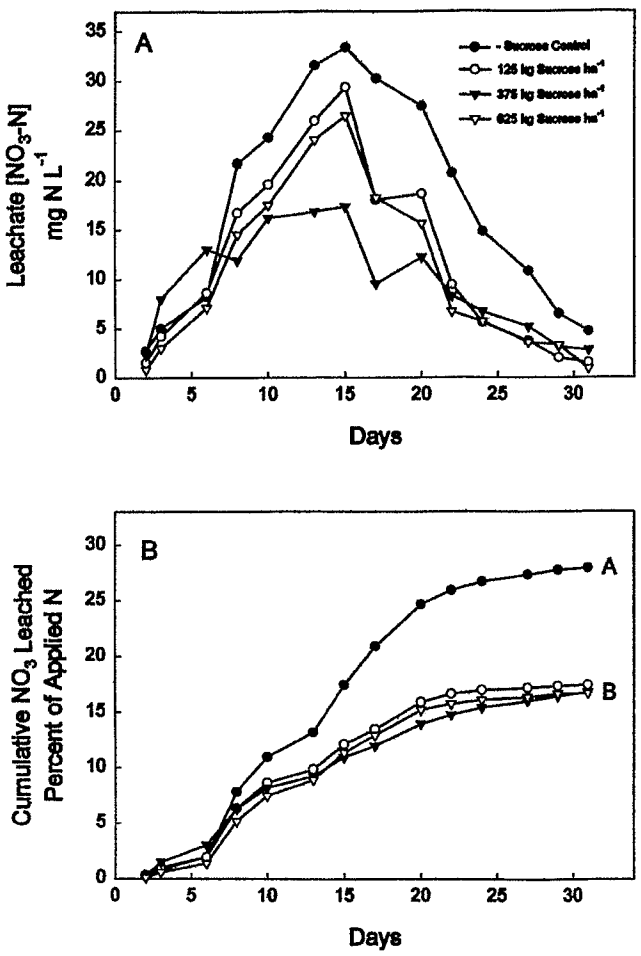

Figure 11. Nitrate-N concentration in leachate (A) and mass emission of nitrogen (B) with time.

Kinetic parameters will then be determined. This work is scheduled for summer of 1999, once sod becomes available.

We are also evaluating the possibility of screening germplasm for nitrogen uptake efficiency using ^{15}N. Seventeen genotypes of Kentucky bluegrass were grown in large flow-through solution culture systems. Nitrogen was maintained in the solution at either constant low-nitrogen concentration with continuous addition via a peristaltic pump, or at high (1 mM) concentration with periodic addition. Screening at low concentration should select for differences in uptake affinity (K_m) while screening at the high concentration selects for uptake capacity (V_{max}). ^{15}N-labeled fertilizer was added transiently to label the plant material. Plants were harvested, separated into roots and shoots, dried, weighed, and ground. The tissue is currently being analyzed by commercial mass spectrometry. Uptake will be expressed on a root weight basis. We will be looking for genotypes that vary significantly in uptake affinity and capacity. Uptake kinetics of selected genotypes will then be verified using the flow-through system.

Comparing Nutrient Losses Via Runoff from a New Golf Course and the Golf Course Site's Previous Native Condition.

Kansas State University

Steve Starrett

Start Date: 1998
Number of Years: 5
Total Funding: $118,155

Objectives:

1. *Compare the nutrient loading, by way of surface water runoff, from a new golf course, and the site's previous native prairie condition.*
2. *Investigate the new golf course's impact on surface water quality during construction and during golf course operation.*

The objective of this research is to compare the nutrient loading, by way of surface water runoff from a new golf course (Colbert Hills Golf Course), and the site's previous native prairie condition. The nutrient loading from the golf course site into the main surface water stream (Little Kitten Creek) will be determined during construction and during operation. Surface water samples are being collected during runoff events from at three locations on Little Kitten Creek. Currently, automated samplers are installed where Little Kitten enters the golf course property, where a small tributary enters the property and where Little Kitten Creek exits the property. About 300 water samples have been collected since February. Water samples will be tested for nutrient concentrations and other physical and chemical parameters. Surface water runoff amounts will be determined so those mass amounts of nutrients contained in the runoff can be calculated.

Kansas State University in cooperation with Jim Colbert, PGA TOUR, GCSAA, and various alumni are building Colbert Hills Golf Course, a 27-hole championship course, near Manhattan, Kansas. Colbert Hills is being built on land that has a prairie-woodland mix that is typical of the Flint Hills Region. The only previous land use was occasional grazing for beef cattle. Data on water quality from the nearby Konza Prairie research area (NSF Long-Term Ecological Site and USGS Benchmark site) has been collected for close to 20 years and comparisons in water quality from Colbert Hills and the Konza Prairie will be made.