

Registration of Mi-1 Root-Knot Nematode Resistant Beet Germplasm Line

Mi-1 germplasm line of beet (*Beta vulgaris* subsp. *maritima* L.) (Reg. no. GP-170, PI 593237) was developed by the USDA-ARS in cooperation with the California Beet Growers Association, Ltd., and was jointly released in November 1995. This line segregates for resistance to multiple species of root-knot nematodes in the genus *Meloidogyne*.

Mi-1 is the pooled seed increased from the selected root-knot nematode resistant plants of PI 546426, also known as WB 258. Accession WB 258 was originally collected by Mario De Biaggi in the Po Delta of Italy in 1979 (1). Mi-1 is mostly annual, self-compatible, and varied in plant type and pigmentation. Seedlings were grown in polyethylene containers, inoculated during the fourth- to sixth-leaf stage with 1000 second-stage *M. incognita* (Kofoid & White) Chitwood Race 1 juveniles per plant, and examined for root gall and protuberance formations 40 d after inoculation. In greenhouse tests, 17% of seedlings from the initial accession were resistant. Seed was increased via interpollination of 40 resistant plants; more than 55% of Mi-1 seedlings were resistant. Individual plants were classified as resistant that had fewer than 10 root gall and protuberance counts, and with none to low observed nematode reproductions.

Host-plant resistance to BNYVV (beet necrotic yellow vein virus, which causes rhizomania disease symptoms in *Beta*) was identified in accession WB 258; however, such resistance was not

expressed in WB 66 (PI 546387) in the same study (2). The differential reaction to BNYVV from these two source accessions exhibited the distinction between germplasm line Mi-1 and M66 (3,4). Mi-1 will be of value for conducting sugarbeet root-knot nematode resistance breeding research.

Breeder seed will be maintained at the U.S. Agricultural Research Station at Salinas, CA, and will be provided to sugarbeet breeders and researchers in small quantities for research upon written request. Requests for seed should be made to the author. Appropriate recognition should be made of the source if this germplasm line contributes directly to the development of a new population, parental line, cultivar, or hybrid.

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References and Notes

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Registration of ICCV 7 Chickpea Germplasm

ICCV 7 chickpea (*Cicer arietinum* L.) germplasm (Reg. no. GP-167, PI 557452) was developed at the Asia Center of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India. It was approved for release by ICRISAT in 1986. It is a good source of resistance to *Helicoverpa armigera* (Hübner) pod borer and was identified as a donor parent for the chickpea breeding programs in India by the All India Coordinated Pulses Improvement Project (AICPIP) in 1985.

ICCV 7 originated from a cross between H 208 (ICC 4954) and BEG 482 (ICC 4923) made at ICRISAT in 1973-1974. A single plant was selected in the F₂ generation in 1974-1975, and selection continued by the pedigree method up to the F₅ generation in 1977-1978, when it was bulked. It was then tested in pesticide-free conditions at ICRISAT Asia Center in 1978-1979 and 1979-1980. This revealed its resistance to *Helicoverpa* pod borer. ICCV 7 was entered into entomological trials of the AICPIP in 1980-1981 as ICCX 730008-8-1-IP-BP-3EB.

In trials conducted in the pesticide-free area at ICRISAT Asia Center from 1979-1980 to 1988-1989, ICCV 7 showed consistently low borer damage (average 8.0%) relative to the control cultivar Annigeri (average 21.2%). The percentage of borer damaged pods ranged from 3.8 to 11.8 in ICCV 7 and 13.2 to 36.3 in Annigeri. These data were reflected in the AICPIP entomological multi-location trials in India (1980-1981 to 1984-1985): an average of 5.6% damage for ICCV 7 vs. 11.2% for Annigeri. ICCV 7 was jointly tested by ICRISAT and the AICPIP entomologists at 23 locations in peninsular and central India from 1980 to 1989, where it showed a relative resistance rating of 3.8, compared with a 6.0 rating for Annigeri (on a scale of 1 to 9, where 1 = resistant and 9 = susceptible). In the International Chickpea *Helicoverpa* Resis-

tance Nurseries conducted between 1985 and 1989, it had low borer damage scores not only in India but also in Kenya, Myanmar, Tanzania, and Mexico. The seed yield of ICCV 7 under unsprayed conditions is slightly higher than the control, Annigeri. In tests at ICRISAT Asia Center, the mean seed yield was 1130 kg ha⁻¹ (compared with 1080 kg ha⁻¹ for Annigeri) between 1985-1986 and 1988-1989. ICCV 7 continues to be a source of resistance to *Helicoverpa* podborer in the crop improvement programs in India, Myanmar, and several other countries.

ICCV 7 is semispreading, with a plant height of 30 to 40 cm under peninsular Indian conditions, and shows predominantly secondary branching. Like most desi chickpea genotypes, the plants have anthocyanin pigment in all aerial parts; the flowers are pink. It has compound leaves, with leaflets of medium size. ICCV 7 flowers in 45 d and matures in 90 to 100 d from planting in peninsular India. It is susceptible to wilt [caused by *Fusarium oxysporum* Schlechtend.:Fr. f. sp. *ciceris* (Padwick) Matuo & K. Sato], which is similar to most other *Helicoverpa*-resistant germplasm lines. Seeds are light brown, and the 100-seed mass is 14.3 g.

Seed of ICCV 7 germplasm can be obtained from the Genetic Resources or Genetic Enhancement Division at ICRISAT Asia Ctr.

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References and Notes

- Onkar Singh, S.C. Sethi, S.S. Lateef, and C.L.L. Gowda, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru P.O., Andhra Pradesh 502 324, India. ICRISAT Journal Article no. JA-1827. Registration by CSSA. Accepted 30 Apr. 1996. *Corresponding author (o.singh@cgnet.com).

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