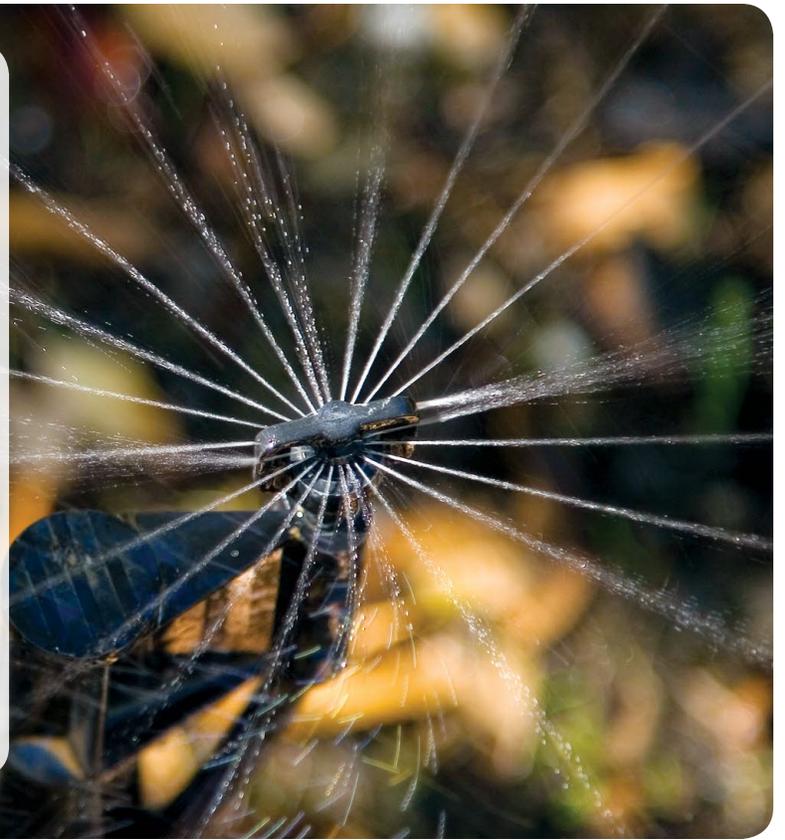


FLORIDA AG WATER NEWS

Volume 1 | Issue 2
Fall 2013



MESSAGE FROM THE DIRECTOR

Colleagues:

Feedback from readers on our first newsletter has been overwhelmingly positive. Thank you for your comments and your support.

As you review the second edition of *Florida Ag Water News*, be mindful that Legislative Committee meetings are in full swing in Tallahassee in preparation for the 2014 session. Interest from members about water issues is palpable: springs protection, Lake Okeechobee restoration, Indian River Lagoon, water supply planning, and alternative water supply development and funding are a few of the topics being discussed. It's far too early to tell how issues will sort out, but it looks like it will be a busy session on the "water" front.

In our first newsletter I promised to report back on the 2013 legislative initia-

tive to assign a formal role to FDACS in the development of water management district regional water supply plans. I'm pleased to report that the Legislature passed and the Governor signed into law Senate Bill 948. Through that bill, Senator Denise Grimsley and Representative Travis Hutson successfully negotiated changes to Part VII of Chapter 373 that make FDACS responsible for assisting Florida's water management districts in estimating the future water needs of agriculture and helping develop policies and programs to meet those projected needs. We intend to continue to work very closely with the water management districts, agricultural associations, UF/IFAS, FDEP and other interested stakeholders as we implement this new responsibility.

On September 24, Judge Robert Hinkle presided over a federal court hearing in Tallahassee to consider oral arguments in what, I hope, will be the final phase of the

long-running numeric nutrient criteria debate in Florida. Both the EPA and FDEP have completed their obligations to implement a plan that would allow the EPA to withdraw all of their final and pending rules. If Judge Hinkle rules in favor of the EPA petition, I expect the EPA will initiate formal proceedings to withdraw all of their rules and leave Florida in charge of implementing its own water quality criteria.

My best wishes to all of you for the upcoming holiday season. It's a great time to remind ourselves that family should always come first.

Richard J. Budell,
Director, Office of Agricultural Water Policy

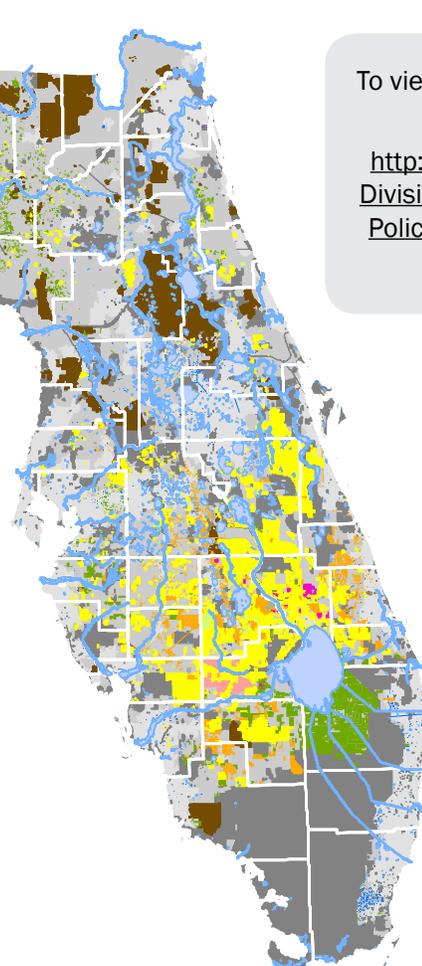


Florida Department of Agriculture and Consumer Services
Adam H. Putnam, Commissioner

BEST MANAGEMENT PRACTICES STATEWIDE ENROLLMENT

as of
September 30, 2013

Usage	Acres Enrolled	# of NOIs
Citrus	579,549.36	3,320
Cow/Calf	1,969,323.90	832
Dairies	47,165.77	26
Equine	964.46	24
Fruit/Nut	5,614.13	150
Mixed Use	101,323.65	4
Nursery	29,602.98	1,181
Row Crops	1,029,242.92	1,198
Sod Farms	36,551.29	61
Subtotal	3,799,338.46	6,796
Forestry	5,268,355.00	396
Total	9,067,693.46	7,192



To view maps by water management district, visit

<http://www.freshfromflorida.com/Divisions-Offices/Agricultural-Water-Policy/BMP-Implementation/BMP-Enrollment-Maps>.

