Nitrogen mass balance in potato production: what it means to the environment

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Agriculture is the key to the Suwannee River area's economy and green space. Increasing concentrations of nitrate in ground water in the Suwannee River basin has raised concerns over the past 30 years (SRWMD, 2007). Among non point sources, agricultural operations have been implicated as a source of the increased nitrogen load in the springs and river. Potatoes are an important crop in the basin requiring adequate nitrogen for quality tubers and high yields. Simple nitrogen input/output balance calculations can be used as the starting point for evaluating the components of the nutrient management program on the farm. The objective of this study is to quantify the nitrogen balance associated with potato cultivation for a diversified farm in northern Florida using sandy soil and center-pivot irrigation. The partial nutrient balance (Doberman, 2007) was determined for the growing seasons of 2010 and 2011. Of the total nitrogen available (280 kg/ha) to the crop, 69 % was found in the plant and tubers and 2% in the soil. Twenty-nine percent of N could not be accounted-for and possibly could be associated with leaching or volatilization.