

CFAES

OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
OHIO STATE UNIVERSITY EXTENSION

CONNECTIONS

SUMMER 2019

OSU SOUTH CENTERS

Open for BUSINESSES

Endeavor Center has services to help start or grow a business

Ryan Mapes

Endeavor Center Manager

Are you interested in starting a business, but not sure how to start? Do you need to grow your existing business? Do you just need office space?

Come visit the Endeavor Center and visit with one of our knowledgeable business development network staff to determine how we can help.

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ENDEAVOR from Front

The Endeavor Center can provide access to programs such as the Small Business Development Center, Manufacturing Extension Partnership, Export Assistance Network, and the CFAES Center for Cooperatives. The Endeavor Center also has space available for lease. These spaces range from 200–400 sq. ft. general use, furnished offices, an office suite including four small offices, a private conference room, and a small break area, as well as three high-bay industrial type spaces. Tenants have access to high speed internet, phone systems, and office equipment.

If you do not need physical office space, but need a place to hold business meetings and events, the Endeavor Center has three conference rooms and a 16-station computer lab available to lease for your business's needs. These rooms range from a small board room style conference space to a larger space that can accommodate up to 75 attendees. These can be leased for full-day or half-day meetings and catering can be arranged. The conference rooms are utilized frequently by OSU programs, our partners, and outside organizations.

There are currently 16 partner companies that occupy 20 spaces and four virtual partners that occupy the building on a part-time basis, but do not occupy an office.



Summer means SOACDF Grant season for SBDC

Brad Bapst
SBDC Director

With the summer months quickly passing by, the Small Business Development Center (SBDC) is busy serving the needs of clients in Southern Ohio. One of the key services the center provides is assistance with applications to the Southern Ohio Agricultural and Community Development Foundation (SOACDF) for the Ag Development Grant and the Young Farmer Grant programs.

This is a program where our SBDC counselors work closely with area farmers to write business plans for projects that will be submitted to the SOACDF for potential grant funding to assist with their project. Our counselors assist individuals in exploring, completing, and submitting applications for these programs. You can see details and deadlines about the program at soacdf.net. Eligible parties must submit their completed application by August 31, 2019.

This service aligns with the key services the SBDC provides to entrepreneurs in Southern Ohio. The center continues to grow through its successes in assisting business achieve their goals. The SBDC provides business counseling and assistance to individuals who are either starting or growing their business. The Piketon center is staffed with highly-trained, Certified Business Advisors® (CBA) to help small businesses and entrepreneurs with development and growth to increase sales and create jobs in their local communities.

These services are provided free of charge with funding provided by the Small Business Administration (SBA) and Ohio Development Services Agency (ODSA). A sample listing of the services offered is below. Additional service offerings may be available through other business development programs located at the South Centers or through our wide network of regional partners.

Services Include:

- One-on-One business counseling
- Strategic business planning
- Cash flow analysis
- Financial projections development
- Identifying sources of capital
- Workshops and training programs
- Marketing strategy development
- Market feasibility and research
- Business assessment evaluation
- Export Assistance

To schedule an appointment to meet with one of our highly trained counselors, contact Brad Bapst, SBDC Center Director at 740-289-2071 ext.230, or bapst.4@osu.edu.

Manufacturing Extension Partnership makes cybersecurity less daunting

Cybersecurity requirements such as the DFARS 252.204-7012 clause or NIST 800-171 framework may sound daunting, but they don't have to be.

The Ohio MEP network has economically efficient solutions for Ohio small and medium enterprises, manufacturers, and government contractors looking to achieve cybersecurity compliance and/or increase their cyber hygiene.

Consider these recent statistics*

- 43% of all cyber-attacks are aimed at small businesses
- in most cases, it takes companies about 6 months to detect a data breach
- 85% of all attachments emailed daily are harmful for their intended recipients
- in 2017, 61% of data breach victims were companies with less than 1000 employees



For more information on how the Ohio MEP can assist you, contact:

Dorinda Byers, byers.18@osu.edu

Mick Whitt, 740.289.2071 x 252, whitt.124@osu.edu

Kelly O'Bryant, 740.289.2071 x 235, obryant.6@osu.edu

Jamey Dixon, 740.856.6340 mobile, jamey.dixon@manufacturingsuccess.org

*Sources: Cisco, Symantec, Small Business Trends, ZD Net

South Centers' Export Assistance Network participates in successful internship program

Kelly O'Bryant

Export Assistance and MEP Advisor

Finding the time to focus on developing a new international market is a challenge for many small businesses.

The Ohio State University South Centers SBDC Export Assistance Network participates in the Ohio Export Internship Program by placing export-focused interns within southeast Ohio regional companies.

The Ohio Export Internship Program was designed to help businesses overcome challenges of international marketing by matching them with highly motivated students, from Ohio universities and colleges, who have taken export-focused coursework., such as this year's interns and students at The Ohio State University Fisher College of Business, Youngstown State University's Williamson College of Business Administration, or Cleveland State University's Monte Ahuja College of Business.

2019 Ohio Export Internship Program Showcase
 Thursday, August 8, 2019
 1 p.m. Networking Reception, 2-3:30 p.m. Showcase
 The Ohio Statehouse Atrium
 1 Capitol Square
 Columbus, Ohio 43215

This year's Export Internship Showcase, highlighting the accomplishments of the Class of 2019 and demonstrating the positive impact of partnerships among the state of Ohio, its universities, and private industry will be held Aug 8, 2019 at 1pm at the Ohio Statehouse Atrium.

