REGISTRATION OF BELTSVILLE-6, A SEMI-DORMANT ALFALFA GERMPLASM
(Reg. No. GP 103)


A population of alfalfa (Medicago sativa L.), Beltsville-6 (GP 103), was developed by AR, SEA, USDA and released to alfalfa breeders in April 1979.

Beltsville-6 was developed from an intercross of 362 vigorous plants selected from broadcast stands of the nondormant cultivars 'Bonanza,' 'Florida 66' (4), and 'Moapa' (3). The selected plants had survived at least four winters (1970-75) in experimental field plots in Maryland. Selections from Florida 66 were made at Wye Mills, Md., and selections from Bonanza and Moapa were made at both Beltsville, and Wye Mills, Md. In the initial intercrossing, 154, 128, and 80 clones were derived from Bonanza, Moapa, and Florida 66, respectively. The resultant population was increased for one generation at Reno, Nev. to allow additional genetic recombination. Approximately 8,000 seedlings of the Reno intercross were screened in the laboratory at Beltsville for resistance to anthracnose caused by strains of Colletotrichum trifolii Bain commonly occurring before the 1978 growing season (5, 6). From this screening, 199 plants free from phenotypic symptoms of the disease were selected and intercrossed to produce Beltsville-6. The parental background of this germplasm can be traced principally to Indian and African sources (1).

Beltsville-6 provides a source of highly vigorous, semi-dormant, disease- and insect-resistant alfalfa. The germplasm was selected under field conditions which were conducive to improvement of tolerance to winter stress. Beltsville-6 has resistance to commonly occurring strains of anthracnose, to Fusarium wilt, caused by Fusarium oxysporum Schlecht., and to the pea aphid (Acyrthosiphon pisum Harris). The germplasm will be useful to breeders interested in extending the northern adaptation of nondormant alfalfa. Beltsville-6 has an upright growth habit, earlier bloom, and less winter dormancy than alfalfa types normally used in the mid to upper U.S. latitudes.

The mean frequencies of plants resistant to the commonly occurring strains of anthracnose, as determined by moisture chamber inoculation (2) at Beltsville were as follows: Beltsville-6 = 74.4%, 'Arc' = 77.2%, 'Saranac AR' = 35.3%, 'Bonanza' = 0.0%, Florida 66 = 0.0%, Moapa = 0.0%, and 'Saranac' = 0.0%. In a test for Fusarium wilt resistance at St. Paul, Minn., the mean percentages of resistant plants were: Beltsville-6 = 74.5%, 'Arc' = 55.2%, 'Moapa 69' = 81.8%, 'Agate' = 47.2%, 'Narragansett' = 26.2%, and 'Ranger' = 25.7%. In a seedling survival test for pea aphid at Beltsville the mean percentages of surviving plants were: Beltsville-6 = 48.4%, 'Kanza' = 57.0%, 'Williamsburg' = 6.0%, and Ranger = 6.5%.

In other tests, Beltsville-6 exhibited low frequencies of resistant plants to: bacterial wilt, caused by Corynebacterium insidiosum (McCull.) H. L. Jens., = 7.9%, Phytophthora root rot, caused by Phytophthora megasperma Drechs., = 9.7%, and spotted alfalfa aphid (Theorioaphis maculata Buckton) = 16.0%.

REFERENCES

REGISTRATION OF BARLEY COMPOSITE CROSSES XXXIII - A AND B
(Reg. Nos. GP 31 and GP 32)

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TWO barley (Hordeum vulgare L.) populations, Composite Cross XXXIII-A (GP No. 31) and Composite Cross XXXIII-B (GP No. 32), have been released by the AR, SEA, USDA to provide a diverse gene pool with sources of resistance to barley yellow dwarf virus (BYDV).

These populations of spring barley are the result of a breeding program established at Mesa, Arizona, to develop sources of BYDV resistance. These sources of resistance had previously been incorporated in 28 three-way crosses of coast-type barley cultivars and sterile (msg1) 'California Mariout' as the additive parent to facilitate hybridization.

The initial backcross breeding procedure was to use 'Harlan' as recurrent parent and utilizing the selection system as described in the method of screening for BYDV. Seed from the selected F2 sterile plants were composited and backcrossed to 'Harlan' in the autumn of the same year. For selection of resistant F3 plants, the recurrent selection system was used. The F3 generation was increased at the same location. The F3 selection was used for the F4 generation. Crosses were made between plants with different characteristics to maintain heterozygosity.

Four populations in addition to the 1964 population were selected as a result of subsequent improvement of the germplasm. Two of these populations were composed of plants with high BYDV resistance. These populations were released as Composite Cross XXXIII-A (GP No. 31) and Composite Cross XXXIII-B (GP No. 32).