APPENDIX
EVALUATION OF SOME CHEMICALS AGAINST PESTALOTIOPSIS DISSEMINATA CAUSING GREY BLIGHT OF SOM

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Fun ‘trial treatment on mycelial growth showed that Carbendazim (Bavistin), Thiophanate methyl (Topsin-M) and Phenyl pyrrole (Celest) had completely inhibited the growth of the pathogen at all concentrations. Mancozeb (Indofil M-45) was found effective only at higher concentration. No sporidial germination was recorded in the plates amended with Carbendazim (Bavistin), Thiophanate methyl (Topsin-M) and Phenyl pyrrole (Celest). Copper oxychloride showed a higher per cent of conidial germination (2.32). The disease severity on all the fungicides was significantly lower than the check. Bavistin was found most inhibitory followed by Topsin-M.

Keywords: Control, fungicides, grey blight, som.

INTRODUCTION

"Som" (Persea bombycina Kost), the primary food plant of muga silkworm, grows abundantly in north eastern region (Choudhury, 1981). This food plant is prone to various diseases that affect the quality and quantity of leaves and ultimately affect cocoon yield production (Das et al., 2003). Grey blight is one of the major foliar disease of som plant caused by Pestalotopsis disseminata (Thum) Stoll (Bharali, 1969). It was observed 48-59% plant infection during March to September with 13.8-21.6% leaf area destruction (Das and Benjamin, 2000). The leaf loss in Grey blight disease was estimated at 1273 kg per hectare per annum (Das and Benjamin, 2000). Thus, there is a need to evolve suitable management strategy so that the loss due to diseases may be prevented and the economic value of the crop is raised. Therefore considering the importance of the disease, attempt was made to estimate the influence of different fungicides on mycelial growth, conidial development and the disease development of Pestalotopsis disseminata the causal organism of Grey blight disease of “som plant.”

MATERIALS AND METHODS

Screening of fungicides in vitro:

Five fungicides namely, Carbendazim 50% Wp (Bavistin) Copper oxychloride 50%Wp (Bitox 50), Mancozeb 75% (Indofil M-45), Thiophanate methyl (Topsin M) and Phenyl pyrrole (Celest) at 0.25, 0.10, 0.15 and 0.20 per cent concentrations were tested against Pestalotopsis disseminata by the food poison technique (Nene and Thapliyal, 2000). Equal volume of potato dextrose agar medium in flasks was mixed with the required quantities of above mentioned fungicides. The medium was

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then poured in sterilized petridishes. A mycelial disc of 5 mm diameter of the pathogen was taken from the 7 days old culture with the help of sterilized cork borer and placed at the center of the petridishes. A mycelial disc of the pathogen on PDA without adding any fungicide served as check (control). Each treatment was replicated thrice. Linear mycelial growth and germination of conidia were recorded after a 24 hours interval up to 5 days.

Screening of fungicides under field condition:

An experiment was conducted during from 2001 to 2004 under field condition. The experiment was laid out in a randomized block design (RBD) with three replications. The spacing of the plantation was 3 × 3m. After one month of pruning the experimental plants were inoculated with spore suspension (1 × 10⁶ spores/ml) of Pestalotiopsis disseminata by high volume sprayer, one day before spraying of fungicides. Five above mentioned fungicides were used along with check. Three sprays of above fungicides at @ 0.20 percent were given during the period (first at May 15th rest at 15 days of interval). The disease severity was assessed on 5 randomly selected plants from each replication, 15 days after the last spray by categorizing the infected leaves in 0-5 grading scale.

Grading Scale

- 0 = No disease
- 1 = 1-20% leaf area destroyed by the disease
- 2 = 21-30% leaf area destroyed by the disease
- 3 = 31-40% leaf area destroyed by the disease
- 4 = 41-50% leaf area destroyed by the disease
- 5 = Above 50% leaf area destroyed by the disease

The percent disease index (PDI) for each treatment was calculated by using the formula Anonymous (1984).

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\text{Percentage Disease Index (PDI)} = \frac{\text{Sum of numerical values} \times 100}{\text{Total number of leaves observed} \times \text{Maximum grading i.e. 5}}
\]

The numerical value was calculated by the number of leaves infected multiplied by respective grading.

The percent disease index was converted into angular transformed value for the data analysis.

RESULT AND DISCUSSION

Data revealed that out of five fungicides (Table I) carbendazim (Bavistin), thiophanate methyl (Topsin-M) and phenyl pyrrole (Cleest) had completely inhibited the growth of the pathogen at all concentrations tested. Mancozeb (Indofil M-45) was found effective at higher concentration. Copper oxychloride (Blitox-50) was found least effective, as it did not cause substantial reduction in growth of the pathogen as compared to check.

