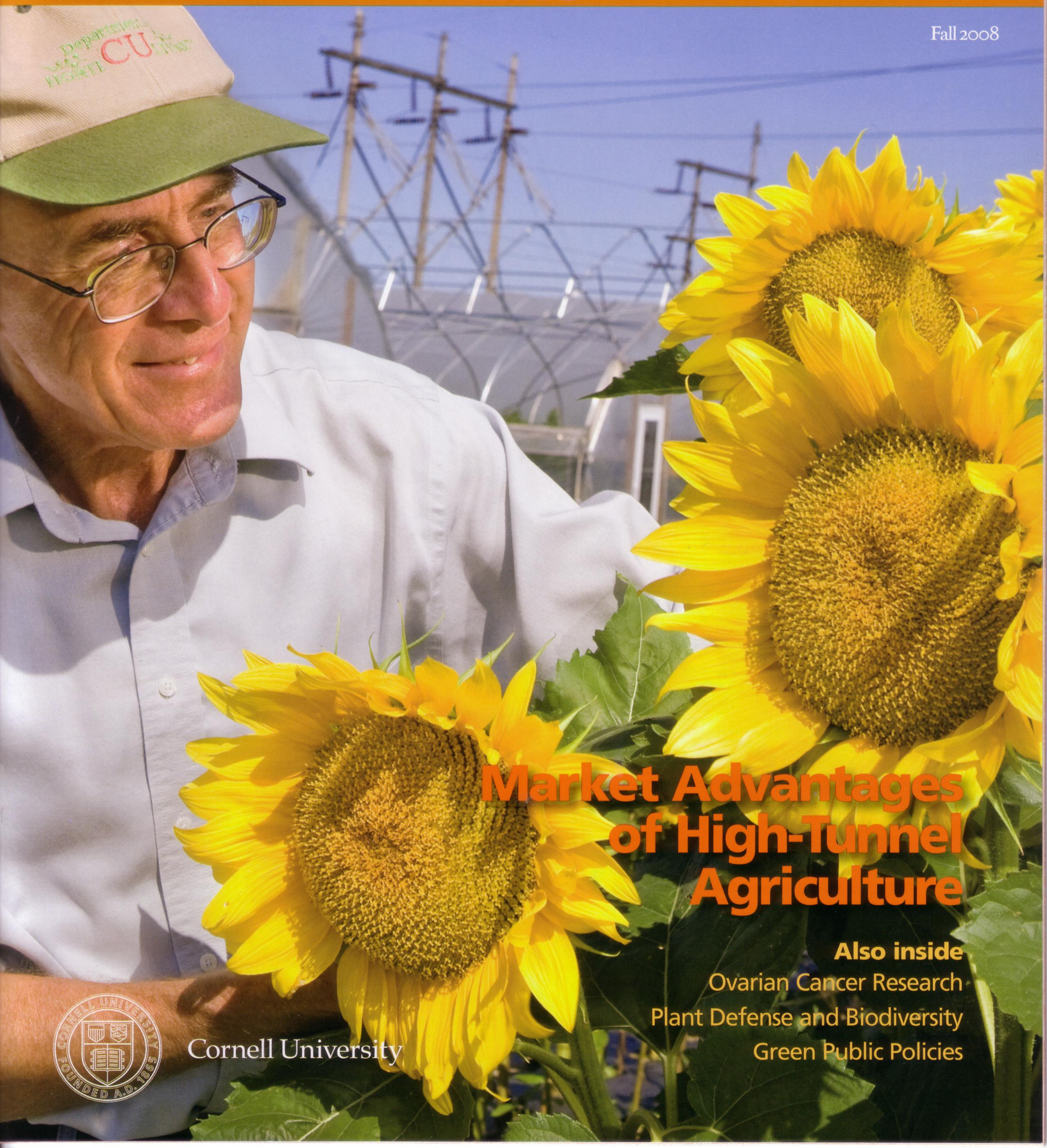


College of Agriculture and Life Sciences

NEWS

Fall 2008



Market Advantages of High-Tunnel Agriculture

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Cornell University



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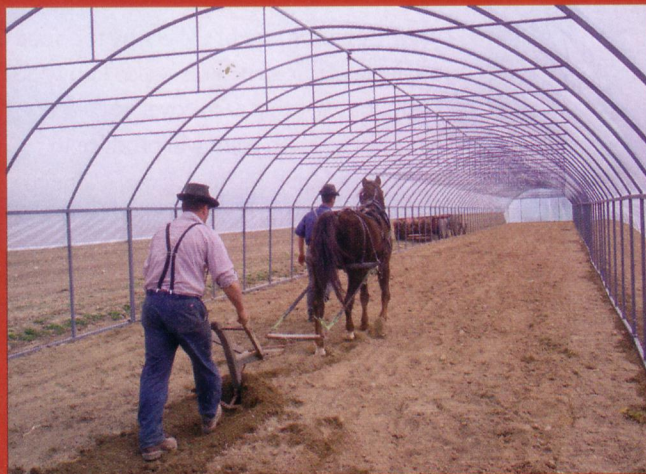


Farmers Find Market Advantages in High Tunnels

Fred Forsburg's tomatoes are perfect, blemish free—tough to do in a certified organic operation where no pesticides, herbicides, or fungicides are used. The secret? He grows all his tomatoes in high tunnels.

