



Innovation Ecosystem 2023 Year-End Update

Digital and Precision Agriculture

With the critical support of the Iowa Legislature – and in partnership with **BioConnect Iowa** – Iowa State University of Science & Technology continues to forge new frontiers in innovation supporting the growth of Iowa’s biobased economy.

KEY AREAS OF EMPHASIS

The Digital and Precision Agriculture Platform continues to support innovation-driven enterprises by providing funding, guidance, and meaningful connections to experts at Iowa State and in the state of Iowa.

- Seven projects were supported with seed grants and expert advice in areas such as sensor technology, predictive algorithms, soil informatics, advanced engineering of biolistic transformation, and pesticide-detecting nanoparticles.
- Five projects are in incubation for seed grants, fellowships and demonstration grants, reflecting the progress of previously funded projects and the improved commercial viability and industry relevance of new platform-supported projects.
- Established a series of networking events to foster connection between ISU researchers, ISU Research Park, and Iowa-based innovation-driven enterprises.
- Approved investments to add farm-scale prototyping and testing capability and infrastructure to support commercialization of digital precision ag solutions through the Alliant Energy Agriculture Innovation Center.

- Facilitated ISU faculty engagement to enhance interdisciplinary collaboration directed at applied field research in hyperspectral imaging, artificial intelligence, machine learning, livestock management and telehealth.

KEY ACCOMPLISHMENTS AND ECONOMIC IMPACTS

- ISU researchers funded by the platform developed computer-enhanced algorithms that detect anomalies in swine production 18 days earlier compared to traditional methods and leverage scientific breakthrough to obtain a \$300,000 award from USDA-AFRI.
- SoilSerdem and EnGeniousAg, two Iowa-based innovation-driven companies advised by the platform, were each awarded \$1M NSF Phase II SBIR grants.
- Co-authored with BioConnect Iowa the Iowa/Kansas/Nebraska/Oklahoma submission for the \$160M NSF Regional Innovation Engines program.
- Contributed to the USDA proposal for \$4M submitted by ISU agronomy faculty on AI-driven climate smart agricultural research and demonstration, integrating autonomous farm management activities, continuous real-time sensing

of soil and plant conditions and weather parameters, and intelligent data harvesting for analysis and visualization.

- Contributed to the submission of a \$300k proposal by ISU faculty to develop workforce in cybersecurity using virtual reality educational curriculum and training especially for English learners in rural communities.

KEY OPPORTUNITIES AND PRIORITIES FOR 2024

- Develop a collaborative project to engage future talent in rural communities to consider innovation and career opportunities in agtech through outreach activities focused on the connection of agriculture, engineering, and data science. This effort aligns federal initiatives and startup collaborations associated with digital, precision, and climate smart agriculture.
- Develop a marketing, manufacturing and e-commerce framework for agtech innovators, faculty and staff to commercialize stand-alone products to support research in digital and precision agriculture.

INNOVATE
at
Iowa State

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