

TURFGRASS CULTURAL PRACTICES AND THEIR
INTERACTIVE EFFECTS ON ROOTING

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Lincoln, Nebraska

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I. Accomplishments Pertinent to USGA Goals:

- A. Cool-season turfgrass water use rates were identified for nine species. Water use varied by as much as 60%.
- B. Cultivar differences in water use varied by 64%, 31% and 30% for Kentucky bluegrass, perennial ryegrass and creeping bentgrass, respectively.
- C. Selection of appropriate species and cultivars could play a significant role toward meeting the 50% water conservation goal of the USGA.
- D. Species and cultivars varied in turfgrass rooting responses in percentages similar to the magnitude observed for water use.
 1. Species varied in total root production, root distribution and percent of roots supporting topgrowth.
 2. Variation among cultivars of Kentucky bluegrass, perennial ryegrass, and tall fescue was similar to that observed in species rooting characteristics.
 3. The combination of reduced water use, and increased rooting depth, distribution and percentage supporting topgrowth are important criteria in drought avoidance and potential water conservation.
- E. Interaction of potassium nutrition and irrigation frequency resulted in a 38% reduction in total water use of Seaside creeping bentgrass.
 1. Water use rate of daily irrigated turfs was higher than those receiving irrigation twice weekly.
 2. Turfgrass quality was higher for turfs receiving light frequent irrigations, except for those turfs receiving more than 6.0 pounds potassium (K) per 1000 sq. ft./season.
 3. The interaction of infrequent irrigation and high potassium nutrition (i.e., ≥ 6.0 lbs. K/1000 sq. ft./season) resulted in a water use reduction of 38% with no loss in turfgrass quality.

II. Other Research Contributions:

- A. This project identified criteria for selection of water conserving cultivars of Kentucky bluegrass, perennial ryegrass, creeping bentgrass, and tall fescue, using vertical extension rate, verdure and shoot density.
- B. This project developed field, and greenhouse procedures for screening turfgrass species and cultivar rooting responses.
- C. This project identified Kentucky bluegrass and tall fescue cultivars that were superior for reduced water use and enhanced drought avoidance. These cultivars could be used in blends and mixtures to enhance water conservation or in breeding programs to develop water conserving cultivars.