

# THE UNIQUE STORY OF THE EVERGLADES AGRICULTURAL AREA



CONSERVATION *IN ACTION* TOUR

OCTOBER 14 -15, 2014

CONSERVATION TECHNOLOGY INFORMATION CENTER



## 2014 CONSERVATION IN ACTION TOUR FLORIDA'S EVERGLADES AGRICULTURAL AREA

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CONSERVATION TECHNOLOGY INFORMATION CENTER

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# THE DIVERSE PALETTE OF FLORIDA AGRICULTURE

*Sugarcane silhouettes dark against pink skies. Strawberries as red as the clouds line the rows. Orange trees glow vibrantly against the bright autumn sky. Cows graze on lush green grass, calves playing tag nearby.*

*The picture of Florida agriculture is as colorful as the state's kaleidoscopic sunsets.*

Due to the state's mild winter climate, the growing season is counter-cyclical to most other fresh-market agricultural states. Florida's harvesting season starts in October and ends in June or July.



The state leads the nation in the value of oranges, sugarcane, grapefruit, sweet corn, snap beans, watermelon, squash and cucumbers.



In 2011, Florida was second only to California in the value of the nation's vegetable cash receipts. The U.S. Department of Agriculture's 2012 Ag Census Report showed increases from 2007 to 2012 in both the amount of land in farms (9,548,362 acres) and the number of farms (47,740).



Florida exports 80 percent of its crops, with total ag exports worth \$4.1 billion in 2013. Purebred breeding horses were the fastest-growing export from 2012-2013, followed by strawberries, tomatoes, peppers, potatoes and snap beans.



*Just as the sunset is painted by many different colors, the diverse palette of agriculture makes one beautiful picture that is Florida agriculture.*

**TURN TO PAGE 6 TO LEARN ABOUT  
THE COLORFUL PICTURE OF  
AGRICULTURE IN THE EVERGLADES  
AGRICULTURAL AREA.**



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*"The Mosaic Company supports CTIC because we share CTIC's commitment to conservation agriculture. The Conservation in Action Tour brings together a large and diverse group of stakeholders in the future of sustainable agriculture, and we are proud to encourage their collaboration on issues critical to the future of sustainable agriculture."*

**– Ben Pratt**, member of the CTIC Board of Directors and vice president of corporate public affairs at The Mosaic Company, Tour Leader

## GREETINGS FROM THE CONSERVATION TECHNOLOGY INFORMATION CENTER



*"On behalf of the CTIC Board, I'm pleased to welcome you to the 7<sup>th</sup> Annual Conservation in Action Tour, 'The Unique Story of the Everglades Agricultural Area'! We're delighted you've joined us today. Together with local and state partners, we've planned this tour to highlight successful agricultural practices that complement the surrounding ecosystem in the Everglades Agricultural Area. All of us at CTIC look forward to meeting you, and we invite you to join us in our efforts to promote and provide information on conservation technologies and sustainable agricultural systems."*

**– Pauley Bradley**

Chair of the CTIC Board of Directors and John Deere Ag and Turf Tactical Marketing – Region 4



*"Welcome to this year's Conservation in Action Tour in the Everglades Agricultural Area. Here, growers and researchers work together with state agencies to develop and implement a suite of agricultural conservation practices that protect the Florida Everglades and maintain high productivity in the field. As one of the leading agricultural areas of the country, the EAA has a unique conservation story that is not to be missed. We hope you enjoy the tour!"*

**– Karen Scanlon**

CTIC Executive Director

## THANK YOU!

CTIC extends sincere and heartfelt thanks to our partners in Florida who shared their knowledge, experience and insight to help make this tour a special event. We appreciate the many hours everyone contributed and recognize their leadership and dedication to conservation in the Everglades Agricultural Area. Our partners in Florida are listed below:



**Mike Aerts**  
Florida Fruit & Vegetable Association



**Joan B. Kyle**  
Nutrients for Life Foundation



**Barbara Miedema**  
Sugar Cane Growers Cooperative of Florida



**Niki Spencer**  
South Florida Water Management District



**Mary Hartney**  
Florida Fertilizer & Agrichemical Association



**Mel Kyle**  
Syngenta



**Gregg Nuessly**  
Everglades Research and Education Center, University of Florida



**Dennis Wedgworth**  
Wedgworth Farms, Inc. and Wedgworth's Inc.



**Jaime Jerrels**  
Florida Farm Bureau Federation



**Mabry McCray**  
Everglades Research and Education Center, University of Florida



**James M. Shine, Jr.**  
Sugar Cane Growers Cooperative of Florida

NOT PICTURED:

**Kathy Krawchuk**  
Everglades Research and Education Center, University of Florida

**Derek Pridgen**  
United States Sugar Corporation

**Judy Sanchez**  
United States Sugar Corporation

**Darrell Smith**  
Florida Department of Agriculture and Consumer Services

# ITINERARY & MAP

## PRE-REGISTRATION

3:00-5:00 P.M. | HILTON PALM BEACH AIRPORT

## SOCIAL ITINERARY

OCTOBER 14 | 6:00-8:00 P.M.

SOUTH FLORIDA SCIENCE CENTER AND AQUARIUM, WEST PALM BEACH\*

Hosted by John Deere



# JOHN DEERE

## Welcome from John Hoblick, president of Florida Farm Bureau Federation



John Hoblick, a third-generation farmer, serves as president of Florida Farm Bureau Federation, a position he has held since October 2006. He is a Volusia County cut foliage producer who has been a member of the Florida Farm Bureau state board of directors since 1994.

John earned his bachelor's degree in ornamental horticulture from the University of Florida in 1990. He then took over the ownership of Hoblick Greens, Inc., an operation established by his grandparents 22 years earlier. In 1998, he was named the Swisher Sweets/Sunbelt Expo Florida Farmer of the Year.

John is excited about the future of Florida agriculture. "Though agriculture faces many challenges, we farmers are a resilient group," John said. "However, the world is changing today at a faster pace than agriculture would like and we must be prepared to make the changes and face the challenges that lie ahead."

\*Complimentary shuttles provided for transport to and from the social location. The first shuttle leaves the hotel at 5:45 p.m., and the last shuttle will return at 8:15 p.m.

## TOUR ITINERARY

OCTOBER 15



### 6:45 - 7:45 A.M.

Registration, Hilton Palm Beach Airport

### 7:15 - 7:50 A.M.

Breakfast, Welcome and EAA Overview, Hilton Palm Beach Airport

### 8:40 A.M.

Improving Water Quality for the Everglades, Stormwater Treatment Area 1 West

### 10:15 A.M.

EAA Best Management Practices, Gladeview

### 12:40 P.M.

Lunch, Everglades Research and Education Center

### 1:50 P.M.

Research and Application, Everglades Research and Education Center

### 3:15 P.M.

Precision Agriculture in the EAA, Prewitt Farm

### 5:40 P.M.

Dinner, City of Pahokee Campground & Marina

### 8:15 P.M.

Return to Hilton Palm Beach Airport

# THE EVERGLADES AGRICULTURAL AREA



The Everglades Agricultural Area (EAA) surrounds Lake Okeechobee on the south, east and west shores. Over 1.5 million people call the four-county area home (Palm Beach, Hendry, Martin and Glades). The EAA represented almost 23% of Florida's total agricultural sales in 2012. Agricultural commodities grown in the area (2012) were:

- **Sugarcane**  
– 99% of Florida acreage and 47% of the U.S. 2012 production
- **Trees, Nuts, Berries**  
– \$378 million or 20.46% of Florida's total
- **Vegetables, Melons, Potatoes**  
– \$415 million, which represents 30.75% of Florida's total
- **Citrus**  
– 25.2 million boxes, which represents 16.12% of Florida's crop
- **Nursery, Greenhouse, Floriculture**  
– \$194.7 million representing 11.3% of Florida's total
- **Cattle**  
– 176,638 head of cattle or about 10.5% of Florida's herd

## Economic Impact:

- Employment supported: 13,166 jobs
- Total economic impact: \$2.49 billion
- \$1.771 billion agricultural value sold (2012)
- 1,591,737 acres of land in farms

SPECIAL NOTE: The Everglades Agricultural Area overlays part of the four-county area denoted in this analysis. Data displayed in this summary represents information for each county's entire agricultural output.

## State Rankings:

### Palm Beach County:

- #1 in value of sales, sugarcane and vegetable production
- #3 in farm acreage, population and nursery/greenhouse/floriculture

### Hendry County:

- #3 in value of sales
- #2 in sugarcane and citrus production
- #6 in cattle herd size

### Martin County:

- #9 in nursery/greenhouse/floriculture

### Glades County:

- #3 in sugarcane acreage
- #6 in total farm acreage
- #7 in cattle herd size



SOURCES: USDA 2012 AgCensus Report

PREPARER: Tom Perny, Marketing Specialist, Florida Department of Agriculture and Consumer Services, July 28, 2014  
SUPERVISOR: Dan Sleep, Senior Analyst, Supervisor, Florida Department of Agriculture and Consumer Services

# BREAKFAST | GROWERS ON THE BUSES

## History of the EAA

A brief historical overview of the origin, implementation philosophy and results achieved to date by the on-farm phosphorus reduction program in the Everglades Agricultural Area.



