Selection of Turf Type and Seed Production in Inland Saltgrass (*Distichlis spicata)*

Colorado State University

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Start Date: 1998
Number of Years: 5
Total Funding: $125,000

Objectives:

1. *Determine turf performance of 7 elite CSU-USGA lines, 7 elite University of Arizona lines, 7 Great Basin lines (check lines from the University of Arizona).*
2. *Determining the range of stress tolerance (drought, salinity) present in inland saltgrass.*
3. *Determining seed production of 7 elite CSU-USGA lines.*
4. *Evaluate Kopec collection and Northern Great Plains collection.*
5. *Evaluation of seed germination and seedling vigor of all crosses.*
6. *Evaluate RAPD as a means of identifying unique genotypes of saltgrass.*
7. *Determine the relative chromosome number of elite clones.*
8. *Study the viability and germination requirements of inland saltgrass seed.*
9. *Evaluate seed priming as a possible method by which germination can be improved.*

A total of 7 elite CSU-USGA clones, 13 University of Arizona clones and a Salt Lake seed source were subjected to standard turf practices relative to mowing and weed control. Observations of vigor, shoot density and fill-in as of May 21 and color, regrowth and shoot density on October 14 were made. The turf from the Salt Lake seed source showed considerable winter damage. There was no apparent damage when herbicides at standard rates were used to control weeds. Data collected from next year will be tabulated with this years data to determine relative potential for use of elite lines for turf. The collection of 190 clones were observed in fall 1998 and spring/summer 1999 for an array of characteristics including fall color, densities, sex, flowering and many other turf and seed characters. The 7 CSU-USGA clones showed the highest vigor while the other Colorado and Nebraska types tended to be short and dense. The Utah and Nevada types tended to have taller female racemes and the South Dakota types were intermediate. Hand crosses were made among those showing the best turf characteristics. Chromosome counts and intercrossing among the various chromosome accessions continue. A total of 71 accessions have had chromosome counts made. The most common chromosome number is 2n=38 (42 accessions) while 2n=40 (7accessions), 2n=74(8), 2n=38+1B(1), 2n=38+2B(1), and 2n=40+2B(2) chromosome numbers have been observed. The most common chromosome type (38) is geographically widespread in California, Nevada, Idaho, Colorado, and Nebraska. Crosses among these genotypes have been made and seed was produced. These are being evaluated as to their chromosome number. Meiosis of these accessions are also under study. Seed germination studies continue to indicate that hand scarification of seed increases or at

least speeds germination in laboratory experiments. The use of mechanical scarification appears to result in similar rates of germination. Field comparisons of scarified seed (hand and mechanical) and nonscarifed seed gave mixed results depending on relative viability of seed. However, excess moisture and associated disease problems may have influenced these results. At the end of the season, the plot densities were similar in all treatments.