



Kathy Brooks of Misty Morning Herbs and More in Felton, Del., shows how she uses compost to heat a greenhouse for her plants. A sump pump at the bottom of the pile circulates water, travels into the greenhouse, under the plants, and back out into the pile.

Photo by Carol Kinsley

Sleepless in Felton, but Brooks uses compost to heat greenhouse

By CAROL KINSLEY
Staff Writer

FELTON, Del. — A clever herb producer has devised a system to heat her greenhouse through the cold

winter months using plant materials most people discard.

She doesn't burn the wood chips, weeds and green clippings from a

See BROOKS, Page 3

Continued from Front Page

cover crop in her garden, she composts them. As the materials decompose, they create heat. By running water in a circular loop through the compost pile, into the greenhouse and back out, she puts that heat to work.

Kathy Brooks of Misty Morning Herbs and More received a grant from Sustainable Agriculture Research and Education (SARE) to test her system in her small greenhouse. She was scheduled to describe her experiment during Delaware Ag Week on Jan. 7.

The idea just came to her, she said.

"I have trouble sleeping at night, and ideas pop into my head in the middle of the night," she said. "One thing leads to another."

For her business Brooks starts seedlings of herbs, vegetables and cut flowers to be planted outdoors in the spring. She plants the seeds in trays inside her house, then moves them to the greenhouse as small seedlings where they can bask under the plastic covering in the sun all day. But the seedlings had to be moved back into the house each evening when temperatures dipped too low.

"I wanted to eliminate the need to move the plants daily and extend the greenhouse growing season, allowing for longer and more varied production, and greater profit," she said.

With minimal help to tighten plumbing fittings, she set up the system by herself. She constructed a compost pile, starting with a cylindrical rat wire mesh frame, reinforced with steel pipes and lined and topped with plastic to retain moisture and help retain heat.

Finely chipped wood chips, a waste product from the farm and also available free from logging operations, is used for the carbon element in the compost pile. They break down slowly, providing heat for a longer period of time. The nitrogen element is supplied by a harvest of the winter cover crop growing in Brooks' garden. The supply is limited this year, Brooks noted. There has been less growth because of the prolonged drought. The plants aren't as lush as they usually are. Then, too, deer have been nibbling away at the cover crop. As "snow insurance" she is growing hairy vetch in the greenhouse before her salable crops are planted. She'll use the vetch as green material to keep the compost pile active if necessary.

She decided not to add the typical vegetable waste from her kitchen that might ordinarily go in a compost pile

is placed in the reservoir, connected to semi-rigid black plastic pipe that is coiled within the pile to absorb heat. Where it exits the pile, the pipe is connected to black rubber hoses which are insulated to prevent heat loss. The hoses fit through openings in the plywood half-wall at that end of the greenhouse.

The hoses are laid out in a zig-zag pattern under the growing tables so heat can be transferred by convection to warm the plants at their roots. Some heat escapes into the air, and with a bright sun in the daytime, the greenhouse is quite comfortable, even

when the outside temperatures hover at the freezing mark with a brisk wind blowing.

The hoses form a continuous loop, exiting the greenhouse and going back into the compost pile to heat up again.

As the compost materials settle and break down, more raw material is added. Each layer is moistened as it is added, and the pile is checked periodically to make sure the moisture is not lost.

While composting is ordinarily facilitated by turning, Brooks explained, in this situation the internal



**PURCHASE E
AND SAVE I**

**Southern States
Seed Corn and Soy**

**PURCHASE YOUR SOUTHERN STATES HYBRID
AND SOYBEANS NOW AND RECEIVE SPECIAL FINA**

**Contact your Southern States
to place your order today**

0-INTEREST UNTIL JUN

for Southern States Soybeans now through
owed by Prime at -1% until December 200

ffer ends May 31, 2008. Subject to Farm Plan credi
approval. Minimum purchase may be required. Subj
participation. Farm Plan™ is a service of FPC Financ

SOUTHERN STATES

might ordinarily go in a compost pile because that might draw animals, something she doesn't want while conducting an experiment.

A small amount of manure from a nearby organic dairy farm is added to enhance the microbial action and elevate the temperature of the compost pile.

