

Research Paper :

Effect of *Pseudomonas fluorescens* Pf1 talc-based formulation under different storage periods against late leaf spot of groundnut



B. MEENA

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SUMMARY

In groundnut, late leaf spot caused by *Cercosporidium personatum* is the serious disease. The effect of storage of *Pseudomonas fluorescens* Pf1 talc-based formulation for different periods in the management of late leaf spot disease was assessed. Groundnut seeds were treated with Pf1 formulation (100 g/kg seed) and sprayed with Pf1 formulation (1 kg/ha) at different days of storage and challenge inoculated with pathogen. The disease intensity and population of *P. fluorescens* in the formulation at different days of storage were recorded. The results revealed that effective protection against the disease was observed only up to 30 days after seed treatment with Pf1 formulation and foliar application of Pf1 formulation was able to offer protection only up to 15 days.

Correspondence to :
B. MEENA
Sugarcane Research
Station (T.N.A.U.),
Sirugamani, TRICHY
(T.N.) INDIA

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Key words :

Pseudomonas fluorescens, talc-formulation, storage period

Late leaf spot caused by *Cercosporidium personatum* is the destructive foliar disease in groundnut. The most obvious effect of this disease is the loss of photosynthetic tissue, which leads to premature defoliation (Kaur *et al.*, 1992). Late leaf spot is almost co-existent with the crop and contributes to significant loss in yield throughout the world (Wells *et al.*, 1994). Among a range of rhizobacteria including *Azotobacter*, *Bacillus* and other genera with the ability to promote plant growth through biocontrol or other mechanisms, the fluorescent *Pseudomonads* have received much attention as the most effective bacteria for biological control of soil and foliar pathogens.

Fluorescent *Pseudomonads* belong to a major group of rhizosphere dwelling bacteria known as plant growth promoting rhizobacteria (PGPR) (Leeman *et al.*, 1995; Liu *et al.*, 1995). Several fluorescent *Pseudomonads* are known to control soil borne fungal pathogens like *Pythium*, *Fusarium*, *Rhizoctonia* in a wide range of crops (Vidhyasekaran *et al.*, 1997). They survive and multiply well in the phyllosphere and induce resistance in the host (Wilson *et al.*, 1992).

MATERIALS AND METHODS

Groundnut seeds were treated with Pf1 talc-based formulation (100 g kg⁻¹ seed) at different days of storage *viz.*, 0, 15, 30, 45, 60, 75, 90, 105 and 120 days of storage. The plants were inoculated with *Cercosporidium personatum* at 45 days after sowing. The plant height and disease intensity were recorded at 60 and 90 days after sowing. The population of *P. fluorescens* in the talc-based formulation at different days of storage and pod yield per plant were also recorded.

In another set of experiment, groundnut plants (45 days old) were sprayed with Pf1 talc-based formulation (1 kg ha⁻¹) at different days of storage *viz.*, 0, 15, 30, 45, 60, 75, 90, 105 and 120 days of storage. The plants were inoculated with pathogen two days after foliar spray. Disease intensity was scored at 90 days after sowing. The population of *P. fluorescens* in the formulation at different days of storage and pod yield per plant were also recorded.

RESULTS AND DISCUSSION

Effective protection against the disease was observed only up to 30 days after seed treatment with Pf1 formulation (38% disease

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