# Ohio (Central State University) Annual Report - FY2021

# Report Status: Approved as of 07/08/2022

## Contributing Organizations

Central State University

## Executive Summary

**Overview**

Central State University (CSU) is emerging to be a significant 1890 contributor to the advancement of agriculture and forestry in the State of Ohio. Dr. Michelle Corley became the Dean of the College of Engineering, Science, Technology and Agriculture (CESTA) and Director of the 1890 Land Grant Program at CSU in July of 2021. During the year of reporting (2021) two Evans Allen projects - Enhancement Of Farm
Productivity; Conservation and Sustainable Utilization Of Natural Products (Project II) and Enhanced Crop Production Efficiency through
Mechanized Integrated Pest Management Strategies (Project III) ended. One new project with expanded focus, titled, Advanced
Agriculture Technologies for Small Scale Farms has been added. The honey bee/ Pollinator research component under Project II has been separated and a new project completely focusing on Pollinator research has been initiated. The Project (II) on Farm Productivity is being currently expanded to be incorporated into a new project. With all the changes the Evans Allen program has 5 Main Research Projects addressing solutions tor critical issues on 5 systems - Plant Systems, Animal Systems, Food, Nutrition and Health (FNH) systems, Natural Resources, Farming and Environmental Systems and Social and Allied Research Systems. Under plant systems CSU is focusing on hemp as a major crop that can positively impact the economic circumstances of small and medium scale farmers.

Extension programs by Central State University (CSUE) focus on the needs of Ohioans in under- represented communities, those with limited resources, and socially disadvantaged individuals and families in rural, urban, and Appalachian areas of the state.

CSUE's Agriculture and Natural Resources (ANR) program is vested in beginning farmer training, aquaponics and hydroponics programs, and hemp and sweet production demonstrations and other farmer-trainings. The ANR program also offers training for home gardeners, including providing gardening space at the campus botanical garden, and providing pest management training.

CSUE's Family and Consumer Sciences (FCS) and EFNEP programs provide education in disease abatement through nutrition, exercise, hygiene, and the culinary arts. CSU's Family and Consumer Sciences (FCS) uses the Diabetes Empowerment Education Program (DEEP) to help people manage with chronic illnesses. CSUE educators provide healthful cooking classes for people who may be on a limitedbudgets.

CSUE's FCS program combats food insecurity throughout the state, like in Greene County, OH—designated as a "pocket of poverty" by the Dayton Food Bank, by distributing free food, donated fruits, vegetables, and breads at an on-campus Mobile Food Pantry which serves between 120 to 150 people each month. The food recipients also receive factsheets and programming information to help fight malnutrition and obesity.

CSUE's 4-H and Youth Development impacts grade schools in socially disadvantaged and/or economically depressed communities of Ohio. The 4-H program was very successful and laid the foundation for CSUE Youth and Family-4H sponsors multiple summer camps every year including the Ag-STEM Institute (rising 6th, 7th and 8th-graders), REAP (rising 9th, 10th, 11th and 12th-graders), and Discovery Day Camp (rising 3rd, 4th and 5th-graders).

CSUE's Community and Economic Development (CED) program builds sustainable individuals, communities, and small businesses. Programs focus on uplifting some of the most underserved citizens of Ohio with high school equivalency test trainings, felony record expungement programs, disaster assistance information, and small business incubator development. CED also formed a key partnership with the Public Defender's Offices of Montgomery County and Greene County, hosted a

free virtual record-sealing clinic (the legal practice of removing criminal/court records that would otherwise be publicly accessible).

During the FY 2021, these Extension topics were utilized within the Plan of Work as they are aligned with our Critical Issues:

1. Plant Systems:
    1. Specialty crops (e.g., hemp, fruit, vegetable, medicinal, hops)
    2. High-amylose corn 3. Hydroponics & aquaponics
2. Animal Systems:
    1. Poultry (egg, chicken, & turkey) w/production
    2. Animal feed & fodder
3. Food and Nutrition and Health Systems:
    1. Human nutrition
    2. Disease abatement through nutrition and exercise
    3. Cooking methods
    4. Individual/family mental health
4. Natural Resources and Environmental Systems:
    1. Apiculture/Honeybees/Pollinator
    2. Water Science/Irrigation
    3. Organic farming (composting)
    4. Soil health
5. Social and Allied Research Systems:
    1. Money management
    2. Financial literacy
    3. Resource availability
    4. Community planning and development
    5. Control of animal reproductive performance
    6. Personal education (e.g., high school equivalency, entrepreneurship, & employment)
6. Advanced Technologies and Commercialization Systems:
    1. Mechatronics in Agriculture (integrates expertise in mechanical engineering, electrical engineering, computer control, machine vision and information technology)
    2. Robotics
    3. Hydroponics & aquaponics

**Critical Issue: Animal Systems**

CSU is engaged in apiculture research under the leadership of Dr. Hongmei Li-Byarlay.

