

Title Disease and pest resistance in grains of sorghum and millets
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Abstract

In this review available information on the mechanisms of resistance to insect pests and fungal pathogens in sorghum and millets is discussed. The primary source of resistance lies in the chemical and physical make up of the grain. Phenolic compounds such as ferulic acid and tannins present in some sorghums are potent inhibitors of pests and pathogens. Grain hardness is a major deterrent to infection and infestation in low tannin grains. The prolamins, the grain storage proteins of sorghum, are organized into protein bodies and provide a physical and a nutritional barrier since they are resistant to digestion by insect and fungal proteases. A plethora of proteins that belong to the 'pathogenesis related protein' group are distributed in various parts of the grain. Some of them are located in protein bodies. Notwithstanding, sorghum is still susceptible to insect pests and fungal pathogens. An understanding of the natural mechanisms of resistance in the grain is paramount for the development of durable resistance against pests and pathogens. The pyramiding of resistance genes and the development of transgenic lines based on this understanding are two sources of hope for the future protection of sorghum and millets.

Abbreviations: AFP, antifungal proteins; AV, avirulence; *bmr*, brown midrib gene; daa, days after anthesis; HR, hypersensitive response; MAS, marker assisted selection; nsLTP, non specific lipid transfer protein; PRP, pathogenesis related proteins; QTL, quantitative trait loci; R, resistance gene products; RIP, maize ribosome-inactivating protein; SAR, systemic acquired resistance; TLP, thaumatin-like protein