REGISTRATION OF ILC 8262, A COLD-TOLERANT GERMPLASM LINE OF CHICKPEA

'ILC 8262' (Reg. no. GP-101, PI 552790) is a kabuli chickpea (Cicer arietinum L.) germplasm line developed through the selection from ILC 3470 at the International Center for Agricultural Research in the Dry Areas (ICARDA), Syria. Because of its cold tolerance, it has been released to chickpea researchers in the Mediterranean region including West Asia, North Africa, and Southern Europe for use in breeding programs.

The cold tolerance of a purified form of ILC 3470 now being assigned a new accession number ILC 8262 was identified when 7139 lines of the world collection of kabuli type chickpea (characterized by large, ram-head-shaped, and beige-colored seeds) comprising landraces from >35 countries and elite breeding lines developed at ICARDA were evaluated for cold tolerance at Tel Hadya in northern Syria. Tel Hadya has a typical Mediterranean climate with minimum temperature ranging from 0 to -10 °C for an average of 35 d in a year. The screening was done from 1981 to 1990 following the technique and scale developed at ICARDA (2). ILC 8262 was one of 19 lines identified as cold tolerant.

The cold tolerance of ILC 8262 was confirmed during the 1989-1990 season, which was characterized by an unusually severe cold spell late in the season. Usually the freezing temperature in northern Syria occurs during December to February, and rarely in March. But on 17 Mar 1990, the temperature suddenly dropped to -8.9 °C at Tel Hadya. This event killed or severely damaged all the plants that were previously identified as cold tolerant except ILC 8262, which maintained its rating of 3 (tolerant) on a scale of 1 to 9, where 1 = free from any damage and 9 = all plants killed. It maintained its tolerance at Breda, in northern Syria, where the temperature dropped to -7 °C on 17 Mar. 1990. In the cold-tolerance screening nursery at Terbol, Lebanon, in the 1989-1990 season, when freezing temperatures occurred for 66 d with a minimum of -7.4 °C, ILC 8262 was found to be tolerant. Thus, ILC 8262 has proved a cold-tolerant line able to withstand winter temperatures as low as -10 °C and below 0 °C for >60 d in a year. Such a cold-tolerant line has not been reported earlier in chickpea.

ILC 8262 is an introduction from Spain. The original accession, ILC 3470, when sown in the cold-tolerant nursery, segregated for cold tolerance. Following purification, all plants of this line now exhibit cold tolerance. The purified line was assigned a new germplasm accession number, ILC 8262. This line has a typical kabuli-type seed, with a 100-seed weight of 34 g and 23.3% protein content. Under Tel Hadya winter-sown conditions, it has a bushy-type growth habit, a 56-cm plant height, and requires 140 d to reach 50% flowering and 182 d to maturity. It is a medium-yielding line (rating 5 on a scale of 1 to 8, where 1 = highest yielding and 8 = lowest yielding) and is highly susceptible to ascochyta blight (Phoma rabiei (Pass.) Khune & J.N. Kapoor; syn. = Ascochyta rabiei (Pass.) Lab.). ILC 8262 should be of great value in improving chickpea for winter sowing in the Mediterranean region, where winter sowing (December) has been found to double the yield (1) over traditional spring (March) sowing, provided cultivars have tolerance to cold and resistance to ascochyta blight. ICARDA is using this line extensively as a source of genes for cold tolerance in its chickpea improvement program.

ILC 8262 is maintained by the Legume Program, ICARDA, P.O. Box 5466, Aleppo, Syria, and small quantities of seed can be obtained on request.

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References and Notes


Published in Crop Sci. 32:508 (1991).

REGISTRATION OF NY90BC4, OAT GERMPLASM

NY90BC4, oat (Avena sativa L.) germplasm (Reg. no. GP-54, PI 555666) was released by the Cornell Agricultural Experiment Station in 1990. NY90BC4 is a composite of tan-white lemma backcross lines derived from the recurrent parent 'Ogle' oat (Clav 9401). NY90BC4 was developed as a feed oat germplasm that combines the wide adaptation of Ogle with white lemma color. White lemma oat grain is preferred in the Northeastern USA feed grain trade.

NY90BC4 was developed by the backcross method using 'White Lustre', a germplasm developed by J. Valentine, Welsh Plant Breeding Station, Aberystwyth, Wales, UK, as the donor parent for the white lemma genotype. Lemma fluorescence is closely linked, or pleiotropic to, alleles conferring white lemma color (1) and segregation in the BC2 generation and the F2 generations derived from F1 and BC progeny was consistent with a single dominant factor conferring fluorescence in the Ogle/White Lustre cross. The F1 of the Ogle/White Lustre cross was used to initiate a backcrossing program with Ogle as the recurrent parent. At maturity, the progenies of selfed BC2 plants used as BC3 parents, were evaluated for white lemma color and blue fluorescence under ultra-violet light. Only BC3 crosses to the white-fluorescent lemma BC2 progeny were advanced to obtain BC4 crosses. The backcross procedure used for the BC2 generation was repeated to produce BC3 and BC4 progeny. During 1987, families of BC2F2 progeny, each tracing to a single fluorescent-lemma BC1 plant, were field planted at Ithaca, NY. Progeny were selected for similarity to the Ogle plant morphology and the presence of white lemma. Lemma fluorescence was poorly expressed in the seed of those field-grown plants, so families of BC2F2 plants, derived from selected BC2F2 plants, were grown in the greenhouse and evaluated for the lemma fluorescence trait. Forty-one BC2F3 families derived from 3 BC2 and 6 BC1 plants, were homzygous for lemma fluorescence and 32 of these had phenotypes similar to Ogle. These were compositied to form NY90BC4. This line was tested as 'White Ogle' in central New York trials starting in 1988 and in the Uniform Mid-season Oat Performance Nursery during 1989 and 1990.

NY90BC4 is a mid-season spring oat similar in most characteristics to Ogle except for the lemma color trait. Lemma color of NY90BC4 is uniform but may vary from cream to tan depending upon the production environment. NY90BC4 is uniform for stature, heading date, and panicle morphology but heterogeneous for grain yield and test weight.