Speakers will include representatives from the Ohio Development Services Agency, The Ohio State University, Youngstown State University, Cleveland State University and participating companies.

For more information, email Kelly O'Bryant at obryant.6@osu.edu.

Bauman, Gardner take on new roles with co-ops team

Two familiar faces are filling new positions within the College of Food, Agricultural, and Environmental Sciences Center for Cooperatives. Long-time South Centers employees Joy Bauman, now the Cooperative Development Specialist, and Charissa Gardner, the new Program Coordinator, have taken on new roles in the program.

Bauman began her new role on June 3, while Gardner's first official day with the program was July 22. Both are very

familiar with the Center, however, as Bauman previously served as the Program Coordinator, while Gardner has worked with the co-ops team on various projects throughout her career at South Centers.

The CFAES Center for Cooperatives comprehensively integrates the teaching, research and Extension programs of the College. The Center creates and extends knowledge to emerging and existing cooperatives in Ohio and beyond.

Joy Bauman has worked at the Ohio State University South Centers since 2006 and has been involved with the cooperative development efforts at the South Centers since that time, most recently serving as the Program Coordinator for the Center for Cooperatives. On June 3, Joy transitioned to the Cooperative Development Specialist role, where she collaborates with staff at OSU South Centers, Ohio State University Extension, West Virginia University Extension Services, USDA Rural Development and other rural economic development organizations to create and deploy programming to support the mission, goals, and priorities of the Center. Joy provides technical assistance to new and emerging cooperatives and rural businesses, develops and deploys educational programming on small business development, and communicates with the Center's network of stakeholders internal and external to the University. She works to foster cooperative development, strengthen existing cooperatives, and educate the next generation of cooperative leaders.



She has facilitated the planning, organization, and delivery of cooperative development trainings and disseminating information about the Center throughout Ohio and West Virginia. She helped to form the successful Southern Ohio Grower's Cooperative at market pumpkins and other produce. Joy is currently leading a North Central Region Sustainable Agriculture Research & Education (NCR-SARE) project—the Youth Cooperative Leadership Experience—an immersive cooperative educational program for high school students in the Appalachian region.

Joy holds a Bachelor of Science in Agriculture from The Ohio State University, majoring in Agricultural Communication and Animal Science. Currently, she is pursuing a Master of Science in Agricultural and Extension Education. She is long-experienced in farm and agricultural business planning as a co-owner of Turkey Run Angus Farm in Adams County. Joy will help lead the Center's work to develop worker-owned and agricultural cooperatives in rural communities.



Charissa Gardner began her career at The Ohio State University South Centers in 2011. She has served as the Program Coordinator/Assistant for the Specialty Crops program for the past seven years, and as Program Coordinator for the Direct Marketing program for the past five years.

For Specialty Crops, she managed the news and event publications, website, social media, listservs, and served as the event coordinator. Gardner was also Co-Editor of the VegNet and Hops Newsletters.

With Direct Marketing, she served as the Program Coordinator and managed the Ohio MarketMaker program, was the news and event publications coordinator, website, social media, and listserv manager, and was the event coordinator.

Gardner also served as the OSU South Centers Campus Campaign Ambassador from 2014 through 2018, and is currently a member of Chi Epsilon Sigma and JCEP.

Prior to joining OSU, she was an English teacher for Adams County Christian school for 3 years, and worked as a Business Manager for the Peebles Monument Company for 12 years.

Gardner is a graduate of Peebles High School. She obtained her Bachelor's Degree in Arts and English Humanities from Shawnee State University.

Her hobbies include gardening, raising market goats and rabbits, traveling, and keeps busy with 4-H, FFA, school, and sports activities with her teenage daughter, Carrington.

Gardner and her daughter currently reside in Peebles, Ohio.

Direct Marketing, partners collab to improve farmers market sustainability

Christie Welch

Direct Marketing Specialist

OSU Direct Food & Agricultural Marketing Program is collaborating with Cornell Cooperative Extension, Grow NY, and the Ohio Farmers Market Network to help farmers markets improve their sustainability

We see the word “sustainable” being used everywhere these days. It can be found on food packing, farm production methods, and even non-agricultural related businesses are touting that they are sustainable. But what does that mean for you and your farmers’ market?

According to USDA’s National Agricultural Library, when searching for the definition of sustainable, (Sustainable Agriculture: Definitions and Terms, 2007) “Sustainable agriculture” was addressed by Congress in the 1990 “Farm Bill” [Food, Agriculture, Conservation, and Trade Act of 1990, Public Law 101-624, Title XVI, Subtitle A, Section 1603 (Government Printing Office, Washington, DC, 1990)]. Sustainable agriculture means an integrated system of plant and animal production practices having a site-specific application that will, over the long term:

- satisfy human food and fiber needs;
- enhance environmental quality and the natural resource base upon which the agricultural economy depends;
- make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls;
- sustain the economic viability of farm operations; and
- enhance the quality of life for farmers and society as a whole.

These last two bullet points stand out in relation to farmers’ markets. If our farms are not economically viable, farmers’ markets will suffer. If the quality of life for farmers and society are not enhanced, we all suffer. So, how can you



ensure that your farmers market is sustainable?

