►"With uniform forage in the field, we had uniform manure application," says Jason Gross, describing one of the benefits of The Pivot Fence system.

►"Much like a movable feedbunk, the calves all took their places and waited while that pivot was moving. They spread themselves out the entire length of that pivot," Gross says.

PHOTOS COURTESY OF JASON GROSS

Turn Your Irrigating System into a Fencing System

Pivot fence allocates a specific amount of fall/winter forage with minimal labor required.

*by **Paige Nelson,** field editor*

After months of nonuse, pivot irrigation systems are finally put to work during the growing season; but, after crops are harvested, they slowly crawl back into depreciating winter hibernation. Jason Gross, University of Nebraska–Lincoln (UNL) Extension biological systems engineer, thought the $100,000 piece of equipment could be used for more than just watering crops.

From 2009-2010 Gross noticed a high-priced trend in harvested forage. His solution? Let the cattle feed themselves in the field during the fall and winter months. However, intake control, frozen soils and labor costs made him think harder about an easier way to manage cattle in the field. The result? The Pivot Fence was born. The seemingly simple idea was recognized by the American Society of Agricultural and Biological Engineers as one of the top 50 innovative engineering products for the food and agriculture industries in 2014.

35 Keys to Success
Winter Feed Management

Says Gross, "[The Pivot Fence] allows you to graze cover crops, crop residues and forages, control dietary intake for performance issues, or just control intake to reduce founder. Basically, you can move a quarter-mile fence, or longer fence, in a couple of minutes."

John Rieckman, farm operations manager at the U.S. Meat Animal Research Center (USMARC) near Clay Center, Neb., says, "I had often pondered how to utilize the pivot for a movable/temporary fence while grazing crop residues." So when he heard about The Pivot Fence, he chose to purchase the system in hopes it would "increase percent utilization of grazed feedstuffs with minimal labor investment."

After one year of use, USMARC has ordered two more fences for the fall grazing season.

Installation and maintenance

The design is modest and can be mounted on any pivot, center or linear, without causing any damage to the pivot. The fence system consists of three main components:

►John Rieckman, farm operations manager at the U.S. Meat Animal Research Center (USMARC) near Clay Center, Neb., was looking for a way to use the pivot as a movable fencing system when he purchased The Pivot Fence. USMARC has since ordered two more pivot fencing systems.

►"Once we were advancing the pivot and giving them more forage to graze, they really didn't go back to grazing what they already left behind," Gross says, "and that kept the calves from really overworking the soil or putting a lot of compaction out there."

►"[The wire] can grow or it can shrink with the pivot as it moves through the field without it getting too much stress and breaking or drooping down too low and getting snagged," explains Gross.

The **truss-rod hanger** is attached to the truss rods between each tower. It functions to stabilize the wire and can be adjusted vertically according to the height of the cattle using the system. Truss-rod hangers can be placed anywhere between the towers. Depending on the topography of the soil, use as many as are needed to stabilize the wire.

In the event of the pivot bumping into something, "the truss-rod hangers are made to break away, so they won't cause any damage to the pivot or themselves," says Gross.

A **wire clamp with an insulator** is fixed to the tower brace pipe and works to stabilize the wire by keeping the wire from grounding on the pipe or on the drive motor.

The **tension-control system** allows the current to flow by keeping the wire at a constant tension, no matter the terrain or the weather.

"The pivot shrinks and elongates as it moves through a field based off of terrain. [The wire] can grow or it can shrink with the pivot as it moves through the field without it getting too much stress and breaking, or drooping down too low and getting snagged," explains Gross.

Because of its design, The Pivot Fence can be installed on a pivot in a matter of 2-3 hours and uninstalled in about an hour. Though it has been done, Gross does not recommend leaving it installed during the irrigating season.

The system ranges from $250-$300 per tower depending on the terrain of the field. Thanks to Global Positioning Systems (GPS), The Pivot Fence can be moved in minutes, from anywhere in the world, or it can be operated from the pivot tower.

Maintenance on the fence hasn't been a problem for Gross, who says, "temporary fixes would be pretty easy, and there's not a lot to break." As for the wear on the pivot, Gross advises positioning the wire so that the cows and the calves are opposite of the motor.

