

# PURDUE EXTENSION SHOWCASE



**AUGUST 2023**

*Bringing World-Class Education to Rural and Urban Communities*

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## Foreword

Purdue Extension's annual report reflects accomplishments, outcomes, and activities, sharing impacts across Indiana. Extension specialists and educators deliver educational programs and research-based knowledge that help families, individuals, and communities prosper and thrive. Here are some of their efforts:

- Addressing invasive species to enhance sustainable woodlands in Indiana.
- Engaging marginalized neighborhoods, providing technical assistance and leadership, and contributing to community resilience to climate-related water challenges.
- Preparing youth for tomorrow's workforce via STEM design and innovation studio opportunities.
- Providing 4-H Day at the Indiana Statehouse to spark interest and engagement of youth in state and local government opportunities.
- Preparing adults to take the FAA's remote pilot test to fly drones for their work or hobbies.
- Helping adults strengthen families, spend smart, eat right, and live well.
- Training adults about mental health issues to provide support for youth in military families.
- Helping communities prepare public spaces to boost economic development, improve quality of life, and create healthier places.
- Contributing to new knowledge and intention to apply recommended practices for small-scale and urban farmers.
- Increasing knowledge, confidence, skills, and aspirations for urban farming, and building connections and networks among experienced and beginning urban farmers.

Our efforts meet the changing needs of residents in every Indiana county, across this nation and around the globe. We hope you'll find this compilation interesting and helpful as you communicate with stakeholders about potential collaborations.

*Angela R. Abbott*

*Angela Abbott, Interim Director of Purdue Extension, Purdue University*

## Acknowledgments

This report spotlights our Extension work in a wide range of subjects that directly support our land-grant mission to build a sustainable future for our local communities, our state and beyond. Some examples of Extension programming and impacts from 2023 include:

- Annual Field Day events held at the eight Purdue Agricultural Centers across Indiana contributed to farmer and producer adoption of recommended practices, resulting in financial improvements up to \$100 per acre.
- Workforce training and licensing for employees working across industries provided sustainable management of hardwoods, safety practices in poultry production, and improved efficiencies and environmental practices for turf and landscape.
- Extension supported Indiana produce farms during a *Salmonellosis* outbreak, facilitating communication with federal agencies and conducting parallel analyses.
- Weekly forums contributed to knowledge and practices of farmers and ranchers for producing quality forages for livestock.
- Virtual series contributed to new knowledge and intention to apply recommended practices for safe fertilizer/manure use.
- Beef Basics increased knowledge and skills of adults interested in beginning beef production, and for agriculture vocational teachers seeking new knowledge for professional development.
- Demonstration plots and education events help build capacity of small-scale vegetable growers in using cover crops and reduced tillage systems.
- The Purdue Extension Master Gardener program provided gardening education and opportunities for sharing horticulture knowledge in communities.

I thank Angela Abbott, Interim Director of Purdue Extension, for her leadership, and all faculty, researchers, specialists, educators, staff and volunteers who deliver unbiased information and resources to help us deliver on our land-grant mission.



*Bernie Engel, Glenn W. Sample Dean of Agriculture, Purdue University*

## Climate Change, Natural Resources, Environment & Sustainable Energy

### Field Day Explores Invasive Species Management



Invasive species, especially in native woodlands areas, are a major concern in southern Indiana woodlands. The incursion of invasives often result in ecological, financial, and recreational

degradation in forests where invasives become established. The latest technologies are needed to ensure the most efficient means of controlling and eradicating invasive species for Indiana woodland owners.

A full day invasive species workshop hosted at the Southern Indiana Purdue Agricultural Center (SIPAC) featured lectures, wagon tours, hands-on demonstrations, and forest walks. Topics included assessing invasive plant problems, pillars of an invasives management system, invasives management control options, correct use and application of herbicides, herbicide labels, herbicide laws and regulations, invasive management funding and technical assistance, and developing an invasives management plan. Participants were 39 landowners from across southern Indiana and out of state interested in controlling invasive species common to Indiana woodlands. On the post-survey completed by 29 participants, they reported currently managing or advising woodlands acreages: 50 acres or less (25%); 51 to 100 acres (8%); 101 to 500 acres (54%); and 501 to 1000 acres (8%).

Most (93%) found the field day extremely or very useful to their operations. Attendees reported they planned to incorporate information learned into their management operations: herbicide information and demonstrations (55%); integrated management and scheduling in management (14%); controlled burns on invasive species (14%); and grazing goats on invasive species (10%). As a result of the field day, participants reported planning to adopt these practices: identify invasive plant problems on my property (86%), take steps to prevent new infestations (79%), assess the infestation, prioritize, and actively manage invasive plants on my property (76%), incorporate invasive plant management into my forest/wildland management plan (76%), seek professional expertise in managing invasive vegetation (66%),

seek financial assistance to help pay for invasive plant control (59%), and hire a forester or other vegetation management professional for invasive vegetation control work (38%). A majority (68%) would recommend this field day to a friend or colleague ranking the event as a 10 on a 10-point scale. Participants indicated the reason for the high ranking was that the field day was informative and engaging, provided practical, applicable techniques and tool demonstrations, and gave clarity on fighting invasive species. Purdue Extension's Field Day helps landowners identify and manage invasive species to enhance high quality and sustainable woodlands in Indiana.

### One Block at a Time: Community-Driven Planning and Equitable Adaptation through Multi-Benefit Green Infrastructure



Great Lakes communities are facing multiple water-related climate challenges. Frontline communities, marginalized due to income insecurities and historic effects of redlining, are

experiencing these challenges most acutely, yet have the fewest means to respond. In Michigan City and Hammond, Indiana, neighborhoods with high social vulnerability index scores are challenged with managing complexities of flooding, extreme heat, and drought, which are coupled with social issues, including food insecurity. In long-running partnership with the two Indiana sites, Purdue Extension assisted in development of small community gardens to increase access to fresh vegetables for residents. However, each site experiences challenges with sustainable water irrigation for their gardens. One garden has no access to freshwater onsite, and as a result, volunteers carry buckets of water from nearby buildings, leaving managers in need of more sustainable forms of watering.

In the Lincoln Park neighborhood of Duluth, Minnesota, residents are still recovering from a historic two-day mega-rain event in 2012 and face water challenges due to steep topography, high levels of impervious surfaces, and an increase in urban flooding events. In Erie, Pennsylvania, residents experienced multiple extreme

weather events and are struggling to adjust to climate variability and uncertainty.

Purdue Extension and Sea Grant partners from Illinois-Indiana, Minnesota, and Pennsylvania formed a multi-community work team to address climate-hazards in Michigan City and Hammond, Indiana; Duluth, Minnesota; and Erie, Pennsylvania. The team developed mirrored community engagement processes tailored to the neighborhoods, leading toward implementation of Ready for Rain One Block. Minnesota Sea Grant developed Ready for Rain One Block to engage local government and residents to address challenges of flooding (<https://seagrant.umn.edu/programs/community-resilience-program/one-block-time>). The focus is on developing community-planned public and private green and gray infrastructure projects within one city block which could be duplicated across nearby city blocks. To implement across the four communities, three project phases were developed: 1) background assessment of climate hazards and vulnerabilities, 2) community visioning, and, 3) implementation of a multi-benefit green infrastructure project.

In Indiana, the team collaborated with a community center with a garden program in Michigan City and a faith-based group that owns a neighborhood farm in Hammond. The team worked with garden managers, neighbors, and site users to conduct focus groups, interviews, and site visits to collaboratively design rainwater irrigation and harvesting structures and rain garden overflow. Undergraduate student interns and Purdue landscape architecture undergraduate students assisted in designing and installing these garden sites. In Duluth, the team conducted surveys and focus groups for neighborhood urban flooding needs, and developed sites for community-led green infrastructure projects.

In Erie, the team focused on building relationships with local communities through focus groups and interviews, developed 3D models of vulnerable locations, and is currently identifying a green infrastructure demonstration site. Community center and neighborhood farm managers and volunteers, and municipal and community leaders were engaged in the activities. The team shared processes, findings, and results identifying neighborhood vulnerabilities and associated climate challenges, hosted focus group sessions with municipal and community leaders, and led community engagement activities. As a result, the team enhanced neighborhood resilience to climate-related water challenges through site-specific discussions and design that guided installation of rainwater harvesting practices and rain gardens. Volunteers contributed 100 hours of time on these community garden projects for an estimated value of \$2,995.

“Before we started this garden, there was no public park or true green space in this neighborhood,” an organizer of the neighborhood farm said. “It was a lower-income neighborhood that had been unfairly labeled as crime-ridden, and if kids wanted to get to a community park to play, they had to cross several busy streets to get there. It felt good that Purdue Extension could see the value in this garden space, too” (<https://ag.purdue.edu/news/2022/11/national-sea-grant-partnerships-address-water-equity-in-marginalized-neighborhoods.html>). The Purdue Extension and Sea Grant team engaged marginalized neighborhoods, provided technical assistance and leadership, and contributed to community resilience to climate-related water challenges with the design and installation of rainwater harvesting practices and rain gardens.

## Workforce Development

### Hardwood University Ensures Sustainable Management of Indiana’s Woodlands

Indiana ranks fourth in the U.S. in hardwood industry production. According to Indiana’s Department of Natural Resources, the hardwood industry contributes \$17 billion in value-added to the Indiana economy. However, lack of skilled hardwood employees is the No. 1 impediment to industry success and growth. The number of job openings in wood products manufacturing exceeds the number of qualified applicants by a factor of 3:1 to 10:1. Hardwood industries employees require specialized training to produce lumber and hardwood products, and to maintain sustainable productivity of forest resources.

Purdue Extension annually offers a program, Hardwood University, to provide expertise, technical assistance, and education to industrial stakeholders engaged in wood products manufacturing to solve issues related to raw material quality, processing technologies, and manufacturing efficiency. Participants are business owners, chief executive and operations officers, production managers, supervisors, engineers, designers, equipment operators and industry



associations in both primary hardwood products manufacturing for lumber and veneer, and secondary wood products manufacturing of furniture, cabinets, millwork, flooring and others. Nine monthly sessions during the academic year provide over 50 hours of instruction. Each session is a minimum of six hours and held at forestry or manufacturing worksites across Indiana. Hardwood industry professionals learned about sustainability of material supply, best management practices, procurement and marketing, tree, log and lumber quality and measurement, step-by-step processing techniques, equipment, and decision-making.

Participants may choose to focus on one of three tracks: 1) primary industry for log buyers, sawmill, stave mill, veneer mill, and lumber drying operators, 2) secondary industry for furniture, cabinet, millwork and other manufacturers of wood products, and 3) training a la carte for companies and individuals that would like to organize in-house training on a selected topic. Participants who finish all nine sessions in a chosen track within two years receive a program completion recognition from external partner [Indiana Hardwood Lumbermen's Association](#). In addition, sessions qualify for continuing education credits for certified foresters ([Society of American Foresters](#)), and consulting foresters ([Association of Consulting Foresters](#)). In one year of the program, 168 employees attended the sessions. Participants were employees new to the hardwood industry and employees preparing for advancement or cross-training.

On post-surveys, participants indicated they learned something new, increased awareness, and learned new skills. Participants indicated practices from the sessions that they plan to implement in the next 12 months. Most comments addressed lumber drying, including adjust kiln drying schedule, build/buy lumber dry kiln, change kiln startup procedure, change yard locations for drying particular species, eliminate standing water in yard, improve air flow in yard, and establish lumber drying operation. Also mentioned were: setting up lumber grading for company and training employees to grade lumber, conducting saw maintenance and changing sawing procedures, focusing on management – getting more education, implementing plan, or pursuing professional assistance, and identifying and sorting lumber by quality. Purdue Extension's training for employees working in the hardwoods industry helps produce skilled workers for company success and to ensure sustainable management of woodlands across Indiana.

## Purdue Turf & Landscape Field Day Equips Green Industry Professionals

There is a large demand for information and education among Midwest turf and landscape professionals. Collectively, those working in turf (natural grass) and

landscape businesses are referred to as the green industry. Development of education programs that address both short-term (current problems and hot topics) and



long-term (sustainability) issues is key to reducing inputs and environmental risks while simultaneously improving quality of turf and landscapes for human and environmental benefits. Further, there is a need among professionals for continuing certification hours (CCHs) to keep their commercial pesticide certification current with the Office of Indiana State Chemist (OISC). More than 2,800 individuals maintain Category 3a-Ornamentals or 3b-Turf pesticide applicator licenses requiring 15-20 hours of recertification training (CCHs) every five years.

Purdue Extension faculty, specialists, students, and Office of Indiana State Chemist (OISC) and Purdue Pesticide Programs staff provide high-quality, science-based continuing education to green industry professionals using a demonstration-style event. This annual, one-day Turf and Landscape Field Day event provides 16 hours of content via morning tours and afternoon workshops. Participants could earn up to four CCHs for attending. Participants include managers and staff from golf courses, professional lawn care businesses, landscape installers and maintenance firms, plant nurseries, sod farms, athletic fields (university, high school, and municipal level), grounds managers of business and industrial complexes, schools, parks, cemeteries and hospitals, and industry salespeople and distributors.

Average number of Field Day participants was 482 (2013-2019, pre-covid) with 403 in 2022. Of 85 participants reporting, they were predominantly White (90.2%) and male (85.4%). Participants described their work as lawn care (59%) landscape install/maintenance (36%), landscape design (26%), athletic fields (16%), land/vegetation management (10%), plant nursery (8%), golf course (6%), and aquatics, arborist, greenhouse, or sod farm (<5%). A total of 243 Field Day participants earned CCH credits. These represent a portion of the 3,489 professionals who earned CCHs by attending Purdue Extension programs in 2022. As a result of the field day, participants (85.9%) reported they learned something they didn't know before. Additionally, nearly half (48.2%) indicated they plan to adopt practices for increased efficiencies. A third (33.7%) plan to adopt practices/technologies for horticulture and the environment, and fewer (27.7%) plan for conservation of resources. As a result of discussions at this event, nearly all (93.8%) indicated they feel better equipped to do their jobs more effectively and efficiently. Participants (67.1%) reported attending to earn professional CCH credits.

