The prevention of sucker growth of tobacco after topping

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Experiments conducted overseas and elsewhere in Australia have shown that the application of mineral oils to the cut surface of the tobacco stem after topping (removal of the flower head) have reduced the amount of sucker growth of tobacco plants. Previous experience in Western Australia has shown that the most appropriate time for topping of tobacco crops has been after the first leaf has been harvested. This operation has the effect of putting more body and width into the tip leaves, which, without topping, tend to be narrow and comparatively light in weight. With late planted crops, however, crops are generally left untopped, since the topping operation tends to retard the ripening of leaf by several weeks, although, after this period, the leaves ripen more rapidly and evenly.

The main objection to topping tobacco is that the growth of suckers is greatly increased by the operation. These suckers take food from the plant which would normally go into the leaves. Suckering of a tobacco crop is long and tedious, and if labour is employed, is costly.

Another point in favour of topping is that, when the flower petals are mature, they drop and fall on to the leaf. Contact of the petal with the leaf produces conditions conducive to the development of fungi such as Sclerotinia sclerotiorum and Botrytis cinerea, which cause "dead-blossom leafspot." This disease produces large dead spots on the leaves, causing leaf to be placed in a damaged grade and it can also carry through the curing of the leaf causing a mould to develop on the cured leaf while still in the kiln.

Preliminary experiments were conducted at the Manjimup Tobacco Research Station in 1952 to determine the effects of application of several mineral oils on the cut surface of the stem after topping on the development of sucker growth. The oils used were:—

- Vacuum White Oil No. 1.
- Vacuum White Oil No. 4.
- Vacuum Liquid Paraffin.

EXPERIMENTAL DATA AND RESULTS

(1) In the first trial, Vacuum White Oil No. 1 was used. Thirty-two rows of tobacco which had been hilled were selected and all plants which were in flower were topped on the 30th January. All topped plants in every second row were then treated with Vacuum White Oil No. 1, alternate rows being left as controls. The oil was applied at the rate of one teaspoonful (approx. 4cc) per plant. There was a certain amount of waste in this method of application, since approximately half of the oil ran down the outside of the stem and was not absorbed by the stem.

Table I gives the number and dry weight of suckers from each row. After picking, on the 30th March, the suckers were placed in paper-bags and hung in a kiln at 200° F. for three days to completely dry. All suckers over half an inch long were taken and counted.
HORMONES FOR VINES MAY SUPPLANT CINCTURING

SYNTHETIC hormone sprays used experimentally by the Department of Agriculture during the past season may eventually make unnecessary the laborious practice of cincturing vines. Cincturing, which consists of removing a strip of bark from the stem of the vine just after flowering time, is normally essential for the setting and subsequent development of commercial currants.

In experiments conducted by the Chief Plant Research Officer of the Department of Agriculture (Dr. T. C. Dunne) this season, two spray materials, 2,4-D (2,4-dichlorophenoxyacetic acid), at a concentration of $2^{1/2}$ parts per million and P.P.A. (parachlorophenoxyacetic acid), at 20 and 50 parts per million, were used with promising results. It was found that quantities as low as 50 gallons per acre sprayed on the vines were effective and that it was not necessary to concentrate the spray on the bunches to effect satisfactory setting.

It is emphasised that the work is still in the experimental stage and as yet, no recommendations for commercial use can be made. Preparations of the materials used are not available in forms suitable for use by vigneron. As considerable injury and perhaps death of vines can result from such substances being applied in the wrong way, growers are warned against the indiscriminate use of these hormone type materials at question-able concentrations.

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For best results plant Barrow Linton's "Bumpa-Krop" pasture seeds. All are machine dressed and include the best strains of clover, rye grass, tick beans, field peas, etc.