BY METTA WINTER

“People eat with their eyes—when we go to market with tomatoes that look like jewels, they flock to them,” says Forsburg of the pink, red, orange, green, yellow, and purple tomatoes (15 heirloom varieties in all) that he grows at Honeyhill Farm in Livonia, New York.



The premium that beauty brings isn't the only market advantage high-tunnel technology offers New York state fruit and vegetable growers. Take what happened in the summer of 2004 when it rained practically every day.

(opposite page) A Mennonite farmer checks the health of his high-tunnel pepper crop. (left) High tunnels are sized to allow in horses or small tractors for tillage.

Old Order Communities in New York State

Howard Hoover put together the design of his first high tunnel in a flash in the middle of the night.

"I didn't have the money to build a proper greenhouse with plumbing, heating, ventilation, foundation, concrete," Hoover explains, "but in my steel shop I could make some hoops and stretch plastic over them to build a place that would be nice and warm on a cold day."

That was six years ago. Today Hoover, a member of the Groffdale Conference Mennonite community who bought his farm in Yates County in the mid 1980s, manufactures and sells tunnels to other Old Order Amish and Mennonite farmers as well as conventional growers scattered across the state.

In the mid 1970s members of the Groffdale Conference began to migrate from Lancaster, Pennsylvania to the Finger Lakes, where they found viable, affordable farm land. Now there are 450 families in the four counties surrounding Penn Yan. Members of the Groffdale Conference operate 90 percent of the 300 dairy farms in Yates County. The thriving Finger Lakes Produce Auction provides them an outlet for fresh market vegetables, putting millions of dollars of new revenue into local communities.

High-tunnel technology is particularly appealing to Old Order farmers because the tunnels require a modest capital investment, are ventilated by rolling up the sides rather than relying on a fan, are movable and thus can leave soil-borne diseases behind, and reduce dependence on chemical inputs. Too, this technology is most profitable when there is an abundant, inexpensive labor pool.

"Clipping and tending the plants is easy work for small children," notes Hoover, who has 10. (The average number of children among families in Old Order communities is 8.) "And since we use no pesticides it's safe for them."

Hoover has been an active participant in the on-farm research that Judson Reid conducts. This past summer they worked together to evaluate grafting tomato plants to increase yield and disease resistance; different trellis systems and types of plastic coverings; and the growing requirements of a novel crop—the three-pound, personal-sized, seedless watermelon. Reid will summarize the data, make recommendations, and share those with other farmers. Hoover and Reid also hosted a field day at the farm, attracting more than 50 growers last year.

Metta Winter



(clockwise from top) Judson Reid inspects tomatoes growing in a high tunnel in Penn Yan, New York. A young Old Order woman trellises her family's tunnel tomato crop. Judson Reid and Leonard Hoover discuss production techniques at the Finger Lakes produce auction.

Forsburg lost 100 percent of the fruit on the 600 plants in his fields. The only tomatoes he had to sell that year were those from plants trellised upward on a length of string and sheltered under a row of high polyurethane-covered hoops.

"We had one tunnel at the time and now we have three, and I'm getting more next year," Forsburg says of the 20- by 100-foot movable plastic structures—also known as hoophouses—that each cover 300 plants. (On average each plant will produce 16 pounds of fruit.) "I'll never grow a tomato outside the tunnel again."

Protection against the vagaries of weather can also mean safety from some devastating losses due to diseases such as the late blight (the pathogenic fungus of Irish Potato Famine fame) that swept through the Northeast in 2004. If Howard Hoover, the owner of a family-operated

vegetable farm in Penn Yan, New York, hadn't already been convinced of the virtues of high-tunnel technology, he certainly was by the end of that July.

"The late blight was so severe that every potato and tomato on our farm died, right up to the edges of the tunnels," says Hoover, who explains that the host plant has to be wet for six hours for the fungus to inoculate it, so those protected from the dew and rain won't develop the disease. "One of the high points of having a tunnel was being able to save those tomatoes without using any chemicals."

There's no question money is to be made when a crop that consumers desire can be grown dependably—and close to home. High tunnels increase a grower's profits because they produce a more beautiful, higher-yielding crop during an expanded growing season.