Our research in this project address the colony declines of honey bees and wild bees in the State of Ohio and the United States. By selecting and breeding efforts for mite-resistant bee stocks, we use cutting edge genomic and molecular tools to focus on how to improve pollinator health. A good trait and behavior to display mite resistance is the grooming or mite biting behavior. We train underrepresented minority students from Central State University in pollinator biology, apiculture, molecular biology and ecology.

Pollinators including honeybees and wild bees are critical players for agricultural food and crop production. The colony health of pollinators directly linked to the crop, fruit, and vegetable yield for food safety. However, honey bee colonies are in decline as 30-40% in the State of Ohio and the United States annually. Multiple stressors such as parasitic (Varroa mite) and pathogenic infections, pesticide exposures, malnutrition, climate change and lack of genetic diversity negatively affect colony health. However, there is no research and extension efforts towards breeding and selection for honey bee stocks as long term goals in the State of Ohio for the last decade. As a research bee lab focusing on bee genetics and breeding, we aim to promote sustainable apiculture by selecting good traits for mite resistance (such as grooming and mite biting behavior) and minimizing bad traits using cutting edge genomic and molecular tools.

Central State University (CSU) is the sole 1890 land-grant institution in Ohio. Our research project will train the future workforce of Underrepresented Minority students from Central State University in pollinator biology, provide opportunities for cutting-edge research tools and topics, prepare CSU students to enter sustainable agriculture career and gain growth opportunities for a future in the sustainable agriculture and agricultural economy.

We are planning to establish animal systems research at CSU under the leadership of Dr. Corley, the Dean and Director of 1890 Land Grant Programs at CSU.

**Critical Issue: CSU - Building new farmers, supporting limited-resource and urban farms**

Central State University Extension Agriculture and Natural Resources program works with farmers in rural and urban areas to provide interactive programs, such as beginning farmers, beekeeping, aquaponics, small scale farming, organic production, forestry, soil health and more. The Beginning Farmer Training program provided classes designed to help people interested in farming learn about growing crops while also developing business skills. Classes are hands-on with interactive experiences with no farming experience needed.

**Critical Issue: Advanced Technologies and Commercialization Systems.**

CSU, under the Evans Allen Program had a project titled : Enhanced Crop Production Efficiency through Mechanized Integrated Pest Management Strategies which ended on 06/30/2021. As a sequel to this project we initiated a project titled "Activities and objectives of this project aim to develop and use advanced agriculture technologies for enhancing farmer profitability, promote sustainable agriculture, and to play role in economic growth of broader public communities. It is also known that modern agriculture technologies o en receive skepticism from public as well. It is important that modern agriculture technology is demonstrated for spreading the education and for increasing the public acceptance of modern technologies. we demonstrated the technology developed under this project and shared with farmers at the Black Farmers Conference. Approximately 20 farmers, students and staff attended the demonstration. Weed seed destroyer researchers have met with entrepreneurs and organic farmers to describe the results and potential benefits of minimizing viable weed seeds in the soil seed bank.

Under the efforts for developing non-chemical weed management systems we established robotic lab was with equipment including tools, a robotic arm, drones and computers to develop autonomous pest management strategies for small-scale farmers. Field equipment was purchased to initiate non-chemical, integrated pest management strategy field trials in corn and soybeans. Research faculty and technicians were hired with experience in autonomous systems and computer visualization. These faculty and staff joined existing academic faculty in computer science, manufacturing engineering and plant science to build the agriculture technology program at Central State University from the ground up. In addition to the Evans-Allen funds, this research has generated 2 research Capacity Building Grants ($600,000 total), and one validation study ($14,000) during the 5 years of this plan of work.

Expanded field testing and the range of plants/applications for current directed-energy, mechanized weed control systems already being tested at CSU. Computer vision and AI assisted so ware was upgraded to optimize the weed detection algorithm, user interface, and to improve the reliability of the program. Robotic arm has been repaired to deliver directed energy to detected weeds. Weed seed destroyer validation study was performed to kill weed seeds in chaff. Broad spectrum directed energy on vegetative soybean plants in the field (V2/V3 stages) has been shown to enhance soybean yield in the field by up to 20%. Directed energy treatment does not affect quality of the bean, just the quantity. Research is ongoing to identify stress markers and the biochemical mechanisms for yield enhancement.