<table>
<thead>
<tr>
<th>Row Number</th>
<th>Number of Plants</th>
<th>Total Number of Suckers</th>
<th>Total Weight of Suckers in Ounces</th>
<th>Number of Suckers per Plant</th>
<th>Weight of Suckers per plant in Ounces</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16</td>
<td>103</td>
<td>7.0</td>
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<td>5</td>
<td>12</td>
<td>88</td>
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<td>7</td>
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<td>0.97</td>
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<td>1.39</td>
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<td>Average</td>
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<td>9</td>
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**CONTROL: TOPPED AND NOT SUCKERED**

<table>
<thead>
<tr>
<th>Row Number</th>
<th>Number of Plants</th>
<th>Total Number of Suckers</th>
<th>Total Weight of Suckers in Ounces</th>
<th>Number of Suckers per Plant</th>
<th>Weight of Suckers per plant in Ounces</th>
</tr>
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<tbody>
<tr>
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<td>100</td>
<td>11.0</td>
<td>6.6</td>
<td>0.73</td>
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<td>17.5</td>
<td>6.9</td>
<td>1.25</td>
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<td>11</td>
<td>80</td>
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<td>1.27</td>
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<td>1.85</td>
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<tr>
<td>Average</td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td>1.92</td>
</tr>
</tbody>
</table>

It can be seen from the figures presented in Table I that there was an increase of one in the number of suckers taken from treated and untreated plants, but the average weight of suckers taken from each treated plant was 1.32 oz. compared with 1.92 oz. in the control plants.
TABLE No. II

<table>
<thead>
<tr>
<th>Treatments.</th>
<th>Number of Plants</th>
<th>Total Number of Suckers</th>
<th>Total Weights of Suckers in Ounces</th>
<th>Number of Suckers per Plant</th>
<th>Weight of Suckers per Plant in Ounces</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.—Equal quantities of paraffin + No. 4 oil</td>
<td>38</td>
<td>352</td>
<td>15</td>
<td>9.3</td>
<td>0.40</td>
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<tr>
<td>B.—No. 4 oil</td>
<td>45</td>
<td>557</td>
<td>21.5</td>
<td>12.4</td>
<td>0.48</td>
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<td>C.—Paraffin</td>
<td>53</td>
<td>797</td>
<td>35</td>
<td>15.0</td>
<td>0.66</td>
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<tr>
<td>D.—Topped and not suckered.—Control</td>
<td>38</td>
<td>501</td>
<td>31</td>
<td>13.2</td>
<td>0.82</td>
</tr>
</tbody>
</table>

(2) The second trial conducted was to compare the effects of two oils, and a combination of the two as against control. Four rows were selected in one block for each treatment, the treatment being:

(a) Equal quantities of No. 4 Oil and liquid paraffin.
(b) No. 4 oil alone.
(c) Liquid paraffin alone.
(d) Control: topped and not suckered.

Table No. II gives comparative numbers and dry weights of suckers from the various treatments.

From the figures, it can be readily seen that Treatment (a), using equal quantities of liquid paraffin and No. 4 oil, reduced by half both the number and weight of suckers on each plant, as against the control. There were 15 suckers weighing 0.40 oz. from each plant in the treated rows, whilst the control gave 31 suckers weighing 0.82 oz. No. 4 oil alone was more effective than paraffin, both of which had some effect on reduction of the weight of suckers.

DISCUSSION

The results of these preliminary trials have clearly shown that the application of several oils to the cut surface of the stems after topping tobacco reduced the dry weight of suckers produced.

Further investigations will be undertaken next season, when it is hoped that a device which tops the plants and automatically applies the oil at the same time will be available. This device will prevent the loss of oil involved by the present methods of application and should give more effective control of suckers.

From results obtained to date, it appears that the application of a mixture of equal quantities of White Oil No. 4 and liquid paraffin is the most effective for the prevention of sucker growth of tobacco after topping.

ACKNOWLEDGMENTS

The co-operation and assistance of the Vacuum Oil Coy. Pty. Ltd. is gratefully acknowledged.