Similar trend of response to treatment was noted for germination of conidia (Table II). No germination was recorded in the PDA plates amended with carbendazim (Bavistin), thiophanate methyl (Topsin-M) and phenyl pyrrole (Cleest). However in Mancozeb (Indofil M-45) treatment a few germination of conidia (0.83) was recorded. Copper oxychloride (Blitox-50) showed a higher percent of conidial germination i.e. 2.32 as against 8.75 in check showing ineffectiveness in reducing the inoculum of the disease.

Field studies (Table III) on the efficacy of fungicidal sprays on grey blight severity revealed that percentage of disease severity varied between 20.00 and 50.33 being lowest with Bavistin and highest...
with Indofil M 45. The percentage of disease severity in check was 84.22 which is varying significantly from all the five fungicides tested.

The disease severity recorded with all the five fungicides was significantly lower than for the check. Thus, there was a significant decrease severity with above mentioned fungicides. However Bavistin was found most inhibitory followed by Topsin-M. No information is available on the effect of Bavistin and Topsin-M on disease severity of Gray blight disease under field conditions.

Harsh et al. (1987) reported the effectiveness of Bavistin at 0.1% concentration and Dithan M 45 at 0.3% concentration against Pestalotiopsis verruculata, which caused the foliar disease in Diospyros melanoxylon Roxb. Various workers have reported that Bavistin (carbendazim), Tilt 250 EC, Curiavat and Dithan M 45 (Mancozeb) performed best against Pestalotia palmarum (Kundlikar, et al., 1991; Khaleqizaman, et al., 2001). Complete inhibition of Pestalotiopsis mangiferae colony growth at the lowest concentration (0.11%) of Carbendazim was reported by Pandey et al. (2006). Similar results obtained in this study also. Bavistin (carbendazim) at 0.20 percent concentration can effectively minimize the severity of Gray blight disease of som plant. However it was observed that no residual toxicity of Bavistin (carbendazim) was recorded in muga silkworm (Das and Benchamin, 2000) Guneseekhar et al., (1995) reported similar result in mulberry food plant caused by Cerotelium fis.
Table II. Effect of different fungicides on conidial germination in *Pestalotiopsis disseminata*.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Average conidial germination (%) in response to different concentrations (%) of fungicides (square root values)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.05</td>
</tr>
<tr>
<td>Bavistin (carbendazim)</td>
<td>0.0</td>
</tr>
<tr>
<td>Bitox -50 (copper oxychloride)</td>
<td>7.0</td>
</tr>
<tr>
<td>Bitox-50 (oxychloride de cuivre)</td>
<td>1.23</td>
</tr>
<tr>
<td>Indofil M 45 (mancozeb)</td>
<td>0.0</td>
</tr>
<tr>
<td>Topsin-M (thiophanate methyl)</td>
<td>0.0</td>
</tr>
<tr>
<td>Celest (phenyl pyrrole)</td>
<td>0.0</td>
</tr>
<tr>
<td>Control / Temoin</td>
<td>84.22</td>
</tr>
</tbody>
</table>

CD at 5% / DC à 5 %

Within concentration / Pour la concentration 0.47

Between treatment / Entre les traitements 0.19

Control vis rest / Témoin par rapport au reste 0.34

Table III. Effect of fungicidal sprays on grey blight intensity under field condition.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Disease severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bavistin (carbendazim)</td>
<td>20.00 (26.47)</td>
</tr>
<tr>
<td>Bitox -50 (copper oxychloride)</td>
<td>45.93 (42.65)</td>
</tr>
<tr>
<td>Bitox-50 (oxychloride de cuivre)</td>
<td>42.22 (42.18)</td>
</tr>
<tr>
<td>Indofil M 45 (mancozeb)</td>
<td>45.90 (42.61)</td>
</tr>
<tr>
<td>Topsin-M (thiophanate methyl)</td>
<td>84.22 (69.22)</td>
</tr>
<tr>
<td>Celest (phenyl pyrrole)</td>
<td></td>
</tr>
<tr>
<td>Control / Temoin</td>
<td></td>
</tr>
</tbody>
</table>

CD at 0.05% / DC à 0.05 % 11.32
The study suggests that Carbendazim (Bavistin) at 0.20 percent concentration can be effectively used for minimizing the severity of Gray blight disease of som. It is enough to use two sprays at 15 days interval to suppress the prevailing disease.

REFERENCES