With the rapid pace of change in how consumers are purchasing local food, technology advancements, and the growing use of the terms sustainable and local by larger retailers, how can we maintain the consumers that shop at, and ultimately support, our farmers’ markets and our vendors/producers? To help address this question, the OSU Extension Direct Food & Agricultural Market Program in collaboration with

the Ohio Farmers Markets Network is bringing experts to Ohio to learn about the development of a sustainability plan for farmers’ market.

Laura Biasillo, Agricultural Economic Development Specialist with Cornell Cooperative Extension of Broome County, and Jessica Douglas, Healthy Exchange Project Manager, Greenmarket of Grow NY, will be coming to Ohio November 11-12 to share the curriculum they developed for New York farmers’ markets. In addition to information on the development of sustainability plans, they will share insights from lessons learned by working with New York farmers’ markets in the development of their plans.

This two-day workshop is geared toward Ohio farmers market managers who are interested in learning from experts from New York and their peers. The workshop is designed to be hands-on, so market managers will leave with an action plan they can take back to their vendors and boards to share their plans and finalize the details.

Beth Irons, who has managed a New York farmers’ market for seven years, found the resources very helpful. “It provided not only the big chunks of information we should include, but also the action steps to complete each of those steps and helped to bring it all together as a cohesive plan,” Irons said in an interview with the New York Farms Market Federation.

To learn more about the November training go to go.osu.edu/SustainabilityPlanning2019 or contact Christie Welch, Direct Marketing Specialist at welch.183@osu.edu.

STAFF PROFILE



Professor Gary Gao is pictured shooting one of his YouTube videos while Duane Rigsby runs the camera. (Photo; Bradford Sherman/CFAES)

YouTube

Newly-minted Professor Yu ‘Gary’ Gao takes on a new challenge – online video

(Editor’s Note: The following is the latest in a series of feature stories highlighting The Ohio State University South Centers Staff)

Bradford Sherman
CFAES/OSU South Centers

Dr. Yu “Gary” Gao has accomplished nearly everything professionally possible. He was the editor and co-author of a highly-cited and award-winning publication; he has established many successful programs over the years; and all the while he has been a mentor to, and helped launch the careers of, many young scientific minds.

But nothing tops his most recent achievement, when he fulfilled a lifelong dream by earning a promotion to the rank of full professor at The Ohio State University. So, you might ask, what is the logical next step for a man like Gao, who has now reached the pinnacle of a career in academia?

Become a YouTuber, obviously.

In all seriousness though, using the immensely-popular, self-publishing video platform to share the wealth of knowledge he has accumulated over his career is part of a much larger plan for Gao. Now, his career path forward is all about leaving a lasting legacy.

“I don’t know if it is an age thing or what, but this desire to leave a legacy for other people means a whole lot more now,” Gao stated. “One thing that excites me a lot is recording YouTube videos, where I show people how to grow things, etc. And since videos are kind of permanent, it is like leaving a legacy.”

If you ever talk to Gao for very long about YouTube, he will be sure to tell you about the video that first got him thinking about using the platform as a way to enhance his programming.

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It featured a common man in his backyard showing the viewers a few slick tricks to effectively rake leaves. As of the writing of this article, the video with a simple title and unpretentious presentation has been viewed 3.1 million times, and the host “David” now has over 10,000 subscribers.

“‘How to rake leaves’ – that was my inspiration,” Gao said with a chuckle.

And while “Gary” still has a way to go before he catches up with “David,” right now he is having a lot of fun being in front of the camera, and working alongside the talented team of Duane Rigsby and Sarah Swanson, who shoot and produce the videos.

“It is also exciting to know that we have people like Duane and Sarah at South Centers who are equally passionate about this,” he said. “I can do what I do, and then they turn it into really neat videos. I have a little more time and freedom to do these types of things now, following my promotion to full professor.”

That ultimate career goal Gao spoke of was finally fulfilled on May 30 of this year. A long process that began with a letter of intent to pursue the full professor rank, then went through a series of steps that included: 1) a departmental review, 2) college promotion tenure review, 3) a letter from the dean of the college, 4) and then to the provost’s office before ultimately being approved by the OSU Board of Trustees.

“It was one of the happiest days of my life, it is hard to imagine getting here from my humble beginning as a graduate student – this has been a lifelong dream for me,” Gao reflected. “You always want to accomplish great things, but there are no guarantees in life.”

He was also quick to point out all the help he received along the way, everyone from graduate advisors to co-workers to students/scholars to members of his family.

“Even though it was a personal achievement, a lot of people have helped me along the way.” He said. “It certainly took a village.”

Gao currently serves as a small fruits specialist and the co-leader of the specialty crops program at OSU South Centers, where he has worked since 2010. During that time he has built a program that includes a staff consisting of full-time Research Assistant, Ryan Slaughter, and a steady stream of visiting scholars. He holds several popular events throughout the year including the Blueberry, Bramble, and Wine Grape Field Day and Night, Pruning School, and Grape and Wine Workshop, as well as conducts research and trials on a variety of small fruits.

