REGISTRATION OF GERMPLASM

Registration of Four Jassid-Resistant Peanut Germplasm Lines: ICGV 86252, ICGV 86393, ICGV 86455, and ICGV 86462

Four elite peanut (Arachis hypogaea L.) germplasm lines, ICGV 86252 (Reg. no. GP-69, PI 585001), ICGV 86393 (Reg. no. GP-70, PI 585002), ICGV 86455 (Reg. no. GP-71, PI 585003), and ICGV 86462 (Reg. no. GP-72, PI 585004), resistant to jassid (Empoasca kerri Pruthi), were developed at the Asia Center of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India. They were released in 1993 by the ICRISAT Plant Materials Identification Committee.

These lines were developed using the bulk pedigree method from single and three-way crosses made in 1982. Following selection of individual F2 plants, phenotypically similar plants were harvested in bulk for five generations, at which point the lines were uniform in appearance and resistance to jassids. The pedigrees of these lines are: ICGV 86252, ICGS 7/NC Ac 2214 F2-B1-B2-B3-B3; ICGV 86393, ‘J 11’/M 13/NC Ac 2214 F2-B1-B1-B1-B1-B1-B1; ICGV 86455, Kadiri 3/M 13/NC Ac 2214 F2-B1-B1-B1-B2-B2; ICGV 86462, ICGS 1/NC Ac 2240 F2-B2-B2-B3-B3-B4-B2.

NC Ac 2214 (ICG 5040) and NC Ac 2240 (ICG 5043) are low-yielding, unadapted Virginia runner germplasm lines with deep purple-colored seed and a high degree of resistance to jassids (1). The two lines are both F2-derived and share common ancestry, tracing to the same F2 plant but different F3 selections. Their pedigrees, summarized from Gregory and Emery’s field book records (T.G. Isleib, personal communication), are NC Ac 2214 = Corduroy/Flop F2-82-01-B-08:F06 (1960); NC Ac 2240 = Corduroy/Flop F2-82-03-B-15:F06 (1960). Corduroy and Flop are two leaf mutants selected from irradiated NC 4 (6). J 11, Kadiri 3, M 13 (PI 366048), and ICGS 1 (PI 478780) are cultivars grown in India; Kadiri 3 and M 13 are selections from the exotic germplasm Robust 33 and NC 13, respectively. J 11 was selected from cross Ah 4218/Ah 4354 (2). ICGS 1 originates from a single-plant selection made in a natural hybrid population of Kadiri 3 (4). ICGS 7 (PI 477886) is a high-yielding breeding line developed from the cross ‘TMV 77’/FSB 7-2 at the ICRISAT Asia Center.

ICGV 86252, ICGV 86455, and ICGV 86462 belong to the Spanish botanical group (subsp. fastigiata Waldron var. vulgaris Harz) and ICGV 86393 to the Virginia botanical group (subsp. hypogaea Krap. & Rig. var. hypogaea Gregory et al.). All have a Decumbent 3 growth habit and elliptical dark green leaves (3). The leaves of ICGV 86252 and ICGV 86462 are waxy. The average trichome numbers in these lines range from 2250 to 3780 on leaf midrib and lamina (average of five fully expanded leaves), and from 256 to 356 on 1 cm of leaf margin. The trichome numbers in jassid-resistant sources, NC Ac 2214 and NC Ac 2240, range from 256 to 356 on 1 cm of leaf margin. By comparison, the jassid-damage score of NC Ac 2214 and NC Ac 2240, averaged over four seasons at a single location, was 0.84 t ha-1 for NC Ac 2214, and 0.53 t ha-1 for NC Ac 2240 (5). The jassid damage score for these lines, averaged over seven locations and four seasons, ranged from 1.6 to 2.2 (on a scale of 1 to 9, where 1 = highly resistant, 2—3 = resistant, 4—5 = moderately resistant, 6—7 = susceptible, and 8—9 = highly susceptible), compared with 8.0 for the susceptible control Kadiri 3. The jassid damage score for these lines, averaged over four seasons at a single location, was 0.97—0.98.

Limited quantities of seeds of these jassid-resistant lines can be obtained from the Genetic Resources Division at ICRISAT. Seeds are also deposited with the National Seed Storage Laboratory, 1111 Mason St., Fort Collins, CO 80526.