USING LINDANE GRANULES TO ESTABLISH YOUNG COCONUTS

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INTRODUCTION

The New Guinea rhinoceros beetle, *Scapanes australis*, is the most damaging pest of young coconut palms in Papua New Guinea. Adult beetles attack the unopened spears of palms from about the second to the seventh year after planting.

When they first attack, the rhinoceros beetles make holes in the spear. Often, another insect pest, the palm weevil, *Rhynchophorus bilineatus*, invades these holes and if it attacks the growing point of the palm, it may kill it. The damage caused by the New Guinea rhinoceros beetle is not so bad after palms begin producing nuts.

TREATMENT

The recommended method for controlling the New Guinea rhinoceros beetle is regular treatment of the unopened spears and bases of the fronds of young palms, with an insecticide, lindane. It should be applied as granules. Some growers have tried to establish young coconut palms without using this treatment. Many of them have now stopped trying to grow coconuts because New Guinea rhinoceros beetles caused so much damage.

To show how well the recommended treatment works, D.P.I. set up a demonstration in the Siki Settlement area, near Hoskins in the West New Britain Province. Here, the pest has caused many deaths of young palms.

In December 1974, two plots of coconuts were planted. Each plot was about 1.2 hectares in area. The plots were separated from each other by about 100 m of bush.

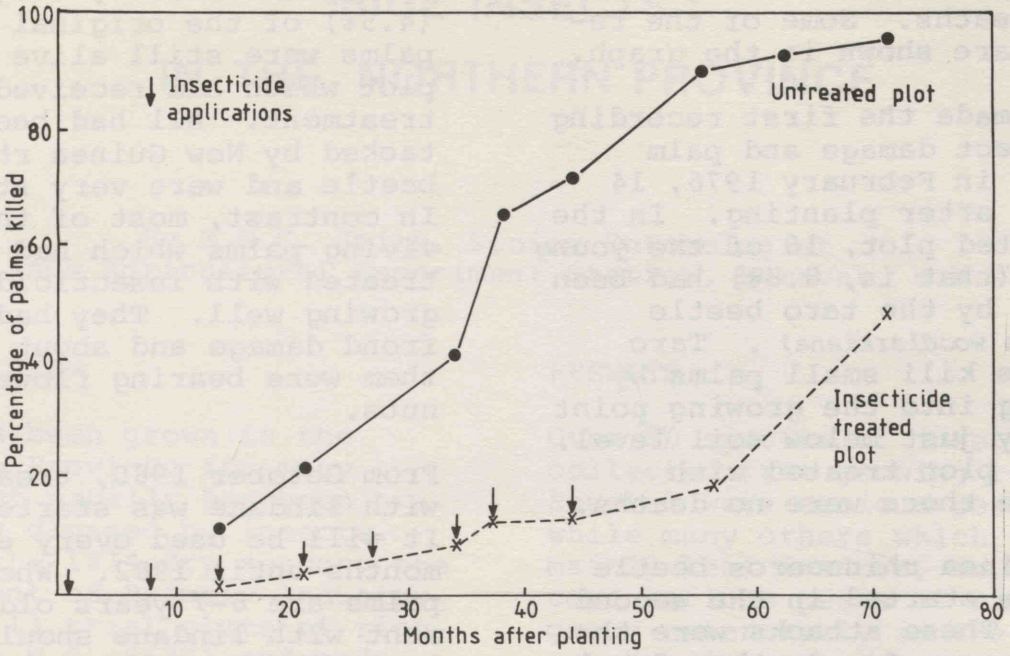
D.P.I. staff regularly tidied up and fertilised the plots. They also checked the palms for insect attack.

In one plot, the palms were treated in the recommended way. Lindane granules (6% active ingredient, 30 g per palm) were placed in the spear, leaf axils and on the soil around the palms. The plants were treated about every six months for the first two years. Once every six months during the next two years, lindane granules were sprinkled into the spear and leaf axils only, and not onto the soil.

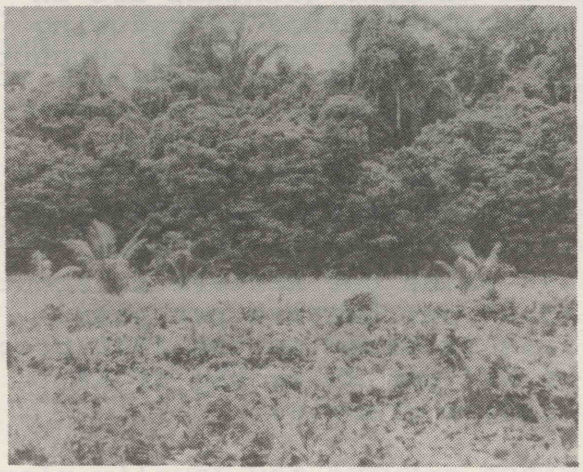
The second plot was not treated with any insecticide during the whole four year period.

RESULTS OF THE TRIAL

There were clear differences between the two plots of coconuts in both New Guinea



The numbers of young coconuts killed in each plot. Each insecticide application to the treated block is marked with an arrow.



September 1980. Coconut palms in the plot not treated with lindane granules. Only eight plants survived, and all had been attacked by New Guinea rhinoceros beetles.

September 1980. Coconut palms in the plot treated with lindane granules were growing well.

rhinoceros beetle damage and in palm deaths. Some of the results are shown in the graph.

Staff made the first recording of insect damage and palm deaths in February 1976, 14 months after planting. In the untreated plot, 16 of the young palms (that is, 8.8%) had been killed by the taro beetle *(Papuana woodlarkiana)* . Taro beetles kill small palms by chewing into the growing point usually just below soil level. In the plot treated with lindane there were no deaths.

New Guinea rhinoceros beetle attacks started in the second year. These attacks were the main reason for deaths of palms in both plots.

At 44 months after planting, the plot which received no insecticide, had only 28% of the palms still alive. However, in the plot treated with lindane granules, 87% of the palms were still alive.

Clearly, the lindane treatment was protecting the palms against taro beetle, and later New Guinea rhinoceros beetle. However, some treated palms were still attacked and sometimes killed.

After this time (44 months), insecticide treatment stopped so that any increase in New Guinea rhinoceros beetle damage in the treated plot could be recorded. In the next two years, deaths increased until almost half of the treated palms were killed.

By September 1980, only eight (4.5%) of the original 178 palms were still alive in the plot which had received no treatment. All had been attacked by New Guinea rhinoceros beetle and were very stunted. In contrast, most of the surviving palms which had been treated with insecticide, were growing well. They had little frond damage and about half of them were bearing flowers or nuts.

From October 1980, treatment with lindane was started again. It will be used every six months until 1982. When the palms are 6-7 years old, treatment with lindane should no longer be necessary.

CONCLUSION

So far, the trial has shown that lindane granules are an effective method of reducing insect attack in young coconuts.

COSTS

The cost of a dose of 30 g of lindane granules per palm, at 148 palms per hectare is about K9.60 per hectare per year. This is based on the 1980 price of K27 per 25 kg bag of 6% lindane granules.

Since growers now usually plant high yielding hybrid palms, this treatment is very economical, when compared to the expected losses from New Guinea rhinoceros beetle damage.