



Mark Burlage converted a gravity box into this high-capacity cattle feeder. One of its roof panels tip open easily for filling with help from cinder block counterweights.



"The great thing about this feeder is that if a bigger steer is eating on one side, he can't see the smaller steer on the other side and push him away from the feed," says Burlage.

High-Capacity Gravity Box Cattle Feeder

Mark Burlage made a gravity box cattle feeder that handles up to 40 head of cattle of different ages.

"Larger cattle will often push younger ones away from the feed," notes Burlage. "The great thing about this feeder is that if a bigger steer is eating on one side, he can't see the smaller steer on the other side."

Burlage has fed cattle for years, starting 10 head or so at a time every 3 months or so. The scheduling guarantees he always has some on hand that are ready for the butcher. Burlage sells most of his cattle to individuals as locker meat.

With a full-time job off the farm, he got tired of transferring feed from a bulk bin to the hog feeders he used. Having delivered feed for a number of years, he had seen a lot of set ups, so he knew what worked and what didn't.

"I noticed that with most V-shaped, commercial cattle feeders, the animal would stand at an angle, take a mouth full of feed, and then turn away from the feeder and

eat," says Burlage. "Feed would drop on the feedlot floor and go to waste."

Burlage wanted a feeder big enough to handle a delivery once a month. When Burlage's father pointed out 2 center dump gravity boxes for sale in the neighborhood, he started to work on the design. With the help of his son, a top-notch welder, he cut holes out of each side and fabricated a push plate that lets the cattle knock down feed. He also installed a wedge-shaped block on the floor of the wagon so feed would drop evenly to all 4 sides.

He also designed it so cattle would stand head on. That way, dropped feed would go back into the bunk. His feeder design includes plastic lined bunks so calves can push their feed around and so the bunks are easy to clean.

"My son welded 4-in. channel iron supports for a 2 by 6, tongue and groove, wood bunk floor about 20 in. above the ground," says Burlage. "Bunk sides are 2 by 10's. We also used channel iron and some other steel to

make six 80-in. legs that we bolted to the sides of the wagon box."

Burlage made gussets from 4-in. wide, 3/16-in. steel to go from the stilts to the channel iron floor supports.

The roof was framed with 3-in. galvanized angle iron edges and 16-ft. 2 by 4's spaced 2 ft. apart for joists. These were overlaid with 3/8-in. plywood, a layer of Tyvek, and galvanized tin roofing material.

"My brother installs HVAC equipment so he bent the tin for the roof," says Burlage. "I screwed it down. Everything on the feeder is either screwed or bolted together."

To increase feed storage capacity, Burlage offset the roof panels. Instead of equal sizes, the fixed position panel is 45 percent of roof area. The 55 percent panel is designed to tip to the side.

"I wanted the auger over the larger panel for a bigger fill," says Burlage.

The roof panels are also significantly larger than the underlying bunk area. All 4 sides extend out over the bunk to protect it from

all but a driving rain or snow.

To make it easier to tip the panel open, Burlage hung cinder block counterweights on the lower corners. This balances the panel, making it easy to pull it back into place with cables attached to the top corners of the feeder. Once in place, the cables slip over tie-down hooks to secure the panel in place.

Moving the feeder up the hill from where it was made would have been difficult without salvaged I-beams from an old concrete corncrib. The I-beams were the just the right size to slip under the stilts. Welded in place, they made first-rate runners.

"We slid it right up the road and into place on the feeding floor," recalls Burlage. "The feeder holds 8 ton of feed, and my cattle are dressing out better than with the old hog feeders I used before."

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Novavert Retractable Roof can be closed quickly to protect plants against weather extremes. Photo shows roof completely retracted.



Roof uses a system of struts, cables and fabric screening strong enough for a person to stand on. Photo shows roof partially retracted.

Easy-To-Retract Greenhouse Roof

A new retractable roof for greenhouses was developed in Europe and is now available in Canada and the U.S.

"Most plants grow stronger and healthier with more vibrant color when exposed to natural sunlight, breezes and light rains," says Craig Riesebosch, Westland Greenhouse Equipment and Supplies. "However, if grown outside, plants can be damaged by hail, strong winds, heavy rains and frost. The Novavert Retractable Roof can be closed quickly to protect plants against weather extremes."

The roof uses a system of struts, cables and fabric screening strong enough for a person to stand on. It can be designed with waterproof cloth to channel water away or

shade or blackout cloth for light control where weather extremes aren't a concern. An insulated double layer is also available for even earlier starts and later season protection.

"Our initial target market is customers who raise pots for hanging baskets, as well as bedding plant and flower producers in cooler temperature zones," says Riesebosch. "Our retractable roofs let the plants get started earlier in the spring and get them to market sooner. In the fall, the Novavert system protects against heavy winds, rain and frost, yet exposes the plants enough to ready them for next year's growth."

The company is working on a lower cost version for orchards, adds Riesebosch. While

every installation is unique, he estimates average cost at between \$6 and \$9 per square foot.

"The cost depends on size, height and type of structure," says Riesebosch. "It is not a low-cost alternative to a greenhouse, but a better one for the plants."

The Novavert system uses all stainless steel wires and aluminum components. Riesebosch notes that a clip that is made from plastic is, like other components, easily replaced.

"The beauty of the system is that any one piece can be replaced, including the cloth, which is easy to install or change," he says. "The system has been proven in Germany, and we are confident it has a place in

moderate climates in North America."

While he says the company is still experimenting with the system in colder climates, he thinks it has a place there as well.

"In colder areas like Quebec, they use heavy snowfalls to insulate plants for overwintering," says Riesebosch. "It could be ideal for protecting plants when needed and letting the snow fall on plants when appropriate."

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