DEVELOPMENT OF DRYLAND WESTERN TURFGRASS CULTIVARS

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1989 Research Grant: $25,000
[fifth year of support]

Our work at Fort Collins, CO, on western-adapted grasses continues in the breeding and turf adaptation phases. The three grasses alkaligrass, blue grama and fairway wheatgrass are all in the middle of the second cycle of selection for numerous traits. Seed production, plant type, and small plot evaluation for turf appearance and tolerance to weather, disease, and two mowing heights [3/4" and 1-1/2" by reel mowers, three times a week] are the most important. Seed production of elite types for regional testing is a vital step which is being pursued more vigorously as we get nearer to knowing the identify of the desired parents. For each of the three grasses we have reported progress in the breeding nurseries and in turf evaluation plots and in some cases we can predict their role in fairway and rough plantings and other turf uses; none of these grasses is suitable for use on greens.

Alkaligrass proved to be a cross-pollinated grass with segregation possibilities to select new genotypes. Plants with a bluish-green [glaucous] leaf color may have more upright stems but they make poor turf. Many plants are semi-prostrate but have good green color and produce attractive turf in spring and fall, better than the cultivar Fults, which was attacked by a brown patch disease in midsummer and by rust in fall. All alkaligrass looks worse in summer due to heat stress, even when given 1" - 1.5" irrigation per week, but we have selected materials which are least affected. This species is salt tolerant and survives where bluegrass dies. It tolerates 3/4" mowing well, but is not fertilizer responsive. The better sources are under test in larger plots in Michigan, Nebraska, and Oklahoma as well as here.

Blue grama tolerates the drought of the Great Plains and has produced an attractive turf under both mowing heights, with only 1/2" supplemental moisture in a dry summer. It greens up in late April and stays green until October frost, with no noticeable response to nitrogen. Since the chief constraint to its wider use as dryland turf is seed supply and cost, we have selected families and plants in the second cycle with more seed-bearing capacity, and some with more or finer leaves. Seed of these will need testing to ensure favorable effects on turf quality as we put together the parents for a synthetic cultivar.

Fairway wheatgrass [FWG] was tested severely by the 1989 summer where we had two four-week periods without rain, and a week with daily temperatures above 95° [Denver had 5 consecutive days above 100°, a

record]. As a cool-season grass, FWG went brown and dormant, but watering 1/2" - 1" every two weeks from mid-July brought greening and partial recovery, some of the stand density being lost. It tolerated mowing at 1-1/2" better than 3/4" so FWG's role may be in roughs rather than modern fairways. However, we are selecting for variation in amount of rhizomes or buried shoots which could cause stand repair and thickening, and also for finer leaves, so the results of the second breeding cycle may show increased versatility.

Cooperative testing here included buffalograss from Nebraska's program, which did only moderately well, probably because of soil salinity up to 8 mmhos/cm. Bermudagrass from Oklahoma, planted in late August, failed to survive a -28°F February cold snap.