'MID-CYCLE' SPRAYS OF ALDRIN FOR THE CONTROL OF SHOT-HOLE BORER.

J. E. Cranham

Aldrin can be used as a 'mid-cycle' spray for the control of Shot-hole Borer, and applied to the bush frames about one year after pruning. Where the cover of tea permits it, this is recommended as an alternative to post-pruning sprays of dieldrin because it carries less risk of Tortrix outbreaks.

A series of field trials have been carried out with the insecticide aldrin as a possible alternative to dieldrin. Aldrin is more volatile and much less persistent on plant surfaces than dieldrin. The small residues that remain, however, become dieldrin by 'epoxidation'. It is not surprising therefore that, being less persistent, aldrin does not give control of shot-hole borer as lasting as that obtained from dieldrin; nor, on the other hand, does it interfere so severely with the natural control of Tea Tortrix (*Homona coffearia* Nietner) by the parasite *Macrocentrus homonae* Nixon. Chiefly for the latter reason, and also because it is slightly cheaper than dieldrin, it is of interest as an alternative insecticide for borer control.

A series of field trials have shown that, as a *post-pruning* spray, aldrin will not give control as lasting as that obtained from dieldrin and will not be a satisfactory alternative except possibly for shorter pruning cycles of 18-24 months in the low-country. A further series of trials on this are in progress.

Aldrin has, however, shown promise as a 'mid-cycle' spray applied to the basal parts of the bush frames when the bushes are in full foliage. When the spraying is carried out about one year after pruning (between the 9th and 15th months) it greatly reduces the second-year build-up of attack by Shot-hole Borer. This type of spraying is only practicable on tea where the frames are accessible for spraying, *ie* where there is an incomplete cover of tea and more particularly on high-jat bushes, because low-jat bushes generally have 'skirts' of foliage which make it difficult to achieve coverage. Nevertheless, it should be practicable on quite a lot of mid-country and low-country tea. A practical advantage of this type of spraying is that we have more choice of timing than we have in the post-pruning spraying. In the trials, we found that during the period mid-March to May we had good weather for spraying, when the bark was dry. Also, in the months of the South-West monsoon period, the climatic conditions were least suitable for a build-up of Tortrix, and in these trials there was no serious Tortrix trouble, and spraying against Tortrix was not necessary.

It is vitally important to avoid residues of aldrin (and the epoxidation product dieldrin) in made tea. It has been determined that there should be a '*minimum safe period*' of *three weeks* between spraying aldrin and the next plucking for manufacture; this is a shorter period than the six weeks recommended after dieldrn spraying. Generally, the crop so lost will be small by comparison with that which is normally lost in the second year from serious borer attack, and will, therefore, be more than compensated for later.

This type of spraying is envisaged chiefly as an alternative to post-pruning sprays of dieldrin where the cover of tea permits it; an alternative that carries less risk of Tortrix outbreaks and other side-effects. Generally, therefore, it will be used *instead* of dieldrin spraying after pruning and carried out about one year after pruning.

However, the results of post-pruning sprays of dieldrin in pruning cycles of three or four years duration show in several cases a tendency for the borer to build up in the third year. In these cases, to maintain good control of the borer throughout a pruning cycle of 3 or 4 years it may be desirable to follow the post-pruning spray of dieldrin with a 'mid-cycle' spray of aldrin about the end of the second year.

Revised recommendations for Shot-hole Borer control

1 – Recommendations for the use of dieldrin as a post-pruning spray still stand. This is the only practicable method so far developed, for areas where there is a full cover of tea.

2 – Aldrin, which is somewhat cheaper and is less liable to induce severe outbreaks of Tortrix, is recommended for two purposes:

(*a*) In new clearings—this has been recommended previously (Cranham 1964);

(*b*) As a 'mid-cycle' spray on mature tea where the cover of tea permits it (see below).

'Mid-cycle' spraying with aldrin

1 – Use Baurs' Aldrin 25% EC at the rate of 5 pints in 80-100 gallons of water per acre, or Shell 'Aldrex 2' (20%) at the rate of 6 pints in 80-100 gallons of water per acre.

2 – Spray the basal frames and branches from the sides, directing the nozzle sideways and *slightly* upwards. Spraying should cover as much of the wood as possible but particularly the lower parts of the frames to a height of 12-18 inches or so from the ground. Spraying should be done when the bark is dry. Rain occurring soon after spraying does not matter particularly, so long as the spray has dried on.

3 – Spraying should be done immediately after a plucking round, and there should be a *three-week* interval between spraying and the next plucking on which leaf is taken for manufacture, either by resting the tea for three weeks or by discarding the leaf from the plucking rounds.

4 – Spraying against Tortrix with DDT or Dipterex need not be done routinely. In many cases it may not be necessary to spray, but a close watch should be kept and spraying done if necessary.

5 – *Timing*—In the South-West monsoon zone, it is advantageous to carry out mid-cycle aldrin spraying from March to May in fields which are about one year (9-15 months) from pruning at that time. Any tendency to a build-up of Tortrix then falls in the months of the South-West monsoon when conditions are least suitable for it.

The most suitable timing in the North-East monsoon zone has yet to be determined, but it may be August to October, *ie* the months before this North East monsoon.

6 – The advice on spraying machinery and safe-handling given for dieldrin (Cranham 1961) apply also for aldrin.

References

CRANHAM, J. E. (1961). The chemical control of shot-hole borer (*Xyleborus fornicatus* Eichh.) on tea. *Tea Quart.* **32**: 171-184.

CRANHAM, J. E. (1964). Research on new developments in shot-hole borer control. *Tea Quart.* **35**: 32-40.