### TOM MACVICAR

Tom MacVicar is a registered professional engineer specializing in water resource issues of South Florida. He spent 16 years on the staff of the South Florida Water Management District and was instrumental in the science-based mediation process that led to the Everglades Water Quality Program. For the last 20 years, he has been a private consultant serving clients engaged in agriculture, rock mining and project development in South Florida.

## Local Insights on the EAA

Several growers will be joining us on the buses to provide their perspectives on local agriculture.



### LESLIE BAUCUM

Leslie Baucum is the multi-county agronomic/pasture forage Extension educator and Highlands County Extension Director for the University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) in South Florida. He received a bachelor's degree and a master's degree from Mississippi State University before moving to Florida in 1989. He worked in the private industry before joining UF/IFAS Extension and combines these experiences with his Extension experiences to provide timely, relevant programming. He has received recognition for his programming at the state and national levels.



### PAUL GROSE

Paul Grose currently serves as vice president for King Ranch Florida Operations, managing the 20,000-acre Palm Beach County farm, as well as 8,500 acres of row crops in Martin County. Paul is responsible for 75 employees and all aspects of sugarcane, sweet corn, corn silage, field corn, rice and turfgrass on muck and sandy soils. He studied range management at Texas A&M University and worked for one semester on a cattle ranch in Colombia, South America, prior to receiving his bachelor's degree. Paul returned to work on the family farm in Georgia, but an uncertain future there prompted Paul to return to Texas A&M for his master's degree. He then worked for King Ranch in Venezuela for 2.5 years, then spent a year in Brazil before returning to the U.S.



### DEREK ORSENIKO

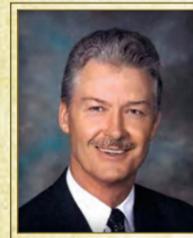
Derek Orsenigo is the production manager for Orsenigo Farms and Grower's Management. Born and raised in Belle Glade, Derek grew up on the farm and spent all summers, weekends and holidays working for his father, Paul. After majoring in agricultural operations management at University of Florida and graduating in 2009, he returned to the farm as production manager. Derek currently serves on the Western Palm Beach County Farm Bureau Board of Directors and Black Gold Jubilee Committee.



### PAUL ORSENIKO

Paul Orsenigo's agriculture career began when he followed up on a *Newsweek* article about wheat harvesting. On a whim, the Florida native called the harvest operation managers featured in the article, and the next thing he knew, he was headed to Texas. He spent the next six months on a wheat harvesting combine crew that traveled from Texas to Montana. Paul returned to Belle Glade on Christmas Eve 1979 and began working with local vegetable and sugarcane growers. In 1985, he formed his own company.

Orsenigo Farms grows sugarcane and rice. Paul also is involved in other farming ventures that grow lettuce and other leaf crops, fresh market green beans, baby spinach and wild arugula. He currently sits on the Florida Fruit and Vegetable Association Board and Executive Committee and the Sugar Cane Growers Cooperative Board, among others. His son, Derek, joined him in the family farming business after graduating from the University of Florida in 2009.



### RICK ROTH

Rick Roth is a third-generation farmer. He joined his father in the family business in 1976 after graduating from Emory University with a bachelor's degree in mathematics. He became the president and principal owner of Roth Farms, Inc., in 1986. The closely held family farm is located in the EAA near Belle Glade where they employ 20 people full time, plus 150 seasonal employees, and grow radishes, leafy vegetables, rice, sugarcane, sweet corn, green beans and celery.

In 2006, Rick became principal owner of Ray's Heritage, LLC. On April 9, 2007, Ray's Heritage opened its state-of-the-art packing house in the Belle Glade Industrial Park, where they grade, cool, pack and ship radishes, green beans and sweet corn. They also cool and ship a wide variety of leafy vegetables and celery.



### DENNIS WEDGWORTH

Dennis Wedgworth serves as president of Wedgworth Farms, Inc., and president of Wedgworth's Inc., the state's largest custom fertilizer dealer. He currently serves as secretary/treasurer for the Sugar Cane Growers Cooperative of Florida, a board member for the Florida Sugar and Molasses Exchange and past president of the Florida Fertilizer & Agrichemical Association. In 1974, he received his Bachelor of Science in engineering from Duke University and his Master of Business Administration from the University of Florida in 1977.



### KEITH WEDGWORTH

Keith Wedgworth is a fourth-generation sugarcane farmer in the EAA. Wedgworth Farms also produces rice on some of its rotational land and leases land to area farmers for rotational vegetable production. Keith's great-grandfather was one of the first professional scientists stationed at the Everglades Research and Education Center in the early 1930s. Today, Wedgworth's Inc. is the state's largest agrichemical company supplying commercial fertilizer needs throughout South Florida.

Keith earned his Bachelor of Science in food and resource economics and his Master of Agricultural Business from the University of Florida. He has been active in a number of community activities, including the Belle Glade Rotary Club and Leadership Glades. In addition to their land interests in the EAA, the family owns and cares for ranch land in central Florida.

## ALSO ON THE BUSES:

John S. Hundley, Eric Hopkins, Paul Allen, Denise Hatton

# STORMWATER TREATMENT AREA

## TOUR STOP 1 MAP



STA-1W



### Improving Water Quality for the Everglades

Phosphorus is a mineral essential for all life. It forms genetic material, builds bones and teeth and aids metabolism. However, when natural wetlands such as the Everglades receive too much phosphorus from developed areas such as lawns, farms and roadways, the nutrient does more harm than good.

Phosphorus excess stimulates plant growth, which produces an overabundance of unwanted vegetation. Cattail and other species crowd out natural wetland plants and prevent sunlight from reaching plants in the water. Aquatic insects, crustaceans and other invertebrates then do not have enough food or oxygen. Moving further up in the food chain, this means that fish and birds do not have enough to eat, either.

This is where Stormwater Treatment Areas (STAs) come in. The STAs are constructed wetlands that remove excess nutrients from water headed for the Everglades. At present, 57,000 acres of land south of Lake Okeechobee have been converted to STAs, which are managed by the South Florida Water Management District (SFWMD).

The key purpose of STAs is to remove phosphorus from urban and agricultural runoff. The wetlands remove phosphorus from runoff water by channeling it through shallow marshes filled with aquatic plants such as cattail, southern naiad, hydrilla and algae. These plants take up or absorb phosphorus from water traveling through, reducing to very low levels the amount of the nutrients reaching the Everglades.



The STAs provide another bonus – prime home and visiting territory to wildlife including wading birds, ducks and American alligators. Through partnerships with the SFWMD, local Audubon chapters offer bird-watching tours at three STAs. Bicycling, hiking, nature viewing and photography are also offered. Waterfowl and alligator hunting are permitted in some STAs during weekends designated by the Florida Fish and Wildlife Conservation Commission.

The state has invested more than \$1.8 billion in water-quality improvements aimed at lowering phosphorus levels. Two decades ago, water headed for the Everglades averaged phosphorus concentrations of more than 170 parts per billion (ppb). Today, the long-term target concentration of 10 ppb is already being met in most locations throughout the Everglades.

Over nearly two decades, best management and improved farming practices combined with water quality treatment by the STAs have prevented more than 4,580 metric tons of phosphorus from entering the Everglades.



## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

The South Florida Water Management District (SFWMD) is a regional, governmental agency that oversees the water resources in the southern half of the state. Its mission is to manage and protect water resources of the region by balancing and improving water quality, flood control, natural systems and water supply.

The agency serves 16 counties from Orlando to Key West and from Fort Myers to Fort Lauderdale, encompassing 31% of the state's land area (18,000 square miles) and 41% of the state's population (7.9 million residents).

The SFWMD operates the region's primary flood control network along with other system components made up of major canals, levees, water storage areas, pump stations and other water control structures.

The agency also safeguards and plans regional water supplies for people and the environment. Other core responsibilities include improving and protecting water quality and restoring natural systems in one of the most diverse ecosystems in the world – America's Everglades.

## Overview of Stormwater Treatment Areas (STAs)

Stormwater treatment areas (STAs) and agricultural Best Management Practices (BMPs) and their roles in Everglades Restoration.



### TERRIE BATES

Terrie Bates manages the South Florida Water Management District's (SFWMD) environmental research, ecosystem monitoring, water quality monitoring and analysis, water supply planning and groundwater resource evaluations. She joined the district in 1985 and has gained wide-ranging experience in environmental regulation, water quality, wetland mitigation, ecosystem restoration and other issues.

Terrie also has held executive management responsibilities for overseeing the district's emergency water shortage and drought response in 2006-2007 and again in 2011. Born and raised in Palm Beach County, she received her bachelor's degree in forest resources and conservation from the University of Florida and a Master in Public Administration from Florida Atlantic University.

## How do STAs function?

The complex operation of STAs and how they function in reducing phosphorus from runoff water.



