

EVALUATION OF CURLY MESQUITEGRASS

AS A DESERT TURFGRASS

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Mancino and Ralowicz at Arizona have made considerable progress on the Curly Mesquitegrass Project with USGA funding for the last eight months. Curly Mesquitegrass (*Hilaria belangeri*), similar in appearance to buffalograss, is being evaluated as a minimum input, low water requiring desert turfgrass. Plant materials (100 selections) collected in Arizona from approximately 25 specific sites have proven to be diverse, and are maintained in a germ plasm nursery at the Campus Agricultural Center. Plant collections are being planned for higher elevation areas in Arizona. At present, accessions possessing turfgrass qualities for minimum to medium maintenance situations have been identified. This plant material is being vegetatively increased for an experiment investigating responses to cutting and fertilizing. Additionally, other accessions appear to be promising soil stabilizing plants.

Early research focused on flowering biology. Female flowers finish emerging one week before male flowers shed pollen on the same spike. Research then progressed to seed related investigations. Two experiments were performed to evaluate germination responses of (a) range, and (b) nursery produced seed. Seed gathered on the range had an average germination of 31.2 percent while germination of nursery produced seed averaged 41.9 percent. Nursery produced seed had a greater average seed index (wt/100 seed); however, range produced seed germinated faster. In both germination experiments, seed treated with a growth hormone, gibberellic acid, germinated better than seed treated with distilled water or potassium nitrate. Accessions displaying high germination rates and percentages in both range and nursery produced seed are being vegetatively increased as seed production is essential for commercial acceptability of this grass.

Polyacrylamide gel electrophoresis is a method of identifying or fingerprinting plants with respect to specific plant enzymes. The end result of electrophoretic analysis is either an identical pattern of bands between plants having the same genes for the enzyme (the same fingerprint), or different banding patterns between plants with different genes for that enzyme (different fingerprints). A common misconception has been that curly mesquitegrass does not reproduce by seed on the range, but rather that it spreads vegetatively by stolons. Stolon plants are clones which manifest the same electrophoretic fingerprints. Plants that looked identical and were collected within inches of each other on the range have shown different enzyme banding patterns. This indicated that these plants were not clones, but more likely produced from seed. In view of the powers of electrophoretic

analysis, individual plants are being isolated and clonally increased in the greenhouse. These plants will be fingerprinted for the peroxidase enzyme and then used in an experiment to determine if plants can pollinate themselves and produce viable seed. The seed will be grown out and fingerprinted to confirm the parents used for pollination.