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Effect of the Pollinating Weevil, *Elaeidobius kamerunicus* on the Incidence of Bunch Failure in Oil Palm Plantations of Little Andamans

Oil palm was introduced in Andamans in the early part of 20th century but the commercial cultivation started only during 1976. The area under oil palm in Andamans is about 1600 ha and is maintained by the Andamans and Nicobar Forest and Plantation Development Corporation (ANFPDC).

The islands receive, on an average, rainfall of 3000 mm distributed throughout the year. Temperature ranges from 18°–35° C and sunshine an average of 6 h/day. These are quite favourable for cultivation of oil palm.

Though the growth of palms is very

good at Little Andamans the yield is very low, as compared to that in the oilpalm plantations in Kerala (Sharma, 1986). One of the main constraints in increasing the yield is the high incidence of bunch failure.

Inadequate pollination is one of the major causes of the bunch failure in oil palm (Turner, 1981). This predisposes the bunches to invasion by weak pathogenic fungus like *Marasmius* sp., which results in severe crop loss. The extent of bunch failure varies considerably from a few fruits to the whole bunch. The failure or abortion usually occurs 2 months after anthesis. Inadequate pollination can be detected by observing female inflorescence three weeks after anthesis. The fertilized fruits give a glossy appearance and squatty in shape containing embryonic kernel.

The factors responsible for inadequate pollination are the absence of pollinating fauna, thick canopy of the palms which restricts wind pollination, high rainfall distributed throughout the year and poor sanitation of palms. In order to overcome these problems ANFPDC has introduced the pollinating weevil, *Elaeidobius kamerunicus* from the Central Plantation Crops Research Institute, Research Centre, Palode, Kerala in September 1986. The present study deals with the incidence of bunch failure in selected plantations before and after the introduction of weevil. Three plantatations were selected for carrying out the observations.

The year of planting, source and country of origin of planting materials and total area of the plantation are given in Table I.

Table I. *Year of planting, source and country of origin of planting materials and area of the plantation*

Year of planting	Source and country of origin	Total area in ha.
1976	NIFOR, Nigeria	160
1980	Harrisons and Cross fields Ltd., Malaysia	180
1981	FELDA, Malaysia	300

Five blocks each were selected from each of the above plantations and 10 bearing palms were marked from each block for the observations. Observations were taken during October 1985 and from March–May in the year 1986,1987 and 1988. All the female inflorescences produced on the experimental palms were monitored throughout the year and the bunch failure was recorded by using the following scale:

0 – No failure (full bunch set)

1 – 1 to 25% of failure (75–99% setting)

2 – 26 to 50% of failure (50–74% setting)

3 – 51 to 75% of failure (25–49% setting)

4 – 76 to 100% of failure (0–24% setting)

After grading individual bunches, the index of individual palms was prepared by using the following formula:

$$\text{Bunch failure index} = \frac{\text{Sum of numerical rating of the bunches}}{\text{Total number of bunches}} \times \frac{100}{\text{Maximum bunch failure grade}}$$

The indices of all the ten palms were pooled for the block wise index. Then average index was calculated, in each group of the plantation.

Table II shows that the introduction of the pollinating weevil has reduced the incidence of bunch failure totally in all the plantations. The incidence of bunch failure even after 9 months of release of the weevil shall be attributed to the low population build up of the pollinator. No incidence of bunch failure could be recorded in the subsequent observation made 18 months after the release of weevils. Population of *E. kamerunicus* (Number of weevils per 3 spikelets during the peak anthesis – average of 15 male inflorescences randomly selected) which recorded ranging from 285 – 394 at 18 months as against 97 – 172 at 9 months after release, confirms the above views. The introduction of the weevil also resulted in perfect fruit setting and increase in the mean bunch weight from 5 to 12 kg (Dhileepan and Nampoothiri, 1989). However, the seasonal fluctuations resulted in the production of 0–2% imperfect/aborted bunches. It was found that assisted pollination yielded 95% of the perfect bunches with no incidence of bunch failure. (Anonymous, 1985). Increase in bunch weight (up to 59%) after the introduction of *E. kamerunicus* was reported from Malaysia (Syed, 1979; Syed and Corley, 1982). The present observations support the above views. The total oil yield of the plantation also increased to 510 tonnes in 1987–88 as against 210 tonnes in 1986–87.

Bunch rot caused by *Marasmius palmivorus* was recorded in the oil palm plantation of Hut Bay (Reddy, Nair and Majumdar, 1987). Poorly pollinated, nonfecundated bunches were the main foci for *Marasmius* infection. Development of perfect bunches with complete fruit set reduced the incidence of bunch

Table II. *Bunch failure incidence before and after release of pollinating weevil*

Plantation Block	1986			1987			1988		
	Before	After		Before	After		Before	After	
		At 9 mths	18 mths		At 9 mths	18 mths		At 9 mths	18 mths
I	51.2	27.2	0	50.0	31.5	0	53.6	27.0	0
II	52.0	31.7	0	55.0	30.0	0	50.2	26.7	0
III	55.2	29.2	0	51.5	28.2	0	58.2	29.5	0
IV	60.5	34.5	0	53.7	26.2	0	60.0	32.5	0
V	57.7	32.7	0	49.7	25.7	0	54.5	28.7	0
Mean	55.3	31.1	0	52.0	28.3	0	55.2	28.9	0

rot. The release of the pollinating weevil improved the economy of the plantation by increasing the oil production and reducing the expenditure on assisted pollination, which is calculated to be around Rs. 2,800 per ha per year. (Dhileepan and Nampoothiri, 1989).

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