

The Ohio State University
South Centers include:

- Piketon Research and Extension Center
- Endeavor Center for Business Incubation
- Enterprise Center
- OSU Learning Center South
- Small Business Development Center
- Manufacturing & Technology SBDC
- Ohio Cooperative Development Center
- Ohio Center for Aquaculture Research & Development

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Connection

2011 Achievements: A Year in Review

FARMS, FORESTS & STREAMS

Ohio Strawberry Sales Increase Over \$2 Million in Two Years

By: Brad Bergefurd, Extension Educator Horticulture/ Agriculture and Natural Resources

Strawberry research and outreach has been one of the main efforts of the OSU South Centers horticulture program in recent years. The primary purpose of the strawberry project is to support cultural research and extension programs in Ohio's commercial strawberry crops that will enhance farm incomes.

Strawberry plasticulture is one of the most economically attractive alternative specialty crops for small-to large-size farm operations seeking diversification out of tobacco or into high value specialty crops. Ohio's strawberry industry has generated an additional \$2 million dollars in annual strawberry sales since 2008 according to the USDA/ National Agricultural Statistics Service (2011), largely from direct marketing of plasticulture strawberries.

With much-appreciated grant funding from the Ohio Vegetable and Small Fruit Research and Development Program (OVSFRDP), Ohio Fruit Growers Society (OFGS), and financial contributions from industry partners, this project creates opportunities for increasing farm incomes by extending the current harvest season of strawberries from 6 weeks to 6 months using



Ohio strawberry sales have increased \$2 million dollars since 2008

researched season-extension techniques such as plasticulture, variety selection, winter protection, and high tunnels throughout Ohio. Field research results have shown that it is possible in southern Ohio for farmers to market strawberries from May through early November using strawberry growing methods being developed in this project.

Additional expected economic impact of the South Centers strawberry research and outreach may lead to a doubling of the gross value of the Ohio Strawberry industry in the next five years.



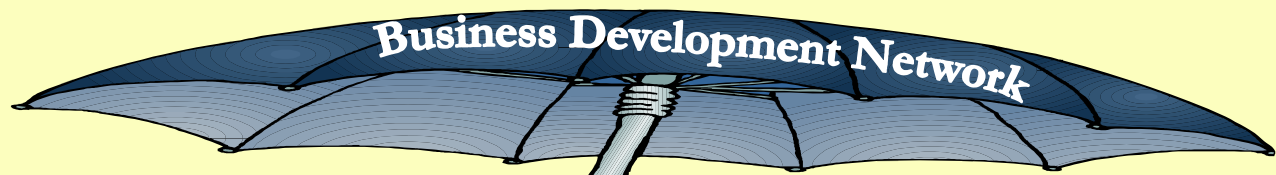
Strawberry study at Piketon with winter protection treatments installed.

BUSINESS & ECONOMIC DEVELOPMENT NETWORK

Business Development Network Assists in Developing Business in 2011

By: Business Development Network Team

The Ohio State University (OSU) South Centers **Business Development Network** (BDN) operates under a unified delivery model, giving clients easy access to industry specialists across Center and program designations. Under this umbrella, development is currently focusing on seven major development areas. The Small Business Development Center (SBDC) provides counseling to emerging and established small businesses; the Manufacturing and Technology Small Business Development Center (MTSBDC) offers counseling in lean processing and manufacturing practices to area companies; a newly added center, the International Trade Assistance Center (ITAC), provides assistance to emerging and established small businesses interested in trading internationally; the Endeavor Center business incubator provides facilities and support staff for entrepreneurs to house and grow their businesses; the Ohio Cooperative Development Center (OCDC) offers assistance to developing cooperatives; the TechGrowth Ohio Third Frontier Entrepreneurial Signature Program provides guidance and commercialization opportunities for ag bioscience ideas and product development requiring patents and copyright protection; and the *Growing!* Ohio Farmers' Markets Program offers education and resources to emerging and established farmers' markets.



Small Business Development Center	Manufacturing and Technology Small Business Development Center	International Trade Assistance Center	Endeavor Center Business Incubator	Ohio Cooperative Development Center	TechGrowth Ohio Third Frontier Entrepreneurial Signature Program	Growing! Ohio Farmers' Markets Program
<i>Serving Ohio Economic Development Region 7</i>	<i>Serving Ohio Economic Development Region 7</i>	<i>Serving Ohio Economic Development Region 7</i>	<i>Serving Ohio Economic Development Region 7</i>	<i>Serving Ohio and West Virginia</i>	<i>Serving 19 Counties in Southern Ohio</i>	<i>Serving Ohio</i>

2011 Business Development Network program highlights include:

The **Small Business Development Center** counselors provided 5,937 hours of business counseling to 411 clients throughout the year. The efforts of the Small Business Development counselors resulted in the creation of 805 new jobs, assisted with the retention of 2,006 jobs, and assisted the startup of 22 businesses. The businesses the Center served in 2011 were able to acquire \$8.3 million of additional capital in the form of loans or equity.

OSU South Centers SBDC business counselors received recognition from the state SBDC for their excellent work. **Kelly O'Bryant** was awarded the *SBDC Collaboration Award* for her work with OSU South Centers partners.

