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Development of Foliar Diseases Resistant Groundnut Lines at ICRISAT

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Breeding for resistance to the most devastating foliar diseases of groundnut, the leafspots and rust has received the highest priority in the groundnut breeding program at ICRISAT. More than 400 single, triple and double crosses were made using 12 rust and 9 late leafspot resistant germplasm lines. Several high yielding agronomically superior lines with high levels of resistance to rust and with moderate levels of resistance to late leafspot have been developed through mass pedigree method. Thirty lines possessed combined resistance to both rust and late leafspot. A few resistant lines gave more than 3000 kg/ha pod yields under rainfed condition. Some of the resistant lines showed better stability of yield performance across 5 environments in India.

The genetic analysis of parents F_1 , F_2 , BC_1 and BC_2 generations of resistant x susceptible crosses revealed that rust resistance is controlled predominantly by additive, additive x additive and additive x dominance gene effects.

Disruptive selection and backcross procedures would be adopted in future to increase the levels of late leafspot resistance in good agronomic backgrounds.

Recently a few early leafspot resistant sources have been identified and these lines will be intermated to accumulate the favourable alleles for resistance.