- Major Lakes & Rivers
 - Public/Managed/Tribal Lands
 - Urban Areas (2007)
 - County Boundaries
- Commodity**
- Citrus
 - Cow/Calf
 - Dairies
 - Equine
 - Fruit/Nut
 - Mixed Use
 - Nursery
 - Row Crops
 - Sod Farms
 - Forestry*
- * Florida Forest Service Data

How do we know producers are implementing BMPs?

When producers enroll in the BMP program and implement the practices applicable to them, they have a presumption of compliance with state water quality standards for the pollutants that the practices address. The presumption of compliance is based on the expectation that producers understand and address the water quality and conservation issues on their operations, working within economic and technical constraints.

The FDACS Office of Agricultural Water Policy collects information on BMP implementation through an Implementation Assurance Program, which involves

sending written surveys to all producers active in a BMP program, and conducting on-farm visits to some sites.

Surveys have been sent to enrollees in citrus, vegetable and row crop, container nursery, and sod programs. Cow/calf operations will receive a survey in 2014. The survey questions are designed to determine the BMP-related management actions taking place on enrolled operations. Detailed results of the surveys are located at: www.freshfromflorida.com/Divisions-Offices/Agricultural-Water-Policy/BMP-Implementation/BMP-Implementation-Assurance.

While FDACS field staff has conducted site visits specifically to evaluate the implementation of nutrient and irrigation management BMPs in the Suwannee River Basin and Northern Everglades region for

several years, the number of site visits is being increased statewide. In addition to the surveys and site visits, field staff members observe BMP implementation through their interactions with producers to provide on-farm technical assistance.

Following up with agricultural producers on the implementation of BMPs provides feedback on producer understanding of the practices, whether and how well the practices are being implemented, educational needs, and potential weaknesses in the drafting or content of the BMP manuals. It also helps identify operations that are no longer in production, have reduced or increased production acreage, or have changed agricultural activity.



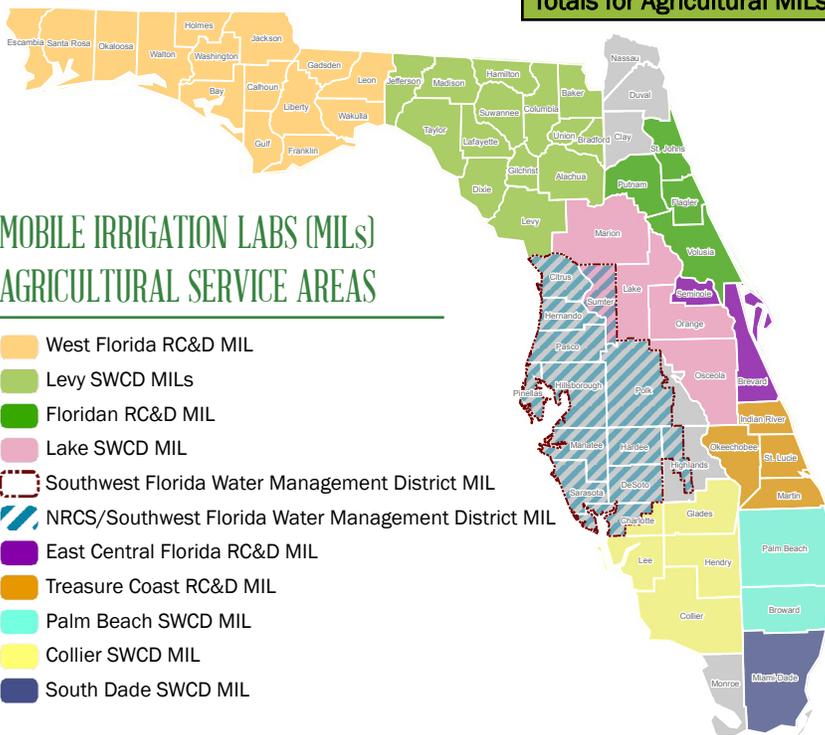
Mobile Irrigation Labs Continue to Help Farmers Save Water

Results for July 2012 to June 2013

For more than 16 years, partnership-based Mobile Irrigation Labs (MILs) have been operating throughout Florida, and there are currently 11 agricultural MILs in operation.

The agricultural MILs operate within all five water management districts (WMDs), and receive support from three of the WMDs, FDACS, and the USDA Natural Resources Conservation Service (NRCS).

Mobile Irrigation Lab	Evaluations	PWS* (Million Gal.)	AWS** (Million Gal.)
West Florida RC&D MIL	112	175.82	713.83
Levy SWCD MILs	257	1715.21	45.01
Floridan RC&D MIL	113	844.18	8.44
Lake SWCD MIL	124	461.40	42.06
NRCS/SWFWMD MILs	20	72.74	0.00
Treasure Coast RC&D MIL	96	594.83	143.05
Palm Beach SWCD MIL	100	47.34	38.18
Collier SWCD MIL	144	196.92	138.94
South Dade SWCD MIL	100	264.35	36.09
Totals for Agricultural MILs:	1,066	4,372.79	1,165.60



There are currently 331 farms covering more than 21,000 acres on MIL waiting lists statewide.

