

EFFECT OF BORDEAUX PASTE AS A REPELLENT OF SLUGS (*MARIAELLA DUSSUMIERI* GRAY) INFESTING RUBBER PLANTS

The slug, *Mariaella dussumieri* Gray and the snail, *Cryptozona (Xestina) bistrialis* Beck, are the most important invertebrate non-insect pests of rubber. They cause identical damage on young rubber plants as well as on mature trees. Sharples (1936) reported that the slug, *Mariaella dussumieri*, drinks latex and feeds on terminal buds and shoots of young rubber plants in Ceylon and Malaysia. In 1967 the attack of *M. dussumieri* in Malaysia was reported (Anon, 1967). Ramakrishnan and Pillai (1962) reported the attack of slugs (*M. dussumieri*) on rubber in India. Jayarathnam (1980) described the damage done by slugs to rubber trees in India.

Slugs rasp the tender terminal and axillary buds with their denticulated tongue and feed on latex that oozes out from the wound. As a result, the buds do not grow and their repeated attack leads to stunted growth in the affected plants leading to clubbed terminal shoots. In the case of severe infestation the growth of young rubber plants is considerably reduced and the immature period extended by 2-3 years and in some cases it will lead to plant mortality due to dieback of terminal shoots. In mature rubber trees the slugs move to the top of the trees and feed on buds and tender leaves. Owing to their nocturnal habit, in the early morning, the slugs descend from the top to the tapping cut to feed on latex from tapped trees. In the process they block the latex flow from the tapping cut and contaminate the latex. There is also loss of latex due to their feeding. Owing to their nocturnal behaviour, prolific breeding,

resistance to highly toxic pesticides and non-availability of effective molluscicides in India, chemical control of the pest is difficult and costly. In this context, a field trial was conducted to evaluate the repelling effect of Bordeaux paste by contact against *Mariaella dussumieri* Gray (Phylum: Mollusca; Class: Gastropoda).

The experiment was conducted in severely slug infested areas (0.5 ha each) belonging to four estates, viz.

1. Anathanam Porunnukad Estate, Ponkunnam, Kottayam District,
2. Modi Rubber Nursery, Nariyanani, Ponkunnam, Kottayam District,
3. Palampra Estate, Kanjirappally, Kottayam District and
4. Cochin Malabar Estate, Pudukad, Trichur District.

The experiment was conducted during 1987 and 1988. In these areas 200 rubber plants each were selected. Out of these, 100 were treated with Bordeaux paste and 100 left untreated. The Bordeaux paste was prepared at a ratio of 1:1:10. One kilogram of copper sulphate was dissolved in 5 litres of water, one kilogram of quicklime was slaked by sprinkling water and was then diluted with five litres of water. The copper sulphate solution was slowly added to the lime water with continuous stirring. The resultant suspension is the 10% Bordeaux paste. About 50 ml of the paste was painted on the stem of the rubber plant above the bud union of the main stem as a band of about 30 cm length. Observations were taken at 45,

60, 75 and 90 days after treatment. The number of plants attacked by slugs in the treated and the untreated plots were recorded. The data were subjected to statistical analysis and are presented in Table 1.

Table 1. Mean percentage of affected plants at different intervals after treatment (days)

	45 days	60 days	75 days	90 days	Mean
T ₀	93.39 (75.07)	88.10 (69.82)	86.70 (68.62)	86.40 (68.35)	88.80 (70.46)
T ₁	0.0	0.0	3.40 (10.64)	7.80 (16.20)	1.38 (6.71)
Mean	37.14 (37.53)	32.78 (34.91)	40.69 (39.69)	45.28 (42.28)	

C.D. (P=0.01) : Treatments = 1.71
Days = 2.28
Treatment × Days = 3.23

(Figures in parenthesis are (Arcsin) transformed values)

T₀ Untreated control
T₁ 10% Bordeaux paste

The data clearly indicated that 10% Bordeaux paste, applied as a band on the stem of the young rubber plants, functioned as an effective slug repellent. It was found that there was no damage in the Bordeaux paste-treated plots for a period upto 60 days. The treated plants recorded 3.40% damage only upto 75 days and 7.80% damage upto 90 days after the application of Bordeaux paste (P = 0.01). The damage remained almost steady in the untreated plot; ie., 86.04 to 93.39%.

Copper sulphate was reported as a molluscicide against several species of slugs and snails (Bhardwaj, 1972; Bali *et al*, 1984). But copper sulphate alone cannot be used against slugs on rubber plants because of its phytotoxicity. However, in this trial it is proved that copper sulphate, lime and water at a ratio of 1:1:10 acted as a slug repellent, when applied as a band at the

base of the stem of plants. Care should be taken to keep the plant basins free of weeds and debris, so as to prevent direct access for slugs from the ground to untreated portion of the stem. This method of control is highly useful when other effective molluscicides are not available.

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