"Because the pivot moves every day," he says, "cattle do not tear up the ground where the wheel is by rubbing in the same spot every day."

Rieckman used the fence for the first time in the fall of 2013 and says he saw no damage to the pivot after using this system.

"I was originally concerned with moving the (T-L hydraulic drive) pivot in cold weather, but everything worked great," he says.

Cattle management

To test the usefulness of Gross's invention, UNL grazed 328 feeder

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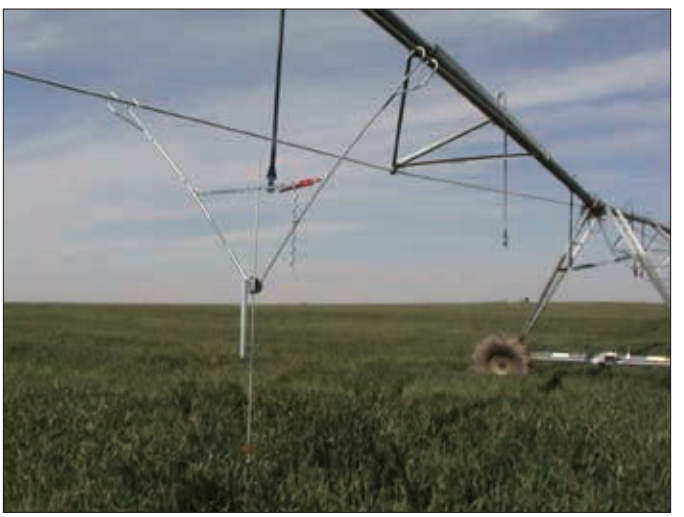
►A wire clamp with an insulator is fixed to the tower brace pipe and works to stabilize the wire by keeping the wire from grounding on the pipe or on the drive motor.



►The truss rod hanger is attached to the truss rods between each tower. Depending on the topography of the soil, as many as are needed to stabilize the wire can be used.

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calves during the 2011 and 2012 fall and winter seasons. The calves' average forage intake was almost 15.5 pound (lb.) per head per day. On windrowed forage, they had an 83% forage utilization rate. During the first grazing period, UNL moved the fence every three days; after that the grazing period was shortened to every two days and eventually to every other day.

"Once we were advancing the pivot and giving them more forage to graze, they really didn't go back to grazing what they already left behind, and that kept the calves from really overworking the soil or putting a lot of compaction out there. They were always ready for the new forage to graze," notes Gross.

"Much like a movable feedbunk, the calves all took their places and waited while that pivot was moving. They spread themselves out the entire length of that pivot," he adds.

Rieckman says USMARC moved the pivot daily while grazing the mature, postweaning cows from mid-October through early December. The cattle were given 4.75 acres per day to graze "a cocktail mixture of late-August-seeded oats, turnips and radishes."

USMARC has not harvested this year's crop from the winter-grazed field, but Rieckman isn't worried about any surprise compaction issues.

"As we grazed cattle in the early winter months, I do not expect to see any compacted areas. In addition to soil winter heaving, radishes were included in the cocktail mix to help with potential/

incidental soil compaction," he explains.

With his feeder calves, Gross noticed that as long as there was a uniform amount of forage in the field, there was also uniform manure application.

Cattle are noticeably happier and healthier when they can spread out. Gross says, in the field the cattle are in a comfortable environment, and he saw a dramatic improvement in the behavior of the feeder calves.

"As you interact with those cattle at the pivot point regularly, they become 'bucket-calf' like in their demeanor. It will be noticeable," he says.

Rieckman hasn't seen much change in the behavior of his cattle, but he says the economic benefits of using a system like The Pivot Fence "enables the [manager] to allocate forage with minimal labor involved.

"Every pound of dry matter harvested through grazing animals in the dormant season is 1 pound less of mechanically harvested feed that needs to be produced and fed," he says.

For more information on the system, visit *www.thepivotfence.com.*

Editor's Note: *Paige Nelson is a field editor from Rigby, Idaho.*