Greenhouse up an

DIANE VANCE/Ledger photo

an Swinton, local food coordinator at Hometown Harvest of Southeast Iowa and one of the chief architects of the greenhouse, kneels etween rows of vegetables in the farm-to-school greenhouse south of Schaus-Vorhies Manufacturing in Fairfield. She said salad greens ould be grown at the greenhouse, which would then go to feed kids at Fairfield schools. Swinton said the kind of cold season crops that ould grow well in the greenhouse during the winter would be vegetables such as carrots, kohlrabi and leaf lettuce.

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By DIANE VANCE
Ledger staff writer

Seeds went in the dirt March 1 and food should be ready to harvest near the end of May.

Fairfield's Greenhouse Farm-to-School Project is growing its first crop of spinach, snow peas, lettuce and carrots, with tomatoes to be added soon.

A ribbon cutting and short program for a grand opening begins at 3 p.m. April 4. Tour guides will be available to show everyone around until 5 p.m.

"Anyone who eats is welcome to come out to the grand opening of the greenhouse project," said Jan Swinton, local food coordinator at Hometown Harvest of Southeast Iowa and a chief architect of the greenhouse.

The greenhouse is tucked away on an industrial lot south of West Stone Avenue, behind Schaus-Vorhies Manufacturing.

"We located here to take advantage of the heat energy available from the bag house at Schaus-Vorhies," said Swinton.

Four feet of organic soil was laid down over a gravel base and extends outside the walls of the greenhouse. Insulation was tucked down the perimeter of the greenhouse, six-feet deep, with about a foot of wood-clad insulation sticking above the ground inside the walls, forming a rodent and chemical barrier.

"This is a U.S. Department of Agriculture project, all of the food grown here goes to the local schools," said Swinton Thursday. "You won't see these crops being sold at the farmers' market or served anywhere else."

The USDA $15,000 grant paid for the above ground plastic hoop greenhouse, but Swinton said about $68,000 more was spent on the underground heating system of copper water pipes, water storage, pex loops and air circulation systems.

Swinton says there's room for nine more similar greenhouses like the first along the railroad tracks on this lot between North Ninth Street and North 10th Street.

"If we could find funding, we could grow more local food, year round," she said.

The winter of 2014 was a good testing ground.

"Because hopefully, we won't have such a cold winter again," said Swinton.

The weather hindered getting the greenhouse up and running and stressed some of its systems, but helped figure out what worked.

"Schaus-Vorhies uses 1,600-degree ovens and has to vent that out, but anything higher than 350 degrees causes fire in the bag house, so it gets mixed with cooler air," said Swinton who has educated herself about all the heat exchange, water systems and air circulation. "We are piping the cooler than 350 degree air into our water so it is about 180 degrees, through copper pipes and circulate that in coils through the soil in the greenhouse to warm the soil, which also warms the air."

Thursday's sunshine also was helping warm the air through the tanslucent plastic covering.

In the interior corners of the greenhouse, large round black tubing, similar–looking to field tile, but about one-foot in diameter, stuck up knee-high from the dirt. Air blowing out of these tubes was cool, a welcome feel to the 116 degrees of air inside the greenhouse that day.

"This air is coming from down in

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the earth," said Swinton, indicating the corner tubes. "It's an exchange system."

On one side of the indoor "field" a small structure, like a doghouse, sheltered the intake fans, sending the hot air down underground and storing it for later, such as nighttime, to send back up into the greenhouse to keep the young fragile plants at an even temperature.

"If it gets chillier inside the greenhouse, the air circulates from the earth and warms it," said Swinton. "Right now, we're getting the cooler air from the earth."

The gravel base under the organic soil is to help regulate humidity.

The top of the greenhouse can slide open, as well as side walls can slide down to let in birds and bees and outdoor air in nice weather.

Swinton said the greenhouse has three purposes:

• Production: 100 percent of the food produced in the greenhouse will be sold to the public schools. Crops grown will reflect the needs of the school lunch menus. Summer production will be based on attendance at summer feeding programs and focused mainly on harvest times during the school year.

• Education: This is a research facility. The temperature control system is based on readings from 15 thermometers strategically placed throughout the facility. Readings are automatically recorded every 10 minutes to an online system.