Patrick Dengel was presented the *Individual Outstanding Performance Award* at the state SBDC conference for achieving outstanding counseling objectives relating to client contact hours, capital infusion, jobs created, and cost avoidance counseling results.

The **Manufacturing and Technology Small Business Development Center** provided 363 counseling hours to 28 clients during 2011. Those companies reported an \$8,000 increase in sales as a result of the assistance the center provided. The counseling efforts of the MTSBDC also resulted in the retention of 66 jobs. Under the direction of **Brad Bapst**, the OSU South Centers MTSBDC was recognized from the state level as the *Top Performing Manufacturing and Technology Small Business Development Center* in the entire state. Together, the SBDC and MTSBDC saved clients over \$337,000 in cost avoidance during 2011.



Your Success is Our Business!

BUSINESS & ECONOMIC DEVELOPMENT NETWORK**Business Development Network Assists in Developing Business in 2011 continued:**

BDN Training is a key component to delivery of services. The BDN assessed the needs of clients, community, and partners to identify and address custom business-related training opportunities. During 2011, 43 training events were hosted with over 386 attendees.

In late 2011, the **International Trade Assistance Center**, was established at OSU South Centers. Leading the endeavor as the Director of ITAC is seasoned business development specialist, Kelly O'Bryant. Small businesses are sure to receive assistance that will help them to grow profitability. The ITAC serves as southern Ohio's first point of contact for information, resources, referrals, and consultation for the new-to-export, new-to-import, and expanding businesses, helping to connect Ohio entrepreneurs and small businesses with new buyers and new markets abroad.



At the **Endeavor Center**, 2011 was a very busy and profitable year, for both The Ohio State University Endeavor Center and the business partners who occupy the building. The facility is a business incubator providing a variety of office configurations, access to advanced technology, classroom and meeting space, free business counseling, and networking with other small, growing businesses.

With the next phase of the decontamination and decommissioning project beginning at the former gaseous diffusion uranium enrichment plant at Piketon, the Endeavor Center has become a hub of activity. Fluor, Babcock & Wilcox, the prime contractor for the multi-year 2 billion dollar project, located transition staff numbering nearly 100 in the center, occupying the largest classroom in the facility and six second floor offices. Simultaneously, the center signed an MOU with a former Endeavor Center partner, Wastren, to provide classroom and training space for the training required for the 1,500 new workers to be employed in the cleanup process. More than 100 training sessions were held throughout the year in hazardous material handling, radiological worker training, and various other health and safety courses.



The prospect of new projects also provided an infusion of new small businesses seeking occupancy in the facility. When constructed in 2005, the facility had 26 office spaces. As demand has grown, several underutilized spaces have been renovated into regular offices. 2011 saw two new offices created from former storage spaces and a brand new Stage 2 business space created by combining several formerly separate spaces into one large space, with five individual offices and a conference room housed in the original area.

2011 was also a banner year for a number of business partners within the facility. Wastren, housed in the facility since 2005 and originally comprised of four full-time employees, has grown to employ more than 350 with sales of over 300 million dollars. In 2011, Wastren graduated from the facility, electing to build an 11,000 square foot headquarters building across the road from the Endeavor Center. Wastren also has become a vivid example of how incubation should work, as upon graduation they acknowledged the role the Endeavor Center had in their growth by generously donating funds to completely refurbish the Endeavor Center Learning Center, complete with multiple network and internet servers and 20 new workstations.

In total, the 20 businesses occupying the 32 offices in the Endeavor Center created more than 300 new jobs in 2011 and assisted in the retention of more than 700 others. The Center continues to seek ways to be financially self-sustaining and remain technologically current for the businesses and community groups who utilize the facility and its resources.

BUSINESS & ECONOMIC DEVELOPMENT NETWORK

Business Development Network Assists in Developing Business in 2011 continued:

The **Ohio Cooperative Development Center (OCDC)** provided 26 new and emerging cooperative business clients with 1,067 hours of technical support, such as providing seed grants, conducting feasibility studies, facilitating bylaws development, facilitating incubator web site development, and providing one-on-one counseling and training. This resulted in the legal formation of seven new businesses designed to cooperatively provide member services such as: employee recruitment and training, marketing, product processing, purchasing, and funding/grant procurement.



The OCDC oversaw the investment of six seed grants totaling \$12,680 for new and emerging cooperatives. These seed grants were a major help in supporting start-up activities for new and emerging cooperatives. The OCDC staff led the development of two feasibility studies and two business plans for local food cooperatives ranging from aquaculture to specialty crops growers.

The OCDC provided a significant amount of technical support for the formation and continued development of the United Regional Purchasing Cooperative (URPC) working with businesses located in Appalachia Ohio. The group obtains better prices for services and better quality products for their companies, as well as their cooperative members, employees, and their families. Participating businesses, cooperatives, or associations joined the URPC along with other similar groups as members of a cooperative purchasing effort. In participating in cooperative purchasing, businesses gain the advantage of shared resources and the power of large numbers to benefit all participating businesses, cooperatives, or associations. OCDC development support of this cooperative-of-cooperatives purchasing cooperative governed by the South Central Manufacturing Network has had significant results. The final results in the targetted region include: 553 total member businesses participating with a total of 8,509 employees representing 25,527 total lives. Direct impact includes: 3,661,600 total costs avoided, 19 total jobs created, and 27 total jobs saved.