1) A study of 1000 broad leaf and grass weeds in agricultural fields has demonstrated that directed energy is up to 84% effective in killing and damaging weeds with under a 10x10 cm squared leaf spread. A combination of IR and LED blue lights was validated to kill nonshattering, broad leaf weed seeds including morning glory, pigweed and water hemp. Implications are that weed seeds entering chaff during harvest will not contribute to the soil seed bank and subsequent year infestation of herbicide-resistant weeds.
2) Robotic so ware was upgraded by optimizing functionality for following features; added an auto resizing feature to graphic user interface; identified and fixed alignment issues with video capture program GUI; fixed 'broken' buttons in the so ware to switch between cameras in preview mode; improved picture recording program to make use of multi-thread to eliminate desynchronization between cameras; resigned the picture recording program to make it user friendly and to be used with any computer (assuming proper so ware is installed); improved the base framework's readability, efficiency, and overall structure of the program to make future modifications much easier; adjusted frame rate calculation to ensure it runs exactly at the desired frame rate; and added adaptive folder detection and image synch functionality to field robot.
3) Testing and experimenting continued with robot arms for the robotic platform to deliver directed energy to weeds in field. Robotic arm was maintained and repaired.
4) A validation study was completed for an industry produced Weed Seed Destroyer prototype to determine parameters to kill broad leaf and grass weed seeds in chaff to develop a new option for non-chemical and sustainable integrated pest management to control weed infestations, especially of herbicide resistant weeds.
5) Broad spectrum directed energy (UV A, B, visible, near-IR and IR) on vegetative soybean plants in the field (V2/V3 stages) has been shown to enhance soybean yield in the field by up to 20%. Directed energy treatment does not affect quality of the bean, just the quantity. Research is ongoing to identify stress markers and the biochemical mechanisms for yield enhancement. A combination of IR and LED blue light (440 nm) have been shown to kill weed seeds to potentially reduce viable weed seeds in the soil seed bank. Research has demonstrated that low levels of IR+LED blue light also may

enhance seed germination rates and total germination for soybeans. Experiments are ongoing for soybean and hemp seeds.

**Critical Issue: CSU - Engaging Communities and Transforming Lives**

The percent of Ohio adults reporting no physical activity increased from 25.2 percent in 2012 to 29.6 percent in 2017.State Health Assessment Ohio 2019. Family and Consumer Sciences provdied multiple programs to impact communities:

- QPR---Questions, Persuade and Refer - Reduce suicidal behaviors by providing innovative, practical and proven suicide prevention training. Quality education empowers all people, regardless of their background, to make a positive difference.
- “Let’s Get Turned Up and Turn it Around” - Educates youth on childhood obesity, focusing on kid-friendly cooking as well as dancing for fitness and fun.
- Nutrition Education for Older Adults - Four-session program promoting eating/physical activity to improve health focusing on goal setting and addressing real and potential barriers.
- Families Eating Smart, Moving More - Hands-on nutrition program teaching new skills---shopping, cooking and daily physical activity.
- Teen Cuisine - Learn concepts about nutrition, food prep, cooking, safety and physical activity to enhance learning/behavior among teens.
- Chicago Parent Program - Twelve-session evidence-based parenting program created for parents of young children (2-5 years old) designed to meet the needs of a culturally/economically diverse audience.
- Strengthening Families - Evidence-based parent/youth/family skills-building program focusing on preventing substance abuse, behavior issues and increasing communication skills leading to academic success.
- Mastering “Adulting” A er Moving Out - Teaches lessons preparing young adults for independence. This four-week series covers topics such as the apartment hunting process; home maintenance; what to do in emergency situations; financial literacy (loans, credit reports, choosing a bank, etc.); maintaining relationships; and time/stress management and more.

The Community and Economic Development team works to create pathways to success by empowering communities, organizations and individuals through education and technical assistance. With a focus on a both urban and rural areas, the primary aim of this program is to address community development and revitalization, small business development and personal achievement.

Community and Economical Development provdied multiple programs to impact communities:

- SMALL BUSINESS DEVELOPMENT
  - Ready, Set, Grow Business Planning
  - Accessing USDA Funding
  - Beginning Farmers Program
- A FRESH START
  - Record Sealing Clinics
- HIGH SCHOOL EQUIVALENCY PREP
- PRiMR DISASTER PREPARATION
  - Improving disaster preparedness of businesses, agribusinesses and organizations
- BUILD YOUR BRAND
  - Marketing and Branding Strategies for Small Business and Communities
- A STEP UP
  - Customized Workforce Development Training

**Critical Issue: CSU - Food Nutrition and Health Systems**

We did set up a biological research lab  a er developing a focus of research that will enable us to develop correlation between cardiovascular diseases and HIV patients - especially studying the problems affecting African Americans.  Dr. Islam assisted in the development of research projects and funding proposals related to this focus. His studies are enabling researchers to establish a correlation between cardiovascular diseases and HIV patients. Our studies determined effects of storage and processing on nutrient value and oxidation of novel food products and nutrient supplements.

