



RESEARCH ARTICLE

# Biological control of anthracnose of sorghum caused by *Colletotrichum graminicola*

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## ABSTRACT

Forty isolates of *T. harzianum* and one isolate of *P. fluorescens* were tested for their antagonistic potential against *Colletotrichum graminicola*. Th-43 isolate brought maximum inhibition of radial growth (72.5%) of the test pathogen. In glass house seed biopriming experiment, maximum germination was obtained with Th-43 (84.0%), whereas maximum plant height (102.0 cm) with Th-39 and maximum reduction in disease severity (43.3 %) was observed with Th-39 and Th-43. In field trial of seed biopriming and BCA colonized compost amended soil, Th-39 recorded maximum height (234.7 cm) and stem diameter (1.8 cm) whereas maximum reduction in disease severity was obtained with Th-39 (28.1%). In seed biopriming and foliar spray trial under field conditions, maximum reduction in disease severity (45.2%) and highest green fodder yield (90 t/ha) was found in seed biopriming and three foliar spray treatment with Th-39. In foliar spray experiment carried out under field conditions, Th-39 showed maximum reduction in disease severity (34.0 %) as well as maximum green fodder yield (81.9 t/ha) where as Th-43 was also at par Th-39 in terms of green fodder yield.

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## INTRODUCTION

Sorghum is attacked by a broad range of plant pathogens. Anthracnose caused by *Colletotrichum graminicola* is one of the most destructive diseases of sorghum. Reduction in grain and stover yield by 47 and 23 per cent, respectively have been reported (Pande *et al.*, 2003). It occurs everywhere in the world where sorghum is grown and most of the cultivars presently grown in the country have varying degree of susceptibility to the disease. For management of this disease besides many cultural practices chemicals are also used. Chemicals are necessary at present, but are not a long term solution to crop health. Besides their non target effects and hazardous nature, many of them are now losing their effectiveness because of development of resistant strains. Moreover, application of chemicals to sorghum crop is to be

avoided as the fodder is fed to the cattle. Therefore, the present investigation was carried out to evaluate the efficacy of biocontrol agents against the anthracnose pathogen.

## MATERIALS AND METHODS

### Source of biocontrol agents :

Forty isolates of *Trichoderma harzianum* and one of *Pseudomonas fluorescens* were used throughout the course of investigation. For *in vitro* studies and glasshouse experiments, the various *T. harzianum* isolates used were Th - 1 to Th-23, Th-25 to Th-34, Th-36 to Th-40, Th-42 to Th-45 whereas *P. fluorescens* isolate was Psf 28. For field evaluation, the formulations of Th-43, 39 and PSF -28 were used. These bioagents were obtained from Biocontrol Laboratory of Department of Plant Pathology, G.B. Pant