A newly formalized OCDC-Local Extension two-state partnership is providing well-trained and supportive local foods' cooperative business development service providers in 10 regions, for a total of 20 field technical support counselors. These individuals help address cooperative development in Ohio and West Virginia.

2011 was a year of growth for the **Growing! Ohio Farmers' Markets** program. Ohio ranks fifth in the nation for the number of farmers' markets in a state. The increased interest in farmers participating in farmers' markets is evident from the number of attendees of the 2011 Ohio Farmers' Markets Conference. In just its second year, the conference doubled the number of attendees to just over 125. Comments received about the conference were overwhelmingly positive and participants indicated they are looking forward to the 2012 conference.

In addition to the growth of markets and the conference, the *Growing!* Ohio Farmers' Markets Program partnered with the Ohio Department of Job and Family Services to provide training and assistance to farmers' markets interested in accepting Supplemental Nutrition Assistance Program benefits (formerly known as food stamps). The number of Ohio markets participating increased from 29 in 2010 to 55 in 2011.

The *Growing!* program provided technical assistance to four new farmers' markets in 2010, including the Easton, New Albany, The Atrium YMCA, and Nelsonville farmers' markets. As a result of the farmers' market at Easton, the management of the market provided for many Ohio local food producers the opportunity to extend their season through the Celebrate Local food store. Celebrate Local provides more than 150 local food producers the opportunity to market their products to Easton customers and has helped many of these producers increase their customer base and income. The Celebrate Local Store at Easton is collaborating between the Economic and Community Development Institute (ECDI), Global Gallery, and the Easton Community Foundation.



Follow the Business Development Network as it continues positively impacting our economy through business development on Facebook at <http://www.facebook.com/OSUBusinessDevelopmentNetwork>. For more information about free business counseling, call 740-289-2071 or email businessdevelopment@osu.edu.

FARMS, FORESTS & STREAMS

Ohio Aquaculture Research and Development Integration Program (OARDIP) - Achievements and Impacts 2011

By: Dr. Hanping Wang, Dr. Laura Tiu

Summary of Achievements: In 2011, in collaborations with the OSU Department of Animal science, the OSU Department of Food Science, the OSU South Centers Business Development Network, the Ohio Soybean Council, and several international Institutions, OARDIP accomplished nine studies and projects, published four journal articles and five proceedings papers, received three research grants in a significant amount of funds, trained five graduate students, post-doctoral fellows and scholars, generated six new grant proposals, conducted three intensive workshops and made 26 presentations to audiences around the state and in the national and international conferences.

Economic and Scientific Impact: *Ohio aquaculture has an estimated impact of \$49.5 million annually. Aquaculture sales in Ohio have tripled from \$1.8 million to \$6.6 million in recent years. Nationally, Ohio ranks first in sales of yellow perch for food and is the number one bluegill producing state. Ohio also ranks fourth in sales of baitfish and largemouth bass sold for sport, and fifth in number of baitfish farms. Sixty journal articles and proceedings papers have been published, including four journal publications and four proceedings papers in 2011.*

O'GIFT (Ohio Genetic Improvement of Farmed-fish Traits) Program: Multiple improved lines of yellow perch have been developed, and over one million genetically improved fish have been distributed to fish farms. The data from the O'GIFT on-farm testing project shows that the improved lines grew 32% faster than unimproved fish in the first year. The third generation of improved fish has been created in 2011 from 2007 year-line through crossing and mating more than 100 families. A male population with female genotype has been created in yellow perch, which could produce a fast-growing all-female population for the aquaculture industry. Three projects related to sex-control and breeding in yellow perch were completed and three manuscripts on these are in preparation. For bluegill, 19 families of all-male populations, which would grow 40-50% faster than a mixed-gender population, have been successfully created through selective breeding. In addition, a project on evaluation of hatchery stocks and wild populations of largemouth bass across North America and Asia, and a manuscript on this have been completed. The results of this study provide valuable base for developing a future selective breeding program for largemouth bass. *The O'GIFT program is expected to increase aquaculture production of perch, bluegill and largemouth bass by 35-50% through the development of genetically improved broodstocks for producers.*

Aquaculture Genetics and Breeding Lab (AGBL): *This is the first lab of its type in the Midwest and is crucial to the success of the GIFT program and improvement of farmed-fish traits.* In this lab, genetic relatedness charts and genetic pedigrees of selected broodfish have been constructed for breeding programs for the past years. Family identification technology using DNA for selective breeding in yellow perch and bluegill has been established. A first genetic linkage mapping of bluegill has been completed for selective breeding and published in *Aquaculture International*. Genotyping for 1300 largemouth bass from 28 sites and 12 states was finished for stock evaluation. The data from the lab has generated four papers in prestigious international journals in 2011.

