Research Paper :

Correlation and path analysis in F_3 material for grain yield and grain mold resistance

VINAY S. PATTED, BASAVARAJ S. LAKKUNDI, MOHAN R. DANDAGI, M.Y. KAMATAR AND SANGAMESH S. HAKKALAPPANAVAR

International Journal of Plant Protection, Vol. 4 No. 2 (October, 2011) : 292-297

See end of the article for authors' affiliations

Correspondence to :
MOHAN R. DANDAGI
Department of Soil Science and Technology, University of Agricultural Sciences, DHARWAD (KARNATAKA) INDIA

SUMMARY

Correlation and path analysis were carried out in 99 progenies of F_3 material derived from red x red and red x white grain crosses for gain yield and mold resistance. Correlation coefficients and path coefficients were computed among 7 yield contributing characters. There was significant high positive correlation between grain yield and 1000 grain mass (0.395), grain yield and fodder yield (0.349) and plant height and fodder yield (0.418) at both genotypic and phenotypic levels. Similarly, significant but negative correlation existed between grain yield and days to flowering (-0.239) and grain yield and days to maturity (-0.403) at both genotypic and phenotypic levels. Partitioning of yield and yield components into direct and indirect effects revealed that 1000 grain mass had the highest direct positive effect on grain yield (0.335) while days to maturity had the highest direct negative effect on grain yield (-0.432). Panicle compactness, grain hardness, glume coverage and colour were important components of grain mold resistance. Genotypes with hard grains, loose panicles, medium to long glume coverage and red and black colored glumes had low incidence of grain mold.

Patted, Vinay S., Lakkundi, Basavaraj S., Dandagi, Mohan R., Kamatar, M.Y. and Hakkalappanavar, Sangamesh S. (2011). Correlation and path analysis in F_3 material for grain yield and grain mold resistance. *Internat. J. Plant Protec.,* **4**(2): 292-297.

Key words : Correlation, Path analysis, Grain mold, Resistance, Sorghum

In many regions of the world where sorghum is produced, grain mold is a serious disease that reduces grain quality and tis 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 worldwide. *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 farmer in reducing the loss of grain quality and fetches him 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 particularly important 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 grain pericarp are particularly more vulnerable to grain mold than those with brown and red grain pericarp. Though lot of information is available on the quantitative characters, less information is available about the inheritance of grain mold resistance as well as its association with other morphological traits. Keeping in this view, the present investigation was undertaken in segregating generation (F_3) progenies of red ×

Received : *March, 2011*
Revised : *June, 2011*
Accepted : *August, 2011*