was grown in the USDA Uniform Regional Hard Red Wheat Performance Nursery from 1972 to 1977. Angus was selected from the cross 'Thatcher' x 'Supreza'/3' x 'Frontana'/3' x 'Kenya 58'/3' x 'Newhatch'/7' x 'Bembina'/5' x 'Thatcher' x '6/21' x 'Thatcher'/4' x 'FNII-58-3'/5' x 'Thatcher'/4' x 'MN III-58-4'/5' x 'Kenya 58'/3' x 'Newhatch'/7' x 'Frontana'/5' x 'Thatcher'/4' x 'MN III-58-4'/5' x 'Kenya 58'/3' x 'Newhatch'/7'. The semidwarf character was introduced through a selection obtained from Montana and labelled MN III-58-4.

Angus is bronze chaffed, midseason to late in maturity, and is adapted for planting in the northern areas of the North Central spring wheat region of the United States. It has good lodging resistance. The spike is awned, fusiform, and midlense. Kernels are red, hard, and medium in length. Angus is resistant to the prevalent races of stem rust (incited by Puccinia graminis f. sp. tritici Eriks. and E. Henn.) and to most other virulent isolates found in low frequency in the recent stem rust surveys. The cultivar has a different leaf rust (incited by P. recondita Rob. ex Desm. f. sp. tritici Eriks.) gene(s) than 'Chris' and 'Era'. It is also tolerant of powdery mildew (incited by Erysiphe graminis De. f. sp. tritici E. Marsch) and ergot (incited by Claviceps purpurea [Fr.] Tul.). The hectoliter weight for Angus is similar to that of 'Polk', Chris, and Era, but better than 'Kitt', 'Olf', and 'Waldron'. Angus produces 15 to 20% more grain than Chris and Waldron. Regional and Minnesota performance trials show that Angus is similar to Kitt but slightly lower than Era in yield in Minnesota, North Dakota, South Dakota, and Montana.

Milling performance, mixing characteristics, and general bread making quality of Angus are satisfactory. Angus is equivalent to Chris and superior to Era in bake absorption and loaf volume, but has a longer mixing time than Chris and Era. Breeder seed will be maintained by the Minnesota Agricultural Experiment Station.

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### Registration of Germplasms

**REGISTRATION OF AZMFA-1 NON-DORMANT MULTIFOLIOLATE ALFALFA GERMPLASM**

(Reg. No. GP102)

M. H. Schonhorst, A. K. Dobrenz, R. K. Thompson, and Mark Brick

AZMFA-1 alfalfa (Medicago sativa L.) germplasm was developed by personnel of the Arizona Agriculture Experiment Station. This germplasm represents the third cycle of selection for genotypes which displayed more than three leaflets per leaf and a non-winter-dormant growth habit.

A plant having many leaves with more than three leaflets per leaf was found in 'Ladak-65' grown at the USDA, SCS, Plant Materials Center, Tucson, Ariz. 'Ladak-65' is a very winterhardy and winter-dormant cultivar. The multifoliate plant was used as the maternal parent in a cross with a vigorous plant selected from 'Mesa-Sirsa' a non-winter-dormant cultivar. Approximately 8% of the progeny from the cross expressed the multifoliate characteristic. Ten of the most highly multifoliate and high seed setting progeny were selected, vegetatively propagated, and established in an isolated seed production plot. Four of the 10 clones were subsequently used in a detailed study of the transmittability of the multifoliate leaf characteristic into a non-winter-dormant alfalfa. 3 Syn-1 seed of the 10-clonal polycross was identified as Cycle-1, Syn-1. This seed was planted in rows 75 cm apart at Marana, Ariz. on a 1/2 ha plot at the rate of 1 kg/ha. Plants not displaying the multifoliate characteristic were removed. Approximately 3,000 plants which strongly expressed the multifoliate characteristic were used to produce Cycle-2, Syn-1 seed. The same experimental procedures were used to produce Cycle-3, Syn-1 seed.

AZMFA-1 Cycle-2, Syn-1 seed was tested for forage yield at the University of Arizona, Mesa Experiment Station. It yielded 88% as much forage as the average of three check cultivars ('Mesa-Sirsa', 'Moupa-99' and 'Lew'). AZMFA-1 and Mesa-Sirsa were not significantly different in yield trials conducted at Tucson.

AZMFA-1 was also evaluated for percentage protein, specific leaf weight, dark respiration, and apparent photosynthetic rates in comparison with Mesa-Sirsa and Lew at Tucson.4,4 Specific leaf weight of AZMFA-1 was greater than the check cultivars at 18 out of 14 observations during the 1977 growing season. The apparent photosynthetic rate of AZMFA-1 was 4 mg C02dm-2 hour-1 higher than Mesa-Sirsa. We believe that this was due to the higher specific leaf weight for AZMFA-1. Differences in percentage protein were not statistically significant between germplasm sources. Nevertheless AZMFA-1 was approximately 1 to 1.5%, percentage points higher than Mesa-Sirsa at all harvests. The leaf to stem-petiole ratio for AZMFA-1 was significantly higher than for the check cultivars during the cooler portion of the growing season. However, the seasonal mean for this characteristic was not significantly different among entries.

Seed stocks of AZMFA-1 will be maintained by the Plant Sciences Department, Arizona Agriculture Experiment Station, Tucson 85721. Fifty grams of seed will be made available upon written request and agreement to make appropriate recognition of its source if the germplasm contributes to the development of a new germplasm source, cultivar, or hybrid.

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### REGISTRATION OF BARLEY COMPOSITE CROSSES XXXV, XXXV-A, -B, AND -C

(Reg. Nos. GP27 to GP30)

J. G. Moeman and P. S. Baczinger

FOUR spring barley (Hordeum vulgare L.) composite cross populations designated XXXV, XXXV-A, XXXV-B, and XXXV-C, have been released by AR, SEA, USDA. These populations were released to provide a diverse gene pool with possible new combinations for resistance to three diseases. Composite Cross XXXV and its subpopulations originated from crosses between male lines having excellent disease resistance and female lines that were genetically male-sterile. The male lines were resistant to Puccinia hordei Oth., Erysiphe graminis (DC.) ex Merat f. sp. hordei Em. Marchal, or Rhynchosporium secalis (Oud.) J. F. Davis as determined in our...