REGISTRATION OF CROP GERMPLASMS

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References and Notes


REGISTRATION OF 81IND-2 GLANDULAR-HAIRED ALFALFA GERMPLASM

Glandular-haired alfalfa germplasm 81IND-2 (Reg. no. GP-192) was released by the Purdue University Agricultural Experiment Station, 30 May 1984. Germplasm 81IND-2 is a synthetic population derived from three perennial Medicago species: cultivated M. sativa L. (MS), and wild-types M. prostrata Jaquin (MP) and M. glandulosa David (MD) (1). From a cross of diploid (2n = 2x = 16) MP and tetraploid (2n = 4x = 32) MS, two tetraploid hybrids were obtained. These two hybrids were subjected to three cycles of phenotypic recurrent selection for hair density and the resulting population crossed to diploid MP. The tetraploid F1 hybrid (MP × MS) × MP was crossed to 'Tempo' (25 plants) and 'Anchor' (25 plants) individually. The seed from the two crosses was composited to produce population 79TC. One cycle of phenotypic recurrent selection in this material produced a 78-plant population designated 79TC-C1. Population 79TD-C1 was obtained by crossing diploids MP and MG, and subjecting the population to two cycles of recurrent phenotypic selection for glandular-hair density and vigor. Selected plants were treated with colchicine, which resulted in a population composed of diploids and tetraploids.

81IND-2 is a syn 2 seed from a cross of populations 79TC-C1 and tetraploid individuals from population 79TD-C1. Glandular-hair density on stems of 81IND-2 (third internode below the apical meristem) ranged from <1 to 26/mm², with 45% >6/mm². Based on observations made during the development of 81IND-2, it appeared that a minimum of six glandular hairs/mm² were needed on the stem to condition resistance to the alfalfa weevil (Hypera postica Gyllenhal). Glandular-hair density on the abaxial surface of the leaf, mid-way between the base and apex of the stem, ranged from 0 to 30/mm². No potato leafhopper (Empoasca fabae (Harris)) (PLH)-yellowing occurred on leaflets with glandular-hair density >3/mm². Twenty-four percent of the plants had a mid-leaflet glandular-hair density <3/mm². Glandular-hair density on the leaflets appeared to be the critical factor related to PLH-yellowing, since glandular-hair density on leaf veins was rarely lower than that on the leaf blade. Where PLH control was applied, 0.6 and 54.0% of 81IND-2 and 'Vernal' leaves, respectively, showed PLH-yellowing. With no PLH control, the respective percentages increased to 8.7 and 90.3%.

With PLH control, the mean weight for 81IND-2 and Vernal was 1.75 g plant⁻¹ (range 0.2 to 5.8 g) and 1.77 g plant⁻¹ (range 0.2 to 6.4 g), respectively. Without PLH control, mean plant weight for 81IND-2 (range 0.3 to 3.7 g) and Vernal (range 0.05 to 1.8 g) was reduced 29 and 67%, respectively.

Five grams of 81IND-2 seed are available to each applicant upon written request and agreement to recognize it as a matter of open record when this germplasm contributes to the development of a new cultivar or hybrid. Seed stocks of 81IND-2 are maintained by the Dep. of Entomology, Purdue University, W. Lafayette, IN 47907.

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References and Notes

1. Lesins, K., professor emeritus, Dep. of Genetics, Univ. of Alberta, Edmonton, Canada. We express our appreciation to Dr. Lesins for his consultation regarding the wild Medicago species, and for providing the original seed of M. prostrata (UAG 1862) and M. glandulosa (UAG 79) used in the development of 81IND-2. 81IND-2 seed was produced with the cooperation of regional project NC-83.


REGISTRATION OF GA 1 BIRDSFOOT TREFOIL GERMPLASM

GA 1 birdsfoot trefoil (Lotus corniculatus L.) (Reg. no GP-55) germplasm was released by the University of Georgia Agricultural Experiment Station in 1985. It was developed at the Georgia Station, Experiment, GA, by mass selection started in 1965, with seed supplied by Howard W. Johnson (Stoneville, MS) and Paul Henson (BELTSVILLE, MD) of the USDA-ARS.

The original material was obtained from crosses of a Brazilian introduction (PI no. 244036) and the commercial cultivars, 'Kimey', 'Granger', and 'Empire'. Approximately 2000 plants were space-planted in a field at Experiment, GA, in April 1965. Periodically, superior plants were moved into new areas for further selection. Selection under natural conditions of disease, weed, and other environmental pressures resulted in the identification of 15 superior clones in April 1972, which possessed superior spring and summer growth, leafiness, and vigor. Cuttings from these clones were rooted and planted in a randomized complete block design with Empire sown as a control. After 2 yrs, Empire had disappeared while the cuttings survived. In April 1975, additional cuttings were planted in rows for seed production. In September 1975, open-pollinated seed was harvested from these plants and was bulked as GA 1 germplasm. This seed was planted in an adjacent area for seed increase.

GA 1 trefoil produces more early spring growth than 'Fergus' and has considerable variability for plant size, growth habit, leaf size, and number of stems per plant. Its broad genetic base, in combination with its ability to withstand disease and environmental pressures for 19 yrs in the humid Southwest, should make GA 1 useful in breeding programs for this region. Stands of GA 1 planted in north Georgia at Blairsville (34°50' N Lat, elevation 600 M) were damaged by a severe freeze (-25°C) in 1988, indicating that it lacks cold hardiness. Therefore, its probable zone of adaptation is limited to the southern Piedmont.

Seed of GA 1 may be obtained upon written request from F.C. Boswell, Agronomy Department, Georgia Station, Experiment, GA 30412. The seed supply is limited and will be made available in quantities of 50 g as long as the supply lasts.

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