



RESEARCH ARTICLE

# Field screening of germplasm lines and local genotypes against charcoal rot of sorghum caused by *Macrophomina phaseolina* (Tassi.) Goid

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## ABSTRACT

Sixty four germplasm lines including local genotypes were screened for charcoal rot resistance in the sickplot during 2006-07 and 2007-08. The results of the study indicated that the genotypes Dagadi Solapur (12.35%), followed by GRS-1 (13.15%), BCR-9 (14.25%) showed less disease incidence compared to other genotypes. Highest per cent charcoal rot incidence was recorded in CSV-8R (56.10%). The study also revealed that the local genotypes recorded reduced levels of other charcoal rot parameters such as per cent lodging due to charcoal rot (soft stalk), mean length of spread (MLS) and mean number of nodes crossed (MNC). The local genotypes also possessed desired breeding traits such as delayed senescence and stay green type which could be employed in resistance breeding programme of *Rabi* sorghum.

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## INTRODUCTION

Sorghum [*Sorghum bicolor* (Linn.) Moench] has occupied an area of 92.0 lakh ha. with the production of 82.70 lakh tones and productivity of 615 kg/ha (Biradar *et al.*, 2006). Karnataka has an area of 18.91 lakh ha, out of which *Rabi* sorghum is grown in 12.08 lakh ha with a production of 12.14 lakh tones with productivity of 1005 kg/ha (Chari Appaji *et al.*, 2009). Nearly 65 per cent of the total area in the state is covered during *Rabi* (post rainy) season on stored moisture which accounts for 44 per cent of total sorghum production. *Rabi* sorghum area is mainly covered by states of Maharashtra, Karnataka, Andhra Pradesh, Tamil Nadu and Gujarat. The hunt for new varieties and hybrids with better productivity and resistance is a continuous process in crop improvement. Charcoal rot disease has become a major production constraint in *Rabi* sorghum. The indirect loss computed due to this disease alone amounts to 40 per

cent (Hiremath and Palakshappa, 1994). Patil (1980) reported that the loss in grain yield was more in *Rabi* (40.83%) than in *Kharif* (17.69%). With this background, present investigation was made to collect and screen sixty four genotypes for charcoal rot resistance with good agronomic characters.

## MATERIALS AND METHODS

Field experiments were conducted at Regional Agricultural Research Station, Bijapur in sickplot conditions followed by toothpick inoculation during 2005 and 2006. Test genotypes were sown during the second fortnight of October with a spacing of 45cm x 15cm with three replications. The susceptible check, CSV-8R was sown after two test entries. Observations on per cent charcoal rot incidence, lodging per cent due to charcoal rot, mean length of spread (cm), mean number of nodes crossed, grain yield, fodder yield and thousand grain weight were recorded for screening purpose.