

“Extension professionals offer unbiased, research-based information that CCAs can provide to farmers. Agriculture is our No. 1 industry, and farmers need that information to keep on top of new research, technology and innovations in order to farm economically and efficiently, and to stay in business.”

— Tina Lust, past chair, Ohio CCA Board, which works closely with the Ohio AgriBusiness Association



## ESSENTIALS

- OSU Extension provides training year-round, offering the continuing education credits needed by Ohio's 540 Certified Crop Advisers to retain their certification.
- CCAs each consult on an average of 40,000 to 50,000 acres of Ohio farmland.
- The economic impact that CCAs have on farmers can be easily \$100 per acre, according to industry efforts.
- CCAs need to earn 40 hours biannually in the following training categories, all of which OSU Extension offers either for free or at a nominal charge: nutrient management, pest management, soil and water management, and crop management.
- CCA training is offered by 40 members of OSU Extension's Agronomic Crops Team, Extension's county educators and, specifically, 65 agriculture educators throughout Ohio's 88 counties.
- CORN newsletter has some 3,800 subscribers, including farmers, producers, CCAs and agriculture professionals in Ohio and surrounding states.

OSU Extension educates CCAs, maximizing the university's impact on millions of acres of farmland statewide. (pictured: Tina Lust and Harold Watters)

# Extension reaches millions of Ohio cropland acres through Certified Crop Advisers training

**As part of her job to advise producers** statewide on farming issues, Tina Lust regularly reads the Crop Observation and Recommendation Network (CORN) newsletter, written weekly by Ohio State University Extension specialists.

The publication offers information on Ohio agronomic crops, and it is just one of the ways OSU Extension works year-round to continually educate Certified Crop Advisers (CCAs) through agronomic workshops, presentations, schools and conferences — providing them the most up-to-date information needed to help producers increase yields, increase financial bottom lines, reduce environmental impact and boost the state's overall economy.

CORN newsletter is part of Extension's efforts to reach Ohio farmers one crop adviser at a time. Working to educate CCAs helps to extend and maximize The Ohio State University's impact on Ohio crops to millions of acres of farmland statewide, said Harold Watters, an OSU Extension agronomy field specialist and coordinator of the university's Agronomic Crops Team.

Training CCAs is an excellent return on investment for tax dollars, and also supports a private-sector business model by providing science-based education to CCAs as small business operators.

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More: [corn.osu.edu](http://corn.osu.edu)

# OSU Extension's mission

Engaging people to strengthen their lives and communities through research-based educational programming

*We connect with people in all stages of life, from young children to older adults. We work with families and children, farmers and business owners, community leaders and elected officials to build better lives, better businesses and better communities that make Ohio great. We do this through a focus on four impact areas:*



## Strengthening families and communities

OSU Extension teaches people how to apply research in their daily lives in order to make informed choices about everything from finances to healthy living to food safety.



## Preparing youth for success

OSU Extension's 4-H youth development program delivers skills in leadership, communications, math, science and research to nearly 250,000 young Ohioans. 4-H extends its reach through special in-school, afterschool and summer programs.



## Enhancing agriculture and the environment

Ohio's diverse agricultural, horticultural and forestry industries contribute \$105 billion to the state's economy every year. OSU Extension assists with technology, marketing and educational support, protecting Ohio's position in the global marketplace. OSU Extension also works to enhance the environment, water quality and natural areas in the state — balancing economic progress with environmental sustainability.



## Advancing employment and income opportunities

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The Grain C.A.R.T. demonstrates the complexity of an agricultural incident, where there may be confined spaces, engulfment hazards and entanglements with moving parts.

