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CONTROL OF INSECTS IN COTTON

By D. G. Shedley, D. L. Hardy, and P. J. Michael

Results of two experiments at the Ord Irrigation area in 1968 indicate that farmers may be spending more than necessary to obtain economic control of cotton pests in some seasons. One experiment clearly demonstrated the relationship between low insect numbers and improved cotton yields—the second indicated that a moderate but well timed spray schedule, especially during the early part of the season, can result in more economic insect control than an intensive spray schedule.

Experiment 1.—Effect of cluster caterpillar population on cotton yields

Thirteen one-fifth acre cotton plots were sprayed regularly throughout the season with various levels of recommended insecticides. Native budworm, (Heliothis punctigera), and rough bollworm, (Earias huegelt), did not appear in the plots in significant numbers, but the insecticide treatments resulted in four distinct levels of S. litura infestation. These levels, and the cotton yields associated with them are shown in Table 1.

Experiment 2—Timing and intensity of spray applications

Beginning on February 23, 1968, four cotton plots were subjected to the spraying treatments summarised in Table 2. The plots had been planted to Stoneville 213 on January 12, with 200 units of nitrogen per acre and a band of diuron for weed control. Timing and rates of application were varied...
according to the levels of insect infestation.

The effects of the spray treatments were determined by counting the number of *S. litura* larvae per foot of cotton row at weekly intervals (one larva per foot = 13,000 per acre).

**Results**

The graph indicates that the early-season moderate treatment, followed by a main-season intensive treatment, controlled *S. litura* as effectively as the intensive treatment throughout the whole season. However, the lower costs associated with the moderate-intensive treatment made it more economical than the intensive-intensive treatment (Table 3). The effects of all treatments on yield, the cost of insect control per pound of cotton, and effects of treatments on overall farm costs per acre, are summarised in Table 3.

**Discussion**

Figures in the table indicate that although treatments C and D cost considerably more per acre than treatments A and B, they increased yields to such an extent that their total farm cost per pound of cotton was less. However, because of the unnecessarily intense early season control, treatment D was slightly less profitable than treatment C.

**Conclusions**

*S. litura* infestation was particularly heavy in 1968 and any conclusions drawn from the above results would apply only to a season with similar weather and insect situations. Under such conditions it appears that March and April are the most critical months for insect control. When early season control is not achieved, insect numbers and/or crop damage may be too great for main season control measures to be successful. To achieve such control a moderate but well timed spray control programme appears as effective but more profitable than an intensive programme.

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**TABLE 3.—ECONOMICS OF FOUR S. LITURA CONTROL TREATMENTS**

<table>
<thead>
<tr>
<th></th>
<th>Plot A</th>
<th>Plot B</th>
<th>Plot C</th>
<th>Plot D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield of seed cotton (lb. per acre)*</td>
<td>...</td>
<td>2,323</td>
<td>2,390</td>
<td>2,953</td>
</tr>
<tr>
<td>Cost of insect control ($ per acre)†</td>
<td>...</td>
<td>36.50</td>
<td>45.36</td>
<td>52.58</td>
</tr>
<tr>
<td>Cost of insect control (cents per lb. cotton)</td>
<td>...</td>
<td>1.57</td>
<td>1.90</td>
<td>1.78</td>
</tr>
<tr>
<td>Total farming cost ($ per acre)‡</td>
<td>...</td>
<td>146.30</td>
<td>155.36</td>
<td>162.58</td>
</tr>
<tr>
<td>Total farming cost (cents per lb. cotton)</td>
<td>...</td>
<td>6.31</td>
<td>6.50</td>
<td>5.51</td>
</tr>
</tbody>
</table>

* Average of all samples (hand picked).
† Includes cost of application reckoned at $1 per acre.
‡ Includes an allowance of $110 per acre for total farm costs other than insect control.

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<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Pye Vacuum Cleaners</td>
<td>$42.50</td>
</tr>
<tr>
<td>Pye 2-Brush Polishers</td>
<td>$26.50</td>
</tr>
<tr>
<td>Twin Tub Washers</td>
<td>$133.00</td>
</tr>
<tr>
<td>Sunbeam Hair Dryers</td>
<td>$16</td>
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<tr>
<td>Necchi Fully Automatic Portable Sewing Machines</td>
<td>$135</td>
</tr>
<tr>
<td>H.M.V. Record Player</td>
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<tr>
<td>Hecla and Speedie Electric Blankets - 3 heat</td>
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<tr>
<td>A.W.A. Hair Dryers</td>
<td>$18</td>
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<tr>
<td>Sunbeam Auto Toasters</td>
<td>$22</td>
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<tr>
<td>Sunbeam Deluxe Shavers</td>
<td>$21</td>
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<tr>
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<td>A.W.A. Hair Dryers</td>
<td>$18</td>
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<tr>
<td>Sunbeam Steam &amp; Dry Irons</td>
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<tr>
<td>Astor 8 Trans. Car Radios</td>
<td>from $45</td>
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<tr>
<td>Sunbeam 11&quot; Frypans</td>
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<tr>
<td>Hecla Electric Kettles</td>
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<td>Philips 23&quot; Lowboy TV</td>
<td>$170</td>
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