**Assessing Vegetable Grafting For Tomato, Pepper And Watermelon Production In Oklahoma**
**$86,690.00**

Grafting is regarded as an emerging and must-test technology for the U.S. vegetable industry. The usage of grafted vegetables in Oklahoma is at its earliest stages due to the lack of research-extension-teaching programs on vegetable grafting. Grafting has the potential to benefit Oklahoma vegetable growers through better biotic and abiotic management, enhancing crop vigor, lengthening harvest window, increasing total seasonal yield, improving heirloom variety performance, and creating a potential source of income by preparing and supplying grafted plants. Scientists at Oklahoma State University's Horticulture and L.A. Department will assess the potential benefits of grafting on vegetable production in local conditions in Oklahoma. Tomato, pepper, and watermelon, which are important vegetables in Oklahoma and the most commonly grafted vegetables globally, will be included. Two grafting rootstock-scion combinations representing the locally preferred fruiting variety and production challenges will be investigated for each crop at OSU. On-farm trials will be carried out to directly demonstrate the effects of research efforts and develop partnerships with growers and industry of grafted vegetable propagators. Research-derived information will be transferred to vegetable growers and propagators through our outreach plan. With our research and extension efforts through this project, we will evaluate the benefits of grafting for vegetable production, increase awareness of this potential practice, facilitate the adoption of grafting, and eventually sustain and enhance vegetable production in Oklahoma.

**Backyard Demonstration Garden**
**$37,722.00**

Oklahoma State University Department of Horticulture and Landscape Architecture is establishing a Backyard Demonstration Garden that will be open to the public at The Botanic Garden at Oklahoma State University, located just west of the main campus in Stillwater, Oklahoma. This educational garden will feature two 40x40 foot backyards demonstrating how Oklahomans can produce food in their own backyard, no matter the size. Various styles of raised beds will show homeowners options to help customize a garden for their needs. The hobby-sized greenhouse and hoophouse will further exhibit how to grow in a backyard with season extension. Signage, field days, and guided tours will be available throughout the growing season. This demonstration garden will also provide multiple opportunities for filming "Oklahoma Gardening" which airs weekly throughout the state of Oklahoma on OETA and OETA-WORLD.

**Management Of Potyviruses Infecting Cucurbits In Oklahoma**
**$92,689.00**

This project at The University of Tulsa focuses on cucurbit viruses to determine the complete genomes of three important and dominant potyviruses infecting cucurbits in Oklahoma and to find resistant varieties against these viruses to reduce the yield losses and increase cultivation and production of cucurbits. In Oklahoma, cucurbits (cucumber, melon, pumpkin, squash and watermelon) are grown on more than 734 farms with an acreage of 5,000 acres and they

contribute approximately 2 million dollars per year to the state economy. For the last several years, virus diseases have severely affected the production of cucurbit crops (both quality and quantity), causing the reduction of cultivated acreage. The main objectives of this project are to evaluate genetic diversity among the three potyviruses by sequencing their complete genomes from selected counties in Oklahoma and determining sources of resistance against these viruses. Currently, we have limited information on resistant varieties against these viruses in Oklahoma. At the end of this project, we will be able to have a list of cucurbit varieties that are resistant or susceptible against these viruses, so growers can have the choice to choose the best variety for cultivation. The information obtained in this project will be beneficial for cucurbit growers in future integrated pest management strategies. Thus, the annual losses caused by these viruses in cucurbit crops can be minimized and growers will be able to sustain or even increase cucurbit production in Oklahoma.