## ESSENTIALS

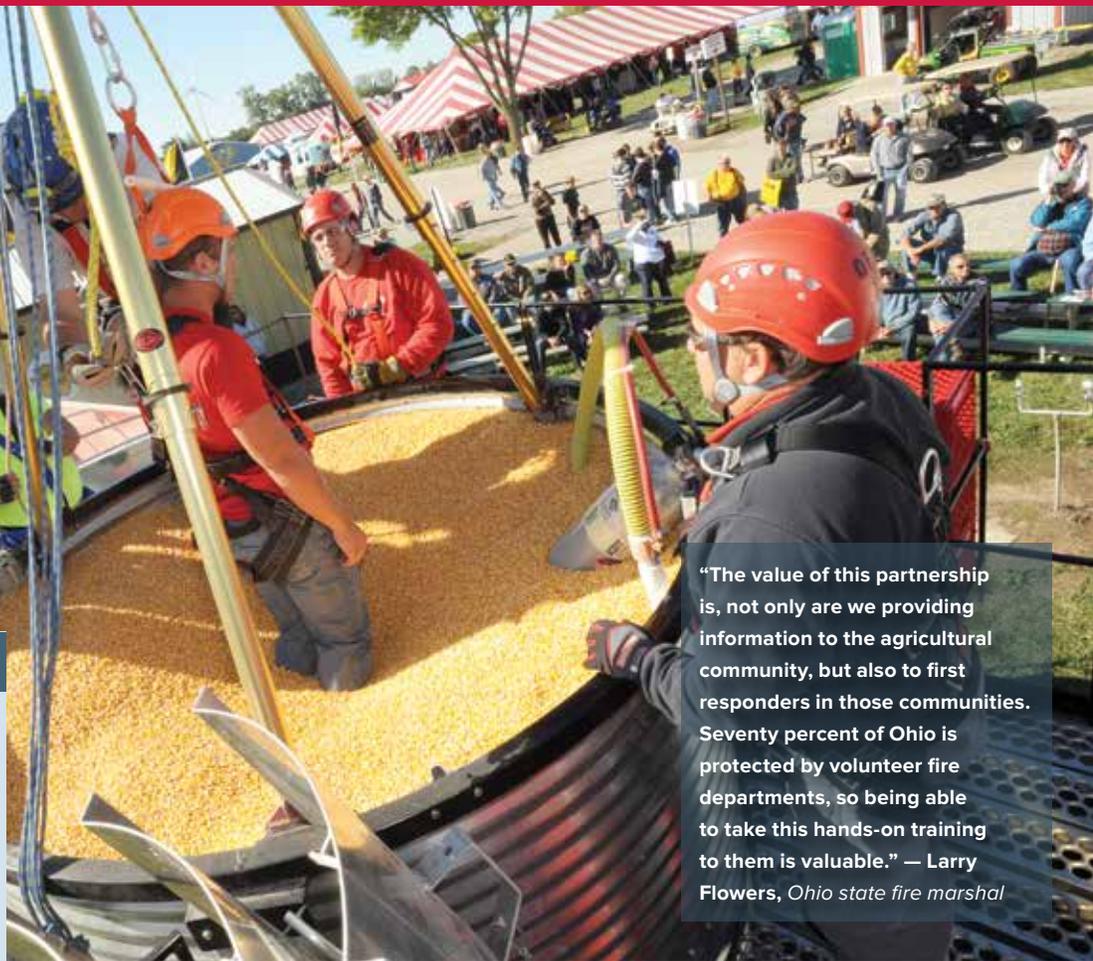
- The need for grain-handling safety programs is significant, considering that every year approximately 26 Ohio farm workers lose their lives to production agriculture. Flowing grain and grain storage is one of the contributing factors. In the past 10 years, 14 Ohio farmers have died due to engulfments in grain bins, entanglements in augers, falls from grain bin-related structures and electrocution.
- Mounted on a 40-foot flatbed trailer, the Grain C.A.R.T. includes a grain bin, a gravity wagon, a grain leg system with augers and other training essentials.
- The Grain C.A.R.T. was used for training in 26 counties on 54 days in fiscal year 2014, according to the Ohio Fire Academy.
- This OSU Extension outreach program presented live demonstrations of grain engulfment and equipment entanglements to the farming community, to grain co-op employees and to first responders — reaching approximately 12,000 participants.

