



Grain mold resistance studies in sorghum F_3 material or red x red and red x white grain crosses

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ABSTRACT

The present investigation was carried out to estimate the nature and magnitude of genetic variability for yield and grain mold resistance in 99 sorghum F_3 progenies of red x red and red x white crosses including parents and checks. Variation for grain mold associated traits were analyzed with respect to grain hardness, panicle compactness, grain colour, glume length and glume colour. Among 99 F_3 progenies 30 progenies exhibited partly hard grains and 19 progenies had hard grains and which exhibited low incidence of grain mold. In case of panicle compactness, 6 progenies had very loose, 9 progenies had loose and 26 progenies had semi-loose panicles and exhibited low incidence of grain mold. Twenty one progenies and seven progenies had long glume coverage and very long glume coverage, respectively and these were resistant to grain mold. All the red grain coloured progenies showed low incidence of grain mold and progenies which had red and black coloured glumes were moderately resistant to grain mold. Genotypes with hard grains, loose panicles, medium to long glume coverage and red and black coloured glumes had low incidence of grain mold. First and eleventh F_3 progenies of IS 24995 x IS 23585, first and ninth progeny of IS 24996 x IS 23585 and 8th progeny of IS 25022 x IS 23585 were high yielding and resistant to grain mold.

KEY WORDS : F_3 , Grain mold, Resistance, Sorghum

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INTRODUCTION

In many regions of the world where sorghum is produced, grain mold is a serious disease that reduces grain quality and utilization. The term grain mold is used to describe the diseased appearance of sorghum grain resulting from infection by one or more parasitic fungal species. Grain mold is most commonly caused by *Fusarium moniliforme* and *Curvularia lunata* (Esele *et al.*, 1993), although many other species also cause grain mold. This disease is especially severe when grain development coincides with wet and warm weather conditions.

Sorghum grain mold is one of the most important biotic constraints to sorghum improvement and production

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worldwide. It is estimated that annual economic losses in Asia and Africa as a result of grain mold are in the excess of US\$ 130 million. Production losses due to sorghum grain mold range from 30 to 100 per cent depending on cultivar, time of flowering and prevailing weather conditions during flowering to harvesting. *Kharif* sorghum grains are usually caught in September – October rains, thus mold develops on grains and make the grain unfit for consumption. In addition, consumption of mold affected grains cause health hazards to human beings, dairy animals and poultry birds. Mold reduces the germination per cent of the affected seeds thus reduce the quality of seed and grain. Development of grain mold tolerant *Kharif* sorghum varieties is the need of the day, which helps the farmers in reducing the loss of grain quality and fetches them high market price compared to deteriorated grains due to mold attack. This reduces the cost of production by avoiding spraying of chemicals and also checks the environmental hazards.

The disease is hazardous on improved, short and medium-duration sorghum cultivars that mature during the rainy season in humid, tropical and subtropical climates. Photoperiod-sensitive cultivars that mature after the rains often escape mold infection. Sorghum cultivars with white