His previous stops at Ohio State included Horticulture Extension Specialist roles in Delaware County and Clermont County, where 25 years ago he founded a Southeast Ohio Perennial Flower School that is still



Gary Gao holding a copy of the Midwest Home Fruit Production Guide, and award-winning publication for which he wrote several chapters and also was an editor. (Photo: Duane Rigsby/CFAES)

going strong to this day, as well as the Master Gardner program. He also spent time as a post-doc researcher at Purdue University working primarily with culinary herbs, blueberries and muskmelons.

Born in Taiyuan in northern China, he came to the United States in 1985 as a Graduate Student at The Ohio State University. He earned his master’s degree in viticulture and a PhD in table grapes.

Looking forward, in addition to producing educational videos, he also wants to continue his work as a mentor to young people, and to continue his work on the development of new rootstocks. One of the major goals of which is the development of a small blueberry tree through grafting.

“If this comes to fruition, there is a very good chance that anybody could plant this, and harvest blueberries from your little tree in your backyard.”

Gao and his wife, Wendy, reside in central Ohio and are the parents of two sons, Tom and Alvin, a medical school student and Technology Development Specialist for PNC Bank, respectively.

OSU, ACIE SUPPORT ACADEMIC, RESEARCH, AND EXTENSION PROGRAMS ABROAD

Dr. Rafiq Islam

Soil, Water and Bioenergy Resources

A three-member delegation from The Ohio State University’s College of Food Agriculture and Environmental Sciences (CFAES), including Dr. Rafiq Islam from OSU South Centers, Professor Renukaradhya Gourapura from Food Animal Health Research Program, and Beau Ingle from the International Program in Agriculture (IPA), visited Kazak National Agrarian University (KNAU) Almaty, Kazakhstan, as part of the grant from the American Councils of International Education (ACIE).

Gourapura both delivered two presentations to faculty members and students.

Dr. Islam delivered his first presentation on current research and Extension activities of the Soil, Water, and Bioenergy Resources program at the OSU South Centers followed by another presentation entitled “Climate-smart Agriculture for Kazakhstan.” Moreover, Dr. Islam delivered a professional presentation entitled “Sustainable Agriculture” at the international conference held at the Institute of Plant Protection and Quarantine in Almaty.

on vaccines against bioterrorism agents and biosafety procedures, and interacted with scientists working in a biosafety level 3 laboratory, which was built by the U.S. Department of Defense.

Dr. Islam also conducted a day-long brain-storming and grant writing workshop for the agriculture faculty members, scientists, researchers, and PhD students. The grant writing workshop initially covered a brain-storming session to identify the important current and existing agricultural, environmental, and animal science research problems in Kazakhstan,



FAR LEFT: *Dr. Rafiq Islam delivers one of several presentations he shared during the trip.*

LEFT: *Professor Renukaradhya Gourapura*

The purpose of the visit was to help develop academic, research, and Extension programs to improve the KNAU faculty members’ and scientists’ professional capacity. The delegation was led by Ingle.

As part of the program, the delegation met with the KNAU administration, faculty members, scientists, and students. Dr. Islam and Professor

Likewise, Prof. Gourapura delivered a presentation on innovative vaccines for veterinary use and using a pig model for universal flu vaccine studies. In addition, Prof. Gourapura visited the Central Reference Laboratory of Kazakhstan located in Almaty. It is a branch of the National Biotechnology Center (Ministry Education and Science of the Republic of Kazakhstan) and delivered a seminar

followed by in-depth discussion on team-building procedures. The grant proposal session included discussion on Request for Proposal (RFP), budget and budget justification, rationale, goal/objectives, methodology, outcomes/outputs, data management, Extension outreach, project evaluation, and title and abstract.

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Visiting scholar Kateryna Chorna, of Ukraine, joins Soil and Water Program

Dr. Rafiq Islam

SWBR Program Leader

Kateryna Chorna, of Ukraine, has recently joined the Soil, Water, and Bioenergy Resources Program as a short-term exchange scholar for a two-month period at The Ohio State University South Centers.

In 2016, the Institute of Water Problems and Land Reclamation and The Ohio State University signed a memorandum of understanding and are partnering together on a Civilian Research Defense Foundation (CRDF) project. CRDF Global, Ukrainian Ministry of Education, and The Ohio State University funded her fellowship under a grant program entitled “Impact of sustainable agricultural management practices on soil quality and crop productivity.”

During her fellowship period, she will be involved in applied research activities and Extension activities associated with climate-smart agriculture, as well as working with modern laboratory equipment and learning analytical techniques. She will also be trained on writing peer-reviewed articles, grant proposal, factsheets, and news articles as part of her professional development.

Chorna was born in Crimea in the then-Soviet Union.



She graduated from the National Academy of Nature Protection and Resort Construction, Department of Water Resources and Energy in Simferopol, Crimea in the then-Ukraine. In 2011, she received a specialist diploma as an Expert of Science in Hydraulic Engineering and Land Reclamation. From July 2011 through December 2013, she was employed as the lead engineer on Metrology in the Salgir Water Management Department in Simferopol. She was responsible for the management and accounting of water used for irrigation, water supply to urban areas and power plants, preparation of technical passports, certification of gauging stations, calibration of water-use recording devices, and leveling of undulating landscapes.

She is currently employed as one of the researchers in the

Institute of Water Problems and Land Reclamation under the Academy of Agrarian Sciences of Ukraine in Kyiv since December 2013. Chorna is assigned to work in the Department of Sustainable Use and Development of the Reclaimed Areas especially in the areas of climate data, organizational condition of land use, projected and actual irrigated areas, water-supply volumes, producing maps using remote sensing, and ancillary data to determine and evaluate relationship between meteorological parameters and crop-growing potentials in Ukraine.