### DELIA IVANOFF

Delia Ivanoff is a senior supervising environmental scientist for the water resources division of the South Florida Water Management District (SFWMD) currently supervising a team of scientists working to understand and optimize the performance of the STAs. Prior to this, she was the district's quality administrator for water quality monitoring programs and laboratory manager.

Delia also is a professor teaching environmental sustainability and environmental monitoring classes. Previously, she worked as a researcher with the University of Florida on projects to understand the fate and transport of nutrients in wetlands and lake systems. Delia received her bachelor's degree in agriculture (soil science) from the University of the Philippines and a Master of Science in soil and water science from the University of Florida.

## What do you see at the STA?

An overview of the created wetlands and the challenges of operating dynamic, biological treatment systems subject to varying hydrology, vegetation and wildlife constraints.



### LAWRENCE GERRY

Lawrence Gerry is the STA coordinator at the South Florida Water Management District. He works with multiple departments on activities related to vegetation management, water treatment operations, hydraulic enhancements and expansion of the STAs.

From 2002 to 2009, Lawrence was the director of the Everglades Restoration Planning Department and worked closely with the Corps of Engineers Jacksonville District on a \$10.5 billion ecosystem restoration planning effort. He has over 40 years of experience in private sector consulting and state government.

Lawrence holds a Bachelor of Arts in environmental science from the University of Virginia and a master's degree in marine science from North Carolina State University.

## Best Management Practices Program in the EAA

A brief history of how the Best Management Practices (BMP) program in the EAA was established and the subsequent evolution of the program.



### MALCOLM "BUBBA" WADE

As senior vice president of Corporate Strategy and Business Development for the United States Sugar Corporation, Malcolm "Bubba" Wade analyzes and negotiates major opportunities, projects and ventures that add to the company's growth, profitability, efficiency and diversity. In addition, he is responsible for all water compliance and related regulatory activities and has been actively involved in

the environmental issues involving the Everglades, Lake Okeechobee and the South Florida ecosystem for more than two decades.

He was appointed by Governor Jeb Bush to serve on the South Florida Water Management District Governing Board in 2005. Malcolm has served on the board and currently is chairman of the board for the Everglades Agricultural Area Environmental Protection District.

## Wildlife in STAs

The role of vertebrate wildlife in agriculture and the importance of the EAA as wildlife habitat; the use of flooded fields as surrogate wetland habitats for wading birds; possible impacts of wading birds on phosphorus dynamics in flooded systems (STAs, EAA).



### RENA BORKHATARIA

Rena Borkhataria is a research assistant professor in wildlife ecology and conservation at the Everglades Research and Education Center and the director of the Doris Duke Conservation Scholars Program Collaborative. Her primary research interests are in avian community ecology and conservation (including wildlife/human interactions in agriculture), the role of waterbirds in nutrient transport and cycling and barriers to

participation in conservation. Her current research focuses on the conservation of endangered wood storks and the role of vertebrate wildlife in agriculture.

She earned a Bachelor of Science in wildlife management at the University of Arizona, a Master of Science in zoology at North Carolina State University and a doctorate in wildlife ecology and conservation from University of Florida.



# GLADEVIEW

## TOUR STOP 2 MAP



OWL BOX  
RICE HARVEST

# GLADEVIEW

DD PUMP STATION

GMI BARN

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## Best Management Practices in the Everglades Agricultural Area

Best Management Practices (BMPs) are practical, cost-effective methods that agricultural producers can use to keep soil and inputs on their fields. These practices also often enhance production. However, not every BMP applies to every farm, so they are selected and implemented according to the type of operation in question. In Florida, BMP manuals are developed and adopted based on commodity groups (e.g. cow/calf, citrus, nursery, equine, vegetable/row crops, etc.). Some BMPs, such as structural improvements requiring engineering and expensive technologies, are included in cost-share programs to increase the number of farmers who can install these practices.

By law, Florida has established the use of BMPs as the primary means for growers to meet water quality goals. Based on Florida law specific to the Everglades Agricultural Area (EAA), the South Florida Water Management District (SFWMD) has adopted regulations requiring a Works of the District permit that includes the use of BMPs to reduce the amount of phosphorus introduced into the fragile Everglades ecosystem, while maintaining the viability of agricultural production. The Florida Department of Agriculture and Consumer Services (FDACS) has adopted BMP programs that address both phosphorus and nitrogen input. However, the current FDACS rule provides for EAA growers to follow the SFWMD rule, which allows growers to select from a list of BMPs according to specific resource issues that need to be addressed on their operations. Under the SFWMD rule, EAA growers must submit an annual BMP certification report.

The achievements of the EAA growers have far surpassed the phosphorus reduction requirements. In 2014, for example, the SFWMD reported a 63% reduction, compared to the 25% reduction target.

## The Role of Flooded Rice Production in Best Management Practices Program

The use of flooded rice production as an environmentally sensible cover crop option for sugarcane producers; flooded rice production and its role in organic soil conservation; recent improvements in variety selection and adoption that are beneficial to the Florida rice industry.



### RON RICE

Ron Rice is the agriculture program leader for the University of Florida's Institute of Food and Agricultural Sciences Palm Beach County Extension. He works closely with researchers from the University of Florida and USDA's Agricultural Research Service to design timely and meaningful crop production educational events for South Florida's farming clientele.

Ron earned his doctorate in agronomy from the University of Florida in 1993. He is a past president of the American Society of Sugar Cane Technologists (Florida Division) and is currently the president-elect of the Florida Association of Agriculture County Agents.



### LUIGI TROTTA

As director of farming for Florida Crystals, Luigi Trotta is in charge of all rice operations, as well as organic rice and sugarcane farms. He oversees approximately 20,000 acres of farmland.

Luigi was raised on a dairy and rice farm in Italy. After graduating from college with a degree in agronomy, he moved to Costa Rica to manage 12,000 acres of rice, sugar cane and cattle. Seven years later, he moved to the U.S., earned his master's degree in agribusiness and worked for another seven years in the commodity trading business. He has served as director of farming for Florida Crystals for three years.

## Nutrient Management and Crop Rotation in Vegetable Production

Nutrient management, which is very important for crop production in the Everglades Agricultural Area, both from a crop production standpoint and from an environmental stewardship standpoint; adding sufficient nutrients to the soil while using proper application methods, timing and rates to minimize losses through runoff into canals.



### PAUL ORSENIKO

Paul Orsenigo's agriculture career began when he followed up on a Newsweek article about wheat harvesting. On a whim, the Florida native called the harvest operation managers featured in the article, and the next thing he knew, he was headed to Texas. He spent the next six months on a wheat harvesting combine crew that traveled from Texas to Montana. Paul returned to Belle Glade on Christmas Eve 1979 and began working with local vegetable and sugarcane growers. In 1985, he formed his own company.

Orsenigo Farms grows sugarcane and rice. Paul also is involved in other farming ventures that grow lettuce and other leaf crops, fresh market green beans, baby spinach and wild arugula. He currently sits on the Florida Fruit and Vegetable Association Board and Executive Committee and the Sugar Cane Growers Cooperative Board, among others. His son, Derek, joined him in the family farming business after graduating from the University of Florida in 2009.



### ALAN WRIGHT

Alan Wright is associate professor in the University of Florida Soil and Water Science Department. He conducts research and leads Extension programs for agricultural and natural resources issues of importance in South Florida. His program focuses on fertilizer and nutrient management to enhance agricultural productivity and sustainability in the EAA while minimizing adverse environmental effects on Everglades wetlands.

Research and Extension projects include assessment of effects of anthropogenic factors on nutrient cycling, agricultural management practices to conserve subsiding soils of the EAA and soil and water biogeochemical processes in agricultural, urban and wetland ecosystems. His research also has been used by water managers for improving the functioning of Stormwater Treatment Areas for phosphorus removal.



## Nutrient Export Reduction and Sediment Control Practices

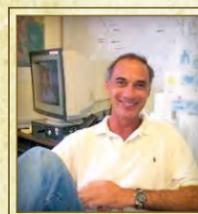
Best Management Practices implemented to achieve a total phosphorus loads reduction of 25 percent in accordance with the Everglades Forever Act (1994); nutrient control practices such as application of phosphorus fertilizers according to calibrated soil tests, banding of phosphorus fertilizer using specialized application equipment, and fertilizer spill prevention; sediment control BMPs that focus on minimizing the transport of sediments off the farm and removing accumulated sediments from farm canals.



### TIMOTHY LANG

Timothy Lang, research associate in water resources at the Everglades Research and Education Center, joined the University of Florida in 1997 to conduct research on Best Management Practices (BMPs) that reduce phosphorus load. The research has been instrumental in helping growers lower phosphorus loading from the EAA basin by a long-term average of approximately 54%, more than double the reduction mandated by Florida's Everglades Forever Act.

Timothy has had direct responsibility for developing, testing and transferring to farmers BMPs that reduce the amount of phosphorus leaving farms via drainage waters. In his current BMP research, he is investigating the impact of floating aquatic weed growth in farm canals on farm phosphorus loads. Lang received his doctorate in agronomy from the University of Florida in 1993.