Bowling Green Aquaculture Center (BGAC): The BGAC continues to refine the hatchery that was constructed last year. These refinements will attempt to look at the costs of production, utilizing the live feed technologies that were developed at the BGAC, from hatch through the larval stage of the spot fin shiner. Another study of interest that started this winter is a one cubic meter rotifer system. To the best of our knowledge, no studies have examined a commercial scale system. This system should support a standing crop of three billion rotifers with a harvestable surplus of approximately 1-1.2 billion rotifers. This system is an enlargement of systems being used at the BGAC. This will be an important step in the development of hatcheries within the state.

Fish Muscle Growth and Nutrition Program: The muscle and nutrition program has continued breakthrough research demonstrating the effect of wheat gluten-based diets supplemented with lysine have on muscle growth, gut development, and amino acid transport in yellow perch. *The research could result in a cost savings of 10-15% in feed costs and they would reduce the impact on the natural resources.* Two manuscripts related to nutrition and proteomics are in peer review.

Aquaculture Technology Transfer (AT²) and Dissemination: In 2011, OARDIP personnel toured over 100 clients through their research and demonstration facilities in Piketon and Bowling Green, Ohio including: potential fish farmers, students, agency personnel, university guests, Congressional Assistants and Polish and Israeli visitors. Staff made over 20 presentations to audiences around the state and in the Midwest. Three intensive workshops including a Bluegill Workshop, Aquaculture Field Day and Fish Necropsy Training course, were conducted in the past year. Twenty four clients received individual business planning assistance designed to enhance the success of their aquaculture business ventures. Three on-farm demonstration projects with hybrid bluegill, paddlefish, and spotfin shiners were conducted. Three aquaculture Extension proposals were submitted to enhance services available.

FARMS, FORESTS & STREAMS

Horticulture Achievements and Impacts 2011

By: Dr. Gary Gao, Extension Specialist and Associate Professor

The Horticulture program at OSU South Centers has traditionally focused on high value fruit and vegetable crops. These crops are considered specialty crops and can be grown successfully as alternative cash crops in southern Ohio and beyond. Due to the challenging economic situation in 2011 and a greater demand for fresh and safe fruits and vegetables, both fruit and vegetable crop acreage has experienced a significant increase. There has been a much stronger demand for both research and Extension outreach in fruits and vegetables. Our horticulture research and Extension programs have been designed specifically to meet these needs.

Wine Grape Research and Outreach

Wine grape (viticulture) research has been a main focus of our research and Extension efforts at OSU South Centers. Due to a tremendous increase in the number of Ohio wineries, there is an increased demand for Ohio-grown wine grapes. There are more than 150 wineries in Ohio. Approximately 2,000 acres are currently produced in Ohio. Based on a study commissioned by the Ohio Grape Industry Committee in 2008, the estimated economic impact of Ohio's grape and wine industry was \$582.8 million dollars.. Our viticulture research and outreach program was funded by the Ohio Grape Industries Committee. We are very appreciative of this generous support!

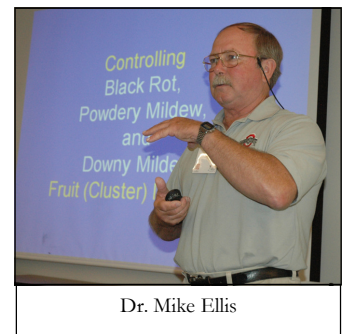


Mr. Dave Scurlock (left), Viticulture Outreach Specialist, Department of Horticulture and Crop Science, OARDC, The Ohio State University, and Thom Harker (right), Research Assistant, OSU South Centers, making final bud adjustment of our wine grapes in May. Pictured in back are Lynn Miller, former Research Assistant at OSU South Centers, and Wayne Lewis, OSU South Centers Farm Manager.

The wine grape research vineyard at OSU South Centers produced its second crop in 2011. Two French-American hybrids performed much better than most of the French or *Vinifera* grapes and other hybrids. Some of our grapes were shipped to OARDC Enology Lab for further processing and analyses. Our research vineyard has been the focal point of our field days, 20-year celebration, many guided tours, and Extension programs.

Dr. Mike Ellis, Extension Specialist and Professor, Department of Plant Pathology, OARDC, The Ohio State University, gave a talk on disease control of wine grapes at OSU South Centers in August 2011.

Three educational programs were offered in 2011. They were "Introduction to Wine Grape Growing," "Southern Ohio Summer Wine Grape Workshop," and



Dr. Mike Ellis

"Grape and Wine Analysis Workshop – A Practical Approach." The combined attendance for these programs was 81. Dr. Gao has also made presentations on wine grapes at the Farm Science Review and other Extension programs in Ohio. In addition, he answered many phone calls, email inquiries and made vineyard visits.

Currants, Gooseberries, and Jostaberries as New Cash Crops in Ohio

Currants, gooseberries and jostaberries are collectively grouped into the genus *Ribes*. Our *Ribes* production and marketing project, funded through a specialty crop block grant from the United States Department of Agriculture (USDA) via Ohio Department of Agriculture (ODA), was completed in 2011. Some of currants and gooseberries produced their first crop in 2011. We were able to collect yield and fruit data. A year-end report has been completed and submitted to Ohio Department of Agriculture. The full project report will be completed in 2011. There is a growing interest in growing currants and gooseberries in Ohio. The acreage of *Ribes* is still quite small. However, we do expect a growth in both demand and acreage. Gooseberry pies and currant juice are some of the common uses of *Ribes* fruits. A few growers in Ohio have planted currants and gooseberries due to our research and outreach efforts.