Through our studies we have developed regional nexus for wellness assessment and solutions. (phase I-completed, phase II-data is being analyzed). Co-developed, along with Drs. Carter and Islam, a 3-year Research Plan and budget for the newly established Food, Nutrition and Health division of the Agriculture Research Development Program.

We developed  Sleepiness Questionnaires which are useful tools to identify correlation between sleep, academic performance and obesity promotion in improving health. A significant reduction in perceived stress score and improvement in sleep quality index was noted at the end of a virtual Heartfulness meditation program. Moreover, Heartfulness meditation practice may help

cultivate the quality of empathy, acceptance, and individual peace. We conclude that the effects of virtually accessible Heartfulness meditation practice need to be explored further in larger studies. The mindfulness applied research program implemented for undergraduate students at Central State University has had a
positive effect on their stress levels being reduced. Dissemination of these successful efforts are being prepared. Dr. Gupta's research during the past year focused primarily on manipulation of nutritional intake in order to maintain health. We investigated the manipulation of macro and/or micronutrients to help individuals adapt to their stressors and perform at their highest level possible.

Our research on studying angina issues in African Americans investigated a technique to use nitric oxide (NO) therapy to improve blood circulation and heart function has been developed and successfully tried on trials with mice that have heatfailure. This methodlogy/technique is expected to be exapnded to human through clinical trials. Dietary sources of nitric oxide are fresh leafy vegetable, red beets, etc. In addition, NO can produce hydrogen sulfide (H2S) and the best source of H2S is garlic. To maintain a healthy life it is essential to keep NO/H2S sources in our diets through natural products such as beets and garlic.

Target audience benefitted gaining information and knowledge on the following aspects of food nutrition and health:

- Diabetes Management and Prevention by Self-Care Pratibha Gupta, [The 51st Annual Meeting of the Southern Rural Sociological
- Association (SRSA, February 2-3, 2020), Kentucky St Louisville, KY 40202. ]
- Sleep Habit/Sleepiness Questionnaires: A Useful Tool to Identify Correlation between Sleep, Academic Performance and Obesity
- Promotion in Improving Health by Pratibha Gupta, Ph. D, CSU & Matt Collins, M.D.WSU, [American Society for Nutrition for Nutrition 2020 May 30 – June 2, 2020]

Sleepiness survey questionnaire assessment and study on correlation of sleep deprived adults working in night. Published the article

- Impact of Virtual Heartfulness Meditation Program on Stress, Quality of Sleep, and Psychological Wellbeing during the COVID-19
- Pandemic: A Mixed-Method Study, Kunal Desai 1,* , Pratibha Gupta 2, Priti Parikh 3 and Alpa Desai
- Prevention of Obesity: Bioelectrical Impedance Analysis (BIA) Device, a Tool for Complete Body Fat Scan. *P. Gupta, Ph.D., S.
- Nelson, April 2022
- The public benefitted by the following presentations by Dr. Pratibha Gupta from the FNH Research Group:

The broader public benefited from advances in research in critical areas carried out by the researchers in the Food Nutrition and Health (FNH) group.

- Presentations to area farmers on "Food is health" at the Second harvest food bank Inaugural Harvest breakfast, Springfield Ohio, September 3, 2021.
- Presentation in REAP (research education apprenticeship program) for high school students in research training on Nutraceuticals and functional food Clinical nutrition: Nutrition assessment laboratory during summer program for school children.
- Demonstration of Body composition among adults utilizing BIA (Bio electrical impedance) unit for complete body fat analysis to community groups.
- Routine physical fitness and promotion of weight management for obesity prevention and body composition. Part of the REAP summer program.
- Use of Refractometer to test sugar content in various samples of nutritional food, juices, salsa, and salad dressings fruits and, vegetables. Part of the REAP summer program.

**Critical Issue: CSU - Preparing our youth for the future**

Central State University Extension (CSUE} 4-H Youth Development offers young people between the ages of 5 to 19 programs that empower youth to reach their full potential by working in partnership with caring adults. CSUE will work with schools, community organizations, youth associations and more to offer clubs, summer camps, and individualized programming to meet their
needs. Programs are open to all youth and help develop knowledge, skills, and attitudes that will enable them to become productive and contributing members of society.