More than half (59%) indicated they had attended this event in the past. Of these past participants, nearly three-quarters (70.8%) reported they had adopted a new or recommended practice for their farm or operation. These practices were most commonly described as fertilizer technology, improved weed control strategies, or disease identification and management. When asked about improvements observed as a result of adopting a new recommended practice, two-thirds (66.7%) indicated increased efficiencies and 27.3% reported increased economic returns. Participants shared improvements as a result of adopting recommended practices: better control, happier customers/clients, and an increase in sales. While most past participants could not estimate a dollar value for economic returns from adopted recommended practices, those who could estimated between \$1,000 and \$4,500. As a result of Purdue Extension's Turf and Landscape Field Day, green industry professionals are better equipped to do their jobs, complete required training to maintain professional licenses, adopt practices and new technologies to improve efficiencies, the environment, or sustainability efforts. Those who adopted improved fertilizer and pest control practices saw better results, increased economic returns, and more satisfied customers.

### Shell Egg Academy Provides Food Safety Practices for Employees in Laying Hen Production and Egg Processing Plants



As a result of a national needs assessment for the poultry industry, two critical needs were identified: Food safety in table egg production; and coordinated and consistent training for

employees in the industry. A national board was formed of individuals from industry, stakeholder organizations, and academia, including Purdue Extension, to collaborate and coordinate training. Purdue Extension developed the Shell Egg Academy with a holistic approach, recognizing the food safety connection between live production houses (laying hens) and egg processing plants. Two training tracks were created – live production and processing. Academy goals were for poultry industry employees to gain knowledge of good management practices, and to become aware of resource individuals/experts who can be contacted for future assistance.

Academy training started in 2019. The 2020 iteration was cancelled due to the pandemic. Purdue Extension transformed the 2021 academy to a six-hour virtual

program delivered daily for a week. Participants were mailed a "Laboratory in a Box" (LAB), supported by sponsors and allied industries, which included a light for candling eggs, a book compiling all USDA and FDA regulations from the Federal Registry, and eight swab types for sample collection. In 2022, the Academy was offered as two distinct programs: virtually and in-person. In addition, the virtual program and associated educational materials were offered in Spanish to significantly increase reach. The in-person event targeted upper-level management of egg producers, allowing for enhanced networking and focusing on case studies about key topics.

A total of 82 poultry employees from across the U.S. attended the virtual or in-person training. A total of 164 poultry industry employees have attended the Academy training, with 86% earning a certificate of competency. In a survey, participants (n=18; 10% response rate) indicated that over half (56%) adopted recommended food safety practices, resulting in increased operating efficiencies or increased value per unit of output. Participants indicated information from the Academy was applied for updating vaccine programs, training subordinates, and enhancing understanding of FDA expectations for audits. As a result of the training, three-quarters (78%) indicated they contribute more to the success of the poultry facility, over half (57%) agreed the training played an important role in achieving new benefits or results in their job, workplace or career, and one-third (35%) reported being more proactive in engaging with regulatory agencies. Purdue Extension's Shell Egg Academy ([www.shelleggacademy.org](http://www.shelleggacademy.org)) is developing food safety knowledge and practices of employees in laying hen production and egg processing plants.

### Teens and Adults Learn Interviewing for Jobs and Professional Behaviors for the Workplace



Indiana's Department of Workforce Development estimates there will be 1 million jobs to fill by 2025. Workforce development is needed to produce more qualified job applicants. Employers

are looking for employees who have skills and knowledge to support current and future businesses and industries. PayScale and Future Workplace surveyed managers who reported that new graduates lack critical thinking/problem solving skills, communication, and teamwork. The Conference Board reported high school graduates were deficient in professionalism, communications, and critical thinking.

[Purdue Extension implemented the Work Ready program](#)

to prepare teens and adults for work. The curriculum provides instruction on goal setting, responsibility, accountability, interviewing skills, money management, time management, dressing for success, developing cover letters and resumes, marketable skills, potential career opportunities, and responsible social media usage. Work Ready is provided for high school students in schools and for adults via community programs/ organizations (learning centers, Jobs for America’s Graduates (JAG), and shelters for the homeless, for victims of violence and abuse, etc.) Across Indiana, there were 91 Work Ready sessions delivered to 927 youth and 70 adults. Youth reported their demographics as White (83.5%), Hispanic (4.5%), and male (47.2%), and adults reported they were White (76.5%), more than one race (23.5%), Hispanic (11.8%), and male (52.9%).

Students reported they had learned it is important to arrive on time for work, to be trusted by their employer, to do their job well, and to show respect for others. Students reported Work Ready helped them learn how to act professionally in the workforce. As a result of participating, students had thought about the amount of education they may need in the future, have a better idea of what they might do after high school, identified careers that might be a good fit for them, increased knowledge about future job or career opportunities, and learned which certification or training they need for their future career.

Adults reported an increase in soft skills. Adults now have a resume to use when they apply for positions and are more confident during job interviews. Adults understand the skills it takes to obtain a job/career, feel more confident they can be successful, and intend to use the life skills they learned. Adult comments included: helped me get more life goals, gets me ready to prepare for an interview in the near future and feel more confident. Hearing back from one center manager, all adults who had participated in the class have since received jobs. Purdue Extension’s Work Ready contributes to the development of skills for applying and interviewing for jobs, and understanding of behaviors for success in the workplace.

**Design and Innovation Studio at the Indiana State Fair Provides STEM Activities, Preparing Youth for Tomorrow’s Workforce**

According to the Indiana Department of Workforce Development, the number of jobs in the computer and mathematical sector in Indiana are expected to grow to nearly 69,000 by 2028, an increase of approximately

7,000 from its 2018 base of 61,344 jobs. Indiana is focused on students to enter this workforce through guiding principles of problem solving, access to STEM education, focus on communication and collaboration, self-advocacy, and community partnerships (Indiana Department of Education).



Over the past two years, Indiana 4-H and collaborating partners [Indiana Next Generation Manufacturing Competitiveness Center \(IN-MaC\)](#) and [STEM Education Works](#) have brought innovative technologies to youth through design and innovation studios located across the state. One location is at the Normandy Barn at the Indiana State Fairgrounds. The studio hosts a variety of basic technology used throughout industry, allowing youth and adults to learn by doing. Design and innovation studio participants could: 1) learn about block and text coding with BOLT – Sphero’s most advanced coding robot to date, 2) draw, write, engrave or 3D print with the Dobot Magician robotic arm, 3) create a masterpiece with Glowforge, the best-in-class laser cutter, 4) use virtual reality technology and concentrate to move a robotic arm, and 5) complete a survey to receive a 3D-printed ear of corn with the 4-H emblem. Over 100 Extension educators and specialists collaborated to provide these STEM tools and experiences at the Indiana State Fair.

In 2022, 21,642 youth and 14,428 adults took part in the STEM activities for increasing awareness and interest in STEM opportunities, and careers. Purdue Extension’s Innovation and Design Studio sparked youth creativity and curiosity in technology, engaged them in using technology, problem-solving, critical thinking, basic engineering, designing/building, and coding. Youth were inspired by technology, realizing a 3D printer is STEM and little robots work like big robots. It encouraged youth that if they could do technology on a small basis, they might be able to do it in a bigger way. Youth and families who worked together to connect puzzle pieces were intrigued to learn the pieces had been made on 3D printers. This sparked interest to watch the 3D printers in action. These activities introduced youth to skills and career directions in STEM. Indiana 4-H, IN-MaC, and STEM Education Works have partnered to create design and innovation studios to provide STEM opportunities to spark interest and prepare youth for tomorrow’s workforce.

## Positive Youth Development & 4-H Opportunities

### Teen Leaders Gain Leadership, Teamwork and Communication Skills as Camp Counselors



The National Association of Colleges and Employers found that top priorities in new hires were leadership, collaboration, communication, problem-solving, initiative, flexibility,

and a strong work ethic. However, most employers say potential applicants lack these skills. Youth need an environment where they can gain life skills that prepare them for college and careers. Teen leaders need opportunities to enhance life skills, such as team building, responsibility, time management, and understanding.

"Involvement in a camp counselor program does indeed appear to have a long-term, positive impact on the lives of participants," Brandt and Arnold (2006) noted. Their study discussed how "teen 4-H camp counselors play out their role in that interesting place between childhood and adulthood. No longer are they the little ones looking up to their counselor. Instead, as camp counselors, they take on a pseudo-adult role and experience many of the rights and responsibilities of being an adult. It appears that being a 4-H camp counselor is a rewarding and meaningful experience that has a lasting, important impact."

Summer camps organized around clusters of counties across Indiana provided opportunities for teen leaders to guide younger participants (grades 3-7) through structured activities. Camp counselor training was held during the spring to prepare youth (grades 8-12) for responsibilities to care and oversee campers while teaching them essential elements for positive youth development. Training topics focused on: protection of minors, camp roles, leadership, committee structure, ages and stages of youth development, structured team building, difficult scenarios, emergency action planning, basic first aid, and outdoor safety. During camps, counselors planned and taught classes, supervised free time activities and were responsible for campers in cabins. Plus, counselors led their campers in cabin skits, chants and team activities.

More than 350 youth, grades 8-12, participated in camp counselor training and led activities for younger youth at camps across Indiana. These teens indicated they are

in, or have been in, a 4-H club and have competed in county- and state-level events. For learning and applying life skills, camp counselors indicated: If I'm the leader of a group, I make sure that everyone in the group feels important, I feel like I can stand up for what is right, even if my friends disagree, and when I see something that is wrong, I try to change it. For communication skills, counselors reported: I can resolve differences with others in a positive way, and I am aware of my body language and non-verbal communication. Looking at interpersonal skills, youth indicated: I can resolve conflicts in positive ways, and I can work with others to create goals. For skills in collaborating, youth reported: I think everyone on the team is important, I encourage other team members to give their best effort, and I respect the differences and strengths of individuals on the team. Camp counselors indicated that 4-H is a place where they have a chance to be a leader, get to help make group decisions and teach others what they've learned, are encouraged to plan for the future, and learn ways to help their community. Counselors stated they learned that everyone's opinion matters, how to plan out a lesson and ask different questions depending on ages of campers, how to effectively communicate, strategies to make campers feel welcome at camp, how to be patient and respect different backgrounds, new icebreakers, and how to not let their own opinions change how they think about people's ideas. The Indiana 4-H Camp Counselor Training provided youth in grades 8-12 with skills and activities that contribute to positive youth, leadership, and teamwork development, communication, decision-making, and college and career preparation.

### Youth Engage During 4-H Day at the Indiana Statehouse



Democratic society requires an engaged citizenry, and Indiana 4-H is committed to finding ways to encourage and excite youth for civic engagement. Indiana 4-H Day at the Statehouse was

a trip to the capital for youth from across the state. Two separate days were scheduled. Legislators spoke to groups. Youth viewed the Senate and House in session and met with their local representatives. Youth learned about Indiana's history. More than 400 youth in grades 7-12 participated in Indiana 4-H Day at the Statehouse. Many experienced serving as pages for the day. Of 59

youth who self-reported demographics, they were white (100%) and female (76.6%). For past 4-H participation, youth indicated being in, or having been in, a 4-H Club, and participating in a county- or state-level competitive event.

Youth indicated what they liked the best about the Statehouse experience: Touring the Statehouse and learning about it, meeting and talking with senators and representatives, sitting in on the House and Senate sessions and watching legislators discuss bills. For civic engagement, all youth reported that they like helping people in their community. For interactions with local, state and national government, youth (89.1%) reported they had met community leaders because of 4-H. Helping to address problems in the community, three-quarters (77.9%) indicated that when they learn about a problem in the community, they look for ways to help. Most youth indicated they like helping people (80.0%) and they feel

a responsibility to help their community (94.9%). Youth (96.7%) indicated 4-H inspired them to volunteer in their community. Youth shared what they learned: how the Senate and House work, how bills are passed, about Indiana, our government, and interesting facts about our state history. Youth reported they plan to use information from this Statehouse experience for future opportunities to be involved with the government, to advance their understanding about government, and to share what they have learned with others. They plan to use this information for future opportunities to be involved with the government as an intern, for running for office, career opportunities, voting in local elections, and to advance their understanding about government and share what they have learned with others. Purdue Extension's 4-H Day at the Indiana Statehouse contributes to youth interest, awareness, and engagement in current and future state and local opportunities.

## **Big Data, Internet of Things, Broadband Access, Digital Literacy, Inclusion & Innovation**

### **Small Businesses Thrive by Improving and Expanding their Online Presence**



To remain competitive, rural and small businesses need a well-designed online presence. In the past few years, small businesses adopted technology at breakneck speed to adjust to pandemic

conditions and survive. Salesforce stated that over 70% of small and medium businesses went digital to persist through the pandemic. The majority would not have survived if they had not taken advantage of online presence strategies. Going forward, it is anticipated that many approaches to an online presence will be long-term.

Purdue Extension identified key online presence components for small businesses, and created Expand Your Business's Online Presence training to share strategies for entrepreneurs and small business owners. In partnership with the Indiana Small Business Development Center (ISBDC), the ISBDC covered program fees for up to 50 businesses for the online program. In the 12-module training, participants learned about websites, search engines, digital storefronts, virtual customers, email, podcasts, and social media. They learned how to reach more customers, how to use

digital transactions, how to be discovered by potential customers, and ways to improve customer online experience. Purdue Extension conducted 19 online and two in-person workshops. There were 40 entrepreneurs and small business owners from across Indiana in the workshops.

