ABSTRACT

A large Sikorsky S58 helicopter was compared against an FMC air blast sprayer for spray coverage and ultimate ability to control walnut blight. The helicopter and ground sprayer were found to do an equal job of spray coverage before full canopy but as the season progressed, coverage dropped off in the lower parts of the tree with the helicopter. Likewise, ground spray coverage dropped off in the upper part of the tree. Overall, after full canopy the ground sprayer provided slightly better coverage. Walnut blight control was significantly better with the ground sprayer than with the helicopter. Both application methods provided significantly better control than the untreated check.

OBJECTIVES

The objectives of this trial were to compare the best spray application method by air, presumably a large helicopter, against a conventional ground application using an air blast sprayer for spray coverage and walnut blight control.

PROCEDURES

A randomized block design on Ashley walnuts was established with four three-acre replicates of two treatments. The treatments were: sprays applied by a large helicopter, Sikorsky S58, and sprays applied by a ground sprayer, FMC air blast sprayer. Small, untreated areas were also established. The helicopter applied 8 lbs. Kocide 101 per acre for walnut blight control at the rate of 35 GPA, 40 MPH, using 60 PSI. The ground sprayer applied 8 lbs. Kocide 101 per acre at 100 GPA, 1½ MPH at 96 PSI. Both spray methods were applied five times between March 27 and May 29. A dye was added to the spray mix of both spray methods. Dye cards were placed at four-foot intervals on 32-foot poles and evaluated on three different occasions during the spray period for spray coverage. Copper residue on nut traps was evaluated on three occasions during the spray period. On June 20 a walnut blight control rating was determined by evaluating 1000 nuts per replicate.

RESULTS

The dye cards on the poles revealed that early in the season, before full canopy, both the helicopter and the ground sprayer gave 100 percent coverage. As the season progressed, coverage by the helicopter dropped off in the lower part of the tree and ground spray coverage dropped off in the upper part of the tree. Overall ground spray coverage was slightly better than helicopter coverage once full canopy occurred. The copper residue analysis is not complete but partial analysis tends to reveal the same information as the dye cards. That is, more copper was on the nuts after ground sprays than after helicopter sprays.
The analysis of walnut blight infection on nuts within 10 feet of the ground revealed that the ground applications provided significantly better control than the helicopter applications. Both ground and helicopter applications were significantly better than the check (see Table).

CONCLUSIONS

The use of a large helicopter for control of pests and disease appears to be a good alternative during the dormant period and early spring period. It also will provide good coverage in the upper tree canopy where ground sprays often provide poor coverage. If ground spray applications are not possible, the helicopter used can greatly reduce the amount of walnut blight which would develop if left untreated.
### Average Walnut Blight Infection 1/

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Rate Kocide 101</th>
<th>Spray Rate 2/</th>
<th>Average % Blight 3/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Blast Sprayer</td>
<td>8 lbs/A</td>
<td>100 - 1½</td>
<td>1.7 A</td>
</tr>
<tr>
<td>Large Helicopter</td>
<td>8 lbs/A</td>
<td>35 - 40</td>
<td>2.7 B</td>
</tr>
<tr>
<td>Check</td>
<td>--</td>
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<td>8.9 C</td>
</tr>
</tbody>
</table>

1/ Blight evaluation 6/20/84; 125 nuts/tree in lower skirt area; 8 trees/replicate; 4000 nuts/treatment

2/ First number is GPA; second number is MPH

3/ Means not followed by a common letter are significantly different at the 5 percent level of significance according to Duncans Multiple Range Test