



This research presents an effective alternative to costlier forms of season extension for one of N.C.'s most popular crops, organic strawberries, allowing N.C. small farmers to harvest the profits of a year-long growing season.

Organic Production of Off-Season, Day-Neutral Strawberries Using Low and High Tunnels in N.C.

Who cares and why?

Organic strawberries, the most widely distributed organic produce item in the country, are a profitable crop for N.C. small farmers. However, in North Carolina, the organic strawberry industry has a highly centralized four to six month harvest window, starting from late April. The industry is also almost entirely based on small to medium-sized farms, which cannot afford to use greenhouses to extend the harvest season. This research analyzes the feasibility of using low tunnels inside high tunnels as a less expensive, but efficient, tool for small farmers to use, along with planting a type of strawberry capable of producing continuously, which would extend the harvest season from November to June, substantially increasing the farmers' income. More than 72 farmers and extension agents have participated so far in sessions explaining this method.

This method is also ideal for an organic system, as cover crops can be planted in summer to meet the recommended organic soil fertility management requirements. Extending the season this way also helps consumers, who can continue to benefit from strawberries' nutritive qualities in the off-season.

N.C. A&T Extension is the only place in the state with active research projects in high and low tunnels. Farmers depend on this research for their season-extension practices and can apply this research to other small-fruit and vegetable-growing endeavors.

What has the project done so far?

Researchers raised and transplanted strawberry plants into a low/high-tunnel system at the end of October, when temperatures fell below 50 degrees at night. By checking the plants and monitoring temperatures, they were able to prove the feasibility of producing high-quality strawberries for winter markets using plastic tunnels and appropriate strawberry varieties. Also, the researchers were able to identify the climate characteristics inside the tunnels that would be of the most benefit to farmers in season extension, and improve farmers' understanding of the physiology of the ideal plant variety for this method, the day-neutral cultivar.



Impact Statement

North Carolina ranks third in the U.S. in strawberry production. Organic strawberries are a profitable crop for N.C. farmers, but they often face challenges from a shorter-than-ideal growing season and price drops from product saturation at the peak harvest. Small farmers' profits can be substantially increased by growing the popular berries using a low tunnel inside a high tunnel; a 30'x96' (2880 ft²) high tunnel would have a profit potential of \$11,232 to \$14,112. Switching the variety of plant grown, also, would help extend the harvest season from November to June. This system also benefits organic agriculture in N.C., as cover crops can be planted in summer to increase soil fertility, and gives consumers a longer access to healthy, organic strawberries, which also enhances local economies.

What research is needed?

The next steps for the project are to continue to study later-planted winter strawberries in low/high-tunnel, day-neutral strawberry fertility, and to disseminate the information to interested communities through professional and grower-based conferences, field days and workshops, including for the N.C. Strawberry Growers Association. USDA NIFA OREI grant and SARE Research and Education grant will be sought out.

Want to know more?

Dr. Sanjun Gu, (336)-285-4954, sgu@ncat.edu

This research was funded by the Evans Allen Grant, Accession # 1006717, within USDA's National Institute of Food and Agriculture (NIFA). The project addresses the NIFA knowledge areas (202) Plant product quality and utility (Preharvest); and (205) Plant management system.