

**REPORT**

**ANNUAL SYMPOSIUM OF THE DEPARTMENT OF  
AGRICULTURE: HAS THE EXPECTATIONS ACHIEVED?**

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**SUMMARY**

The Annual Symposium of the Department of Agriculture, started in 1999, is held to provide a forum to officers in different divisions of the Department of Agriculture (DOA) and Provincial Departments of Agriculture (PDOA) to present the results of scientific research and development programs, and to publish findings in the Annals of the Sri Lanka Department of Agriculture (ASDA). The symposium also announces useful scientific methods on crop production and protection and methods of efficient use of resources for farming community. In this study, publications in the ASDA over the past eleven years were reviewed to assess the relative contributions by major divisions of DOA and the PDOA. The publications were grouped on the basis of disciplinary working groups and crop commodity groups to find their relative contribution, too. Further the ASDA publications were assessed to understand whether they have addressed five focus areas that are of national significance namely, (a) major pests and diseases encountered in the national scale, (b) farmers' problems identified at Provincial Technical Working Group (PTWG) Meetings, (c) outcome of research projects funded by the Sri Lanka Council for Agricultural Research Policy (SLCARP) to DOA, (d) successes or failures of major crop production drives undertaken by DOA, and (e) major changes that took place in the agricultural sector of Sri Lanka during the past eleven years. Results revealed that the contribution of the PDOA to ASDA was marginal and that 90 % of the peasant agricultural sector, which is under the purview PDOA, has been poorly represented. Within the DOA, only the research division had a relatively larger share to ASDA while the extension and training, seeds and planting material, seeds certification and plant protection, Natural Resources Management Center and socio-economic and planning divisions had a poor representation. The ASDA publications during past 11 years, in general, had not represented a cross section of the productive work carried out by PDOA or DOA under the 5 focus areas indicating that those unreported but valuable information, technical know-how and experience of senior technical officers may have no future use as they are not found in the public domain. Technical officers of PDOA and DOA must ensure that their scientific and development work be recorded in an appropriate forum such as ASDA.

**KEYWORDS:** Research review, Progress review

**INTRODUCTION**

Since independence, the agriculture sector in Sri Lanka has remained as an important component in the country's economy. The agriculture sector has made a significant progress towards achieving an increased level of self-reliance in food production (CBSL, 2009), particularly rice production (CBSL, 2009). The Department of Agriculture (DOA), which started in 1912, has been a main institution responsible for the above success (Emitiyagoda, 2009). The mission of DOA is to achieve an equitable and sustainable agriculture

development through generation and dissemination of improved agricultural technologies to the farming community. This mission is expected to be fulfilled through the activities of many specialized institutions and units that are under the purview of five major technical divisions of DOA; Research Division (RD), Extension and Training Center (ETC), Seeds and Planting Materials Development Center (SPMDC), Socio-Economic and Planning Center (SEPC) and Seed Certification and Plant Protection Center (SCPPC) and Natural Resources Management Center (NRMC) (DOA, 2009).

The research division, through its 3 crop research institutes namely, Rice Research and Development Institute (RRDI), Horticultural Crops Research and Development Institute (HORDI) and Field Crops Research and Development Institute (FCRDI) and their islandwide satellite stations (approximately 40 units), and research farms seasonally undertake a diverse range of research activities towards generating improved technology for increased crop production, crop protection and efficient use of resources (DOA, 2009). Similarly, the ETC through its islandwide network including six inter-provincial districts (Anuradhapura and Pollonnaruwa in North Central Province, Ampara in Eastern Province, Monaragala in Uva province, Kandy/Hasalaka in Central Province and Hambantota in Southern Province), eight Schools of Agriculture, three In-Service Training Institutes, two District Training Centers, four Farm Broadcasting Services and the Audio Visual Center undertakes diverse programs of extension and training activities (Emitiyagoda, 2009). Further, the SCPPC conducts activities related to enforcement of plant protection, pesticide regulation and seed quality assurance laws and regulations, while the Natural Resources Management Center (NRMC) undertakes activities vital for natural resources conservation and protection through appropriate ordinance and Acts. The SPMDC, through its 15 seed production farms and contract grower systems, contributes to the National Seeds and Planting Material Production Programme. In addition, the Provincial Departments of Agriculture (PDOA) in the nine provinces undertake a vast amount of extension, training, supply of seeds and planting materials and related services except agricultural research.