Ripening gooseberries at OSU South Centers

FARMS, FORESTS & STREAMS**Horticulture Achievements and Impacts 2011 continued:**

By: Dr. Gary Gao, Extension Specialist and Associate Professor

Blueberries – Ride the “Blue Wave”

Blueberries have enjoyed a worldwide surge in popularity due to their high antioxidant content, great taste, and versatile uses. Based on a 2007 estimate, approximately 360 acres of blueberries are grown in Ohio. There is a major shortage of blueberries in Ohio. Though more difficult to grow than other fruits, blueberries can be an excellent crop to grow in Ohio due to their high productivity, high return, and relatively low pesticide input.

Dr. Gao applied for and was awarded a specialty crop block grant from USDA via ODA as the principle investigator in 2011. Other co-investigators of this two-year project at the OSU South Centers are Brad Bergefurd, Horticulture Specialist; Julie Fox, Direct Marketing Specialist; and Rafiq Islam, Soil and Water Specialist. The title of our blueberry project is “Revitalization, Expansion and Season Extension Blueberries in Ohio.” This funded project officially started in October 2011. Dr. Gao has given talks on blueberry production, answered many questions, given tours of our blueberry plots, and made farm visits in 2011. However, the major research and outreach programs of the blueberry research project will be delivered in 2012 and 2013.



Brilliant red fall color on our blueberry plants on October 10, 2011 at OSU South Centers. Please note the terminal bud on the stem had developed into a flower bud, which will produce a small cluster of blueberries in 2012.

Horticultural Educational Resources From OSU South Centers

Fruit ICM News: This is an electronic newsletter produced by Dr. Gary Gao. Please email Julie Strawser-Moose at moose.14@osu.edu, if you would like to be added to the email distribution.

Twitter: Follow our horticulture team on Twitter at <http://twitter.com/osushort>

Facebook: Please “Like” us on Facebook at <http://www.facebook.com/OSUSouthCentersHorticulture>

OSU South Centers on the Web: <http://southcenters.osu.edu/horticulture>

FARMS, FORESTS & STREAMS

Horticulture Achievements and Impacts 2011 continued:

By: Brad Bergefurd, Extension Educator Horticulture/ Agriculture and Natural Resources

Research Identifies Alternative Pollinators for Ohio's Pumpkin Growers

The OSU South Centers at Piketon, the OSU Department of Entomology and twelve grower collaborators throughout Ohio are conducting a study funded by the USDA/NRCS Conservation Innovation program to determine if the presence of nectar-rich floral resources have an effect on the abundance and diversity of important crop pollinators. Results of this research will determine growing practices that can be adopted by farmers to encourage natural pollinators that could lead to increased yields and quality of pumpkin crops.

Security cameras were set up on specific blossoms in field experiments to record pollinator service data and visitations to pumpkin blossoms, after which stigmas were collected for pollen counting on the day of the experiment. The developed pumpkins were then harvested to count the numbers of seeds produced.

Samples were also collected to record pollinator diversity and abundance through the use of bee bowls, colorful plastic cups that are filled with soapy water to attract and collect bees, at the field sites. Data from this study was presented at the Southern Ohio Beekeepers School, OSU South Centers Horticulture Field Night, and other extension programs in Ohio.



Cameras recorded pollinator service data and visitations to pumpkin blossoms in the field.



Pumpkin data collection from South Centers field

Research Identifies Natural Biocontrol Agents for Insect Control in Pumpkin Crops

The OSU South Centers at Piketon, the OSU Department of Entomology, and twelve grower collaborators throughout Ohio are conducting a study funded by the USDA/NRCS Conservation Innovation program to determine if there are natural bio-control agents, such as parasitoid wasps and flies, and predatory beetles that can reduce farmers' dependency upon chemical pesticides for control of specific insect pests.

In 2011 it was found that spotted cucumber beetle eggs exposed to field conditions received 65% predation by beneficial insects. Data also shows there is a correlation between the percentage of field crops (corn, soybean, wheat) and the amount of egg predation on spotted cucumber beetle. There also



Cucumber beetle collected from Piketon fields that has been killed by parasitoid flies.

exists a strong correlation between the percentages of fruit, vegetable, and forage crops surrounding the pumpkin crop and the amount of parasitism of adult striped cucumber beetles.

In 2011, 32% of the striped cucumber beetles that were collected in Piketon were parasitized by flies from the *Celtoria* genus which form "external pupariums" that naturally kill the cucumber beetle.



Parasitoid flies identified at South Centers control damaging cucumber beetles in pumpkins.