More than 90% reported that the training increased their knowledge and recommended the series to others. Applying strategies learned, they reported increased customer engagement, customer base, and sales. As a result of adopting strategies learned, employers reported they had developed plans for their business and were able to retain jobs. Purdue Extension's [Expand Your Business's Online Presence](#) helped small businesses and entrepreneurs apply online strategies to increase customer engagement, customer base, and sales, and to retain jobs.

### **Purdue Extension's UAV Program Prepares Participants to Fly Drones for Work or Hobby**

The Federal Aviation Administration (FAA) introduced CFR 14 Part 107 regulations in 2016 to address increased numbers of UAVs (unmanned aerial vehicles, aka drones) in U.S. airspace. Part 107 provides regulation on UAV use in controlled airspace, weather conditions, performance and weight standards, and usage by the general public for professional and hobbyist applications. The FAA reported 865,000 UAVs registered (314,000 commercial, 538,000 hobbyist) along with 280,000 certified UAV

pilots. This does not account for all UAVs that are not registered. There are growing concerns of UAV use by companies for delivery, scouting, mapping, and inspections, leading to the need for more training.

Purdue Extension created the UAV program for Indiana stakeholders. Over 240 sessions totaling 190 hours, training focused on UAV applications, safety, regulations, sensors, and best-use cases. Extension specialists and educators used flight planning software to create unique maps to share with stakeholders for data interpretation and manipulation. Nearly 1,200 maps were created and 122,748 acres flown in working with more than 4,000 people across Indiana.

Purdue Extension worked with youth through STEM programs, helping hone flight skills through controller manipulation, obstacle course completion, or UAV presentation/demonstration in classrooms. Some youth developed programming for UAVs through computer software (Scratch or Scratch Jr.), allowing them to develop programmed flights. More than 3,100 youth participated in 52 training sessions. Some 27 UAV programs provided training for 863 agriculture, utility, construction, real estate, insurance, infrastructure, and many other industry professionals, using live drone demonstrations, imagery, and software. In the past five years, Extension and the Purdue Agriculture Centers (PACs) partnered to purchase four spray drones. The team sprayed herbicide and fungicide on about 300 acres of crops at the PACs for research or on-farm demonstration plots. For UAV programs and demonstrations presented in schools, teachers indicated

that drones are always the favorite station for students. For adult participants of UAV training, all reported that after the program, they were more aware of safety protocols and better understood applications



associated with UAV technology. Nearly all participants (98.3%) were more aware of legal issues and troubleshooting techniques. Most (92.9%) indicated they felt prepared with study materials for taking the FAA's Remote Pilot test. Three-quarters of adults (75.9%) indicated they plan to take the Remote Pilot test, and to implement UAV technology in their operations (72.4%). Adults described how they plan to implement UAV technology for fire or public safety, inspections/surveys, field scouting, and photography. The majority (80.4%) felt they would save money by investing in UAV technology in the future. The Net Promoter Score® (NPS®) is a measure of customer loyalty that helps inform decision-makers of the experiences they are providing. The calculated NPS® for UAV program participants was +67 (on a scale from -100 to +100) and is considered an excellent rating. Extension's UAV Program introduces youth to drones via STEM-related activities, prepares adults to take the FAA Part 107 Remote Pilot Test to fly drones for their work or hobbies, and increases participant knowledge about future job or career opportunities.

## Human, Family & Community Health

### Helping Hoosiers Get on their Feet



Even though promotion of physical activity has been a public health priority for decades, key U.S. public health agencies, including CDC, routinely collect data indicating most Americans

are not meeting physical activity guidelines. Physical inactivity is directly related to the prevalence of adult and childhood obesity. Participation in regular physical activity decreases the risk of coronary heart disease, hypertension, Type 2 diabetes, osteoporosis, depression, obesity, breast and colon cancers, and falls in older adults. In 2020, 69% of Indiana adults were considered overweight or obese and only approximately 21% self-

reported meeting physical activity guidelines (CDC, 2022). Walking is an easy way to start and maintain a physically active lifestyle. Walking is accessible to almost anyone, does not require specific skills or abilities to perform, can be performed alone or with others, is adaptable (i.e., can be performed at any chosen intensity) and is inexpensive.

Purdue Extension provided education to adults about physical activity and ways to increase walking behaviors through Get WalkIN! This program is a 12-week series of emails, with e-mail messages sent twice weekly for the first four weeks and then weekly for the next eight weeks. Topics covered include benefits of exercise, how to overcome barriers, principles of self-efficacy, social support, goal setting, walking locations, and relapse prevention. Via emails, Extension Educators help motivate participants to make simple changes to their daily routine that can improve physical activity and overall health and well-being. The program was

presented 38 times during the year. Get WalkIN' reached 729 adults across Indiana. Of those reporting, participants of the program were mainly female (92%), middle age (54.5 years), and White (92%).

At the beginning, 129 adults were categorized as insufficiently active, but at the end, this number dropped to three. Participants initially reported walking an average of 153 minutes per week, and this increased significantly to 243 minutes at the end. Adults reported an increase in self-efficacy for physical activity (average from 3.1 to 3.6 on a 5-point scale), and in social support (2.5 to 2.8). Participants indicated that intervention emails were both easy to read and to understand (average = 4.5 on a 5-point scale). They reported the frequency of emails was acceptable (4.4) and that receiving emails encouraged an increase in walking (4.1). Participants responded it was likely they would continue to use information learned from the program (4.3). Adults stated they always read the intervention emails (67%), or read the emails quite often (23%). As a result of Purdue Extension's email-based Get WalkIN' program, adults increased their walking and overall physical activity, contributing to reduced risk for obesity, coronary heart disease, and other diseases.

### Across Indiana, Adults Increased Knowledge of Food, Family, Money and Health



Indiana has room for improvement in many issues related to food, family, money and health. Indiana ranks 41st in overall health and consistently ranks among the worst states for obesity, smoking,

and diabetes. Many risk factors for disability or death are preventable via improving eating habits and living an active lifestyle. On finances, Indiana ranks 11th for bankruptcy filings. By making smart choices, households are able to maximize financial resources.

Purdue Extension offers a variety of effective, engaging programs based on community needs to increase knowledge and improve behaviors related to food, family, money and health. During the year, 537 programs (in-person or virtual) were delivered for adults across Indiana. There were 4,833 adult participants in the health programming. Participants were primarily White, non-Hispanic women. There were 4,530 adults (93.7%) who responded on the statewide evaluation post-survey.

Data indicate significant increases in adult knowledge about diet quality, food safety, food selection/preparation, environmental health, physical health,

mental and emotional health, relationships/social health, aging process, parenting/caregiving skills, financial empowerment, and risk management. Adult participants (94%) reported they learned about food, family, money and/or health that would improve their life positively, and they (94%) indicated they would share the information learned with others. Adults reported they intended to engage in many healthy behaviors after completing programs. Asked to provide an example of how the program would make a difference in their lives, adults shared: 1) It made planning ahead for meals seem much less overwhelming and brought it to a realistic level. 2) This program is a good simulation of a cross-cultural experience that allows for meaningful conversation regarding cultural differences. 3) This program will help me have a better understanding of how my spending habits affect me in the future and how to manage them. 4) Understanding that I need to practice self-care. My physical and mental health suffer because I tend to take care of others and do not take time to care for myself. Results from the statewide evaluation tool indicated that Purdue Extension's programs help adults strengthen families, spend smart, eat right, and live well.

### Youth Mental Health First Aid - Military Partnership



Mental health and substance use issues are widespread concerns and are often perceived differently than physical health. In the CDC Children's Mental Health Report, adolescents and

teens are reported at risk for depression and suicide, with one in five youth (12 to 17 years old) reporting having had major depressive episodes and almost one in five reporting serious contemplation of suicide. CDC recommends that parents, health care professionals, and teachers and school administrators take action to address mental health in youth, with a focus on early identification.

Purdue Extension provided the Youth Mental Health First Aid course 21 times during the year to concerned adults working with youth in military families. The course addressed signs and symptoms of youth and adolescent mental health and substance use issues, provided tools for first-aid level assistance to youth experiencing crises, and was available in-person and virtually. Focusing on mental health issues affecting youth (ages 12-17), topics discussed were anxiety, depression, substance use (including opioids), trauma, and deliberate self-harm. In addition, adults learn how to be a resource for those at risk for mental health and/or substance use, and gain

skills to identify and support adolescents with mental health issues. There were 320 adult participants. Of those reporting (n=311) on the Council on Mental Health and Wellbeing’s post- evaluation, most identified as female (71%), and about half (46%) indicated having a bachelor’s degree or higher level of education.

Nearly all (95%) indicated the training benefited their professional development or practice and said they would recommend this training to a colleague. One participant noted the most helpful portion was learning the helpful versus non-helpful approaches: It helped me realize that I need to change how I ask certain questions. Said another: Practicing skills and group discussions (gave) us an opportunity to connect with other childcare professionals experiencing similar issues. Another participant commented that they valued the group discussions because we have different backgrounds and work with a variety of populations and it was helpful to hear others’ challenges and successes. Purdue Extension’s Youth Mental Health First Aid helps adults learn about mental health issues and provide support to youth in military families.

### Enhancing the Value of Public Spaces: Creating Healthy Communities



In Indiana, community leaders make decisions about public spaces such as parks, trails, and schools every day – decisions that affect the health and wellness of communities.

[Purdue Extension’s Enhancing the Value of Public Spaces: Creating Healthy Communities](#) program coaches communities through development of high-quality action plans for public spaces, guiding decisions and better positioning communities to take advantage of opportunities to promote healthy eating and active living. The curriculum is designed for decision-makers and local leaders who have oversight and management of community public spaces, such as parks boards and plan commissions, public officials and their staff, and members of organizations whose missions relate to services, programs, or management of public spaces.

The program combines data collection and analysis with inclusive public deliberation to design action plans toward meaningful, sustainable improvements of public spaces focused on community health. The goal is to strategically guide policy, systems, and environmental changes to promote healthy communities.

Focusing on Blackford County, a series of online and in-person public participation workshops were conducted to gather residents’ input for the parks and recreation

five-year master plan. Three visioning workshops – each two hours long – allowed community members to share assets and opportunities for placemaking, active living, and healthy eating. Podcasts and videos were provided, helping residents understand the conceptual framework. At the first visioning session, participants compiled assets and opportunities, and then voted on themes they felt needed to be the focus of the next two workshops. During the second visioning virtual session, participants focused on placemaking, active living, and healthy eating. In the third session, participants prioritized strategies. At the final session, also two hours, participants completed an action plan for each strategy for placemaking, active living, and healthy eating. In addition, a public survey was conducted to gather input from community residents who could not attend the sessions. Survey results, community data, and the action plan were presented to the community in a 62-page report.

There were 46 virtual participant surveys and 279 public surveys received. Demographics of survey respondents (n=182) were: 94% White, 69% female, and 44% age 25-44. A third (34%) reported they earned less than \$50,000 annually, and 25% had attended some college but did not earn a degree. A post-program evaluation was completed by 26 participants (57%). Over 95% found the program informative, felt engaged in activities, and had meaningful discussions. Participants indicated significant takeaways were the concept of community capital, involvement is key, and the realization that there are resources and organizations in the county that can be partners for healthy living. Several mentioned takeaways were working together, communication, and that the program was a catalyst for progress.

Action strategies developed have seen progress since the plan was delivered. To expand and market community events in the parks and create outdoor movie nights downtown, Purdue Extension partnered with Taylor



University Social Work Department, Hartford City, Firefly Children and Family Alliance, and Meridian Services to host a community movie night with a mental health awareness theme. More than 70 people attended. Resources, including a newly published community directory, were shared. To develop youth leadership opportunities for parks and public spaces, local students were asked what they would like to see in the community. Twelve high school students identified improvements to a basketball court, and asked for support from Purdue Extension to connect them with local funders. Students

raised \$1,700 through a Change War competition at school, and a pitch to the plant manager and human resource director at the local 3M factory resulted in an additional \$1,600; new goals will be installed. As a result of this effort, a Mayor's Youth Council will be started to focus on project-based efforts. Purdue Extension's [Enhancing the Value of Public Spaces: Creating Healthy Communities](#) helped communities prepare public spaces action plans to boost economic development, improve the quality of life, and create a healthier place for individuals and families.

## Food Production, Security & Safety

### Providing Information and Guidance During a Foodborne Illness Outbreak Investigation



A safe food supply is critical to maintaining public health and public trust in producers. A significant proportion of foodborne illness outbreaks have been traced to fresh produce. Outbreaks

exact a large toll in human suffering, expense of treatment, and loss of trust. As an example, cantaloupe grown in Indiana were implicated in an outbreak of foodborne illness in 2012. Based on available data, this outbreak reduced the size of the Indiana cantaloupe industry by 40%, compared to pre-outbreak production.

In August 2022, three southwestern Indiana farms were contacted by the FDA and CDC and informed that cantaloupe grown on their farms were implicated in multistate outbreaks of *Salmonellosis*. Production on these farms represented 30% of the entire multimillion dollar industry for Indiana. These farms operate individually, but collectively own and operate a cantaloupe packing facility and a marketing company. Cantaloupe growers/operators reached out to Extension immediately when contacted by the FDA. Purdue Extension personnel, [www.safeproducein.com](http://www.safeproducein.com), provided guidance and advice during this investigation. Extension staff sat in on calls between growers and regulatory agencies, advising growers in real time as the situation unfolded. As the investigation progressed, a team from FDA and IDOH visited the farms and shared packing facility. Purdue personnel provided information to

growers to better understand the sample collection processes. Given the unique position of Purdue as a non-regulatory entity, Extension personnel were able to facilitate communication between all involved parties.

