

Terry Nennich knew he was onto something as he trekked through the lush flatlands of Normandy, France, in the summer of 1999. The Extension educator from Crookston, had come to study fruit and vegetable practices and stumbled upon horticulture’s version of a French revolution. The region’s miniature, greenhouse-like huts—known as high tunnels—blanketed the countryside. Inside, the plants were thriving; the cool spring weather wasn’t an issue. A light bulb went on for Nennich, comparing everything he saw to his home climate. One might say his French discovery kick-started the high tunnel phenomenon in Minnesota.

High tunnel craze feeds farmers’ markets

Extension works to improve Minnesota’s fruit and vegetable production

High tunnels, also called high hoops or hoop houses, are temporary structures that extend the growing season. The plastic-covered garden structures allow growers to roll sidewalls up and down for ventilation and frost protection. Because the system is enclosed, no rainfall enters the tunnel. Growers place plants directly into the soil and water them with small irrigation tubes under the plastic.

Nennich saw how enthusiastic the French were about this growing system. Fruit and vegetable growers now had a longer growing season; yields were two to three times the size of conventional gardens; and consumer demand for these home-grown goods, a month earlier than usual, added extra clout to what growers could charge. In addition, the protective walls greatly reduced the need for pesticides, or eliminated the need altogether, and new and different crops could be added to the mix.

“If it weren’t for Terry, we would not have been able to do this,” said Eldon Voigt, who, along with his wife, Melissa, grows blueberries, onions, cucumbers, tomatoes and peppers on the couple’s farm, Elm Tree Fruit Farm, LLC, in International Falls.

In 2004, the pioneer from the “Icebox of the Nation” first worked with Nennich to learn how to grow tomatoes in high tunnels. Today, Voigt sells at a roadside stand and to a local deli. However, he is most enthusiastic about a new project he and his neighbors have organized.

Extension engineer Jerry Wright (left), horticulture educator Terry Nennich and soil scientist Carl Rosen (front) are part of a team of University researchers and educators working to improve Minnesota’s fruit and vegetable production, making a difference in the state’s farmers’ markets.





There are more than 100 active farmers' markets in Minnesota today, twice as many as four years ago.

"We've started a community farmers' market with 10 vendors," Voigt said. In late June, their community market officially opened, selling locally produced goods Saturday mornings in the lots outside Backus Community Center in International Falls.

High tunnels didn't spring up in Minnesota overnight. Three years of collaborative research by Nennich, Extension soil scientist Carl Rosen, engineer Jerry Wright and retired research horticulturist Dave Wildung, as well as on-farm research, helped lay a solid foundation. Then in 2004, Nennich and co-

authors finished the University's manual on growing in high tunnels. There are an estimated 150 high tunnels in use throughout the state, according to the group.

As the tunnel craze spread in the Gopher State, the number of farmers' markets also began to climb. Today, there are well over 100 active farmers' markets in Minnesota.

"Working with Terry and the U has really changed everything for us," Voigt said. "I didn't even see myself getting into farming, much less starting a community market."



Eldon Voigt sells his produce at a new community market in International Falls, the "Icebox of the Nation."

For more information on commercial vegetable and fruit production in Minnesota, see www.extension.umn.edu/Vegetable&Fruit

On-farm research provides key to growers' success

Conducting University research on local growers' farms gives Extension soil scientist Carl Rosen and engineer Jerry Wright the best scenario for studying high tunnels in action.

The U's Central Region Sustainable Development Partnership funds the research.

Dallas and Mary Flynn of Frazee monitor a high tunnel and participate in the U's on-farm research. In exchange, the University monitors the tomatoes and cucumbers grown in their tunnel, analyzing plant tissue, as well as soil composition, moisture and temperature.



Dallas and Mary Flynn, owners of Forest Glen Farm in Frazee, grow fresh produce in a high tunnel that is monitored by University researchers.

Due to the high yields in tunnels, soil is depleted of nutrients much more rapidly and in higher quantity than in field-grown crops. Rosen and his group analyze data, such as how much nitrogen and potassium is taken up in the fruit. They also study the benefits of adding soil amendments such as compost before planting begins.

"We're trying to develop a nutrient budget," said Rosen. "Things are really progressing. The growers just have so much more confidence in knowing how to manage the crop."

For the Flynns, the biggest challenge has been explaining their growing system to customers. "I bring pictures with me every year because I get the same questions, 'Who do you buy your cucumbers from?'" said Dallas Flynn, who sits on the board of directors for the Minnesota Farmers' Market Association. "The beauty of it is when they find out it's locally produced by me. They love that."