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Effect of Legume Root Rot Pathogens and Fungicide Seed Treatment on Nodulation and Biomass Accumulation

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Abstract: Greenhouse experiments were conducted over two cropping cycles to investigate the effect of fungicide seed treatment and fungal root rot pathogens on nodulation and dry matter accumulation of selected food legumes. The legumes were common bean (*Phaseolus vulgaris* L. variety GLP 2), green gram (*Vigna radiata* L. variety M66) and lablab (*Lablab purpureus* L.) while the pathogens were *Fusarium oxysporum* f. sp. *phaseoli*, *Macrophomina phaseolina*, *Sclerotinia sclerotiorum* and *Rhizoctonia solani*. Treatments consisted of inoculation of legume seeds with appropriate rhizobia alone, rhizobia together with fungicide, rhizobia together with pathogen and a combination of rhizobia, fungicide and pathogen. Fungicide copper oxychloride was used as a seed dresser. *Rhizoctonia solani* and *S. sclerotiorum* were more pathogenic and showed significantly increased seedling mortality and greater reduction in seedling emergence, number of nodules and root dry matter. Fungicide seed dressing significantly increased seedling emergence and reduced seedling mortality. However, fungicide seed dressing alone and in combination with pathogen depressed nodulation in all the legumes. Inoculation with *F. oxysporum* and *M. phaseolina* had no significant effect on nodulation in common bean. All the treatments had little or no significant effect on shoot dry matter. The results suggest that fungicide seed treatment in combination with rhizobia inoculation is beneficial in management of root rot and enhancement of nodulation in food legumes.

Key words: Dry matter, legumes, nodulation, root rot, seed treatment