FARMS, FORESTS & STREAMS

Horticulture Achievements and Impacts 2011 continued:

By: Brad Bergefurd, Extension Educator Horticulture/ Agriculture and Natural Resources

Promoting Profitable Beekeeping Practices Through Local Production of Nucleus Colonies and Queen Honeybees

One goal of the OSU South Centers beekeeping program is to demonstrate and provide Extension outreach training in profit-making beekeeping opportunities. Funded through a specialty crop block grant from the United States Department of Agriculture (USDA) via the Ohio Department of Agriculture (ODA), training to demonstrate and educate Ohio beekeepers how to profit by creating local supplies of honeybees and how to rear queen bees was conducted at the OSU South Centers in April 2011 in partnership with the Ohio State Beekeepers Association, OSU Department of Entomology Bee Lab, and the Ohio Department of Agriculture. By participating in this program, beekeepers learned how to raise bees and queens and reduce dependence on packaged bees from afar, thus increasing the sustainability of existing farming practices and adopting agricultural techniques that make use of on-farm natural cycles. The project was designed to demonstrate more sustainable methods of starting new and/or replacing colonies using natural on-farm resources in existing apiaries and to support the viability of local beekeeping operations. Bees, nucleus colonies and queens produced locally can provide income-generating business options that can be sold, offering a source of on-farm income. This workshop gave participants the knowledge they needed to become efficient at raising queens for their own use, or to get started using this technique to have a profit-making business.



John Grafton, President of the Ohio State Beekeepers Association welcoming everyone to the opening the queen raising workshop.



John Kovaleski of the Ohio State Beekeepers Association demonstrating in-hive queen cell building



John Kovaleski of the Ohio State Beekeepers Association demonstrating queen cell building.



Dan O'Hanlon demonstrating the Cell Punch Method of queen bee production.

FARMS, FORESTS & STREAMS

Crop, Soil, Water, and Bioenergy Resources Program Achievements and Impacts 2011

By: Dr. Rafiq Islam, Soil, Water and Bioenergy Specialist

The Soil, Water, and Bioenergy Resources program at The Ohio State University South Centers at Piketon is an integrated and multi-lateral effort to develop and disseminate information about economic crop production, alternate income, and sustainable management of resources.

Local, State and Regional Impact

Renewable (Bioenergy) research

Since bioenergy is one of the important sectors in future energy investment to replace imported fossil fuels, we focus our applied research on advanced energy. However using our best land to grow biofuel crops is not a logical choice. Marginal quality land such as reclaimed strip mine land and low quality sloping pasture or brushy land, is relatively low priced and may be suitable to grow perennial grasses as bioenergy crops. As municipalities nationwide face growing populations, and therefore produce more waste, they are pleased with any opportunity to dispose of sewage sludge in a positive, productive way. Electric utilities with coal-fired power plants face a similar problem with flue gas desulfurization (FGD) gypsum. Applying sewage sludge and FGD gypsum on marginal land as soil amendments to grow bioenergy feedstock will provide a valuable use for these waste products.

Presently, we are managing seven bioenergy experiments on *Miscanthus*, warm-season grasses, willow, Sudan-sorghum grass, and Sweet sorghum. These projects are funded/ collaborated by: NE Sun grant (through the Department of Energy); Mendel Biotechnology, Inc. Hayward, CA; Repreve Renewables (Giant *Miscanthus*), Soperton, GA; Speedling, Inc. Ornamental and Energy Crop Divisions, Ruskin, FL; Konza Renewable Fuels, LLC, Meriden, KS; and New Polymer Systems, Inc., New Cannan, CT.

Long-term research at the OSU South Centers has suggested that growing perennial warm season grasses for biofuels on marginal land amended with sewage sludge and FGD gypsum could produce more than 8 to 10 tons of dry biomass feedstock/ acre annually. Likewise, *Miscanthus*, produces 15 to 20 ton/acre of biofeedstocks (Photo 1). Because the grasses are not grown for food, applying sewage sludge and FGD gypsum to improve soil quality for growing biofuels will not pose danger to human health.



Fifteen months old *Miscanthus giganteus* plantation

Professional development and technology transfer

We are one of the leading authorities in the world conducting research on soil quality and ecosystem services. A simple and inexpensive soil quality field test kit for routine evaluation of field soils by farmers, producers, Extension Educators, and citizens was developed at the OSU South Centers several years ago. This test helps farmer and others to determine on-farm soil quality, soil organic matter content, plant available N, biological activity, and soil tilth, and to predict crop yields (Photo 2). On average, Ohio has 78,000 farms for growing corn, soybeans, wheat and other crops. Farmers spent at least \$10-20/year for routine analysis of soil. Our soil quality test costs less than a \$1 per year. Collectively, this test can potentially save Ohio farmers more than **\$ 350,000 to 700,000/year**. Our soil test has also been made available for international shipment, with test kits sold outside the United States in 2011.



Soil quality test kit color chart for field evaluation of soil quality

FARMS, FORESTS & STREAMS

Crop, Soil, Water, and Bioenergy Resources Program Achievements and Impacts 2011 continued:

Based on our research performance, we have received a two-year North Central Region Sustainable Agriculture Research and Education (NCR SARE) professional development grant to train-the-trainers (~200) in the Midwest on soil quality and 21st century agriculture. Out of 5 proposed train-the-trainer workshops, we have successfully conducted two workshops in Morris and Waseca, MN. About 120 professionals comprised of Extension educators, crop consultants, and state and federal personnel participated in the day-long workshop. About 25% of the participants indicated that they gained new information and knowledge on soil quality and future agriculture. Both workshops were rated as one of the best training sessions in MN in 2011. In 2012, the third day-long train-the-trainer workshop on soil quality will be held during the Conservation Tillage and Technology Conference annual meetings March 6 and 7, 2012 at Ada, Ohio. It is expected that about 100 trainers will be trained during the conference.

