Materials and Methods

Golf Course Soils

400 g soil samples were collected at each site (Table 1) from three replicates and analyzed at the University of California, Riverside.

Soil Chemical Analyses
- Soil pH
- Soil Nitrate and Ammonia Concentrations
- Soil Nitrogen and Ammonia Concentrations
- Soil Organic Matter Concentration

Potential Nitrification Activity Measurements
- Soil DNA extraction
- PCR using specific primer (McCarley et al. 1999)

Molecular Microbial Analyses
- Soil DNA Extraction
- PCR using specific primer (McCarley et al. 1999)

Our Findings

- Acetate inhibited nitrification in all soils suggesting autotrophic nitrification at all sites.
- PNA and delta pH measurements indicate differences in activity between the 4 golf courses.
- PNA measurements were significantly greater (P = 0.05) for the golf course receiving groundwater.
- PNA measurements were greater for the rough soils than for the sand traps.
- Diversity measurements suggest a predominance of Nitrosospira sps. at all four courses.

Future Directions

- AOB and NOB abundance measurements should correlate with PNA measurements.
- Carbon sequestration should track PNA measurements (Figure 3).
- Carbon incorporation into biomass is anticipated to be greater in the rough than in the sand due to presence of rhizosphere.