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## Cornelius nursery warms to the sun

By Eric Mortenson, The Oregonian  
October 08, 2009, 5:58PM



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Grace Dinsdale, owner of Blooming Nursery south of Cornelius, is installing the state's largest solar thermal project. Water heated by solar panels will flow through pipes in the gravel floor of a 54,000-square-foot greenhouse, warming the plants growing there.

CORNELIUS -- It was a combination of things that drew Grace Dinsdale back to the family farm 28 years ago, where she transformed a struggling dairy into a profitable plant nursery. One was the simple joy of growing things. Another was a complex sense of stewardship.

Both are at play in the project rising from the ground at her 130-acre Blooming Nursery. There, workers are installing an array of towering solar panels that will stretch nearly the length of the nursery's 700-foot driveway. Nearby, a crew is applying insulating foam to a covered concrete tank that will hold 300,000 gallons of water.

When finished, it will be Oregon's largest application of solar thermal energy. Instead of producing electricity, the solar panels will heat the tank water, which will circulate underground and warm the plants growing in a 54,000-square-foot greenhouse.

The system is so immense and the tank so well-insulated that it will retain heat for months at a time. Dinsdale expects to use her existing natural gas heating system only as a backup. She'll continue to use natural gas in two other large greenhouses.

It's a project of great interest to the state's 2,130 nurseries, which produce potted houseplants, vegetable starts, and trees, flowers and bushes for outdoor landscaping. Nurseries are the leading sector of Oregon agriculture, with sales last year of \$820 million, but are particularly susceptible to energy cost increases because much of their product is grown in heated greenhouses.

"The long-term trend is established -- energy is going to become more expensive," said John Aguirre, director of the Oregon Association of Nurseries. "You overlay that with general concern about issues like climate change, and there is strong motivation to become more efficient users of energy."

Dinsdale declined to disclose the project's cost -- "You don't want to know; I don't want to know," she said -- but said her heating bill is \$150,000 a year.

A 50 percent tax write-off -- available under Oregon's Business Energy Tax

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Credit program -- and anticipated energy cost savings make the project feasible, Dinsdale said. She expects the project to pay for itself in five to eight years.

"If the tax incentives weren't there, we wouldn't do a solar system," she said. "It was what we wanted to do, and thankfully we were able to because of the incentives in place."



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Doug Beghtel/The Oregonian

Workers apply waterproofing to the exterior of the 300,000 gallon water storage tank for the solar thermal system at Blooming Nursery.

The system was designed by **Ra Energy**, a Portland company that installed a similar but much smaller project for Lucky Labrador Brewing Co. on Southeast Hawthorne Street in Portland. The brewpub uses solar thermal to heat water used to make beer.

Tim Ruch, a Ra Energy partner, said Dinsdale and her general manager approached him at a trade show and asked if it was possible to design a system for the nursery. The engineering and financing took nearly two years, and construction began late this summer.

A thermal flywheel will store heat in the heavily insulated concrete vault for months at a time, with water at the back of the vault approaching 200 degrees, Ruch said. It cools over time, circulating in the greenhouse floor at about 80 degrees. Ruch said the system will save enough in natural gas consumption to heat 200 homes.

"This is a success story. This puts money back in your pockets," he said.

Nursery owners have reduced natural gas, fuel, water and fertilizer usage, but the solar thermal project at Blooming Nursery marks the next level of sustainability, said Stephanie Page, renewable energy specialist with the Oregon Department of Agriculture.

"It's a great model for others to look at, and definitely something we support," Page said.

Dinsdale said the heating system will allow her to diversify the type of plants she grows in the greenhouse, adding a degree of flexibility in a business where markets and trends change. "We could do tropicals," she said. "There's a good market for bold foliage."

But she said the solar thermal system is "not just an economic project."

Dinsdale grew up on the farm, raking stalls and feeding calves when it was a dairy. She's the second-youngest of 11 children, and the only one to step forward when her mother announced she intended to sell it. The property had been her childhood wonderland, and she couldn't stand the thought of it passing out of the family. She returned home, turned it into a nursery, bought out her siblings and has been at Blooming Nursery ever since.

If she has anything to say about it, the land will always be a farm. The solar thermal system, which could last 30 to 50 years, will help the farm survive in what Dinsdale believes will be a changing economy.

"I see everything shifting during this period," she said. "We can see trends. It's quite clear we need to develop versatility, grow diverse crops and control and even reduce our costs."

A renewable energy system is key to the farm thriving even after she's gone.

"The way I see it is, it's really about the nursery," she said. "Being a steward of the nursery."

-- **Eric Mortenson**

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