

# IOWA STATE UNIVERSITY



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## **The BioCentury Research Farm**

## THE IOWA STATE UNIVERSITY BIOCENTURY RESEARCH FARM

The Iowa State University [BioCentury Research Farm](#) is the first-in-the-nation integrated research and demonstration facility dedicated to biomass production and processing. This one-of-a-kind facility allows the integration of the production, transportation, storage and processing of agronomic crops to end products. Researchers have access to 2,000+ acres of test ground, which includes full crop production management for high risk development and support for high intensity innovative methods. The BioCentury Research Farm is a collaborative university resource managed by the College of Agriculture and Life Science's Center for Crops Utilization Research. Additional funding is provided by Center for Industrial Research and Service and Office of the Executive Vice President and Provost. The BioCentury Research Farm closely partners with the College of Engineering and the BioEconomy Institute on research, demonstration, and commercialization.



### Partnership Innovation Example Deere & Company

Iowa University and Deere & Company (Deere) have a strategic public-private partnership that spans research, philanthropy, workforce development (both new hires and continuing education), and a variety of other activities including, advisory boards, guest lectures, and sponsorships. During the past four years, Deere has sponsored 30 projects at the BioCentury Research Farm. Deere funds four different types of projects (annually) in this unique, multi-faceted partnership:

1. MS graduate research projects: applied research projects, two years in length.
2. PhD research projects: generally fundamental research or high risk technologies, 3 – 4 years in length and involve a higher level of analysis and/or design.
3. Professional research projects: utilize staff engineers and/or scientists along with faculty to complete project deliverables. There is generally a higher level of integration into Deere processes. ISU faculty/staff are generally engaged with Deere personnel during the project from concept to commercial delivery.
4. Technical Service Projects: non-research contract activities that utilize standard lab processes or equipment. Generally short term in nature and commonly used to support data generation or validation of crop properties and technologies.

The partnership focuses on the integration of fundamental research, applied research, and product development. ISU staff are integrated members of the product team and have regular weekly meetings with Deere to discuss the project(s). Deere has discovered that ISU Research Foundation's innovative solutions for managing IP ownership, licensing, and patenting meets its corporate needs, facilitates the research, and strengthens the relationship with the university.

Deere uses a solution titled [Flex B for the majority of these projects](#). Utilizing the Flex B sponsored funding agreement and associated exclusive license allows ISU innovations to more seamlessly integrate into Deere product and technology portfolios. Deere has optioned or licensed 20 technologies and filed 24 patent applications (7 US, 17 Foreign) as part of this partnership. Deere understands, from the start, the business terms and conditions that will allow them to implement research results seamlessly into products and customer solutions. They simply send an email to the ISU Research Foundation (ISURF) indicating that they intend to protect and commercialize results from the research project, ISURF sends the license agreement for final execution, and Deere inputs the technology into a tracking system they developed for this purpose. ISU faculty, staff and students get experience solving timely, real-world problems, while fulfilling the land-grant university missions of education, research, and engagement. At a recent international meeting, Deere received 13 silver and gold medals – [three silver medals were for innovations that were part of their partnership with Iowa State](#).



### **Partnership Innovation Example Argo Genesis**

Iowa State and Argo Genesis Chemical, a subsidiary of Seneca Petroleum (Argo Genesis) have a strategic public-private partnership focuses on expedited commercialization of new innovations. Together ISU and Argo Genesis developed a process that converts soybean oil into thermoplastics, the soft, rubbery polymers that can be melted and re-formed over and over again.

Once the bench scale work was complete, an industrial-scale pilot plant to make about 1,000 pounds of bio-polymers per day was built at the BioCentury Research Farm. The building of the plant was a collaboration between the College of Engineering's, Department of Civil Construction and Environmental Engineering (CCEE) and the Department of Chemical and Biological Engineering (CBE); the College of Agriculture (BioCentury Research Farm and the Center for Crops Utilization Research); the Iowa State University Research Foundation; Environmental Health and Safety; Facilities Planning and Management, The Iowa Soybean Association, and Argo Genesis, with Argo Genesis paying \$5.3 million for the construction before donating it to Iowa State (SEE: [Link 4](#) and [Image 3](#), Biopolymer Pilot Plant). The plant contains two main processes, one to turn soybean oil into a monomer, and the second part to turn that monomer into a polymer. The polymer can then be used in asphalt, adhesives, coatings, and packaging. Argo Genesis and their affiliated companies have optioned or licensed three technologies and filed 47 patent applications (3 US, 47 foreign) as part of this partnership.

In summary, the BioCentury Research Farm provides the capability to test all aspects of the supply chain in new product development. This capability is unique and a major competitive advantage to the region that the Cultivation Corridor promotes heavily to prospective companies. Additionally, the facility provides the technical training required to conduct R&D across the supply chain and thus offers a well prepared workforce. The university's flexibility in negotiating

intellectual property ownership and rights is an important component of technology transfer and the establishment of true partnerships with the private sector.