

## Evaluation of advanced progenies of sorghum for grain mold resistance

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### SUMMARY

Crosses among grain mold tolerant sources and elite lines were made for development of grain mold tolerant restorer lines at Sorghum Research Unit, Dr.PDKV, Akola. Twenty crosses alongwith check IS-14332 were evaluated for grain mold resistance. Derived progenies viz., AKGMR-92, AKGMR-95 and AKGMR-98 performed relatively better over the wild source IS-14332 for grain mold tolerance. These progenies could be effectively utilized as restorers in grain mold resistant hybrid development and as a source in breeding programme for grain mold resistance.

Key words : Sorghum, Advanced progenies, Grain mold resistance, Tolerance.

Sorghum is the third most important cereal crop for food and fodder in India after rice and wheat. It is also gaining importance for industrial purposes. Maharashtra is the largest sorghum growing state in India. Despite significant advances in genetic improvement in sorghum during past three decades, the potential high yields of rainy season hybrids have not been realized in the farmers' field, where major constrain during this season is grain mold disease (complex of fungi). In *kharif* season, because of rains during flowering to maturity stage, the crop more particularly the grains get affected with grain mold. The mold affected grains looks black, pink and red depending upon fungi involved and also induces mycotoxin production, which is of major concern for food and feed industry. Infected grains not only fetches less price in the market; but also reduce germination (Von Oppen and Jambunathan, 1978). For producing the resistant hybrids to grain mold, development of mold tolerant parents is highly essential. Thus, it is necessary to evaluate sorghum genotypes for grain mold tolerant advanced breeding material, so as to identify resistant restorers and varieties. With these views the present study was undertaken.

### MATERIALS AND METHODS

The present investigation comprised of twenty advanced progenies developed by utilizing grain mold tolerant and elite lines viz., AKGMR-86, AKGMR-87, AKGMR-87.1, AKGMR-87.2, AKGMR-87.3, AKGMR-88, AKGMR-88.1, AKGMR-89, AKGMR-90, AKGMR-91, AKGMR-92, AKGMR-92.1, AKGMR-93, AKGMR-93.1, AKGMR-94, AKGMR-95, AKGMR-96, AKGMR-96.1, AKGMR-97, AKGMR-98 and a resistant wild check *i.e.* IS14332. These 21 strains were grown in randomized fashion with three replications. The observations were

recorded on the traits associated with the grain mold resistance viz., TGMR *i.e.* threshed grain mold rating (on 1-5 scale), total fungi associated, floury endosperm (%), germination (%), grain hardness (Kg/cm<sup>2</sup>) and 1000 seed weight (g).

### RESULTS AND DISCUSSION

#### Threshed grain mold rating (TGMR)

As presented in Table 1, six progenies viz., AKGMR-91, AKGMR-92, AKGMR-93, AKGMR-94, AKGMR-95 and AKGMR-98 were found superior than the resistant check, IS-14332 for threshed grain mold rating. Reddy *et al.* (1991) reported sorghum improvement by selecting the lines on the basis of low TGMR.

#### Total fungi associated (%)

For this trait, none of the progenies differed significantly in respect of association of total fungal complex. However, the check IS-14332 (11.93%) recorded lowest fungal load followed by the advanced progenies viz. AKGMR-91 (14.20%), AKGMR-87.1 (16.0%) and AKGMR-87.2 (17.1%). Several workers were also reported resistance screening for sorghum grain mold using this trait (Rana *et al.*, 1984; Jambunathan *et al.*, 1992 and Audilaksmi *et al.*, 1999)

#### Floury Endosperm (%)

For this character none of the progenies recorded statistical significance over the check IS-14332 in desired direction. However, the wild check IS-14332 had lowest of 21.67% floury endosperm followed by the progenies namely, AKGMR-86 (25.0%), AKGMR-93 (25.67%) and AKGMR-87 (26.33%).

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