Islam delivers seminars, conducts grant writing workshop in Kyiv, Ukraine

Dr. Rafiq Islam

SWBR Program Leader

Dr. Rafiq Islam, the Director of the Soil, Water, and Bioenergy Resources Program at OSU South Centers,

recently visited Ukraine as part of the CRDF Global – Ukrainian Ministry of Education-funded US-Ukraine research project to meet and guide field researchers at the Askaniya

State Agricultural Experimental Station, Institute of Irrigated Agriculture, National Academy of Agrarian Sciences, Ukraine.

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KYIV from 9

This is the second phase of the experiment that needs to include summer cover crops after winter wheat harvest, followed by the planting of corn and sunflowers in the spring 2020. Moreover, he was actively involved in interviewing and selecting another short-term scholar from the Askaniya State Agricultural Experimental Station, Institute of Irrigated Agriculture.

As part of the CRDF project goal, Dr. Islam disseminated information to the collaborative partners, discussed further research and grant collaboration, delivered seminars for students and faculty members, and organized a professional development on grant writing workshop during his visit to Ukraine. He delivered a classroom presentation entitled “Climate-Smart Agriculture for Healthy



Soils, Healthy Food, Healthy People” to the undergraduate and graduate students at Kherson State Agrarian University, Kherson. Dr. Sergey Lavrenko, who previously worked with Dr. Islam at the OSU South Centers, was very helpful to translate and explain the presentation in Ukrainian to the students.

Dr. Islam delivered a two-hour presentation entitled “Brain Storming and Successful Grant Writing” to the faculty members of the Kherson State Agrarian University, which was followed by an interactive question and answer session. Moreover, he conducted a day-long grant writing workshop to the faculty members, scientists, and researchers of the Institute of Water Problems and Land Reclamation in Kyiv. The grant writing workshop covered most of the aspects of research proposals including budget and budget justification, introduction/ rationale, hypothesis, goal and specific objectives, methods and materials, methodology and procedures, experimental design/analysis, outcomes/outputs, data management, Extension outreach, project evaluation, etc. The workshop was well attended and accepted by the participants and the administration of the institute.

ABROAD from 8

The workshop was well attended and accepted by the participants of the university. With an active support from the ACIE and KNAU, Dr. Islam and Professor Gourapura developed

a sandwich program to train two short-term scholars from the KNAU to work on climate-smart agriculture and the evaluation of immune correlates using modern immunological tools at OSU South Centers at Piketon and the Food Animal Health Research Program.

UKRAINIAN PROFESSORS, SCIENTISTS VISIT OSU FOR APPLIED RESEARCH AND EXTENSION COLLABORATION



Dr. Rafiq Islam

Soil, Water and Bioenergy Resources

A seven-member delegation from Ukraine including Drs. Nataliia Didenko (PI/Senior Researcher), Rushena Kupiedinova (Co-PI/Senior Researcher), Mykhailo Romashchenko, Co-PI/Director), and Olga Zhovtonog, (Co-PI/Chief, Dept. of Irrigation Land Use), Institute of Water Problems and Land Reclamation, National Academy of Agrarian Sciences, Kyiv, Ukraine; Drs. Rayisa Vozhehova (Co-PI/Director) and Anastasiia Maliarchuk (Co-PI/Senior Researcher), Institute of Irrigated Agriculture, National Academy of Agrarian Sciences, Kherson, Ukraine; and Vira Konovalova (Co-PI/Junior Scientist), Askaniya State Agricultural Experimental Station, Institute of Irrigated Agriculture, National Academy of Agrarian Sciences, Ukraine visited The Ohio State University (OSU) from April 15 to 25, 2019 under the Civilian Research Defense Foundation (CRDF) and Ukraine Ministry of Education sponsored US-Ukraine Competitive Grant Program. Dr. Rafiq Islam is the United States counterpart of the project and hosted the visitors.

The delegation members visited The Ohio State University International Program in Agriculture (OSU-IPA), its Director and Professor Mark Erbaugh,

and other staff members to learn about land grant mission of The Ohio State University. They signed a memorandum of understanding for future applied research and Extension collaboration to improve the professional development of Ukrainian scientists. The delegation met Professor Scott Shearer, who heads the Food, Agriculture, and Biological Engineering Department, to learn about teaching, research, and Extension collaboration with precision agriculture.

As part of their program, they visited Brandt's Farm in Carroll, Fairfield County, to learn more about sustainable agriculture, especially continuous no-till, cover crops, and cropping diversity to improve soil health and quality, carbon sequestration, biodiversity, and physical stability of soil. They were keen to learn how these practices can be applied to predict and calculate soil hydraulic properties, in the modification irrigation requirements, and for scheduling for major agronomic crops under irrigation in southern Ukraine.

They were amazed to see how cover crops covered the grounds during the winter months, control runoff after snowmelts, and can create and recycle N and other nutrients for economic crop growth with reduced chemical inputs. They also visited the Fayette

County Extension Office to learn how Extension offices and various programs in Ohio work to reach clientele. While in Fayette County, they toured field research and demonstration plots and soil compaction studies underway at the county farm.