### LUIS GIRADO

Luis Girado has 12 years of experience as environmental manager for Florida Crystals. He works with agricultural Best Management Practices on a 180,000-acre farm. Luis also is heavily involved in environmental projects with the University of Florida and the South Florida Water Management District. His main areas of expertise are water use permit compliance, pumping operations and agricultural practices related to the environment.

Luis studied agronomy engineering at the University of Buenos Aires, Argentina, and then received his Master of Science in agricultural economics from Michigan State University. His previous experience includes consulting and business analysis for major food companies in Argentina, Uruguay and Brazil.

## Barn Owl Project, a Sustainable Rodent Control Program Using Barn Owls

An overview of the University of Florida's Barn Owl Project, a sustainable rodent control program using barn owls, in which EAA growers have participated since 1994; the program's results of decreased rodenticide use and lower levels of rodent damage to sugarcane.



### RICHARD RAID

As a plant pathologist serving the vegetable, rice and sugarcane industries, Richard Raid has helped growers manage a number of crop diseases, including foliar blights of celery and sweet corn, lettuce downy mildew and rust diseases of sugarcane. In addition to his pathological research, he has developed a widely accepted program using barn owls for rodent control. He routinely uses the barn owl project, as well as a popular school garden program known as Students SOAR (Sharing Our Agricultural Roots), for youth education and outreach. Providing hands-on lessons, these programs have informed thousands of students on the importance of agriculture, wildlife and the value of land stewardship.

## LUNCH



### EVERGLADES RESEARCH AND EDUCATION CENTER University of Florida's Institute of Food and Agricultural Sciences



**Speaker:** RICHARD BUDELL

Richard Budell serves as the director of the Office of Agricultural Water Policy for the Florida Department of Agriculture and Consumer Services. He joined the department in 1985 and has held a variety of management positions within the department. In his current position, he oversees statewide programs promoting implementation of agricultural best management practices (BMPs) addressing water quality and conservation. Richard's office also is responsible for assessing future water needs for agriculture as part of developing Regional Water Supply Plans. He recently completed work on a National Academy of Sciences Committee evaluating the nutrient reduction strategies being employed in the Chesapeake Bay Watershed. He earned his Bachelor of Science from Boise State University in 1977 and Master of Science from Florida State University in 1984.

*Sponsored by*



## EVERGLADES RESEARCH AND EDUCATION CENTER

### TOUR STOP 3 MAP



## EREC

*Sponsored by* **Agrium**

## Research and Application at Everglades Research and Education Center

The Everglades Research and Education Center (EREC) is a facility for the University of Florida's Institute of Food and Agricultural Sciences. This location houses agricultural and environmental research and education. Its goal is to investigate and advocate agricultural systems that are both sustainable and profitable. The scientists located at the Center form an interdisciplinary team to investigate ways to conserve and protect soil, water and other natural resources.

Construction on what is now known as the EREC began in 1922, despite setbacks created by the forces of nature typical to southern Florida. In the 1930s, studies included soil analysis, cattle crossbreeding and insect control. By 1940, crops were being developed and bred specifically for the Everglades region. A virus research unit dedicated to plant diseases was established in 1952. The 1970s were an era focused on technology with soil test recommendation computer programs, growth regulators and even cloning sugarcane. Researchers also examined utilizing flooded soils, like rice rotated with sugarcane and vegetables. The name of the center changed to the Everglades Research and Education Center in 1984 and now reflects its expanded studies of environmental issues, especially water quality.

Current research underway at EREC includes a lettuce cultivar development and genetics program, integrated control of the Southern Chinch Bug in St. Augustine grass, nutrient application practices and wildlife use of cultivated and natural landscapes in the Everglades Agricultural Area, among many others.



## Best Management Practices to Minimize Soil Subsidence and Increase Agricultural Productivity and Longevity

The problem of subsidence, soil loss due to oxidation and lowering of the surface elevation; methods used in the EAA to decrease subsidence and increase longevity for agricultural use; improving water management throughout the EAA.



### JEHANGIR BHADHA

Jehangir Bhadha is a research assistant scientist at the Everglades Research and Education Center, specializing in water quality and sustainable agriculture. He is currently working on developing new Best Management Practices (BMPs) that will help reduce phosphorus loads from the EAA. His research also includes efforts focusing on soil conservation and sustainability, particularly because soil loss due to oxidation is a major concern for growers in the EAA. To develop a knowledge base that would help growers conserve

soil, Jehangir is conducting research on utilizing organic byproducts and biochar as soil enhancers to grow sugarcane. At least twice a year, Jehangir helps organize phosphorus-reduction BMP workshops that are regularly attended by over 100 farmers, regulators and scientists.



### PAUL GROSE

Paul Grose currently serves as vice president for King Ranch Florida Operations, managing the 20,000-acre Palm Beach County farm, as well as 8,500 acres of row crops in Martin County. Paul is responsible for 75 employees and all aspects of sugarcane, sweet corn, corn silage, field corn, rice and turfgrass on muck and sandy soils. He studied range management at Texas A&M University and worked for one semester on a cattle ranch in Colombia, South America, prior to receiving his bachelor's degree. Paul returned to work

on the family farm in Georgia, but an uncertain future there prompted Paul to return to Texas A&M for his master's degree. He then worked for King Ranch in Venezuela for 2.5 years, then spent a year in Brazil before returning to the U.S.

## Sustainable Biological Control Program and Sugarcane Cultivar Development

Parasitic wasps and generalist predators resulting in dramatic reductions in insecticide use and millions of dollars in industry savings; sugarcane genetics and cultivar development.



### DAVID OWENS

David Owens is an entomology doctoral student working with Gregg Nuessly at the Everglades Research and Education Center. His current research examines the biology of corn silk flies in order to improve sweet corn pest management practices in a more sustainable manner. He is originally from Virginia, graduating from Virginia Tech in 2010 with his bachelor's degree in biology and in 2012 with his master's degree in entomology.



### PER McCORD

Per McCord is a sugarcane breeder and geneticist at the USDA's Agricultural Research Service Sugarcane Field Station in Canal Point. His responsibilities include overseeing the early stages of the sugarcane breeding program and performing research to understand the genetics of important sugarcane traits. The goal is to make the breeding process more effective and efficient. In this research, he uses both classical and molecular genetics approaches. Prior to working in sugarcane, Per performed

genetics and breeding research in alfalfa and potato. He earned his bachelor's degree in plant genetics and breeding from Brigham Young University and his master's degree and doctorate (both in horticulture) from North Carolina State University.

# PREWITT FARM

## TOUR STOP 4 MAP



## PREWITT FARM AREA

### Precision Agriculture in the Everglades Agricultural Area

With its abundant, nitrogen-rich muck soils, the Everglades Agricultural Area provides ideal growing conditions for sugarcane. The area contains 99 percent of Florida sugarcane acreage and 47 percent of U.S. production (according to 2012 statistics).



To produce sugarcane, growers first prepare the land for planting by cleaning ditches, leveling land and applying nutrients to the soil. Once fields are prepared, planting activities include seed cane harvesting, furrowing, fertilizer application, dropping seed cane and applying insecticide.

Harvest season runs from October to April and operates 24 hours a day, 7 days a week. Sugarcane is cut using mechanical harvesters, loaded into cane wagons pulled by tractors, transported to loading stations, loaded on railcars and transported to the sugar mill. A single harvest crew typically includes five harvesters, ten cane haul tractors, thirty cane wagons and additional support equipment.

Examples of precision agriculture – the use of technology to tailor agricultural practices to the needs of a crop in the field – can be seen in the process of growing sugarcane. A nutrient management program could include soil sampling, leaf tissue analysis, laboratory analysis, fertility recommendations and amendment application. Nutrient recommendations are tailored to each soil type and other unique conditions within the Everglades Agricultural Area.

Some of these unique conditions include subsidence and the changing properties of soil that result from it, namely shallower soils and increased concentrations of calcium carbonate. Also, sugarcane acreage on mineral soils in Florida has increased by 84% in the last 25 years. Current research seeks to update previous fertilizer recommendations and analyze how soil test calibrations for sugarcane on organic and mineral soils can be updated and improved.



Using precision nutrient application is challenging without good yield and soil pH maps. Researchers are currently looking at technology that can be used to develop maps based on soil conductivity. For now, the most common use of precision agriculture in the Everglades Agricultural Area is in equipment, including Global Positioning Systems (GPS), auto steer to guide machines and spray control to accurately control nutrient application rates.

Using precision agriculture is beneficial to the crop and to the soil. Nutrients are only applied where they are needed, minimizing the risk of excess nutrients running off the field. With auto steer and GPS to guide equipment, growers can use more efficient driving patterns to increase the number of acres covered per day. Growers also can limit soil compaction, which is beneficial because compacted soil is difficult for plants to grow in. Further research and more technology in the future will mean increased opportunities for producers to use precision agriculture, with many more benefits for conservation, as well.



