

# Under Roof



PHOTO BY TROY SMITH

► Zach Herz explains the bedded barn concept to cattle producers gathered for a meeting hosted by University of Nebraska Cooperative Extension and USDA's Meat Animal Research Center, Clay Center, Neb.

## Young entrepreneur builds bedded beef barn.

by **Troy Smith**

**I**t's been said, time after time, that getting started in the cattle business is difficult. But young people are doing it, often because they are willing to think outside the box. A case in point is Zach Herz, a 20-something entrepreneur from Lawrence, Neb. Raised on a diversified cattle and farming operation, Herz attended college in hopes of returning to his hometown area and a career in production agriculture. But the family farm couldn't readily expand to accommodate both Herz and a brother with similar aspirations.

Of course, their dad has helped both sons get something going. For Herz it was a custom farming enterprise. The young man also leased a herd of about 100 cows from a local cattleman.

Plenty of start-up producers have entered production agriculture in similar fashion, often with the help of family and friends. But Herz was motivated to further diversify by establishing an out-of-the-ordinary cattle-feeding enterprise. His 400-head-capacity bedded beef barn is the first of its kind in south-central Nebraska. They're rather rare anywhere, but Herz finds this unusual confinement-feeding concept economical and environmentally friendly.

From weaning until they are finished and

ready for harvest, Herz houses cattle in a barn measuring 100 feet (ft.) wide by 200 ft. long. Situated with its length running east to west, the barn features a mono-slope roof covering two feeding pens and a centrally positioned concrete manure storage bunker. The roof is 28 ft. high on the open south side, affording maximum exposure to the sun in winter, but shade and southerly breezes in summer. The roof is 18 ft. high on the north side of the barn, which is equipped with a curtain that can be lowered against bitter winds.

"The curtain is open most of the time, even in winter, unless a northwest wind gets up over 25 miles per hour. Then the curtain can be partially closed while still maintaining enough airflow to prevent condensation inside the barn," Herz explains.

Fenceline feedbunks run along the north and south sides of each pen, providing a foot of bunk space per animal. While feeding, cattle stand on a 20-ft. concrete apron. A concrete "step" [6 inches (in.) high and 10 in. wide] runs along the bunk line. The step allows young calves to reach into bunks more easily and prevents cattle from backing up to bunks and defecating inside.

The remainder of each pen — the loafing

**Feeding & Feedstuffs**

►The mono-slope barn employed by Zach Herz houses cattle and stores waste under one roof. It eliminates the need for run-off control structures and waste lagoons typically associated with cattle-feeding operations. And the Herz operation is exempt from department of environmental quality permit requirements.



PHOTOS COURTESY ZACH HERZ

area — has a dirt floor bedded with straw. It's the bedding and manure handling that make this kind of finishing barn different.

### Straw to fertilizer

"Manure is cleaned from the aprons and pushed into the storage bunker every four days. In that amount of time, the [loafing area] bedding usually becomes saturated, and another layer of straw is added," says Herz, explaining how packed soiled bedding serves as the base for subsequent layers of clean straw.

Herz figures it takes about 5 pounds (lb.) of straw per animal per day to keep calves adequately bedded during the course of a typical feeding period. Unless the pens are bedded with at least that much straw, cattle performance may suffer.

The resulting multiple layers of bedding are not removed until after the cattle are shipped to market. That's also when manure is removed from the storage bunker and piled at the edges of nearby crop fields. It's all applied as fertilizer according to a nutrient management plan developed with the assistance of the Natural Resource Conservation Service (NRCS).

"I run two cycles of cattle," Herz says. "Home-raised calves (the collective crop from herds managed by Herz, his brother and their father) go in the barn in the fall, targeting an April market. In the spring, the



►From weaning until harvest, cattle are in the barn bedded with straw. A new layer of fresh straw is added when old bedding becomes saturated — about every four days.



►Poured concrete bunks feature a step — about 10 in. wide and 6 in. high — to aid young calves in reaching feed. The step also helps prevent cattle from backing up to bunks and defecating inside.



►Aprons along bunks are cleaned every four days, with manure stored in this bunker located between the barn's two pens.

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barn is filled with purchased or custom-fed calves, shooting for a September market."

### **Planning the facility**

A good deal of thought and planning went into designing the facilities. Herz had seen other confinement barns in use, including a hoop barn at an Iowa State University (ISU) research facility and a mono-slope barn in northeast Nebraska. His steel building with mono-slope roof proved to be less expensive

than the hoop style. Forgoing flooring in the loafing area also reduced concrete costs by about \$60,000. Choosing to bed the area's dirt floor and constructing a manure storage bunker inside the barn yielded multiple economic advantages.

Poring over NRCS Environmental Quality Incentives Program (EQIP) information, Herz found that construction of a facility that stored waste, as well as housing cattle, could qualify for cost-share assistance. He applied and was approved. To finance his share of the construction cost, Herz sought a bank loan under the Beginning Farmer Program. For an

operating loan, however, he turned to Farm Credit Services of America.

Because cattle and waste would both be under a roof, there would be no runoff and no need for runoff control structures or an outside waste storage facility — the typical settling basin or lagoon. That made Herz's operation exempt from the Nebraska Department of Environmental Quality (DEQ) operating permit generally required for a confined animal feeding operation (CAFO) involving 300 head or more.

Early on, Herz felt a responsibility to inform the community about his plans. The chosen site of his feeding enterprise was not

quite a mile from town. There were no county of village zoning regulations to prohibit the project, but he wanted community approval. For help in promoting good public relations, Herz contacted the Alliance for the Future of Agriculture in Nebraska (A-FAN), an organization that assists agricultural producers in communicating the value responsible agricultural development can add to local and state economic and social well-being. Ultimately, the community gave Herz its blessing.

And, yes, Herz did compare the cost of a confinement barn with that of a more

traditional open-lot facility or feedyard. The total cost of constructing a 400-head-capacity barn came to \$659 per head. Construction of a feedyard with that capacity was estimated at \$210 per head. However, the latter estimate did not include any of the waste management facilities associated with a feedyard.

In choosing to build a bedded beef barn, Herz saved the expense of constructing and maintaining a lagoon, as well as the associated DEQ permit fees. EQIP assistance reduced engineering and construction costs for the barn, and Herz qualified for a 10% (up to \$30,000) state tax credit on his

investment in a “livestock modernization project” covered under a state rural development act.

“In the end, my cost was \$305 per head. That’s less than \$100 per head more than an open lot. Adding a waste management lagoon would probably cost that much, so the net costs of the barn versus an open lot are pretty close,” Herz says.

“It has worked out fairly well. I’m pleased so far, and there is potential for expansion on the same three acres. With another barn and necessary feed storage area we could accommodate 800 head someday.”

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