

ENERGY-EFFICIENT REFRIGERATION SYSTEM

Makes Georgia Farmer 'Berry' Happy

There is more to the blueberry business than pies, cobblers, and sticky fingers. There is berry picking and selection, packing, storing and shipping.

At the Chambers Brothers Farms, a cooling system lends a helping hand. The technology is considered so innovative that blueberry farmers from throughout the United States travel to Homerville, GA, to see how it is done.

Jim Chambers' business has been growing since 1978. His initial three acres—some of the first commercial blueberry farmland in Georgia—have become an expanse of fields that yield more than half a million pounds of blueberries each year.

The farm attracts other growers from across the United States looking for ideas for their own facilities, according to Adair Chambers, Jim Chambers' daughter, who has been running the farm's operations since 1993. "As my dad says, if you can afford to do it over, you can afford to do it right."

That was the principle behind the decision to build a new packing shed a few years ago. In the early days of blueberry production, a simple lean-to shed was used to store and pack the fruit after picking. But more was needed in modern times. Jim Chambers noted that not only did a new shed need more sophisticated design than a lean-to, but it would need more than a traditional air-conditioning system to keep berries looking and tasting their freshest.

"It is important to keep the temperature of the packing area really low and as constant as possible," said Chambers. "It is also important to be able to control the humidity. If a berry is cooled in too much humidity, it sweats. This makes the berry deteriorate. Being able to control the humidity cuts down on ruined berries."

The first step was to build a larger packing shed with better insulation. Then to keep the shed properly cooled to the ideal temperature of 65 degrees F., Jim Chambers went to see John Wilkes at Always There Air Refrigeration in Homerville. Always There Air installs refrigeration equipment and has been installing Heatcraft's Larkin line of commercial refrigeration products since 1989.

Wilkes consulted with Larry Pittman, a service center manager with Baker Distributing Co. in Brunswick, GA. After talking to Wilkes, Pittman recommended the Beacon Refrigeration System.

"What made the system so ideal," Pittman said, "was its solid state control board. The room temperature thermostat and defrost controller are both located on the control board, which is mounted on the evaporator. The control board can also be set for operation with simple or multiple evaporators."

Pittman and Ron Andrews, a sales rep for the Larkin line, decided to use the Beacon technology with Larkin coolers and condensing units. They looked at the basic load of the building and the product load, calculated the refrigeration requirements and determined that the Chambers Brothers Farms packing shed needed three Beacon systems for the best redundant capacity. One unit is constantly cooling. The other two cycle on only if the room's temperature rises. They turn themselves off when the building returns to the necessary temperature. This guarantees that if one unit is lost, there will be other units to take care of the load.

Having multiple units is also energy efficient.

“All commercial buildings have an energy demand,” Pittman said. “There is more demand on a building when a unit is starting up than while it is actually running, so one large unit cycling on and off causes an increased energy demands. With multiple units, there are fewer start-ups, a decreased demand, and a less urgent draw on the building for running the units. The owner was concerned about humidity, so coil selection was critical.”

Pittman chose medium airflow coils because they generate less noise than warehouse coils, an important factor to make the build’s environment suitable for workers. Pittman also chose to maintain a 10-degree temperature difference between the coil temperature and the room temperature. Keeping the coil only 10 degrees cooler than the room ensures that the coil does not meet the dew point, which would cause condensation to form on the coil and dehumidify the room. Wilkes installed three 5-hp condensing units and three medium profile unit coolers.

“I basically made a huge building into a walk-in cooler,” he said.

Chambers declared he was pleased with what the system was doing for current operations and with its potential should the business expand. At the time this story was written, Chambers Brothers was sending its berries out to be processed for frozen sales. Plans called for eventually installing a processing line which could be housed in the packing shed.

Said Chambers, “The market is always changing, never the same from year to year. We do what we have to do to keep up. The new building has opened up more possibilities for us.”