In the final part of the program, they visited OSU South Centers at Piketon and met scientists in order to acquire knowledge about how a regional campus or research station works to develop science-based knowledge and disseminate information to clientele. The delegation visited the South Centers' aquaculture, specialty crops, and soil and water resources laboratory facilities, including current aquaponic and hydroponic research systems with a great interest to develop similar lab services and systems in Ukraine. A wagon-tour was provided to the delegation to show the on-going field research activities, including berries and other specialty crops, vegetables, a second generation fertigation system (Mitsui iCast System), and long-term no-till and cropping diversity with multi-functional cover crops experiments. Rafiq Islam, Gary Gao, Brad Bergefurd, Hanping Wang, Wayne Lewis, Ryan Slaughter, Jordan Maxwell, and Tom Harker facilitated the lab, greenhouse, and field research activities.

BUILDING FOR BERRIES:

NEW TRELLIS SYSTEMS INSTALLED AT SOUTH CENTERS

Ryan Slaughter

Research Assistant

Despite the summer heat, outdoor activities continue at the South Centers' research plots. Most recently, construction and installation began on trellises for our cultivar evaluation and demonstration plots for both blackberries on Rotatable Cross-arm Trellis (RCA) and our hardy kiwis.

Blackberry production is a difficult venture here in Ohio because of its susceptibility to winter injury. The RCA system has proven to be a very effective way for farmers to produce a good, high-quality blackberry crop from year to year, despite some very devastating winter temperatures we have experienced.

The way the RCA system improves on traditional trellis systems, simply, is that the entire trellis (blackberry canes included) can be laid flat on the ground and covered with a specially designed fabric called row cover to protect the plants throughout the winter. More and more growers are adopting this trellis system and require the technical assistance to learn the management requirements for this; the small fruits program at OSU South Centers will provide this assistance through workshops and online videos.

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RIGHT: *Emily Dean and Gwen McCreery look on as the post hole digger drills into the soil.*

FAR RIGHT: *Charli McClay is pictured cleaning out a post hole. (Photos: Ryan Slaughter/CFAES)*



Photo by Will Hastings, UNH



DR. JIUXING ‘LULU’ LU HAS JOINED DR. GARY GAO’S TEAM AT SOUTH CENTERS AS A VISITING SCHOLAR

Dr. Gary Gao

Professor and Extension Specialist

Dr. Jiuxing “Lulu” Lu, an instructor of Horticulture from Henan Agricultural University in Zhengzhou, China, joined Dr. Gary Gao’s extension and research team in May.

Dr. Lu teaches botany courses and conducts research on Chinese tree peony in the College of Landscape Horticulture of Henan Agricultural University. She will participate in Dr. Gao’s fruit extension and research projects across the state of Ohio, attend programs at the Chadwick Arboretum in Columbus, be involved in some of the activities of the Ohio Master gardener volunteer program, and learn about American culture, history, and language.

When you see Dr. Lu, please introduce yourself to her. She goes by Lulu. The entire team is enjoying Lulu’s enthusiasm for just about everything; she always has a smile on her face. Lulu is actively involved in the intelligent sprayer project in Mansfield, Ohio and blueberry projects at OSU South Centers in Piketon.

She received her PhD from Beijing Forestry University, and earned her master’s and bachelor’s degree from Henan Agricultural University. She is originally from



Dr. Jiuxing “LuLu” Lu, right, works with Research Assistant Ryan Slaughter to take color readings in order to measure fruit maturation.

Henan Province, which is located in central China.

Lulu enjoys interacting with our staff and summer interns. She will stay in the United States for one year. “I am very excited to have her on our team, and look forward to a very productive year,” Gao said of his newest visiting scholar.



MaKayla Risner operates the tractor-mounted post hole digger during a recent trellis installation project at OSU South Centers.

BERRIES from 12

Hardy kiwi production is very similar to grape production, in respect to the trellis system on which it grows. Hardy kiwi fruits are smooth-skinned and much smaller in size compared to their tropical, “fuzzy” relative. The vines’ growth habit are very similar to grapevines and require an extensive trellis system to support their vigorous vegetative growth. Besides determining the best-suited cultivars for our regional area, we will be able to offer farmers the technical assistance in raising this crop, something they can add to help diversify their products.

Keep an eye out for our upcoming workshops here at South Centers. Also, stop by and see Research Assistant Ryan Slaughter at the Farm Science Review (September 17-19, 2019) for a talk on Growing Fruit in Containers.

Produce auctions for the direct buying and selling of produce

Brad Bergefurd

*Extension Educator Scioto County
and OSU South Centers*

Produce auctions are local aggregation points that facilitate small-scale fruit, flower, and vegetable farmer access to wholesale buyers from a broader geography. Buyers purchase lots from multiple farmers to fulfill wholesale demand, and then retail the product to the consumers. Produce auctions charge a commission, usually 10 to 15% of sales, to the farmer to conduct the mediated marketing transactions. Sales are held multiple times per week to create a consistent supply for buyers and regular market for the farmers. Buyers make payment to the auction at the end of the sale day, and in turn the auction issues a single weekly payment to individual farmers based on their total combined sales minus commission. With over 70 produce auctions located in eastern North America, including 12 in Ohio, this is a growing trend of intermediated direct agricultural marketing that is beneficial to many farmers. Produce auctions have a positive economic impact on the communities in which they are located, as well as on those who sell and/or buy at the auction.