*PWS, or potential water savings, is estimated based on the amount of water that could be conserved if all MIL recommendations made during the reporting period are implemented.

**AWS, or actual water savings, is the actual amount of conserved water documented through follow-up evaluations. If AWS is greater than PWS, it is likely that more follow-up evaluations were conducted than initial evaluations during the reporting period.

During the July 2012 - June 2013 reporting period, agricultural MILs helped Florida farmers conserve more than 1.1 billion gallons of water.

BMAP Overview for Agricultural Producers

What is a BMAP?

For those of you who do not yet have the acronym “BMAP” in your vocabulary, here is a short tutorial. BMAP stands for basin management action plan. Adopted by the Florida Department of Environmental Protection (FDEP), a BMAP is a collection of strategies to reduce the discharge of specified pollutants into an impaired waterbody – one that does not meet its designated use for drinking, shellfish harvesting, fish consumption, recreation, and/or agriculture, among others.

BMAPs are designed to achieve water quality targets called total maximum daily loads (TMDLs), many of which are for nutrients such as nitrogen and phosphorus, though there are TMDLs for mercury, fecal coliform, and other constituents. While nutrients are essential for human health, their use in fertilizing lawns and growing crops can lead to excess accumulation in our lakes, rivers, ground water, springs, and other water resources. Excess nutrients can lead to algal blooms, which may cause ecosystem imbalances.

How does agriculture fit into BMAPs?

As the product of a local stakeholder-driven process, each BMAP is unique. However, agricultural producers’ responsibility in an area with an adopted BMAP remains the same: implement the applicable FDACS-adopted Best Management Practices (BMPs), or conduct costly water quality monitoring at their own expense to show they are not violating water quality standards.

This type of monitoring requires much more than taking well water samples; instead, producers must work with FDEP to develop an approved plan, and monitoring results must document continued compliance with state water quality standards. Implementing BMPs

provides a presumption of compliance with state standards, and clearly is the better option.

By now, most agricultural producers know about these options, which also apply to statutorily designated areas such as the Northern Everglades.

Where are the BMAP areas?

To date, FDEP has adopted seventeen BMAPs to address impaired waters. The Upper Ocklawaha BMAP was adopted in 2007, followed closely by the Orange Creek, Long Branch, and Lower St. Johns River BMAPs in 2008.

BMAPs also have been adopted for the Hillsborough River, Lower St. Johns River Tributaries, Lake Jesup, Bayou Chico, Santa Fe River, Lakes Harney and Monroe/Middle St. Johns River, Everglades West Coast, Caloosahatchee Estuary, three sections of the Indian River Lagoon, and St. Lucie River and Estuary.

Currently, BMAPs are under development for the Wekiva River, Suwannee River, Wakulla Springs, Silver Springs, Rainbow Springs, Caloosahatchee Upstream, Alafia River, Manatee River, and Lake Okeechobee basins. You can see a map of BMAP areas and review plan contents at: www.dep.state.fl.us/water/watersheds/bmap.htm.

While most BMAP areas have some significant agricultural acreage, some BMAPs, such as the Lower St. Johns River Tributaries and Long Branch, have only one or two agricultural producers (and those operations already are enrolled). Bayou Chico is an entirely urban BMAP and contains no agriculture at all, and the Banana River segment of the Indian River Lagoon BMAP is similar. Other basins like Orange Creek and Upper Ocklawaha contain a large number of equine operations, for which there was no BMP manual until 2011. Outreach to horse operations in these basins is still relatively new.

The Lake Okeechobee BMAP is still under development, but the Lake Okeechobee

Protection Program, which was expanded into the Northern Everglades and Estuaries Protection Program, has been underway for more than a decade, and FDACS maintains a field office with seven staff in the south Florida region; consequently, the enrollment there is very high. The relatively low enrollment in the St. Lucie basin, which is within the Northern Everglades, is due primarily to a significant decrease in citrus production acreage, yet to be reflected in the land use information used to develop BMAPs.

What is the compliance process for agriculture?

Florida law also says that if a producer does not either implement BMPs or do water quality monitoring, the FDEP or the water management district can bring enforcement action. FDEP will be initiating a BMP compliance process, starting in the Lower St. Johns River BMAP area. FDACS already has sent out a letter to landowners with agricultural properties in that area, to make sure they are aware of their statutory options and give them a chance to enroll in BMPs before FDEP starts contacting folks. Many producers have responded, opting for BMP enrollment.

FDEP will conduct this compliance process in other BMAP areas over time, and that will affect most of the state. Don’t wait until there is a BMAP in your area because there likely will be one soon. If you are already in a BMAP area, don’t wait until you hear from FDEP. Enrolling now will save you and the state time and money.

FDEP has made it clear that they prefer that agricultural producers get with the BMP program. The question is whether it is sooner, with free assistance from FDACS, or later, after FDEP enforcement and possible fines.

Why should I implement BMPs?

In addition to having a presumption of compliance with state water quality standards and avoiding enforcement, there are other benefits to implementing BMPs.

For instance:

- The Florida Right to Farm Act generally prohibits local governments from regulating an agricultural activity that is addressed through FDACS-adopted BMPs when farmers implement them.
- Producers who implement FDACS-adopted BMPs might satisfy some water management district permitting requirements.
- Some BMPs increase production efficiency and reduce costs.
- Enrolling in FDACS BMP programs makes producers eligible for cost share for certain BMPs.
- BMP participation demonstrates agriculture's commitment to water resource protection, and maintains support for this non-regulatory approach to meeting water quality goals.

How do I enroll in BMPs?

BMP enrollment is straightforward, doesn't cost anything, and in most cases will take only a few hours of your time.

FDACS field staff assist producers through a free on-site evaluation to determine which practices are applicable to their operations.

