foreman (Engineering)		1																1						2

7 STAFF POSITION (As at 2008.12.31)

Cadre Post	FCRDI					HORDI										RRDI		ETC	SCPPC	SPMDC	SEPC	ADM	ENG	FIN	TOTAL
	FCRDI	FMRC	GLORDC	RARDC/ARL	RARDC/VAV	HORDI	FCRDC	FRU	NRMC	FRDC	ARS/SE	ARS/TW	ARS/GK	RRDI	RARDC/BWW										
Budget Assistant																								1	1
Land Valuation Officer																									
Draughtsman		1																					1		2
Mechanical Officer																		1							1
Garden Assistant																									
Foreman (Agriculture)																									
Photographer/ Dark Room Assistant																		1							1
Foreman (Press)																									
Composer																		3							3
Computer Operator																									
Matron																									
Research Sub Assistant	11		1		2	14	1	3	2		1	2	1	2	8	1		5							54
Audio Visual Technician																		1							1
Seed Technician																		12							12
Foreman (Garden)																									
Garden Conductor																									
Secretary - Agriculture School																									
Artist																		2							2
House Warden																									
Librarian																		1							1
Cinema Machine Operator																		4							4
Sri Lanka Management Assistance Service	16	2	7	2	1	25	7	3	8	2	9	10	4	3	14	8	50	76	11	104	16			130	617
Clerk (Supra Grade)																									
Clerk													1												1
Typist - Sinhala																									
Typist - Tamil																									
Typist - English																									1
Shroff																									

7 STAFF POSITION (As at 2008.12.31)

Cadre Post	FCRDI					HORDI								RRDI		ETC	SCPPC	SPMDC	SEPC	ADM	ENG	FIN	TOTAL		
	FCRDI	FMRC	GLORDC	RARDC/ARL	RARDC/VAV	HORDI	FCRDC	FRU	NRMC	PVIC	RARDC/BAN	RARDC/MK	ARS/SE	ARS/TW	ARS/GK									RRDI	RARDI
Store Keeper (Supra Grade)																									
Store Keeper																						3			
Stenographer – English/ Tamil				1																		1			
Stenographer – Sinhala																									
Book Keeper (Supra)																									
Book Keeper																									
Welfare Officer																									
Data Entry Operator																									
Farm Clerk						9						4						5	1	25		44			
Telephone Operator																									
Roneo Operator																									
Book Binder																		1				1			
Book Binder (Press)																									
KKS Arachchi																									
KKS	3					2			1		3	1					1	15	7	5	3	22	1	12	76
Peon		1	1				1																	3	
Office Watcher																			8		2			10	
Sanitary Labourer (Combined Service)																2								2	
Office Labourer							5	7		4									84				13	113	
Garden Labourer																13								13	
Factory Clerk																									
Wharf Clerk																									
Time Keeper																	1							1	
Proof Reader																									
Driver	7	3	7	5		11	3	2	5	2	6	4	2	2	1	9	4	71	34	48	6	8	3	6	249
Tractor Operator	5	1	2	3			1				1	4								19				36	
Machine Attendant/ Machine Minder																									
Machinist		2				2											2							6	

7 STAFF POSITION (As at 2008.12.31)

Cadre Post	ECRDI				HORDI				RRDI				ETC	SCPPC	SPMDC	SEPC	ADM	ENG	FIN	TOTAL
	ECRDI	FMRC	GLORDC	RARDC/ARL	RARDC/VAV	HORDI	FCRDC	FRU	NRMC	PVIC	RARDC/BAN	RARDC/MK	ARS/SE	ARS/TW	ARS/GK	RRDI	RARDC/BWW			
Mechanic		5									1							5	6	20
Plumber		1																		1
Storeman	1	2	1			2				1								2		16
Lorry Cleaner																				18
Carpenter			2			2					1							3		10
Mason		1	1	1		1					1							1		10
Fitter																				
Welder		2	1			1											1			6
Blacksmith		1	1																	3
Tinker		1																		1
Electrician			1	1		2		1			1							2		16
Painter						1					1							1		3
Latheman																				
Grass Cutter						1					1									2
Sprayer Operator																				
Earth Mover Operator						2														16
Sub Overseer																				
Machine House Operator		1																		1
Machine House Attendant		1																		1
Pump Operator						1					2							1		5
Machine Operator						2		1												13
Label Designer																				
Bee Keeper																				6
Bee Demonstrator			1			1														3
Budder						7					2	3								16
Circuit Bungalow Keeper	1	1	1	1	1	1				1	1	1								13
Garden Kangan																				
Livestock Keeper																				
Hostel Keeper																				