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*“The value of this partnership is, not only are we providing information to the agricultural community, but also to first responders in those communities. Seventy percent of Ohio is protected by volunteer fire departments, so being able to take this hands-on training to them is valuable.” — Larry Flowers, Ohio state fire marshal*

Officials demonstrate how the Grain C.A.R.T. works to rescue a worker during a grain bin entrapment.

# Simulator helps prevent grain-handling injuries, increases grain bin safety, trains first responders

**Ohio's first grain rescue simulator trailer** — designed by faculty and students from The Ohio State University's College of Food, Agricultural, and Environmental Sciences — is now used to educate first responders, grain industry employees and farm families about the hazards of flowing grain. This simulator maximizes the public-private partnerships between the university, the Ohio Fire Academy and the Ohio agribusinesses that contributed resources toward the project.

The Grain C.A.R.T. (Comprehensive Agricultural Rescue Trailer) is a dynamic teaching aid, said Dee Jepsen, state safety leader for Ohio State University Extension. It enhances safety education in farm communities and trains first responders who are called to an agricultural scene where grain is stored. It's used with the Ohio Fire Academy's agricultural rescue direct-delivery training modules and with OSU Extension's grain bin rescue outreach education program.

Rescue personnel requested training in these unconventional rescue situations, where they have limited experience and knowledge of the agricultural conditions that exist.



Larry Flowers

More: [agsafety.osu.edu](http://agsafety.osu.edu)

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 LOCALLY GROWN

The Northwest Ohio Food Council is just one example of OSU Extension's efforts to improve consumers' access to local foods.

## ESSENTIALS

- According to Ken Meter's "Finding Food in Northwest Ohio," if each resident of Northwest Ohio bought \$5 worth of food weekly from a local farm, \$345 million of new farm income would be generated.
- OSU Extension supports 239 community gardens in Cuyahoga County that yield nearly \$3.1 million in fruits and vegetables each growing season. Annually, Extension donates more than 10,000 pounds of produce to nonprofit agencies and shelters.
- Market gardens are for-profit agricultural enterprises — including urban farms — that provide jobs and fresh, local food. Through the Market Gardener Training Program in Cuyahoga County, OSU Extension has trained 215 residents, 51 of whom have created microbusinesses such as farm stands and restaurants.
- Kinsman Farms is OSU Extension's 6-acre incubator farm in Cleveland. It supports 13 beginning urban farmers and saw aggregated sales of \$98,870 in 2013.

"Eliminating food deserts and including fresh fruits and vegetables at convenience stores are some strategies being developed by the Northwest Ohio Food Council in partnership with Ohio State University Extension and other organizations designed to increase access to local, healthier foods in urban areas."  
— Carol Contrada, Lucas County commissioner

Urban agriculture offers city-dwellers the ability to grow their own produce and increase the community's access to safe, local foods. (pictured: Carol Contrada, Lucas County commissioner)

## Local foods programs promote healthy, sustainable and equitable food systems in urban cities

**More Ohio urban neighborhoods** are seeing an increase in season-extending gardens. The gardens offer city-dwellers the ability to grow their own foods and to become food entrepreneurs right where they live.

Seasonal high tunnels are similar to but less expensive than greenhouses, require no artificial energy and help keep local produce reaching consumers even when weather turns nasty. These domed structures are now in inner-city neighborhoods in Cleveland, Columbus and Youngstown, where they help urban farmers and gardeners grow food almost year-round. Ohio State University Extension provides technical support and marketing education to help the residents utilize the tunnels to increase profits.

Such programming occurs in all Ohio counties, with efforts to increase access to local foods by helping to create community gardens to promote urban agriculture and opportunities for vocational agricultural training. Efforts also strive to increase students' access to healthy foods in schools, and to create local food councils similar to the Northwest Ohio Food Council.



