

Center for Agricultural and Rural Sustainability

Faculty Spotlight

December, 2014

M. Elena Garcia

Title: Extension Fruit and Nut Specialist

Project Title: High tunnel strawberry production for season extension

Collaborators: Donn Johnson, Mike Evans, German Rodriguez, Kristen Gibson

Project Timeline: through June 2015

Project goal: The goal of this project is to provide Arkansas strawberry growers with the skills and resources necessary to advance and extend strawberry production.

Tools Used: high tunnels, insect netting, row cover, foliar nitrogen testing, weather stations, scales, refractometer, auto-titrator

Project Description: For the past 5 years Dr. Garcia has been investigating and extending information on season extension of strawberries using high tunnel technology. Strawberries are planted in the early fall and can begin harvesting as early as late November in the high tunnel. Depending on the winter weather, plants can continue to flower and fruit through spring. However, if weather conditions are severe plants will remain in a quiescent period until late winter when they begin to flower and fruit continuously until June. Peak production in high tunnels occurs approximately a four to six weeks earlier than field production. Growers can use high tunnels to compliment field production by entering markets earlier. Total yields in the high tunnel can often be higher than field production (30-35,000 lb/ ac compared to 20-25,000 per acre) and berries are larger, sweeter and are of higher quality. Following harvest, Garcia plants cover crops as alternatives to fumigation, to replenish soil nutrients and add organic matter.



Despite the benefits of high tunnel production, there are some challenges to production. Pest pressures change in the high tunnel and management strategies differ than field production. Mites and aphid pressures can increase and are influenced by cultivar and foliar nitrogen levels. Crickets and mice feeding on ripe fruit can also be problematic. Garcia and her collaborators are investigating these issues as well. Weather also plays an important role in high tunnel production. For most of the winter, strawberry plants thrive under the warm to cool

temperatures of the high tunnel. However extra measures must be taken for periodic extreme weather events. In December 2013, during the record setting temperatures of the polar vortex, plants stayed well above freezing due to 4" black tube that served as a heat sink, and layers of row cover, straw and plastic.



As part of the 2013 National Strawberry Sustainability Initiative, Garcia worked with German Rodriguez to develop and interactive strawberry budget for growers, Kristen Gibson on food safety issues, Mike Evans on hydroponic production and Donn Johnson on insect pest management issues. Information gained through this project has been extended to growers, Extension agents, student and other agricultural professionals through trainings, workshops, field days, and a [YouTube channel](#).

Funding: Garcia's high tunnel research and outreach has been supported through grants from Arkansas Agriculture Department (Specialty Crop Block grant), two National Strawberry Sustainability Initiative grant (2013, 2014), North America Strawberry Growers Association, and the Southern Region Small Fruit Consortium.

More info: Project YouTube: <https://www.youtube.com/user/revitalizingstrawber>

Project Photos: <http://nssi.smugmug.com/Projects/Elena-Garcia-Arkansas>

Project profile: [Moving the Needle: Accomplishments of the National Strawberry Sustainability Initiative 2013 – 2014](#), pp 13-14