CSU Extension 4-H programs promote skills in the following areas:

- Citizenship
- Healthy living
- Leadership
- Volunteerism
- Critical thinking

CSUE 4-H signature programs include:

- Discovery Day Camp
- Seed To Bloom Ag-STEM Institute
- Research and Extension Apprentice Program (REAP)

**Critical Issue: CSU - Promoting food nutrition and health for socially-disadvantaged communities**

The Agriculture and Natural Resources Extension Program at Central State University provides outreach, education, and awareness to all Ohioans while enhancing sustainability of Ohio's most valuable resources. Aquaponics: Growing fish and plants together in a controlled environment is aquaponics. CSU Extension has a demonstration greenhouse that features two systems for farmers to view. Field days are held during the year to help interested farmers learn about aquaponics.

Organic Production: CSU Extension provides support for organic growers along with transitioning farms from conventional to organic. Programs include workshops on utilizing organic production and how to incorporate IPM and other tools.

Central State University Extension Family and Consumer Science programs are designed to meet the needs of all participants and partnering organizations with options for a single class or series of classes designed to address any issue.

Diabetes Empowerment Education Program DEEP(TM) topics include diabetes risk factors, diabetes complications, foot care, meal planning and healthy eating, as well as stress management techniques such as physical activity, medications and self-monitoring of health. Freedom from Smoking (Adults)Freedom From Smoking® program focuses on setting a quit date with a quit plan to become tobacco-free.Not on Tobacco (N-O-T) (Youth)Smoking cessation program designed for youth and teens to develop/maintain positive behaviors.GenRXFocuses on safe medication practices and prescription drug safety for all ages.

**Critical Issue: CSU - Natural Resources and Environmental Systems**

The CSUE Agriculture and Natural Resources Program develops, conducts, and promotes programs to create sustainable farms—farms that are good stewards of the environment, improve quality of life for the farmer and the community, and are profitable to enable the farm be available for future generations.

Forestry: CSU Extension works with woodland owners to develop goals, implement best management practices, encourage sustainability and create opportunity. CSU Extension works with the Ohio Interagency Forestry Team, Southeast Ohio Chapter of Women Owning Woodlands to provide topical, accessible and current forestry/natural resource information to women landowners and forest practitioners.
Soil Health: Soil is the base for any growing crop and CSU researchers in this area are exploring cover crops and biodiversity to keep farms sustainable through soil health. CSU Extension organizes field days and workshops to provide farmers with a road map for improving the health of their soil –whether in a rural or urban setting.

**Critical Issue: CSU - Supporting small and medium-sized farms**

The CSUE Agriculture and Natural Resources Program develops, conducts, and promotes programs to create sustainable farms—farms that are good stewards of the environment, improve quality of life for the farmer and the community, and are profitable to enable the farm be available for future generations. Small Scale Farms: From raising livestock and poultry to growing fruits and vegetables, CSU Extension provides programming for farmers who are looking to maximize production.

**Critical Issue: CSU - Plant Systems**

CSU is engaged in solving problems related to Plant Systems on 3 fronts - medicinal plants/natural products, hemp and high amylase corn breeding.

Central State University Extension is committed to bringing research-based practices to Ohioans to improve lives and sustain communities. Hemp and Natural Products: CSU research includes hemp and other natural products. CSU Extension organizes field days/ workshops to provide growers with access to the most recent research and also provides information for growers entering these markets.

**Critical Issue: OSU - Economic Vitality**

Not a CSU Critical Issue.

**Critical Issue: OSU - Environmental Quality and Sustainability**

Not a CSU Critical Issue.

**Critical Issue: OSU - Food Security and Production**

Not a CSU Critical Issue.

**Critical Issue: OSU - Health and Wellness**

Not a CSU Critical Issue.

**Critical Issue: OSU - Thriving Across the Lifespan**

Not a CSU Critical Issue.

## Merit and Scientific Peer Review Processes

**Updates**

None

## Stakeholder Input

**Actions to seek stakeholder input that encouraged their participation with a brief explanation**

None

**Methods to identify individuals and groups and brief explanation**

None

**Methods for collecting stakeholder input and brief explanation**

None

**A statement of how the input will be considered and brief explanation of what you learned from your stakeholders**

None

## Highlighted Results by Project or Program

Critical Issue

### CSU - Building new farmers, supporting limited-resource and urban farms

**Beginning Farmer Training**

Project Director
Alcinda Folck
Organization
Central State University
Accession Number
7000161

**Year 1**

**In 2-3 sentences, briefly describe the issue or problem that your project addresses.**

Beginning Farmer Programs are designed to assist those interested in growing crops while also developing a farm business. The programs emphasize hands-on training and participants do not need any farming experience before attending the programs.

### Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

In addition to the programs in Montgomery County, other beginning farmer educational classes were held in the other regions. A beginning farmer program was started in Cincinnati with a vegetable demonstration site. Workshops focused on the installation of raised beds and drip irrigation. Participants helped with transplants and plant care. Two participants were involved with the workshops at this location.

Other beginning farmer programs were held in Columbus and featured training with walk-behind tractors, crop planning, marketing, food safety, and post-harvest handling.

### Briefly describe how your target audience benefited from your project's activities.

Two beginning farmer programs were started in Montgomery County, Ohio, at urban sites in Dayton and Trotwood. The program featured in-class instruction with time dedicated to hands-on activities at an incubator farm at each site. There were 67 participants in the classes that were divided between the two locations. Because of COVID, the classes were held twice a week with the groups divided in half to allow for social distancing during hands-on activities. The participants attended 18 classes over an eight-month period that included instruction in crop planning, soil sampling, soil health, crop planning, irrigation, weed management, pest management, marketing, recordkeeping, successional planting, harvesting, on-farm food safety, post-harvest handling, and season extension. Within the classes, space was provided for 20 participants to have a plot between the two incubator sites to provide real-world experience in vegetable production and marketing. The beginning farmer programs in Montgomery County provided an opportunity to pilot test a beginning farmer curriculum. Evaluations were given at the end of each class to provide feedback on the presentations and activities. The farmers increased knowledge in the following topics: crop planning, soil sampling, soil health, crop planning, irrigation, weed management, pest management, marketing, recordkeeping, successional planting, harvesting, on-farm food safety, post-harvest handling, and season extension. The farmers also provided detailed feedback regarding the pace of the curriculum, topics covered, questions that came up that needed to be included in the curriculum, and the quality of the presentation materials. This feedback was used to update the curriculum for use in the coming years around the state of Ohio.

### Briefly describe how the broader public benefited from your project's activities.

In Ohio, food insecurities are prominent in both urban and rural areas. The beginning farmer program provides an opportunity to develop a local food system in these areas. The curriculum developed through the beginning farmer program will provide a framework for other programs throughout Ohio to help grow local food systems.

### Impact Statement (Optional)

Use this space to talk about the impact that this result had, in layman's terms. Adding comments here will **not** change the content in the highlighted result.

The CESTA/Land Grant Extension in Agriculture and Natural Resources at Central State University focuses on education and outreach for limited resource farmers, socially disadvantaged populations and military veterans. In FY 2021, ten programs were held with over 500 participants and in the latter part of the year when COVID prevented in-person meetings, five virtual programs were viewed by over 350 people. Highlights include forestry outreach and programming including work to start a chapter of Women Owning Woodlands in the Appalachian region of Ohio.

In FY 2021, seven agriculture and natural resources educators were hired to work in four regions in Ohio conducting programming on agriculture and natural resources topics including beginning farmer programs, fruit and vegetable production, agroforestry, forage management, farm planning and recordkeeping, organic production, integrated pest management and more. With the additional staff, programming increased to over 150 programs, both virtual and in-person, with more than 1,000 participants through programs, presentations, videos, and technical support. Notable programs included a year-long, beginning farmer with incubator farms at two urban locations that trained over 50 new farmers on intensive vegetable production. The program included weekly classroom instruction coupled with incubator farms to give participants hands-on experience.

Critical Issue

# CSU - Engaging Communities and Transforming Lives

## Fresh Start-Record Sealing Clinics

Project Director
Mark Rendleman
Organization
Central State University
Accession Number
7002661

Year 1

### In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Building Families and Communities- a FCS priority addressed childhood obesity, family resilience, financial readiness, health, hunger, and environmental degradation. Addressing these through research and programming focused on human nutrition, food and non- food products, food safety, hospitality/recreation, health, and financial education are planned.

### Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Fresh Start-Record Sealing Clinics: people's past criminal records have prevented them from access to educational, viable employment, and affordable housing opportunities despite serving the terms of the infraction. This has harmed the quality of life of individuals and their families. Many people do not even know that they are eligible to get their records sealed. This program seeks to educate the community on record sealing options. We collaborate with the local justice systems, county offices of reentry, and other community partners to host clinics where individuals learn about their record sealing eligibility and other options such as Certificate of Qualified Employment (CQE) and record expungement. Once eligibility is determined, the individual is guided through the process of filing the paperwork and getting a court date to get their records sealed. The individuals are then connected to both Extension resources and other resource partners' programs and services.