Monitoring, evaluation and recording of successes and failures of the activities of DOA and PDOA is of prime importance to ensure quality improvement and re-orienting agricultural research, extension, production and development programmes aiming at improving agricultural productivity. However, except the annual performance report of DOA and the internationally recognized journal "Tropical Agriculturist", which is the oldest journal on tropical agriculture, there was no regular and formal opportunity for technical officers of DOA and PDOA to present, discuss and publish their scientific findings until the initiation of an annual event, the Annual Symposium of the Department of Agriculture in 1999 with the theme "Towards Next Millennium Agriculture". Accordingly, the symposium held

for the past eleven years provided formal opportunities for technical officers of DOA and PDOAs to present and discuss their scientific investigations and observations, related farming problems etc. in a common forum and to publish them in the Annals of the Sri Lanka Department of Agriculture (ASDA). Furthermore, at the turn of the century, the United Nations declared several Millennium Development Goals (MDGs) among which poverty alleviation, access to food at affordable prices, environmental conservation and sustainable use of natural resources (MDG goals 1 and 7) were some of the important issues closely connected to Sri Lankan agriculture. The scientific agriculture has been more bearing than ever before, in achieving these MDGs. Therefore, the objective of this paper is to make a quantitative assessment of the publications in ASDA during the past 11 years and to assess whether they were in line with the above stated MDGs while proportionately representing the activities of different divisions and specialized units of DOA and PDOA. In addition an attempt was also made to verify whether the publication in ASDA have addressed five important focus areas of national significance namely, (1). major pests and diseases encountered in national scale, (2). farmer problems identified at Provincial Technical Working Group (PTWG) meetings, (3). outcome of research projects funded by Sri Lanka Council for Agricultural Research Policy (SLCARP) to DOA, (4). successes or failures of major crop production drives and development programs undertaken by DOA and PDOA, and (5). major changes that took place in the agricultural sector of Sri Lanka during past eleven years.

## **MATERIALS AND METHODS**

The database of the ASDA Secretariat was examined to find the number of manuscripts submitted by each division, institution or unit of DOA or PDOA during past eleven years, and the number of manuscripts rejected under each division or institute and the reasons for doing so. The publications in the ASDA Vol. 1 (1999) through Vol. 11 (2009) were scrutinized to find whether they fell in line with MDGs closely related to Sri Lankan agriculture namely, (MGD goals 1 and 7) and also towards fulfilling the missions of DOA and PDOA. The ASDA publications were separated into the contribution made by PDOA and DOA, and those from the DOA were grouped on the basis of major technical divisions of DOA. The publications were further subdivided into individual units within the technical divisions to assess the contribution of each major division and unit to ASDA. The publications were also grouped on the basis of disciplinary working groups and crop commodity groups to study whether there had been a reasonable representation among major disciplines and crops relevant to the DOA's mandate. The contributions of the DOA and PDOA were assessed as the percentage of papers published under the 5 focus areas by each institute, and divisions within the DOA, in relation to the total publications in the ASDA during the period 1999 to 2009.

## RESULTS AND DISCUSSION

The database at the ASDA Secretariat did not have complete information on the number of manuscripts submitted for publication by different divisions or units of DOA during the past 11 years. However, based on available records, 134 and 124 abstracts had been received by the ASDA Secretariat in 2008 and 2009, respectively. Of these, 71 (2008) and 69 (2009) full papers have been submitted and only 44 and 32 were published in ASDA Vol. 10 (2008) and 11 (2009). No records were available to indicate the number of abstracts and full manuscripts submitted by each division of the DOA and those got rejected, and reasons for rejection. Personal communications with several former editors of ASDA indicated that on an average 50% of manuscripts get rejected owing to poor presentation, poor quality of research and sometimes due to non-relevance. Therefore, it is important to identify the reasons for such rejection in order to improve the writing and presentation skills of those officers to avoid technical errors in the scientific investigations and writing. This will help improve the effectiveness and efficiency of the limited resources *i.e.* human, physical, financial and natural.

