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Multiple biotic stress resistant and productive genotypes identified under Spanish bunch background in groundnut (*Arachis hypogaea* L.)

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The cultivated groundnut is an important oilseed crop of the world. Several pest and diseases damage the crop and reduce groundnut yields considerably. Cultivation of resistant varieties is an ecologically sound and economically viable approach to reduce the loss due to these stresses, but their occurrence and intensity vary in space and time necessitating the use of multiple stress resistant genotypes. Several diverse groundnut germplasm were assessed for different biotic stresses under epiphytotic conditions. Most of the cultivated varieties were susceptible to different stresses. Interspecific derivatives constituted the best source of resistance to late leaf spot (LLS), rust and *Sclerotium;* while mutants were superior for late leaf spot, *Spodoptera* and bud necrosis. Pedigree of multiple stress resistant genotypes revealed contribution of wild species for resistance to many biotic stresses. Trait association studies indicated late maturing nature of resistant germplasm. Induced mutagenesis and extensive hybridization with interspecific derivatives were sought to break these undesirable associations. Several foliar disease resistant mutants and second cycle interspecific-derivatives were isolated in Spanish bunch background. Mutant (28-2) and second cycle interspecific derivative (GPBD-4) were resistant to foliar diseases with high yield potential even under foliar disease epidemic. 28-2 was also resistant to *Spodoptera*, thrips and *Aspergillus* infection besides having bold kernels. GPBD-4 was iron absorption efficient and had O/L ratio of 1.68. They also possessed desirable agronomic features, early maturity, high partitioning and better quality. Mutant 28-2 and GPBD-4 have been registered with National Bureau of Plant Genetic Resources (NBPGR) , New Delhi with INGR numbers 98003(IC296686) and 01031 (IC296810), respectively. These cultures had stable and superior performance over popular cultivars (JL-24 and TMV-2) across years. GPBD-4 has been accepted by farmers and traders; under active seed chain and cultivation in the farmers' fields in India. GPBD-4 has been widely employed for MABC at ICRISAT and UASD as the source of resistance to LLS and rust.

Evaluation of groundnut genotypes for resistance to *Sclerotium rolfsii* under artificial field inoculated conditions

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Stem and pod rot caused by *Sclerotium rolfsii* is the major constraint to groundnut production in many groundnut growing regions of the world. Paucity of suitable field screening methods to identify sclerotium resistant genotypes hinders the progress of resistance breeding. A sick plot with high inoculum load of *Sclerotium rolfsii,* was established. A total of 165 sergeants derived from TAG 24 (adopted but susceptible variety) · R 9227 (stem rot resistant variety) were screened for resistance to stem and pod rot. The F_5 and F_6 generations were grown in the sick plot to confirm their reaction to stem and pod rot. Among different parameters, variation was highly heritable for yield per plant, disease incidence parameters potential for selection under disease epidemics. Strong negative association between disease incidence and yield per plant revealed the importance of disease incidence in determination of yield per plant under epiphytotic conditions. The higher number of superior segregants observed for pod weight per plant (26), oil content (21), test weight (19) and shelling percentage (8) and disease at harvest (6) were compared to both the parents. None of the genotypes showed complete resistance. It is unlikely that highly resistant genotypes to neurotropic pathogen like *Sclerotium rolfsii* would be identified. However information obtained on genotypic variance, heritability, genetic advances and association of disease with yield and lines selected with considerable sclerotium resistance with good yield attributing characters (6) can be utilized in future breeding programs.