Effect of some Fungicides on *Carthamus tinctorius* (Safflower) to control the fungus, *Fusarium wilt*

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ABSTRACT

Wilt of Safflower caused by *Fusarium oxysporium* f.sp. carthami Klisiewicz and Houston (FOC) is an important disease spreading widely and causing yield losses up to 80 percent (Sastry and Chatopadhay, 1977). Owing to its soil borne nature, chemical control is one of the viable propositions for management of such a pathogen. Therefore, studies were made to evaluate the efficacy of fungicides viz. Carbendazim (50 wp), Copper Oxychloride (50 wp), Capatafol (50 wp) and Thirum (75 wp) on the inhibition of mycelial growth of Fusarium by using food poisoning technique. Attempt was made to find out the suitable chemical to manage this disease in Nashik region of Maharashtra.

Key Words: Safflower, *Fusarium oxysporium*, Carbendazim, Copperoxychloride, Captafol, Thirum, Potato Dextrose Agar, soil borne

INTRODUCTION

*Carthamus tinctorius* L. commonly is known as safflower or Kardai. It is an important oilseed crop in India belonging to family Asteraceae. The potential yield of this crop has affected by a number of diseases as well as seed borne pathogens. Among them, wilt caused by *Fusarium oxysporum* causes heavy losses to crop (Klisiewicz 1963, Shastri and Jayramana 1993). The disease manifesting in the form of unilateral infection on branches and levels golden yellow discolouration of leaves, followed by wilting, brown to black streaks are evident in the vascular tissue of the roots and lower stem. Plant pathogen is both seed and soil borne fungus. Now the trend is increased to manage crop diseases by innovative approaches. Fungicidal sprays are generally recommended for controlling fungal pathogens on crop plants. The efficacy of fungicides Carbendazim (Bavistin 50 wp), Copper-oxylchloride (Blitox 50 wp), Captan (Captafol 50 wp), Thirum (Thirum 75 wp) was studied against wilt disease of Safflower by using food poisoning technique (Nene, 1971).

MATERIALS AND METHODS

Testing of efficacy of some fungicides for antifungal properties against *Fusarium oxysporum* by food poison technique is developed by Nene (1971). In the present study, Bavistin, Blitox, Captan, and Thirum are used. The fungicides were selected with three concentration viz 0.05 (Subnormal concentration) 0.10 (normal concentration) 0.15 (above normal concentration). These concentrations were incorporated into 50 ml Potato Dextrose Agar (PDA). The calculated amount of fungicide was added lukewarm PDA in the flask before pouring. Media without fungicide were used as control. There are three replication of each treatment on these petriplates were inoculated with 5 mm. discs of actively growing mycelium of the organism. The petriplates were incubated at room temperature (25+2°C) for 4 days. After four days the colony growth diameter and percentage of growth inhibition was recorded.

RESULTS AND DISCUSSION

With the increased importance of safflower oil in human health and economy in India, it has become necessary to sort out the problems encountered in increasing the production and productivity of Safflower. Safflower wilt caused by *Fusarium oxysporum* f. spcarthami, is major hurdle in achieving the production. The present investigation was undertaken with a view to find out a chemical management of resistance to this wilt pathogen. This experiment was conducted to the efficacy of different fungicides at three different concentrations by "poison food technique" (Nene, 1971) .The observations and the *in vitro* sensitivity of fungicides were found to be significantly superior over control in inhibiting the growth is given in (Table-
From all this it can be inferred that at normal, subnormal and above normal concentration significantly higher inhibition of growth was recorded in Thirum (75 WNP) followed by Bavistin, Captan and Biltox. Thirum (75 WP) was found to be most potent fungicide to manage this disease followed by other fungicides at different concentrations (Table- 1). Superiority of Thirum in inhibiting the growth was supported by Sharma (1984) Sastry (1997) and Somwanshi (2000).

Table 1. Efficacy of fungicide against mycelial growth of *Fusarium oxysporium* sp. carthami (foc).

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Code</th>
<th>Technical name</th>
<th>Trade name</th>
<th>Concentration%</th>
<th>Colony diameter in mm (Mean)</th>
<th>% Inhibition of mycelial growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F1</td>
<td>Carbendazim</td>
<td>Bavistin (50 wp)</td>
<td>SN (0.05) N (0.1) AN (0.15)</td>
<td>38 24 19</td>
<td>87.38 55.67 43.48</td>
</tr>
<tr>
<td>2</td>
<td>F2</td>
<td>Copperoxychloride</td>
<td>Biltox (50 wp)</td>
<td>SN (0.05) N (0.1) AN (0.15)</td>
<td>40 36 24</td>
<td>94.70 84.94 55.67</td>
</tr>
<tr>
<td>3</td>
<td>F3</td>
<td>Captan</td>
<td>Captafoil (50 wp)</td>
<td>SN (0.05) N (0.1) AN (0.15)</td>
<td>30 25 23</td>
<td>70.31 58.13 53.23</td>
</tr>
<tr>
<td>4</td>
<td>F4</td>
<td>Thirum</td>
<td>Thirum (50 wp)</td>
<td>SN (0.05) N (0.1) AN (0.15)</td>
<td>27 24 18</td>
<td>62.99 55.67 41.04</td>
</tr>
<tr>
<td>5</td>
<td>F0</td>
<td>Control</td>
<td></td>
<td></td>
<td>44</td>
<td></td>
</tr>
</tbody>
</table>

SN – Sub Normal  N- Normal  AN- Above normal

Graph-1. Efficacy of fungicide against mycelial growth of *Fusarium oxysporium* sp. carthami (foc).

REFERENCES