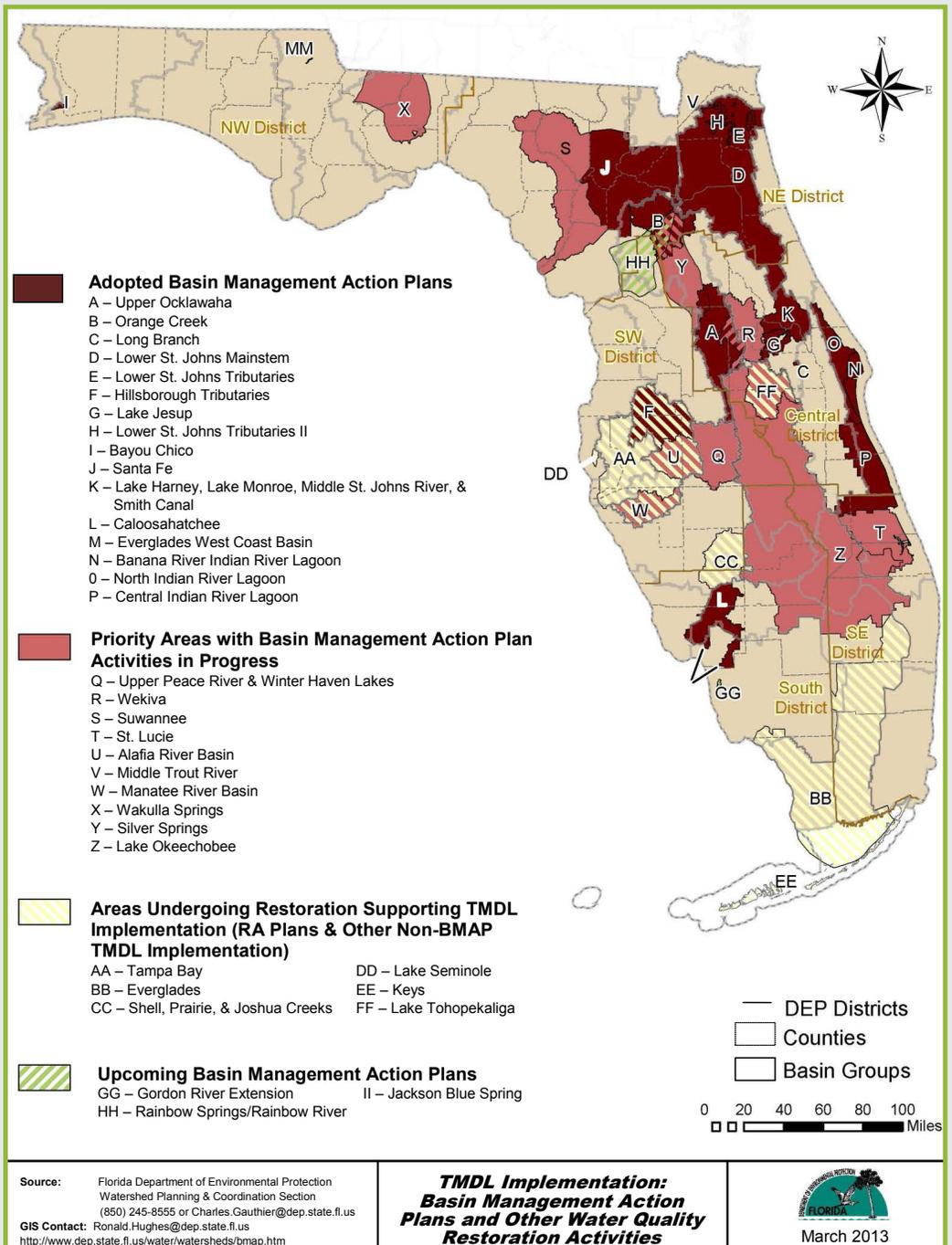
The evaluation includes a review of irrigation, fertilization, and other practices, identification of water resource features, and discussion of how to address any observed concerns. With FDACS staff help,

the producer will complete a checklist of BMPs and sign a Notice of Intent to implement the practices.

As FDEP develops more TMDLs and BMAPS throughout the state, FDACS will continue to work with producers to help them understand their statutory responsibilities and how the BMP programs work, and offer technical assistance with BMP implementation.

Additional information on BMP programs can be found on the FDACS website, www.freshfromflorida.com/Divisions-Offices/Agricultural-Water-Policy.

For more information on agricultural responsibilities and BMP enrollment within BMAP areas, please contact Terry Pride or Holly Edmond at (850) 617-1727 or AgBMPHelp@FreshFromFlorida.com.





BMP SUCCESS STORY: FIDDLE LEAF FARMS

Using BMPs to increase production and reduce environmental impacts

by Carol Johnson, FDACS Office of Agricultural Water Policy

Blueberry farmers are constantly looking for better ways to grow their crops in Florida's challenging environment. Sandy, alkaline soils and high temperatures are just two of the conditions they must cope with. Conserving water and minimizing fertilizer use are at the top of the list when it comes to both water resource protection and increased profits.

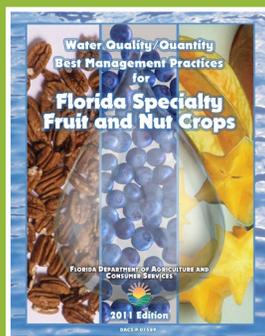
Steve Minotakis and his production manager at Fiddle Leaf Farm in Summerfield Florida have established blueberries using two methods. The first is the traditional way of planting the bushes in rows with a grass middle. They are also trying a high-density technique, planting the bushes more closely together in blocks with the same pine bark substrate throughout the whole area.

In the traditional blocks they use Rainbird impact sprinkler heads, and in the high density block they use wobbler heads. Both methods are effective irrigation and frost/freeze protection methods; however, Fiddle Leaf Farm prefers the more uniform coverage of the wobblers.

