

Farmers Market Conference - \$70,000.00

The University of Oklahoma Health Sciences Center on behalf of the Oklahoma Nutrition Information and Education Project (ONIE) will organize, implement, and evaluate an annual Oklahoma Farmers' Market Conference & Expo in 2019 and 2020. The conference will provide education and outreach opportunities to specialty crop growers, farmers' market managers, community supporters, and Agritourism sites from across the state. The conference will offer presentations in four tracks (producers, market managers, support organizations, Agritourism) on a variety of topics including marketing and social media, accepting SNAP and Senior Farmers' Market Nutrition Program (SFMNP) benefits, growing techniques such as aquaponics or extending the growing season, planning, how to establish or expand a farmers' market or Agritourism site, comply with health regulations, build stronger collaborative networks among specialty crop producers, and improve local economies.

Decontamination Of Produce By Cold Atmospheric Plasma - \$72,621.00

Oklahoma State University will optimize a cold atmospheric plasma (CAP) device for decontamination of foodborne pathogens on produce. Postharvest decontamination treatment is a critical step in reducing food safety risk associated with produce. However, the current decontamination technologies are mostly based on chemical sanitizers (such as chlorine) which not only have limited inactivation efficiency but also consumer a large amount of water. CAP, as a simple dry technology, has the capacity to inactivate microbes including foodborne pathogens on produce with minimum usage of valuable water resource. Our research team has constructed a prototype CAP device and preliminary studies demonstrated its inactivation capability on three major foodborne pathogens. In this study we propose to optimize the device to achieve maximum foodborne pathogen inactivation on produce. The specific objectives are 1) to assess the impact of electrode arrangements and dielectric materials on the inactivation of *Salmonella enterica* (model foodborne pathogen) on in-shell pecans (model produce); 2) to investigate the influence of power input and related operational parameters on the inactivation of the pathogen on pecans. The optimized CAP device could be scaled down/up to fit small, medium, and large produce processing settings.

Assessing Pecan Oil For Nutritional Potency In Oklahoma - \$83,099.00

Scientists at Oklahoma State University will team with pecan production experts at the Noble Research Institute in Ardmore to document the nutritional potency of pecans produced throughout Oklahoma. Identical pecan varieties will be harvested from northeast (Afton), northwest (Cherokee), northcentral (Cleveland), southeast (Idabel) and southcentral (Ardmore) Oklahoma to determine whether nutritionally vital phytochemicals in the oil (fatty acids, tocopherols, phytosterols and squalene) vary for pecans produced across the state. Since the majority of pecans produced in Oklahoma are from native populations of trees, the investigators will also sample populations from northeast (Afton), southeast (Idabel) and southcentral (Ardmore) Oklahoma to determine natural variability in these important oil phytochemicals. Two commercially viable oil extraction technologies will be tested for their ability to maintain oil

nutritional potency. The pecan genetic resource, grown at the best location and using the best extraction technology could have enhanced use to improve diets for diabetics and protect skin from damaging UV radiation, among the many other benefits of pecans and pecan oil in our daily diet. Results will be extended to stakeholders on-farm and at a grower conference.

Developing Traffic Tolerant Turf Bermudagrass For Sports Fields In Oklahoma - \$91,600.00

Oklahoma State University will develop improved turf bermudagrasses for athletic fields by evaluating traffic tolerance in a large set of 350 experimental turf bermudagrasses that were bred and selected in the last 10 years. Bermudagrass (*Cynodon* spp.) is the most extensively used turfgrass in sports fields in Oklahoma and other southern states due to its traffic tolerance and exceptional recuperative potential relative to other turfgrasses. The turf bermudagrass development program at Oklahoma State University has bred and selected 350 advanced genotypes for turf quality and adaptation from more than 50,000 plants in numerous field trials. However, traffic tolerance of the advanced selections has not been evaluated yet. In this proposed project, we will evaluate traffic tolerance and related turf performance parameters in a replicated field trial under simulated traffic stress in response to stakeholders' requests. Our major goal is to select one or a few genotypes that have traffic tolerance superior to commercial standard cultivars. Ultimately, a superior traffic tolerant bermudagrass developed in the project will produce a higher quality and safer turf surface for sports fields used by students in schools and other athletes in professional organizations while reducing maintenance costs and increasing sustainability of athletic fields.