## Land Preparation and Sugarcane Planting

The benefits of autopilot in land preparation operation; impact of Global Positioning System-based land leveling on drainage and water control; benefits of Real Time Kinematic (RTK) level accuracy in planting operation.



### STEVEN STILES

Steven Stiles is the U.S. Sugar Corporation Area 3 farm manager with over 30 years of experience with the company. He manages all aspects of sugarcane operation on approximately 50,000 acres located between Lake Harbor and Pahokee.



### SCOTT BERDEN

Scott Berden serves as the precision agriculture manager for U.S. Sugar Corporation. As a certified Geographic Information System (GIS) professional, Scott has over 20 years of experience with GIS and agriculture geodata management. He holds an associate's degree in computer aided drafting technology from ITT Technical Institute.

## Sugarcane Nutrient Management

Nutrient management in the EAA; soil sampling and fertilizer recommendations; precision application techniques; equipment calibration.



### MABRY McCRAY

Mabry McCray is an associate scientist in the agronomy department at the University of Florida. He specializes in soil fertility and plant nutrition of sugarcane and rice. Mabry has been with the university for 10 years, previously having worked as a soil scientist for U.S. Sugar Corporation for 13 years.

Mabry conducts a research and Extension program for sugarcane and rice growers and farm managers in South Florida that promotes increased nutrient use efficiency, cost-effective use of fertilizers and amendments and best management practices that will enable growers to achieve optimum economic yields while protecting water quality. His programs provide growers with effective nutrient management information, as well as access to reliable soil and leaf analytical services.



### ROSA MUCHOVEJ

Rosa Muchovej serves as the chief soil scientist for U.S. Sugar Corporation. She has over 30 years of crop nutrition experience, including over 20 years of sugarcane crop nutrition experience. She holds a doctorate in soil, crop and environmental sciences.



### RUBEN RIFA

Ruben Rifa, U.S. Sugar Corporation Area 2 farm manager, manages all aspects of the sugarcane operation on a 40,000-acre farm located south of the area from Clewiston to Lake Harbor. He has over 30 years of experience with U.S. Sugar Corporation.

## Sugarcane Harvesting

Sugarcane harvesting operation; beneficial uses of sugarcane that produce zero waste; products from sugarcane, from raw sugar to cane fiber; technology utilized in harvest operations to manage logistics, efficiency and fuel consumption.



### KEN McDUFFIE

Ken McDuffie is the senior vice president of sugarcane operations for U.S. Sugar Corporation. He manages all aspects of the company's 195,000 acres of sugarcane, including an extensive railroad transportation network. He has over 20 years of experience with U.S. Sugar Corporation. He received his bachelor's degree in economics from Florida State University.



### JUAN CERVERA

Juan Cervera is the harvest operations manager for U.S. Sugar Corporation, managing the entire harvest operation for over 150,000 acres of sugarcane production. He has over 30 years of sugarcane harvesting experience.



# DINNER

## CITY OF PAHOKEE CAMPGROUND & MARINA

Known as Palm Beach County's "other" coast, the city of Pahokee sits along Lake Okeechobee. Pahokee means "grassy waters" in Seminole and at its height, the city was known as the "Winter Vegetable Capital of the World."

Pahokee also is known for its Royal Palm Trees, which find a natural home in the rich muck soils. Seven miles of these trees line the road to Pahokee.

The City of Pahokee Campground & Marina offers breathtaking unobstructed lake views, which we will enjoy during dinner.



### Speaker: DEREK ORSENIKO

Derek Orsenigo is the production manager for Orsenigo Farms and Grower's Management. Born and raised in Belle Glade, Derek grew up on the farm and spent all summers, weekends and holidays working for his father, Paul.

After majoring in agricultural operations management at University of Florida and graduating in 2009, he returned to the farm as production manager. Derek currently serves on the Western Palm Beach County Farm Bureau Board of

Directors and Black Gold Jubilee Committee.

Derek also served as a grower on the bus throughout the tour. As the dinner speaker, he will provide "Reflections on the Everglades Agricultural Area."

Sponsored by



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Sugar Cane Growers  
Cooperative Of Florida



# ABOUT CTIC



The Conservation Technology Information Center (CTIC), a not-for-profit 501(c)(3) membership organization, provides technical, educational and practical support to America's agricultural and conservation communities. Formed in 1982 by representatives of agribusiness, government and associations, we thrive today with guidance and support from partners and members from public, private and academic sectors.

America's producers face complex decisions about how to integrate and maintain conservation systems within their farming operations. Given the best information, producers will make good decisions for their land. We believe they deserve trustworthy information from a dependable source. CTIC is that dependable source.

## TO ADDRESS OUR MISSION, WE:

### LEAD INITIATIVES

CTIC and its partners lead initiatives to address conservation agriculture's pressing needs. Our initiatives build partnerships, provide information and promote economically viable and environmentally beneficial agricultural systems.

### PROVIDE INFORMATION

We serve as an information clearinghouse, reviewing and communicating information on new research, technologies and innovative conservation agriculture approaches. We promote the good news about conservation in agriculture through our website ([www.ctic.org](http://www.ctic.org)), *Conservation in Action Partners* (our quarterly e-newsletter) and regular news releases. Through national information campaigns, we recognize farmers who use sound management strategies on their farms to efficiently manage inputs and protect natural resources.

### BUILD COALITIONS

We link private businesses, non-profit organizations, associations and local, state, regional and federal government agencies to address common conservation agriculture issues. With strength, wisdom and knowledge in numbers, CTIC's coalitions work to disseminate information on new technologies, techniques, products and tools to ensure conservation agriculture works on the ground.

## Connect with CTIC

**CTIC WEBSITE** At [www.ctic.org](http://www.ctic.org), visitors access CTIC resources, update membership information, register for events, learn about CTIC projects, download free publications, subscribe to the CTIC mailing list and more.

**MEMBER MAIL** All CTIC members receive *Member Mail*, an electronic newsletter containing news briefs pertinent to our membership.

**SOCIAL MEDIA** News moves quickly in today's information age. Join the conservation conversation and see research articles, event announcements, photos and more by following CTIC on Twitter (@ctic\_tweet), liking our page on Facebook ([www.facebook.com/Conservation.Technology.Information.Center](http://www.facebook.com/Conservation.Technology.Information.Center)) and subscribing to our YouTube channel ([www.youtube.com/user/CTICComm](http://www.youtube.com/user/CTICComm)).

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CropLife America

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Indiana Corn Marketing Council

Indiana Soybean Alliance

International Plant Nutrition Institute

Iowa Farm Bureau Federation

Mid America CropLife Association

Missouri Agribusiness Association

National Association of Conservation Districts

National Corn Growers Association

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No-Till on the Plains

Ohio No-till Council

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Soil and Water Conservation Society

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David Williams

## MISSION

CTIC champions, promotes and provides information on technologies and sustainable, productive and profitable agricultural systems that conserve and enhance soil, water, air and wildlife.

\*as of October 9, 2014

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# CTIC STAFF

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**KAREN SCANLON**  
EXECUTIVE DIRECTOR  
*scanlon@ctic.org*

Karen directs staff and consultants; develops policies, procedures and budgets; oversees programs and operations; supports the board of directors; builds and maintains member relations and evaluates programs and services. She earned a master's degree in natural resources management from The Ohio State University and a bachelor's degree in journalism from the University of Florida.



**TAMMY TAYLOR**  
DIRECTOR OF OPERATIONS  
*taylor@ctic.org*

Tammy assists the executive director with financial and human resource functions and membership development. She oversees accounts receivable and payable and maintains the website. Tammy also leads event planning and national conference projects.



**CHAD WATTS**  
PROJECT DIRECTOR  
*watts@ctic.org*

Chad directs on-the-ground CTIC projects in the Midwest and coordinates the crop residue management survey and the annual cover crop survey. Chad works with several partners to implement watershed projects in the Mississippi River and the Great Lakes Basins. He earned his bachelor's degree in natural resources and environmental sciences from Purdue University.



**ELISE BROWN**  
COMMUNICATIONS DIRECTOR  
*brown@ctic.org*

Elise directs media relations and outreach efforts, helps maintain the CTIC website, writes news releases, takes pictures and maintains CTIC's presence on social networking sites. She holds a bachelor's degree in agricultural communication from Purdue University and a master's degree in agricultural and Extension education from Pennsylvania State University.



**SUE TULL**  
PROJECT COORDINATOR  
*tull@ctic.org*

Sue assists CTIC staff with projects and communications, focusing on the Indian Creek Watershed Project. She spent most of her career in plant breeding research, primarily in soybeans. She also has worked with two Soil and Water Conservation Districts in Indiana as a district technician and urban conservationist and with the local food bank.



**SARA HAGMANN**  
PROJECT COORDINATOR  
*hagmann@ctic.org*

Sara Hagmann, who started out as communications intern for CTIC, organizes efforts for CTIC's newest Conservation Innovation Grant, which focuses on cover crops. She also coordinates the Watershed Implementation and Innovation Network. She graduated from Brigham Young University-Idaho in English and worked as a designer and blogger before coming to CTIC.