With both methods, all of the water applied on the high-density blocks goes on the desired plants on a substrate that is efficient in holding water. This may reduce the volume and frequency of irrigation cycles, in addition to a establishing a much better root system for the plants. When less water is applied, the fertilizer that is placed on the plants tends to stay at the root zone and not leach below it, and this could reduce fertilizer use.

The use of more efficient irrigation and other best management practices on the farm allow the Fiddle Leaf Farm to grow plants with as little impact to the environment as possible.

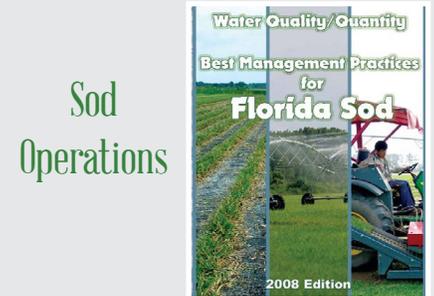
Blueberry production is enrolled with the Florida Specialty Fruit and Nut Crops BMP manual.



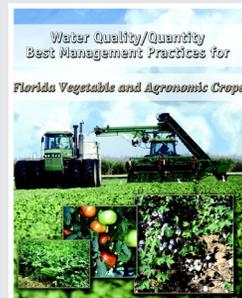
Other BMP Manuals



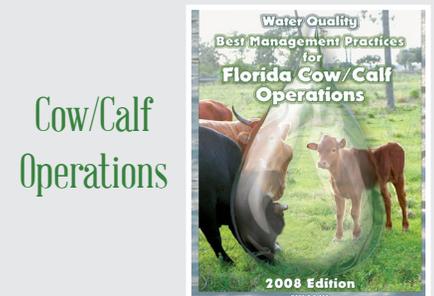
Equine Operations



Sod Operations



Vegetable and Agronomic Crops



Cow/Calf Operations



Container Nurseries



Florida Citrus

FDACS partners with UF/IFAS Extension to enhance statewide agricultural water awareness

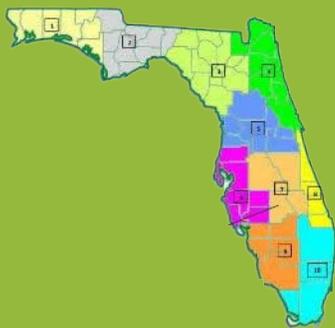
Earlier this year, the FDACS Office of Agricultural Water Policy and UF/IFAS Extension agreed to build on past efforts to help raise awareness for statewide water issues affecting agriculture producers.

As part of this agreement, UF/IFAS developed 10 Watershed BMP Teams statewide that are coordinating with FDACS and other partners to help agriculture producers be aware of water issues and programs.

Related programs include Total Maximum Daily Loads, Basin Management Action Plans, Best Management Practices and cost share, and UF/IFAS producer meetings.

Other parts of the agreement include FDACS funding for extension agent “mini-grants” to support producer demonstration and education programs, agent nutrient and irrigation management tools, and related BMP education material development. This initiative will help identify agriculture industry water related success stories.

For more information about UF/IFAS Watershed BMP Teams, please visit http://bmp.ifas.ufl.edu/BMP_teams.shtml.



“MY FLORIDA FARM WEATHER” APP Connecting agricultural producers with real-time weather data

Agricultural producers across the state can now access real-time, local weather data from their smartphone or computer. The “My Florida Farm Weather” program, developed by FDACS in partnership with the University of Florida’s Florida Automated Weather Network (FAWN), provides up-to-the-minute information on key weather variables such as rainfall, temperature, humidity, dew point, wind speed, and wind direction.

Over the past year, the department has partnered with agricultural producers to install weather stations and input data into a test site for the “My Florida Farm Weather” program. More than 80 operations are participating in the pilot program, with more applications pending. Producers enrolled in BMPs through the FDACS Office of Agricultural Water Policy are eligible to participate.

Weather station data can help producers optimize their irrigation

management, reducing water use, costs, and fertilizer and farm chemical runoff. Weather data is available at the “My Florida Farm Weather” website at <http://fawn.ifas.ufl.edu/mffw>.

Producers are eligible to receive funding for one weather station for each 300 acres of the operation. The department provides 75 percent of the cost of each device up to \$5,000, with a total cap of \$25,000 per producer. Please contact 850-617-1727 or AgBMPHelp@FreshFromFlorida.com for information about how to participate.

[Read the original press release at <http://www.freshfromflorida.com/News-Events/Press-Releases/2013-Press-Releases/New-My-Florida-Farm-Weather-App-Gives-Agricultural-Producers-Real-Time-Data-on-Temperature-Rainfall-More>.]

Cost share funding available to help producers implement BMPs

The FDACS Office of Agricultural Water Policy works with multiple partners, including USDA-NRCS, FDEP, Water Management Districts, and Soil and Water Conservation Districts to provide funds that assist farmers in implementing Best Management Practices.

For more information on currently available FDACS cost share funding, please download the list of programs and contacts located at http://www.freshfromflorida.com/content/download/33139/813305/Costshare_Info_2013_14.pdf.

Cost share funding is available in the following areas:

- Tri-County Agricultural Area
- SRWMD
- SWFWMD
- Marion County
- Jackson County
- Hillsborough County
- Northern Everglades

BMP RESEARCH PROJECTS

Each year, the FDACS Office of Agricultural Water Policy considers proposals for research funding. Research priorities include collecting data that lead to new or enhanced agricultural BMPs and quantifying the positive effects of BMPs on water quality and water conservation. Beginning in fiscal year 2013-2014, proposals will be reviewed with the help of a broad-based committee comprised of technical experts and stakeholder representatives.