During the past 11 years 532 articles have been published in ASDA, out of which 68 % are full papers and the rest in the form of short communications, research news and posters falling in line with MDGs relevant to Sri Lankan agriculture. The DOA had contributed to about 99 % of the publications while nine PDOAs, that represent 90% of the peasant agriculture in Sri Lanka, contributed only 1 % to the ASDA publications. This indicates that the original objectives of the annual symposium and ASDA have not been achieved (Table 1). Within DOA, the research division contributed to 73% of publications followed by SCPPC (14%), ETC (5%), SEPC (2%), NRMC (2%) and others (4%). The SPMDC had no publications in ASDA during the past 11 years (Table 1). When the human resources in each division during past 11 years are considered, the research division with a total of 1721 scientist years had contributed 386 publications while the extension division with a total of 1356 scientist years had only 26 publications. Similarly the rest of the divisions have contributed marginally to ASDA during the past 11 years. This indicates that there is no proportional representation of the work done among major divisions of DOA in terms of publications in the ASDA.

Table 1. Total no of Publications in ASDA from 1999 - 2009 by major divisions of DOA and PDOA

Department	Year											Total
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
PDOA	1 (NA)*	0 (NA)	0 (NA)	1 (NA)	1 (44)**	1 (44)	0 (44)	0 (42)	2 (47)	1 (46)	1 (46)	8
DOA	36 (206)	36 (183)	29 (178)	48 (179)	34 (169)	31 (172)	37 (162)	37 (147)	30 (166)	32 (157)	23 (157)	386 (1721)+
SCPPC	2 (47)	9 (55)	7 (51)	11 (49)	8 (49)	5 (51)	6 (39)	7 (37)	10 (37)	6 (42)	3 (42)	74 (499)
ETC	1 (118)	2 (146)	1 (135)	3 (124)	2 (119)	2 (119)	4 (120)	4 (119)	2 (116)	2 (120)	2 (120)	26 (1356)
SEPC	1 (9)	0 (12)	0 (12)	0 (10)	2 (7)	2 (8)	1 (8)	2 (8)	2 (13)	2 (12)	2 (13)	14 (72)
SPMDC	0 (14)	0 (20)	0 (20)	0 (20)	0 (15)	0 (15)	0 (17)	0 (15)	0 (12)	0 (17)	0 (17)	0 (182)
NRMC	0 (13)	2 (15)	2 (17)	3 (18)	2 (15)	0 (14)	0 (15)	2 (12)	1 (10)	0 (11)	0 (11)	12 (152)
Total +	(407)	(431)	(413)	(400)	(376)	(379)	(361)	(338)	(344)	(359)	(360)	(4168)

Number of Papers Published

PDOA - Provincial Departments of Agriculture. DOA - Department of Agriculture Research - includes the Rice Research and Development Institute, Horticultural Crops Research and Development Institute and Field Crops Research and Development Institute. SCPPC - includes the Seed Certification Service, Plant Protection Service, Registrar of Pesticides, National Plant Quarantine Center, and Plant Genetic Resources Center. ETC - Extension and Training Center includes six inter provincial districts, six School of Agriculture, four In-Service Training Institutes, SEPC- Socio Economic and Planning Center, SPMDC- Seeds and Planting Material Development Center, NRMC- Natural Resources Management Center, \* Number given within parenthesis in each cell represents the number of scientists worked in each unit in a given year. \*\* Not Available. + Number given within parenthesis represents the cumulative number of scientists worked over the past 11 years

The SCPPC consisting of the Seed Certification Service (SCS), Plant Genetic Resources Center (PGRC), Plant Protection Service (PPS), National Plant Quarantine Service (NPQS) and Registrar of Pesticides Office (ROP) has contributed to about 14 % of the publications in ASDA over the past 11 years (Table 1). However, considering the large number of technical officers employed and diverse nature of technical work undertaken, the contribution of SCPPC also highly inadequate (Table 1).

