Research Paper :

Evaluation of *Trichoderma* compatibility with fungicides, pesticides, organic cakes and botanicals for integerated management of soil borne diseases of soybean [*Glycine max* (L.) Merril]

N.B. BAGWAN

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SUMMARY

Compatibility tests were conducted under *in vitro* condition to find out safer fungicides, pesticides, different cakes and botanicals against *Trichoderma.* For this different fungicide, pesticides, cakes and botanicals were tested against *Trichoderma harzianum (*Th 09) and *Trichoderma viride* (Tv 11). Results indicate that among the fungicides tested, thiram (0.2%), copper oxychloride (0.2%) and mancozeb (0.2%) were found comparatively safer against *Trichoderma harzianum* and *Trichoderma viride* as compared to other fungicides. *Trichoderma* was most sensitive to captan, tebuconazole, vitavax, propiconazole and chlorothalonil. But *Trichoderma* was tolerant to all the pesticides and weedicides tested. None of the pesticide and weedicide inhibited the growth of *Trichoderma*. Among the botanicals tested, 10% fresh leaf extract of karanj leaves (*Pongamea pinnata*) and cumin leaves inhibited 32.19 % 27.15% growth of *Trichoderma,* respectively as compared to control. Another intresting thing observed that, neem oil (5%), neem leaves extract (10%), wild sorghum leaves extract (10%), neem cake, castor cake and mustard cake extract (10%) enhanced the growth of *Trichoderma*. This finding indicates that seed treatment or furrow applications of *Trichoderma* would be compatible with thiram, copper oxychloride, mancozeb, pesticides, weedicides, neem oil, neem leaves extract, wild sorghum leaves extract, neem cake, castor cake and mustard cake extracts for the integrated management of soil borne diseases of groundnut.

Correspondence to :
N.B. BAGWAN
Department of Plant Pathology, Directorate of Groundnut Research (ICAR), JUNAGADH (GUJARAT) INDIA

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Soybean [*Glycine max* (L.) Merill] is an important edible oilseed crop of Maharashtra, mostly grown in Marathwada region and continues to be the major source of protein and edible oil in the world. It yields more protein per hectare than most other crops and accounts for more than 63% of high protein meal and 28% of the total edible oil supply worldwide (Golbitz, 2000). The combination of low oil content and the relatively high protein content of fresh green soybean seeds make them particularly desirable to the health conscious people seeking low fat, high protein snacks (Brar and Carter, 1993). This crop is damaged by a number of soil borne fungal pathogens *viz.*, *Phytophthora sojae, Rhizoctonia solani* and *Sclerotium rolfsii.* These fungi reside in the seed or the soil and are found in all agricultural soils. These fungi commonly cause root rot and stem rot. Diseases caused by these pathogens may be suppressed, but not eliminated by chemical treatment. These diseases usually result in the occurrence of dead or dying soybean plants and lower the yield. These soil-borne pathogens are very difficult and uneconomical to control with chemicals alone. Soybean seed treatments with fungicides can protect soybean seed and seedlings from fungal attack early in the season. They do not, however, guarantee that it will not have stand loss from fungal pathogens later. Fungicides for seed treatment, although some are systemic, have a limited time period in which they are effective. *Trichoderma* spp. are important potential bioagents against these soil-borne diseases. For the management of these diseases, farmers are using different fungicides as seed treatments before sowing but farmers are not getting satisfactory results. Therefore, farmers are applying talk. based *Trichoderma* in soil with castor cake or neem cake or farm yard manure for biological control of these soil-borne diseases. For the use of these biocontrol agents in an integrated disease management programme, the bioagents must be compatible with the fungicides, pesticides and botanicals commonly used in soybean.

The fungal contamination of seeds and