An Exploratory Study on the use of Insecticides in Peasant Paddy Production in the Central region of Sri Lanka.

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Introduction:

Since the introduction of insecticides to the Sri Lankan Paddy Sector several decades ago, its use and the related expenditure kept on increasing.

Financial and environmental problems emanated from this situation. Consequently a lot of emphasis is now laid upon minimal and the judicious use of insecticides to minimize the resultant economic, health and environmental problems. Nevertheless the glaring dearth of information on insecticides use in Sri Lanka, adversely affects the efforts of those who plan and implement programmes of the aforesaid nature. Hence this study aims to explore the present knowledge, practices and some factors affecting decision making on the use of insecticides in the paddy sectors of Kandy, Kegalle and Matale districts, which comprises a lager portion of the mid country of Sri Lanka.

The methodological approach to this study was simple tabular analysis of data gathered in a cross sectional sample survey of paddy farmers. 64 paddy farmers were interviewed from each district in Yala 1984. After rejection of inconsistant responses, 63 farmers from Kandy district and 60 each from Kegalle and Matale districts were included in the final analysis.

Socio Economic Background:

Household compositions were found to be close to each other in the three districts. On the average the farmers were 50 years of age and the average family had 5 members. The educational attainment of the farmers could be considered modserate (with 6 years of formal education) while some members reported 8 years of schooling, on the average (Table 1). It is interesting to note that all the farmers were literate and this is certainly helpful using

Table: 1. **Farm household composition, education and employment.**

		No. of years Formal Education				Off Farm Employment Types % Reporting					On Farm Employment % reporting	
	Average per family	Average Years	% Reporting	Average No.of Years	% Reporting Education.	Unskilled labour	Skilled labour	Business Persons	Employees Mid Level	Employees High level	Full time	Part time
Farmer Household	1	32	100	6	100	5.3	213	3.8	14.3	4.0	67.6	32.46
numbers over 16 years												
Male	1	-	73	-	-	-	-	-	-	-	-	-
Female	2	-	97	-	-	-	-	-	-	-	-	-
Total:	3	-	99	8	98.3	1.6	2.3	-	3.9	2.3	31.2	74.38
All ages												
Male	2	-	91	-	-	-	-	-	-	-	-	-
Female	2	-	98	-	-	-	-	-	-	-	-	-
Total	4	-	99	-	-	-	-	-	-	-	-	-

*Means and percentages are rounded up to the closest whole umber

* Computed for the number of cases reporting.

Table: 2.

Annual Income From Farm and Non-Farm Activities.

	Average Farm Income Rs.	% Reporting	Average Non-Farm Income Rs.	% Reporting	Average Total Income Rs.	% Reporting
Farmers Both Full time and Part time.	5934.73	100	5035.91	33	7596.58	100
Pooled Income of the Others in the Household.	2944.10	15	9405.09	25	8463.29	33

Table 3.

Distributionh of Land by Ownership and Tenure

	HIGHLAND						LOWLAND						ALL CLASSES	
	Irrigated		Rainfed		Both		Irrigated		Rainfed		Both			
	Averages.	% Rep.	Averages.	% Rep.	Averages.	% Rep.	Averages.	% Rep.	Averages.	% Rep.	Average.	% Rep.	Average	% P.p.
OWN	0.49	2	1.54	89	1.56	91	0.58	26	0 68	50	0 91	76	2 6P	94
RENTED IN	0.15	2	0.00	0	0.15	2	0.04	2	0.11	4	0.17	4	0.15	6
TENGRTED IN	0.00	0	0.003	1	0.003	1	0.33	6	0.55	17	0.92	23	0.59	23
OTHERS	0.00	0	0.02	1	0.02	1	0.21	5	0.39	4	0.29	7	0.30	8
TOTAL	0.47	3	1,55	91	1.63	94	0.46	36	0:87	66	1.25	100	2.86	100

the insecticides according to instrucations and may be a potential help in educating farmers on aspects such as safe handling of pesticids, integrated pest control etc.,

Table 4:

Spread of Important Insect Pests on Paddy. (Yala 1984)

Pests	% Area Infested	% Farms Reporting
Total Sample		
Leaf roller	37	42
Paddy bug	14	10
Stem borer	14	14
B P H	13	15
Leaf eating Catapillar	10	12
Thrips	9	7
Kandy		
Leaf roller	27	20
Paddy bug	22	13
Leaf eating Catapiller	11	12
Stem borer	10	9
B P H	5	3
Kegalle		
Leaf roller	61	80
PlantHopper	25	28
Paddy Bug	17	13
Thrips	7	3
Stem borer	2	2
Matale		
Stemborer	29	31
Leaf roller	22	25
Thrips	20	15
Leaf eating Catapiller	19	25
Plant hopper	9	13
Paddy bug	3	5

Farmers engaged fulltime in farming activities and the other family members worked in their farmily farms for a part of their time. However, farming was the major source of income (Table 2). The land ownership/ tenurial pattern was very much similar in all the 3 districts. Owner operated lands were dominant with a few tenent ("Ande") holdings (Table 3). This leaves room to assume that farmers' decision are usually made by themselves or by the family members. The farmers were mostly small holders with about 1.63 ac of high land and 1.25 a ac of (mostly rainfed) low land on the average. It was revealed that most farmers were in the low income category average income of approximately Rs.10,000 per annum). Hence these farmers can be slow adopters of cash inputs like insecticides, but may be very receptive to cost reducing techniques such as integrated pest control.

