

Research Paper :

# Antagonism of fungal organisms against *Fusarium oxysporum* f. sp. *carthami*



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## SUMMARY

Wilt of safflower is one of the serious problems for successful cultivation of this crop. The study was conducted to test the efficacy of fungal antagonists isolated from local cultivator's fields against *Fusarium oxysporum* f. sp. *carthami* in laboratory. In all, 25 fungal organisms were tested for their antagonistic effect by dual culture technique. Results indicated that *Aspergillus niger* (Isolate 11 and 1), *Gliocladium virens* and *Aspergillus ustus* had more inhibitory effect than other fungal isolates. Five fungal organisms (*Aspergillus* sp., Black septate mycelium, *Hormiscium* sp., *Trichoderma harzianum* and *Trichoderma viride*) have produced clear zone of inhibition while 10 organisms grew fast and over run the growth of *F. oxysporum* f. sp. *carthami*.

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**Key words :**  
Wilt, Fungal  
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Safflower is one of the important oilseed crops of India. It is popular amongst the cultivators because of its tolerance to drought, non-preference to specific soil type and ability to yield fairly reasonable with low inputs. However, crop suffers from various biotic stresses resulting in poor yields. Wilt caused by *Fusarium oxysporum* f. sp. *carthami* is one of the serious problems in successful cultivation of the crop resulting in to huge losses even up to 61 % (Anonymous, 2001). Since, the disease is seed and soil borne, is difficult to manage. Earlier workers tried to manage the disease with fertilizers, manure and sulphur application (Wolt and Jones, 1973; Sarhan *et al.*, 1982), by soil drenching with fungicides (Chakrabarty and Basuchaudhary, 1977), by soil solarization (Sastri and Chattopadhyay, 1999) but these methods have limited success. The growers are defenseless because of non-availability of resistant varieties for commercial growing.

In the light of this situation, biological management can be good alternative as the bioagents are eco-friendly, cheap and effective in protecting the crop throughout the growth period. Taking into consideration, advantages of antagonistic organisms, present study was

planned to evaluate fungal organisms isolated from cultivated fields for their efficacy in inhibiting the growth of *F. oxysporum* f. sp. *carthami* under laboratory condition.

## MATERIALS AND METHODS

Rhizosphere samples from different locations of Marathwada region were collected for isolation of antagonistic fungal organisms. Isolation of fungal organisms was carried out by dilution and pour plate method on Potato dextrose agar (PDA), Czapek Dox agar, Lima Bean agar and Soil extract agar media under aseptic condition. Well isolated colonies of fungal organisms were picked by inoculating needle under aseptic conditions and were transferred to plate containing sterilized PDA medium under aseptic conditions. Purification of fungal organisms was carried out by hyphal tip method. These were identified by studying colony characters, growth on PDA, morphology of the mycelium, spore bearing hyphae and spores. After expelling common contaminants, 25 fungal organisms were selected to study their antagonistic effect against *Fusarium oxysporum* f. sp. *carthami* in dual culture on PDA. For this, *F. oxysporum*

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