FISCAL YEAR 2013-2014 PROJECTS AS OF OCTOBER 2013

Suwannee Farms Nitrogen and Phosphorus Budgets and Analysis of Existing Data in the Middle Suwannee River Basin*

in collaboration with the Florida Department of Environmental Protection and the Suwannee River Water Management District

The objective of this project is to develop a nutrient budget that maintains or increases farm profitability while minimizing imports and exports of nitrogen and phosphorus, and to develop nutrient-management related educational materials and training programs.

Literature Review and Search of Agricultural Water Quality BMPs

The objective of this project is to identify, collect, index, and provide copies of peer-reviewed publications related

to FDACS-funded studies, as well as similar studies funded by other credible research institutions in the southeastern U.S. for agricultural commodities that have water quality-related BMPs

Effectiveness of Ranchland Water Retention BMP with Regard to Nutrient Discharges in the Northern Everglades

The main objective of this study is to collect and analyze hydrologic water quality data for two wetland water retention (WWR) BMP sites. It will compare the pre- and post-BMP effects of WWR on surface flows and on total nitrogen and total phosphorus concentrations and loads.

Quantitative Evaluation of Water Needs in Citrus Nurseries Using Three Different Irrigation Systems

The objective of this study is to quantify the water savings using three citrus

nursery irrigation systems for seed germination and seedling growth in a replicated experiment at the Mid-Florida Research and Education Center.

Evaluation of Factors Influencing Mercury Methylation in South Florida Marshes*

in collaboration with the Florida Department of Environmental Protection, the South Florida Water Management District, and the EAA Environmental Protection District

The objective of this study is to conduct focused field and laboratory investigations to better quantify the relationships between surface concentrations and loadings, dissolved organic carbon quantity and quality, electron donors, and mercury methylation and demethylation in various Everglades environments.

FISCAL YEAR 2012-2013 PROJECTS

**Continued projects from fiscal year 2012-2013*

C-139 Basin Vegetable Production Demonstration Project

in collaboration with the South Florida Water Management District

The main objective of this project is to develop methods to optimize nutrient management BMPs in the C-139 Basin in South Florida, in order to prevent unnecessary application of nutrients and reduce loss of nutrients in farm

surface runoff and ground water leaching.

Preliminary Evaluation of Water Needs in Citrus Nurseries Using Four Different Irrigation Systems

The objective of this project is to measure irrigation inputs and evapotranspiration with regard to representative citrus trees under four different irrigation systems (traditional overhead, individual container drip, bench top flood, and self-contained capillary mat systems) to determine the

relative efficiency of the systems in meeting the water needs of nursery trees.

Field Demonstration on Most Effective Irrigation Scheduling to Address Water Demand of Greening-Infected Citrus Trees

The objective of this project is to demonstrate improved growth and yields of greening-infected citrus trees using more frequent (split) irrigation events with reduced total water use.



WHAT WAS OLD IS NEW AGAIN

Sod-based system shows potential for conserving water, building soils, and increasing profits

Following perennial grasses with row crops is a practice that farmers have used for generations for a variety of benefits, including nematode control and to build organic matter in the soil. For more than a decade, University of Florida researchers Dr. David Wright and Dr. Jim Marois have optimized this practice by developing a sod-based rotation system that caters to farmers in the Southeast.

The System

The sod-based system Wright and Marois developed involves planting bahiagrass for two years, rotating to peanuts for one year, then to cotton the next year, and back to bahiagrass. Conservation tillage is an important practice involved in this system, and helps protect against erosion and potentially increase profits. Conservation tillage is known to reduce the incidence of disease in cotton and peanut, as well as preserve soil moisture. Wright and Marois have seen yield increases of 30 to 80 percent in crops following bahiagrass when compared to conventional rotations.

While bahiagrass can pose challenges with reduced-tillage practices, Wright recommends killing the bahiagrass in the second year early enough for it to decompose before peanuts are planted, and planting a cover crop in between. A cover crop is also recommended between peanuts and cotton, such as no-till oats or rye.

The final component of this sod-based system is livestock (primarily cattle), which differs from conventional systems in that cattle and crops were

often separated. Cattle placed into the sod-based system which optimize the system by utilizing forages and helping to control weeds. Cattle's biggest contribution to this system, however, is nutrient recycling. Wright and Marois estimate that cattle can provide 50 percent of crop needs by continuously depositing small amounts of manure, reducing both the need for commercial fertilizer and the likelihood of potential runoff. Cotton yields have increased 25 to 30 percent when planted after peanuts followed by cattle grazing on a winter cover crop.

Impact on Water Use

Perhaps the most promising benefit this system provides is the ability to make the best use of water.

"I heard a producer say that you're always four days away from a drought," said Marois. "What that means to me is that there isn't enough organic matter. The only way to get organic matter in a system that doesn't break down quickly is perennial plant roots."

Building organic matter into the soil combined with using cover crops allows for an increase in soil moisture and in the capability of plants to take up water and nutrients. When plants are better able to utilize nutrients and water, they reach the plant instead of leaching into groundwater resources.

The sod-based system also has a water savings benefit. Wright and Marois have seen yields from row crops following sod in non-irrigated areas that equal or exceed irrigated crops.

"Our idea is that we want to use water to manage the crop at critical points

instead of to grow the crop all season," said Marois. "Water would be used to establish the crop, dig peanuts, or activate herbicide or fertilizer, for example."

Next Steps

While Wright and Marois have developed the sod-based system for peanuts and cotton, the concept could be applied to other crops. Other types of livestock could be substituted for cattle.

One barrier to producers adopting the sod-based system is the cost, whether for the first planting of bahiagrass, irrigation, or fencing. With up to 80 percent of Florida's farmland rented, justifying the cost to begin the system can be difficult for producers. It took almost 20 years for farmers in the South to embrace conservation tillage. Considering the added benefits of the sod-based system, government agencies may want to support its adoption.

