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THE VALUE OF ALAR SPRAYS FOR APPLES

By N. SHORTER, Adviser, Horticulture Division, and J. CRIPPS, Research Officer, Plant Research Division.

ALAR* is a growth retardant which has been the subject of intensive research in other countries. It tends to slow both fruit growth and ripening and to reduce shoot extension.

Overseas and local investigations with apples have shown that Alar will reduce pre-harvest drop, restrict shoot growth and increase flower bud formation for the following season. Alar has been reported in other countries to delay fruit maturity, reduce scald and water core, increase colour and reduce fruit size but these effects have not been obtained in local trials.

As far as flower bud formation is concerned most overseas trials with Alar have been conducted in countries with temperate climates where apple trees often make abundant shoot growth and form few fruit buds. A growth retardant with the properties of Alar is of greater value to orchardists in temperate climates than it is to those in a harsher environment such as that of Western Australia where tree growth tends to be less vigorous.

In W.A., Alar has two potential uses—
- reducing pre-harvest drop of Jonathan and Delicious apples, and
- checking the growth of young trees of all varieties which results in an increase in fruit bud formation for the following season.

Alar is now available to Western Australian fruit growers as Alar 85, a white soluble powder containing 85 per cent. Alar.

Pre-harvest drop

The advantage of Alar as a pre-harvest drop spray is its long period of effectiveness. Other sprays which control drop, such as 245 TP and NAA, are only effective for a few weeks but must be applied before drop commences if maximum benefit is to be obtained. Timing of these sprays must then be by guesswork or the calendar, and mistakes can be made.

On the other hand, a spray of Alar in December will reduce pre-harvest drop in the following March and timing is not critical. In fact, spraying in December gives better results than spraying closer to harvest (for example in January).

A normal pre-harvest drop spray such as 245 TP or NAA must still be used. The combination of Alar and a later stop-drop spray gives much better control of shedding than when either is used alone.

For pre-harvest drop spraying, 1 to 1½ lb. of Alar should be mixed with 100 gallons of water (see recommendations below).

Checking shoot growth

Alar will reduce the extension of shoots of young trees by 25 to 30 per cent. It must be remembered that vigorous shoot growth and lack of fruiting, and hence the need for a growth retardant, can be the result of a number of faulty management practices such as—
- lack of cross pollination, which reduces fruit set and therefore encourages shoot growth—generally, fruiting reduces tree vigour so that once a tree comes into bearing there should be no problems with excessive shoot growth;
- very hard pruning, which tends to encourage vegetative growth and reduce fruit bud formation;
- unbalanced supply or excessive use of fertiliser, which may encourage shoot growth or discourage fruit bud formation;
- use of rootstocks that are too vigorous—some rootstocks are too vigorous to be planted in orchards on good soils which are irrigated frequently.

Management practices that can be used in W.A. to check the growth of young trees are—
- increased weed competition—weeds in an orchard compete with the trees for moisture and nutrients and tend to check tree growth;
- light pruning, which tends to encourage fruit bud formation, particularly if some shoots are tied in a horizontal position;
- provision of cross pollination, which will increase fruit set when blossoming is sparse—increased setting usually reduces shoot growth;

* Succinic acid; 2,2-dimethyl hydrazide.
Profuse flowering in tree on the right followed spraying with Alar in the previous spring.

- reduced fertiliser usage—although a supply of nutrients is necessary for fruit bud formation, excessive use tends to encourage shoot growth. Recommended fertiliser rates should not be exceeded (see “Fertiliser recommendations for apple trees”, W.A. Journal of Agriculture, June, 1969. Bulletin 3660).

The use of Alar can be considered if good tree management fails to control shoot growth and induce fruiting, and provided that the trees have reached optimum bearing size. The spraying of small trees that have not reached optimum size is not recommended as they may be permanently stunted.

The check to shoot growth will be greater if high concentrations are used. A rate of 2½ lb. of Alar 85 per 100 gallons will give a greater reduction in shoot growth than 1½ lb. per 100 gallons. For the result obtained, rates above 2½ lb. will be unnecessarily expensive.

Spraying should be done as soon as there are enough leaves on the tree to absorb a reasonable quantity of spray and before the main period of shoot extension in December. In a normal season the best time will be early in November. Spraying at this time will be certain to increase flower bud formation (see photograph).

Recommendations

Recommendations for the use of Alar are summarised in the table. Sprays should be applied as high volume mixtures and should give thorough coverage without run-off. A wetting agent should be added to aid absorption.

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Time of application</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>*To reduce pre-harvest drop of Johnathan and Delicious</td>
<td>Mid-November to late December</td>
<td>1½ lb in 100 gallons plus wetting agent (1000 ppm)</td>
</tr>
<tr>
<td>To reduce shoot growth of all varieties</td>
<td>Early to mid-November</td>
<td>2½ lb. in 100 gallons plus wetting agent (2000 ppm)</td>
</tr>
</tbody>
</table>

* A spray of 245 TP at 10 to 20 parts per million or NAA at 10 parts per million should also be applied 3 weeks before harvest for maximum control of pre-harvest drop.