

# Productivity of insecticides/pesticides in arecanut and its intercrops

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## INTRODUCTION

For centuries, Indian agriculture has been a way of life rather than a business for the millions of literate, orthodox and unorganised men behind the plough. Transfer of technology for them is a hard nut to crack. The Green Revolution has brought a breakthrough in agricultural production, its main weapons being a HYV seed, fertilizers, pesticides and insecticides. Of late, pesticides and insecticides have assumed an added importance because of their role in effectively controlling the widespread plant diseases. Their productivity, however, has not been to the desired extent because of lack of other complementary inputs such as credit, improved seeds, improved implements, fertilizers, irrigation and technical know-how. Although they are now extensively used in certain crops and in some regions, plantation crops like arecanut are not significantly influenced by pesticides/insecticides, as is generally observed by agricultural scientists. The present study is planned to test the truth of this hypothesis.

## OBJECTIVES

Objectives of the present study are: (1) to estimate the share of insecticides/pesticides input in the total cost of cultivation of arecanut and its intercrops and (2) to estimate the productivity of insecticides/pesticides in arecanut and its intercrops in terms of gross returns per rupee spent on insecticides/pesticides.

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## MATERIALS AND METHODS

The study is based on the data collected from a stratified random sample of 190 arecanut growers — 50 small (2 hectares and below), 67 medium (above 2 hectares to 4 hectares) and 73 large (above 4 hectares) — selected from 37 Panchayats of 7 Blocks in Jalpaiguri district of West Bengal. Data were collected by the survey method for a period of 2 years, 1978-79 and 1979-80.

## RESULTS AND DISCUSSION

The average size of a family for the sample was 8.68 persons, while the average size of a holding was 3.95 hectares. Average area under arecanut garden per farm for the sample was 0.45 hectares. The average gross sown area for the sample was 4.86 hectares, of which hardly 12% was gross irrigated, the main sources of irrigation being wells, tubewells, river lift irrigation, tanks and bunds. The average gross operated area (gross sown area + area under arecanut + area under fruits + fallow land) per farm was 5.60 hectares. Of this, cereals accounted for 66%, pulses 4%, oilseeds 5%, vegetables 4%, fruits 4%, jute 5%, arecanut 8%, other crops 2% and fallow 2%. The main intercrops grown by sample farmers were betelvine (5.62% of the area under arecanut), banana (4.29%), pineapple (1.68%), ginger (1.47%) and turmeric (1.13%). Of the total area under arecanut, all the 5 intercrops together accounted for only 14.19%, while 85.81% of the area under arecanut was without any intercrop. About 52% of the sample farmers were growing one or more intercrops. About 25% of the sample farmers were growing only one intercrop, 15% two intercrops, 11%

three intercrops, and 0.53% four intercrops. None of the sample farmers was found to be growing all the five intercrops. About 35% of the sample farmers were growing betelvine as intercrop, 18% banana, 17% pineapple, 12% turmeric and 10% ginger.

*Share of insecticides/pesticides in the total cost of cultivation in Arecanut and its intercrops by size of farm*

Table 1 presenting details of the share of insecticides/pesticides in the total cost of cultivation indicates that in arecanut the share was hardly 0.32% for the sample as a whole and it increased with the size of farm. For banana, it was a little less than 2% but highest on medium farms followed by large and small farms. For pineapple, it was 2.72% for the sample as a whole and highest for small farms followed by large and medium farms. For betelvine, it was 2.67% for sample as a whole and highest for small farms followed by large and medium farms. For turmeric, it was 1.18% and increased with the size of farm. For ginger, again it was 1.18% for the sample as a whole and highest for medium farms followed by large and small farms. Thus it may be seen that insecticides/pesticides accounted for between 1% and 3% of the total cost of cultivation for the intercrops such as banana, pineapple, betelvine, turmeric and ginger they accounted for almost negligible proportion (0.32%) of the total cost of cultivation for arecanut. This is in spite of the fact that arecanut suffers considerable loss because of the pest attack by mites, spindlebugs, inflorescence, caterpillars and root grubs as well as because of the diseases such as Koleroga, Budrot, Anats, Yellow Leaf disease, Band

Table 1 — SHARE OF INSECTICIDES/PESTICIDES IN THE TOTAL COST OF CULTIVATION IN ARECANUT AND ITS INTERCROPS

(Rs./hectare)

Sl. No.	Arecanut and intercrops	Insecticide/Pesticide input and total cost	Size group			
			Small	Medium	Large	All farms
1.	Arecanut	I.P.I.	3 (0.08)	10 (0.27)	18 (0.54)	11 (0.32)
		T.C.	3358 (100.00)	3642 (100.00)	3415 (100.00)	3444 (100.00)
2.	Banana	I.P.I.	30 (1.74)	40 (2.08)	45 (2.01)	40 (1.97)
		T.C.	1720 (100.00)	1926 (100.00)	2249 (100.00)	2022 (100.00)
3.	Pineapple	I.P.I.	67 (3.79)	44 (2.24)	58 (2.86)	53 (2.72)
		T.C.	1761 (100.00)	1956 (100.00)	2022 (100.00)	1963 (100.00)
4.	Betelvine	I.P.I.	147 (3.61)	83 (1.80)	118 (2.86)	113 (2.57)
		T.C.	4064 (100.00)	4585 (100.00)	4130 (100.00)	4240 (100.00)
5.	Turmeric	I.P.I.	27 (0.97)	24 (1.05)	40 (1.54)	30 (1.18)
		T.C.	2783 (100.00)	2330 (100.00)	2601 (100.00)	2535 (100.00)
6.	Ginger	I.P.I.	31 (1.11)	31 (1.27)	31 (1.15)	31 (1.18)
		T.C.	2783 (100.00)	2483 (100.00)	2680 (100.00)	2633 (100.00)

Figures in parentheses indicate percentage to total cost.

T.C. = Total cost I.P.I. = Insecticide/Pesticide input.

or Hidimundige disease, Sunscorch, Collar-rot of seedlings, Dieback of inflorescence.<sup>1</sup>

#### Productivity of insecticides/pesticides in Arecanut and intercrops

Productivity is estimated by residual imputation procedure with the help of the formula:

$$\text{Productivity of resource N} = \frac{\text{(Gross Income) — (All variable costs excluding cost of 'N')}}{\text{Cost of 'N'}}$$

However, in this study, total cost 'C' has been considered in place of

1. CPCRI, Kasaragod-670124, Package of Practices for Arecanut, 1979, Pamphlet No. 2 E.

all variable costs.

Table 2 presenting the details of productivity of insecticides/pesticides in arecanut and its intercrops indicates that it was quite high for the sample as a whole for arecanut and declined with the increase in the size of farm. This was mainly because of the fact that the share of insecticides/pesticides in the total

(Gross Income) — (All variable costs excluding cost of 'N')

Cost of 'N'

cost was very low and there is considerable scope of increasing this share advantageously. This productivity for the sample as a whole was highest in case of ginger followed by betelvine, pineapple, turmeric

and banana. It declined with the increase in the size of farm for banana, while it exhibited opposite trend in the case of turmeric. Other intercrops, namely pineapple, betelvine and ginger did not exhibit any specific trend. For pineapple, it was highest on medium farms followed by large and small farms. For betelvine, it was highest on medium farms followed by small and large farms. For ginger, it was highest for large farms followed by small and medium farms. It can thus be seen that productivity of insecticides/pesticides was considerably high for arecanut and for its intercrops also.

#### CONCLUSION

The foregoing analysis indicates  
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