Kinsman Farms

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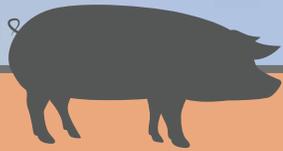
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“There are fewer pigs because of PEDv. Prices at the producer level are already showing significant increases, which are likely going to show up in the retail case as well.” — Steve Moeller, OSU Extension swine specialist

“Ohio State was extremely pivotal in helping answer questions about the potential spread of PEDv in the feed for Ohio pork producers. The university’s experts should be commended for their timely and valuable research put forth to help producers learn more about this devastating disease.” — Dr. Todd Price, D.V.M., North Central Veterinary Services, Sycamore, Ohio



Livestock veterinarians such as Dr. Todd Price benefit from the research and educational efforts put forth by OSU Extension to help farmers deal with new diseases.

## New swine disease shows up, outreach is key to minimize impact

In 2013, a new swine disease was discovered in the U.S. Very quickly, porcine epidemic diarrhea virus (PEDv) spread across the country, killing pigs at hundreds of farms in at least 30 states, including Ohio.

As PEDv has continued to impact the swine industry, Ohio State University Extension has worked with hog producers across the state to keep them updated about biosecurity measures they must follow to minimize the spread of the disease, and about technologies that can help them make better decisions.

“Working with Ohio State in concert with our local veterinarian has helped us use technology, such as new methods of testing for the disease, more effectively,” said Pat Hord, owner

of Hord Livestock in Bucyrus, Ohio. His swine operation was affected by the virus, but has been successful at controlling it.

OSU Extension swine specialist Steve Moeller said continued research and educational efforts are needed to help the industry fend off PEDv and secure an adequate supply of pork products to consumers.

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More: [go.osu.edu/nkx](http://go.osu.edu/nkx)

### ESSENTIALS

- PEDv has killed more than 7 million piglets in the U.S., reducing pork production and industry profits, and threatening to impact the availability of pork products as well as prices.
- Unlike other viruses, PEDv does not pose any risk to food safety or human health.
- The disease causes 50 to 100 percent mortality among piglets. Adult pigs show only mild illness, but they can carry the virus — which is transmitted via contaminated feces — and spread it to other pigs.
- The virus has proven to be very persistent and difficult to contain. Hot summers and cold winters are having little effect on PEDv, so new herds are being infected on a continuous basis throughout the country.
- PEDv might also impact swine exhibits at agricultural fairs, as the conglomeration of animals from many different farms could spread the disease even further.



