Efficacy of certain placements of granulated systemic insecticides applied to the soil against shootfly (Atherigona varia soccata, Rond.) on hybrid jowar

D. N. GANDHALE1 and G. M. TALGERI1
College of Agriculture, Poona.

WITH the introduction of hybrid varieties of sorghum like CSH 1 and CSH 2 which are high yielding, relatively of shorter duration than local, the era of green revolution dawned. Unfortunately, these have created new problems, of which pest problem was the major one causing at times the total failure of the crop, under the serious attack of the pest. However the problem of internal feeder like shootfly remained without effective control, even though a number of potent pesticides are available.

With this object in view, studies were directed towards the proper placements of certain granulated systemic insecticides applied to the soil at the time of sowing for the control of shootfly. Young (1962) reported that phorate granules applied at the rate of 1.5 kg. active ingredient per acre to the soil in the seed furrow, below the seed prior to sowing gave complete control, with the percentage deadhearts 3-5 as against 55-85 in control. Vedamoothy (1965 and 1967) reported that phorate granules applied to the seed furrow at the rate of 1.0 to 1.5 kg. active ingredient per hectare gave best control of shootfly. Ajri (1966), Dhumal (1967) and Ahire (1968) concluded that application of phorate granules at the rate of 0.75 kg. and disulfoton at 1.00 kg. active ingredient per acre on both sides of row 1/2 inches deep and 2-3 inches away from the seeds gave very good results against shootfly. But dimethoate at 2.00 kg. active ingredient per acre at sowing did not give good results.

Awale (1970) concluded that basic dose of phorate with 0.75 kg. and temik 1.5 kg. active ingredient at the time of sowing gave better control of shootfly. Mote (1970) revealed that phorate 0.75 kg. active ingredient per acre by encircling seeds within 2 inches radius, 1 1/2 inch below the seed was found the most promising placement against shootfly. Similarly, disulfoton at 1.00 kg. active ingredient per acre in direct contact with the seeds and insecticides mixed with soil was promising for the control of shootfly.

Jotwani et al. (1971) stated that seed treatment with carbofuran (3, 4, 5, parts to 100 parts of seeds) significantly reduced the damage due to shootfly and increased grain and fodder yield. Again in 1972, he emphasised that potentiality of carbofuran as seed treatment for the control of shootfly was very high.

MATERIALS AND METHODS

Soil application with granulated systemic insecticides has been reported to be one of the ideal method of protecting jowar crop from the attack of shootfly. During the present investigation, following treatments with their doses were tried at two placements, namely encircling seeds with 2.5 cm and 5.0 cm radii.

Phorate at 1.875 kg. a.i. per hectare
Disulfoton at 2.5 kg. a.i. per hectare
Dimethoate at 2.5 kg. a.i. per hectare
Temik at 2.5 kg. a.i. per hectare
Carbofuran at 2.5 kg. a.i. per hectare
Azodrin (Monocrotaphos) at 2.5 kg. a.i. per hectare
Sevidol (Carbaryl 8% + gamma BHC 8%) at 2.5 kg. a.i. per hectare

Statistically designed three field experiments were laid out during three seasons namely kharif, rabi and summer in 1971-72 at Entomology Division, College of Agriculture, Poona. Seven systemic insecticides applied to the soil with two placements in randomised block design. 15 treatments inclusive of one control were replaced thrice. Ridges and furrows were made 45 cm apart to facilitate the irrigation and seeds of hybrid jowar CSH 1 were dibbled at the rate of 3 kg. per acre with spacing of 15 cm with in two spots. Insecticides were applied to the plots with specific placements in definite weighed quantities. Seeds were dibbled exactly at the centre of ring and covered with soil, first irrigation was given soon and subsequent with 7-8 days interval.

In order to assess the relative efficacy precisely, observations on deadhearts were recorded at 7 days interval starting from 14 days after dibbling. The total plant population was taken into consideration and actual number

Investigations carried out by Mr. D.N. Gandhale for M.Sc. (Agrl.) degree of M.P.K.V. under the guidance of Mr. G.M. Talgeri, Prof. and Specialist in Entomology, who is currently working as Sr. Dy. Director of Agriculture, Dept. of Agriculture, Maharashtra State, Poona 411 001.

FEBRUARY 1976

PESTICIDES
of deadhearts produced by shootfly were counted from each treatment and the percentage infestation was worked out. Observations were continued up to 45 days and percentage deadhearts in relation to plant population was subjected to statistical analysis.

