INSECTICIDE MIXTURES AND DAMAGE TO COCOA BARK

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INTRODUCTION

During 1982, L.A.E.S. received three reports of damage to cocoa bark after the insecticide recommended by D.P.I. had been applied to control longicorns. This mixture contains insecticide (1.5% a.i. dichlorvos - trade names, Nuvan or Vapona, or fenthion) in 25% white oil. It has been in use for several years. Since the reports of damage came from three of the most progressive and technically knowledgeable growers in East New Britain we investigated the damage in some detail, and found that it had not been caused by the insecticide.

CASE HISTORIES

Case 1

Two-year-old clonal trees died from severe bark damage following the prophylactic application of the insecticide mixture. The damage looked like *Phytophthora* bark canker but there was no *Phytophthora* in the damaged bark. The damage appeared at the same time on all the affected trees and was mainly on one clone which is resistant to canker.

'Prophylactic application' means that the insecticide was applied as a preventive measure. Longicorns were not a problem at the time of application. It was hoped that applying the insecticide would prevent them becoming a problem.

D.P.I. has never recommended prophylactic treatment against longicorns. The insecticide is highly unsuitable for this purpose anyway, since it is non-persistent.

The mixture and the insecticidal ingredients were not tested. However, we have thoroughly tested both dichlorvos and white oil since this case and both are harmless to bark when made up correctly. The most likely explanation in this case is that the mixture was made up with the wrong pesticide.

Case 1. This tree survived, but its bark was seriously damaged.

Case 2

Bark damage occurred in 2-year-old buddings following the use of Nuvan/white oil mixture. We obtained samples of the Nuvan and the white oil but not of the mixture because there was none left. Neither Nuvan nor white oil caused any damage to the bark of 2-year-old trees when diluted correctly.

Case 3

Deaths in young buddings were reported following the application of a Vapona/white oil mixture. We obtained the Vapona concentrate but there was none of the mixture left. We tested the Vapona on wounds made on 2-year-old trees to look like longicorn damage. We used the correct concentration, 10 times the correct concentration and neat Vapona.

No damage occurred with the correct concentration and the wounds started to heal within 2 weeks. At 10 times the correct concentration and with the neat Vapona, some damage occurred where the mixture had soaked into the damaged bark. Only a little damage occurred where the pesticide soaked through undamaged bark. All the trees were healthy afterwards.

We inspected the dead trees belonging to the grower. We found that the bark damage was associated with old longicorn channels in the same way that canker is. The only trees that had died were the ones that had been painted all the way round. In a block where no pesticide had been applied we saw similar damage to that supposedly caused by the insecticide and we isolated *Phytophthora* from a canker surrounding a longicorn channel.

We concluded that the deaths had probably been caused by the ring barking effect of longicorn damage and associated stem canker. No Ridomil had been added to the longicorn insecticide to control canker although this is recommended.

CONCLUSIONS

The insecticide mixture recommended by D.P.I. (see Entomology Bulletin No.3) is not damaging to cocoa bark. Even 10 times the recommended concentration of Vapona causes very little damage. Reports of bark death following use of the mixture are probably due to:

Either making up the mixture with the wrong chemical (e.g. a herbicide.

Or fatal ringbarking by longicorns and/or the presence of widespread canker before the mixture was applied.

RECOMMENDATIONS

1. Make up pesticide mixtures yourself. Only mix enough of the longicorn paint for one day's use.

2. Have containers for herbicide that are only used for herbicide and never mix herbicide in anything else.

3. Add 1% Ridomil 25 wp to the longicorn and *Pantorhytes* channel paint mixtures to control canker.

4. Pay particular attention to the control of longicorn damage at the base of young buddings. Buddings are very susceptible to ring barking by longicorns and canker.

NOTE: There is an error in Entomology Bulletin No. 3, HARVEST 7(5), p. 202. The insecticide mixture does not remain active for 2 months. It breaks down rapidly and should be used within 2 days. A revised version of Bulletin No. 3 is printed in this issue.