Extension assisted growers during the packing line investigation by collecting parallel environmental samples and facilitating transfer to a private laboratory for testing. Space was provided at the Purdue Extension Food Safety Training Hub for growers and investigators to gather and address investigation questions. Extension advised growers and provided explanations for legal obligations under the Food Safety Modernization Act Produce Safety Rule (21 CFR 112). Extension sat in on wrap-up calls with the investigative team. Due to the technical nature of the field, farm, and packing line sampling reports, Extension conducted a webinar dealing with whole genome sequencing and results interpretation for growers and provided information about traceback activities.

An early and important result was to assist growers in helping the FDA and CDC understand that harvest season had concluded and any implicated product was no longer in the supply chain. This prevented a recall and press release that could have greatly diminished the Indiana cantaloupe industry again. Farm inspection results indicated all farms were in compliance with the Food Safety Modernization Act Produce Safety Rule and that no deficiencies were found on any of the farms. FDA environmental samples collected from the farms, including production fields and the shared packing facility, failed to detect the outbreak strain of *Salmonella*, as did the parallel packing facility samples collected by Extension. Purdue Extension was there to support Indiana farms during a multistate *Salmonellosis* outbreak from cantaloupe and assisted them through the process, including facilitating communication with the federal agencies and conducting parallel analyses.

## Annual Field Days at Purdue Agricultural Centers Lead to Financial Improvements from Adoption of Recommended Practices



There are 56,800 farming operations in Indiana, and 97% of Indiana's farms are family-owned. Of Indiana's roughly 23.3 million acres, 84% are farms, forests and woodland. Corn (\$3.16 billion) and soybeans

(\$2.84 billion) account for the largest value of sales for Indiana's commodities. Successful and sustainable production requires attention to a vast array of variables, including soil health, water availability and access, prevalence of weeds, insects, invasive species, and diseases, and seasonal and weather variability. The need for access to and understanding of new technologies and management is great for Indiana's producers and the future for crops and livestock. It is prudent for Indiana to protect its resources and support productivity of the land, farms, and operations.

In conjunction with the eight Purdue Agricultural Centers (PACs) across Indiana, Extension provided 13 field days between May and October to address field crops, horticulture, livestock, and natural resources. Activities included presentations, demonstrations, and field tours. Topics presented were strawberries, seed treatment, pesticide application and storage, insects, apples, cover crops for vegetables, weed management, hemp, grapes, irrigation, vegetables, sprayer drones, regulations for agronomic use of drones, precision nutrient management, disease management, soil diagnostics, corn response to sulfur, pest management, forest management, invasive species, soybean seeding rates, nitrogen timing management of corn, foliar disease management, and livestock fencing. Participants could earn professional credits for Private Applicator Recertification Program (PARP), Continuing Certification Hours (CCH), and Certified Crop Advisor (CCA).

A total of 1,085 farmers, livestock producers, owners of woodlands, and fruit and vegetable producers attended the 13 PAC events. All PAC events included a post-survey asking participants about adoption of recommended practices after the program.

Of the 925 attendees at seven field days that focused on field crops (Seed Treatment Workshop, five Field Days, Ag Sprayer Drone Technology Day), 555 (60.0%) responded. As a result of attending, more than a third (41.3%) indicated they plan to adopt recommended field crop practices for their farm/operation. A third

reported that they plan to adopt fertilizer and/or pesticide practices (35.6%) or management practices (31.3%).

Focusing on the four horticulture programs (strawberry field day; fruit, vegetable, and hemp field day, and two vegetable field days), a total of 128 attended, and 55 (43.0%) responded. Participants indicated they plan to adopt recommended practices/technologies for horticulture and the environment (44.4%), increased yields (38.9%), increased efficiencies (35.2%), and conservation of resources (33.3%).

For a livestock event, Fencing School, 19 attended and 11 (57.9%) responded. As a result, nearly three-quarters (72.7%) indicated they plan to adopt management practices, and more than half (54.5%) intend to adopt technologies for their farm/business. The forestry field day, focusing on natural resources and land use, had 13 attendees and 11 (84.6%) responded. As a result, three-quarters (72.7%) indicated they plan to adopt or improve stewardship practices. More than half (54.5%) plan to contact professional advisors for natural resource management, or plan to create or revise their land management plan.

Participants were asked if they had attended the PAC event in the past. Of the 574 field day participants responding, three-quarters (72.1%) indicated they had. Of those, more than half (52.7%) reported they had adopted a new, recommended practice for their farm or operation. Past participants reported new practices they adopted, and most mentioned fertilizer/chemical applications, cover crops, sulfur, and no-till. When asked about financial improvements observed as a result of adopting recommended practices, more than half (58.7%) indicated improvements as increased dollar return per acre. A third (35.5%) reported reduced costs per acre. When asked to estimate dollar per acre of financial improvement, more than half (58.2%) reported financial improvement between \$1 to \$100 per acre. Other responses for improvements were soil quality, improved weed control, efficiency, more yield per acre, and better-quality pumpkins. Purdue Agricultural Center Field Day events contributed to farmer and producer adoption of recommended practices resulting in financial improvements up to \$100 per acre.

## Forum Fridays Focus on Quality Forage for Livestock

Forage crops and pastures provide feed for grazing livestock. Quality forage is necessary to provide nutrients in rations to keep livestock healthy and productive. Purdue Extension created an 11-session virtual series, Forage Forum Fridays, about seed industry, hay evaluations, private applicator recertification program (PARP) credits, marketing and purchasing hay, sorghum genetics, fertilizer issues, forage focused leasing, forage toolkit, farming with a four-wheeler, equipment



maintenance, and livestock production labeling. Series topics were presented weekly over three months.

Program participants were those growing forages, grazing

forages, working in the forage industry, Extension, Natural Resources Conservation Service (NRCS), Soil and Water Conservation District (SWCD), and the general public. There were 218 registered from 19 states, three Canadian provinces, and Germany. Almost two-thirds (69%) of registrants reported currently managing forages, ranging from less than 5 acres to over 100 acres. A total of 192 participants attended the sessions via Zoom. Recordings were transcribed, and closed-caption versions were uploaded to YouTube. Since the postings, 415 people have watched the recordings. For participating in the series, nine high school agriculture teachers received 11 Indiana Department of Education Professional Growth Points, and 177 attendees received PARP credits.

Prior to the forage seed presentation, survey respondents (n=21) reported they planned to plant new perennial forages in the upcoming year (76%). But after the presentation, 10 of those respondents reported planning to make adjustments to their forage field planting or management for the upcoming year. For post-survey respondents (n=21), as a result of the hay evaluation presentation, all (100%) reported a better understanding of how to read a hay test, and the majority (88%) had a better understanding of both how hay analysis was performed, and how to evaluate livestock rations based on forage test results.

As a result of the marketing and purchasing hay presentation, all 29 survey respondents were more comfortable with what to look for when buying and selling hay, and more than half (60%) reported both that they learned what resources to use when trying to decide on what hay to purchase or sell, and that they felt more confident in their ability to choose a person to purchase hay from. Before the sorghum genetics presentation, survey respondents (n=29) knew "some" or "nothing at all" about sorghum and its genetics (90%). Afterward, 100% reported they knew "some" or "a lot" about sorghum genetics. After the Fertilizer presentation, survey respondents (n=29) reported they knew the pH of their soils (87.5%), had performed soil tests on their forage fields within the last three years (75%), had used the tri-state fertilizer recommendations (63%), and had applied sulfur to their forage crops (63%).

As a result of the forage focused leasing presentation, all respondents (n=29) indicated they had a much better understanding of the value of pastures and hay fields

when renting, and how to create leases for hay fields or pastures. For the forage toolkit presentation, of the 25 survey respondents, more than half (55%) reported they had at least one of the tools mentioned, but all reported planning to add at least one more tool to their toolkit. Most mentioned were forage tools (grazing/yard stick, rising plate meter, hay probe, and waterproof notebook), grazing equipment (quick-coupler water system, water tank sled, game camera, round bale unroller), and fencing tools (remote fault finder, fencing reel, solar energizer, different type of poly fence).

As a result of the farming with a four-wheeler presentation, survey respondents (n=25) reported increased interest in equipment (subcompact tractors, compact tractors, and skid steers) and implements (box blades, spreaders, and post hole diggers). Most (83%) reported they plan to implement at least one practice from this presentation for raising livestock on smaller acres. Because of the forage equipment maintenance presentation, 86% of the 25 survey respondents reported they were planning to adjust their equipment maintenance routine. Most reported plans were for mower maintenance (especially mower knives) and making sure extra repair parts are on hand. After the livestock production labeling presentation, all 25 post-survey respondents reported a much-improved understanding of product labels. Purdue Extension's Forage Forum Fridays (<https://www.youtube.com/channel/UCFuklSCBh7FsZF3qV3BgCQQ>) contributes to knowledge and practices of farmers and ranchers for producing quality forages for livestock.

## Virtual Series Shares Practices for Safe Fertilizer and Manure Use



Indiana produces about 9.5 million tons of animal manure annually. Manure contains rich nutrients and can be used as organic fertilizers and to produce renewable energy via anaerobic digestion. However,

inappropriate management of manure may cause water, soil, and air pollution and result in safety and health risks for farm workers.

Purdue Extension provided a five-session virtual series, Manure Management and Utilization Technologies. Purdue Extension collaborated to deliver this series with university, industry and agency partners: University of Missouri, University of Georgia, University of Wisconsin, Ohio State University, Michigan State University, Penn State University, Bio Town Ag, Curtis Creek Dairy/Prairie, A&L Great Lakes Laboratories, EcoEngineers, BioWorks Energy (BioWorks) LLC, CleanFuture, Inc., U.S.

Environmental Protection Agency, U.S. Department of Agriculture, and Ontario Ministry of Agriculture, Food & Rural Affairs, Canada.

Session topics included 1) applications and safety, 2) new approaches, 3) testing, mitigation, application, and opportunity, 4) anaerobic digestion topics part 1 (anaerobic digestion, renewable natural gas on farms, treating industrial organic waste, techno-economic and life-cycle analysis of a commercial anaerobic digestion plant), and 5) anaerobic digestion topics part 2 (economics, systems on small-and medium-sized farms, carbon credits, and co-digestion). Afterward, session recordings and/or slides were posted on the website: [https://engineering.purdue.edu/adt/wm/index\\_files/MM.htm](https://engineering.purdue.edu/adt/wm/index_files/MM.htm).

There were 511 youth and adult participants for the five-session series. More than one third (38.6%) were from Indiana; others were from 37 states and five countries. Participant input was collected with a post-survey after sessions three, four and five; 344 individuals participated, representing two-thirds (65.3%) of all session attendees. Of the 344 attendees for three sessions, 47 completed the post-survey (14% response rate). Survey participants reported attending this virtual series to earn professional credits: Certified Crop Advisor/Continuing Education Units 71 (20.6%) and Continuing Certification Hours 32 (9.3%). As a result of sessions three, four and five, three-fourths of participants (76.6%) "agreed" or "strongly agreed" that they learned something they didn't know before. Nearly half of respondents (44.7%) indicated that the recommended practices did not apply to them. As a result of the sessions, remaining participants indicated they plan to adopt recommended fertilizer/manure practices (38.3%), management practices (34.0%), and technologies for agronomic crops (23.4%). The Net Promoter Score® (NPS®) is a measure of customer loyalty that helps inform decision-makers of the experiences they are providing. The calculated NPS® was +63 (on a scale from -100 to +100) and is considered an excellent rating. Primary reasons for their score reported by promoters (rating of 9-10) were:

- good topics, and the information was great/excellent, new or up to date, practical and relevant,
- great, knowledgeable speakers/presentations, and
- well done and well organized.

Purdue Extension's Manure Management and Utilization Technologies virtual series contributed to new knowledge and intention to apply recommended practices for safe fertilizer/manure use. Resources are available online: What We Need to Know about Additive Products for Manure Treatment: <http://www.extension.purdue.edu/extmedia/ABE/ABE-161-w.pdf>. Manure Characteristics, Testing, and Sampling: <https://extension.purdue.edu/extmedia/ABE/ABE-166-W.pdf>. Three Indiana anaerobic digestion systems: <https://www.extension.purdue.edu/>

[extmedia/ABE/ABE-157-W.pdf](http://www.extension.purdue.edu/extmedia/ABE/ABE-157-W.pdf), <http://www.extension.purdue.edu/extmedia/ABE/ABE-158-w.pdf>, and <https://www.extension.purdue.edu/extmedia/ABE/ABE-159-W.pdf>.

## Beginning Producers and Agriculture Teachers Learn Beef Basics Via 8-Week Virtual Series



The average age of farmers is 57.5 years, and 73% of farmers have been on the farm for 10 or more years (2017 Census of Agriculture). U.S. beef herds are operated by this aging population – so about one-fourth

(26%) of beef operations are operated by farmers and youth with less than 10 years of experience. The general public, compared with previous generations, is further removed from agriculture and lacks general agriculture production knowledge. This highlights a critical need – to create training for beginning cattle producers to increase knowledge of raising cattle, and to help new producers develop management, production, and marketing systems to optimize productivity and income.

The goal of Purdue Extension's Beef Basics program is to create a transferable training curriculum delivered using distance learning technology and face-to face, hands-on, experiential learning to develop knowledge and skills in individuals to start an economically viable and sustainable beef production and marketing system. This eight-week virtual program is a series of two-hour sessions addressing beginning beef cattle production topics: beef cattle industry, behavior and facilities, herd health, forages, nutrition, genetic selection, and reproduction. Participants were adults interested in learning beginning beef production and high school vocational agriculture teachers who could earn professional development credits. There were 134 participants from Indiana and 29 other states, and three other countries (Canada, Jordan and Mexico). Ages of participants ranged from 18 to 70+ years. Half (54%) of participants were current beef producers, 30% were future beef producers, and 16% were vocational agriculture teachers.