# CTIC CURRENT PROJECTS

## LET'S DO THE MATH: ECONOMIC, AGRONOMIC AND ENVIRONMENTAL BENEFITS OF COVER CROPS

### Partners

This project is part of a Conservation Innovation Grant (CIG) and is funded by the U.S. Department of Agriculture's Natural Resources Conservation Service and CTIC members and partners: National Corn Growers Association, Corn and Soybean Digest, Monsanto, Syngenta, Bayer CropScience, The Nature Conservancy, Purdue University, DuPont Pioneer and CropLife Foundation.



### Description

The "Economic, Agronomic and Environmental Benefits of Cover Crops" project examines the benefits of cover crop practices to pollinator habitat, nutrient cycling, improvements in soil health and other aspects.

This project covers seven states: Illinois, Indiana, Iowa, Ohio, South Dakota, Minnesota and Michigan. In these states, three farmers have been selected to plant, cumulatively, 1,000 new acres of cover crops. An economic analysis of this acreage will be studied to determine the cost and benefit of cover crops.

The selected farmers vary in their experience with cover crops, ranging from using cover crops for the first time to using them for five or more years. Those who are brand new to cover crops are partnered with an advisor who will help them with seed selection, planting and termination.

Four of the more experienced farmers will conduct a nitrogen rate strip trial, which will allow researchers to estimate the amount of nitrogen secured by cover crops for the following crop. Five of the more experienced farmers will partner with beekeepers. Together with the beekeepers, they will select pollinator-friendly seed mixes and management practices that will benefit beehives placed on their farms. The health of the colonies placed on the farm will be measured and studied throughout the project, in an effort to better understand how cover crops can provide added nutrition for pollinators.

These studies of cover crop cost, nitrogen levels and forage opportunities will in turn be documented and shared with the public via Corn and Soybean Digest and CTIC. Information on the pollinator aspect also will be shared with top beekeeping publications, such as *American Bee Journal*.

### For More Information

Visit [www.ctic.org/CoverCropMath](http://www.ctic.org/CoverCropMath) or contact Sara Hagmann, CTIC project coordinator, at 765-494-9555 or [hagmann@ctic.org](mailto:hagmann@ctic.org).

# INDIAN CREEK WATERSHED PROJECT



### Partners

Livingston County Soil and Water Conservation District, Illinois Environmental Protection Agency, the U.S. Department of Agriculture's Natural Resources Conservation Service and the United States Geological Survey.

### Description

CTIC facilitates the Indian Creek Watershed Project, a multi-year effort led by local farmers who demonstrate and test best conservation practices on their land.

This project aims to encourage 50 percent or more of the farmers in the watershed to adopt best practices and conservation systems that encourage nutrient use efficiency on 50 percent or more of the farmed acreage in the watershed. By the end of the project, CTIC and partners will use water quality monitoring and other information to measure changes in water quality that may result from the application of these best practices and conservation systems.

This unique project combines:

- Real farmers implementing conservation systems while still making a living from their operations;
- On-farm research that demonstrates and measures success of new techniques and technology in a local setting, where area farmers can see how their neighbors make it work;
- A support network for area farmers, agribusinesses and technical service providers to learn about conservation technology together;
- Public and private financial and technical assistance resources to aid the farmer in implementation;
- Water quality data gathering to measure water quality changes;
- An outreach strategy to inform the public about the good things farmers do.

### For More Information

Visit [www.ctic.org/IndianCreek](http://www.ctic.org/IndianCreek) or contact Chad Watts, CTIC project director, at 574-242-0147 or [watts@ctic.org](mailto:watts@ctic.org).

### Thank You

Sponsors provide cash and in-kind donations to ensure the project's success and demonstrate their conservation products, technologies and equipment. Illinois Environmental Protection Agency assists in monitoring water quality.

#### TIER ONE

Agrium  
Koch Agronomic Services  
GROWMARK  
Illinois Soybean Association  
The Mosaic Company  
The Fertilizer Institute

#### TIER TWO

Case IH  
Dow AgroSciences  
Illinois Corn Marketing Board  
John Deere

#### TIER THREE

CropSmith

Partial funding for this project provided by Illinois Environmental Protection Agency through Section 319 of the Clean Water Act.



# MONITORING NITRATE

## IN TILE OUTLET FLOWS FROM INDIAN CREEK FARMS

### Partners

U.S. Department of Agriculture's Natural Resources Conservation Service, Illinois Corn Marketing Board, The Fertilizer Institute, International Plant Nutrition Institute, U.S. Department of Agriculture's Agricultural Research Service, Livingston County Soil and Water Conservation District



### Description

In 2011, the U.S. Department of Agriculture's Natural Resources Conservation Service in Illinois granted CTIC funding through a Conservation Innovation Grant to implement a water monitoring project that would measure nitrogen in tile water outflows from a variety of nitrogen cropland treatments. This project isolated drainage tile lines and defined their drainage areas so that cropland treatments could be applied within each area. The cropland treatments are designed to evaluate the 4Rs of nutrient stewardship: using the right fertilizer source at the right rate, at the right time and in the right place. Because the amount of nitrogen lost through the tiles can be measured, the efficiency of nitrogen use by the crop for each different cropland treatment can be analyzed. A list of best practices for nutrient use efficiency can then be developed and promoted to farmers within the area by highlighting results of this project. If the best practices determined by this project are applied at an appropriate scale across the landscape, then there will be less nitrogen in the tile water, which will lead to improved water quality in the receiving streams.

### Activities

CTIC planned each treatment and worked with the farmers and consulting agronomists to apply cropland treatments to the various tile drainage areas of the selected farm. Each cropland treatment was isolated to a tile drainage area to facilitate monitoring. A variety of cropland treatments was applied. CTIC installed automated sampling equipment on individual drainage tile lines to collect samples during the times when water flowed. These samples quantified nitrogen amounts flowing through the tile lines after rain events from each treatment area. Also, additional locations for random grab samples were established, representing additional cropland treatment areas. All of the samples were collected by local sampling contractors and sent to the National Laboratory for Agriculture and the Environment, which is operated by USDA's Agricultural Research Service. Samples were processed and evaluated by the lab and results were used by experts to develop the nitrogen use efficiency for each cropland treatment.

This project concluded in August 2014. At this time, CTIC and partners are evaluating the water quality data and comparing those results to the outcomes of the cropland treatments to produce a final report characterizing the nutrient use efficiency for each cropland treatment.

#### For More Information

Visit [www.ctic.org/IndianCreek](http://www.ctic.org/IndianCreek) or contact Chad Watts, CTIC project director, at 574-242-0147 or [watts@ctic.org](mailto:watts@ctic.org).

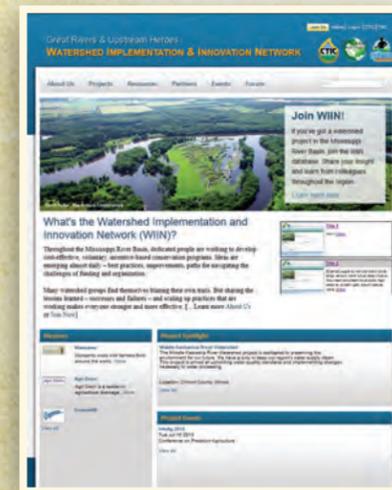
# WATERSHED IMPLEMENTATION AND INNOVATION NETWORK

### Partners

The Nature Conservancy Great Rivers Partnership, The Mosaic Company, The McKnight Foundation and Monsanto

### Description

CTIC and The Nature Conservancy's Great Rivers Partnership established the Great Rivers & Upstream Heroes Watershed Implementation and Innovation Network (WIIN) to strengthen watershed projects throughout the Mississippi River Basin.



The WIIN website is the hub of a new, online community – a network that provides a forum for information sharing, easy access to experts and resources from across the basin and capacity-building webinars. It's an online place for learning, brainstorming and inspiration.

The project's goals are:

- Establish regular communication among water projects in the upper and lower Mississippi River Basin;
- Use a communication network to build understanding of agriculture and conservation concerns;
- Share conservation information and ideas with producers, their advisors, conservation partners and policymakers;
- Increase the capacity of watershed project coordinators and advisors to sustain effective projects that address nutrient concerns.

### Activities

The Great Rivers & Upstream Heroes WIIN website offers a world of opportunities for information sharing, including:

- A growing searchable database of Mississippi River Basin watershed projects, groups and best management practices;
- Details on members' accomplishments, challenges, funding avenues and adoption trends;
- Exchange forums where members can initiate conversations, ask questions or even conduct online polls of their peers;
- Resource libraries of user-submitted reports, publications and presentations;
- Online webinars and dialogues;
- Links to research, technology studies, cost/benefit analyses and technical notes on key practices.

#### For More Information

Visit [www.ctic.org/WIIN](http://www.ctic.org/WIIN) or contact Sara Hagmann, CTIC project coordinator, at 765-494-9555 or [hagmann@ctic.org](mailto:hagmann@ctic.org).

