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exhibited the highest level of CBR resistance of virginia types, and Ga-01R followed by Ga-02C were the most CBR resistant of runner types. Ga Hi/OL appeared to offer the greatest level of resistance to Sclerotinia blight of virginia types, and Ga-03L was the most resistant of runner types.

Evaluation of Advanced Peanut Breeding Lines for Resistance to Late Leaf Spot and Rust. F. WALIYAR*, P. LAVA-KUMAR, S.N. NIGAM, R. ARUNA, International Crops Research Institute for the Semi-Arid Tropics, Patancheru 502 324, Andhra Pradesh, India; and K.T. RANGASWAMY, Department of Plant Pathology, University of Agriculture Sciences, Hebal, Bangalore 560 065, Karnataka, India.

Peanut (*Arachis hypogaea* L.) in India are grown in 6.7 million ha with a total production of 6.5 million t and an average productivity of <1 t/ha. The rainy season (June/July- Oct/Nov) is the main cropping season for peanut where the crop is grown generally under rainfed conditions. Rainy season productivity (0.8 t/ha) is much lower than that of the postrainy season. Late leaf spot (LLS) caused by *Phaeoisariopsis personata* [(Berk. & Curtis), Arx] = *Cercosporidium personatum* [(Berk. & Curtis) Deighton) and rust caused by *Puccinia arachidis* Speg. are the most serious fungal diseases of peanut adversely affecting productivity and quality of produce of the rainy season crop in India. The breeding efforts at ICRISAT initiated in the late 70s, succeeded in transferring high levels of resistance to rust in agronomically superior backgrounds but the success with LLS was limited. The recent breeding efforts focus on improving the levels of LLS resistance while maintaining the high levels of rust resistance. Ten high yielding advanced groundnut breeding lines (ICGS 37 and ICGV # 00005, 00064, 00068, 01270, 01276, 86590, 87846, 92267 and 99029), along with susceptible cv. TMV 2, and resistant cv. ICG 13919 (for LLS) and ICGV 86699 (for rust) were evaluated against LLS and rust during 2005 and 2006 rainy seasons in screening nurseries in Bangalore and Patancheru, respectively. Disease development was assessed on a 1 to 9 scale based on the whole plant observations in each replication. Data were collected at 15 days interval from 60 days after sowing (DAS). The genotypes were also evaluated for components of resistance using detached leaves of the ten breeding lines and controls in a greenhouse study during 2006. Highly significant differences *(p=0.001*) were observed among the genotypes in both the trials (LLS and rust) for disease score and leaf area damage (LAD). This study revealed that ICGV 00068 (LLS score = 2.7; LAD = 7.0) was highly resistant to LLS. Six lines showed moderate resistance (LLS score 3.0 - 5.0; LAD = 11.0 - 26.0) to LLS, and two lines (ICGV # 86590 and 92267) were susceptible (LLS score >5.0; LAD >30.0), compared to the resistant (LLS score = 2.7; LAD = 6.3) and susceptible (LLS score = 7.0; LAD = 60.0) checks. The incubation period of LLS in the test lines ranged from 7.8 to 15.3 days, compared to 7.0 days in susceptible and 11.6 days in resistant checks; days for LLS sporulation was between 17.0 and 25.0, compared to 15.6 days in susceptible and 23 days in resistant checks; percent reduction in lesion number ranged from 48 to 97, compared to 94% in the resistant check. Except for ICGV 92267 (rust score = 3.8; LAD = 18.3) and ICGS 37 (rust score = 4.2; LAD = 20.0), the remaining eight test lines were resistant to rust (rust score = 1 to 2; LAD = 0.3-1.7) compared to the resistant (rust score = 1.8; LAD = 0.8) and susceptible (rust score = 6.0; LAD = 40.0) checks. The incubation period of rust in the test lines ranged from 7.8 to 19.5 days, compared to 7.0 days in susceptible and 11.4 days in resistant checks; days for rust sporulation was between 14.8 and 25.0, compared to 14 days in susceptible and 30 days in

resistant checks; percent reduction in pustules ranged between 51 and 99%, compared to 94% in the resistant check. Of all the advanced breeding lines, ICGV 00068 was found to be highly resistant and ICGS 37 was found to be highly susceptible to LLS and rust. The ICGV 00068 line has CS 16, an interspecific derivative of a cross between *A. hypogaea* and foliar disease resistant *A. cardenasii*, as one of the parents in its pedigree. The advanced breeding lines that showed high resistance to rust and LLS and moderate resistance to LLS will be further evaluated at multi-locations in farmers' fields during the 2007 rainy season.

Field Assessment of Virginia-Type Peanuts Transformed with the Oxalate Oxidase Gene in 2006. D.E. PARTRIDGE*, P.M. PHIPPS, Tidewater Agricultural Research & Extension Center, Virginia Tech, Suffolk, Virginia 23437; S.M. Chriscoe, and E.A. GRABAU, Department of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, Virginia 24061.

The barley oxalate oxidase gene was introduced into three virginia-type cultivars (Perry, Wilson, NC-7). The T_4 generation was evaluated in field trials in 2006 for disease susceptibility and agronomic characteristics. Two field trials were planted to monitor disease susceptibility and agronomic characteristics while a third trial was planted to evaluate the out-cross potential of the oxalate oxidase gene to non-transformed cultivars. Gene expression was confirmed in all T_4 transformed lines in the field. Disease appeared first in the non-transformed parent cultivars and increased to severe levels by harvest. In the first trial transformed lines of NC 7, Perry, and Wilson had an average of 88.3%, 94.7%, and 74.5% less Sclerotinia blight than their non-transformed parent cultivars, respectively. This confirmed the heritability and functionality of the gene in providing resistance against Sclerotinia blight. Fourteen of the transformed lines yielded equal to or better than their non-transformed parent, and eleven lines N70-8-24-B, N99P60-29-10-B, N70-8-B-B, N70-6-B-B, P99N6-1-10-B, P99N6-4-14-B, W14-10-2-B, W59-8-2-B, W171-17-15-B, W73-27-B-B, and W171-17-B-B yielded significantly more (479 to 2222 lb/A) than their non-transformed parent.

The second trial evaluated six superior lines for susceptibility to common foliar diseases in Virginia. There was no difference in susceptibility of the transformed lines and their corresponding non-transformed parent to tomato spotted wilt, early leaf spot, web blotch, and southern stem rot. Three transformed lines, W73-27-B-B, W171-17-B-B, and P53-28-B-B had increased defoliation compared to their non-transformed parent. Transformed lines W171-17-B-B and P53-28-B-B also showed increased susceptibility to Cylindrocladium black rot compared to their non-transformed parent. All six transformed lines had significantly less Sclerotinia blight than their non-transformed parent. All lines yielded equal to or better than their non-transformed parent under high leaf spot pressure, except for P53-28-B-B which yielded 800 lb/A less than the non-transformed Perry cultivar as a result of increased defoliation and susceptibility to CBR. Two transformed lines, N70-8-B-B and N70-6-B-B, yielded significantly more than their non-transformed parent, NC 7.

Gene transfer to non-transformed parent plants through cross-pollination was determined by planting two transformed rows with a non-transformed parent cultivar in between and seven rows of corresponding non-transformed parent on each side for a total of 17 rows per plot. Each row was individually harvested and a subset of seed from each row was germinated in the greenhouse and