The ETC with head quarters at Peradeniya, 14 specialized units, and an islandwide network covering 6 inter-provincial districts, 8 Agriculture Schools, 3 In-Service Training Institutes, a Farm Machinery Training Center, a Audio Visual Center, Farm Broad Casting Service with 3 regional units in Ruhuna, Kandurata and Rajarata, and Young Farmers Club had contributed only 5 % of the articles appeared in ASDA over the past 11 years, which did not justify the large number of senior technical officers involved in these units (Table 1). Considering the diverse nature of activities of extension and training center (Emitiyagoda, 2009) it appears that the real contribution of ETC has not been represented in the form of ASDA publications. Therefore, vast experience and know-how of many officers in the ETC have seemingly been wasted without any written record for reference. Hariharan and Yamini, (2007); Nissanka and Dayaratna (2002); Ranjith (2006); Ranjith and Ranjith (2008) and Ranjith *et al*, (2009) have reported several studies relevant to the extension division and many extension scientists islandwide could have done similar useful studies with respect to their line of field work with publication in ASDA.

The contribution of SEPC, SPMDC and NRMC to ASDA cannot justify the specific mandate undertaken and the large number of scientists worked in the respective divisions (Table 1). The SEPC could have undertaken many collaborative studies with ETC on the status of poor rate of technology dissemination among farmers, farmers' perception on adoption of new technologies, etc. The lack of quality seeds and planting materials has been one of the critical issues faced by the agriculture sector of the country. The SPMDC could have done an elaborated study on the status of planting materials production in the country, and remedial measures adopted and proposed by the DOA and the Ministry of Agriculture and publish them in ASDA for public information. Similarly, diverse work undertaken by NRMC on soil conservation, land utilization and Agro-meteorology has not been appropriately reported.

Within the research division, HORDI with 884 scientist-years in the main station (Gannoruwa), 3 regional research centers, 7 agricultural research stations (ARS), 10 adaptive research units and 10 research farms have contributed to ASDA with 199 publications. This is followed by RRD I with

410 scientist-years in the main station (Batalagoda), 1 regional center and 4 rice research stations have contributed with 96 publications, and FCRDI with 572 scientist-years in the main station (Mahailuppallama) and 3 regional centers have contributed with 88 publications (Table 2). This low number of publications poorly represents the large number of diverse research programs undertaken by the respective research institutions as reported in INFORM data base of SLCARP over the past 11 years (SLCARP, 1999-2008).

Within the HORDI, the ARS at Girandurukotte with a relatively large number of scientists had no publications in ASDA during the past 11 years (Table 3) and similarly, the number of publications contributed by ARSs within RRDII was not proportionate to number of scientist in each ARS (Table 4). The number of publications contributed by FCRDI with three regional research centers and several ARS having a large number of scientists was also marginal (Table 5). The results also revealed that there are only few publications in ASDA done by the scientists in these institutes on new crop varieties and technologies recommended and released by the DOA during the past decade. This suggests that ASDA has not received its due recognition to publish such new information.

Categorization of publications on the basis of disciplinary working groups of DOA revealed that soil and water management and weed science, which are important field problems that farmers face in their farming, are the least represented areas in terms of ASDA publications (Table 6). Water is a scarce natural resource and should be utilized economically and in an environmentally friendly manner in crop production. Weeds are the main biotic constraint that reduces the yield and quality in almost all crops. Therefore, it is important that research work on this area is carefully designed and results published. Herbicide usage in rice production has extensively increased in the recent past (ROP, 1999-2008). Environmentally friendly and economically viable integrated weed management packages should be identified through research programmes to remove the over-dependence on chemical weed control.

The publications based on major crop commodity groups revealed that work on many of the crops mandated to different crop commodity groups have not been reported in ASDA during the past 11 year period (Table 7). This indicated a minimal or no research effort with respect of several important local crop varieties. About 100 new crop varieties covering rice, other field crops (OFCs), fruits, and vegetables have been recommended by DOA during the past decade. However, limited records are available on those crops among ASDA publications (Abeysekera and Abeysiriwardene, 2000; Bandara *et al.*, 2004; Rajapakse *et al.*, 1999; Pieris, 2002; Karunarathna, 2001).

Table 2. Total no of publications in Annals of Sri Lanka Department of Agriculture (ASDA) by three crops research institutes within Department of Agriculture from 1999-2009.

