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

Updated: June 13, 2025

These Purdue and USDA initiatives were incorporated in the 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 Natural Resources

Description

- Taking a global view of sustainability of the environment by addressing changes in weather trends, protecting water, soil and natural resources, and incorporating sustainable energy use. Building water and soil management practices, structures and systems.
- Responding to weather variability and energy needs, focusing on adaptation, mitigation, and resilience. Influencing massive reforestation. Controlling invasive species and diseases, and supporting pollinator health affecting natural resources.
- Developing and adopting sustainable agricultural practices, resilient crops, and sequestering carbon through agriculture.
- Advancing animal systems to reduce/reuse methane in livestock production, and finding solutions for different scales of operation.
- Researching energy sources, energy-efficient processes, products, and agricultural machines.

Extension Programs/Research Projects Examples

- Air quality
- Alternative fuels or energy sources
- Carbon sequestration
- 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
- 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
- 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
- Work Ready

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

 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 Agricultural and Digital Technology 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, and leveraging advances in machine learning and artificial intelligence (AI) for improved farm management.
- Advancing use and understanding of agricultural technology, Unmanned 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 Indiana families, farms, rural households, businesses, and communities.
- Expanding broadband, building digital literacy and skills, and increasing digital connectivity and devices across Indiana.
- 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 wellbeing 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 Gardening, Specialty Crops, and Small-scale Farming

Description

- Growing gardens and small-scale farms and agriculture, diversified farming and food systems, specialty crops, and green infrastructure, landscapes, trees, turf, and lawns
- Advancing practices for efficient production including controlled environments, season extensions, aquaponics, and hydroponics.
- Sharing ways to grow food, and strengthening local communities through 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 actions on issue-based programming
 with a strong outcome focus and capability for shared measurement that illustrates collective impact.
- Developing partnerships, 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
- Forestry and tree care in city, suburb, or town
- Gardening
- Get Growing
- Green infrastructure

- Growing Together
- Hydroponics
- Landscapes and landscaping
- Markets
- Master Gardeners
- Regenerative farming
- Small-scale farming
- Specialty crops
- Turf, lawns, and lawn car