Status of the Adoption of BMP practices in South Florida Vegetables and Agronomic Crops

By: Stewart Swanson, Senior Engineer, BMP, UF/IFAS Tropical Research and Education Center, Homestead, FL

By definition, BMPs are a practice or combination of practices determined by the coordinating agencies, based on research, field-testing, and expert review, to be the most effective and practicable on-location means, including economic and technological considerations, for improving water quality in agricultural and urban discharges. The manual, Water Quality/Quantity Best Management Practices for Florida Vegetables and Agronomic Crops, was developed to assist growers in understanding, evaluating, and implementing BMPS that are applicable for their individual operations. The practices outlined in this manual are intended to be applied statewide for both vegetable and agronomic crop farmers. However, as would be expected not all practices are applicable to all locations or to all crops. The focal crops for which the manual was written to address are vegetables, potatoes, corn, soybeans, peanuts, peppers, sugarcane, and cotton. For the purposes of this manual, vegetables also include tomatoes, cucumbers, strawberries, melons and various types of squashes.

The assessment process in the manual begins with a decision tree flowchart and ends with a series of 138 questions addressing the utilization of the various BMPs. The questions are broken down into six categories each of which has sub-categories:

- Pesticide Management (5 sub-categories)
- Conservation Practices (9 sub-categories)
- Erosion Control (11 sub-categories)
- Nutrient & Irrigation Mgmt. (17 sub-categories)
- Water Resources Mgmt. (6 sub-categories)
- Seasonal or Temporary Farming

As an example, the following sub-categories are under the heading of pesticide management and each contain a number of questions:
As an example, the following questions are under the sub-category of spill management are:

- 1. Are appropriate PPE (as indicated on the label or msds sheet) always used during clean up?
- 2. Are pesticide spills properly contained and cleaned up promptly?
- 3. Do employees receive periodic spill response training?

In the last year 40,000 acres of vegetable and agronomic crops have been assessed in South Florida. The soils in S.W. Florida as well as agronomic practices vary significantly from those on the Rockland soils of Homestead. Figures 1 and 2 give an idea of how different soils and cultural practices impact the applicability of the various BMPs.

Figure 1.
As may be expected IPM practices are consistently applicable regardless of soil type, crop or cultural practices. The applicability of conservation management and erosion control BMPs are low in both regions because the flat terrain eliminates the need for erosion control measures, and are even lower in Dade County because of the general lack of wetlands and the inability to laser level the Rockland soils. The similarity of the crops being grown in both regions probably accounts for the similarity in nutrient and irrigation BMPs. Water resource management practices vary widely between the two regions because of the dearth of canals, ponds and reservoirs in Homestead.

Figures 3 and 4 illustrate how the South Florida growers for the most part have adopted a very high percentage of the recommended BMPs.

Figure 3.
The adoption of applicable BMPs for IPM and conservation management is extremely high. The main BMP not adopted for IPM in both regions is the use of nurse tanks. The lack of the use of cover crops and inter-row cover crops account for the slightly lower value for erosion control and water resource management, respectively. The main nutrient and irrigation management BMPs not being adopted are the use of controlled release fertilizers and soil moisture monitors. Seasonal farming is practiced much more in the Homestead area because of the large number of farms that farm on leased land. Over both regions combined 91.8% of the applicable BMPs are being instituted.

Even though the adoption of BMPs by South Florida growers is already extremely high, small changes to practices can have big environmental and economic impacts because of the large scale of agriculture in the area. As an example, a large citrus grove conducted a test on 222 acres of grove using a traditional fertilizer spreader versus a variable rate fertilizer spreader with eyes. The traditional method required 48 tons per application (3 applications per year). Using the VRT spreader, they reduced the amount applied to 37 tons, a savings of 11 tons per application. On an annual basis, it would result in a reduction of 33 tons applied to the 222 acres (23%). Extrapolating from this 222 acres to the approximately 12,000 acres that is owned by the company would result in an annual reduction of nearly 1800 tons of fertilizer going out – over 80 transport loads (22-tons each).