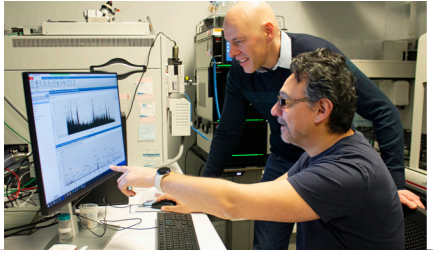
IOWA STATE UNIVERSITY
College of Agriculture and Life Sciences


Iowa State University Agriculture and Home Economics Experiment Station (AES)

INNOVATION FOR IMPACT

Research that originates at Iowa State University's Agriculture and Home Economics Experiment Station (AES) reaches from campus labs, farms and greenhouses to fields and communities, and business and industry in Iowa and across the world. Agricultural production and related manufacturing and other industries make up the largest sector of Iowa's economy, with an economic impact of more than $59 billion (2025). Addressing the opportunities and challenges facing agriculture and natural resources through broad-ranging innovations has always been a critical mission of the AES, which represents the efforts of the College of Agriculture and Life Sciences and its alignment with Iowa State University Extension and Outreach. AES is also a hub for advancing knowledge and practice in many areas of the life and environmental sciences that benefit all Iowans, including nutrition, health, sociology, economics, engineering and technology, and statistics.

AGRICULTURAL PRODUCTION

Iowa Nitrogen Initiative

- Enables Iowa farmers to use precision approaches in agronomic practices, via hundreds of on-farm nitrogen trials in multiple farm systems
- N-FACT (Nitrogen Fertilization Application Consultation Tool) helps farmers improve N management for productivity, profitability and environmental performance
- Funding: Public-private-producer partnership, State of Iowa, USDA Hatch, USDA Smith-Lever

Artificial Intelligence Institute in Resilient Agriculture

- Combines agricultural and engineering expertise, data analytics and decision-support tools
- Equips robots and drones with AI technology for cyber-agricultural systems approaches to breeding and crop production. Helps farmers through the use of expert backed AI tools for timely crop management and identification of pests and diseases
- Preparing AI-aware workforce in agriculture, aligned with digital and precision agriculture
- Funding sources: National Science Foundation, State of Iowa, USDA National Institute of Food and Agriculture, USDA Hatch

Soybean Cyst Nematode Coalition's ProfitChecker Calculator

- Helps farmers combat the relentless soil-borne soybean cyst nematode, one of the major biotic stressors of soybean
- Used by nearly 90,000 U.S. farmers and crop advisors since 2023
- Funding sources: Checkoff funds from the Iowa Soybean Association and other commodity groups, State of Iowa, USDA National Institute of Food and Agriculture, USDA Hatch

Building trust in pork production

- Iowa State is leading the Real Pork Trust Consortium, a partnership with the National Pork Board and scientists from multiple universities striving to listen to and answer consumer questions about pork and pork production.
- The team is using communications science and pork supply chain research to understand and address trust barriers and is training a future workforce, ensuring a sustainable future for the U.S. pork supply
- Funding: State of Iowa, National Pork Board, USDA Hatch

Leadership in modeling for Corn Belt cropping systems

- Iowa State agronomist is the modeling lead for a multistate project to explore big, interconnected questions impacting agriculture in the Corn Belt and Great Plains
- Using Agricultural Production Systems slMulator (APSIM), an international computer model Iowa State manages as the hub for the platform in the U.S. Iowa State updates to APSIM's hydrologic component account for shallow water table fluctuations, an important research focus of the project.
- Funding: Foundation for Food and Agriculture Research, Private industry, USDA Hatch, USDA Smith-Lever

Planter University

- Has helped more than 600 farmers and ag industry professionals learn how to improve planter efficiency, with existing technology and to be prepared for tech upgrades
- Estimated economic impact: $2.6 million in its first three years
- Funding: State of Iowa Skilled Worker Job Creation Fund, USDA Hatch, USDA Smith-Lever

GENETIC IMPROVEMENT

Discovery of "pixie" gene in corn

- Offers plant breeders a new tool to develop desirable dwarf varieties that enhance the crop's resilience and profitability; dwarf varieties have lower water and nutrients requirements and can withstand high winds
- Funding sources: State of Iowa, USDA National Institute of Food and Agriculture, USDA Hatch

Pioneering technologies to create inbred lines in corn

- Groundbreaking work by Iowa State agronomists working with other partners on double-haploid technology, exploiting genetic mechanisms that can accelerate creation of inbred lines in corn – and eventually in other crops
- Funding: State of Iowa, USDA National Institute of Food and Agriculture, USDA Organic Agriculture Research and Extension Initiative, USDA Hatch

FOOD SECURITY

Using beneficial microbes to reduce poultry disease, boost food safety

- Discovering beneficial microbes that can reduce salmonella infections in poultry through boosting gut health
- Developing a probiotic treatment to fight bacterial infections in poultry and humans
- Funding: State of Iowa, USDA National Institute of Food and Agriculture Animal Health Program, USDA Hatch

COMMUNITY & ECONOMIC VITALITY

Analysis and Policy for Iowa Agriculture

- The Center for Agricultural and Rural Development, Center for Agricultural Law and Taxation, and others, and related Extension programming in farm management, keep Iowa farmers, landowners, policy-makers and others informed on the latest influences on farming and the larger economy
- Funding: Many partners, including State of Iowa, USDA Hatch, USDA Smith-Lever

ENVIRONMENTAL MANAGEMENT

The Agricultural Conservation Planning Framework

- Developed by researchers in natural resource ecology and management and partners in USDA
- ACPF and its new Financial and Nutrient Reduction Tool (FiNRT) offer tailored resources to evaluate conservation and economic opportunities from the field to the watershed
- Funding: State of Iowa, Iowa Nutrient Research Center, USDA Agricultural Research Service, Iowa Water Center, USDA Hatch

Iowa Nutrient Research Center - Science for Iowa's Water

- Evaluating and developing emerging and new in-field and edge-of-field nutrient management practices to enhance natural resource management
- More than 157 projects range from refining best practices for cover crops, to the best carbon sources for bioreactors to the best designs for saturated buffers
- Funding: State of Iowa, USDA Hatch

Iowa State partners with zoo and IDNR to save endangered turtles

- Natural resource ecology and management faculty and students worked with the Blank Park Zoo and Iowa Department of Natural Resources to try to boost populations of endangered Blanding's turtles.
- Sudents trapped female turtles to deliver to the zoo where newly hatched turtles could grow to a size better able to resist predation before being released to the wild. Telemetry devices were secured to some of the turtles to track them and learn more about their habits and survival.
- Funding: State of Iowa, U.S. Fish and Wildlife Service, USDA Hatch

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