Effectiveness of Shrub Buffers on Nitrate-N Removal. (S11-wafer062931-Poster)

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Abstract:

Elevated nitrate concentrations in the Neuse River, NC are a major contributor to decreased water quality. Shrub buffers could remove nitrate-N from groundwater before entering surface waters. Shrub buffers were created by allowing native vegetation to grow between crop fields and drainage ditches. Three 15-foot wide and one 30-foot wide buffers were studied. Intermediate (7 - 8.5 ft) and deep (9 - 11 ft) groundwater sampling wells were installed in each buffer, adjacent to and 15-feet from each ditch. Additional wells were installed 30-feet from the ditch in the 30-foot buffer. Samples were collected monthly and analyzed for nitrate-N. Concentration data show that more nitrate-N is removed in the 30-foot buffer than in the 15-foot buffer. However, from 15-feet from the ditch to the ditch edge in the 30-foot buffer nitrate-N removal appears to be similar to that in the 15-foot buffers. Comparisons of removal will be made between the 30-foot buffer, a 30-foot unbuffered ditch and a 30-foot area extending 15-feet into the field from the 15-foot buffered ditches. Redox potentials and groundwater data indicate that the nitrate-N removal is related to denitrification.

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Presentation Information:

Presentation Date: Tuesday, November 12, 2002 Presentation Time: 9:00-11:00 am Poster Board Number: 2326

Keywords:

nitrate-N removal, shrub buffers, groundwater chemistry, water quality