Climate change, sustainable agriculture and ecosystems services

Our applied research on sustainable agricultural management in response to projected climate change suggested that adopting continuous no-till (NT) with multi-functional cover crops is economically viable, environmentally compatible, and socially acceptable to increase crop yields, improve soil quality, reduce greenhouse gas emissions, and enhance ecosystems services.

Our research showed that agronomic crop rotations incorporated with suitable legumes (e.g. winter peas, cow pea, clover, sun hemp, vetch, etc.) provide sufficient N to improve and/or maintain economic crop yields (5-8 bushels/acre), minimize costs of farming (~18%), fertilizers and pesticides (5 to 10%), and improve soil quality (> 15%).



Cow pea (black eyed pea) as cover crops



Oilseed radish as cover crops

Compaction is an on-going problem to maintain productivity/workability in Ohio's wet and heavy soils. The compaction problem is more frequent in transitional NT. Our research showed that by planting only 2 lbs. of oilseed radish per acre after crops are harvested, the radishes can grow more than 30" deep and break-up plow layer compaction. Furthermore, oilseed radish biomass can recycle more than 100, 30, and 30 lbs of N, P and K, respectively, when applied with manures or biosolids. Use of oilseed radish as a cover crop in a NT system could potentially save up to **\$100,000 per year** for managing soil compaction in Ohio. The integrated use of cover crops and a no-till approach will save \$5-6 per acre per year, which is equivalent to saving **\$260,000 per year** in Ohio.

Recently, the OSU South Centers received a \$1,000,000 grant (\$200,000 in 2011) from the United Soybean Board to grow soybeans continuously with cover crops (such as cereal rye and radish) and industrial gypsum (from coal utility/power plants) in collaboration among Ohio State University, University of Kentucky, and USDA-ARS. This research was funded to grow soybeans in response to expected climate change effects on agroecosystems.

International Impact

Over the years, the OSU South Centers has developed a national and international reputation in soil, water, and bioenergy research. As a result, in recent years internationally funded graduate students, scientists, and professionals as visiting scholars from Bangladesh, Brazil, India, Pakistan, Turkey, Uzbekistan, and Yemen, have joined our program for research, education, and Extension activities. In 2011, we hosted 5 visiting scholars from India, Pakistan, and Turkey. One of them was a Norman Borlaug scholar. All of them have successfully completed their work and returned home.

BUSINESS & ECONOMIC DEVELOPMENT NETWORK

Direct Marketing Achievements and Impacts 2011

By: Dr. Julie Fox, Direct Marketing Specialist

Food Entrepreneurs Reach New Markets

In 2011, more than 2,000 food producers, retailers, distributors, market managers, and other entrepreneurs improved their marketing knowledge, practices and performance through the research, Extension programs and outreach from the Direct Marketing Team based at the Ohio State University South Centers. Five primary initiatives, delivered through education at more than 30 events, helped entrepreneurs benefit from increasing demand for local food.

Marketing Education

Market Ready, a comprehensive curriculum developed with the University of Kentucky, prepared more than 100 producers to conduct business with buyers from restaurants, grocery stores, and institutions. Sustainable Agriculture Research and Education (SARE) Professional Development funds provided resources to bring together educators from throughout the state to deliver MarketReady education. Specialty Crop Block Grant funds supported the program team as they guided producers through the process of preparing to sell to new markets.



MARKETREADY

Ohio Farm to School Program

Food producers connected with school food service buyers, and more than 700 Ohio school food service professionals learned about the Ohio Farm to School program in 2011. The Ohio State University (OSU) Extension now provides leadership for the statewide Farm to School program, tapping into the strength of state, county, regional, and national networks. The program was formerly administered by the Ohio Department of Agriculture. Ohio's Farm to School program provides youth, pre-K through college, with access to nutritious food while supporting local farmers and communities. This program not only provides young people with fresh, local food, but also helps them understand where their food comes from and how food choices affect their health, environment, and community.

"The Ohio Department of Agriculture created a solid foundation for the program and will continue to work closely with OSU Extension and a growing list of partners and advisors," stated Julie Fox, OSU's Farm to School Program Director, based at the OSU South Centers. "A team of Extension professionals is bringing an interdisciplinary approach with research and education in nutrition, youth development, food production and distribution, and local food systems," she said, referring to the Family and Consumer Sciences, 4-H/Youth Development, Agriculture and Natural Resources, and Community Development Extension programs that are involved with the project.

"We're working with more than 45 advisory group members from Ohio agencies, nonprofits, education, and industry to expand the benefits of a statewide and national network." <http://farmtoschool.osu.edu>.