At the center of the pile is a water reservoir most men wouldn't have thought of, Brooks said. It's an old canning pot, covered with its lid to keep the compost out. A sump pump

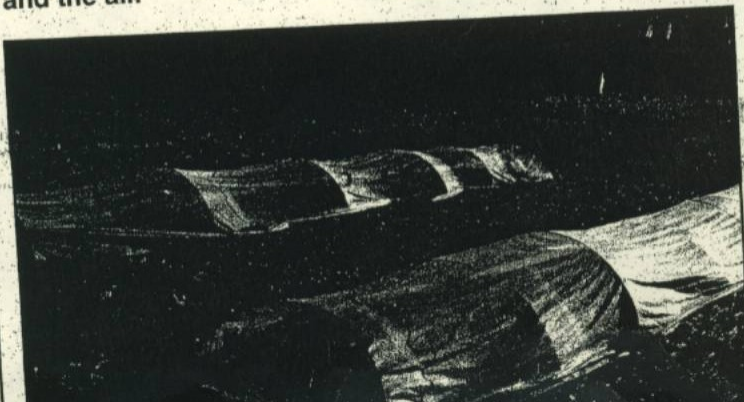
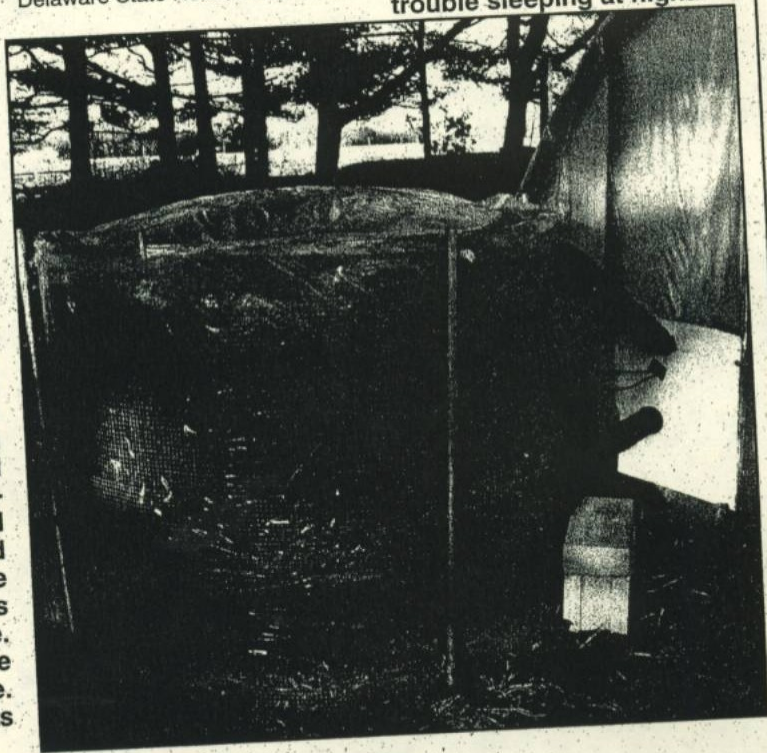


Delaware State News/Katie Kazmir

Heat is on

Kathy Brooks of Felton, a Master Gardener and owner of Misty Morning Herbs and More, invented a heating system for her greenhouse using energy created from a compost system. Pictured, Mrs. Brooks tends to her crimson clover and hairy vetch that she is growing in the greenhouse. When asked how she came up with the heating system, Mrs. Brooks replied, "I have trouble sleeping at night."

The compost system produces heat energy to warm Mrs. Brooks' greenhouse. She invented the system which uses a cylindrical rat wire mesh frame reinforced with steel pipes and lined with plastic at the sides and top to retain moisture and heat. Wood chips and organic manure are used to elevate the heat in the compost pile. A metal reservoir with a lid to keep the compost out is placed in the center of the pile and then partially filled with water. A sump pump is placed in the reservoir, connected to a pipe that exits the pile and is connected to hoses that enter the greenhouse. The hose travels under the tables in the greenhouse. The hoses heat the plants and the air.



Row tarps are used in Mrs. Brooks' garden to keep deer and other animals out of her winter greens, and also work to capture and retain heat to help the vegetables grow.