

# Critical Issues for Purdue Research and Extension to report Activities and Impacts to USDA NIFA

Updated: 9/12/2024

These Purdue and USDA initiatives are incorporated in the new Critical Issues:

- Purdue's Next Moves
- College of Ag Strategic Plan 2021-2026
- Research, Education and Economic Goals of USDA (REE)
- Ag and Food Research Initiative (AFRI)
- Foundation for Food & Agriculture Research (FFAR)
- Extension Committee on Organization and Policy (ECOP)

## 1 Climate Change, Natural Resources and the Environment, and Sustainable Energy

### Description

- Taking a global view of sustainability of the environment by addressing climate change, protecting water, soil, and natural resources, and incorporating sustainable energy use.
- Building water and soil management practices, structures, and systems.
- Responding to climate and energy needs, focusing on adaptation, mitigation, and resilience.
- Influencing massive reforestation. Controlling invasive species and diseases, and supporting pollinator health.
- Developing and adopting climate-smart agriculture, practices, and resilient crops, and sequestering carbon through agriculture.
- Advancing animal systems, reducing/reusing methane in livestock production, and finding solutions for different scales of operation.
- Researching and adopting bioenergy, biofuels (corn and cellulose), other sustainable energy sources, efficient and alternative energy sources, energy-efficient processes, products, and agricultural machines.

### Extension Programs/Research Projects Examples

- Air quality
- Alternative fuels or energy sources
- Carbon sequestration
- Climate
- Climate adaptation
- Climate resilience
- Climate-smart practices
- Environmental education
- Forestry
- Forest Management for the Private Woodland Owner
- Habitat
- Habitat management
- Improved water management
- Invasive species
- Master Watershed Steward
- Pollinators
- Public spaces
- Rainscaping
- Reducing greenhouse gases
- Soil
- Stewardship practices
- Turf
- Watershed

## 2 Workforce Development

### Description

- Improving economic well-being, and workforce development for youth, families, individuals, businesses, organizations, agencies, and communities.
- Focusing on technical, professional, and life skills training to help individuals for their first job, to prepare for or achieve their work-related certifications, licenses, continuing education units (CEUs), and other credentials, to develop positive life skills in families, and to provide youth and adults with opportunities to learn new science, technology, engineering, and mathematics (STEM) skills.
- Raising interest in STEM education for agricultural and environmental careers among young generations by engaging with PK-12 populations, and for adults seeking training for future opportunities, and for building STEM education throughout life.

### Extension Programs/Research Projects Examples

- College/career preparation
- Commercial Applicator Certification
- Commercial Applicator Recertification Program
- Continuing Certification Hours (CCHs)
- Continuing Education Units (CEUs)
- Crop Diagnostic Training (CDT)
- Employment requirements
- Foundational skills
- INWork, Work Ready
- Job skills
- Licensure
- Personal Growth Points (PGPs)
- Private Applicator Certification
- Private Applicator Recertification Program (PARP)
- Professional skills
- ServSafe
- STEM training for careers
- UAV Signature Program

## 3 Positive Youth Development and 4-H Opportunities

### Description

- Preparing youth for economic and social well-being. Opportunities, relationships, and support for youth help them acquire life skills to meet the challenges of adolescence and adulthood.
- Activities align with the mission areas of science, engineering, and technology, healthy lifestyles, civic engagement, teen leadership, and college and career readiness.
- With 13,000 adult volunteers involved, volunteer development opportunities are essential, and a vital component to positive youth development.

### Extension Programs/Research Projects Examples

- 4-H adult volunteer training
- Spark Clubs/4-H programs, trainings, camps
- ASEC research
- HHS research
- PK-12
- Spark Clubs
- If the 4-H program fits in another Critical Issue - choose that. If not, "3 - Positive Youth Development and 4-H Opportunities" becomes the catch-all

## 4 Big Data, Internet of Things, Broadband Access, Digital Literacy, Inclusion, and Innovation

### Description

- Working with big data, developing digital agriculture data science tools (e.g., user-friendly platforms) to make operations more efficient, productive, and sustainable.
- Advancing use and understanding of agricultural technology, Uncrewed Aerial Vehicles, modeling, sensors, robotics, automation, autonomous, and the Internet of Things (IoT) for agricultural production.
- Supporting operations that are “digital ready” for expanding agricultural production resources and potentials.
- Reaching and creating digital parity, inclusion, and equity for all Indiana families, farms, rural households, businesses, and communities. Expanding broadband, building digital literacy and skills, and increasing digital connectivity and devices in rural communities, urban neighborhoods, and metropolitan cities. Building well-connected communities by providing critical information and technical support.

