

EDITORIAL

Control of Shot-Hole Borer

When I came to the T.R.I. in October, 1959, I found that tea in Ceylon was not greatly affected by pests and diseases. Blister Blight arrived in the Island in 1946, Dr F. R. Tubbs showed how to control it in 1947, and since then the most serious and widespread pest has been *Xyleborus formicatus* Eichh. This pest seemed to be top priority for making a substantial step forward in the defence of the industry, as distinct from aggressive improvements in culture methods.

The beetle was first recorded from Ceylon in 1868 but the host plant was not then known. It was first recorded on tea in 1892 from Craighead Estate, Nawalapitiya, and it has since been the subject of much research and of a T.R.I. symposium in 1956. How much damage it does was not known, but it was generally agreed to be large. It was for this reason that a special unit was formed in 1955 with the object of inventing a practical control method.

Dr E. Judenko was kindly seconded to us by Messrs Fisons Pest Control Ltd. to lead this unit, first for a term of two years, then for a second tour of three years, and finally in 1960 for a period that was not to exceed two years, it being then uncertain how much longer would be necessary to complete a useful and remunerative programme. During this time, he has confirmed the choice of dieldrin by Mr G. D. Austin in 1954, and the conclusion of Dr B. A. Baptist, from trials on Sanguhar Estate in 1955, that this insecticide does produce a substantial measure of control of Shot-hole Borer; under certain conditions, he found that 1½ lb. of actual dieldrin per acre applied to the lower parts of tea in plucking produced a marked reduction in the peak population that normally occurs 18-24 months after pruning. Judenko also discovered the vital fact that if the wood of the frame is wet at the time of spraying, far larger doses of dieldrin fail to give such effective control.

At the same time, in the Entomology Division under Mr J. E. Cranham, evidence was accumulating in confirmation of the results of Baptist's findings, namely that dieldrin spraying tended to result in outbreaks of Tea Tortrix because of the destruction of the imported parasite of Tortrix *Macrocentrus homanae*. However, on Sanguhar Estate, under the Superintendent, Mr. A. P. Newton (Visiting Agent: Mr W. H. W. Coultas), dieldrin spraying on freshly-pruned frames had come into regular and confident use, though on some other estates results had been variable and sometimes unsatisfactory.

Judenko did not feel that he could make any practical recommendations, because investigations of the aspects listed on p. 115 of the *Tea Quarterly* for 1958 had not all been completed, especially regarding residues in the made tea. Residues from his experiments on tea in plucking were assessed by Messrs Shell International Company, England, and were found to be not large. But, in practice, spraying might accidentally be done with an excessive dose and, if the made tea were then bulked with insufficient uncontaminated tea on the estate, and the bulk not blended with enough other tea before being packaged, a case could conceivably occur of a residue of dieldrin which would not pass properly rigorous standards. However remote such a combination of circumstances might be, the policy decision was taken

not to risk it, because of the damage that could occur to the good name of Ceylon teas, however unjustifiably. It was decided that all future work should be done on freshly pruned frames, carrying no leaf that would ever be plucked and several weeks before the tea would again be plucked. Even so, in early experiments, minute residues of dieldrin were found and further work had to be done to ensure that the levels that might occur were never likely to present a problem.

This change of policy required a new series of experiments, each of which should last a full pruning cycle. But time was passing and, with every passing year, much crop was probably being lost because of the beetles. The question was: should we go on with experiments until we were quite sure of reliable recommendations to make, to cover every contingency? Or should the T.R.I. depart from its usual practice and make provisional recommendations? It seemed to me that we had to consider a gamble, to win additional yield to the industry, especially in the hard-pressed mid-country, but to lose the good name of the T.R.I. if something went wrong. It seemed to me that the surest way for the T.R.I. to lose its own soul in this case was to concentrate on saving it. This conclusion was reached after the fullest discussion with Cranham, upon whom would fall the burden of resolving any complications, and our conclusion was fully supported by the Board and by the Experimental and Estate Committee. We were to make provisional recommendations as soon as we could resolve certain of the complications.

Cranham had by that time worked out how to control Tortrix, using DDT, until *Macrocentrus* could take over control; the residue questions were being cleared up; but scale effects had not been examined and they could be large. That is to say results obtained on small plots need not correspond to results on whole fields, especially in regard to re-invasion by Shot-hole Borer, by Tortrix, and by *Macrocentrus*. It was therefore decided to devote about a year to full-scale trials in co-operation with estates, particularly to cover scale effects with Tortrix and *Macrocentrus*, which ought to become evident in that time. It was realised, however, that the full effects on Shot-hole Borer could not be seen until at least one full pruning cycle had passed.

The time has now come to make the provisional recommendations and this Cranham has done in the following paper. His paper is not intended to be a scientific and historical account of research, with attribution of credit and erudite discussion. It is intended to be studied and understood fully by planters who are troubled by Shot-hole Borer. The proper use of the recommended procedure will require close personal attention by Superintendents. Warnings have been given in various directions but unexpected complications may arise. Cranham and the Division of Entomology of T.R.I. are ready to study and resolve those complications.

Shot-hole Borer in Trees

Commonly a pest of a crop cannot be properly controlled by treating only the crop; the pest continually comes in from other vegetation. For this reason, there has been great interest in the possibility of Shot-hole Borer of tea infesting shade trees in tea and subsequently reinforcing the infestation in the tea itself. There are many species of Shot-hole Borer, which differ little in appearance, only one of which is an economic pest of living tea, so that the matter required skilled technical investigation. Dr Judenko has now shown that, of the shade trees common in Ceylon tea, only *Albizzia falcata* (L) (commonly called *A. moluccana*) certainly harbours breeding and growing stages of *X. fornicatus* and that beetles from this *Albizzia* can transfer to tea and infest it. Dadap is under slight suspicion, but *Gliricidia*, *Albizzia sumatrana* and *Grevillea* can be dismissed.

Polyphenols of Tea

We are glad of the opportunity of giving our readers the latest authoritative account of this subject. No doubt there are many to whom the matter will be so unfamiliar as to be not entirely clear. This is the case with many matters that ultimately affect us greatly. We take our part in advancing and disseminating fundamental knowledge.

Mist-blowers

Of much more immediate practical and financial importance to planters are the following papers. The first, on motorized knapsack mist-blowers records specialized discussions on this type of apparatus and its use, gives the T.R.I. experience, and indicates where improvements might be made.

Polythene Bags

These bags are coming into general use in replanting and the article gives our latest information.

Manuring of Nurseries

Under this heading we give some experimental information and then definite advice. Organic mixtures are still used to a considerable extent, but they are more expensive than inorganic mixtures. If the inorganic fertilizer is applied with due care, especially so as to avoid damagingly high concentrations in patches, and if it is applied with sufficient frequency, it has no disadvantages compared with an organic mixture.

Letters to the Editor

This time, our contributions under this head are from members of the T.R.I. staff. We trust that planters are not losing interest in this opportunity of self expression.