PURDUE AGRICULTURE

Purdue Agriculture Makes a Difference in Indiana

Purdue Agriculture research and Extension programs funded by the Smith-Lever Act, the Hatch Act, and the Agriculture and Food Research Initiative (AFRI) have direct and significant benefits for the people of Indiana and Indiana's agriculture industry. At a time when the agriculture industry is being called on to feed and fuel our hungry world, continued investment in research and Extension is vital to U.S. competitiveness.

Current Purdue (Fiscal Year 2017) funding from these three sources:

Smith-Lever (Extension)	$9.2M
Hatch (Research)	$5.2M
Agriculture and Food Research Initiative (Competitive Grants)	$5.5M

Smith-Lever

Established by Congress in the Smith-Lever Act of 1914, the Cooperative Extension System is an educational partnership between the USDA and America's land-grant universities such as Purdue. Purdue Extension professionals listen to local residents to identify important needs. Purdue Extension specialists conduct research on issues of importance to our state and nation. These specialists, working with Purdue Extension educators in every Indiana county, deliver research-based educational programs that address local needs and resolve critical issues across the state.

Examples of the impact of Purdue Extension:

- Indiana 4-H Youth Development introduces our next generation to science, inspiring their interest and shaping a sense of how science solves pressing issues. The 4-H NFPA Fluid Power Challenge helped 6th through 8th grade students build fluid-powered robots and learn about engineering design and other STEM skills. In the program's second year, participation grew from 33 students to 118. 4-H SPARK Clubs offer youth new learning experiences related to a specific interest and serve as an entry to the full 4-H experience. Purdue Extension Marion County helped an Indianapolis 4-H SPARK Club design and build a go-kart from the ground up just before the 2016 Indy 500. More than 1,000 youth participated in 2016 SPARK initiatives. In Lake County, students at the Thea Bowman Leadership Academy's Eagles 4-H Club started a garden to help students learn about growing and harvesting food.

- Purdue Extension partners with the Purdue Center for Regional Development in the Stronger Economies Together (SET) program to help Indiana communities find ways to create, attract and retain good jobs. Three Indiana regions covering 17 counties are now part of the SET program, which was launched in 2010 by the US Department of Agriculture Rural Development to promote community development.
- Purdue Extension's Master Cattleman Program helps cattle farmers sharpen their management skills in all aspects of the beef industry, from business management to husbandry and environmental stewardship. Working with industry experts, farmers assess their herds and management techniques and then develop business plans to improve the quality of their cattle and their profits. Participants indicate that the program helped increase their annual revenues by $1,000 to $10,000.

- Purdue Extension provides nutrition education for low-income individuals and families using the federal Supplemental Nutrition Assistance Program (SNAP). These are hands-on lessons to help maximize food budgets while focusing on nutritional components, such as consuming lean meats and vegetables and fruits. A recent study showed that SNAP participants who took advantage of the nutrition education program were able to improve their food security by 25%.

Learn more about our work at: www.agriculture.purdue.edu and www.extension.purdue.edu

PURDUE AGRICULTURE

Making a Difference in Indiana

Hatch Act

America's national network of state-based, federally supported food and agricultural research laboratories is the envy of the world. These "State Agricultural Experiment Stations" were established under the Hatch Act of 1887 and receive appropriations through the USDA's National Institute of Food and Agriculture (NIFA). In Indiana, Hatch funds support research focused on addressing key societal problems such as food safety, enhancing agricultural productivity, and developing sources of renewable energy.

Examples of Hatch-funded research:

- Eileen Kladivko, agronomy, works to identify agricultural management practices that improve soil and water quality and enhance agricultural sustainability by increasing the resilience of cropping systems to climate variation. She has found that cover crops can effectively reduce nitrate-nitrogen losses in the rootzone and she works to measure the impacts of various cover crops on soil quality, nutrient cycling, and crop productivity at several sites in Indiana.

- Today's meat and dairy product shoppers are increasingly sensitive to how these products are produced, especially regarding the treatment and welfare of the animals in the productions processes. As more consumers demand beef and dairy products produced from cattle reared under alternative management systems, cattle producers are faced with decisions on how to produce meat and milk products. Nicole Olynk Widmar, agricultural economics, conducts research to understand consumer preferences for animal handling and treatment. Her work helps producers evaluate potential costs and returns of investments in various cattle welfare production attributes.
- For many years, corn has been the most cost effective and readily available feed source for beef producers, but competition from the ethanol industry and frequent regional drought conditions require new thinking. Feeding technologies that increase carcass weights and decrease feed costs have a negative impact on meat quality, and low quality beef can lower consumer demand and have a negative impact on the industry. Jon Schoonmaker, animal sciences, conducts research to understand the effects of feed ingredients and/or specific nutrients on digestion, growth and development, and meat quality of beef cattle. His goal is to develop technologies that improve meat quality without negatively affecting producer profitability.

Agriculture and Food Research Initiative (AFRI)

AFRI is the National Institute of Food and Agriculture (NIFA) flagship competitive grant program. AFRI has five challenge areas: keep American agriculture competitive while ending world hunger; improve nutrition and end child obesity; Improve food safety; secure America's energy future; mitigate and adapt to climate change. Purdue Agriculture researchers have a strong track record of success in obtaining AFRI funds.

Examples of AFRI-funded research:

- Charles Woloshuk, botany and plant pathology, is part of a nationwide partnership of research institutions that provides corn producers with new tools for managing ear rots and mycotoxins. A website, Corn Mycotoxins, developed by the group with funding from AFRI, helps farmers better understand and respond to the threat of mycotoxins and ear rots in corn. The site includes management information as well as photo and video reference materials about Aspergillus, Diplodia, Fusarium and Gibberella - the four most common and economically significant ear rots. The website also provides information on how to properly store moldy grain and the characteristics of various types of mycotoxins.
- Neonicotinoid insecticides (neonics) are now the most widely used insecticides in the world. While neonics have advantages over older insecticides, they have been implicated as a factor in sudden die-offs of managed honeybee hives and long term declines in native bee populations. Entomology researcher Ian Kaplan leads a multistate team to examine how neonicotinoid pesticides are used by growers of members of the gourd family, such as melons and pumpkins. Their goal is to find ways for farmers to achieve effective pest control while protecting the health of honeybees and other beneficial pollinating insects.

- Salmonella and Listeria monocytogenes are among the leading causes of foodborne disease-related deaths in the United States. Haley Oliver, food science, led a study to evaluate Salmonella or Listeria prevalence in retail produce storage, handling, and sales environments. The study showed that standard cleaning procedures in retail delis may not eradicate Listeria monocytogenes bacteria, which can cause a potentially fatal disease in people with vulnerable immune systems. A goal of her work is to develop, implement and test control strategies to reduce Salmonella and Listeria in retail environments and reduce cross-contamination.

Learn more about our work at: www.agriculture.purdue.edu and www.extension.purdue.edu