Additional research is needed to study the benefits of the sod-based system in combination with variable rate and other irrigation technology. The biology of the system (crops, cattle, and microbes) is well understood, but the potential benefits of customized irrigation are yet to be discovered.

The Florida Department of Agriculture and Consumer Services partners with other agencies to fund sod-based rotation system research. For more information about this research and associated studies, please visit http://nfrec.ifas.ufl.edu/sod_rotation.shtml.

BMP SUCCESS STORY: DOVER/PLANT CITY AREA COST SHARE

Agricultural Water Enhancement Program (AWEP), Facilitating Agricultural Resource Management Systems (FARMS), and MiniFARMS Cost Share Program Successes

by Jessica Stempien, FDACS Office of Agricultural Water Policy

Within the Dover/Plant City area of Hillsborough County, there are more than 10,000 acres of strawberries using groundwater and/or surface water to establish new crops, irrigate, and provide frost-freeze protection. The Florida Strawberry Growers Association states that Hillsborough County produces 20 million flats annually and has a \$700 million dollar economic impact on the community. According to the Southwest Florida Water Management District (SWFWMD) permitting database there are approximately 600 water use permits within this area, including crops other than strawberries and ornamentals, such as blueberries.

In January 2010, there were nine out of eleven consecutive nights of freezing temperatures in the Dover/Plant City area, which required area strawberry farms to freeze-protect their sensitive crops. According to a SWFWMD report on the event¹, the freeze event was the most extreme within the area in 35 years of record.

There were approximately 750 dry-well complaints and 140 sinkholes reported. As a result of the pumping impacts associated with this event, the SWFWMD created the Dover/Plant City Water Use Caution Area (Project Area) comprised of 256 square miles.

Agricultural Water Enhancement Program

One interagency effort arising from the Dover/Plant City experience was a cost-share program through the U.S. De-

partment of Agriculture Natural Resources Conservation Service (NRCS) Agricultural Water Enhancement Program (AWEP). The AWEP is a voluntary conservation program that provides financial and technical assistance to agricultural operations. NRCS and the Florida Department of Agriculture and Consumer Services (FDACS) entered into a partnership agreement, with the cooperation of other agencies, to provide funds to growers in the Project Area.

tracts were planned in conjunction with supplemental funding from the NRCS, the SWFWMD Facilitating Agricultural Resource Management Systems (FARMS) Program and/or the FDACS Mini-FARMS Program. Coordination between these cost-share programs has been critical, since NRCS practices approved for cost share do not yet include some of the newer freeze-protection measures, such as weather stations, row covers, and frost cloth.



Implementation of the partnership agreement occurred over a two-year period, and focused on helping growers implement alternative frost-freeze protection best management practices (BMPs), such as using surface water ponds for irrigation. The program also helped growers improve irrigation efficiencies by replacing or upgrading irrigation systems.

Nineteen AWEP contracts were executed in 2010, totaling 1.45 million dollars within the Project Area, for projects to reduce groundwater use through alternative frost-freeze protection practices and irrigation system improvements. Some of these con-

The SWFWMD and state-funded programs have been able to bridge the funding gap for those practices. To date, eight AWEP projects have been completed, with six projects still in progress and five canceled due primarily to financial hardship.

FARMS and MiniFARMS Programs

The SWFWMD FARMS Program is a public/private agricultural BMP cost-share reimbursement program. The primary focus of the program is to improve water quality and water conservation within priority areas, which include the AWEP Project Area. The MiniFARMS Program is a partnership between the Hillsborough County Soil and Water Conservation District, the SWFWMD, and the FDACS to provide cost share for implementation of agricultural BMPs on farms of 100 irrigated acres or fewer. After the 2010 freeze event and the establish-

ment of the Project Area, the SWFWMD provided funding through FARMS for alternative frost-freeze protection practices such as surface water ponds and frost cloth.

To date, there are 25 FARMS projects within the Project Area. Two of these have pending contracts, nine are under construction, and fourteen are operational. Of these 25 projects, five are also AWEF projects and eight are also MiniFARMS Projects. The MiniFARMS Program has completed 61 projects within the Project Area.

According to the SWFWMD FARMS Program, the combined groundwater savings for frost-freeze protection from MiniFARMS and AWEF projects within the Project Area is projected to be 6.8 million gallons per day (mgd), and for FARMS projects to be 47.07 mgd. Ten FARMS projects reported actual groundwater savings of 17.04 mgd during the 2012 freeze event. Figures for savings during the 2013 freeze will be released soon. The FARMS and MiniFARMS programs working in conjunction with the AWEF have augmented the resource benefits from implementing groundwater conservation BMPs.

AWEF/FARMS Projects Highlights

Astin Farms

The primary goal of this project was to reduce groundwater withdrawals normally used for bed preparation, crop plant establishment, and freeze protection through the operation of a two-acre surface water irrigation and tailwater recovery reservoir. Project components consist of one surface water irrigation pump station and the piping necessary to connect the surface water pump to the irrigation system.

Sizemore Farms

This 242-acre strawberry farm will reduce Upper Floridan aquifer groundwater withdrawals used for bed preparation, plant establishment, and daily and frost-freeze irrigation through the recovery and re-use of tailwater from three surface water reservoirs. The three reservoirs, totaling approximately 2.8 acres, will enable the collection of tailwater from 250 acres of the property and surrounding areas. Under a modified permit, 15,655,500 gpd in additional cold-protection withdrawals will come from the new tailwater recovery ponds.

Sewell Farms

The Sewell Farms project is designed to reduce groundwater withdrawals normally used for bed preparation, plant establishment, and frost-freeze protection on 75 acres of strawberries through operating an existing 1.5 acre surface water irrigation reservoir.

