

## Current Research Projects

### Carbon Sequestration In Urban and Suburban Turfgrass Lands

Urban turfgrass covers over 20 million ha in the U.S. To determine the role of turfgrass in sequestering atmospheric CO<sub>2</sub> and in improving soil quality, we have conducted an initial study using historic soil testing data collected from large turf facilities. We found that a rapid C sequestration occurred during the first 0-25 years after turfgrass establishment, at average rates approaching 0.9 and 1.0-ton ha<sup>-1</sup> year<sup>-1</sup>. These rates are comparable or exceed those recently reported for US land that has been placed in the crop reserve program.

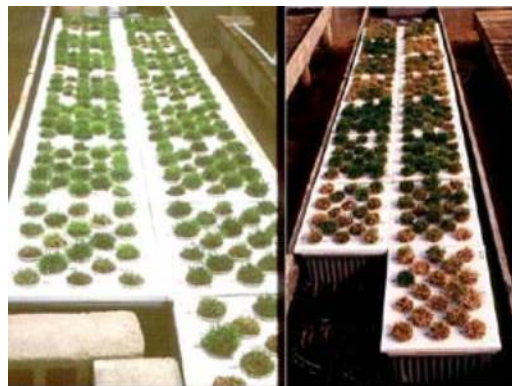
In collaborations with Dr. Ron Follett (USDA-ARS) and Dr. John Kimble (USDA-NRCS), an experiment is in progress to compare carbon sequestration under various turf management conditions, including different mowing and irrigation management regimes. Our research approaches include carbon isotopic technique and ecosystem modeling.



### Stress Tolerances of Saltgrass

In conjunction with the saltgrass breeding program and sponsored by the United States Golf Association, the objectives of this project are to: 1) screen for salt tolerance of advanced saltgrass breeding accessions; 2) determine the level of salinity tolerance of potential new cultivars; 3) determine the level of salinity tolerance during germination; and 4) quantify cold hardiness of saltgrasses.

This information is important for breeders as they develop new cultivars, as well as for the proper marketing and utilization of new cultivars.



## **Animal Waste Utilization In Turfgrass Systems**

In the South Platte River Basin, manure concentration in livestock producing areas has led to long-term over-application of manure and subsequent nitrate contamination of the shallow alluvial aquifer and phosphorus contamination of some reservoirs. Identifying new uses for manure could reduce the over-application of manure and subsequently improve water quality. The growth in the Front Range, accompanied by a rapid increase in turf acreage, presents an opportunity for manure utilization that could move manure out of the agricultural belt near the South Platte River. In collaborations with Dr. Jessica Davis, a study is initiated to address the following objectives:

- 1) To measure the impact of composted manure application on nutrient (N and P) runoff and leaching from turfgrass,
- 2) To evaluate composted manure in its ability to improve turf establishment, rooting, shoot growth, and overall quality, as well as, soil physical and chemical properties.