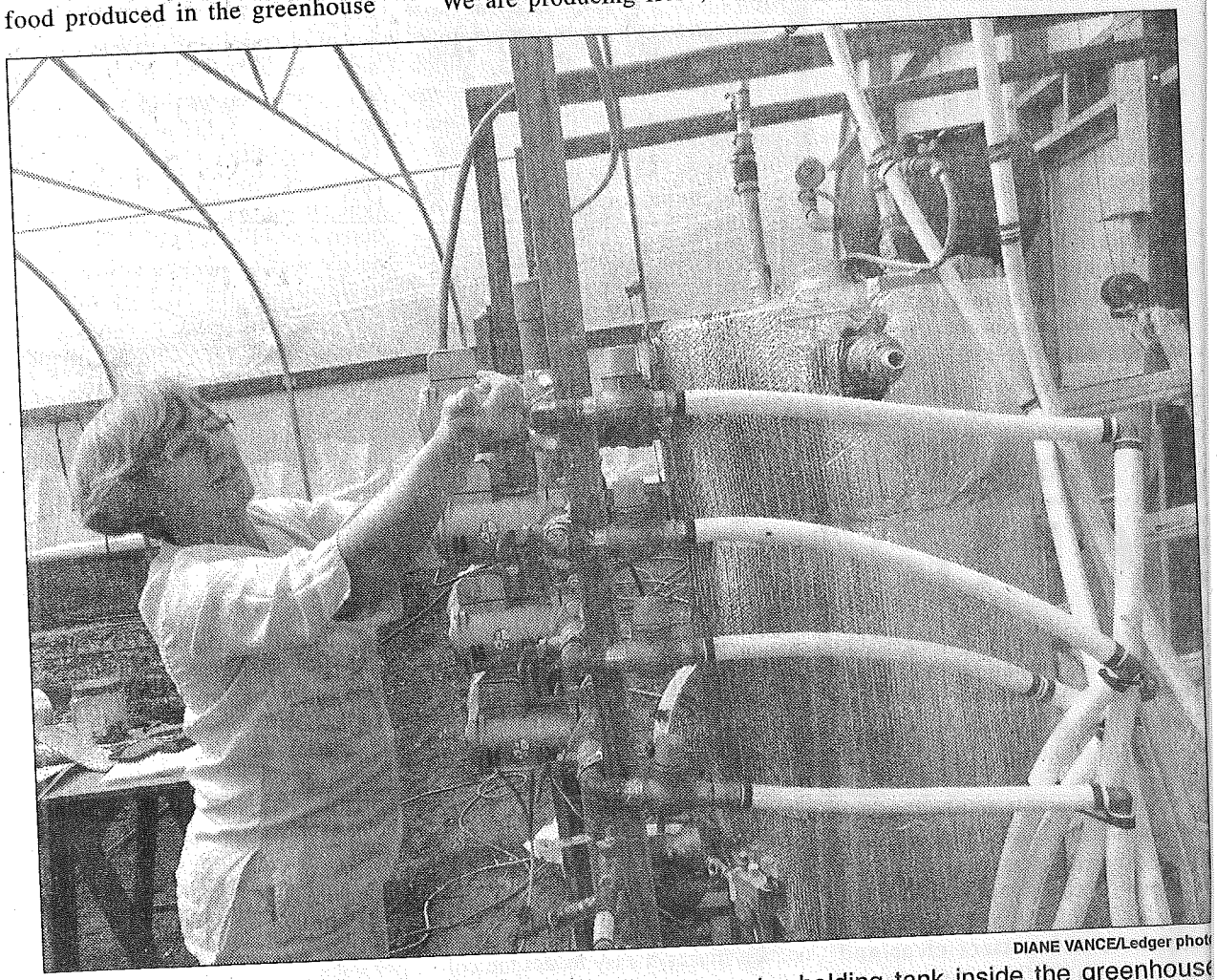
• Energy: "We are partnering with Schaus Vorhies Kleaning to use their waste heat to heat the greenhouse facility," said Swinton. "We have designed a system that collects heat from the SVK air duct system, transfers it into water moving through the hot air, and stores it in a large underground tank, for use in the greenhouse soil.

"We are producing fresh, local, whole foods for the community's school lunch menus," said Swinton.

The greenhouse project was started with help from a USDA Farm to School grant. Additional funding was required to meet the demands of winter production, research capabilities and the unique energy transfer system. Additional funding came from Alliant Energy's Bright Ideas grant, the Iowa Department of Agriculture & Land Stewardship and the TransCanada Pipeline.

Additional funding is still needed to complete the automation of the heating and watering systems. A hanging strawberry production system also is in the research stages. The addition of an environmental learning classroom could also increase the education capabilities of the facility.

Volunteers are always welcome to work at the greenhouse. Call Swinton at 641-751-9061 for scheduling.



