



## Innovation Ecosystem 2023 Year-End Update

# Biobased Products

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 Biobased Products innovation ecosystem continues supporting commercially relevant research and development at Iowa State, and connecting industry to university faculty.

- Ten projects were supported in 2023 in areas such as fermentation food ingredients, carbon fibers, ethanol co-product upgrading, animal probiotics, and conversion of discarded plastics into chemicals and fuels.
- Twenty project submissions are in review for FY24 in areas from biomass fuel production, fungal biomaterials, biobased concrete additives, soybean disease management with essential oils, and carbon dioxide upgrading to organic acids.
- By the end of FY24, ISU’s Biobased Products platform will have funded around 40 different research projects led by more than 30 primary investigators supporting 10 ISU startup companies and partnering with 15 Iowa-based companies.

The platform also continues its focus on adding scale-up capability commercialization infrastructure. The Iowa State Center for Crop Utilization Research (CCUR) has completed work for more than 40

biotechnology companies across the U.S. In addition, strategic partnership discussions have been held with a multinational food ingredient company that plans to construct an Iowa-based contract manufacturing fermentation scale-up facility. A signed MOU includes potential investment in CCUR and collaboration across facilities.

### KEY ACCOMPLISHMENTS AND ECONOMIC IMPACTS

More than \$30M in grant awards have been received by ISU in Biobased Products areas in 2023, including:

- A five-year \$20M [NSF EPSCOR award](#) that includes funding for biomaterials research initiatives;
- A \$2.0 million NSF award for the conversion of natural gas and biomass to hydrogen and performance carbons;
- A \$1.8M DOE award for the development of microbial organisms and fermentation processes for the production of bioproducts; and
- Two awards totaling \$850,000 from the DoD Biomanufacturing Institute (BioMADE) for novel fermentation design and development of advanced sensors.

Iowa State-related biobased startup company progress includes:

- Soybean oil derivative / asphalt additive company [Soylei Technologies](#) has hired an experienced industry CEO to lead the company, and was awarded a \$4.6 million NIFA grant in support of technology commercialization;
- Biopesticide company [Pyrone Systems](#) has closed an investor funding round from funds including [InnoVenture Iowa](#); and
- The 2023 launch of new startups: Rise Energy, developing technology to convert biomass to fuels and biochar; and Upcycling+, developing technology to convert waste plastics to fuels and chemicals.

### KEY OPPORTUNITIES AND PRIORITIES FOR 2024

- Support efforts to bring a fermentation scale-up facility to Iowa, including advancing the signed MOU to definitive agreements. Leverage the historic growth and success of ISU’s CCUR pilot fermentation facility with a more comprehensive strategic plan.
- Continue advancing Iowa State’s startup company pipeline and connecting researchers to existing innovation ecosystem resources such as [NSF I-Corps](#) and the [ISU Startup Factory](#).

#### IOWA STATE UNIVERSITY POINTS OF CONTACT

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