CONTROL OF SUGARCANE SCALE INSECTS WITH FOLIAR SPRAY OF INSECTICIDE IN GUJARAT

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ABSTRACT

Insecticidal trial with foliar application of methidathion, monocrotophos, phosphamidon, dimethoate at 3 kg a.i. per hectare conducted at Navsari for three years, i.e., 1972-73, 1973-74 and 1974-75 showed that the use of phosphamidon was most effective and economical in the control of sugarcane scale insects in Gujarat.

INTRODUCTION

Sugarcane is one of the most important crops of Gujarat but is subjected to a number of pests which cause reduction in cane yield and sugar recovery. Hence, plant protection is one of the most important factors in increasing the production of sugarcane and sugar. Sugarcane scale insects, Melanaspis glomerata Green is one of the serious pests of sugarcane in Gujarat. Tembhekar\(^6\) reported 30% reduction in yield as well as 35% reduction in C. C. S. per acre due to scale insects in Gujarat. Similarly Moholkar et al\(^13\) reported 25% loss in weight of sugarcane in Maharashtra while Khanna\(^2\) observed 43% loss in sugarcane and 8.03 percent loss in sucrose content due to scale insects. Weight of cane, percentage of sucrose in juice, and brix were reduced by 32.60, 44.89 and 32.98 percent, respectively, in the scale infested canes as compared to the healthy ones (Seshagiri Rao\(^4\)). Soil application of Disulfoton granules at 3 kg. a.i./ha was found to be effective in the control of the pest (Annon\(^1\) and Shah et al\(^5\)). Seshagiri Rao\(^4\) observed that 0.1 percent spray of malathion or dichlorvos or parathion or dimethoate or phosphamidon, twice at fortnightly intervals after detrashing the cane was effective. Thus, a study on the chemical control of this pest using new as well as available insecticides in the form of foliar sprays has been undertaken at Navsari.

MATERIALS AND METHODS

The experiment was carried out, using a Complete Randomised Block Design with four replications and five treatments including control in the Regional Sugarcane Research Station of Navsari (Lat. 20°57' N, Long 72°54' E) during the
TABLE 1. Percent incidence of scale insects and yield as well as insecticidal cost-benefit ratio in the insecticidal trial carried out with foliar applications based on results of experiments conducted for three years (1972-73, 1973-74, 1974-75).

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Average percent incidence of scale insect at harvest</th>
<th>Average yield ton/ha</th>
<th>Additional yield ton/ha</th>
<th>Income* Rs./ha.</th>
<th>Cost of Insecticide Rs./ha</th>
<th>Net profit after deducting cost of insecticide in comparison to control Rs/ha</th>
<th>Additional profit per rupee cost of insecticide (ICAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethoate</td>
<td>14.97</td>
<td>62.500</td>
<td>10.782</td>
<td>1293.84</td>
<td>700.00</td>
<td>593.84</td>
<td>1 : 0.84</td>
</tr>
<tr>
<td>Phosphamidon</td>
<td>10.17</td>
<td>65.571</td>
<td>13.853</td>
<td>1662.36</td>
<td>450.00</td>
<td>1212.36</td>
<td>1 : 2.69</td>
</tr>
<tr>
<td>Monocrotophos</td>
<td>8.39</td>
<td>63.984</td>
<td>12.266</td>
<td>1461.92</td>
<td>1290.00</td>
<td>171.92</td>
<td>1 : 0.13</td>
</tr>
<tr>
<td>Methidathion</td>
<td>6.94</td>
<td>75.936</td>
<td>24.219</td>
<td>2906.28</td>
<td>1500.00**</td>
<td>1406.28</td>
<td>1 : 0.90</td>
</tr>
<tr>
<td>Control</td>
<td>21.09</td>
<td>51.718</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>S. E.</td>
<td>1.31</td>
<td>2.437</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>C. D. @ 5%</td>
<td>2.85</td>
<td>4.940</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

* Market rate of sugarcane = Rs. 120 per ton
** Approximate market price (personal communication)
year 1972-73, 1973-74, and 1974-75. The variety used was sugarcane Co 419. The usual dose of fertilizer at 250 kg nitrogen, 125 kg phosphatic acid and 125 kg potash per hectare was applied. Four insecticides, viz, dimethoate, Phosphamidon, monocrotophos and methidathion were used in the form of foliar sprays. These insecticides were applied five times at an interval of 30 days, starting on June-July with a total dose of 3 kg a.i. per hectare. Each plot size measured 10 m x 4 m.

Ten plants from each treatment were selected randomly and were tagged for observation. Percent incidence was recorded on the basis of the total number of infested internodes on each plant. Yield data obtained for 3 years were also recorded, analyzed and reported here.

RESULTS AND DISCUSSION

The data on the incidence of scale insects and yield for three years are shown in Table 1. There was minimum incidence of scale insects (6.94 percent) in plots treated with methidathion and was significantly superior among insecticidal treatments as well as control. The chronological order of effectiveness was methidathion (6.94 percent) > monocrotophos (8.39 percent) > phosphamidon (10.17 percent) > dimethoate (14.97 percent) in comparison to Control (21.09 percent). Yield data revealed that there existed significant difference for the treatments and the chronological order of effectiveness remained as methidathion > phosphamidon > monocrotophos > dimethoate in comparison to control.

Further analysis to find out Insecticidal Cost-Benefit Ratio (ICAR) to show the response of treatments in giving an additional yield (profit) per rupee cost of insecticide showed that the chronological order of effectiveness of the treatments was phosphamidon > dimethoate > methidathion > monocrotophos in comparison to control.

Thus, it can be concluded that the treatment of phosphamidon at 3 kg a.i. per hectare in the form of foliar spray proved to be best both for the reduced incidence of the pest as well as for additional yield as shown from the data in insecti
cidal cost-benefit ratio.

REFERENCES


insect (*Melanaspis glomerata* Green) of sugarcane on the quality and recovery of Jaggery (Gul) 25th conv. DSTA:41-44.


CONTROL DE LA ESCAMA O GUAGUA DE LA CAÑA DE AZÚCAR MEDIANTE LA APLICACION FOLIAR DE INSECTICIDAS EN GUJARAT

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RESUMEN

Pruebas realizadas en Navsari durante los años 1972-73, 1973-74 y 1974-75 con aplicaciones foliares de monocrotophos, phosphamidon y dimethoate a razón de 3 kilogramos por hectárea cada uno separadamente, demuestran que el tratamiento con phosphamidon* es efectivo y económico para el control de insectos escamosos en caña de azúcar en la región de Gujarat.

*Demacro - Dovip - Famfos*