

Antagonism of *Trichoderma viride* to *Macrophomina phaseolina* Causing stem blight of cowpea.

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Macrophomina phaseolina (Tassi) Goid. is a common pathogen causing stem blight of cowpea in Rajasthan. The role of antagonists in curtailing the growth of *M. phaseolina* in mung has been established (Kehri and Chandra, 1991). In the present paper, the efficacy of *Trichoderma viride* Pers. ex Fr. in controlling the stem blight of cowpea is reported.

Cowpea var. C-152 seeds, surface - sterilized with 2 per cent sodium hypochlorite and washed 2-3 times with sterile distilled water, were coated with spores of antagonist and/or pathogen by dipping them in a mixture of spore suspension (4×10^7 spore/ml.) and sown in earthen pots (23 cm.dia.) filled with sterilized or unsterilized soil, at the rate of 5 seeds/pot. A control was also maintained where the surface-sterilized seeds were sown in unsterilized soil. There were five replications for each treatment. Seedling mortality was recorded at three stages of pre-and post- emergence and at maturity

stage. For the qualitative and quantitative estimation of the pathogen and antagonist in the rhizoplane, the root washing technique of Harley and Waid (1955) was employed. Elad and chet medium was used for the isolation of antagonist while potato dextrose agar medium for the pathogen.

The isolate of *T. viride* used in the present study showed a strong antagonism against the pathogen *M. phaseolina* under *in vitro* condition (Mathur and Bhatnager, 1994). The data from the pot culture experiment revealed that mortality in the field soil (check) was low (38.9%) as indicated in Table-1. Addition of *T. viride* alone reduced the mortality to 29.9% at maturity stage. Seventy five per cent mortality was observed due to pathogen alone that was reduced to 25% by the addition of antagonist to unsterilized soil at maturity stage (Table - 1). This reduction may be attributed to the suppression of the activity of the pathogen

Table 1. Effect of *T. viride* on mortality of cowpea plants due to *Macrophomina phaseolina* at different stages

Treatments	% mortality at		
	Pre-emergence	Post-emergence	Maturity
SS+P+A	49.7	44.2	27.0
SS+P	58.2	81.0	90.0
SS+A	33.1	36.6	29.1
US+P+A	52.9	39.7	25.1
US+P	40.3	43.5	75.1
US+A	38.0	34.1	29.9
Check	38.0	40.9	38.9
SEM ±	2.42	4.78	7.86
CD at 5%	7.00	13.85	22.77
CV %	12.23	23.38	30.73
SS = Sterilized soil	P = Pathogen		
US = Unsterilized soil	A = Antagonist		

by the antagonist. Possibly the absence of the interference of the indigenous microflora in the sterilized soil allowed a full expression of the activity of both pathogen and antagonist. However, in unsterilized soil, the presence of antagonist caused a marked reduction in mortality.

These findings were further confirmed by comparing the population of the pathogen in the root region of the plants in the field soil supplemented with pathogen and antagonist. A marked increase in the population of antagonist and decrease in the population of the pathogen were recorded.

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