

Michigan

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Key Points

- Several companies offer fabric structures as an alternative to conventional buildings.
- Material supports several tons; buildings can be designed for specific uses.
- A.K. Equipment offers a 16-year prorated warranty; life expectancy is 25 years.

By JENNIFER VINCENT

FOR modern agriculture, the nostalgic red, hip-roof barn is rarely a first choice for new construction. Barns have long been modified to account for farm size, new technologies, increased efficiency and specific farm needs.

An alternative to conventional buildings, fabric tensioned membrane structures are popping up throughout Michigan. They are touted for supplying natural light and increased air movement. The fabric is attached to steel framing, which is anchored to steel or cement foundations.

A.K. Equipment, founded in Zeeland by Al Kaptein in 1986, is one of many distributors of these fabric structures and is Michigan's authorized Cover-All Building dealer. Cover-All Building Systems is the largest manufacturer of tensioned membrane structures in the world, utilizing Duraweave II, which is a strong, woven polyethylene material, says Terry Kaptein, Al's son and vice president of the company.

How strong is it?

Terry says he's never seen one tear. "A 10-foot-by-10-foot piece of this material can support 14 tons," he says. "Sure, we've had people puncture them with a skid steer, but it's not going to take off on you. And if you do puncture it, it's easy to fix with a patch."

A.K. Equipment began offering the structures in 1986, and they are now its primary business. "We have put up about 800 of these buildings in Michigan, and about 65% of them have been for agriculture, mostly dairy," Terry says.



Fabric fascination

SOLD ON FABRIC: Calvin Lindberg and his family put up another fabric tensioned membrane barn this summer — the biggest one on their farm yet. The family dairy is using a compost system in two of the barns.

The buildings come with a 16-year, prorated warranty, and the life expectancy is 25 years, Terry says.

A.K. Equipment's buildings range from 20 by 30 feet to as large as 200 feet wide with unlimited length. "The average cost is about \$8.50 a square foot," Terry says.

One of the largest buildings the company erected is the new Agro-Culture Liquid Fertilizers plant in Ashley, spanning 140 by 380 feet.

Buildings are engineered specifically for their site and use, and meet building codes for wind and snow loads. "These buildings

are cooler in the summer and warmer in the winter," Terry says.

Ventilation can be controlled by ridge vents, adjustable side curtains and eaves.

■ **Read about Lindberg Dairy's fabric barns in Coopersville on Page 6.**



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NewsWatch



COWS ON COMPOST: The Lindberg family says raising cows on compost under fabric structures has increased cow comfort.

Barns not cut from same cloth

By JENNIFER VINCENT

MARVIN Lindberg bought his first farm 31 years ago. He put up a tie-stall barn and a small freestall barn and bought 19 Guernsey cows from another farmer.

Through the years, changes and expansions occurred on the farm in Coopersville, including the conversion to Holsteins and additional buildings and equipment. As the family grew, so did the business. In 1998, Marvin bought the farm's first fabric tension membrane barn, 50 by 90 feet, with 45 stalls and cows on mattresses. This was his first exposure to fabric structures. The additional light and the increased ventilation led to further purchases, including two large barns in the last five years.

Marvin and his wife, Rose, have three sons, Kyle, 26, who works off the farm, and Calvin, 28, and Wade, 24, who are both involved in the operation.

Key Points

- Lindbergs say fabric barns and a compost system are good for cow comfort.
- Sawdust is applied to the compost, but the cost of the product is rising.
- System hasn't increased somatic cell count; has decreased injuries, hoof issues.

The Lindbergs milk 145 cows and farm 200 acres of corn, chopping all but 50 acres, which is combined for high-moisture corn. "We also buy some corn standing in the field for grain needs," Marvin says. The family also raises 150 acres of an alfalfa-grass mix and buys dry hay.

Another fabric barn, 70 by 160 feet, went up in 2006. About 50 feet of length is for the milking parlor, while the rest houses 70 milking cows on compost.