OHIO FARM TO SCHOOL

Nourishing Young People & Communities

THE OHIO STATE UNIVERSITY
EXTENSION
OARDC

Make a Difference in the Cafeteria, Classroom, & Community

<http://farmtoschool.osu.edu>

BUSINESS & ECONOMIC DEVELOPMENT NETWORK**Direct Marketing Achievements and Impacts 2011 continued:****Food Industry Connections**

Ohio MarketMaker, a free, web-based resource for all businesses in the food industry, connects growers with buyers, other producers and a variety of food industry contacts. For the 1,475 registered businesses and nearly 7,000 users, these connections provided potential solutions for efficiencies in locating, aggregating, grading, and processing. Part of a growing national network, **Ohio MarketMaker was honored by Farm Credit with the 2011 National Food MarketMaker Innovation Award** at the National Value-Added Agriculture Conference in Pittsburgh, PA. The two features most frequently used by Ohio producers were updating their business profile and searching for buyers and sales opportunities. In a 2011 national evaluation of MarketMaker, an increase in the number of contacts received, new customers gained, and increase in annual sales due to participation in the program were positively related to the monthly time devoted to the website. Ohio MarketMaker is supported through the collaboration of OSU Extension, OARDC, the Ohio Department of Agriculture/Ohio Proud, the Ohio Farm Bureau/Our Ohio, the Center for Innovative Food Technology, the Ohio Grape Industries Committee, and other Ohio organizations. <http://www.ohiomarketmaker.com>

Social & Mobile Media Marketing

One of the most requested topics for Direct Marketing Team members was mobile media marketing. One-hour and full-day hands-on sessions were delivered to statewide and national audiences. The team published articles, developed fact sheets, and provided education to help producers address the opportunities and challenges of rapidly evolving technologies. Ohio has partnered with the national eXtension program, Penn State, and other universities for national webinar series scheduled in 2012.

Conference Presentations & Professional Connections

Julie Fox, Direct Marketing team leader, delivered five national conference presentations and connected with professionals from around the globe. In addition, regional partnerships extended Ohio's reach and access to expertise and resources that benefit Ohioans. In 2012, new projects include Meet the Buyers Summits, Agritourism Emergency Management, and a direct marketing survey to be conducted every three years to supplement USDA Ag Census data and targeted research projects. As interest in local products and local economies continues to increase, the Direct Marketing team at the OSU South Centers and around the state continue their commitment to bring unbiased, research-based information and resources to help grow Ohio's economy.

OSU South Centers Directory

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Our Mission

We enhance Southern Ohio by assisting people with informed decision-making through responsive research, education, entrepreneurial application and collaborative partnerships. We are a leading, respected contributor to the land grant mission of The Ohio State University.

Our Vision

We create an environment where our research based educational resources unite to inspire confident decision-making by:

- Fostering objectivity in research and programming
- Interacting with the public and responding respectfully to their needs and opportunities
- Utilizing a holistic approach to problem solving and program delivery to strengthen youth, individuals, families and communities
- Facilitating technology advancement
- Demonstrating and developing leadership
- Educating volunteers for community service

OSU South Centers employees donate to Pike County Outreach Council

By: Joy Bauman

The employees at Ohio State University South Centers along with the business partners of the Ohio State University Endeavor Center in Piketon have once again used proceeds from their horticultural research trials to support the Pike County Outreach Council. To avoid competition with area producers, the fruits and vegetables raised as part of research at the OSU South Centers are not sold to the public. Instead, the produce is offered to the OSU South Centers employees and Endeavor Center business partners in exchange for donations to charitable causes supported by the employees. In addition, staff members organized several "Chow for Charity" lunches where in exchange for lunch, South Centers Employees and Endeavor Center partners made donations to support the South Centers' charity outreach efforts.

"The OSU South Centers employees are pleased to be able to give back to our local community," said OSU South Centers Director, Tom Worley.

The 2011 employee contributions were used to make a cash donation to the food bank at the Pike County Outreach Council and also to donate 50 pair of boots to the Buckeye Boots for Kids drive and were distributed to children through the Pike County Children's Christmas Fund.

Worley recently presented the food bank donation to Judy Dixon, Executive Director of the Pike County Outreach Council. Dixon expressed gratitude on behalf of the Council. "This contribution is much appreciated, as the number of families served through the food bank seems to continue to increase," Dixon said.

For more information about the OSU South Centers, contact Beth Rigsby at 740-289-2071. To learn more about the Pike County Outreach Council Food Pantry, contact Judy Dixon at 740-947-7151.




Pictured: Dr. Tom Worley, Director, OSU South Centers and Judy Dixon, Pike County Outreach

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The Ohio Agricultural Research Development Center (OARDC) and Ohio State University Extension embraces human diversity and are committed to ensuring that all research and related educational programs are available to clientele on a nondiscriminatory basis without regard to race, color, religion, sex, age, national origin, sexual orientation, gender identity or expression, disability, or veteran status. This statement is in accordance with United States Civil Rights Laws and the USDA.

Keith L. Smith, Ph.D., Associate Vice President for Agricultural Administration and Director, Ohio State University Extension; Steve Slack, Ph.D., Associate Vice President for Agricultural Administration and Director, OARDC

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