

LGU Name(s):

2021

Ohio State University

Combined Research and Extension Annual Report Review

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Report Overview

Recommend Approval?

Approve Return

Review Comments:

The Ohio State University (OSU) has submitted an impactful and results-oriented annual report for FY 2021. The College of Food, Agricultural, and Environmental Sciences (CFAES)'s actions are guided by four Grand Challenges: Sustainability, One Health, Rural-Urban Interface, and Leadership. The Student/Learner First Philosophy goal entails 60,000+ youth served through 4-H programs, 2,800 undergrad and 500 graduate students pursuing degrees, and 2 million plus lifelong learners in extension programs. Another goal is the Innovative Scholarship to Sustain Life. During FY21, CFAES researchers had 344 grants awarded totaling \$50 million as well as 25 new innovators, 18 patent filings, 7 active startups and 38 invention disclosures. In the last 18 months, more than \$2.5 million dollars have been raised that benefits Extension programming. COVID-19 remains a critical research topic for CFAES. A high priority issue in their Plan of Work was prescription drug abuse and opioid addiction. A second high priority for research and Extension is water quality in Ohio. Another goal is Capacity Building of Our People and Our Communities. CFAES has hired 18 new research and Extension faculty during FY21 and is currently interviewing to fill 25 new research and Extension positions. Another goal is the Partner of Choice. CFAES wants to engage their entire community, internal and external stakeholders. For example, the 59th Annual Ohio State University's Farm Science Review returned to an in-person format in September of 2021. More than 70,000 people attended to view educational events, field demonstrations, "ask the expert" talks, and interact with 600 exhibitors. Under the goal Resource Stewardship in a One-College Model, CFAES continues to transform and improve the physical environment across the three OSU campuses. There are no updates to the Scientific Review Process. One update to the Stakeholder Input Process: The OSU research and extension team collected and analyzed primary and secondary data and held various listening sessions within OSU, stakeholders, state level Extension advisory councils as well as monthly meetings between the Dean and the Commodity Round Table (composed of leaders of commodity groups, the Farm Bureau and others). The Research and Extension teams of OSU are commended for their preparation of a detailed and informative FY2021 Annual Report.

NIFA appreciates this detailed annual report of very effective activities for FY 2021 from OSU. OSU is encouraged to expand on their most impactful actions in future reports.

Critical Issues

Recommend Approval?

Approve Return

Review Comments:

OSU Research and Extension addressed several critical issues in FY 2021. Selected critical issues are highlighted below:

Critical Issue: OSU - Economic Vitality

The OSU team is working on several areas to improve economic vitality of the state. Some of these include:

- More than 1 million Ohioans do not have access to high-speed internet, mainly in rural areas. A recent analysis determined that there are between 92,000 – 170,000 Ohioans addicted to drugs, costing the state \$6.6 – \$8.8 billion. Employment in the Appalachian coal industry has declined 97% during the last century, leaving coal workers and a number of Ohio counties like Noble County suffering economically. In Noble County, the “least connected” county in Appalachian Ohio, OSU Extension provided guidance and grant writing assistance, which resulted in a \$50,000 grant from The Appalachian Regional Commission with \$21,500 in matching funds from OSU Extension for a Broadband Technical Assistance Project. Broadband access is a critical community infrastructure and the COVID-19 pandemic and subsequent need for telehealth and telework options underscore this need further.
- A researcher of the Institute for Population Research of OSU, and collaborators are working to determine the economic and demographic impacts of shale oil and gas drilling as well as how economic and contextual factors in rural areas impact drug overdose deaths.
- The Earned Income Tax Credit (EITC) is the largest anti-poverty program in the United States and has been shown to have short term health benefits in young mothers. An OSU researcher hypothesized that there may also be long-term health effects from EITC since the increase in income can lead to increased funds for healthy food, health care and lower stress levels. It was estimated that within a decade 20% to 40% of Ohio farmers will be involved in a contract involving carbon sequestration, which is another economic incentive. Research related to federal nutrition assistance policies concluded that food pantry visits increased during the first months of the COVID-19 pandemic. Also, participation in WIC reduces nutrition risk for children in the program. Both of the above findings demonstrate the importance of food banks, especially during crises.

Critical Issue: OSU - Environmental Quality and Sustainability

Under this Critical Issue several parameters are being addressed.

- Through Cargill's and the Natural Resources Conservation Services support, water quality associates with OSU Extension have made more than 500 contacts with farmers and 300 on-farm site visits.
- Nearly 8,000 commercial and private applicators participated in re-certification courses offered by OSU Extension.
- An OSU researcher collaborated with OSU Extension water quality associates to collect soil and biomass samples from farmers' fields that were planted in cereal rye, then analyzed for physiochemical properties and ammonium and nitrate concentration. They used remote sensing in parallel to assess the efficacy of this method in monitoring cover crop biomass and biomass nutrients and develop models to retrospectively monitor cover crop performance at field and landscape scales.
- A pilot watershed project in northwestern Ohio designed to demonstrate that agricultural conservation practices—if used on 70% of the farmland in a watershed and evaluated on a watershed scale—can help meet Lake Erie's water quality goals.
- An OSU researcher is developing model tools to estimate air pollutant generation, distribution, and dispersion of NH₃ emission from poultry layer facilities in Ohio.
- Scientists at OSU have developed a technology which significantly improves poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV) toughness and processability through reactive extrusion with natural rubber (NR) and a novel bio-based plasticizer from food waste. The novel rubbery bioplastic has shown promise for freezer-to-microwave food packaging.
- OSU researchers found the global warming potential (GWP) to be 63-88% lower with bio-based production of lactic acid than petroleum-based production at approximately the same cost. This group also analyzed the costs and GWP of renewable jet fuel production from pennycress, with further results pending.