All survey respondents (n=50) reported that the Purdue Beef Basics Virtual Series was worth their investment, and 95% indicated they would recommend the program to others. All survey respondents shared that the virtual format was effective in conveying program information. For future beef producers (n=13), most (83%) reported they plan to continue work to establish a beef cattle operation and, as a result of the training, feel better

equipped to make them successful. All vocational agriculture teachers (n=6) reported they felt the program was worth their time and expense to earn professional development credits and for growing in their beef cattle knowledge. As a result of the training, participants reported they learned: 1) common beef cattle production terms they had heard but did not know what they meant, 2) records they need to begin documenting to accurately measure whether or not their beef cattle enterprise is profitable annually, 3) management practices and/or records to implement to secure financial support to improve their beef cattle production enterprise, 4) new technology to incorporate into management of their beef cattle herd, 5) recordkeeping strategies for inputs and outputs to determine profit or loss of their beef cattle operation. Several positive comments were received from program participants, including:

- I thought the program provided a lot of practical information and was probably appropriate for the target audience. I really enjoyed it and thought it was worth the modest investment.
- [I learned] how to connect with a good large animal vet and educators that care about producers and will actually assist when it's needed and we call.
- The virtual format was great-easy to plan around, and I hope to see more online classes in the future.

Purdue Extension's Beef Basics Virtual Series develops knowledge and skills for adults interested in beginning beef production, and for agriculture vocational teachers seeking new knowledge for professional development.

### **Focus on Small-Scale Vegetable Farming: Field Demonstrations Build Capacity for Use of Cover Crops, Reduced Tillage**

Cover crops provide benefits to vegetable farms of all sizes in addition to larger-scale contributions to the public good. Reduced tillage systems can provide additional soil health benefits. Many agriculture professionals who advise farmers aren't familiar with the use of cover crops and reduced tillage systems on farms.

Farmers also may not be familiar with less common cover crops and may not have time to work through challenges of reduced tillage systems. These factors limit the adoption of new practices.

Over the last three growing seasons, Purdue Extension established demonstration plots of cover crops and reduced tillage in vegetables at Purdue's Agricultural Centers (PACs). Extension collaborated with the Indiana Association of Soil and Water Conservation Districts to establish cover crop demonstrations specifically for small specialty crop farms at the Pinney Purdue Agricultural Center (PPAC). Demonstrations were documented with photography and videography that were subsequently used in education programs and virtual and in-person presentations. Where possible, information on crop performance was collected and presented. These demonstrations were also featured at field days for growers in 2021 and 2022, and at a field day for agriculture professionals in 2022. There were 995 farmers who attended the education events in person at the PAC demonstration plots or via online presentations. An additional 56 agriculture professionals attended training at the demonstration plots.

Growers and their agricultural advisors gained familiarity with a wider variety of cover crops, with challenges of establishing vegetables by seed without tillage into cover crop residue, and with practical means of overcoming those challenges. They learned about practices and equipment used by small-scale farmers that are not common on larger farms, including termination of a cover crop using a silage tarp, or incorporating cover crop seed into untilled cover crop residue with a power harrow attached to a walk-behind tractor. As a result, farmers and their agriculture advisors increased their knowledge and capacity to incorporate cover crops and reduced tillage into vegetable production, which can enable them to reap the documented benefits of these practices: reduced soil erosion, enhanced soil aggregation, increased availability of water for crop production, and improved soil quality. Purdue Extension demonstration plots and education events help build capacity of small-scale vegetable growers in using cover crops and reduced tillage systems.



## Urban Agriculture & Urban Extension

### Purdue Extension Master Gardeners Help Indiana Gardeners Grow



Home horticulture and gardening continues to be an area of knowledge desired by many Indiana residents. An increased interest by consumers to learn to grow their own food has led

many people to seek gardening information. Purdue Extension provided in-person and virtual basic training for gardening enthusiasts who desire to volunteer in consumer horticulture education projects. The training is at least 40 hours and covers required topics: plant science, soils and plant nutrition, plant disease diagnosis, weed ID and control, insect ID and control, invasive species, pesticide safety and alternatives, lawn care, herbaceous and woody ornamentals, vegetable and fruit gardening, and animal pest management. Participants who complete basic training and pass an exam become Purdue Extension Master Gardener Interns and commit to contributing volunteer hours assisting with gardening education in Indiana communities.

In 2022, 456 new interns completed training. As they reach 40 hours of volunteering, they will become certified Purdue Extension Master Gardeners in about two years. During the year, 2,727 Purdue Master Gardeners logged 158,097 volunteer hours valued at over \$4 million. Master Gardeners logged 38,630 education hours in their communities and made 356,738 contacts with clientele. Master Gardener associations throughout the state awarded \$31,500 in scholarships to high school and college students to study horticulture or other related fields, and donated 49,805 pounds of produce grown in 47 educational demonstration gardens to local food banks.

Of the 908 Master Gardeners who responded to the annual impact survey, nearly all (95.5%) reported they changed their gardening practices as a result of involvement in the program. Most-cited changes in practices were: 1) increased use of pollinator plants or use of practices that protect pollinators (16.3%), 2) choosing the right plant for the right place (15.1%), 3) removed/replaced invasive plant species (14.1%), 4) reduced yard waste headed to landfills by composting and/or leaving grass clippings on the lawn (13.6%), and 5) used environmentally sound pesticide practices (12.5%).

Master Gardeners shared their changed practices: proper fruit tree pruning techniques, raised bed gardens and cover crops, more native plants, created local pollinator garden, received Monarch Watch Certification, planning to add rainwater barrels this spring, soil improvement based on results on soil analysis, mulching the vegetable garden rather than hoeing. Master Gardeners shared skills gained for the community: increased confidence in knowledge of gardening to help others, confidence to answer questions from others, confidence to share knowledge of gardening with friends and neighbors who seek assistance, and working with city departments and leaders. After applying their skills, Master Gardeners reported these results: 1) increased efficiency of gardening practices (35.9%), 2) saved money by choosing the right plant for the right place (26.4%), 3) saved money through more effective use and/or purchase of pesticides or fertilizers (18.5%), and 4) increased fruit and/or vegetable yields (15.2%). Via the Master Gardener program, Purdue Extension provides gardening education and opportunities to share horticulture knowledge in communities.

### Indiana Small Farm Conference Brings Together Small-Scale Farmers for Virtual Learning Experience



Small farms, based on area (acres), are significant in Indiana. Over the last 30 years, the U.S. Census of Agriculture reported the number of Indiana farms has decreased significantly, from 70,506 in 1987 to

56,649 in 2017. During that time, the only farms to increase in number, other than farms of 2,000 acres or more, are farms with 49 acres or less, which increased from 20,544 in 1987 to 26,287 in 2017. Furthermore, farms with fewer than 180 acres represent 71% of Indiana farms. During this time, many Indiana farms had to expand to remain profitable. This is not an option for many smaller or beginning farmers, so they focus on small-scale and diversified production. Unlike many Indiana commodities, the only types of farms that have increased in number in recent years have been vegetable, fruit, some livestock farms, and organic farms. Additionally, according to the 2017 census, Indiana has 23,262 producers who identify as new or beginning.

In March 2022, due to pandemic limitations, the annual Indiana Small Farm Conference was held as a series of 10 webinars. Information about this annual event was shared via the website: <https://www.purdue.edu/dffs/smallfarms/>. Webinar presentations and panels addressed these topics:

- building food justice,
- climate innovations on small-scale livestock and vegetable farms,
- climate smart agriculture for small farms,
- creating and maintaining healthy soil,
- honey bees on the farm,
- how value-added products work into your business or operation,
- improving native pollinator conservation in Indiana agriculture,
- on-farm processing and marketing of chickens and rabbits,
- persimmons and paw paws, elderberries, nuts,
- regenerative agriculture,
- selling to retail stores and restaurants, and, how to sell your products anywhere,
- simple and profitable interplanting strategies,
- soil health practices and compost amendments for vegetable production,
- urban renewal through community agriculture,
- what is your brand and how to sell your product, and
- young farmers and allies growing statewide.

Total attendance was 1,187. Most participants reported being White (87.6%) and female (62.9%). Some 119 completed the post-survey, resulting in a 10% response rate. As a result of the webinars, participants reported they learned something they didn't know before (84.9%), and indicated they intend to apply one or more ideas learned to their operation or organization this year (78.0%). Participants shared ideas they intend to apply, including, cover crops and soil health, working with the community, interplanting and living pathways, growing nuts, and bees / pollinators.

The Net Promoter Score® of +70 is considered an excellent rating for customer loyalty. It shows participants value the event and see it as providing quality experiences and helpful information. Participants indicated they enjoyed the traits of the speakers (quality, diversity, excellence, and inspiring), they liked the content and information, or they liked the virtual experience. The Indiana Small Farm Conference led by Purdue Extension contributes to new knowledge and intention to apply recommended practices for small-scale and urban farmers.

## Building Sustainable Urban Farming Capacity and Connections



Lack of accessibility and availability of fresh produce in urban settings is increasing. As large grocery stores move out of urban areas, fresh produce availability has become more challenging. In Gary,

Indiana, just four grocery stores sell fresh produce for the 76,424 residents. There are no major chain grocers and the limited food outlets are convenience stores and fast-food chains. Residents travel by personal vehicles or rely on public transit to commute miles outside Gary to purchase groceries. Recently, the Gary Food Council was formed to focus on how the local food supply chain must function sustainably to increase access to fresh food for the city. Although there is demand for fresh fruits and vegetables and seemingly space for urban farming to occur, there are currently fewer than 10 urban farms in the city. There is also a general lack of scientifically based information on the most efficient and effective ways to meet demands. There is a gaping need to train urban farmers in sustainable agriculture practices, form peer-to-peer networks to share newly acquired knowledge, and build marketing capacity in urban neighborhoods.

Purdue Extension led a four-year research and Extension project (supported by SARE and extended one year due to the pandemic) on urban farming to increase opportunities for effective and sustainable training, learning, and networking. A leadership team and advisory committee was established to administer the project, host networking events, develop and deliver an urban agriculture certificate program, establish a mentor/intern program, and build a tool share program. The urban agriculture certificate program lasted 10-weeks and included technical assistance from Purdue Extension and local farmers, hands-on experiential learning activities, and field trips to nearby farms to learn about successful practices in action. The program addressed harvesting, food safety, small farm tools and equipment, farm finances, pest control, growing vegetables, harvest day techniques, season extensions, composting, organic weed management, and irrigation. A total of 61 participants across three cohorts completed the certificate program in 2020 and 2021. Cohorts were invited to return to engage with, present to, and connect with newer cohorts. With the pandemic restrictions, this in-person program had to be quickly converted to virtual delivery. Many participants stated they could not have completed the program without this flexible approach. Graduation ceremonies were held to recognize course completion.

A number of networking activities occurred throughout the project. There were field trips to visit urban farming in Cincinnati and Indianapolis, nine farm tours, including the City of Gary, Lands End Farm, and Native Roots Farm, 12 on-farm demonstrations, field days and conferences including the Indiana Small Farm Conference and Purdue's Small Farm Education Field Day, and additional learning opportunities (introduction to grant writing, virtual beginning farmer program, Grass to Garden workshops, ServSafe training, and online videos).

A program for mentors and interns was created. Experienced local urban farmers participated in Extension's mentor training about motivation, communication, responsibility, accountability and ethical behavior, professionalism, emotional intelligence, performance, networking and mentoring protocols. Each mentor then trained three interns on their farms. Interns took part in 10 weeks of hands-on experiences at urban farms, learning land preparation, seed selection, transplanting, weeding, harvesting, tools, and marketing of fresh produce. There were three urban farmer mentors and nine interns. Tools were purchased and made available at a local farm to administer a tool sharing program, and a check-out system was set up.

Following the project completion, a second SARE-supported project was secured to extend and provide ongoing mentor/intern programming and networking opportunities. The goal was to create a sustainable program to pay beginning growers to develop skills in urban farming to help build a sustainable and resilient food system. And it provided local urban farms with much-needed onsite help for their farms. Participants who had attended the certificate program were invited to apply for a summer urban farming internship. Interns spent eight hours per week for 10 weeks in on-farm experiences at local urban farms. In addition, interns checked in weekly with assigned urban farm mentors for individual mentoring sessions. There were three mentors and six interns for the summer program.

On certificate program post-surveys, 13 participants from 2020 (59.1% response rate) indicated they received answers about farming (92%), learned new urban agriculture concepts or methods (83%), and knew where to get technical assistance (75%) and financial assistance (50%). Participants reported confidence in their ability to apply what they learned to their own farm or garden (average 9.0/10). As a result of the program, 67% planned to become urban farmers. Participants shared: "This course helped me develop a comprehensive approach to planning, planting, maintaining, and harvesting the produce of my urban farm/garden." "This course brought a portion of the urban farming / gardening community together. Doing so allowed me and others to see where our local knowledge base is. As an example, I know who my local master gardeners, beekeepers, composters, and chicken farmers are."

Research results showed statistically significant differences from pre- to post-surveys for all three certificate program cohorts. Average scores from before to after increased for confidence, clarity and understanding. These results suggest the certificate program influenced participant clarity of purpose in developing urban farms/gardens, confidence in beginning or further developing urban farms, and understanding of expenses in the farm/garden. Statistically significant differences were also shown for average score increases in knowledge, accessing new urban farming resources, tool sharing, sharing knowledge, and application of knowledge. Some 33 certificate program participants from 2021 (84.6% response rate) reported on how they used the information they learned:

- I have used the information that I learned to reevaluate and expand our planning and operations.
- I have educated others, viewed the websites that were covered, and begun planning my own garden.
- For the first time I started my own seeds. I used to buy plants from a garden center.
- I learned new techniques, the advantage of certain tools, how to utilize water in a more conservative, productive way and who to contact when I have questions.
- I have used the resources that I learned from the course to help me in better planning my garden. I've utilized the soil research tools, and [learned] new tools that were presented that'll make farming much easier.
- I will be starting a new urban farm in Gary to assist with the food desserts.
- For the first time, I had a garden to be proud of. My neighbors were jealous and asking for advice, and I regularly shared my harvest. My confidence and success [were] directly related to this class.