Ennis Strawberry Farm

The purpose of this project is to reduce Upper Floridan aquifer groundwater withdrawals through the use of an existing 0.5-acre surface water reservoir to irrigate 19 acres of strawberries. Project components include a surface water pump station and mainline pipe and controls connected to the irrigation system. It has been estimated that the use of surface water for the project will yield a groundwater offset of approximately 22,500 gpd, almost half the permitted quantity.

Strawberry Red Ranch

The Strawberry Red Ranch project will reduce groundwater withdrawals normally used for bed preparation, crop plant establishment, frost-freeze protection, and daily irrigation of strawberries and cucumbers through the operation of two surface water reservoirs. The farm previously was irrigated from two wells that opened into the Upper Floridan aquifer. The project is anticipated to offset 1.95 million gpd previously permitted for citrus frost-freeze protection.

Gutierrez Farms

This is a 14-acre strawberry farm located 1.1 miles northwest of Plant City. The primary goal of the project is to reduce the withdrawal of groundwater in the Upper Floridan aquifer and offset frost-freeze protection quantities through the application of row cover, the use of electronic engine controls for precision irrigation, the installation of a weather station to monitor daily climatic conditions and the optimum time interval for row-cover cloth deployment, and augmentation of the existing surface water pond for frost-freeze protection withdrawals. The project is expected to offset 1.2 million gpd of the permitted frost-freeze quantity.

Castillo Farms

The primary goal of this project is to reduce the withdrawal of groundwater from the Upper Floridan aquifer for frost-freeze crop protection through the addition of frost cloth on ten acres of strawberry. The

project is expected to offset 997,836 gpd of the originally permitted frost-freeze quantity. The original AWEF project was to install a surface water pond, but the expense to accommodate the tailwater system was not feasible, and frost cloth was determined to be a better option for the farmer.



Astin Farms Reservoir, Plant City



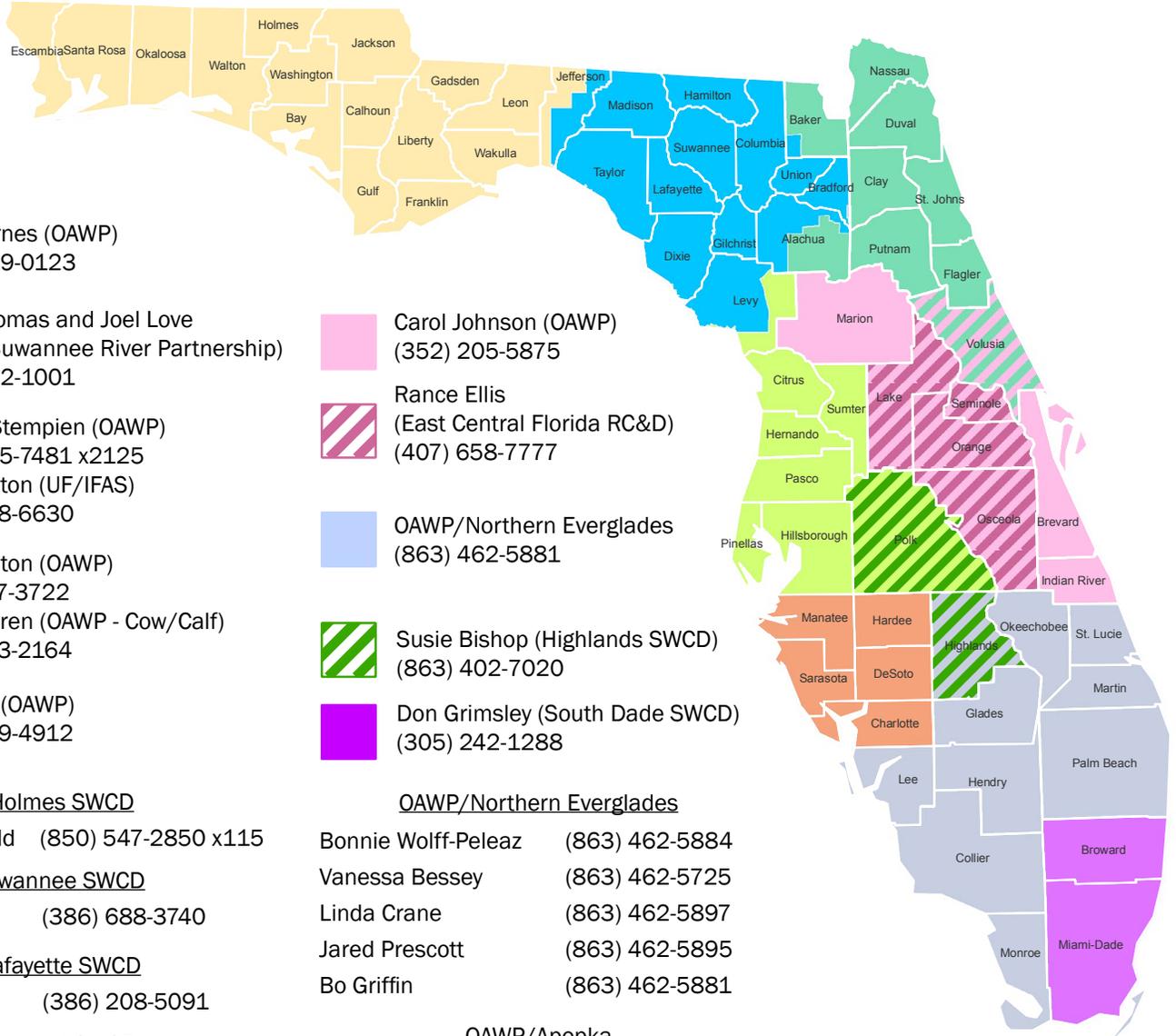
Sizemore Farms Tailwater Recovery Reservoirs

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