Produce auctions fill an important niche in Ohio's produce industry and new ones continue to be formed. For some buyers and sellers, the produce auction is the perfect place to find each other and make their market transaction in a matter that is fair and profitable for both. Produce auctions create another direct agricultural marketing outlet for existing growers and new growers who are producing and marketing high value specialty crops. Produce auctions have become an important piece of economic income for many farm families and it is a part of infrastructure that helps rural areas and communities grow economically.

Brad Bergefurd, an Extension horticulturist and educator at The Ohio State University South Centers, was instrumental in the establishment of the first produce auction in Ohio in 1992 in Geauga County, Ohio and helped establish the first southern Ohio-based auction, the Bainbridge Produce Auction, in Pike County in 1999. "Produce auctions are both new and old, whatever their age, they offer fresh fruits and vegetables for sale to the highest bidder, and buyers and sellers find each other in a very simple format," said Bergefurd. "Fruit and vegetable growers can focus their efforts on the production side and get a lot of help on the marketing side by working with a produce auction."

Bergefurd says, "Ohio produce auctions have been quite



Quantity of produce range from small to wagon loads, available to homeowners to grocery stores. (Photo by Brad Bergefurd/CFAES)

successful and are real economic drivers throughout rural Ohio communities, with over \$20 million in estimated agricultural sales generated from Ohio's 12 produce auctions annually. The farmers who sell at auctions are committed and sell regularly, which provides a consistent produce supply throughout the season to attract and helps retain buyers — both important factors in the success of produce auctions.

"Most of the Ohio auctions have order buyers who actually take orders from buyers and buy for them," Bergefurd said. Auction managers keep in touch with both buyers and sellers, so a lot of information is traded before the auction ever starts.

Most Ohio produce auctions are generally shareholder-owned corporations with mainly the farmers being the shareholders.

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Lots of produce are tagged with the growers number and the lot number and are sold to the highest bidder (photo by Brad Bergefurd)

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The University of Kentucky fact sheet, “Marketing at produce auctions,” <http://www.uky.edu/ccd/marketing/market-resources/wholesale/produceauctions> lists the benefits of produce auctions as:

- Set days and times for delivery
- Ability to group produce into various lots
- Ability to test market new products or sizes of produce for wholesale.

“The primary risk in using a produce auction is the price uncertainty,” it says.

The Kentucky publication offers this piece of advice: “Produce quality

should be defined by the auction and inferior produce should be rejected, with no exceptions.”

For questions, market reports, or pricing information at the Bainbridge Produce Auction located right here in Pike County, call the market report hotline at (712) 432-8520 for daily produce market reports and special sale days. Currently the Bainbridge Produce Auction is in full swing with sales being held every Monday, Wednesday, and Friday beginning at 2 p.m. Produce can be brought during the mornings of sale days, up until the time of sale.

Anybody can buy or sell at a produce auction; just visit the office window prior to the sale to register for either a buyer or seller number and bring lots

of money, as it is easy to get “auction fever” at fast-paced produce auctions. Please be advised, buyers need to carefully read the auction rules and regulations posted on the walls of the auction house prior to bidding. If you intend to only buy a bushel of tomatoes for canning, make sure you are not bidding on a lot that contains 100 bushels of tomatoes; once the auctioneer yells “sold,” you just bought 100 bushels of tomatoes and you are required by law to pay for that lot you just purchased.

For more information on Ohio produce auction marketing, please visit the OSU South Centers web site at southcenters.osu.edu/marketing/place/produce-auctions or call Bergefurd at (740) 289-3727 ext. 136 or (740) 354-7879.

RECENT PUBLICATIONS

A look at recently published work originating from OSU South Centers

Sex Control in Aquaculture: Concept to Practice

Han-Ping Wang and Zhi-Gang Shen

Understanding sex control principles and related concepts in fish is essential for large-scale monosex production in aquaculture, which is a major goal of sex control practice. Utilizing a sound and appropriate approach or practice for a targeted species of economic value is critical for achieving the goal. In this chapter, we review the concepts and practices of sex control in fish and aquaculture based on the achievements during the past two decades. Briefly, establishment of phenotypic sex is triggered by sex determination (SD) factor(s), modulated by complex molecular networks, and influenced by environmental conditions, steroid hormones, and endocrine disrupting chemicals. The complex molecular networks involved in sex differentiation remain unclear, although SD genes have been identified in some fish. We summarize four general characteristics of the molecular pathways involved in sex differentiation. These have been derived from extensive comparative analyses of expression profiles in a large number of fish species based on available reports. We propose an approach that could reduce the length of time needed for monosex production. Large-scale monosex production could be achieved in the third generation with sex-linked markers (SLMs) and in the fourth generation with no available SLMs in fish with an XY or ZW SD mode. There is a great potential for producing large-scale breeding systems for females in much less time if gynogenesis and sex reversal of XX-females are combined. In addition, potential application of sex control practice to control invasive species in natural waters is also discussed in this chapter.

