Evaluation of fungicides for the control of head smut in kodo millet

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Kodo millet (*Paspalum scrobiculatum* L) is cultivated as food grain crop in the soils of low fertility and is staple food for poor and tribal people of Madhya Pradesh. Head smut caused by *Sorosporium paspalii* thunbergii (P. Henn.) S. Ito, is a serious disease (1, 5, 7, 8) in which whole panicle is transformed into a long sorus surrounded by a creamy membrane in early stage. At maturity sorus membrane gets burst and release the black masses of spores. The disease is mainly transmitted through externally seed borne inoculum. Losses in yield increases linearly with increase in disease incidence (5). Some high yielding varieties of kodo millet were found susceptible to this disease (3, 4). Therefore, it is essential to control the disease through the use of fungicides. In the present investigation various systemic and non systemic fungicides were evaluated for control of the head smut under field conditions.

Four fungicides namely Chlorothalonil (Kavach 75 WP), Carbendazim (Bavistin 50 WP), Tebuconazole (Raxil 25 WP) and Methoxy ethyl mercury chloride (Emisan 6) alongwith untreated control were evaluated as seed dresser in randomized block design on a susceptible variety "GPUK 3" during 1994 & 1995 and "Sidhi local" during 1996 at RARS, Kuthulia, Rewa (M.P.). All the fungicides except raxil were tested @ 2 g/kg seed. While, raxil was tried @ 1 g and 1.5 g/kg seed of the formulated product.

Surface sterilized seeds were artificially inoculated (3) and treated with the respective fungicides before sowing. Recommended agronomical practices were adopted for proper crop growth. Per cent disease incidence was recorded by counting healthy and smutted plants in each treatment at maturity. The angular transformed data were used for statistical analysis.

On an average of 3 years result, head smut incidence ranging from 0.2 to 18.5 % was recorded in different treatments. All the fungicides significantly reduce the head smut incidence ranging from 75.3 to 98.9% with an increased yield of 11.6 to 25.3 % over control (Table 1). Carbendazim, chlorothalonil and emisan @ 2 g per kg seed were most effective having less than 1 % incidence. The effectiveness of carbendazim, chlorothalonil and emisan was also demonstrated by several workers (2, 4, 6, 9). Maximum grain yield (2152.3 kg/ha) was recorded in the treatment of carbendazim but it was not significantly superior with raxil (2034.6 kg/ha), emisan (2021.4 kg/ha) and chlorothalonil (1991.8 kg/ha).

It may be concluded from the present study that

<table>
<thead>
<tr>
<th>Fungicides</th>
<th>Concentration (g/kg)</th>
<th>Head* smut (%)</th>
<th>Disease control (%)</th>
<th>Grain* yield (kg/ha)</th>
<th>Increase over control (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorothalonil</td>
<td>2</td>
<td>0.3 (2.29)</td>
<td>98.4</td>
<td>1991.8</td>
<td>15.9</td>
</tr>
<tr>
<td>Carbendazim</td>
<td>2</td>
<td>0.2 (1.17)</td>
<td>98.9</td>
<td>2152.3</td>
<td>25.3</td>
</tr>
<tr>
<td>Raxil</td>
<td>1</td>
<td>4.6 (10.06)</td>
<td>75.3</td>
<td>1916.9</td>
<td>11.6</td>
</tr>
<tr>
<td>Raxil</td>
<td>1.5</td>
<td>2.5 (7.21)</td>
<td>86.5</td>
<td>2034.6</td>
<td>18.4</td>
</tr>
<tr>
<td>Emisan</td>
<td>2</td>
<td>0.6 (3.70)</td>
<td>96.8</td>
<td>2021.4</td>
<td>17.7</td>
</tr>
<tr>
<td>Control</td>
<td>-</td>
<td>18.5 (25.14)</td>
<td>-</td>
<td>1717.7</td>
<td>-</td>
</tr>
<tr>
<td>CD (5%)</td>
<td></td>
<td>3.789</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*mean of three years data

Figures in parentheses are transformed values
seed treatment with carbendazim, chlorothalonil and emisan @ 2 g per kg seed could be used for the control of head smut and getting maximum grain yield. Hence, the same can be recommended to farmers for the economical management of head smut in kodo millet.

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REFERENCES


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