Steve Moeller

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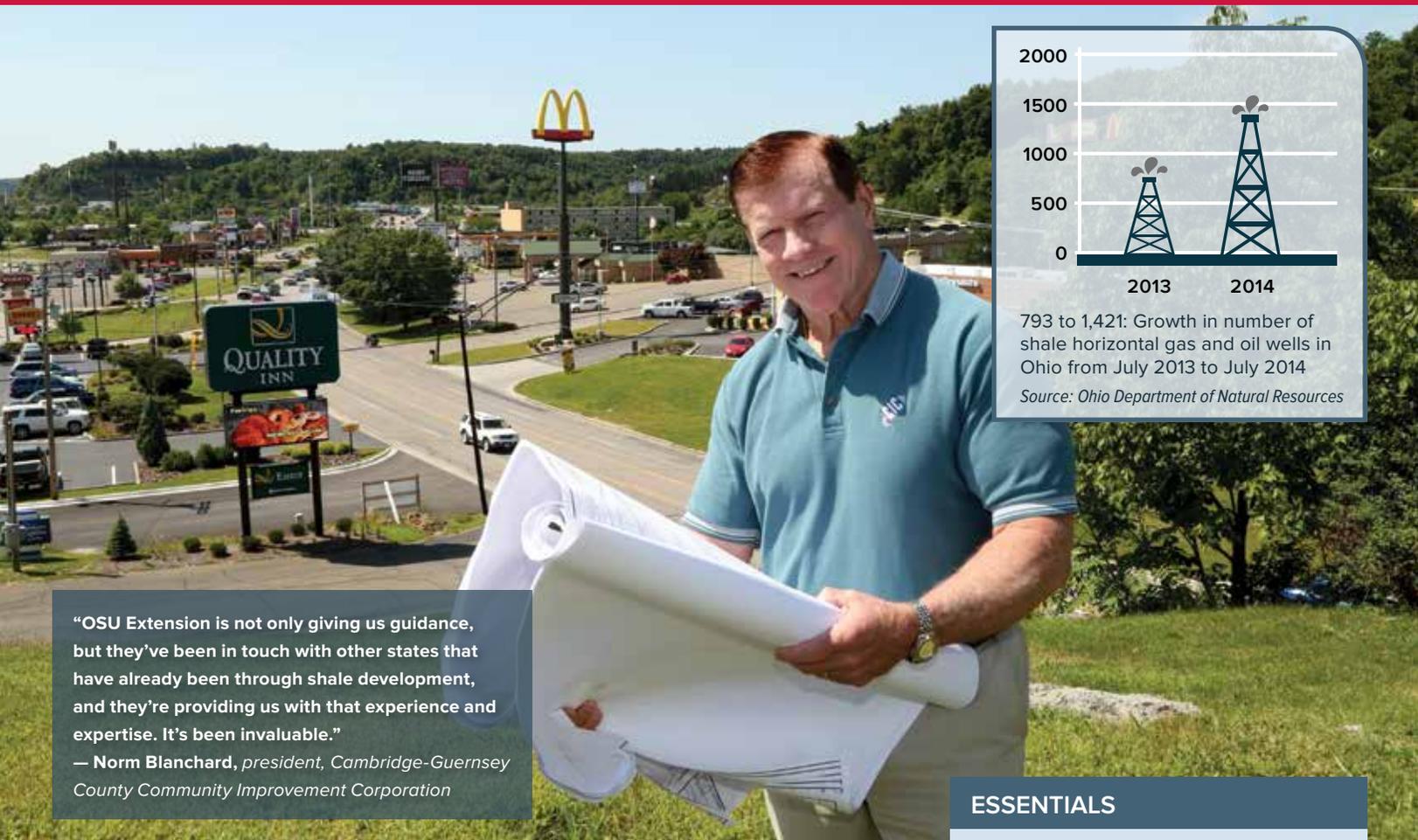
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“OSU Extension is not only giving us guidance, but they’ve been in touch with other states that have already been through shale development, and they’re providing us with that experience and expertise. It’s been invaluable.”

— Norm Blanchard, president, Cambridge-Guernsey County Community Improvement Corporation

Shale workers keep area hotels filled to capacity. While that’s an economic boost, leaders like Norm Blanchard work to minimize the drawback of potential tourists being turned away.

## OSU Extension helps communities prepare for shale-related impacts

In 2010, Guernsey County’s unemployment rate was 14.7 percent. Thanks to shale development, it tumbled to 5.7 percent by May 2014.

That’s all well and good, but the shale-related boom has other implications.

“A gas and oil guy from Midland, Texas, came to speak and told us to be prepared for our population to grow from about 11,500 to 100,000 in the next 15 years — at least, that’s what happened in Midland,” said Norm Blanchard, president of the Cambridge-Guernsey County Community Improvement Corporation. “When that hit the newspaper, we got calls. What are we doing to plan for this? How would we handle that kind of growth?” On the flip side, how should the region prepare for when shale development declines?

To help, Ohio State University Extension is tapping a \$200,000 grant from the Economic Development Administration (EDA) to work with four regional EDA offices representing 25 eastern Ohio counties. Together they are examining shale’s economic, social and environmental impacts and developing plans for sustainable development.

