Research Paper :

Evaluation of biocontrol potential of *Trichoderma* species against *Sclerotium rolfsii, Aspergillus niger* and *Aspergillus flavus*

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SUMMARY

Forty six isolates of *Trichoderma* spp. belonging to *viz., viride, harzianum, hamanatum, ressei* and *koningii* species groups were screened for their modes of biocontrol ability against *Sclerotium rolfsii* Sacc., *Aspergillus niger* van Teighem and *A. flavus* Link ex Fries, the causal agents of stem rot, collar rot and aflaroot of groundnut, respectively. The isolates T005, T043, T095, T49, T126, T144, T166, T191, 250, 390 and T425 gave maximum inhibition of mycelial growth of *S. rolfsii* in dual culture and killed the sclerotia. The isolate numbers T043, T071, T250, T292, and T425 were most effective against *A. niger*. While the isolate numbers T004, T040, T043, T071, T144, T292, T357, T390 and T425 showed maximum inhibition of *A. flavus*. The isolates T043 and T425 were effective against all the three pathogens *i.e. S. rolfsii, A. niger* and *A. flavus*. Isolates T071 and T292 were effective against *A. niger* and *A. flavus*, while isolates T144 and T390 were effective against *S. rolfsii* and *A. flavus*. The results of this study indicate that the two strains (T043 and T425) have the potential for biological control of *S. rolfsii, A. niger* and *A. flavus*. Thus, use of T043 and T425 as seed treatment or furrow application may enable to reduce soil borne diseases of groundnut. However, filed evaluation of these isolates should be under taken to evaluate their efficiency against the soil borne pathogen of groundnut.

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Out of nine oilseed crops grown in India, groundnut accounts for 35% of the total area cropped under oilseed and 40% of the total oilseed production. Though, India is the largest producer of groundnut, its average productivity levels are very low as compared to USA and China. An important factor contributing to low yield are diseases (Subramanyam and McDonald, 1983). Stem rot, collar rot and aflaroot are the major soil-borne diseases of groundnut causing extensive damage to the crop. *S. rolfsii* attacks the crop at all the stages causing seed rot, seedling blight, stem rot and pod rot, the most common being stem rot. On the contrary, both *A. niger* and *A. flavus* primarily attack the seedling stage causing collar rot and aflaroot. Out of the only economical management measure recommended for these diseases is to treat seed with fungicides, but it can not protect the crop for longer period. The chemical method developed control too has its own limitations such as high capital investment, non-remunerative, poor availability, selectivity, temporary effect, efficacy affected by physico-chemicals and biological factors, development of pest resistance, pollution of food and feeds, health hazards, environmental pollution, etc. Considering these limitations, biological control is an important approach in this direction. It refers to "Reduction of amount of inoculum or disease producing activity of a pathogen accomplished by through one or more organisms other than man" (Cook and Baker, 1983). The potential for biological control of plant diseases has been reviewed by (Blackman and Pokkema, 1982; Mukerji, 1983 and Upadhya and Rai, 1983).

S. rolfsii is a facultative parasite and is found in a wide-range of soil. The fungus survives in soil mainly as sclerotia, which represent the main source of inoculum and remain viable in soil for several months. *S. rolfsii* attacks all parts of the plant but stem