7 STAFF POSITION (As at 2008.12.31)

Cadre Post	FCRDI				HORDI										RRDI		ETC	SCPFC	SPMDC	SEPC	ADM	ENG	FIN	TOTAL	
	FCRDI	FMRC	GLORDC	RARDC/ARL	RARDC/VAV	HORDI	FCRDC	FRU	NRMIC	PVIC	RARDC/BAN	RARDC/MK	ARS/SE	ARS/TW	ARS/GK	RRDI									RARDC/BWW
Farm Manager			1																			1			
Assistant Farm Manager																									
Laboratory Sub Assistant											2							2				4			
Steward																		1				1			
Cook																		30				30			
Tree Cutter																									
Tree Feller																									
Nurseryman						1						1										2			
Watcher	9	4	15	10	3	21		4	2	1	15	9	2	4	4	14	6	60	22	65	7	2	279		
Sanitary Labourer	1	1				2		1				1	1	1			2	9	1	4	3		26		
Seedman																		1					1		
Special Labourer												2						1	1		1		5		
Special Laboratory Labourer												1						4					5		
Unskilled Labourer (Grade III)	143	14	61	50	56	151			6		106	78	15	6	36	58	28	250	316	7	27	15	1423		
Labourer (Casual)	150	9	62	39	1		50	5		11	89			21			42	16					495		
TOTAL	397	61	197	132	83	393	107	41	58	47	280	179	43	53	57	177	162	1158	494	722	73	186	65	178	5340

TECHNICAL STAFF QUALIFICATIONS (As at 2008.12.31)

Institute/ Centre/ Division/ Unit		Diploma	B.A./L.L.B.	B.Com./ B.Ed.	B.Sc.	M.I.E.	Postgrad. Dip.	M.A.	M.Sc./ M.Ed.	M.Phil.	Ph.D.	TOTAL
FCRDI	FCRDI	19			8		2		12	3	4	48
	FMRC	4	1		4							9
	GLORDC	11	2		16				4		1	34
	RARDC/ ARL	7			4				2	1	1	15
	RARDC/VAV	9			6				5			20
HORDI	HORDI	41			25				15	7	9	97
	PVIC	9			10				4	1	1	25
	FCRDC	16	3		4				8	5	1	37
	FRU	4			2				7		1	14
	NRMC	15			6				7	2	3	33
	RARDC/BA	19	1		16				3	1		40
	RARDC/MK	32	3		13					4	2	54
	ARS/SE	8			3				5		1	17
	ARS/TW	10	1		5				1		1	18
	ARS/GK	7	1		1				1			10
RRDI	RRDI	27	1		15				17	4	4	68
	RARDC/BW	24			16				6	3	2	51
SCPPC	SCPPC	1	1						6		1	9
	SCS	115			9				6		1	131
	PPS	9			4				2	1		16
	NPQS	14			8				11	2		35
	ROP	7			6				4		1	18
	PGRC	10			2		2		5	4	4	27
SPMDC		92			15				8		1	116
SEPC		2	12		11				10	1	2	38
ETC		392			122		3	2	87	7	5	618
ADM			5		2						1	8
ENG					3	2				1		6
FIN		2	5	8	9							24
TOTAL		906	36	8	345	2	7	2	236	47	47	1636

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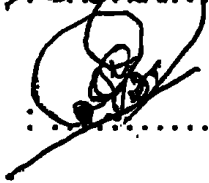
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