These 2021 participants also shared the impact of the certificate program on development of their urban farm or garden.

- This course has provided exposure, education and encounters with professionals and others who have shared their methodology and knowledge which increases my confidence and ability to execute efficiently.
- I came to learn how to have a successful personal garden. However I left with a renewed outlook for my community despite the pandemic and ongoing economic crisis. I met wonderful people who have successfully connected our youth, the formerly incarcerated, the elderly, and other disenfranchised groups to farming and healthy eating. The camaraderie, encouragement, and sharing of

information was refreshing. Each session was so informative and uplifting.

- It has empowered me to further develop programs around urban farming.
- I thought I understood general gardening techniques before I began the class. However, the level of my ignorance was astounding! Now, my confidence has increased, and I am planning my garden plan for this year and future seasons.
- I have developed knowledge of urban farming. I will be able to start my own community garden. I will be able to write grants and find resources for the garden.
- Looking forward to applying and designing techniques of farming that can help children develop their skills of entrepreneurship.
- I learned that there are resources available to start the community garden I wish to start – besides having my own garden at home. I had shied away from purchasing some of the tools but learned that they are essential in making the work manageable, and have already put this knowledge to work. And most of all, I learned about crop rotation, which I had not yet tried.

After two networking events in 2021, 15 respondents reported that as a result of their participation, they know more about community benefits of urban farming, got answers to their questions/concerns about urban farming, and met others at networking/tours who they can continue to communicate with in the future. The average number of new contacts made at networking events was 3.65. On the mentor/intern program post-survey, four interns (44.4% response rate) responded. Three of the four indicated that after completing their internship, they have a good understanding about how to manage pests (i.e., weeds, insects, disease), how to manage soil fertility, bed or field preparation, how to manage direct seeding and transplants, plant care (irrigation and watering), harvest and post-harvest handling of produce, and appropriate farm equipment use.

Due to the pandemic, the tool share program became difficult to implement, along with several complicating factors (staffing issues, location of tools not conducive to participant needs, lack of awareness of tool share program despite attempts to share information, and not having tools most desired). By 2021 some tools were shared, but on a very limited scale. The tools will be given to the Gary Food Council and lent out in the future.

At the conclusion of project activities, past participants organized and administered the 2022 Urban Garden Conference in Gary, a sign of future sustainability for urban farming.

For the second project's mentor/intern program, five interns (83.3% response rate) completed post-surveys and indicated the most valuable aspects of the summer program. Most (80%) indicated valuable aspects were one-on-one mentoring/advising, ability to learn hands-on, connection with farms close to my area, and connection to markets, and over half (60%) reported connection with farms similar to my own, connection with farms different from my own, connection with farms further from my area, and supporting new farmers. As a result of the internship program, participants planned to adopt practices, including an irrigation rain barrel system, no-till practices, trellising, more efficient use of space, more proactive weed control, better soil health practices, and a more social growing system (e.g., to help enter the wholesale market). All interns and mentors indicated they plan to continue relationships formed during the internships. Participants expressed appreciation for connecting urban and rural farmers, plans to pursue forming a farmer co-op, and plans to continue volunteering at the farms.

Urban farmers across the state, including Gary, Indiana, participants, are featured on a [SARE website video](#). Results of Purdue Extension's urban agriculture project have contributed to increased participant knowledge, confidence, skills, and aspirations for urban farming, and built connections and networks among experienced and beginning urban farmers.



## Collaborators

### Climate Change, Natural Resources, Environment & Sustainable Energy

#### Field Day Explores Invasive Species Management

Abigail Heidenreich, County Extension Director, 4-H Youth Development Educator, Orange County

Jason Tower, Superintendent, Southern Indiana Purdue Agricultural Center (SIPAC)

Kenneth Eck, Agriculture & Natural Resources Educator, Dubois County

Molley Hasenour, 4-H Youth Development and Agriculture & Natural Resources Educator, Crawford County

Ron Rathfon, Regional Extension Forester SIPAC, Forestry & Natural Resources

#### One Block at a Time: Community-Driven Planning and Equitable Adaptation through Multi-Benefit Green Infrastructure

Aaron Thompson, Associate Professor, Horticulture & Landscape Architecture

Amber Zimmer, Community Wellness Coordinator, Nutrition Education Program, Lake & Jasper counties

Caroline Arnett, Community Wellness Coordinator, Nutrition Education Program, LaPorte, Kosciusko, & Noble counties

Daniel Walker, Regional Extension Educator, Purdue Extension

Kara Salazar, Assistant Program Leader for Community Development, Sustainable Communities Extension Specialist

Lupe Valtierra, Community Development Educator, Lake County

Mary Komenas, Community Development Educator, LaPorte County

Rebecca Koetz, Agriculture & Natural Resources and Home Horticulture Educator, Lake County

### Workforce Development

#### Hardwood University Ensures Sustainable Management of Indiana's Woodlands

Rado Gazo, Professor, Forestry & Natural Resources

#### Purdue Turf & Landscape Field Day Equips Green Industry Professionals

Aaron Patton, Professor of Horticulture, Horticulture & Landscape Architecture

Cale Bigelow, Professor of Horticulture, Horticulture & Landscape Architecture

Clifford Sadof, Professor, Entomology

Douglas Richmond, Professor, Entomology

Fred Whitford, Clinical Engagement Professor, Purdue Pesticide Programs, Botany & Plant Pathology

Gerald (Lee) Miller, Assistant Professor, Botany & Plant Pathology

Janna Beckerman, Professor, Botany & Plant Pathology

John Bonkowski, Extension Administrator, Plant & Pest Diagnostic Lab, Botany & Plant Pathology

Joseph Becovitz, Pesticide Program Specialist, Office of Indiana State Chemist

Kyle Daniel, Nursery & Landscape Outreach Specialist, Horticulture & Landscape Architecture

Michael Dana, Professor, Horticulture & Landscape Architecture

Tom Creswell, Clinical Engagement Professor, Plant & Pest Diagnostic Lab, Botany & Plant Pathology

**Shell Egg Academy Provides Food Safety Practices for Employees in Laying Hen Production and Egg Processing Plants**

Darrin Karcher, Associate Professor, Animal Sciences

**Teens and Adults Learn Interviewing for Jobs and Professional Behaviors for the Workplace**

Heather VonDielingen, County Extension Director, 4-H Youth Development Educator, Jackson County

Mary Komenas, Community Development Educator, LaPorte County

Mitch Wagoner, 4-H Youth Development Educator, Knox County

Molly Marshall, 4-H Youth Development Educator, Jackson County

Richard Beckort, Agriculture & Natural Resources Educator, Jackson County

Samantha Williams, 4-H Youth Development Educator, Pulaski County

**Design and Innovation Studio at the Indiana State Fair Provides STEM Activities, Preparing Youth for Tomorrow's Workforce**

Casey Mull, Assistant Director, 4-H Youth Development Program Leader, Purdue Extension

Kody Orr, 4-H Youth Development Educator, Marion County

Rachel Haselby, 4-H Youth Development Science Extension Specialist, Agriculture Administration

4-H Youth Development Educators from across Indiana

**Positive Youth Development & 4-H Opportunities**

**Teen Leaders Gain Leadership, Teamwork and Communication Skills as Camp Counselors**

Abby Sweet Morgan, 4-H Youth Development Educator, Montgomery County

Alexis Garbo, former 4-H Youth Development Educator, Delaware County

Alicia Criswell, 4-H Youth Development Educator, Wayne County

Allison Keen, 4-H Youth Development Educator, Jay County

Andrea Hatfield, County Extension Director, Agriculture & Natural Resources and Community Development Educator, Boone County

Baylee Dwenger, 4-H Youth Development Educator, Jennings County

Brian Howell, 4-H Youth Development Educator, Tipton County

Britt Copeland, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources Educator

Brooke Stefancik, former 4-H Youth Development and Agriculture & Natural Resources Educator, Sullivan County

Caren Crum, County Extension Director, 4-H Youth Development Educator, Clinton County

Carly Holland, County Extension Director, 4-H Youth Development Educator, Rush County

Christie Jacob, County Extension Director, 4-H Youth Development Educator, Clay County

Danielle Hunt, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources

David Osborne, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources Educator

Elizabeth Beiersdorfer, County Extension Director, 4-H Youth Development Educator, Dearborn County

Gail Peitzmeier, County Extension Director, 4-H Youth Development and Health & Human Sciences Educator, Crawford County

Heather Caldwell, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources

Heather VonDielingen, County Extension Director, 4-H Youth Development Educator, Jackson County  
 James McCollum, 4-H Youth Development Educator, Floyd County  
 Jeffery Pell, Agriculture & Natural Resources and Community Development Educator, Hendricks County  
 Jennifer Abrell, County Extension Director, 4-H Youth Development Educator, Owen County  
 Jennifer Logue, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources Educator,  
 Jessica Martini, 4-H Youth Development and Health & Human Sciences Educator, Jefferson County  
 Jessica Scholer, 4-H Youth Development Educator, Madison County  
 Jill Andrew-Richards, 4-H Youth Development and Agriculture & Natural Resources Educator, Ohio County  
 Joanne Lytton, County Extension Director, 4-H Youth Development and Health & Human Sciences Educator, Carroll  
 County  
 Josh Winrotte, Area 8 Director, Purdue Extension  
 Julie Threadgill, 4-H Youth Development and Health & Human Sciences Educator, Switzerland County  
 Julie Wilson, County Extension Director, 4-H Youth Development Educator, Randolph County  
 Katharyn Sweet, 4-H Youth Development Educator, Hendricks County  
 Kathryn Weiss, Agriculture & Natural Resources Educator, Newton County  
 Katie Finney, 4-H Youth Development Educator, Brown County  
 Katie Whiteford, County Extension Director, 4-H Youth Development Educator, Clark County  
 Kelsey Holt, former, 4-H Youth Development and Agriculture & Natural Resources Educator, Carroll County  
 Kelsey Meyers, County Extension Director, 4-H Youth Development and Health & Human Sciences Educator, Henry  
 County  
 Kyle Weaver, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources Educator,  
 Switzerland County  
 Kyli Penrod, County Extension Director, 4-H Youth Development Educator, Blackford County  
 Lesley Lodmell, County Extension Director, 4-H Youth Development Educator, Lawrence County  
 Lynn Korniak, County Extension Director, 4-H Youth Development Educator, Cass County  
 Mark Evans, County Extension Director, 4-H Youth Development Educator, Putnam County  
 Megan Broughton, County Extension Director, Health & Human Sciences Educator, Scott County  
 Megan McNeely, County Extension Director, 4-H Youth Development Educator, Scott County  
 Megan Skiba, 4-H Youth Development Educator, Tippecanoe County  
 Miles Payne, 4-H Youth Development and Health & Human Sciences Educator, Ripley County  
 Molley Hasenour, 4-H Youth Development and Agriculture & Natural Resources Educator, Crawford County  
 Molly Childers, 4-H Youth Development Educator, White County  
 Natalie Korniak, 4-H Youth Development Educator, Clay County  
 Pandora Taylor, 4-H Youth Development Educator, Boone County  
 Rachael Smith, 4-H Youth Development Educator, Marion County  
 Rebecca Holbert, former County Extension Director, 4-H Youth Development Educator, Vermillion County  
 Rebecca Wilkins, County Extension Director, 4-H Youth Development Educator, Harrison County  
 Rena Sheldon, County Extension Director, 4-H Youth Development Educator, Morgan County  
 Samantha Williams, 4-H Youth Development Educator, Pulaski County

Sara Badger, County Extension Director, 4-H Youth Development Educator, Miami County

Sara Haag, 4-H Youth Development Educator, Vigo County

William Decker, County Extension Director, 4-H Youth Development Educator, Madison County

### **Youth Engage During 4-H Day at the Indiana Statehouse**

Casey Mull, Assistant Director, 4-H Youth Development Program Leader, Purdue Extension

Dena Held, County Extension Director, 4-H Youth Development Educator, Martin County

Kelsey Guadarrama, County Extension Director, 4-H Youth Development Educator, LaPorte County

Lesley Lodmell, County Extension Director, 4-H Youth Development Educator, Lawrence County

Molly Hunt, Area 7 Director, Purdue Extension

Rebecca Wilkins, County Extension Director, 4-H Youth Development Educator, Harrison County

Steve McKinley, Staff Development Specialist, Purdue Extension

Sthele Greybar, 4-H Youth Development Educator, Elkhart County

### **Big Data, Internet of Things, Broadband Access, Digital Literacy, Inclusion & Innovation**

#### **Small Businesses Thrive by Improving and Expanding their Online Presence**

Cheri Brown, County Extension Director, Community Development Educator, Blackford County

Cheyenne Geideman, Engagement Specialist, Community Development

Elisa Worland, Community Development and Health & Human Sciences Educator, Wayne County

Emily Del Real, Program Coordinator, Purdue Center for Regional Development (PCRD)

Heather Strohm, former Regional Community Development Educator

Jeff Pell, Agriculture & Natural Resources and Community Development Educator, Putnam County

Kristi Whitacre, County Extension Director, Community Development Educator, Vigo County

Lupe Valtierra, Community Development Educator, Lake County

Mary Komenas, Community Development and 4-H Youth Development Educator, LaPorte County

Nicholas Held, County Extension Director, Agriculture & Natural Resources and Community Development Educator, Spencer County

Roberto Gallardo, Community & Regional Economics Specialist and Associate Professor, Agricultural Economics