### Briefly describe how your target audience benefited from your project's activities.

Results of the Record Sealing Program: a targeted small record sealing clinic was conducted focusing on college-age students, trades training program participants, and community college students in Greene and Montgomery Counties. A total of 43 people were registered. Ten people were ineligible because they were still paying their fines or didn't meet to the time-lapse criteria. Seven people were ineligible for record sealing but were scheduled to work with the Montgomery County Office of Reentry, three did not show up for their appointment, and the remaining 23 were able to get their records sealed.

### Briefly describe how the broader public benefited from your project's activities.

Having access to affordable housing, employment with livable wages, and additional educational opportunities makes for viable and thriving communities. It also enables an individual and their families to increase self-sufficiency.

### Impact Statement (Optional)

Use this space to talk about the impact that this result had, in layman's terms. Adding comments here will **not** change the content in the highlighted result.

Impacting the Incarcerated

Assisting Ohio County services and Correctional services across the state of Ohio, we have provided several programs to design and tailor our educational programs to provide effective re-entry of clients into the general population. These programs include:

- High School Equivalency (HSE) Preparation
- Fresh Start-Record Sealing Clinics

- Enter to Entrepreneurship
- Business Ready - Set – Grow

Our services are being utilized in Montgomery and Richland County Re-entry programing to 74 participants in which they learned about:

- Academic High School Content
- Leadership
- Self-esteem
- Determination
- Time management
- Professionalism
- Small business development and management
- Life & workforce skills
- Financial Literacy

CSU-extension served as a business development subject matter expert for the returning citizens (ex-offenders) through virtual classes to give participants business basics, networking strategies, and help them to develop a pitch for their potential future business. Worked through the record sealing and driver license reinstatement clinic plans with record expungement.

Our success story explains how three (3) budding entrepreneurs who completed this program series presented their business pitches to a panel of judges and community stakeholders. Other program partners included the Dayton Chamber of Commerce, Dayton Human Relations Commission, and the Montgomery County Office of Reentry.

Critical Issue

## CSU - Food Nutrition and Health Sytems

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**Diabetes Empowerment Education Program (DEEP)**

Project Director
Renita Porter
Organization
Central State University
Accession Number
7002651

**Year 1**

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**In 2-3 sentences, briefly describe the issue or problem that your project addresses.**

The health of individuals and overall populations encompass many factors: behavioral, economic, environmental, cultural, educational, and genetic. Diet and nutrition are important to overall health. Diseases related to obesity, sedentary lifestyles, nutrient deficiencies, and food insecurity, are major dietary health concerns in the United States. CSU seeks to expand knowledge of the factors affecting health-particularly those of historically underserved populations. For example, because underserved populations o en lack access to nutrient-dense foods, CSU aims to develop novel or enhance existing methods of food production to ensure a sustainable and accessible supply of affordable, safe food and have direct impacts on sustainability efforts, agricultural economy, and human health. Studies will focus on the prevention and/or reduction of chronic diseases invulnerable and underserved populations. Extension programs in FCS will cover human nutrition, disease abatement through nutrition and exercise, cooking methods, and individual/family mental health.

**Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.**

CSUE has implemented the Diabetes Empowerment Education Program (DEEP) in Ohio. The number of people diagnosed with diabetes in the United States has reached dramatic proportions in the last decades. The Centers for Disease Control and Prevention (CDC) estimate that about 29 million people in the U.S. have diabetes, of which 8.1 million are undiagnosed. This means that almost one in 11 people have the disease and one in four do not know it. Approximately 86 million adults have pre-diabetes, and 90% of them remain without a diagnosis. The number of new cases of diabetes tends to be higher among older adults. However, in the last decades, an increase in new cases has been observed in all age groups. Diabetes is the seventh leading cause of death and the leading cause of cardiovascular disease, stroke, blindness, kidney disease, and amputations of the lower extremities. Diabetes risk factors and complications are strongly related to obesity, sedentary lifestyles, and eating habits. More than 80% of the population with type 2 diabetes is overweight or obese. CSUE's DEEP includes topics such as diabetes risk factors, diabetes complications, foot care, meal planning and healthy eating, stress management techniques including physical activity, medications, and self-health monitoring. This program has demonstrated that weight loss and physical activity can prevent or delay diabetes and its complications.

