

Biological Suppression of *Oryctes rhinoceros* by Re-release of *Baculovirus oryctes* in an Infected Contiguous Area

Natural occurrence of baculovirus infection of rhinoceros beetle *Oryctes rhinoceros* (L.) has been reported from different countries (Huger, 1966; Mohan *et al.*, 1983; Zelazny *et al.* 1992) which suppressed the population of the pest. Observing the potency of the virus, it has been introduced in South Pacific Islands, Fiji, Mauritius, Seychelles, Papua New Guinea, Maldives and Lakshadweep (Bedford, 1981; Mohan *et al.* 1989; Zelazny *et al.* 1992) and the beetle population could be brought down below non-injurious level (Bedford, 1981; Caltagirone, 1981; Pillai *et al.* 1993). It was also observed that periodic re-release of infected beetles could further reduce pest intensity and crop damage in island conditions (Marschall and Ioane, 1982). Though efficacy of the virus by release or re-release has been tested in island conditions, it has not been assessed either in disease-free or already infected contiguous areas. So it was envisaged to study the effect of re-release of baculovirus of *Oryctes* in an

already infected contiguous area, in a farmer's field at Chittilappilly, Thrissur, Kerala. The experimental area comprised two hundred and twenty palms of 3 - 4 years of age. Ten per cent of the palms were observed as sample and data recorded on the damage to palms, leaves, spathes and spindle leaves (Mohan *et al.* 1989). The observations were initiated in July, 1989. During the first observation, ten beetles were infected with baculovirus (Mohan *et al.* 1989) and released in the experimental area. Subsequently, crop damage data were recorded at about six months interval for three years and the results are presented in Table 1. Natural occurrence of the baculovirus infection was confirmed by screening Giemsa-stained gut smears under light microscope (Mohan *et al.* 1989).

High incidence of leaf (34%), spathe (13%), fresh incidence on spindle leaves (68%) and palm infestation (100%) were observed before re-release of the virus.

Table 1. Effect of re-release of baculovirus of *Oryctes* on crop damage at Chittilappilly, Thrissur, Kerala

Observations	Percentage of damage			
	Palm	Leaf	Spathe	Fresh incidence
Pre-release:				
July, 1989	100.0 (22)	34.4 (392)	12.5 (8)	68.1 (22)
Post release:				
February, 1990	64.3 (22)	23.8 (101)	0.0 (22)	50.0 (22)
July, 1990	64.7 (22)	27.1 (181)	0.0 (31)	17.7 (22)
March, 1991	89.5 (22)	34.0 (159)	6.5 (46)	0.0 (22)
September, 1991	68.2 (22)	24.6 (175)	1.9 (53)	13.7 (22)
March, 1992	36.4 (22)	0.1 (167)	0.0 (59)	0.0 (22)
August, 1992	22.7 (22)	6.7 (135)	0.0 (49)	0.0 (22)

Actual number observed given in parentheses

Within the subsequent three years, infestation of leaves reached almost insignificant level and spathe and spindle damage to zero level. The palm infestation was also reduced to a significantly lower level. In Minicoy island also, re-release of the virus was effective in further reduction of pest population and crop loss (Mohan *et al.* 1989). However, slight increase in palm damage during March, 1991

might be due to migration of the beetle from the nearby untreated areas.

Thus, the results revealed that increase of inoculum level by re-releasing infected beetles in already infected contiguous area would further reduce crop damage due to rhinoceros beetles.

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