TURFGRASS EVALUATIONS OF CURLY MESQUITEGRASS

THE UNIVERSITY OF ARIZONA
Tucson, Arizona

Dr. Charles F. Mancino
Principal Investigator

1989 Research Grant: $12,000
[second year of support]

Curly mesquitegrass, Hilaria belangeri, is being evaluated for utilization as a desert turf. Research efforts during 1989 focussed on quantifying the natural variation in turfgrass qualities in this species, assessing the effects of planting date and seeding rate on seedling establishment, and evaluating the field performance of selected plant material to fertilizing and mowing practices.

Nursery swards were rated in July 1989 for growing height, leaf length, leaf width, and color. Without exception, the medium class of the first three characteristics contained the majority of individuals. In addition, only 35% of the accessions were rated as having acceptable or better than acceptable color for home lawns. This illustrates the natural variation within the population with respect to these traits, and moreover, indicates that through selection and breeding of the minority a new population can be constructed manifesting low height, short leaves, fine leaf width, and acceptable color. Six accessions had low growing height, short leaves, and fine leaf width, and are being vegetatively increased.

Curly mesquitegrass has been observed flowering on the range in early March. Early flowering may result in an extended period of seed production for breeding purposes and ultimately for commercial seed production.

A seeding rate study was established to determine the optimum seeding rate and planting date for curly mesquitegrass in Southern Arizona. Seedlings of curly mesquitegrass were recognizable 11 days after planting for each planting time and seeding rate. Seeds did not display staggered or delayed germination into the following months. After six weeks it was difficult to recognize original individual seedlings because of prolific stolon production. Although the June planting date produced a lower average number of seedlings, plots seeded in June had the highest percent ground cover by October, 1989 due to a longer growing season which allowed for more vegetative spread.

Current controlled environment germination experiments have lead to the conclusion that Gibberellic Acid at a concentration of 250 ppm significantly promotes germination. Furthermore, the average germination of curly mesquite seeds in the control treatments of these

experiments was 80%, a sharp increase from the 34% average germination of the control treatments of previous experiments. This may indicate an after-ripening requirement for curly mesquitegrass seeds.

A Cultural Practices Study was established in March 1989 to evaluate responses of five sources of selected plant material to combinations of cutting heights [5 cm, 10 cm, and no cut] and nitrogen applications [0, 1, and 2 lb/N 1,000 sq. ft.]. This experiment was vegetatively established.

Plots were rated in July and August for color and percent ground cover. No differences existed among accessions for the color ratings. Nitrogen had no influence on color for the July or the August rating. Increasing nitrogen increased percent ground cover for both rating dates. Significant differences were observed among accessions in percent ground cover for both ratings. The average ground cover for five accessions ranged from 33 to 13 percent in July, and from 72 to 49 percent in August. Increasing cutting height also increased the percent ground cover. Fewer stolons were removed from the 10 cm height of cut than from the 5 cm cutting height. The no cut treatment had the highest average percent ground cover [70.5%] for the August rating.

Within the cultural practices study, stolon counts were performed on 100 individual propagules. The number of stolons per plant ranged from 10 to 94 and averaged 35 + 16. No correlation existed between high nitrogen rate and high stolon number, indicating that stolon production has a significant genetic component. Selection for high stolon number is important in developing a dense, uniform turfgrass. Thirty-five individuals were identified as having 40 or more stolons. Stolons were harvested from these 35 plants and were propagated in the greenhouse. Currently, stolons from 14 of the 35 plants have survived, and eight have been planted into the field.

Eight selections from the cultural practices study, along with six selections based on nursery ratings, possess excellent plant color, and short leaf length. These selections demonstrate that curly mesquitegrass has the potential to become an arid region turf. Breeding and selection efforts have already identified plant material with improved germination and turfgrass characteristics. These ratings and experiments must be performed for a number of years to properly evaluate and confirm the performance of this species as a turfgrass.