

says Paul Brown, UA Extension biometeorologist. For example, the 1991-2 winter was one of the warmest on record. The effect?

- Fewer cold nights may have helped the whitefly overwinter;
- Whiteflies were able to reproduce later into the fall and winter and earlier in the spring;
- Host plants survived and supported whitefly populations.

As the UA whitefly team of scientists immediately realized, managing this pest will never be simple. There is no "magic bullet." Each part of the cropping season has its own dangers and precautions for growers.

"Whitefly management, by its very nature, requires an integrated crop management approach," the team concluded in its report to Arizona cotton farmers. "Though chemical control may be the tactic of choice once infestations have reached damaging levels, there are many other tactics and practices that may be employed well before the onset of infestation to maximize the likelihood of producing a successful crop. Our report points out the importance of considering crop and non-crop dynamics outside the cotton field.

"Cooperation among growers, within communities, or over large areas is encouraged and should result in maximum benefits to all concerned."

Willcox Serves Up Tomatoes Under Glass

By Lorraine B. Kingdon

THE GARDEN — A GREENHOUSE SPREAD OVER 10 ACRES — bears no resemblance to the backyard plot producing tomatoes "with real taste" back in the Midwest. But the fresh, huge, juicy, red "Beefsteak" tomatoes from Bonita Nurseries, Inc. near Willcox taste amazingly similar.

They should. Bonita is merely the newest venture for the owner, VHB — Van Heyningen Brothers Ltd. — which has worldwide experience growing tasty fresh tomatoes under glass.

Leo and Wil Van Heyningen, from Bleiswijk, Holland (where their management company is still located) started their first tomato greenhouse in the South Coast area of England in 1963. In the past 30 years, they have expanded to sites in South Africa, Saudi Arabia, the Philippines, China, Japan, East Germany, Portugal, as well as Pennsylvania in the U.S.

In this country, VHB grows primarily for the fresh tomato market on the East Coast, a booming market. "The people in Boston and New York have never seen anything like our tomatoes as far as their taste, high quality and shelf life," said Wil Van Heyningen, VHB president.

Willcox, for its part, has been struggling to solve its own economic problems and welcomed VHB wholeheartedly. "VHB is the most sophisticated agricultural system in all Arizona," says community leader Eddie Browning.

Browning calculates the greenhouse construction in 1992 impacted the local economy by about \$100,000 in the first month alone. The company spent \$7.2 million on the first phase — the 10-acre greenhouse — with more to come as the fresh tomato market increases. The payroll for 34 people, plus management, equals about \$750,000 annually. That figure

does not include about 20 part-time laborers needed during harvest — people who would otherwise be out of work when the apple season ended.

"Don't forget, the greenhouse, and our regional economic development plans, [also] have given us visibility and media attention we badly needed," Browning says.

The story behind the VHB trek to southeastern Arizona involves old friendships, new expertise and the right combination of climate, energy and labor.

"I've known Wil for years," says Merle Jensen, assistant dean for sponsored research at the College of Agriculture. Jensen has many years of experience in greenhouse vegetable production.

"The Van Heyningens are one of the largest, most respected vegetable growers in the world," he says. "Wil came to Arizona a couple of years ago. He told me they were seriously considering building a greenhouse somewhere in Arizona because of the high light conditions. They wanted to grow tomatoes 12 months year-round in the U.S., and Wil asked me to help them find the best location."

So, friendship started the ball rolling. VHB looked at possible greenhouse locations in Nogales, Parker, Safford, Sierra Vista, Yuma — and land between Bonita and Willcox. The company had several criteria:

- Clean, pure water — Bonita gets clean and plentiful water from surrounding mountain ranges;
- Good light — The belt between El Paso and Willcox has the highest light concentration in the United States;
- Ample energy at a competitive cost — A natural gas supply was available in the Willcox area;
- A climate that was not too hot, nor too cold — Willcox

was ideal because its elevation takes the edge off the southern Arizona heat;

- An experienced labor supply — Again the Willcox area was ideal because workers from the Sulphur Springs Valley apple industry were available.

The Willcox area had another advantage. Isolated from fields with similar crops, fewer insects and diseases would be likely to spread to the greenhouse tomatoes. If they did, the expertise available at the University of Arizona, about 90 miles away, could help VHB solve its problems.

Rob Call, UA Agricultural Extension agent for Cochise County, is even closer. Stationed in Willcox, Call has years of experience in vegetable and horticultural crops.

Jensen credits Eddie Browning with putting together the right chemistry between community and newcomer. An Arizona rancher and graduate of the UA leadership training Project CENTRL, Browning is director of the Willcox Economic Development Group. Browning made sure the management from VHB came to Willcox during its annual Rex Allen Days celebration so they could see Willcox at its festive best.

“They loved the Southwest and everything took off from there,” Browning says.

VHB bought 298 acres of private farmland between Willcox, Bonita and Safford. They made an investment of \$7.2 million just for their first 10-acre greenhouse and tentatively plan to increase greenhouse space to 80 acres in the next 10 years. There’s room for 120 acres under glass.

Once the decision to build was made, VHB moved quickly. Experienced greenhouse builders from VHB headquarters in Holland directed the operation, which included nearly \$1 million of earth-moving alone. In 6 weeks, the greenhouse was finished.

“They moved so fast, they ought to qualify for the Guinness Book of Records,” Browning says, shaking his head.

By late August 1992, the first 100,000 tomato seedlings were planted, and the first crop was harvested in late October. This first harvest was about 40 tons of tomatoes per week, with an annual expected harvest of more than 200 tons per acre, says Arie Nico Markus, greenhouse general manager.

The fully computerized growing system is indeed sophisticated. Lush tomato plants grow from trays of khaki-colored rock wool, through which precise amounts of nutrients flow. Small micro-tubes deliver the nutrient solution to each plant. County agent Call says the tomatoes use about as much water as growing corn.

While the plants are young, they get larger amounts of nitrogen; later, the nutrients will include more calcium. All told, the computer controls 16 elements necessary for growing healthy, tasty tomatoes. The temperature, humidity, fertilization are all computer-controlled, Markus says.

At first, the vines grow straight up, along twine suspended from pipes high in the greenhouse, Markus says. Later the



Gloria Walker moves down the aisle of the climate-controlled VHB greenhouse in Willcox, plucking fruit from tomato vines grown in a computer-mixed solution of water and nutrients.

vines will be carefully laid along the “ground” so they can be easily harvested by hand from small electric carts that fit onto the heating tracks. The vines could be as long as 30 feet.

Huge solar-heated water storage tanks warm the water during the day, for use during the cool nights. Natural gas boilers provide carbon dioxide gas enrichment to the plants and also heat the water, which is piped next to the growing tomatoes. A misting system helps controls the climate to make sure the plants aren’t stressed.

“We’re bringing the taste back into fresh tomatoes because we concentrate on quality,” says Van Heyningen, adding with a smile, “I expect it won’t be long before our customers are angry with us because we can’t provide them with as many tomatoes as they want.”

“All in all, it’s a good deal,” Browning says.



Willcox is the site of a new 10-acre tomato greenhouse that capitalizes on the agricultural skills of the local workforce, providing work for 34 people in addition to management.
Ken Matesich photos

Florence Mendoza and other VHB pickers harvest 40 tons of tomatoes per week from vines that grow up to 30 feet tall. Below, solar-heated storage tanks for the water-nutrient solution that feeds the vines.