# COVER CROP SURVEY

## Partners

U.S. Department of Agriculture's Sustainable Agriculture Research and Education (SARE) program, *Corn and Soybean Digest*

## Description

In 2012, USDA's Sustainable Agriculture Research and Education (SARE) program granted CTIC funding to conduct a survey to evaluate cover crop use and learn more about cover crop users' attitudes surrounding, and practices used with, cover crops. CTIC worked with SARE, social science experts, statisticians, farmers, cover crop experts and members of the Midwest Cover Crops Council to develop a multi-question survey. More than 750 farmers responded. The survey verified the oft-held premise that cover crop use and interest was on the rise.

In 2013, SARE and CTIC once again collaborated to survey producers about cover crops. With more than 2,900 farmers responding, this survey showed again that cover crop use is on the rise. The new survey (information from which is still being evaluated at this time) builds on the 2012 survey by expanding on the knowledge of those farmers using cover crops and providing some new insights from those not using cover crops.



Some significant early findings indicate that, rather than tap into local, state and federal cost-share programs, farmers are planting cover crops on their own. Also, producers rely heavily on the advice and counsel from their local agricultural retailers. The producers strongly believe the ag retailers also have a larger role to play in promoting cover crops and helping farmers adapt their operations. This survey also shows a shift in the reasons for using cover crops, from simply stopping erosion to improving soil health and increasing soil biology. Non-users relate many questions about cover crops as their reasons for not using them on their farms. Many cited lack of time in the fall to plant cover crops, excessive cost of seed and inadequate knowledge of the right species to use as reasons why they were reluctant to use cover crops on their farms. A report is being assembled that expands on these findings and highlights many others.

### **For More Information**

Visit [www.ctic.org/CoverCrops](http://www.ctic.org/CoverCrops) or contact Chad Watts, CTIC project director, at 574-242-0147 or [watts@ctic.org](mailto:watts@ctic.org).

# CONSERVATION CROPPING SYSTEMS INITIATIVE IN INDIANA

## Partners

Indiana Association of Soil and Water Conservation Districts and the 92 local SWCDs, U.S. Department of Agriculture's Natural Resources Conservation Service, Purdue University Cooperative Extension Service, Indiana State Department of Agriculture, State Soil Conservation Board, Indiana Soybean Alliance, Indiana Corn Marketing Council, Vincennes University Jasper Campus, National Fish and Wildlife Foundation, Wabash County SWCD, Dubois County SWCD

## Description

The Conservation Cropping Systems Initiative (CCSI) began in 2009 to promote the use of conservation tillage and cover crops for improved soil health in Indiana. The CCSI promotes a continuous, systematic approach to production agriculture, resulting in improved profitability, soil quality and water quality on Indiana cropland by focusing on continuous no-till/strip-till, cover crops, precision farming and nutrient and pest management. To date, over 250 field days, workshops and other events have been held, reaching more than 15,000 people.

## Activities

CCSI is organized by four regional hubs. The locations of the hubs represent different soil types, climates, and topography. In each hub, sites on volunteer farmers' land will serve as scientific test and survey spots. One activity will involve taking measurements on farmers' current, good cropping system and comparing them with measurements taken after putting in place a newer system. Measurements may also be taken from conventional systems. CTIC will produce and promote economic case studies from producer's farms and a final publication with data and results from each regional hub.

### **For More Information**

Visit [ccsin.iaswcd.org](http://ccsin.iaswcd.org) or contact Elise Brown, CTIC communications director, at 765-494-9555 or [brown@ctic.org](mailto:brown@ctic.org).

# SUCCESS STORIES

## GREAT LAKES COVER CROPS INITIATIVE

### Partners

Midwest Cover Crops Council, Ohio No-Till Council, The Ohio State University, Purdue University, Michigan State University, Indiana Conservation Cropping Systems Initiative, Midwest Cover Crops Council, Ohio No-Till Council and the U.S. Environmental Protection Agency



### Project Description

The Great Lakes Cover Crop Initiative (GLCCI), which concluded in December 2013, promoted cover crops and conservation farming systems to crop producers in the Lake Erie, Lake Huron and Lake Michigan watersheds. Along with several university partners, agricultural organizations and government agencies, CTIC launched the initiative in 2010 to broaden the knowledge and adoption of cover crops to improve soil and water quality in the Great Lakes Region.

With this purpose in mind, CTIC and partners set out to plant 15,000 acres of cover crops over the three-year span of the initiative. From 2010 to 2013, producers in the Great Lakes Basin planted over 36,970 acres of cover crops, far above the original goal. The cover crops reduced nitrogen by nearly 73,000 pounds, phosphorus by more than 24,100 pounds and sediment by more than 1,440 tons in the Great Lakes.

Through GLCCI, farmers received one-on-one technical assistance to identify objectives for their cover crop use, select the right cover crops and crop rotations for their operations and plant and terminate cover crops in a timely manner.

### Activities

To facilitate that sharing of ideas, GLCCI partners hosted several educational opportunities. More than 80 field days reaching 5,500 people demonstrated how farmers were taking steps to improve water quality in the Great Lakes. In November 2013, CTIC hosted the Cover Crop Summit in the Fort Wayne, Indiana, area. The summit featured four farms where farmers discussed how they incorporate cover crops in their rotations, the equipment used for planting and terminating cover crops and the soil health changes they experienced when using cover crops.

Other activities included two focus group meetings that were held to better understand the views of producers and ag retailers on cover crops. CTIC and partners also provided support to GLCCI producers to attend the 2013 National No-Tillage Conference, CTIC's 2013 Conservation in Action Tour and the 2013 Ag Media Summit.

### Thank you

Bio-Till, KB Seed Solutions, N-Vest Cover Crops, Oregon Ryegrass Growers Seed Commission and Tillage Radish

### For More Information

Visit [www.ctic.org/GLCCI](http://www.ctic.org/GLCCI) for more information on the project, as well as stories and videos featuring producers who participated in GLCCI, the lessons learned through the project and a video about the link between water quality and cover crops. For more information on cover crops, visit [www.ctic.org/Cover\\_Crops](http://www.ctic.org/Cover_Crops) or contact Chad Watts at 574-242-0147 or [watts@ctic.org](mailto:watts@ctic.org).

# 6<sup>TH</sup>

## WORLD CONGRESS ON CONSERVATION AGRICULTURE

### Description

Advocates of conservation agriculture from around the world exchanged insights on using conservation ag to feed a growing world population during a global agricultural conference held June 22-25.

The 6th World Congress on Conservation Agriculture (WCCA) in Winnipeg, Manitoba, focused on practical conservation applications and techniques that will help conserve soil, water and other natural resources, as well as provide economic returns. Farmers, researchers, educators, agricultural company representatives, government representatives and others from 47 countries shared ideas on the opportunities and challenges they face in conservation agriculture. Countries represented included Australia, England, France, Argentina, several African countries and more.

Hosted by the Conservation Agriculture Systems Alliance, a network of conservation agriculture organizations across North America, with the Conservation Technology Information Center (CTIC) and Soil Conservation Council of Canada (SCCC) taking the lead, the Congress was the first WCCA to be held on North American soil.

The event included several keynote speakers, discussion panels, networking opportunities and a chance to participate in tours after the Congress, which took attendees to see conservation agriculture in action on nearby farms in Canada and the United States.



### Sessions

Throughout the conference, attendees were challenged by keynote speakers to implement and educate others on conservation agriculture. David Montgomery, author of *Dirt: The Erosion of Civilizations*, opened the Congress with his "Case for Global Soil Restoration." He demonstrated how soil could have been the culprit for the downfall of several civilizations throughout history and how rebuilding good soil is essential for society to thrive.

Howard G. Buffett, a farmer, businessman and author of eight books on conservation, wildlife and the human condition, acknowledged that differences among regions mean that no one cropping system or practice works everywhere. However, he emphasized, sustainable agriculture is essential for feeding the world's population.

In his address to close the Congress, Dwayne Beck, manager of the Dakota Lakes Research Farm, challenged participants to use science and reason, not emotion and rumors, when tackling issues related to soil degradation. Beck also encouraged the use of a systems approach with several conservation practices together in harmony to tackle soil degradation problems.

### The Next Congress

The 7th World Congress on Conservation Agriculture will take place in Rosario, Argentina, in 2017.



### For More Information

Visit [www.wcca6.org](http://www.wcca6.org) for more information on the speakers and activities of the Congress. Presentation and paper abstracts are posted on [www.ctic.org/WCCA](http://www.ctic.org/WCCA).

## Sponsors

### PLATINUM

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Howard G. Buffett Foundation  
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### OTHER CONTRIBUTORS

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# JOIN CTIC

## BE A MEMBER. MAKE A DIFFERENCE.

### Make a difference for agriculture and conservation.

#### As a CTIC member, you can:

- Give valuable time and talents to a small not-for-profit that benefits greatly from the direction, experience and expertise supplied by its diverse membership.
- Provide input and resources for projects where real conservation is being done on the ground and proven strategies are being marketed to improve soil and water quality.
- Participate in committees to chart the future for CTIC and conservation agriculture.
- Collaborate with fellow agriculturists, conservation advocates and public sector leaders to address information needs and advocate for conservation technology.
- Disseminate CTIC information on successful conservation systems to farmers and farm advisors.
- Attend events in support of CTIC and conservation agriculture.
- Help move agricultural conservation forward and engage others in accomplishing the same goal.

