COMPATIBILITY OF CERTAIN FUNGICIDES AND INSECTICIDES USED IN SEED TREATMENT OF SORGHUM MYCOFLORA

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ABSTRACT

Seed sample of sorghum (AKMS-14A) of kharif 1995 affected by rain and having 62 per cent germination was treated with fungicides insecticides alone and in combinations and stored. Important seed mycoflora Fusarium moniliforme and C. lunata was very effectively controlled by Thiram + Bavistin. Insecticides like endosulfan, carbaryl and monocrotophos reduced the incidence of fungi. No synergistic or antagonistic effect at any combinations was noticed indicating the compatibility of combinations tried under test.

Seed borne fungi is one of the limiting factor in seed production when rain coincide with grain maturity. The most common moulds are Curvularia lunata, Fusarium moniliforme, Drechslera spp, Phoma sorginha etc. As a result of these fungi there is deterioration of seed quality in storage. They may reduce the vigour of seeds or may contribute to low vigour by weakening the parent plant. To prevent damage due to seed borne fungi and insect­pests during storage and seedling stage, seed is often treated with fungicide as well as insecticide. To evaluate the compatibility of such combined seed treatments, experiments were carried out at Department of Plant Pathology, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during 1995-96.

Sorghum (AKMS-14A) seed of kharif 1995 was affected by late rains and discoloured due to development of seed borne fungi. Four fungicides viz., TMTD-75 SD @ 3 g/kg captan @ 3 g/kg, carbendazim 50 WP @ 2 g/kg and a mixture of TMTD + carbendazim @ 2 g each and five insecticides viz., Endosulfan 35 EC @ 5 ml, carbaryl 50 WP @ 5 g, Monocrotophos 36 WSC @ 5 ml, BHC 10% @ 5 g and carbofuran 50 SP @ 5 g per kg seed were used for seed treatment as alone and in combinations also seeds were stored in laboratory (temp 22 to 41°C) for six months.

Observations were recorded initially, after three months and six months storage. For recording seed mycoflora, 25 seeds were planted on triple layer of specially prepared sterilized blotting papers in each petri plates (ISTA 1985) at equidistance incubated at 27±2°C with natural day light by using fluorescent tube lights and 16 hr dark period in B.O.D. incubator. Data on development of seed mycoflora were recorded after observations under stereobinocular.

The percentage incidence of Fusarium moniliforme on untreated seed which was 27.6 per cent at pre-storage did not vary significantly during storage period of 6 months. Incidence of Curvularia lunata increased during storage period as compared to its pre storage incidence. Important seed mycoflora Fusarium moniliforme and Curvularia lunata, were effectively controlled by Thiram + Bavistin while seed treatment with Bavistin was least effective. The effect of fungicides was well maintained during storage period. Favourable effect in controlling seed mycoflora by different fungicidal seed treatment has been earlier reported eg. Thiram (Agarwal et al., 1982; Gopinath and Shetty 1982, Munghate and Raut 1982 Novo and Menzes 1984; Patil et al., 1986), Bavistin (Kaur 1985), Thiram and Bavistin (Gupta and Singh 1988, Ingle 1994).

There was more effect of individual insecticide on Curvularia lunata (Table 1). No
Table 1. Effect of interaction of fungicides and insecticides on per cent incidence of *Fusarium moniliforme* and *Curvularia lunata* on sorghum (AKMS-14A)

<table>
<thead>
<tr>
<th>Insecticides</th>
<th>Per cent incidence of <em>F. moniliforme</em> and <em>C. lunata</em> on seed</th>
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<tbody>
<tr>
<td>Fungicides</td>
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<td>F1</td>
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- **Fungicides x insecticides (F x I)**
- **Fungicides x storage period (F x S)**
- **Fungicides x insecticides x storage period (F x I x S)**

* Figure in Parenthesis are Arc-sin values.

| S.E. (m) | 2.16 | 1.53 | 3.75 |
| C.D (5%) | 6.00 | 4.24 | 10.4 |
synergistic or antagonistic effect was observed due to combination of fungicide and insecticide in present investigation indicating the compatibility of fungicide with insecticide tried under test.

Manmode (1972) also reported compatibility of captan carbaryl. Anahosur (1982) reported the compatibility of Captafol and Carbofuran. Peshney (1990) also found Thiram and Ziram being compatible with BHC, carbaryl, Endosulfan, Malathion Phosphomedon, Monocrotophos, Quinalphos and chloropyriphos. Udaybhan et al. (1994) reported compatibility of Bavistin with Endosulfan while working on wheat seed for control of loose smut.

It has been concluded that seed treatment with fungicides like Thiram + Bavistin is sufficient to take care of seed mycoflora as well as insects in storage. Insecticides like Endosulfan, Carbaryl and Monocrotophos reduced the incidence of these fungi. As far as effect on seed-borne fungi and seed borne insects are concerned, if fungicides are required to be combined for specific purpose, all combinations of test fungicides and insecticides revealed these compatible reaction. There was no synergistic or antagonistic effect of any of the combination.

REFERENCES