

United States Department of Agriculture
Agricultural Research Service, Washington, D.C.
and
Colorado Agricultural Experiment Station
Fort Collins CO 80523
and
United States Department of Agriculture
Soil Conservation Service, Washington, D.C.
and
New Mexico Agricultural Experiment Station
Las Cruces, New Mexico

NOTICE OF RELEASE OF 'ALMA' BLUE GRAMA

'Alma' blue grama [*Bouteloua gracilis* (H.B.K.) Lag. ex Griffiths] was developed by the Agricultural Research Service and Soil Conservation Service, United States Department of Agriculture in cooperation with Colorado and New Mexico Agricultural Experiment Stations. Personnel involved were the late A.M. Wilson, R.L. Cuany, G.L. Thor, W. Oaks, and others.

Alma traces to 'Lovington', 'Hachita', and experimental composite PM (K) 1483, and it was tested as T-44169. It was selected for heavier seed (caryopsis) weight, seedling emergence from deep depths of planting, seedling vigor, and seed and forage production. The intent was to combine the beneficial seed and seedling traits with the wide adaptation of Lovington, Hachita, and PM(K) 1483.

Three cycles of recurrent selection were conducted. In each cycle, 40,000 seeds were sown as polycross progenies and covered with 4 cm of dry soil in pots under greenhouse conditions at Fort Collins, Colorado. The pots were subirrigated. About 1,500 of the most vigorous seedlings, including those with the longest nodal roots, were selected and transplanted to the field at Los Lunas, New Mexico, where they were rated for forage vigor and seedhead number. Seeds were harvested from the best 500 to 750 plants and evaluated for caryopsis weight and fertility. From this material, 60 to 90 plants, which excelled for all traits, were selected and clonally propagated. Four replicates of the selected clones were grown under isolation in New Mexico to produce seed for cycle 2. Selection in cycles 2 and 3 was conducted as in cycle 1 except there were 24 replicates of the 90 selected clones in the cycle 3 crossing block. Seed from the cycle 3 crossing block served as breeder seed.

In each cycle, a selection differential of 10 mg/100 caryopses was imposed and the following generation showed a gain of 7 to 8 mg/100 caryopses, so that the population was advanced from 48 to 65 mg/100 caryopses. With more seed reserves and larger seedling organs, the large

caryopses showed improved seedling emergence from deep planting and more capacity for nodal roots to aid establishment by rapid growth after rainfall events. Strain multiplication plots of Hachita and Alma in NM have produced 100-caryopsis weights of 48 mg and 61 mg, respectively in the 1990 crop, but we have no replicated data on seed production. Earlier work showed no correlation between the caryopsis weight of a plant and its seed yield.

Comparison of Alma with Hachita (a very vigorous southwest New Mexico type) showed: Alma usually better in emergence in Colorado dryland trials; Alma not significantly different in forage productivity when grown in 30 cm rows, either alone or alternated with legume rows; no difference in crude protein percentage.

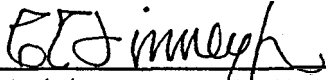
Blue grama is a principal component in warm season mixes for rangeland improvement where adapted. It is suitable for use in mixtures designed for erosion control and surface mine revegetation. It is recognized as an important low maintenance turf (requires less water than bluegrass) and properly managed is suitable for low maintenance recreation areas. As a warm-season grass it becomes dormant in fall and greens up in mid-spring.

Blue grama is most dominant in the Great Plains with 12 to 16 inches precipitation, mainly in late spring and summer. It tolerates moderate salinity and alkalinity. It will not tolerate dense shade, flooding, high water tables or acid soils. It occurs in association with buffalograss, western wheatgrass, needlegrass, and Sandberg bluegrass. It escapes drouth by becoming dormant and tolerates fire only in its dormant state.

For seed production it is recommended that supplementary water be given only after July 1, so that the principal flush of flowering does not coincide with the hottest part of the summer.

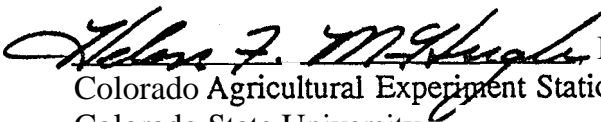
Foundation and breeders seed of Alma will be maintained by the USDA Soil Conservation Service Plant Materials Center, 1036 Miller Ave. S.W., Los Lunas, New Mexico 87031. Foundation seed will be available from the New Mexico Crop Improvement Association, Box 3CI, New Mexico State Univ., Las Cruces, New Mexico 88003, and the Colorado Seed Growers Association, Dept. of Agronomy CSU, Fort Collins, Colorado 80523. There will be a registered seed class.

Approval Signatures:



for Administrator, Agricultural Research Service
U.S. Department of Agriculture

Date OCT 27 1992



Interim Director
Colorado Agricultural Experiment Station
Colorado State University

Date July 29, 1992

James B. Neuman, Director
Ecological Sciences and Technology Division
U.S. Dept. of Agriculture. Soil Conservation Service

Date 8/27/92

William E. L. Norman, State Conservationist (CO)
United States Department of Agriculture
Soil Conservation Service

Date 8/7/92

C.R. Upton, state Conservationist (NM)
United States Department of Agriculture
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Date 8/14/92

Sam J. Cunningham, Associate ~~Dean~~ and Director
New Mexico Agricultural Station and Chairman of New Mexico
Varietal Release Committee,
Las Cruces, NM

Date 8/10/92