

Identification of Anthracnose Resistance Gene in *Sorghum bicolor*

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Genetic studies of natural variants of sorghum have defined many anthracnose resistance loci. A nucleotide-binding leucine-rich repeat receptor gene designated as ANTHRACNOSE RESISTANCE GENE1 (ARG1) has been determined to underlie one of these resistance loci. Following this discovery, efforts towards developing sorghum cultivars with broad-spectrum resistance against different strains of *C. sublineola* necessitated the present study. Thus, the current investigation seeks to identify additional loci underlying anthracnose resistance in a resistant sorghum line PML981488. In this study, F4:5 recombinant inbred lines (RILs) obtained by crossing PML981488 and a susceptible genotype, TAM428, are used to decipher resistance genes/loci. To identify the resistant and susceptible RILs, four-week-old seedlings of 212 RILs were inoculated with 2×10^6 spores/mL of five strains of *C. sublineola* (Cs 29, Cs 27, Csrg, Csgl-1, and Csgl-2) and screened for disease symptoms on the quantitative scale of 1 – 5 (1 = highly resistant, 5 = highly susceptible). Results showed a 1:1 ratio for resistant and susceptible RILs, indicating that the corresponding alleles have been fixed with minimal segregation. Furthermore, RILs showing no disease symptoms, hypersensitive reaction, or necrotic lesions have been identified. Next, genomic DNA will be extracted from a bulk of 50 RILs in the three categories and sequenced to pinpoint the loci of genes that confer the respective phenotypes using bulked segregant analysis. The pinpointed loci will be fine-mapped to identify and characterize the resistant genes. The findings of this investigation will help in developing broad-spectrum anthracnose-resistant sorghum cultivars.