Tanya Hall, Regional Community Development Educator

William Horan, County Extension Director, Agriculture & Natural Resources and Community Development Educator, Wells County

#### **Purdue Extension's UAV Program Prepares Participants to Fly Drones for Work or Hobby**

Abigail Heidenreich, County Extension Director, 4-H Youth Development Educator, Orange County

Adam Shanks, County Extension Director, Agriculture & Natural Resources Educator, Boone County

Adam Tyler, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources Educator, Fountain County

Alex Helms, Assistant Director Purdue Agricultural Centers (PACs), Agriculture Administration

Amy Alka, Agriculture & Natural Resources Educator, Randolph County

Andrea Hatfield, County Extension Director, Agriculture & Natural Resources and Community Development Educator, Boone County

Andrew Westfall, County Extension Director, Agriculture & Natural Resources Educator, White County

Bob Bruner, Exotic Forest Pest Educator, Entomology

Bryan Overstreet, Soil Coordinator for Northern Indiana, Purdue Extension and Crop Conservation Systems Initiative (CCSI)

Daniel Quinn, Assistant Professor – Corn Production, Agronomy

Daniel Scott Gabbard, County Extension Director, Agriculture & Natural Resources Educator, Shelby County

David Osborne, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources Educator, Ripley County

Emily Peterson, Agriculture & Natural Resources Educator, Tipton County

Gary Tragesser, former Superintendent, Pinney Purdue Agricultural Center (PPAC)

Hans Schmitz, Lead Conservation Cropping Systems Agronomist, Purdue Extension & Conservation Cropping Systems Initiative (CCSI)

James Wolff, County Extension Director, Agriculture & Natural Resources Educator, Allen County

Jeff Boyer, Superintendent, Davis Purdue Agricultural Center (DPAC)

Jeff Burbrink, Agriculture & Natural Resources Educator, LaGrange County

Joel Wahlman, Superintendent, Southeast Purdue Agricultural Center (SEPAC)

John Scott, Senior Digital Agriculture Extension Coordinator, Agriculture Administration

Jon Charlesworth, County Extension Director, Agriculture & Natural Resources Educator, Benton & Warren counties

Justin Curley, County Extension Director, Agriculture & Natural Resources Educator, Delaware County

Kenneth Eck, Agriculture & Natural Resources Educator, Dubois County

Kurt Lanzone, 4-H Youth Development and Agriculture & Natural Resources Educator, Parke County

Lais McCartney, Agriculture & Natural Resources Educator, Hancock County

Mark Carter, Agriculture & Natural Resources, Precision Ag, Educator, Blackford County

Mathias Ingle, Agriculture & Natural Resources Associate Educator, Howard County

Miranda Edge, former County Extension Director, Agriculture & Natural Resources Educator, Harrison County

Nicole Witkowski, Agriculture & Natural Resources Educator, Porter County

Phil Woolery, Interim County Extension Director, Agriculture & Natural Resources Educator, Marshall & Starke counties

Robert Nielsen, former Professor, Agronomy

Robert Yoder, former Agriculture & Natural Resources Educator, Marshall County

Shaun Casteel, Associate Professor, Agronomy

Stephen Boyer, Superintendent, Northeast Purdue Agricultural Center (NEPAC)

Tricia Herr, Agriculture & Natural Resources Educator, Montgomery County

Valerie Clingerman, County Extension Director, Agriculture & Natural Resources Educator, Knox County

Veronica Bullock, County Extension Director, Agriculture & Natural Resources Educator, Franklin County

William Decker, County Extension Director, 4-H Youth Development Educator, Madison County

William Horan, County Extension Director, Agriculture & Natural Resources and Community Development Educator, Wells County

## Human, Family & Community Health

### Helping Hoosiers Get on their Feet

Abbi Smith, Health & Human Sciences Educator, Putnam County  
 Abigail Creigh, Health & Human Sciences Educator, Noble County  
 Amanda Veenhuizen, former Health & Human Sciences Educator, Johnson County  
 Annetta Jones, County Extension Director, Health & Human Sciences Educator, Porter County  
 Brooke Goble, 4-H Youth Development and Health & Human Sciences Educator, Pike County  
 Carmen Fortney, Health & Human Sciences Educator, Jasper County  
 Chelsea Brewer, County Extension Director, Health & Human Sciences Educator, Dubois County  
 Christiana Owusu-Ankomah, former Health & Human Sciences Educator, Shelby County  
 Dana Stanley, Health & Human Sciences Educator, Steuben County  
 Elizabeth Richards, Associate Professor, Nursing, Health & Human Sciences  
 Harriet Armstrong, former Health & Human Sciences Educator, Bartholomew County  
 Janet Steffens, County Extension Director, Health & Human Sciences Educator, Floyd County  
 Jennifer Stefancik, Health & Human Sciences Educator, Daviess County  
 Jessica Martini, 4-H Youth Development and Health & Human Sciences Educator, Jefferson County  
 Jo Gilreath, Health & Human Sciences Educator, Warrick County  
 Kanza Zafar, Health & Human Sciences Educator, Greene County  
 Karen Richey, Health & Human Sciences Educator, Marshall County  
 Karina Moore, former Health & Human Sciences Educator, Orange County  
 Kristen Lowry, County Extension Director, Health & Human Sciences Educator, Posey County  
 Linda Curley, Health & Human Sciences Educator, Lake County  
 Lori Bouslog, Health & Human Sciences Educator, Vermillion County  
 Marcia Parcell, Health & Human Sciences Educator, Dearborn County  
 Meagan Brothers, County Extension Director, Health & Human Sciences Educator, Vanderburgh County  
 Megan Jaspersen, County Extension Director, Health & Human Sciences Educator, Perry and Spencer counties  
 Molly Hunt, Area 7 Director, Purdue Extension  
 Molly Marshall, 4-H Youth Development Educator, Jackson County  
 Shannon Chipman, County Extension Director, 4-H Youth Development and Health & Human Sciences Educator, Ohio County  
 Stephanie Woodcox, Assistant Program Leader, Health & Wellness Specialist, Health & Human Sciences  
 Susan Peterson, County Extension Director, Health & Human Sciences Educator, Hamilton County  
 Zoe Robinson, Health & Human Sciences Educator, Randolph County

### Across Indiana, Adults Increased Knowledge of Food, Family, Money and Health

Abbi Smith, Health & Human Sciences Educator, Putnam County  
 Abigail Creigh, Health & Human Sciences Educator, Noble County  
 Allison Hillis, County Extension Director, Health & Human Sciences Educator, Howard County

Amanda Bullion, Health & Human Sciences Educator, Jay County  
 Amanda Veenhuizen, former Health & Human Sciences Educator, Johnson County  
 Angela Abbott, Interim Director, Purdue Extension  
 Angela Sorg, Health & Human Sciences Educator, DeKalb County  
 Annetta Jones, County Extension Director, Health & Human Sciences Educator, Porter County  
 Asa Reid, Health & Human Sciences Educator, St. Joseph County  
 Ashlee Davis, 4-H Youth Development and Health & Human Sciences Educator, Fountain County  
 Ashley Piland, Health & Human Sciences Educator, Marion County  
 Beth Switzer, County Extension Director, Health & Human Sciences Educator, Hendricks County  
 Brittney Schori, Health & Human Sciences Educator, Whitley County  
 Brock Turner, Health & Human Sciences Educator, Tippecanoe County  
 Brooke Goble, 4-H Youth Development and Health & Human Sciences Educator, Pike County  
 Carmen Fortney, Health & Human Sciences Educator, Jasper County  
 Caroline Everidge, Health & Human Sciences Educator, Huntington County  
 Chelsea Brewer, County Extension Director, Health & Human Sciences Educator, Dubois County  
 Cheryl Casselman, County Extension Director, 4-H Youth Development and Health & Human Sciences Educator, Sullivan County  
 Christiana Owusu-Ankomah, former Health & Human Sciences Educator, Shelby County  
 Christina Swathwood, Operations Specialist for HHS Extension  
 Christopher Fogle, Interim County Extension Director, Health & Human Sciences Educator, Decatur County  
 Courtney Schmidt, 4-H Youth Development and Health & Human Sciences Educator, Miami County  
 Danielle Scott, Health & Human Sciences Educator, Madison County  
 Debora Arseneau, Interim County Extension Director, Health & Human Sciences Educator, Newton County  
 Diana Stone, Health & Human Sciences Educator, Shelby County  
 Donna Vandergraff, Extension Specialist, Nutrition Science, Health & Human Sciences  
 Elisa Worland, Community Development and Health & Human Sciences Educator, Wayne County  
 Esmeralda Cruz, Health & Human Sciences Educator, Clinton County  
 Gail Peitzmeier, County Extension Director, 4-H Youth Development and Health & Human Sciences Educator, Crawford County  
 Gail Wright, Health & Human Sciences Educator, Vigo County  
 Harriet Armstrong, former Health & Human Sciences Educator, Bartholomew County  
 Jamie Lowder, Health & Human Sciences Educator, Owen County  
 Jane Horner, Health & Human Sciences Educator, Cass County  
 Janet Steffens, County Extension Director, Health & Human Sciences Educator, Floyd County  
 Jennifer Stefancik, Health & Human Sciences Educator, Daviess County  
 Jessica Martini, 4-H Youth Development and Health & Human Sciences Educator, Jefferson County  
 Jessica Riffle, County Extension Director, 4-H Youth Development Educator, Franklin County  
 Jo Gilreath, Health & Human Sciences Educator, Warrick County

Joanne Lytton, County Extension Director, 4-H Youth Development and Health & Human Sciences Educator, Carroll County

Kanza Zafar, Health & Human Sciences Educator, Greene County

Kara Hammes, County Extension Director, Health & Human Sciences and Agriculture and Natural Resources Educator, Brown County

Karen Richey, Health & Human Sciences Educator, Marshall County

Karina Moore, former Health & Human Sciences Educator, Orange County

Kelsey Meyers, County Extension Director, 4-H Youth Development and Health & Human Sciences Educator, Henry County

Kelsie Muller, Human Development and Family Science Extension Specialist, Health & Human Sciences

Kristen Lowry, County Extension Director, Health & Human Sciences Educator, Posey County

Linda Curley, Health & Human Sciences Educator, Lake County

Lisa Graves, Interim Program Leader, Health & Human Sciences

Lori Bouslog, Health & Human Sciences Educator, Vermillion County

Mandy Medbourn, Health & Human Sciences Associate Educator, Pulaski & Starke counties

Marcia Parcell, Health & Human Sciences Educator, Dearborn County

Meagan Brothers, County Extension Director, Health & Human Sciences Educator, Vanderburgh County

Megan Jaspersen, County Extension Director, Health & Human Sciences Educator, Perry and Spencer counties

Miles Payne, 4-H Youth Development and Health & Human Sciences Educator, Ripley County

Mindy Mayes, Health & Human Sciences Educator, Wabash County

Molly Hoag, Health & Human Sciences Educator, Wells County

Molly Marshall, 4-H Youth Development Educator, Jackson County

Monica Nagele, County Extension Director, Health & Human Sciences Educator, Montgomery County

Naomi Bechtold, Financial Resource Management Specialist, Health & Human Services

Ody Ekwonwa, County Extension Director, Health & Human Sciences Educator, Monroe County

Olivia Morgan, Health & Human Sciences Educator, Clay County

Rachel Dillhoff, Health & Human Sciences Educator, Adams County

Sarah Kramer, former Health & Human Sciences Assistant Educator, White County

Shannon Chipman, County Extension Director, 4-H Youth Development and Health & Human Sciences Educator, Ohio County

Shaylie Hall, former Health & Human Sciences Assistant Educator, Delaware County

Sonya Mitchell, Health & Human Sciences Educator, Washington County

Stephanie Woodcox, Assistant Program Leader, Health & Wellness Specialist, Health & Human Sciences

Susan Peterson, County Extension Director, Health & Human Sciences Educator, Hamilton County

Tessa Garrow, Behavioral Health Specialist, Health & Human Sciences

Tonya Short, Health & Human Sciences Educator, Knox County

Zoe Robinson, Health & Human Sciences Educator, Randolph County

**Youth Mental Health First Aid - Military Partnership**

- Alicia Criswell, 4-H Youth Development Educator, Wayne County
- Amy Rumschlag, County Extension Director, 4-H Youth Development Educator, Adams County
- Angela Frost, Extension Specialist, 4-H Health & Wellness
- Britt Copeland, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources Educator, Jefferson County
- Carla Kidwell, County Extension Director, 4-H Youth Development Educator, Warrick County
- Jennifer Abrell, County Extension Director, 4-H Youth Development Educator, Owen County
- Jennifer Mayo, 4-H Youth Development Educator, Spencer County
- Kelsey Meyers, County Extension Director, 4-H Youth Development and Health & Human Sciences Educator, Henry County
- Kelsie Muller, Human Development and Family Science Extension Specialist, Health & Human Sciences
- Megan Hoffherr, 4-H Youth Development Educator, Vanderburgh County
- Rachael Smith, 4-H Youth Development Educator, Marion County

**Enhancing the Value of Public Spaces: Creating Healthy Communities**

- Blake Connolly, Assistant Director, Nutrition Education Program, Health & Human Sciences
- Cheri Brown, Community Extension Director, Community Development Educator, Blackford County
- Daniel Walker, Regional Extension Educator, Purdue Extension
- Janel Franks, Health and Human Sciences Educator, Blackford County
- Kara Salazar, Assistant Program Leader for Community Development and Sustainable Communities Extension Specialist
- Lindsey Cox, Community Wellness Coordinator, Nutrition Education Program, Delaware, Blackford, Jay & Randolph counties
- Lisa Graves, Interim Program Leader, Health & Human Sciences