Research Institute	Year											Overall average
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
	Percentage											
HORDI	22 (90)*	14 (87)	17 (79)	27 (83)	14 (77)	13 (81)	23 (77)	23 (72)	19 (83)	16 (79)	11 (79)	199 (808)**
RRDI	06 (43)	18 (36)	13 (38)	05 (40)	09 (42)	09 (40)	08 (34)	07 (35)	08 (32)	10 (33)	03 (33)	96 (373)**
FCRDI	07 (73)	04 (60)	09 (61)	16 (56)	11 (50)	09 (51)	06 (51)	10 (40)	01 (51)	06 (43)	09 (43)	88 (536)**
Total	35 (206)	36 (183)	39 (178)	48 (179)	34 (169)	31 (172)	37 (162)	40 (147)	28 (166)	32 (157)	23 (157)	383 (1714)

HORDI - Horticultural Crops Research and Development Institute - Including 3 regional research and Development Center, 5 Agriculture Research Station and 15 Research farms

RRDI - Rice Research and Development Institute - Including 1 regional research and Development Center, 4 Agriculture Research Station and 15 Research farms

FCRDI - Field Crop Research and Development Institute - Including 3, regional research and Development Center

\* Number given within parenthesis in each call represents the number of scientists worked in each institute in a given year

\*\* Number given within parenthesis under the total column represents the cumulative number of scientists worked over the past 11 years.

**Table 3. Total no of publications in Annals of Sri Lanka Department of Agriculture (ASDA) by different units within the Horticultural Crops Research and Development Institute (HORDI) from 1999-2009.**

HORDI	Year											Total
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Main Station	09	07	06	15	04	08	13	15	10	07	03	97
Gannoruwa	(41)*	(38)	(33)	(38)	(34)	(41)	(34)	(31)	(36)	(36)	(36)	(370)**
RARDC	06	01	02	0	0	01	0	0	0	01	0	11
Bandaravela	(14)	(10)	(10)	(08)	(07)	(07)	(05)	(07)	(12)	(10)	(10)	(90)
ARS	03	02	02	03	02	01	06	01	0	0	01	21
Sita-Eliya	(08)	(08)	(08)	(08)	(09)	(07)	(09)	(08)	(07)	(07)	(07)	(79)
ARS	0	0	0	0	0	0	0	0	0	0	0	0
Girandurukotte	(02)	(03)	(02)	(01)	(01)	(01)	(02)	(01)	(02)	(02)	(02)	(17)
FCRDC	0	01	02	02	0	01	01	03	04	05	03	22
Horana	(01)	(03)	(08)	(10)	(11)	(12)	(14)	(11)	(11)	(11)	(11)	(92)
Homagama	0	0	01	02	01	01	02	0	0	02	03	12
ARS	(02)	(04)	(02)	(03)	(03)	(03)	(03)	(03)	(03)	(03)	(03)	(29)
ARS	01	0	0	0	0	0	0	0	02	01	01	05
Thehijjawila	(02)	(02)	(01)	(01)	(01)	(01)	(02)	(02)	(02)	(02)	(02)	(16)
Total	22	14	17	27	14	13	23	23	19	16	11	199
	(90)	(87)	(79)	(83)	(77)	(81)	(77)	(72)	(83)	(79)	(79)	(808)

RARDC - Regional Agriculture Research and Development Center. ARS - Agriculture Research Station. FCRDC - Fruit Crops Research and Development Center. \*Number given in parenthesis in each cell is the number of scientists worked at each RARDC or ARS in a given year. \*\* Number given within parenthesis under the total column represents the cumulative number of scientists worked over the past 11 years

Table 4. Total no of publications in Annals of Sri Lanka Department of Agriculture (ASDA) by different units within the Rice Research and Development Institute (RRDI) from 1999-2009.

