

Research Paper :

Effect of seed treatment of biocontrol agents and chemicals for management of stem and pod rot of groundnut

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SUMMARY

Three fungicides viz., mancozeb, tebuconazole and vitavax power, two bioagents viz., *Trichoderma harzianum* and *Pseudomonas fluorescens* and one insecticide (chlorpyrifos) were tested as seed treatments against stem and pod rot of groundnut (*Sclerotium rolfsii*). Results were found that seed treatment with *Trichoderma harzianum* (10.0 g/kg) provided maximum protection to the crop by minimum stem rot incidence (37.43%) and maximum pod yield (1464 kg/ha) of groundnut.

Key words :

Trichoderma harzianum,
Pseudomonas fluorescens,
Sclerotium rolfsii, Seed treatment

The combination of biocontrol agents with fungicides as seed treatment could be very effective against stem and pod rot as it makes the plant vulnerable throughout its life starting from rooting of seeds to the death of mature plants. The present work was undertaken to test the efficacy of bioagents and chemicals as seed treatment for management of stem and pod rot of groundnut in the field condition.

Excessive use of chemical fertilizers and plant protection chemicals for maximizing crop yield and changes in traditional cultivation practices results in deterioration of chemical, physical and biological health of the cultivated soil. This situation eliminates the ecologically beneficial microbes from soil, which are detrimental to crop health to establish in soil. Biocontrol strategy is highly compatible with the sustainable agricultural practices that are required for conserving natural resources and beneficial microbes. This requires an understanding of the interactions between the biocontrol agent and complex microbial community in which the agent must function (Pan and Jash, 2004). Field use of biological control agents in modern agriculture is hampered by lack of suitable carrier and application methods (Jash, 2006). Seed coating method has been relatively successful when applied to small volumes of soil (Harman *et al.*, 1980.)

MATERIALS AND METHODS

Field experiments were conducted to study the efficacy of selective: bioagents, fungicides and insecticide as seed treatment for the management of stem and pod rot of groundnut caused by *Sclerotium rolfsii*. The field experiment was conducted in randomized block design with four replications during Kharif 2006 and 2007 at Department of Plant Pathology, College of Agriculture, Junagadh Agricultural University, Junagadh. The details of treatments, two bioagents viz., *Trichoderma harzianum* (10⁶ cfu/g) 10.0gm/kg seeds and *Pseudomonas fluorescens* (7x10⁹ cfu/g) 5.0gm/kg seeds, three fungicides viz., mancozeb 4.0gm/kg seeds, Tebuconazole (Raxil 2 SD) 1.25 gm/kg seeds and vitavax power (vitavax 37.50 %+ thiram 37.50%) 3.0gm/kg seeds and chlorpyrifos (25ml/kg seeds) were used as seed treatments. An untreated control was also maintained. The seed treatment was given before sowing.

In the field experiment groundnut cv. GG-20 was sown at 60 x 10 cm distance in 5.0 x 3.0m plots. At the time of sowing *Sclerotium rolfsii* culture was added in each plot @450g/plot. All agronomic practices were followed as per recommendations.

At the time of harvesting, the numbers of healthy and infected plants were counted in each treatment and per cent disease incidence and per cent disease control were calculated

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