More than 60% of the farmers both in Kandy and Kegalle districts were using similar paddy cultivation prictices where 3 to 3½ month and 4 to 4½ month varieties were transplanted under rainfed conditions. However Matale was an exception with over 70 per cent of the extent broadcast under shortaged rice varieties. Non of the districts reported the use of any form of agricultural credit for paddy cultivation.

Occurence of Insect Infestations and the use of Insecticides.

The intensity of pest out breaks were found fairly diverse in among individual districts. Of the cumulative area over one third was infested with leaf roller. Stem borer, paddy bug, and brown plant hopper were reportedly found on 41 percent of the area (Table 4). In all cases of major pests, more than 50

Table 5

Successes in Pest Identification and Choosing an Effective Chemical by Paddy Cultivators.

Pest	% Farmers Correct in Identification. 1	2
Kandy		
Leaf roller	33	80
Leaf eating catapiller	16	67
Paddy bug	20	77
Stem borer	10	55
B P H	4	67
Kegalle		
Leaf roller	39	76
Plant hopper	22	71
Paddy bug	2	50
Thrips	2	50
Matale		
Stem borer	29	87
Thrips	15	90
Leaf roller	27	91
Leaf eating catapillar	27	53
Plant Hopper	15	60
Paddy bug	5	82

1. Computed as percentages of the number of farmers reported any Pest Problem.
2. Computed as percentages of the number of farmers reported the respective pests.

percent of the farmers capable of correct identification (Table 5). Comparing the 3 districts Matale farmers were found to be the best in in their ability to correctly identify the pests.

Lowest occurence of pest out breaks was found in Kandy District coupled with low numbers of chemical sprays and low use of insecticides (Table 6). These observations leave room for hypothesising that the chemical applications were basically need based but not prophylatic.

A wide variety of brands of insecticides were used in all the dis tricts surveyed, although the choice of the right pesticide was very poor in Kandy and Kegalle while in Matale a reasonably satisfactory situation was observed (Table 7). The pooled information for all three districts show that the most widely used brands were Tamaron, Curater-G and Monocrotophos. According to the active ingredients, methamidiphos, monocrophos and carbofuran respectively were the most widely adopted chemicals. Nevertheless the above order of preference varied some what among individual districts, due to differences in pest problems, extension advice and commercial advertisments. The farmers in Matale district showed a comparatively high competence in correct identification of Pests as well as in selecting the

Table 6:

USE OF PESTICIDE ON THE PADDY CROP.

Some basic features of the pattern of Pesticide use on the Paddy Crop.

		Percentages. Kandy	Kegalle	Matale.
Percentage Farmers using any pesticide.		77.8	90.0	91.0
Percentage farmers using one Pesticide		41.3	36.7	53.0
Percentage farmers using more than one.	2	28.6	40.0	38.0
	3	6.3	13.3	3.0
	4	1.6	0	0
	5	0	0	0
More than ...	5	0	0	0
Percentage farmers making one pesticide application.		30.2	38.0	32.0
Percentage farmers making more than one	2	25.4	43.0	13.0
	3	9.5	9.0	
	4	3.2	0	46
	5	0	0	
More than five	5	0	0	0
Reporting errors		9.5	0	0

right chemicals, for those different pests, although the overall ability of the farmers in this respect was poor.

It is important to note that except in a few isolated fases, the amounts of insecticides used by the farmers (Table 7) had been lower than the recommendations. Nevertheless, the rates of dilution were correctly followed most probably due to its comparative uniformity over a wide range of chemicals.

Reasons for the Present Practices Relating to Insecticide Use.

Direct questioning revealed that the insecticide applications are mainly curative (Table 8), consistant with the speculations made before. Observations made on the farmers' own fields were the basic criterion behind the decision on whether or not to

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1. It could be fried as athis is the most tasty method of preparation.
2. In soups as the main ingredient.
3. Fried with meat.
4. Fried and mixed in fried rice, noodles etc.
5. Mushrooms could be added in any receipe.

Preservation

1. Sun dried or oven dried.
2. Mushroom pickles.
3. Mushroom canning.
4. Mushroom paste.

Moisture	88.9%	Calcium	8 m.g
Proteins	3.4%	Iron	1.1 m.g
Fats	1.8%	Vitamin B1	0.15 m.g.
Carbohydrates	3.9%	Vitamin 2	0.25 m.g
Fibre	1.4%	Vitamin C	1.00 m.g
Ash	1%	Niacine	13.7 m.g
Energy	44 calories		

NEMATODE DISEASES ON RICE

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The nematode diseases of rice cause severe yield reductions. Aphelenchoides besseyi, Hirschmanniella orysae and Ditylenchus angustus are the most serious plant parasitic nematodes on rice. Other rice nematodes of less importance are Heterodra sp., Meloidogyne sp., Hoplolaimus sp., Pratylenchus sp., and Helicotylenchus sp.

Sri Lanka only few records on rice nematodes are available. Knowledge about the distribution and behaviour of these nematodes under the local conditions is limited. This paper reports the major nematode diseases of rice and their occurrence in Sri Lanka.