USGA Annual Turfgrass Research Report 1988

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Evaluation of Curly Mesquitegrass as a Desert Turfgrass

I. Overall Progress

Significant progress has been made in eight months by Mancino and Ralowicz on the Curly Mesquitegrass Project at Arizona with principal funding from the USGA. Presently, curly mesquitegrass selections have been identified which possess turf qualities suitable for golf course roughs, parks, cemetaries and home lawns. Other selections have been identified that display superior germinability making commercial production of seed feasible.

II. Plant Collection and Evaluation

One hundred curly mesquitegrass selections have been collected in Arizona and one from Texas. Plant material collections from higher mountainous areas of Arizona are being planned. Most selections are of mixed genotypes; however, some selections are genetically uniform. All plant materials are maintained in a germplasm nursery at the Campus Agricultural Center. Ten selections are in the process of being vegetatively increased; the best five selections will be put into a vegetative establishment-cultural practices experiment investigating responses to mowing (unmowed control, 5 cm and 10 cm) and fertilizing (0, 48 and 96 Kg N/ha/yr).

III. Seed Investigations

Seed was harvested from the range in the Fall of 1987 and from the nursery in the Fall of 1988. Nursery seed had a greater mean seed index (wt/100 seed) than range seed. Experiments performed on seed from both environments have shown that seed treated with gibberellic acid germinate better than seed treated with potassium nitrate, or distilled water. The average germination of range seed was 31.2 percent while nursery seed averaged 41.9 percent germination. Range seed displayed more rapid germination. Selections with high germinability not under the influence of gibberellic acid have been identified.

IV. Selection Identification by Gradient Gel Electrophoresis

A common belief is that curly mesquitegrass spreads exclusively by vegetative means on the range. Plants with similar physical appearance collected in close proximity on the range have shown different enzyme banding patterns after electrophoretic analysis which indicated that these plants were not clones. Individual plants have been isolated from the nursery selections for clonal increase. These plants will be fingerprinted for the peroxidase enzyme using polyacrylamide gel electrophoresis techniques. Experimental crossing plots will be isolated in the field to determine the natural frequencies of cross and self-pollination.