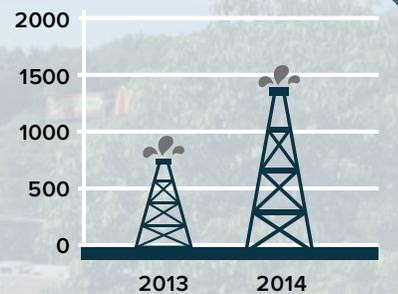
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More: [go.osu.edu/shalecommdev](http://go.osu.edu/shalecommdev)



793 to 1,421: Growth in number of shale horizontal gas and oil wells in Ohio from July 2013 to July 2014

Source: Ohio Department of Natural Resources

### ESSENTIALS

The OSU Extension project is:

- gathering and analyzing volumes of data to track the area’s economic, social and environmental conditions, including measurements on employment, population, income, charitable giving, school enrollment, crime, housing, noise, traffic counts, air quality, and water quantity and quality.
- examining the growth and contraction of specific industry segments. This will allow targeted actions to help local businesses adjust when the active shale construction phase ends.
- identifying sectors that need local investment. In some areas, the focus might be on infrastructure; others might zero in on housing, community amenities, entrepreneurship or workforce training.
- working with regional EDA offices to foster long-term planning across community and county lines.
- piloting educational materials in Guernsey County, thanks to another \$20,000 grant. Community leaders across the Midwest will be able to use the materials to incorporate shale development into their strategic planning.

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Josh Jennings

“The whole idea of STEM is not just taking a rigorous engineering or mathematics course. STEM is a whole different process of looking at things. You present students with a problem, and they use their creativity and critical thinking skills to figure it out.”

— Josh Jennings, director,  
Global Impact STEM Academy,  
Springfield, Ohio



STEM =

Present a problem.  
+  
Provide the tools.  
+  
Challenge young people to find an answer.

The Ohio State University is a partner of Global Impact STEM Academy, which offers hands-on learning in agbioscience fields, including food science, environmental sustainability, and biobased energy and products.

## ‘It blows their minds’: Challenges inspire youth to seek STEM careers

In 2012, the President’s Council on Advisors on Science and Technology predicted that over the next decade, U.S. industries will need one million more STEM graduates than the nation will have.

In 2013, Ohio State University Extension created the STEM Pathways signature program to spark enthusiasm in young people about science, technology, engineering and math. “STEM isn’t dry and boring. It’s fun, it’s exciting,” said Patty House, 4-H youth development educator and program leader. “You can use it to help solve real-world problems.”

In its first year, STEM Pathways developed a dozen 30- to 60-minute challenges and attracted an estimated 8,500 participants across Ohio. Challenges were piloted at the Global Impact STEM Academy in Springfield, where director Josh Jennings is a huge proponent.

“There’s no real prescribed step-by-step procedure they follow, because that’s the important thing: The students have to solve the problem on their own,” Jennings said. “When something happens they don’t expect, it kind of blows their minds.”

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More: [ohio4h.org/STEM-Pathways](http://ohio4h.org/STEM-Pathways)

### ESSENTIALS

STEM Pathways Challenge topics include diabetes, ergonomics, animal behavior, chemical spills, mining and bioproducts. One, the Fish Farm Challenge, was selected by the National 4-H Council and Monsanto to be the 2014 4-H Ag Innovators Experience for eight midwestern states. Leaders estimate 10,000 youth will participate in the challenge, designed to explore how to boost food production through aquaculture.

Here are some other 4-H initiatives:

- Nearly 5,000 children and teens in Cleveland learn a lifelong appreciation of nature and understanding of natural resources through Youth Outdoors, a unique collaboration between Ohio 4-H, the City of Cleveland Division of Recreation, and Cleveland Metroparks: [go.osu.edu/youthoutdoors](http://go.osu.edu/youthoutdoors).
- Two urban schools, one each in Cleveland and in Cincinnati, host “4-H Agri-science in the City,” which provides hands-on classroom instruction as a complement to regular coursework, as well as afterschool and summer programs: [go.osu.edu/cityagriscience](http://go.osu.edu/cityagriscience).

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The drinking water for more than half the people in Ohio comes from water at risk from harmful algal blooms.