RESULTS AND DISCUSSION

Data presented in the Table and figure reveal that all the treatments were significantly superior to the control. Carbofuran applied by encircling seeds with 2.5 cm and 5.0 cm radii was found to be highly significant throughout three seasons giving only average percentage deadhearts 3.21 and 4.82 on the basis of total plant population and statistically proved superior to the rest of the treatments. Next best set of the treatments was phorate applied with 2.5 cm and 5.0 cm radii, disulfoton with 2.5 cm radius and temik with both placements 2.5 and 5.0 cm radii giving average percentage deadhearts 18.11, 15.14, 17.61, 15.78 and 16.12 respectively. Remaining treatments gave percentage deadhearts ranging from 20.80 — 32.73 as against 38.74 in control.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Treatments (encircling seeds with)</th>
<th>Percentage deadhearts</th>
<th>Pooled Arcsin mean transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Phorate 5.0 cm radius</td>
<td>8.76</td>
<td>11.05 4.28 8.03 15.14</td>
</tr>
<tr>
<td>2</td>
<td>Phorate 2.5 cm radius</td>
<td>9.65</td>
<td>15.12 7.38 10.71 18.11</td>
</tr>
<tr>
<td>3</td>
<td>Disulfoton 5.0 cm radius</td>
<td>17.33</td>
<td>16.58 8.00 11.30 20.80</td>
</tr>
<tr>
<td>4</td>
<td>Disulfoton 2.5 cm radius</td>
<td>14.10</td>
<td>9.83 6.52 10.15 17.61</td>
</tr>
<tr>
<td>5</td>
<td>Dimethoate 5.0 cm radius</td>
<td>36.96</td>
<td>31.41 17.48 28.61 31.45</td>
</tr>
<tr>
<td>6</td>
<td>Dimethoate 2.5 cm radius</td>
<td>40.18</td>
<td>35.31 16.46 30.65 32.73</td>
</tr>
<tr>
<td>7</td>
<td>Temik 5.0 cm radius</td>
<td>6.47</td>
<td>16.18 5.78 9.47 16.12</td>
</tr>
<tr>
<td>8</td>
<td>Temik 2.5 cm radius</td>
<td>8.11</td>
<td>13.35 4.69 8.91 15.78</td>
</tr>
<tr>
<td>9</td>
<td>Carbafuran 5.0 cm radius</td>
<td>1.16</td>
<td>0.97 1.49 1.20 4.82</td>
</tr>
<tr>
<td>10</td>
<td>Carbafuran 2.5 cm radius</td>
<td>1.20</td>
<td>0.25 0.97 0.80 3.21</td>
</tr>
<tr>
<td>11</td>
<td>Monocrotophos 5.0 cm radius</td>
<td>41.77</td>
<td>31.25 19.47 30.83 32.71</td>
</tr>
<tr>
<td>12</td>
<td>Monocrotophos 2.5 cm radius</td>
<td>38.36</td>
<td>30.51 20.18 29.68 32.35</td>
</tr>
<tr>
<td>13</td>
<td>Sevitol 5.0 cm radius</td>
<td>28.85</td>
<td>23.43 12.52 21.60 26.95</td>
</tr>
<tr>
<td>14</td>
<td>Sevitol 2.5 cm radius</td>
<td>26.06</td>
<td>21.39 11.62 19.67 25.66</td>
</tr>
<tr>
<td>15</td>
<td>Control</td>
<td>52.30</td>
<td>41.30 26.07 39.90 38.74</td>
</tr>
</tbody>
</table>

S.E. = ± 1.33
C.D. at 5% = 3.85

TABLE — POOLED ANALYSIS OF THREE SEASONS FOR THE EFFICACY OF GRANULATED SYSTEMIC INSECTICIDES AGAINST SHOOTFLY (ATHERIGONA VARIA SOCCATA, ROND.)

SUMMARY

In general, carbofuran at 2.5 kg. active ingredient per hectare applied to the soil with the placements encircling seeds with 2.5 cm and 5.0 cm radii were found to be the best and most promising placements showing least number of deadhearts. Secondly, the treatment with phorate at 1.875 kg. active ingredient per hectare applied by encircling seeds with 2.5 cm and 5.0 cm radii, disulfoton at 2.5 kg. and temik at 2.5 kg. active ingredient per hectare with both placements encircling seeds with 2.5 cm and 5.0 cm radii gave better control of shootfly. The rest of the treatments were inferior to the above against the control of shootfly.

PESTICIDES

FEBRUARY 1976
REFERENCES


The name that pests dread most!

FORMULATORS OF WIDE RANGE OF PESTICIDES FOR AGRICULTURAL, STORAGE AND PUBLIC HEALTH APPLICATIONS

BHC Dust, DDT Dust, Aldrin Dust, Malathion Dust, Parathion Dust, Toxaphene Dust, Carbaryl Dust, Kiltex Dust, Kilcombi Dust, DDT 50% WDP, BHC 50% WDP, Carbaryl 50% WDP, Endosulfan 35% EC, Toxaphene EC, Malathion EC, Endrin EC, Aldrin EC, Kiltex EC

NEW ADDITIONS:

For Agricultural purposes —

Kilgor EC (Dimethoate based), Kilzol 20% EC, Kilzol 5% G, Kilzol 40% WDP (Diazinon based), Kilthane 18% EC (Miticides), Kiltrex 5% Dust

Others/House-hold etc —

Kilflick (ready-to-use emulsion), Kilgon (Fly-bait)

Enquiries solicited for appointment of Dealers/Stockists/Agents/Representatives in all unrepresented areas. Contact:

KILPEST PVT. LTD.
7C, Industrial Area, Govindpura, BHOPAL 462 023.

Phone: 3117/3890

Gram: KILPEST

FEBRUARY 1976

PESTICIDES 43