

Genetic studies on shoot fly resistance in sorghum [*Sorghum bicolor* (L.) Moench.]

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SUMMARY

An investigation was carried out to elicit the information on the inheritance pattern of resistance to shoot fly in *Rabi* sorghum using six parameter model of generation mean analysis. The resistances to shoot fly resistant (IS2312) and susceptible (RS 29) lines were crossed separately. Back crossing to both the parents was practiced. Segregating and non-segregating material generated (*viz.*, P₁, P₂, F₁, F₂, BC₁ and BC₂) was evaluated under replicated trials and data obtained for various relevant traits were subjected for generation mean analysis. The symptoms expressed by shoot fly infection are taken at appropriate time. With respect to shoot fly inheritance studies, susceptibility was found to be dominant over resistance in the cross RS29 x IS2312. Based on gene effects, dominance component (*h*) was found prominent for inheritance of various traits like egg count, dead heart percentage, seedling height, recovery resistance, number of effective tillers etc. Additive effect was evidenced for trichome density indicating that the resistance brought through selection for increased number of trichomes per unit leaf area is fixable. Among interaction effects, dominance x dominance effects (*l*) were prominent. Epistasis of duplicate nature revealed possibility of obtaining transgressive variants for shoot fly resistance in subsequent generations of cross RS29 x GRS1.

Key Words : Shoot fly, Sorghum, Inheritance, Studies, Gene effects

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Sorghum [*Sorghum bicolor* (L.) Moench.] is widely grown throughout the world (Asia, Africa, North and Central America and Europe) for food, feed and fodder. In Peninsular India, particularly the Deccan plateau, covering

Maharashtra, Karnataka, Andhra Pradesh, parts of Madhya Pradesh and Tamil nadu, sorghum is a major crop as a source of food and fodder for a large section of people inhabited in semi-arid tropics. But grain yield levels are considerably low compared to those with the developed world. So, relevant research on improving sorghum genetically is essential.

In north Karnataka, sorghum is an important food crop grown mainly under rainfed condition in post-monsoon season. Apart from the grain flour used for *roti* making, *Rabi* sorghum also gains importance for its alternate by-products, *viz.*, semolina, snack foods (pop types used in rural areas), infant mixes, breakfast foods like *dosa* and *idli*, malted foods with high enzyme activity. Considering the regional importance of *Rabi* sorghum as a major food crop as much as wheat and rice and its fodder quality much valued than other cereals, the production levels are still marginalized compared to wheat and rice.

In sorghum, of the 150 insect species causing damage to the crop the sorghum shoot fly [*Atherigona soccata*

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