MYCOFLORA ASSOCIATED WITH INUNDATED BENGAL GRAM PLANTS AND THEIR MANAGEMENT

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ABSTRACT

Bengal gram pods soaked in rain water revealed the presence of fungal species viz., Alternaria, Rhizoctonia, Ascochyta, Helminthosporium and Aspergillus. Among these Alternaria was predominant (57.4%) followed by Aspergillus (23.3%), Rhizoctonia (10.7%), Helminthosporium (7.5%) and Ascochyta (1.1%). Seeds looked apparently healthy, but they were found small and slightly wrinkled. Alternaria alternata and Ascochyta rabiei, besides Aspergillus flavus were isolated from young seedlings of untreated seeds. Seed treatment with carbendazim or benomyl @ 0.1% was effective to eradicate the seed borne infection of Ascochyta rabiei and Alternaria alternata and improved the germination in Apparently Healthy (AH) and Apparently Diseased (AD) seeds. Hence drying followed by treatment with 0.1% benomyl or carbendazim of seed from inundated bengal gram plants was recommended to the farmers.

Key words: Mycoflora, Bangal gram, Management.

Wilt and root rot are major diseases on gram. However, unprecedented rains during February 2008 caused inundation of crop at pod maturity stage causing losses to farmers. The present study was taken up to identify the mycoflora associated with inundated gram plants.

A survey was conducted in Guntur and Prakasam districts where rains damaged the crop. Plant samples were labeled and collected from ten different inundated fields of gram farmers. Ten samples from individual fields were analyzed for the presence of mycoflora associated with pods of affected plants. Microscopic examination of scrapings and washings from the pods revealed the presence of Alternaria (90%) predominantly followed by Rhizoctonia, Ascochyta and Helminthosporium. The pods incubated in moist chamber over night at room temperature showed development of Alternaria (90%) and Helminthosporium (10%). Further the pods were analyzed by the blotter test and agar plate test. The plates were incubated at 25±1°C and recorded the presence of mycoflora.

The data showed that analysis of bengal gram pods soaked in rain water revealed the presence of fungal species viz., Alternaria, Aspergillus, Rhizoctonia, Helminthosporium and Ascochyta. Among these Alternaria was predominant (57.4%) followed by Aspergillus (23.3%), Rhizoctonia (10.7%), Helminthosporium (7.5%) and Ascochyta (1.1%). Ascochyta rabiei, Botrytis cinerea and Alternaria alternata were reported to be seed borne pathogens on bengal gram (Ahmed and Ravinder Reddy, 1993).

Despite the contamination of pod, seeds looked apparently healthy. However the seeds were small and slightly wrinkled. Such seeds when inoculated on PDA mycelia grew vigorously on seeds. Microscopic examination of mycelia on seed showed the presence of spores of Alternaria, Helminthosporium, Aspergillus and Rhizoctonia. Alternaria grew faster compared to other fungi. These seeds were treated with carbendazim or benomyl @ 1g/ kg to get healthy plants (Table 1). Each treatment was replicated thrice and the experiment was repeated in vitro and in vivo. A. alternata and A. rabiei, besides Aspergillus flavus were isolated from young seedlings of untreated seeds. Seed treatment with carbendazim or benomyl
Table 1: Effect of seed treatment on germination of seed from inundated bengal gram plants

<table>
<thead>
<tr>
<th>Sample</th>
<th>Treatment</th>
<th>Per cent Seed Germination</th>
<th>Fungi recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparently Healthy (AH)</td>
<td>Untreated</td>
<td>10</td>
<td>Aspergillus flavus (40%), Alternaria (60%)</td>
</tr>
<tr>
<td>Apparently Diseased (AD)</td>
<td>Untreated</td>
<td>10</td>
<td>Aspergillus flavus (70%), Ascochyta rabiei (30%)</td>
</tr>
<tr>
<td>Apparently Healthy (AH)</td>
<td>0.1% carbendazim</td>
<td>86</td>
<td>Nil</td>
</tr>
<tr>
<td>Apparently Diseased (AD)</td>
<td>0.1% carbendazim</td>
<td>70</td>
<td>Nil</td>
</tr>
<tr>
<td>Apparently Healthy (AH)</td>
<td>0.1% benomyl</td>
<td>70</td>
<td>Nil</td>
</tr>
<tr>
<td>Apparently Diseased (AD)</td>
<td>0.1% benomyl</td>
<td>90</td>
<td>Nil</td>
</tr>
</tbody>
</table>

@ 0.1% was found effective to eradicate the seed borne infection of A. rabiei and A. alternata and improved the germination in AH and AD seeds. Haware et al. (1978) recommended benomyl + thiram (1:1) @ 0.9g/kg of chickpea seed dressing, while Grewal et al (1982) reported carbendazim alone or in combination with thiram at about 2.5g / kg to eradicate Botrytis from the seeds. Thiram was the best seed dressing fungicide followed by bavistin in getting the highest seed germination and minimum pre and post emergence mortality of chickpea seedlings (Bagri et al., 2004). Kaushal and Sood (2008) found thiram and bavistin @ 2g/kg gave best control of chickpea root rot disease under field conditions. Similar results were observed in case of horse gram root rot (Vanitha and Alice, 2008). Hence drying followed by treatment with 0.1% benomyl or carbendazim of seed from inundated bengal gram plants was recommended to the farmers.

REFERENCES