

## Evaluation of Virginia-type Germplasm for *Sclerotium rolfsii* Tolerance in Field Conditions

M. DAFNY YELIN\* and J. MOY, Northern Agricultural Research and Development, Migal Galilee Technology Center, P.O.B. 831, Kiryat Shemona, 11016 Israel; R. HOVAV and S. AGMON, Department of Field Crops, Plant Sciences Institute, ARO, Bet-Dagan, 50250 Israel; and O. RABINOVICH, Extension Service, Ministry of Agriculture, Kiryat Shemona, 10200 Israel.

Stem rot (white mold), caused by *Sclerotium rolfsii*, inflicted severe losses in several crops, including peanuts, in the Hula Valley, Israel. Peanut cultivars grown in Israel are of the Virginia-marketing type, characterized by large pods, and are intended for the in-shell market. The long-term objective of this project is to reduce peanut sensitivity to *S. rolfsii* by genetically introducing tolerance, obtained from local, relatively tolerant Virginia-type peanut varieties. The specific objective addressed in the present report was to perform phenotype analysis of peanut tolerance to *S. rolfsii* by screening a population of recombinant inbred lines (RIL) derived from a cross between the thick-shelled, spreading-type cv. 'Hanoch' with the bunch-type, thin-shelled cv. 'Harari'. Methods: In 2016 sixteen RILs and their parental lines were artificially inoculated in the field by placing hyphal plugs of *S. rolfsii* near the root crown of 100-day-old plants, and assessing the viability of the directly infected plants and of adjacent plants. In 2017 the same method was applied to 100 lines from the same RIL population; the 16 lines examined in 2016 were included. Results: Concentrating only on the 16 lines and their parents in 2016 and 2017 we found high correlation between the years in the vitality percentages of the directly infected and the adjacent plants ( $p < 0.01$ ). Phenotype correlations: (1) the spreading types were more sensitive to the infection than the bunch types, with strong correlations to vitality of the directly infected or adjacent plants, at  $p = 0.08$  or  $0.006$ , respectively. In 2017 similar results were found for average daily loss of vitality, which was correlated with the directly infected or adjacent plants at  $p = 0.0314$  or  $0.0751$ , respectively. (2) In 2016 Shell strength was highly correlated with viability of the directly infected or adjacent plants, with probabilities of  $p = 0.09$  and  $0.06$ , respectively. In 2017 significant correlations were found between shell weight and the vitality of the infected plants at 45 and 60 days after infection (DAI), at  $p = 0.0136$  and  $0.0102$ , respectively. (3) In 2017 plants with higher oil content exhibited less viability at 60 DAI than the directly infected and adjacent plants, at  $p < 0.05$ ; and (4) correlations between pod reticulation and viability of the infected plants were found at 34 DAI. In conclusion, our results indicate that local breeding varieties, growing on heavy mineral soil with bunch growth habit, pods with thick and reticulated shells, and high oil content should be preferred in order to promote resistance to *S. rolfsii*. For instance, the bunch-type, thick-shelled B65 line was among the least sensitive to *S. rolfsii* infection.