

COLORADO STATE UNIVERSITY

Development of Dryland Western Turfgrass Cultivars

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The Colorado State University project went a stage further in developing turfgrass varietal material of three western adapted species: alkaligrass, blue grama, and fairway (crested) wheatgrass. These three grass species would be extremely useful in minimum maintenance turfgrass plantings and for areas with special soil or moisture problems. In all these grasses we have been evaluating nurseries for plant type, seed productivity and other seed traits, and exercising our best efforts to produce enough seed for the multiplication stage and the early verification of turf behavior and quality.

Since all these grasses are (purposely) different from Kentucky bluegrass and bermudagrass, they have a different appearance and different cultural needs, in addition to being adapted to specialized uses such as saline soils, low water inputs, or reduced grooming. These grasses are not highly domesticated and they are not suitable for use on greens, but two of them are suitable for fairways and low-maintenance roughs, while the fairway crested wheatgrass is probably better suited for roughs than for modern close-cut fairways on golf courses.

Alkaligrass (*Puccinellia* spp.) is salt-tolerant, not very drought resistant, and exhibits summer dormancy during hot weather regardless of water status. As a cool-season grass it greens up very early (late March, before bluegrass) and retains color well into winter. We have identified lines which are much more resistant to rust than the cultivar Fults. Alkaligrass nurseries produced less seed in their second full-season year than their first, with some of the loss due to a decreased number of plants (i.e. not true perennial plants). This could be solved by more frequent establishment of seed fields as is done for annual crops. Our selections have been from the best surviving plants of Eurasian and Western U.S. sources, and several promising lines are in production and in turf tests.

Blue grama (*Bouteloua gracilis*) is a warm-season grass, green from late April until frost, and shows an attractive apple-green color under mowing heights at 1 to 2 inches and very limited water. In order to show sufficiently dense turf it needs to be seeded at 2 to 3 lb. per 1000 sq. ft. The chief breeding objective is to increase the seed harvestable from a plant or a field. Blue grama has low seed fertility (viable seeds per spikelet are often less than 10%) so we have selected the best parents for seed traits and are preparing a large recombination block for 1991 seed production. Other blocks have been planted to explore the narrow-leaf trait shown by a few plants, and a June 1990 turf test shows Western material of the "Elite" type to have a darker green than the cultivar Hachita.

Fairway crested wheatgrass (*Agropyron cristatum*) has been surveyed in several nurseries totalling more than 1,000 plants, which show considerable variation in leaf width, tendency to put out one or two rhizomatous shoots, and incidence of a summer clump-disease causing lodging of seed-stalks. Selections were made for narrower leaves and/or more rhizomes within the healthy group, and recombinations will set seed in 1991. Previous turf trials have shown this grass to be poorly adapted to a regime of three mowings per week at 3/4 inches when not irrigated, but it is not bad when provided with some supplemental water. The best performance occurs at mowing heights of 1 1/2 to 2 inches and indicates the species will be best suited for use in golf course roughs.