Tomato Production In Greenhouse, High Tunnel And Field Along With Quality Analysis For Local Fresh Market Production - \$99,130.00

As interest in local year round fresh market crops continues to increase, other alternative crops need to be investigated and improved upon to allow growers to diversify and expand into new markets. Research at Oklahoma State University and Langston University will evaluate tomato production in three different growing systems to compare yield and quality to support local market production. Field production of tomatoes still dominates the market; however use of season extending production systems like greenhouses and high tunnels is increasing to meet market demands of readily available tasteful tomatoes. Both greenhouse and high tunnel production is thought to improve yields and nutritional quality with less inputs compared to field production by allowing growers to avoid Oklahoma's unpredictable weather. This research will evaluate at least two cultivars of two different types of tomato (slicing and cherry) using similar cultivars adapted to each system.

Identification Of Factors Affecting Sod Tensile Strength And Wear Tolerance Of Warm-Season Turfgrass - \$62,966.00

Researchers at Oklahoma State University will identify the morphological and physiological characters associated with wear tolerance and tensile strength of sod. Ten experimental and commercial cultivars of bermudagrass and zoysiagrass will be tested for wear tolerance and tensile strength using standard methods. The same grasses will then be evaluated for morphological and physiological features that are suspected to contribute to sod tensile strength in selected cultivars. These findings will be used by the OSU turfgrass breeder to reliably predict and select for wear tolerance or high tensile strength sod. Ultimately, the enhanced selection efficiency will lead to improved cultivars reaching Oklahoma producers and consumers.

Increasing Pecan Consumption Through Value-Added Product Development - \$50,666.00

Scientists at Oklahoma State University will investigate the value-added processing of pecans grown and shelled in the state of Oklahoma. The annual pecan production in the state is over 16 million pounds (10-year average production). Despite the large production, the value-added processing of pecans in the state is not well developed. The long term goal of this project is to develop an integrated and sustainable pecan processing system that will produce high-value health beneficial functional foods, cosmetics, and food and industrial ingredients that can be used to improve food safety and quality. To achieve this goal, extraction processes will be designed and optimized and their efficiency to produce extracts enriched in bioactive compounds from various parts of pecan nuts will be examined. Furthermore, antioxidant capacity of these extracts and their effects on common food pathogens and human cancer cells will be tested. The successful completion of this project will benefit farmers and processors in Oklahoma by enhancing the competitiveness of their specialty crop, pecans, through increased consumer usage by providing natural health beneficial and safe food products.

U can U-pick! Resources for producers considering starting a u-pick operation - \$22,400.00

The Oklahoma Agritourism program will undertake a project to help specialty crop producers understand the benefits, risks and best practices involved in operating a u-pick farm. This project will create an educational binder for producers that outlines facts about the most popular u-pick crops in Oklahoma in order to aide in researching and setting up their u-pick operation. This project will also enlist successful Oklahoma u-pick producers to participate in educational videos showcasing best practices in use on their farm. These videos will be aggregated and promoted to potential producers on the Oklahoma Agritourism producer website and YouTube channel.

Farm to School “Back at the Table” Conference and Tour - \$27,964.00

Oklahoma Farm to School will hold a “Back at the Table” Training Conference and traveling tour in 2019 and 2020 for local farmers, producers, Child Nutrition Directors, Food Service Personnel and educators who are interested in serving Specialty Crops in their school lunches. These conferences and tours will allow producers to network with Child Nutrition Directors near them who would like to purchase and serve specialty crops in their school. These will be two day

conferences. The first day will be spent in a conference location attending sessions. The second day will be a traveling conference to tour specialty crop gardens and Farmers Markets.