RRDI	Year											Total
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Main Station	04	15	09	04	07	08	06	07	07	06	02	73
Batalagoda	(17)*	(18)	(21)	(22)	(20)	(19)	(18)	(17)	(13)	(13)	(13)	(181)**
RARDC	02	03	04	0	02	01	02	0	0	02	01	17
Bombuvela	(18)	(13)	(12)	(13)	(14)	(14)	(09)	(11)	(09)	(10)	(10)	(123)
ARS	0	0	0	0	0	0	0	0	01	02	0	03
Ambalantota	(02)	(02)	(02)	(02)	(02)	(02)	(02)	(01)	(02)	(04)	(04)	(21)
ARS	0	0	0	0	0	0	0	0	0	0	0	0
Labuduwa	(04)	(02)	(02)	(02)	(02)	(02)	(02)	(03)	(03)	(03)	(03)	(25)
ARS	0	0	0	01	0	0	0	0	0	0	0	01
Bentota	(02)	(01)	(01)	(01)	(02)	(01)	(01)	(01)	(01)	(01)	(01)	(12)
Samanthure	-	-	-	-	(02)	(02)	(02)	(02)	(02)	(02)	(02)	14
Total	06	18	13	05	09	09	08	07	08	10	03	96
	(43)	(36)	(38)	(40)	(42)	(40)	(34)	(35)	(32)	(35)	(35)	(373)

RARDC - Regional Agriculture Research and Development Center. ARS - Agriculture Research Station. \*Number within parenthesis in each cell is the number of scientists worked at each RARDC or ARS in a given year. \*\* Number within parenthesis under the total column represents the cumulative number of scientists worked over the past 11 years

Table 5. Total number of publications in Annals of Sri Lanka Department of Agriculture (ASDA) by different units within Field Crops Research and Development Institute (FCRDI) from 1999-2009.

FCRDI	Year											Total
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Head Quarters	04 (36)*	01 (35)	04 (37)	09 (29)	04 (25)	05 (27)	02 (27)	03 (20)	01 (28)	04 (23)	02 (23)	39 (287)**
RARDC	01 (08)	01 (07)	01 (07)	03 (09)	03 (06)	02 (05)	03 (08)	04 (05)	0	01 (05)	02 (05)	21 (65)
RARDC	02 (17)	02 (16)	04 (15)	04 (14)	02 (14)	02 (14)	01 (11)	01 (10)	0	0 (11)	02 (11)	20 (135)
ARS -Jaffna*	0 (05)	0 (02)	0 (02)	0 (04)	02 (05)	0 (05)	0 (05)	02 (05)	0 (05)	01 (04)	03 (04)	11 (49)
Total	08 (73)	04 (60)	09 (61)	16 (56)	11 (50)	09 (51)	06 (51)	10 (40)	03 (51)	06 (43)	09 (43)	91 (536)

RARDC - Regional Agriculture Research and Development Center. ARS - Agriculture Research Station. \*Number given within parenthesis in each cell is the number of scientist worked at each RARDC or ARS in a given year. \*\* Number given within parenthesis under the total column represents the cumulative number of scientists worked over the past 11 years

Table 6. Total number of publications in Annals of Sri Lanka Department of Agriculture (ASDA) from 1999-2009 based on disciplinary working groups and subjects.

Disciplinary working group and subject area	Year										Total	
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008		2009
Plant breeding & bio technology*	09	07	11	13	07	12	16	08	11	14	09	117
Plant pathology*	04	06	10	11	08	07	06	06	04	06	08	71
Agronomy; plant physiology*	05	08	03	12	09	04	04	07	04	05	03	64
Entomology*	07	09	11	07	08	01	04	06	04	03	06	63
Soil fertility & plant nutrient*	05	09	10	05	05	04	01	07	03	03	01	53
Soil & water management*	05	01	04	04	01	02	02	01	02	02	02	26
Weed science*	01	03	03	01	01	01	0	0	0	0	0	08
Post harvest**	02	02	02	03	04	01	04	03	04	01	01	27
Extension & training**	03	01	01	03	01	06	02	03	03	01	01	24
Socio Economic & planning**	01	01	0	0	01	02	01	02	0	04	01	13
Seed & planting material**	0	01	01	06	03	02	04	04	03	03	02	27
Others**	0	01	0	02	05	03	06	04	07	01	0	29
Total	42	48	54	66	50	44	50	51	45	40	32	532

\* Disciplinary working groups of DOA; \*\* Subject areas that do not come under disciplinary work groups

**Table 7. Total number of publications in Annals of Sri Lanka Department of Agriculture (ASDA) from 1999-2009 based on major crop commodities**