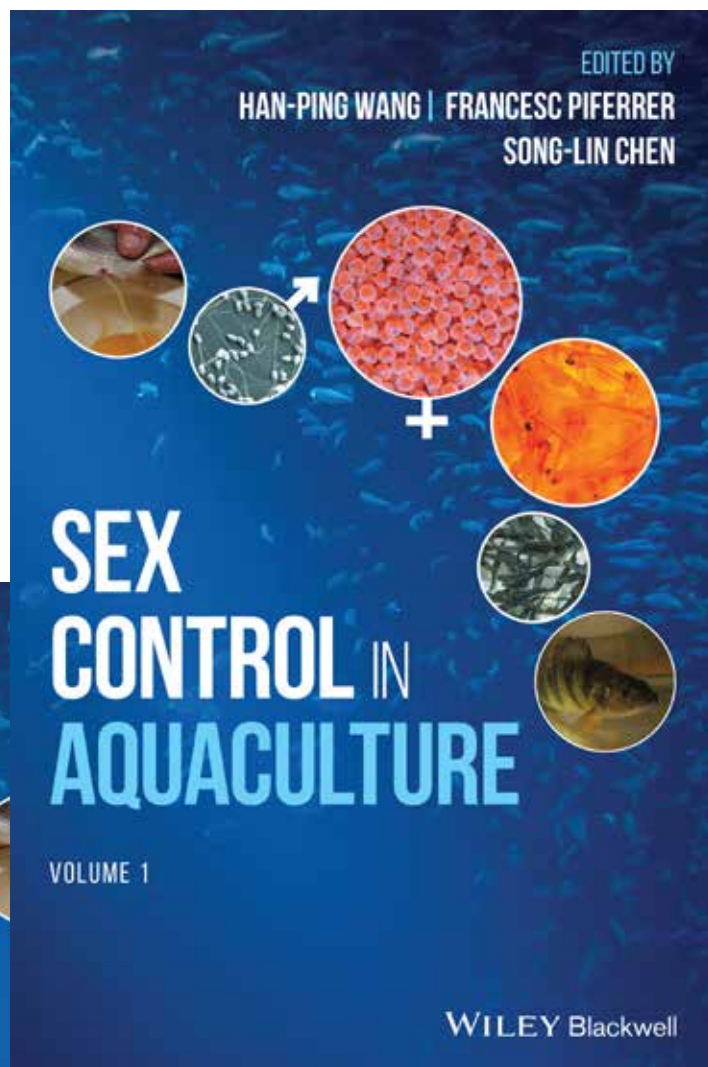
Sex Control in Aquaculture, February 2019.

Sex determination and monosex female production in yellow perch

Han-Ping Wang, Zhi-Gang Shen, Paul O'Bryant, Hong Yao, and Dean Rapp

Yellow perch *Perca flavescens* female monosex culture has considerable potential for increasing the efficiency and profitability of yellow perch aquaculture, since females grow ~40% to ~50% faster than males in aquaculture systems in year 1 and the advantage is even more pronounced in year 2. Genomically, yellow perch have a genome size of ~1.38 and ~1.24 Gb for males and females, respectively and a karyotype of $2n=48$ with gradation in size of chromosomes. Dietary supplementation of MT at 20–30 mg/kg of the diet at the age of 30 - 38 dph is effective in inducing masculinization in yellow perch. All-females and mixed broods were produced by progeny testing indicating male heterogamous (XY/XX).

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The fact that progeny tests did not produce all-female offspring, skewed sex ratio were observed in natural and cultural environments and sex specific markers were not identified using AFLP and BSA methodology suggests the involvement of other factors, although the possible role of temperature on sex determination in perch is not proven. Genetically all-females from breeding grew 26.3% faster than normal mixed-sex and 60.0% faster than males, on average. Gynogenesis is not recommended for producing monosex female perch due to negative effects on the growth, survival, and reproductive development resulting from heat or hydrostatic pressure shocks.

Sex Control in Aquaculture, February 2019.

Sex Determination, Differentiation, and Control in Bluegill

Han-Ping Wang, Zhi-Gang Shen, Ze-Xia Gao, Hong Yao, Dean Rapp, and Paul O'Bryant

Bluegill have become an economically important and high-value species both from the perspective of their use in aquaculture and their recreational value. This species has complicated the sex determination system and reproductive

modes. Its sex differentiation was more related to body size than to age and occurs earlier in females than males. The critical period of sex differentiation occurs between 13.2 and 16.0 mm TL and the foxl2/testis differentiation gene(s) ratio may trigger the direction of the gonadal differentiation. Sex chromosomes could not be distinguished from autosomes cytologically in this species. Highly skewed (male-dominant and female-dominant) sex ratios were consistently reported both in natural and experimental populations. A predominant male (100% or close to 100%) or balanced sex ratio (close to 1:1) was produced from estrogen-treated females crossed to normal males in our previous work, indicating female heterogamous (ZW/ZZ) bluegill, at least in some populations. In addition, temperature effects on sex ratio have been found in some geographic populations. Based on these results, it is concluded that bluegill display genetic sex determination with a ZW/ZZ system, plus temperature effects, e.g., both genetic sex determination and temperature-dependent sex determination exist in bluegill. For production of monosex male populations of bluegill, the optimal dosage for feminization is 150 mg kg⁻¹ E2 and the treatment window is between 13.2 and 16.0 mm TL. ZZ-neofemale GMB (genetically male bluegill) producing brooders can be produced by feminizing some progeny from ZZ × ZZ crosses. Mostly-male bluegill populations can also be established through grading selection.

Sex Control in Aquaculture, February 2019.



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