### Extension Programs/Research Projects Examples

- Agricultural equipment and tools
- Broadband
- CD/PCRD programs
- Decision-support tools
- Digital Ready
- Ground vehicles
- Management tools
- Models, GIS, and visualizations
- Robotics
- Sensors
- UAVs/Drones

## 5 Human, Family, and Community Health

### Description

- Enhancing positive human development and strengthening financial resource management.
- Increasing physical and mental health understanding and practices, by tackling opioid addiction, obesity, depression, and other health challenges, and by cultivating healthy nutrition, physical activity, and stress management behaviors.
- Operating at levels of policy, systems, and environments via active health coalitions representing all voices of the community.
- Enhancing success in communities by informing decision-making to improve economic and social well-being for communities of all sizes, developing businesses, and increasing community vitality, building leadership capacity, improving public decision-making, resolving public issues, and creating quality places.

### Extension Programs/Research Projects Examples

- Becoming the Employer of Choice
- CD programs
- Community Health Coalitions
- Grass to Garden
- HHS programs
- HHS research
- Vet Med research

## 6 Food Production, Security, and Safety

### Description

- Advancing plant and animal sciences and production and supporting sustainable agricultural production.
- Addressing nutrient management and crop- and livestock-related soil and water management.
- Developing agricultural management, multidisciplinary farm decision-making, sustainable pre-harvest and post-harvest practices, and efficient on-farm production and off-farm post-production.
- Building and supporting the whole value chain, strengthening markets, making sure food reaches all consumers including foods they like and prefer.
- Targeting invasive species and disease, and working with integrated pest management (IPM), and weed and disease management strategies.
- Ensuring the safety and security of food produced. Generating rapid detection of pathogenic organisms and/or toxins, proper handling and storage/shipping/preparation, and post-harvest monitoring and traceability.
- Engaging with partnerships that advance societal development, fulfilling agricultural needs and aspirations around the world supporting global sustainability of agriculture.

### Extension Programs/Research Projects Examples

- Crops and livestock
- Food safety
- HHS research
- PACs/Field Days
- Pre- and post-harvest
- Purdue Agricultural Center Field Days
- Vet Med research

## 7 Urban Agriculture and Urban Extension

### Description

- Growing urban gardens and farms, urban agriculture, diversified farming and food systems, and small-scale farming including specialty crops.
- Advancing practices for efficient production including controlled environments, season extensions, aquaponics, and hydroponics.
- Sharing ways to grow food, and strengthening local communities through urban gardens and farmers markets. Building whole value chains, market systems, and farmers markets.
- Using comprehensive community development strategies, targeted to address key community needs and issues.
- Programming that encompasses policy, systems and environmental change focused on issue-based programming with a strong outcome focus and capability for shared measurement that illustrates collective impact.
- Developing partnerships, and collaborating with community and public agencies and the private sector for shared priorities and new opportunities.

### Extension Programs/Research Projects Examples

- Aquaculture
- Beginning Farmers
- Controlled environments
- Diversified farming and food systems (DFFS)
- Farm Market Certificate
- Gardening
- Get Growing
- Growing Together
- Markets
- Master Gardeners
- Small Farming
- Regenerative farming

## ACROSS ALL CRITICAL ISSUES: Diversity, Equity, and Inclusion

- Delivering need-based and constituency-focused Extension programs, in partnership with diverse populations addressing contemporary societal issues.
- Expanding the diversification of audiences, programming and delivery methods recognizing the social and cultural contexts of constituencies.
- Extending reach via online introductory-to-advanced programming (e.g., Urban Agriculture Certificate, pesticide application licensing, Master Cattleman, Tree Stewards).
- Introducing Extension as a career option and identifying new audiences and opportunities for people to try Extension as a career (e.g., internships).
- Rebranding of 4-H programs to reach PK-12 underrepresented groups and youth.
- Using contemporary communication technology to make existing and emerging resources more accessible (e.g., visual impairment, multilingual literacy, and other challenges).
- Using emerging technologies to selectively focus on international Extension.
- Educating new and current employees to advance their knowledge of the subject matter of their interest and corresponding skills for delivery methods.

## ACROSS ALL CRITICAL ISSUES: Commercialization

- Supporting clients/participants in building new businesses
- Training and providing resources for new or aspiring entrepreneurs
- Moving discoveries into startup companies
- Supporting convergence center and accelerator activities
- Moving things into the marketplace
- Identifying and seeking unconventional partners and alliances while remaining connected to current stakeholders