



Title: NO₃-N seasonal fluctuation in soil/surface water – groundwater continuums

Name: G. Anguelov, I. Anguelova, N. Bailey and R. Bradford **Email:**

Organization: Center for Water Quality, College of Engineering Sciences, Technology and Agriculture, Florida A&M University

State:

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Under the scope of a project, funded through a grant from USDA's Initiative for Future Agricultural and Food Systems (IFAFFS) and aimed at improving productivity of small family farms, a program was established to address the need for environmental quality monitoring. Water quality monitoring is most important to evaluate the ecological and social impact of the project.

Objectives of the program are: to assess the effect of goat and cattle husbandry on biogeochemical cycle of elements in this small but complex agroecosystem, and promote sound adaptation options for environmental protection. The monitoring scheme is designed to obtain information about the cumulative impact of precipitation, irrigation and fertilization on soil solution, surface water and groundwater quality. Soil liquid phase (soil solution/lysimeter water) is considered as an early environmental indicator for potential leaching of nitrogen and non-nitrogen nutrients through soil profile. Soil solution, surface water and groundwater samples were taken biweekly and analyzed for volume, pH, electrical conductivity and major nutrients content. Rainfall samples were taken from every event and the same analyses were performed.

A small part of the results, i.e., NO₃-N balance and dynamics are presented and discussed. The analysis showed that monitoring of the different components of the small but complicated agroecosystems can be organized according a site-specific methodology. The assumption was made that extensive and semi-intensive pasture management is a suitable technological decision, which ensures maximum inclusion of nitrogen in the biological cycle and prevents its leakage through soil profile.



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