CSREES National Water Quality Program

Title: Treatment of N in Swine Wastewater by Marsh-Pond-Marsh Constructed Wetlands

Name: Gudigopuram Reddy **Email:** reddyg@ncat.edu

Organization: Dept of Natural Resources & Environmental Design, North Carolina A & T State University

State: NC **Region:** Southern **Year of Funding:** 2001-present

Theme: Animal Waste Management

Objectives: To remove N from swine wastewater at different N loading rates; To find the temperature influence on N removal

Methods: Constructed wetlands with Marsh-Pond-Marsh system were constructed. Each wetland cell size was 11 m wide and 40 m length. Marsh areas were planted with cattail and bulrushes. Swine wastewater with different N loading rates was used. The inflow and outflow wastewater samples were collected and analyzed. The hydraulic loading rate and detention times were calculated based on the N loading rates.

Partnerships: USDA-ARS, Florence, SC

Research: Research and outreach

Resources: Funds from USDA-CSREES (Evans-Allen) and USDA-ARS

Results: A linear relationship was observed between N reduction and water temperature at two N loading rates (16 and 32 kg ha day). The relation between temperature and N removal was highly significant. The N uptake by cattails and bulrushes ranged from 3.0 to 3.5 kg ha. If solids can be separated from wastewater, constructed wetlands would be a feasible technology to the small to medium swine operators.