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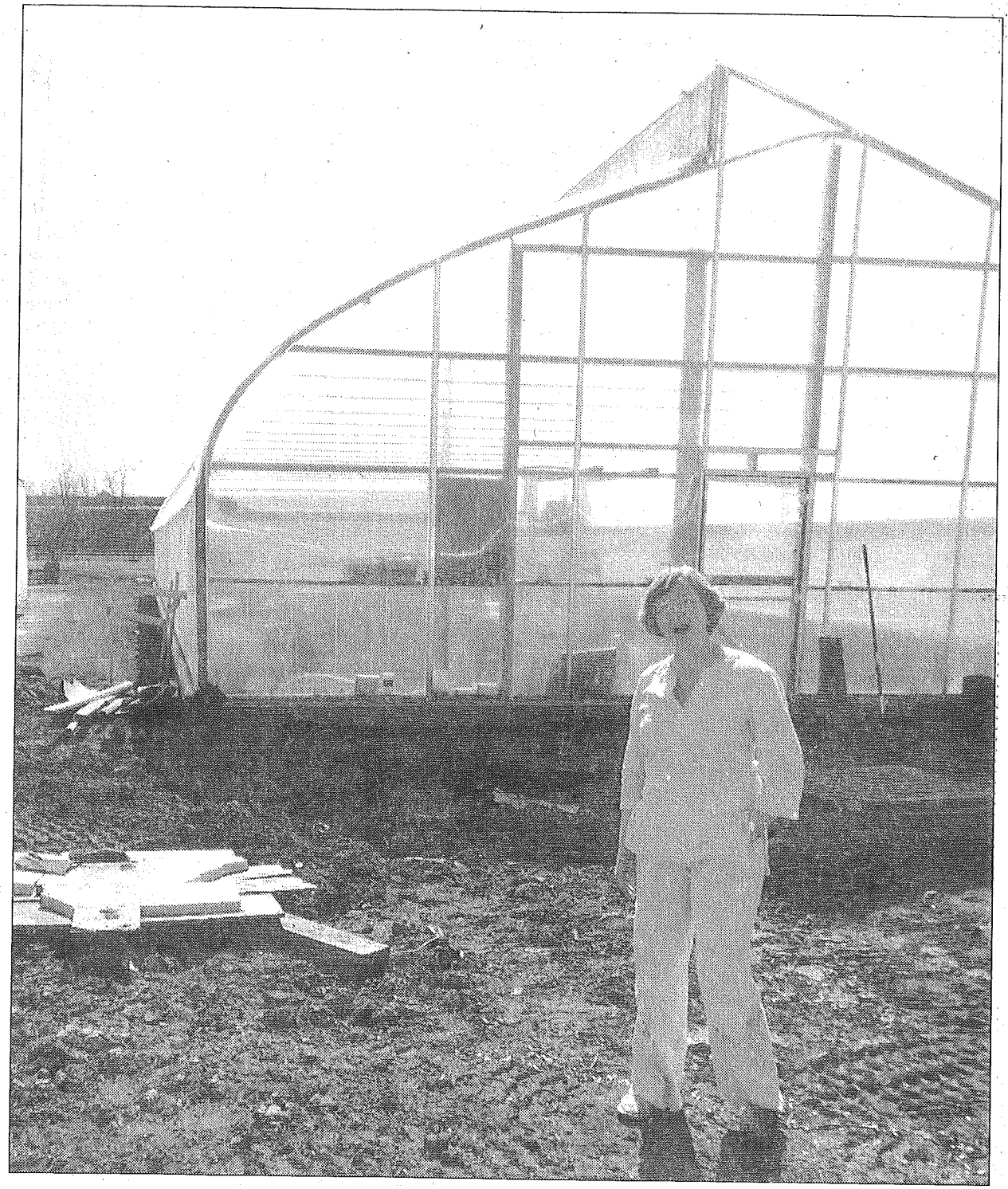
Jan Swinton checks the gauges and temperatures on a water holding tank inside the greenhouse Thursday. Water in the upper hoses is leaving the storage tank at 180 degrees to circulate in coils unde the soil, and returning in the lower hoses from circulation back into the storage/hot water tank.



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Jan Swinton stands outside the greenhouse behind Schaus-Vorhies Manufacturing near the intersection of Stone Avenue and Ninth Street. The farm-to-school greenhouse project will hold a ribbon cutting and grand opening on Friday, April 4. The actual opening will start with a short program and ribbon cutting ceremony at 3 p.m. Tour guides will be available to show everyone around from 3-5 p.m.