In the six years since New York growers began adopting high tunnels, it's been tomatoes (heat-loving plants that can be trellised vertically and bear continuously) that have been most commercially successful. At the Finger Lakes Produce Auction in Penn Yan, a 25-pound box of U.S. #1 top-grade tomatoes sells for \$40. During a rainy summer the wholesale price could rise to \$50, while field-grown tomatoes (with their unavoidable cracks and slight blemishes) may bring a grower only \$5.

In New York state, high-tunnel agriculture has taken off at a time when consumers want to buy food raised close to home.

"It's now more profitable than ever to grow food and market it locally," says Hoover. "There's no such thing any more as cheap transportation."

"When tomatoes are ripe at the same time as strawberries it's a good economic position for a farmer to be in—he can sell the tomatoes at a premium because the product will move itself when it's next to

strawberries," explains Judson Reid '97, MPS '04, an extension associate with the Cornell Vegetable Program. First introduced to high tunnels by Hoover, Reid now assists farmers across the state who want to adopt the technology.

"I'll never grow a tomato outside the tunnel again."

—Fred Forsburg

"Active research is being done with growers in their facilities," says Hans C. Wien, MS '67, PhD '71, a professor in the Department of Horticulture, who is the leader of high-tunnel research projects funded through the New York Farm Viability Institute. He explains that all project proposals must be approved by a board of growers. "We want to be sure that there's a sustainable system in place by which high-tunnel technology is easy to come by and there's a knowledgeable

extension staff available to help."

Reid has half a dozen vegetable projects on farms in multiple counties, while Wien, a specialist in cut flowers, and Marvin P. Pritts, professor and chair of the Department of Horticulture and an expert in small fruits, also do some controlled experiments in three tunnels adjacent to campus at the East Ithaca Farm.

In the Northeast, raspberries are a hot commodity, as are sweet cherries. In response to this consumer demand, Pritts summarized the current knowledge on all aspects of production into a booklet, "High-Tunnel Raspberries and Blackberries," available online. Terence Robinson, associate professor of horticultural sciences at the New York State Agricultural Experiment Station in Geneva, NY, has begun to work on cherries in very high tunnels.

Currently Wien is coordinating the high-tunnel work of six extension specialists around the state. These specialists have projects with 11 growers producing high-tunnel

Marvin Pritts evaluates the condition of the Triple Crown thornless blackberries growing in high tunnels at CALS East Ithaca Farm.





Hans C. Wien checks on plants in the high tunnels in Ithaca where he and other researchers grow various varieties of flower and vegetable crops.

Not by Tomatoes Alone

On Wind Flower Farm in Washington County, Jan Blomgren and her husband Ted, MS '00, a graduate student in the college from 1989 to 1991, have 11 high tunnels in which they grow cut flowers (among them stock, godetia, larkspur, snapdragon, delphinium, and lisianthus) and cucumbers, peppers, eggplants, tomatoes, and salad greens for 750 community-supported agriculture (CSA) shareholders in New York City.

Former Extension Agent Zaid Kurdieh has three-and-one-half acres of vegetables and small fruit under tunnels at Norwich Meadow Farms in Chenango County. Kurdieh supplies more than 700 customers through CSAs and green markets in New York City.

"In Ithaca you can get a crop of early sunflowers to market two to three weeks before the competition," Wien says, speaking about the benefits of high tunnels. "That's worth money because it gets customers to say, 'Ah, I got these wonderful sunflowers from you, so I'll keep coming back because you might have other special things!'—so you get a customer all season."

Metta Winter

vegetables, in projects funded by the New York Farm Viability Institute.

In addition to specific experiments in growers' high tunnels, the team is also investigating the most profitable sequence of plantings to keep the tunnels full—and customers coming back to farm stands and markets all season. Crop rotation keeps the ground healthy; early-bearing crops such as cucumbers might perhaps be followed by lettuce or cold-tolerant spinach.

By the winter of 2009, Wien expects to have their findings on a website, with results from two cycles of the studies sponsored by the New York Farm Viability Institute. Economic data gathered by Wen Fei Uva, MPS '03, PhD '99, senior extension associate in applied economics and management, will also be available.

Wien explains: "Growers who might want to pay for a specific type of high tunnel for growing tomatoes, for example, will be able to go to the website and—before

taking any action—find out how many pounds of fruit they'll need to produce, the price they'll need to get for it, when they'll need to first plant, how late to continue harvesting, and more."

The growers are excited—there has been record-breaking attendance at high-tunnel presentations from the North Country to the dairy region of Delaware County.

"Farming is a stressful business, and some things—hail, drought, high winds—you can't do anything about," says Hoover. "The tunnel is one part of my operation where I can feel secure in my chances of a good harvest"

web urls

Cornell Fruit Resources—Berries:
www.fruit.cornell.edu/berry.html

New York Farm Viability Institute:
www.nyfarmviability.org