**Briefly describe how your target audience benefited from your project's activities.**

Results from the DEEP program: A total of 10 DEEP programs were implemented resulting in 100 participants (77% female) that graduated and obtained certificates of completion for attending all seven, 2-hour sessions. Program topics included selfmanagement for the prevention of prediabetes, diabetes, and the prevention of complications due to unmanaged diabetes including meal planning, lifestyle changes, increasing physical activity, self-monitoring techniques, risk factors mitigation, "layperson" language for relatable learning, and stress management. The program coordinates activities, resources, journaling, discussion, and presentations for participants to apply the evidence-based education program to their lives and help others better understand the illness.

Success story: one participant was a 29-year-old mother of two children who had extremely high blood pressure and unmanaged diabetes with a fasting blood glucose of 350. She did not have health insurance or any other public assistance. She participated in weekly classes with her extended family of 8 people who lived in the same house. She set goals at the beginning of the program to lose weight, make better food choices, apply for assistance, and get diabetes under control. By the 8th DEEP session, she and her children received public assistance and health insurance, they all had health check-ups, and she received medical advice and medications to help with the management of diabetes and high blood pressure. The family was planning menus and grocery lists that benefited the health and well-being of everyone in the household and they reduced the number of high processes, low-nutrient foods coming into the house and reduced eating at fast-food restaurants. All the members of the family increased their physical activity by walking more and using the community center close to the house. Comparing the pre-test to the post-test results for the participant, there was not much difference because she scored high on the pre-test with an 8 out of 10. As a result of the DEEP program, she reduced her blood glucose to being under 200 and her blood pressure was in the normal range for her condition. DEEP helped this participant and her family make significant lifestyle changes and improve their overall quality of life. Based on these and other observations, it was noted that the issues that DEEP addressed was not necessarily learning about diabetes but giving people the tools to make practical lifestyle changes to control diabetes.

Some comments from the participant evaluations of the DEEP include:

"I exercised for 20 minutes this week and did not get a McDonald's sweet tea." Or "I went to the grocery this week and got healthy snacks and made healthy recipes for dinner."

"The classes are making me more alert of what to watch for in myself and what to look for in others."

"Since learning about the difference between hypo and hyperglycemia, I am using my glucose monitor every day and the right way."

"I liked when we had to create our menus for lunch and dinner. It made me think ahead for healthy food and save money."

**Briefly describe how the broader public benefited from your project's activities.**

Impacts from the DEEP program: the statistic from the CDC indicates that 1 in 10 Americans have diabetes and more than 1 in 3 American adults are pre-diabetic. Comments from DEEP participants, who started the classes but did not complete them, showed that some are still unready to face the facts and change their habits. However, overall, community members had increased knowledge about diabetes. Given the reports regarding ambulance runs involving glucose numbers and Diabetesrelated issues, there is a need for additional DEEP programming.

## Impact Statement (Optional)

Use this space to talk about the impact that this result had, in layman's terms. Adding comments here will **not** change the content in the highlighted result.

Diabetes is one of the leading causes of death across Ohio. The Diabetes Empowerment Education Program targets adults with prediabetes, diabetes and/or relatives who need information about diabetes self-care. The program empowers participants to take control of their diabetes with improved life skills to prevent future complications. The program has 8 sessions:

1. Understanding the Human Body
2. Understanding Diabetes and its Risk Factors
3. Monitoring Your Body
4. Get Up and Move! Physical Activity and Diabetes
5. Health Management Through Meal Planning
6. Diabetes Complications: Identification and Prevention
7. Learning about Medications and Medical Care
8. Living with Diabetes: Mobilizing Family and Friends

The series is presented face to face with a short survey about knowledge gained a er each class, 8 programs were delivered in FY2020 & 2021, reaching 98 participants (52% African Americans, 79% Females, and spread out throughout the state of Ohio). From our DEEP workshop evaluations, we were able to impact the lifestyles of the participants through:

1. Checking their own blood sugar levels more o en
2. Exercising more
3. Drink more water
4. Eat less sugar daily
5. Take recommended medication consistently
6. Reduce the amount of stress in their daily life habits

All (100%) of the DEEP participants had a better knowledge of:

- Diabetes and its risk factors
- Diabetes self-monitoring (blood glucose level, blood pressure, etc.)

- Importance of physical activities
- Importance of reading food labels
- Better meal planning strategies
- Diabetes complications
- Diabetes medications
- Communicating with my healthcare providers
- Managing stress
- Diabetes self-management strategies

A few of the participant comments were:

- “I pray this workshop will be available to more participants more regularly because it is essential.”
- “Thank you, more people need this.”
- “The various scenarios and visuals presented helped me tremendously. I want to thank both instructors and I hope they continue to help others.”