### All CTIC members benefit from:

- Access to research and information related to conservation agriculture.
- National recognition for support of agricultural conservation.
- Networking opportunities with agricultural and conservation advocates.
- Customized projects and materials promoting conservation agriculture.
- Interaction with technical professionals and policy makers at state and national levels.

### Options

Join our national public/private partnership at the basic membership level that fits you best – **Individual**, **Institutional** or **Corporate**. For additional benefits and recognition, increase your contribution. Each level includes additional benefits through Gold, Silver and Bronze.

## MEMBERSHIP LEVELS AND BENEFITS

### Corporate Membership

#### **GOLD** – \$8,500 + BASIC CORPORATE MEMBERSHIP

##### You receive the Basic benefits, plus:

- Recognition on web page and in social media outlets and feature stories in *Conservation in Action Partners*
- 10% discount on CTIC products during your annual membership term
- Special recognition at a CTIC Board of Directors meeting
- Two gift memberships at the Individual Silver level
- Recognition at two CTIC events
- Two complimentary registrations to CTIC's Conservation in Action Tour

#### **SILVER** – \$3,500 + BASIC CORPORATE MEMBERSHIP

##### You receive the Basic benefits, plus:

- Recognition in *Conservation in Action Partners*, web page and social media outlets
- 10% discount on CTIC products
- Special recognition at a CTIC Board of Directors meeting
- Two gift memberships at the Individual Silver level
- Recognition at two CTIC events

#### **BRONZE** – \$1,000 + BASIC CORPORATE MEMBERSHIP

##### You receive the Basic benefits, plus:

- Recognition in *Conservation in Action Partners*, web page and social media outlets
- 10% discount on CTIC products
- Special recognition at a CTIC Board of Directors meeting
- Two gift memberships at the Individual Silver level

#### **BASIC-1:** \$6,500 - Gross revenue greater than \$500 million

#### **BASIC-2:** \$2,000 - Gross revenue greater than \$100 million and less than \$500 million

#### **BASIC-3:** \$1,000 - Gross revenue greater than \$50 million and less than \$100 million

#### **BASIC-4:** \$500 - Gross revenue less than \$50 million

### BASIC CORPORATE BENEFITS

- One-year subscription to *Conservation in Action Partners* and *Member Mail* e-newsletter
- Access to Crop Residue Management Survey data from 1989 to 2004 through CTIC website
- Recognition on CTIC's website



## MEMBERSHIP LEVELS AND BENEFITS

### Institutional

#### **GOLD** – \$1,000 + BASIC INSTITUTIONAL MEMBERSHIP

**You receive the basic benefits below plus:**

- Recognition in *Conservation in Action Partners*, web page and social media outlets
- 10% discount on CTIC products during your annual membership term
- Special recognition at a CTIC board of directors meeting

#### **SILVER** – \$750 + BASIC INSTITUTIONAL MEMBERSHIP

**You receive the basic benefits below plus:**

- Recognition in *Conservation in Action Partners*, web page and social media outlets
- 10% discount on CTIC products during your annual membership term

#### **BRONZE** – \$500 + BASIC INSTITUTIONAL MEMBERSHIP

**You receive the basic benefits below plus:**

- Recognition in *Conservation in Action Partners*, web page and social media outlets
- Free conservation agriculture book or other CTIC product

#### **BASIC-1:** \$1,000 - Organizations with a national focus

#### **BASIC-2:** \$250 - Regional, state or local organizations

- Recognition on CTIC's website
- One-year subscription to *Conservation in Action Partners* and Member Mail e-newsletters
- Access to Crop Residue Management Survey data from 1989 to 2004

### Individual

#### **GOLD INDIVIDUAL MEMBERS** – \$500

**You receive the basic benefits below plus:**

- Recognition in *Conservation in Action Partners*, web page and social media outlet
- Free conservation agriculture book or other product from CTIC's online store
- Box of CTIC notecards featuring conservation in agriculture

#### **SILVER INDIVIDUAL MEMBERS** – \$250

**You receive the basic benefits below plus:**

- Recognition in *Conservation in Action Partners*, web page and social media outlet
- Box of CTIC notecards featuring conservation in agriculture

#### **BRONZE INDIVIDUAL MEMBERS** – \$100

**You receive the basic benefits below plus:**

- Recognition in *Conservation in Action Partners*, web page and social media outlet

#### **BASIC INDIVIDUAL MEMBERS** – \$50

- Recognition on CTIC's web site
- One-year subscription to *Conservation in Action Partners* and Member Mail e-newsletters

## MEMBERSHIP APPLICATION FORM

Name: \_\_\_\_\_

Company/Organization: \_\_\_\_\_

Address: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

### CORPORATE MEMBERSHIP

\_\_\_ **Gold Corporate Member** Basic\* plus \$8,500+

\_\_\_ **Silver Corporate Member** Basic\* plus \$3,500

\_\_\_ **Bronze Corporate Member** Basic\* plus \$1,000

\_\_\_ **Basic-1: \$6,500** - Gross revenue greater than \$500 million

\_\_\_ **Basic-2: \$2,000** - Gross revenue greater than \$100 million and less than \$500 million

\_\_\_ **Basic-3: \$1,000** - Gross revenue greater than \$50 million and less than \$100 million

\_\_\_ **Basic-4: \$500** - Gross revenue less than \$50 million

\*The Gold, Silver or Bronze Corporate Membership rate includes the basic membership rate of \$500, \$1,000, \$2,000 or \$6,500 plus the additional amount for the desired medal membership level.

### INSTITUTIONAL MEMBERSHIP

\_\_\_ **Gold Institutional Member** Basic\* plus \$1,000 +

\_\_\_ **Silver Institutional Member** Basic\* plus \$750

\_\_\_ **Bronze Institutional Member** Basic\* plus \$500

\_\_\_ **Basic-1: \$1,000** – Organizations with a national focus

\_\_\_ **Basic-2: \$250** – Regional, state or local organizations

\*The Gold, Silver or Bronze Institutional Membership rate includes the basic membership rate of \$250 or \$1,000 plus the additional amount for the desired medal membership level.

### INDIVIDUAL MEMBERSHIP

\_\_\_ **Gold Individual Member** \$500+

\_\_\_ **Silver Individual Member** \$250

\_\_\_ **Bronze Individual Member** \$100

\_\_\_ **Basic Individual Member** \$50

### METHOD OF PAYMENT

Please check one of the following:

\_\_\_ A check is enclosed, payable to CTIC

\_\_\_ Credit Card \_\_\_ Visa \_\_\_ MC \_\_\_ American Express

Card # \_\_\_\_\_ Exp. date \_\_\_\_\_

Signature \_\_\_\_\_

Please mail or fax  
(if paying by credit card) to:

Conservation Technology  
Information Center

3495 Kent Avenue, Suite J100,  
West Lafayette, Ind. 47906

Fax: (765) 463-4106

ctic@ctic.org

# NOTES

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# NOTES

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# THANK YOU

CTIC thanks all sponsors of the 2014 Conservation in Action Tour. We appreciate your support and value your contributions to make this event a valuable and enjoyable experience.

## TOUR LEADER

The Mosaic Company

## EVENING SOCIAL

John Deere

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Syngenta

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## PAST TOUR HOST SPONSORSHIP

Each year, CTIC invites the farm hosts from the past two Conservation in Action Tours to join us on the tour with travel expenses paid. This year, Syngenta supported the following individuals, listed with the location and year of the tour they hosted:

**Trey Cooke** –Mississippi, 2012

**Terry and Judy Bachtold** – Illinois, 2013

**Mike and Teresa Trainor** – Illinois, 2013

We thank Syngenta for sponsoring these conservation-minded individuals in their travels to Florida.



## PHOTO CREDITS:

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Paul Gross, Michigan State Extension

South Florida Water Management District

Sugar Cane Growers Cooperative of Florida

Tom MacVicar

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University of Florida, Everglades Research and Education Center

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Speaker photos provided



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# 4R Advocate Spotlight: Jones Potato Farm Parrish, Florida

“4R program ideals have been at the core of my fertility program for years. Adapting my fertilizer programs based on crop needs, weather and raw material prices has enabled Jones Potato Farm to maximize production while keeping costs in check.”

- Alan Jones, Grower  
Past 4R Advocate Winner

“So many times we get stuck in a rut and repeat the same programs year after year. The 4R Program spurs us into really thinking about fertility programs and to reevaluate how we are managing them. As a result, growers may just end up becoming a little more profitable and an even better steward of the land.”

- Dennis Coleman, Crop Advisor  
Past 4R Advocate Winner



## 4R Advocate Program

Now accepting nominations. For program details and information on the 4Rs, visit [www.nutrientstewardship.org](http://www.nutrientstewardship.org).

