Chemical Control of Cashew Stem and Root Borer, *Plocaederus ferrugineus* L. at Goa*

Plocaederus ferrugineus L. (Coleoptera : Cerambycidae) the stem and root borer of cashew tree is capable of killing the tree outright and the pest infestation is severe in the neglected cashew plantations. The attack of this pest is normally confined to the main trunk near the collar region.

Benzene hexa chloride, carbaryl, pyrethrins piperonyl butoxide, dimethoate, trichlorphon, fenitrothion, dichlorvos (applied as injection and drenching the base), phorate granules and aluminium phosphide tablets (applied into the tunnels on the stem) were used in control trials against this pest. But the success of the treatment depended on intensity of infestation. Eventhough most of the above insecticides were quite effective in controlling the grubs, the trees in the middle and advance stages of infestation could not be saved (Pillai, Dubey and Singh 1976). Rao, Ayyanna and Narayan (1979) could get 100% control even in advanced stage of infestation by following an integrated approach *viz*., mechanical collection, raking of BHC 10% dust @ 500 g per tree in the soil around the infested tree and BHC 0.1% spray to the infested trunk.

With a view to evolving suitable chemical control measure against this pest, under Goa conditions, all the available infested trees in the cashew plantations at Kalay and Edumol (Canacona) Forest Department Plantations selected and marked for early (gummosis and presence of frass), middle (gummosis, presence of powdery frass with yellowing of leaves) and advanced (withering of bark, presence of dry powdery frass, shedding of leaves and drying of twigs) stages of infestation.

As a phytosanitary measures in the marked trees, the withered and dried barks and soil around the tree were removed. The padding method of application adopted by Gopalakrishnan et al. (1979) in mango was adopted in cashew with slight modifications. A flap of live bark for an area of 30 cm^2 (6 × 5 cm) near the infested region was peeled out and a layer of absorbent cotton wool was inserted in between the flap of live bark and the trunk portion and at each place monocrotophos 36 EC @ 15 ml was slowly poured so that the insecticide got absorbed in cotton wool (Fig 1). The bark was kept back and tied tightly (Fig. 2). The cut ends were covered with fungicide (copper oxychloride) treated wet clay and the soil was heaped all around the tree. The trial was conducted for two seasons (1979 and 1981). During the succeeding two seasons (1982 and 1983), BHC 10% dust @ 500 g/tree was raked around the base of the infested tree after the monocrotophos treatment and raking of BHC dust alone was also done for comparison. All these treatments were given just before the commencement of South West Monsoon. The effect of treatments was assessed during the