Crop Commodity*	Year											Total
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Rice	7	20	11	8	13	11	12	9	11	14	4	120
Other Field Crops	5	4	5	14	10	5	4	7	4	9	2	69
Fruits	9	3	9	18	9	9	6	11	10	9	10	103
Vegetables	5	6	9	6	8	3	12	9	6	5	6	75
Potato	4	1	2	4	2	1	4	2	1	2	1	24
Other	13	15	18	18	8	15	12	14	14	5	8	140
Total	43	49	54	68	50	44	50	52	46	44	31	532

\*Other Field Crops - include publications involving 12 OFC crops; Fruits - include publications involving 15 Fruit crops; Vegetables - include publications involving 19 crops

In spite of specific improved characteristics of the new varieties, only few of them have been widely adopted by several farmers/farmer groups. The ETC and SEPC divisions should have undertaken investigations on these aspects and reported in ASDA, which would have enabled the plant breeders to reorient their breeding and selection programs to accommodate farmers' needs in developing new varieties. Except for 1-2 project works (Emitiyagoda and Wirasinghe, 2000) accomplishments or failures of about 18 major crop production drives and 7 research projects of national scale (Table 8) undertaken by DOA and PDOA from 1996-2009 have not been addressed in the ASDA publications. Similarly, except for announcement of the few pests, disease and weed epidemics encountered in national scale during the past decade (Table 9), no formal and in-depth research investigations have been reported in ASDA publications.

Critical scrutinizing of research projects funded by SLCARP to DOA during the past decade revealed that out of 210 projects funded, the results of only 39 projects have been published in ASDA (SLCARP, 1999-2008). As SLCARP research projects are well formulated, the findings should have been made available in the public domain such as ASDA. The results of this study revealed that the outcome of the SLCARP funded projects were limited to project terminal reports that will not serve any purpose except fulfilling the requirement of the funding agency. Therefore, it should be mandatory to publish the project findings in a recognized public domain, especially those funded by the SLCARP that receive finances from the government treasury, which will not only help the dissemination of valuable pieces of information but also avoid that repetitions of similar studies in future.

**Table 8. Major crop production drives, in terms of extension programs and research projects launched in the recent past.**

<i>Extension projects</i>	<i>Research projects</i>
Waga Lanka Waga Sangramaya 1996-1998	Hybrid rice development project
Second Agricultural Extension Project	Hybrid maize development project
Granary Area Production Programme (GAP) 2003-2007	Hybrid vegetable development project
One crop One Village	SL/USA underutilized fruit development project
Crop Zoning	SL/USA germplasm research project
Farmer Community Group Approach NAPT 1999-2003	Potato project CIP
Api Wawamu Rata Nagamu 2007-2010	Banana project IMMIBAB
Citrus Development Programme in Moneragala	
High tech agriculture promotion project (micro irrigation, sprinkler irrigation and protected agriculture)	
Dry zone lively hood support and partnership project (IFAD)	
Cyber Extension project	
Agro-Technology Park project	
Organic Fertilizer Production and Promotion Project	
Rice knowledge bank (RKB) (IRRI/DOA) project	
Home garden promotion in schools, urban areas	
Post harvest technology project	
Toll free farmer advisory telephone service 1920	
Mass media TV/ Radio extension program	

**Table 9. Major Pest and disease problems encountered by farmers during the last decade.**

<i>Pest and diseases</i>
Papaya mealy bug epidemic
Leaf miner epidemic - <i>Lyriomiza sativa</i>
Rambutan fruit borer infestation
Rambutan powdery mildew infection
Leaf scorching in Mango nurseries and flower scorching in adult plants
Sudden death of jack trees
Scale and stem borer infestation in Durian
Fruit fly epidemic
Chili leaf curl complex
Chili narrow leaf disorder
Bean leaf yellowing syndrome
Cucurbitaceae leaf yellowing syndrome
Potato cyst nematode epidemic
Rice root knot nematode out break ( <i>Meloidogynae graminicola</i> )
Rice sheath mite epidemic
Rice leaf mites out break
Weedy rice epidemic
White fly out break
Parthenium invasive plant epidemic

The close examination of scientific investigations requested at the PTWG meetings by extension officers (Table 10) revealed that the issues have not been adequately addressed in ASDA publications. In addition, investigations into status review reports of major changes that have taken place in the agriculture sector during the past 10-12 years (Table 11) also have not been adequately addressed in ASDA publications except for that of Sajeewani (2008). Apart from the publication by Wijesekera *et al.* (2005), the acceptance and performance of advanced agricultural technologies such as micro irrigation, protected agriculture, etc., that were introduced among farmers, and bio-technological innovations of practical significance have not been presented in ASDA.

