FIELD PRACTICES FOR REDUCING RISK OF RHINOCEROS BEETLE (ORYCTES RHINOCEROS)

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Over the last decade, the rhinoceros beetle (*Oryctes rhinoceros*) has become a serious pest of oil palm replantings throughout Malaysia. This is due to the abundance of oil palm trunk chips which are left to rot in situ, in the zero-burning replanting technique. Since the early 90's, the Malaysian oil palm industry has contributed significantly in the quest of effective control methods for the pest. These include screening for effective chemicals, pheromone trapping, biological control and cultural practices.

This article summarises most of the earlier reports, plus some recent findings. These information are summed up for better assimilation and dissemination, particularly among planters and the oil palm industry in general. The deliberations below will follow the sequence from before to after replanting, covering aspects of cultural practices, biological and chemical control.

BEFORE REPLANTING

Pheromone Trapping

The aggregation pheromone for *O.rhinoceros*, ethyl 14-methyloctanoate, is commercially available in Malaysia since the mid 1990's. The use of the pheromone is to lure the adult beetles into a vane trap, hung above the ground at a height of between 1.5 to a maximum of 4.5 meters (*Figure 1*) (Chung, 1997; De Chenon, 1999).

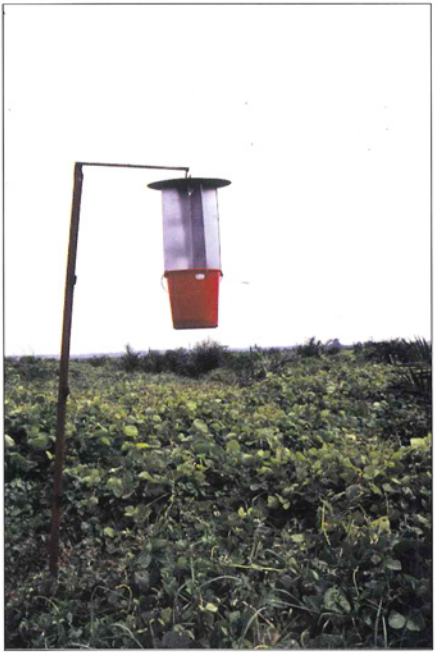

Figure 1. Pheromone trap

Based on findings of Chung (1997) and Norman *et al.* (1999), it can be suggested that pheromone trapping be conducted at 6 months earlier, at the borders of the replanting block prior to replanting. This could minimize the population density of the adults surrounding the replanting area, thus reducing chances of immigration once replanting starts. Traps can be placed at the

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immediate boundary, spaced at 15 palms apart and another row of traps at 15 palms inside the surrounding block (Chung, 1997).

AT REPLANTING

Methods of replanting

Do not conduct underplanting (*Figure 2*). This method is most vulnerable to attack and highly attractive to *O.rhinoceros*. The dead standing trunks in the underplanting method has been

Figure 2. Underplanting

shown to harbour the most number of *O.rhinoceros* larvae (18,000 larvae/ha) compared to felled (4,000 larvae/ha) or shredded trunks (500 larvae/ha) (Samsudin *et al.*, 1993).

Do not stack shredded trunk chips in a large heap (usually each heap in every 3-4 rows) (*Figure 3*).

Fig 3. Avoid stacking trunk chips in large heaps in the interrows

This would provide high moisture, most conducive to beetle breeding and larval development (Norman *et al.*, 2000)(*Table 1*).

Instead, the shredded trunk chips should be spread as evenly along the planting points to act as mulch (*Figure 4*). This practice is likely to increase yield as the roots are in direct contact to the rapid release of nutrients from the trunk chips compared to the heaps placed at the interrows (Khalid, *pers. comm.*). There were negligible population of rhinoceros beetle in the spreaded trunk chips compared to those in the large heaps (*Table 2*).

TABLE 1. WEIGHTS OF O.RHINOCEROS STAGES REARED IN OIL PALM TRUNK SUBSTRATE WITH 3 LEVELS OF MOISTURE CONTENT

Moisture content of substrate	Mean individual weight (g)				
	Instar 3	prepupa	pupa	male	female
Low (10-40%)	5.44a	n.a.	n.a .	n.a	n.a
Medium (57-65%)	7.24b	5.05a	4.74a	2.70a	n.a.
High (>77%)	11.62c	6.56a	5.75b	3.21a	3.09

Note: n.a., stages not developed
Values in column with the same letters are not significantly different with one-way ANOVA and Student-t test (p>0.05).

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