**Food Production, Security & Safety**

**Providing Information and Guidance During a Foodborne Illness Outbreak Investigation**

- Amanda Deering, Associate Professor, Food Science
- Robert Pruitt, Professor, Botany and Plant Pathology
- Scott Monroe, Regional Agriculture & Natural Resources and Food Safety Educator
- Tari Gary, Extension Administrator, Food Science
- Valerie Clingerman, County Extension Director, Agriculture & Natural Resources Educator, Knox County

**Annual Field Days at Purdue Agricultural Centers Lead to Financial Improvements from Adoption of Recommended Practices**

- Amy Alka, Agriculture & Natural Resources Educator, Randolph County
- Ed Farris, County Extension Director, Agriculture & Natural Resources Educator, Huntington County
- Jill Andrew-Richards, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources Educator, Ohio County
- John Woodmansee, Agriculture & Natural Resources Educator, Whitley County

Kenneth Eck, Agriculture & Natural Resources Educator, Dubois County  
 Nikky Witkowski, Agriculture & Natural Resources Educator, Porter County  
 Petrus Langenhoven, Horticulture/Hydroponic Crop Specialist, Horticulture & Landscape Architecture  
 Phil Woolery, Interim County Extension Director, Agriculture & Natural Resources Educator, Marshall & Starke counties  
 Valerie Clingerman, County Extension Director, Agriculture & Natural Resources Educator, Knox County  
 Wenjing Guan, Clinical/Engagement Associate Professor, Horticulture & Landscape Architecture

**Forum Fridays Focus on Quality Forage for Livestock**

Brooke Stefancik, former 4-H Youth Development and Agriculture & Natural Resources Educator, Sullivan County  
 Elysia Rodgers, County Extension Director, Agriculture & Natural Resources Educator, DeKalb County  
 Jason Tower, Superintendent, Southern Indiana Purdue Agricultural Center (SIPAC)  
 Keith Johnson, Professor, Agronomy  
 Mark Kepler, County Extension Director, Agriculture & Natural Resources Educator, Fulton County  
 Michael Langemeier, Professor, Agricultural Economics  
 Nicholas Minton, Beef Systems Specialist, Animal Sciences

**Virtual Series Shares Practices for Safe Fertilizer and Manure Use**

Brad Kohlhagen, Agriculture & Natural Resources Educator, Adams County  
 Brian Richert, Associate Professor, Animal Sciences  
 Bryan Overstreet, Soil Coordinator for Northern Indiana, Purdue Extension and Crop Conservation Systems Initiative (CCSI)  
 Jennifer Rackliffe, NSF Fellowship, Agriculture and Biological Engineering  
 Jiqin Ni, Professor, Agricultural & Biological Engineering  
 John Radcliffe, Assistant Department Head & Professor, Animal Sciences  
 Kenneth Eck, Agriculture & Natural Resources Educator, Dubois County

**Beginning Producers and Agriculture Teachers Learn Beef Basics Via 8-Week Virtual Series**

Adam Tyler, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources Educator, Fountain County  
 Beth Vansickle, Agriculture & Natural Resources Educator, Madison County  
 Bethany Funnell, Clinical Associate Professor of Bovine Theriogenology, Veterinary Clinical Sciences, College of Veterinary Medicine  
 Brooke Stefancik, former 4-H Youth Development and Agriculture & Natural Resources Educator, Sullivan County  
 Danielle Walker, Agriculture & Natural Resources Educator, Washington County  
 Elysia Rodgers, County Extension Director, Agriculture & Natural Resources Educator, DeKalb County  
 Jerry Rusch, retired Doctor of Veterinary Medicine, Board Certified Beef Cattle Specialist  
 Jill Andrew-Richards, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources Educator, Ohio County  
 Kara Stewart, Adjunct Associate Professor, Animal Sciences

Keith Johnson, Professor, Agronomy

Kelly Heckaman, Area 11 Director, Purdue Extension

Mark Kepler, County Extension Director, Agriculture & Natural Resources Educator, Fulton County

Matt Claeys, former Livestock Judging Team Coach and Extension Livestock Specialist, Animal Sciences

Michele Jones, Agriculture & Natural Resources Educator, Morgan County

Molley Hasenour, 4-H Youth Development and Agriculture & Natural Resources Educator, Crawford County

Nicholas Minton, Beef Systems Specialist, Animal Sciences

Ophelia Davis, Agriculture & Natural Resources Educator, Lawrence County

Ronald Lemenager, Professor, Animal Sciences

**Focus on Small-scale Vegetable Farming: Field Demonstrations Build Capacity for Use of Cover Crops and Reduced Tillage**

Daniel Quinn, Assistant Professor, Corn Production, Agronomy

Elizabeth Maynard, Clinical Engagement Associate Professor, Horticulture & Landscape Architecture

Gary Tragesser, former Superintendent, Pinney Purdue Agricultural Center (PPAC)

Joseph Rorick, Soil Health Statewide Coordinator, Agronomist, Agronomy

Laura Ingwell, Assistant Professor, Entomology

Phil Woolery, Interim County Extension Director, Agriculture & Natural Resources Educator, Marshall & Starke counties

Stephen Meyers, Assistant Professor, Horticulture & Landscape Architecture

**Urban Agriculture & Urban Extension**

**Purdue Extension Master Gardeners Help Indiana Gardeners Grow**

Aaron Neufelder, Agriculture & Natural Resources Educator, Posey County

Aaron Patton, Professor of Horticulture, Horticulture & Landscape Architecture

Adam Tyler, County Extension Director, 4-H Youth Development and Agriculture & Natural Resources Educator, Fountain County

Amanda Mosiman, Agriculture & Natural Resources Educator, Warrick County

Amy Thompson, Beginning Farmer Coordinator, Agriculture Administration

Andrea Hatfield, County Extension Director, Agriculture & Natural Resources and Community Development Educator, Boone County

Ann Kline, County Extension Director, Agriculture & Natural Resources Educator, Noble County

Ashley Adair, Extension Organic Agriculture Specialist, Horticulture & Landscape Architecture

Beth Vansickle, Agriculture & Natural Resources Educator, Madison County

Bob Bruner, Exotic Forest Pest Educator, Entomology

Brian MacGowan, Wildlife Extension Specialist, Forestry & Natural Resources

Brooke Alford, Urban Agriculture Educator, Marion County

Carey Grable, Horticulture Educator, Marion County

Clifford Sadof, Professor, Entomology

Cora Reinbolt, County Extension Director, Agriculture & Natural Resources and Community Development Educator, Bartholomew County

Courtney Lockwood, County Extension Director, Agriculture & Natural Resources Educator, Hamilton & Miami counties

Courtney Schmidt, Agriculture and Natural Resources and Health & Human Sciences Educator, Miami County

Daniel Scott Gabbard, County Extension Director, Agriculture & Natural Resources Educator, Shelby County

Daniel Walker, Regional Extension Educator, Purdue Extension

Danielle Hunt, 4-H Youth Development and Agriculture & Natural Resources Educator, Henry County

Edward Farris, County Extension Director, Agriculture & Natural Resources Educator, Huntington County

Elizabeth Long, Assistant Professor, Horticulture Crop Integrated Pest Management, Entomology

Emily Evers, Agriculture & Natural Resources Educator, St. Joseph County

Emily Kresca, Agriculture & Natural Resources Educator, Kosciusko County

Fred Whitford, Clinical Engagement Professor, Purdue Pesticide Programs, Botany & Plant Pathology

Geoffrey Schortgen, County Extension Director, Agriculture & Natural Resources Educator, Wabash County

Gina Anderson, Community Development and Agriculture & Natural Resources Educator, Floyd County

Hans Schmitz, Lead Conservation Cropping Systems Agronomist, Purdue Extension & Conservation Cropping Systems Initiative (CCSI)

James Wolff, County Extension Director, Agriculture & Natural Resources Educator, Allen County

Jayde Grisham, Extension Educator, Allen County

Jeff Hermes, Agriculture & Natural Resources Educator, Dearborn County

Jeffery Pell, Agriculture & Natural Resources and Community Development Educator, Hendricks County

Jeffrey Burbrink, Agriculture & Natural Resources Educator, LaGrange County

Jenna Nees, Agriculture & Natural Resources Educator, Putnam County

Jessica Outcalt, Agriculture & Natural Resources Educator, Grant County

John Bonkowski, Lead Extension Administrator, Botany and Plant Pathology

John Orick, Purdue Extension Master Gardener State Coordinator, Horticulture & Landscape Architecture

John Woodmansee, Agriculture & Natural Resources Educator, Whitley County

Jonathan Ferris, County Extension Director, Agriculture & Natural Resources Educator, Wayne County

Justin Curley, County Extension Director, Agriculture & Natural Resources Educator, Delaware County

Karen Mitchell, Consumer Horticulture Extension Specialist, Horticulture & Landscape Architecture

Kelly Heckaman, Area 11 Director, Purdue Extension

Kurt Lanzone, 4-H Youth Development and Agriculture & Natural Resources Educator, Parke County

Kyle Daniel, Nursery & Landscape Outreach Specialist, Horticulture & Landscape Architecture

Lais McCartney, Agriculture & Natural Resources Educator, Hancock County

Laura Ingwell, Assistant Professor, Entomology

Mathias Ingle, Agriculture & Natural Resources Associate Educator, Howard County

Meagan Brothers, County Extension Director, Health & Human Sciences Educator, Vanderburgh County

Michele Jones, Agriculture & Natural Resources Educator, Morgan County

Miranda Purcell, former Extension Specialist, Horticulture & Landscape Architecture  
 Nicholas Held, County Extension Director, Agriculture & Natural Resources and Community Development Educator, Spencer County  
 Nikky Witkowski, Agriculture & Natural Resources Educator, Porter County  
 Ophelia Davis, Agriculture & Natural Resources Educator, Lawrence County  
 Patrick Williams, Agriculture & Natural Resources Educator, Tippecanoe County  
 Phil Woolery, Interim County Extension Director, Agriculture & Natural Resources Educator, Marshall & Starke counties  
 Phillip Cox, Agriculture & Natural Resources Educator, Vermillion County  
 Reba Wicker, Agriculture & Natural Resources and Community Development Educator, Steuben County  
 Rebecca Koetz, Agriculture & Natural Resources and Home Horticulture Educator, Lake County  
 Richard Beckort, Agriculture & Natural Resources Educator, Jackson County  
 Robert Yoder, former Agriculture & Natural Resources Educator, Marshall County  
 Sara Dzimianski, Agriculture & Natural Resources Educator, Perry County  
 Sarah Brackney, Agriculture & Natural Resources Educator, Daviess County  
 Sarah Hanson, Agriculture & Natural Resources Educator, Johnson County  
 Scott Gabbard, Agriculture & Natural Resources Educator, Shelby County  
 Sherry Fulk-Bringman, Laboratory & Outreach Coordinator, Agronomy  
 Steven Engleking, former County Extension Director, Agriculture & Natural Resources Educator, LaGrange County  
 Tabatha Flinn, Agriculture & Natural Resources Educator, Vigo County  
 Tom Creswell, Clinical Engagement Professor, Plant & Pest Diagnostic Lab, Botany & Plant Pathology  
 Tom Springstun, Agriculture & Natural Resources Educator, Scott County  
 William Horan, County Extension Director, Agriculture & Natural Resources and Community Development Educator, Wells County

**Indiana Small Farm Conference Brings Together Small-Scale Farmers for Virtual Learning Experience**

Amy Thompson, Beginning Farmer Coordinator, Agriculture Administration  
 Andrew Westfall, County Extension Director, Agriculture & Natural Resources Educator, White County  
 Ashley Adair, Extension Organic Agriculture Specialist, Horticulture & Landscape Architecture  
 Austin Pearson, Service & Outreach Climatologist, Agronomy  
 Azad Chahal, Agriculture & Natural Resources Educator, LaPorte County  
 Brooke Alford, Agriculture & Natural Resources Educator, Marion County  
 Elysia Rodgers, County Extension Director, Agriculture & Natural Resources Educator, DeKalb County  
 Hans Schmitz, Lead Conservation Cropping Systems Agronomist, Purdue Extension & Conservation Cropping Systems Initiative (CCSI)  
 James Wolff, County Extension Director, Agriculture & Natural Resources Educator, Allen County  
 Jeffery Pell, Agriculture & Natural Resources and Community Development Educator, Hendricks County  
 Laura Ingwell, Assistant Professor, Entomology  
 Lupe Valtierra, Community Development Educator, Lake County

Mathias Ingle, Agriculture & Natural Resources Associate Educator, Howard County  
 Meagan Diss, Agriculture & Natural Resources Educator, Vanderburgh County  
 Nathan Shoaf, Senior Urban Agriculture Coordinator, Agriculture Administration  
 Patrick Williams, Agriculture & Natural Resources Educator, Tippecanoe County  
 Petrus Langenhoven, Horticulture/Hydroponic Crop Specialist, Horticulture & Landscape Architecture  
 Sarah Hanson, Agriculture & Natural Resources Educator, Johnson County  
 Steven Engleking, County Extension Director, Agriculture & Natural Resources Educator, LaGrange County  
 Tamara Benjamin, former Assistant Program Leader & Diversified Agriculture Specialist, Agriculture Administration

**Building Sustainable Urban Farming Capacity and Connections**

Brad Kohlhagen, Agriculture & Natural Resources Educator, Adams County  
 Kathryn Orvis, Associate Professor, Horticulture & Landscape Architecture  
 Lynda Bodie-Fernandez, NW Urban Agriculture Assistant/Local Food Coordinator, Agriculture & Natural Resources, Lake County  
 Nathan Shoaf, Senior Urban Agriculture Coordinator, Agriculture Administration  
 Rebecca Koetz, Agriculture & Natural Resources and Home Horticulture Educator, Lake County  
 Tamara Benjamin, former Assistant Program Leader & Diversified Agriculture Specialist, Agriculture Administration  
 Theoneste Nzaranyimana, Lecturer, Horticulture & Landscape Architecture



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