* *Contribution No. 410, Central Plantation Crops Research Institute, Kasaragod*

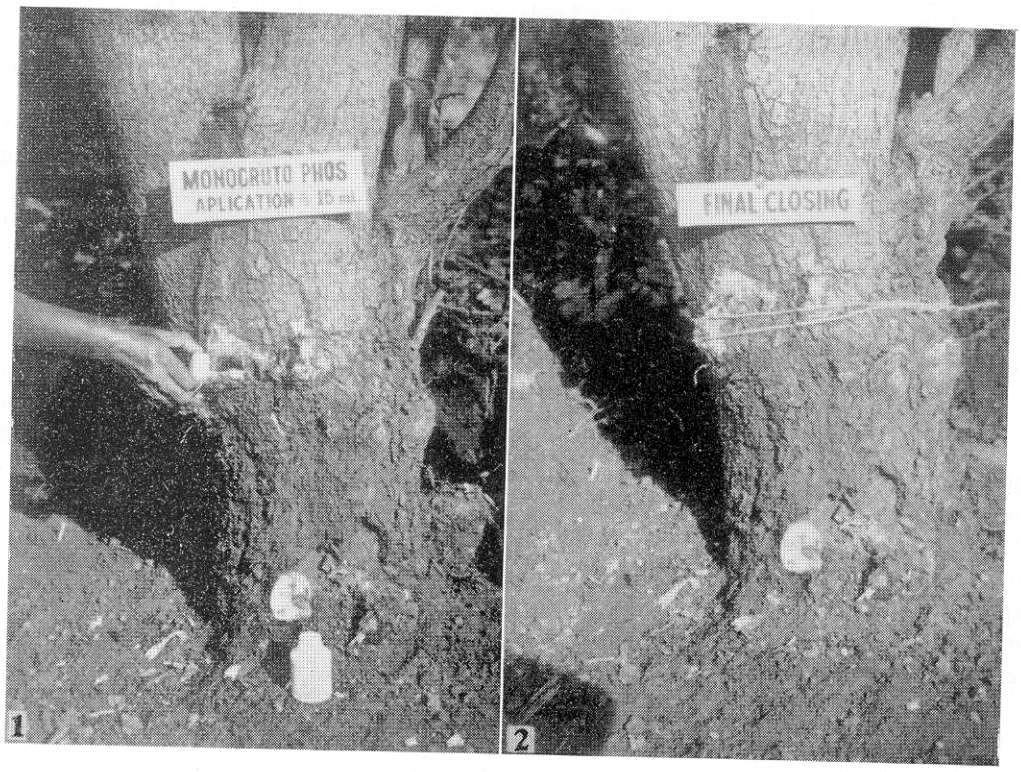

Fig. 1. Padding method of application of Monocrotophos
Fig. 2. Closing and tieing of bark with coir thread

month of December, and percentage of control of infestation was worked out based on the number of trees recovered/ totally free of infestation.

The results of 1979 season indicated that maximum of 83.3% control was achieved with monocrotophos 36 EC @ 30 ml/tree, when the treatment was given at the early stage of infestation (Table I). Trials conducted during 1981 season indicated that only early stage of infestation could be controlled with monocrotophos with a dosage of 30 ml/tree with an average of 79.5% control (Table I). The results of 1982 and 1983 indicated that monocrotophos + BHC treatment gave 78.3% to 90.0% control while BHC alone gave a maximum control of 36.4% only of early stage of infestation (Table I). Therefore, it is evident that this pest can be successfully controlled only at the early stage of infestation as indicated by Pillai et al. (1976). Further, by the padding method of treatment, maximum

Table I. *Effect of Monocrotophos 36 EC and BHC 10% alone and in combination in controlling cashew stem and root borer infestation*

Dosage		Stage of infestation	No. of trees treated	No. of trees recovered	Percentage of control
1979					
Monocrotophos 36 EC	15 ml	Early	4	2	50.0
,,	30 ml	Early	6	5	83.3
,,	45 ml	Middle & advanced	6	nil	–
1981					
Monocrotophos 36 EC	15 ml	Early	9	3	33.3
		Middle & advanced	10	nil	–
,,	30 ml	Early	44	35	79.5
		Middle & advanced	16	nil	–
1982					
Monocrotophos 36 EC (30 ml/ tree) + BHC 10% (500g/tree)		Early	30	27	90.0
–do–		Middle & advanced	5	nil	–
BHC 10% (500g/tree) alone		Early	20	7	35.0
1983					
Monocrotophos 36 EC (30 ml/ tree) + BHC 10% (500g/tree)		Early	23	18	78.3
BHC 10% (500g/tree) alone		Early	11	4	36.4

control was obtained when the treatment was given in the trees with trunk infestation not exceeding 15 cm above the ground level. The peak infestation of this pest was generally noticed during summer months (March–May) which coincides with harvesting period. During this harvesting period, close and periodical examination of the basal portions of the trunk and exposed parts of the roots could be done without any additional effort.

The trees in the middle and advanced stages of infestation are to be removed from the plantation as a phytosanitary measure. This would ensure prevention and spread of the pest to the adjacent trees in the plantation. Trees in the early stages of infestation could be treated with insecticides before the onset of the South West Monsoon. The treatments need minimum water and convenient in hilly terrains where spraying as well as drenching are difficult.

ACKNOWLEDGEMENTS

The author is grateful to the Joint Director, ICAR Research Complex for Goa, the Deputy Conservator of Forests (Cashew Division) and his staff, Govt. of Goa, Daman & Diu for various