

Integrated management of soybean stem rot

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ABSTRACT: Combination of four different carriers along with *Trichoderma harzianum* as seed treatment was tested in pot condition against *Rhizoctonia solani* causing soybean stem rot. Conidial suspension (1×10^8 conidia per ml) of the antagonist was used for seed treatment. Seed germination (%) and yield (g/plant) was found higher in all treatments irrespective of carrier and antagonist used. However, seed germination and yield was found to be on par. The highest germination (85.33%) and yield (11.78 g/plant) and lowest disease index (1.5) were obtained when seeds were treated with *T. harzianum* + methylcellulose. Seed treatment with sub-lethal doses of thiram (0.05 and 0.01%) and *T. harzianum* showed lower disease index, higher germination and yield than the lethal dose (0.3%) alone.

KEY WORDS: Carrier, disease index, methylcellulose, *Rhizoctonia solani*, thiram, *Trichoderma harzianum*

Rhizoctonia solani Kuhn. is one of the most destructive pathogen of soybean (*Glycine max.* L. (Merril). The disease caused by *R. solani*, referred to as stem rot, web blight, damping off, etc. causes stand and yield loss up to 50 and 40 per cent, respectively (Anon, 1975). Except for high cash value crops, chemical control of *Rhizoctonia* disease is not practical or economical. In addition there are environmental problems inherent in such control measures. Recently, there has been considerable interest in the biological control of *R. solani* by introduction of antagonistic micro-organisms especially *Trichoderma* spp. into the rhizosphere (Papavizas and Lewis, 1984; Mukhopadhyay *et al.*, 1992). Seed treatment with antagonist is reported to be an effective method of introducing the antagonistic micro-organism into the soil plant environment or crop rhizosphere (Chao *et al.*, 1986).

Seed treatment with antagonist is hampered due to absence of a suitable carrier. Integration of an effective antagonist with fungicide has been reported to provide enhanced disease control, (Mukhopadhyay, 1996). The present study was carried out to find out effective carrier system for *T. harzianum* and also to find out the compatibility of the antagonist with a seed dressing fungicide for the management of soybean stem rot causing pathogen.

The present experiment was conducted in the Kharif season of 1997 and 1998 in the green house of the Department of Plant Pathology, Assam Agricultural University, (AAU), Jorhat.

Rhizoctonia solani was isolated from freshly infested soybean plant and *T. harzianum* culture was obtained from culture bank of the Department of Plant Pathology of AAU and the cultures were maintained on PDA.