The fifth and newest fabric barn was started in June and completed Sept. 1. It's 62 by 250 feet and will hold 100 cows — 60



FAMILY BUSINESS: As the family grew, so did the business for the Lindbergs — Calvin (left), Rose, Wade and Marvin. Calvin and his wife, Cindy, and Wade and his fiancée, Jenny, have joined the operation. Another son, Kyle, works off the farm.



FEED SEPARATELY: A feed alley separated from the compost area by cement walls allows the compost to stay intact and the alley to be scraped.

milking cows and 40 dry cows on compost, as well as a group maternity pen.

The Lindbergs bought the barn from A.K. Equipment of Zeeland, which can serve as general contractor. The Lindbergs opted to hire the excavating and cement work locally, which included a new 300,000-gallon cement lagoon behind the barn.

Barn allows for expansion

The barn allows the family to eventually expand to 180 cows. "With Wade coming into the operation, we needed to grow, and we will internally," Calvin says.

"These barns are all about cow comfort," Marvin says. "It's brighter, with more airflow and very little condensation on the roof. The eaves are open year-round, so there's always fresh air coming in."

The barns are also adjacent to a woodlot, providing a cooling breeze in the summer and some wind block in the winter. "The barns are typically 10 degrees cooler than conventional barns in the summer and 10 degrees warmer in the winter," Marvin adds.

The Lindbergs first heard about dairy composting systems in a magazine, and through further research online, they decided to go with an open compost system for the barn built in 2006. A feed alley stretches one width and one length of the barn, separating it with a wall to contain the compost and allow scraping of the alley.

Two entryways allow access to the compost area. "In our newest barn, we put in three entryways," says Marvin. "The new barn is also narrower, which allows for even better airflow. Our first compost barn was built wider to accommodate the parlor."

A thin layer of sawdust is spread across the top of the compost every other day. Using a three-point-mounted rototiller, they fluff the top layer up twice a day during milking. "We incorporate the manure, and that helps dry the surface," Calvin says.

"When we built this, sawdust was readily available, but today it's more difficult to secure shipments, and it's gotten a lot more expensive," he adds.

"In the winter we're paying \$10 a yard," Calvin says. "So we use straw and chopped cornstalks for the calves."

So why did the Lindbergs stay with a compost system with the newest barn? "We didn't want to get into sand with freestalls," Calvin says. "And because we're already using sawdust and compost, we didn't want to have two different systems to manage."

The 4-foot-tall cement walls, which secure the framing, allow for the compost to build up. The compost starts with a 6-inch layer of wood chips. "That's our base," Calvin says. "It stays as a firm base, and when we're cleaning out, we leave that."

By midsummer the compost is built up about halfway on the wall, which places the cows on higher ground with even better wind flow during the hot months.

Raising dairy cows on compost may raise more than a few eyebrows concerning herd health. "It's not been a problem for us at all," says Calvin. "They lay on it like they would if they were out to pasture, and our somatic cell count is between 180,000 and 200,000, which hasn't changed from our conventional freestall barn."

The Lindbergs say the compost barns are easier on the animals and their joints, especially the older cows. "We seldom have leg or shoulder injuries, and if we have a cow that's having some trouble in the freestall barn, we move her to a compost barn," Marvin says. "We have less hoof problems." The compost is removed twice a year, at the end of October and close to the beginning of March.

The compost is then land-applied with virtually no odor. Some of the compost is diverted into piles that Rose manages. "I continue to compost and turn until it's finished. We sell it by the road for \$1 per bag as a soil amendment for flower and garden beds," she says. "We sell about 1,000 bags a year. I really like that we can supply our neighbors, and they return every year."



LARGEST YET: A.K. Equipment in Zeeland erected both the newest Lindberg fabric tensioned membrane barn, as well as the new Agro-Culture Liquid Fertilizers plant in Ashley (pictured), spanning 140 by 380 feet.

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