



C-CHANGE

Consortium for Cultivating Human
And Naturally reGenerative Enterprises

www.agchange.org



USDA NIFA Grant

The project is powered by a five-year, \$10 million grant from the U.S. Department of Agriculture's National Institute for Food and Agriculture.

Partners

C-CHANGE's USDA NIFA project includes Iowa State University, Penn State University, Roeslein Alternative Energy, FDCE Inc., the USDA-ARS National Laboratory for Agriculture and the Environment, and 33 partner organizations.

The Consortium for Cultivating Human And Naturally reGenerative Enterprises, or C-CHANGE, is a multi-institutional consortium working to create new value chains on U.S. farms, with emphasis on the generation of renewable natural gas, improved rural economic outcomes, and protection of the environment.

C-CHANGE will innovate methods for farmers to make more efficient use of resources while maintaining current value chains, resulting in an agricultural economy that's both more profitable and environmentally sound.

Researchers are developing new ways for farmers to produce renewable natural gas that could be used as an energy source both on and off farms. They hope to demonstrate that land unprofitable for annual crops could instead grow native grasses and forbs from which the renewable natural gas would be produced. This perennial biomass crop would prevent flooding and reduce nutrients running into streams and rivers.

“We recognize the benefits of current production systems but also that there's a lot of inefficiency in how we use land, sunlight, nutrients, and water. We also realize that farmers and rural communities are struggling. We know we can address inefficiencies by adding perennials and recoupling crop, livestock and energy systems. Research is needed to ensure these combinations are also profitable.”

— Lisa Schulte Moore, professor of natural resource ecology and management, Iowa State

The project centers on anaerobic digestion, or the process by which microorganisms break down biomatter and produce biogas, which is mostly methane, the main component of natural gas. With new separation technologies, biogas can be upgraded to renewable natural gas and distributed through the gas pipeline network, much like renewable electricity is distributed through the electrical grid.



C-CHANGE will work with farmers to incorporate perennial grasses and winter crops into their operations as a source of biomass for the anaerobic digesters. Some areas of farm fields – particularly uneven terrain that is especially susceptible to erosion, frequently inundated areas or turnrows – can yield poor or negative profits for corn and soybean producers. Switching those acres out of corn and soybeans to perennial grasses could save farmers money and protect the environment.

The consortium also will engage producers, commodity groups, and companies to see how receptive farmers and businesses are to implement management practices and other knowledge emerging from experiments. Adopting these innovative approaches could be facilitated through changes in agricultural policies.



United States
Department of
Agriculture

National Institute
of Food and
Agriculture

IOWA STATE
UNIVERSITY



FDCE
Conservation & Bioenergy

“We will be working with farmers and other industrial partners to update anaerobic digestion for the 21st century, applying the principles of process intensification, automation, and economies of scale to reduce costs, simplify operations and expand digester feedstocks beyond manure to incorporate perennial grasses and winter crops.”

— Tom Richard, director of Penn State’s Institutes of Energy and the Environment

“Ecological services from this perennial biomass crop would prevent flooding, reduce nutrients running into our streams and rivers that could save hundreds of billions of taxpayer money on water treatment facilities while improving the health of our future generations.”

— Rudi Roeslein, company founder and CEO, Roeslein Alternative Energy

Engage with C-CHANGE

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