**Colored Shade Netting Evaluations For Improving Production And Quality Of Cut Flowers And Vegetables**
**$75,034.00**

As input costs continue to increase, growers are looking for simple solutions to increase production or plant quality without having to make big changes to their production. Research at Oklahoma State University will evaluate colored shade cloth for both hydroponic vegetable production and for cut flower production to compare yield and quality to support local market production. To control heat during the summertime, growers use black shade netting to cool the greenhouse. Knowing that plants respond to specific wavelengths, colored shade netting technology has begun to emerge but is not widely tested in the U.S. despite other countries reporting longer stems, improved yield, and more compact plants depending on the species and shade netting color used. This research will evaluate four different species response to three different colored shade nettings. Quantitative growth, nutrient, and postharvest analysis will be used to determine growth and quality characteristics to make a recommendation on the value of adapting an already common method used in production of the crops. Outcomes include providing information on which shade netting color could be used to increase production efficiency in terms of growth and postharvest quality. Information will be provided to stakeholders through a factsheet, journal publication, site visits, and word of mouth of those supporting growers that will do on farm evaluations too. Tasks to be completed include installing the colored shade netting, setting up hydroponic tables, growing plants, data collection on growth parameters, nutrient analysis, postharvest quality, and disseminating results.

**Preparing Oklahoma Pecan Processor For FSMA And Third-Party Audit Through Research And Technical Assistance**
**$69,177.00**

Researchers at Oklahoma State University (OSU) will identify and optimize low temperatures and sanitizer based in-shell pecan sanitation methods to improve the microbial safety of pecans. The impact of the newly developed methods on the quality of treated pecans' color, texture, and water activity will also be analyzed. Food safety modernization act (FSMA) and non-regulatory third-party audits require that pecan shellers develop a food safety plan with a validated strategy to control food safety risks. The project team will develop model food safety plans using newly

developed antimicrobial treatments to assist owners and operators of small and medium-sized processors, including beginning socially disadvantaged pecan processors to comply with FSMA and third-party audit requirements.

**Farmers Market Agritourism Conference**
**$84,451.00**

The Oklahoma Department of Agriculture, Food and Forestry (ODAFF) will undertake a project to assist members of the specialty crop supply chain incorporate innovative and sustainable growing practices, learn new marketing techniques and connect with consumers more effectively. This project will culminate in a gathering of growers, market managers, venue owners and supporting partners in February of 2021 and 2022. The conference will focus on technical assistance for growers, marketing of products and venues, utilizing incentives such as the Supplemental Nutritional Assistance Program (SNAP), and educating consumers about specialty crops. ODAFF will enlist the help of the Oklahoma Nutrition Information and Education Project (ONIE) to identify a group of stakeholders representing the broad spectrum of the specialty crop supply chain in Oklahoma. This group of stakeholders will give guidance as to which topics and presenters are to be featured at the conference as well as to the additional educational activities surrounding the conference.

**"You-Pick An Ag-Tivity" Specialty Crop Education Activity Sheets For Oklahoma Agritourism Venue Visitors**
**$51,150.00**

Oklahoma Ag in the Classroom, Oklahoma Agritourism, and Oklahoma Farmer's Markets will create four "You-Pick an AG-tivity" Specialty Crop Education Activity Sheets for Oklahoma Agritourism Venue Visitors. These sheets will be distributed to the Oklahoma Agritourism Berry Farms, Pumpkin Patches, Christmas Tree Farms, and Peach Orchards to give to visitors to their farms. They will also be available to Oklahoma Farmer's Markets to give to consumers as they purchase these specialty crops. These activity sheets will promote the consumption of berries and peaches grown in Oklahoma and will educate families about the nutritional benefits of consuming them. They will also educate families about pumpkins and Christmas trees. The activity sheets will include pictures of the product to help students identify the products, nutritional/educational information and puzzles/activities to reinforce the information, recipes for the berries and peaches, and conversation starters with questions to ask the producer. The activity sheets will be printed front and back, in full color and packaged together in sets of 100.

**Let's Get Growing With A School Garden**
**$45,484.50**

The Oklahoma Department of Agriculture, Food & Forestry's Farm to School program will partner with three public schools and two Early Childhood Education programs to create and provide financial, technical and educational support for a school garden. The purpose of school gardens is to promote healthier eating and better learning. The school garden incorporates hands-on learning for students in all grade levels. Hands-on learning provides students with the know

how to apply their lessons to real life situations. When paired with a school garden program, students are more likely to prefer and consume more fruits and vegetables. With resources from Ag in the Classroom, teachers and garden educators will be able to help students gain a better understanding of not only where their food comes from but, also how to make healthier food choices.