Most vegetable growers in the Suwannee Basin are small growers who have adopted drip irrigation and plastic mulch over the past twenty five years to produce vegetable such as tomato, bell pepper, eggplant, cucumber, muskmelon, and watermelon. Soils in the area are sandy with low water holding capacity (<10%) and low organic matter content (<1.5%). Hence, vegetable production in North Florida requires intense irrigation and fertilization management.

University of Florida County Extension agents and state specialists have been working with vegetable growers in North Florida who use plastic mulch and drip irrigation to refine their management of the technology since it was introduced to the region about twenty five years ago. The emphasis of the educational program has been to improve efficiency of water and nutrient management. The environmental impact of intensive vegetable production using plasticulture may be reduced through the implementation of Best Management Practices (BMPs) that integrate water and nutrient management together.

Plant nutrient status can be determined in the field by squeezing plant sap onto meters (Cardy) that measure either nitrogen or potassium (Fletcher, et al., 1993; Hochmuth, 2003). This gives a grower an instant result to guide their fertilizer program week to week. The Cardy meters have been used and demonstrated by several county extension agents in the area. A specific success story with these meters has been the adoption by area watermelon growers. Over 75% of the area watermelon acreage has benefited from this program. In addition to the agents on-farm visits with the meters, four area growers have invested in their own meters to further refine their nutrient BMPs.

Educational programs have included:

- Demonstrations using plant sap readings with hand-held meters (Cardy) to immediately determine plant nutrient status.
- End of season regional watermelon meeting.

Weekly on-farm visits were conducted by a Suwannee Valley Extension team of Hochmuth, Vann, Bauer, Fenneman, and Toro to conduct sap tests and teach growers how to sap test on their own. The Extension team all learned how to conduct the sap testing with their own meters individually and gained the confidence to conduct the test independently. An informal survey was conducted of the 10 cooperating growers who were more intensively consulted with in 2010. These growers reduced nitrogen applications by an average 25 lbs per acre. These changes in practices will likely be permanent changes. One large watermelon grower reduced nitrogen use by 50 lbs per acre on 200 acres from the previous year. Altogether, the on-farm BMP work on these 10 farms resulted in a savings of $48,000 in fertilizer.

**Literature Cited**