The nature of publications in ASDA journals during the past 11 years revealed that technical officers have had freedom to present their technical findings in an appropriate manner to fit into expectations of ASDA. Unfortunately no publications were reported in ASDA on the level of adoption of the recommended varieties or technologies. It appears that there is a misunderstanding among the technical officers of the DOA that ASDA exclusively comprises of contribution made by the research divisions. However, the expectation of ASDA at inception was to represent the performance of all divisions of the DOA and PDOA. Every technical officer in these organizations will have a clear scientific message after 2 to 3 years of investigations that will be helpful to improve productivity and quality of the product and to increase resource use efficiency in the field of agriculture.

**Table 10. Frequent requests made by Extension Officers at Provincial Technical Working Group Meetings (PTWG) for scientific investigations by the Research Division**

<i>Requests of PTWGs</i>
Germination problems in DOA certified seed paddy
Grain discoloration and sterility problems in paddy
Yellowing of rice crop
Problems in weedy rice management
Salinity problems in rice cultivation
Need for a short maturity red pericarp samba variety
Sheath mite and leaf mite outbreak in rice cultivation
Reluctance of farmers to use quality seed paddy
Heavy use of agrochemicals in vegetable production
Virus diseases in Papaya cultivation
Abnormal fruit ripening in Durian
True seed production of Big onion
Fruit rot in Avocado
Rambutan powdery mildew and fruit splitting
Growth abnormalities in tissue cultured banana cultivations
Scorching of mango flowers
Nematode infestation in leafy vegetables
Need for small scale machinery for seed paddy cleaning
Poor pod setting in Pole bean
Heavy use of liquid fertilizers in vegetable cultivation in Nuwara Eliya

**Table 11. Major changes took place in crop production systems and agriculture market during the last decade.**

<i>Major Changes in the Agriculture Market</i>
Mechanization of paddy harvest
Advances in post harvest technology of rice
Cultivation of abandoned paddy lands
Popularity of hybrid vegetables and maize
Heavy use of liquid fertilizer and micro nutrients in crop production
Introduction of a very high fertilizer subsidy and its implications in rice production
Increased use of herbicides in rice production
Recommendation of low toxic, low volume pesticides
Introduction of micro irrigation and protected agriculture
Promotion of urban agriculture and home gardening
Introduction of Integrated Plant Nutrient System (IPNS) in farmers' fields
Enactment of Seed Act & production of quality seeds and planting materials by public & private sector
Increased imports of fruits: apple, orange and grapes and impact on local fruit production

Unfortunately, the valuable experience and capabilities and know-how of technical officers, whether in research, extension, seed production or socio-economic studies have not been adequately and timely reported in ASDA in the past. Availability of such records in public domain will be of immense importance for future references as well as for monitoring and evaluation of the development projects. In addition, the information in these publications will prevent repetition of similar projects in future and also provides a base to formulate appropriate and effective research and development proposals.

## CONCLUSIONS

It is necessary to re-examine the ASDA objectives for timely relevance. The ASDA should accommodate technological findings and other related information to represent a reasonable cross-section of DOA and PDOA activities carried out annually. Review of publications in ASDA for the past 11 years revealed that not all available scientific and useful information of each technical division have been adequately published. Relative contribution of different technical divisions of DOA in ASDA does not proportionately represent the amount of resources used and in relation to the number of qualified technical officers present. The information generated through research investigations or field surveys should be appropriately recorded at the correct time in the relevant sources. The ASDA secretariat should be equipped with permanent staff and an editorial board to facilitate assistance for improving writing skills of technical officers. Senior managers of all technical divisions must ensure that the technical programmes are formulated on a priority basis and all findings be appropriately recorded chronologically in journals such as ASDA. However, based on the observations made in this review, ASDA has not lived up to its expectations made at the inception.

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