## ESSENTIALS

- Harmful algal blooms produce toxins that can sicken people and animals. Beach closings, expensive-to-treat or unsafe drinking water (as happened in summer 2014 in Toledo) and lost tourism revenue all can result.
- The drinking water for more than half the people in Ohio comes from lakes and other surface water at risk from harmful algal blooms.
- OSU Extension teams up on its water quality efforts with the Ohio Farm Bureau Federation, Ohio Department of Agriculture, U.S. Department of Agriculture, Ohio Department of Natural Resources, and Ohio Environmental Protection Agency, among others.
- OSU Extension specialists, for example, taught water-protecting practices to 900 participants — including 400 Certified Crop Advisers responsible for more than 3 million acres — at last year's Conservation Tillage and Technology Conference. That acreage is equal to nearly a quarter of all the cropland in Ohio.

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*“Farmers are committed to protecting and improving our waters, but they need help through information-sharing, learning opportunities and education on the latest research and best nutrient management practices. OSU Extension is a key partner in providing these valuable services.” — Adam Sharp, vice president of public policy, Ohio Farm Bureau Federation*

Adam Sharp's boots are firmly on the ground when it comes to farming and protecting water: He is also a farmer in Fairfield County.

## Backed by research, educating farmers on best ways to protect water quality

**In summer 2014, Lake Erie and Grand Lake St. Marys**, among others, again suffered harmful algal blooms. An ongoing problem in recent years, the blooms are mainly caused by excess phosphorus runoff, including fertilizer and manure from farms. And Ohio State University Extension — teaming with state agencies and Ohio farmers — is delivering crucial science-based educational programs to put new solutions to work.

As a latest example, OSU Extension specialists, tapping into ongoing research by their college, are developing and will provide the fertilizer certification training required by Ohio's new nutrient management law, Senate Bill 150. Other efforts include teaching nutrient management sessions at Ohio's yearly Conservation Tillage and Technology Conference, and updating nutrient recommendations — also based on college research — for growers of the state's major crops.

In these and other programs, “Extension takes the scientific view,” said Greg LaBarge, OSU Extension agronomy field specialist. “We take the emotion out and develop solutions that meet both environmental and economic needs.”



Greg LaBarge

More: [go.osu.edu/NutrientStewardship](http://go.osu.edu/NutrientStewardship)

# OSU Extension's mission

Engaging people to strengthen their lives and communities through research-based educational programming

*We connect with people in all stages of life, from young children to older adults. We work with families and children, farmers and business owners, community leaders and elected officials to build better lives, better businesses and better communities that make Ohio great. We do this through a focus on four impact areas:*



## Strengthening families and communities

OSU Extension teaches people how to apply research in their daily lives in order to make informed choices about everything from finances to healthy living to food safety.



## Preparing youth for success

OSU Extension's 4-H youth development program delivers skills in leadership, communications, math, science and research to nearly 250,000 young Ohioans. 4-H extends its reach through special in-school, afterschool and summer programs.



## Enhancing agriculture and the environment

Ohio's diverse agricultural, horticultural and forestry industries contribute \$105 billion to the state's economy every year. OSU Extension assists with technology, marketing and educational support, protecting Ohio's position in the global marketplace. OSU Extension also works to enhance the environment, water quality and natural areas in the state — balancing economic progress with environmental sustainability.



## Advancing employment and income opportunities

OSU Extension's economic, small business and job development programs are tailored to local community needs in every county, whether metropolitan, rural or a combination of both.

[u.osu.edu/cfaesimpact](http://u.osu.edu/cfaesimpact)  
[extension.osu.edu](http://extension.osu.edu)



**THE OHIO STATE UNIVERSITY**

COLLEGE OF FOOD, AGRICULTURAL,  
AND ENVIRONMENTAL SCIENCES

## Locally based — jointly funded

OSU Extension is the university's community-based research and outreach arm, delivering knowledge from The Ohio State University to every county in Ohio.

OSU Extension is jointly funded through a line item in the State of Ohio's budget, through county funds and through the federal government. OSU Extension does not receive funding from student tuition.