

# Solar-Powered Feeder Eliminates Waste

Ear tags identify each calf to sensors on solar-powered feeder, which then delivers portions of calf's daily feed allotment. Steel dividers create 4 single animal feed stalls on each side.



Matt Ford's calves get all the feed they need with minimal waste thanks to his solar-powered, moveable cattle feeder. Ear tags identify each calf to sensors on the feeder, which then delivers portions of the calf's daily feed allotment. Half the allotment is available in the morning and half in the afternoon.

"The calves can stay in place and the feed will continue to be delivered in small amounts, or they can leave and return for the

rest of their ration," says Ford. "Some calves eat their entire ration at once, and others come back multiple times through the day."

Ford designed the feeding system for dairy heifers to compensate for the poor-quality forage in the drained marshland on his farm. Environmental rules prevent fertilizing or reseeded. While multiple years of intensive grazing helped, supplemental feeding was needed.

"We dropped piles of feed on the ground,

but we are near the ocean, and seagulls took a lot, plus we couldn't regulate how much each animal got," says Ford. "Some were quick and others too slow, and we ended up with waste and worm problems."

His solution was a battery-powered, Out of Parlor feeding system from Agricultural Technology Limited ([www.atlagri.com](http://www.atlagri.com)). He mounted it on a low trailer so it could be moved between paddocks. Steel dividers create 4 single animal feed stalls on each side. Initially Ford added pallets to the dividers to ensure one-per-stall feeding with smaller calves. Later he fabricated steel replacements to fit over the dividers when needed.

A steel box added to one end houses the battery and onboard processor to run the sensors and feed delivery gates. He installed a small solar panel to top off the battery, but quickly found that a second battery and a larger panel were needed. He also made some modifications to the hopper to strengthen it and make it more watertight.

The 8-stall system can easily handle 200 head a day, delivering the prescribed amount of feed and tracking how much was eaten and when.

"Some animals will visit the feeder 16 to 17 times a day, while others will visit 2 to 3 times," says Ford.



Steel box on feeder houses the battery and onboard processor that operate the sensors and feed delivery gates.

The entire system came to about \$13,700. The trailer cost about \$2,745, and the feeding unit was about \$9,600. The remainder covered the cost of the solar panels and other components.

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## Cordless Thresher Samples Grain Fast

In one quick swoop, Dean Quimby's cordless hand thresher strips grain from stems, cleans them, and collects them for testing. Quimby says the device is increasingly vital as smaller elevators close and regional hubs become more common.

"Many farmers in western Kansas have to haul their grain 50 miles or more at harvest," says Quimby. "If they haven't taken a sample and checked for moisture before harvesting, they may be told the grain is too wet. They can't sell it, and it's not worth hauling home."

Getting an accurate test requires gathering a representative sample and threshing it clean. That's something that isn't practical to do with a combine, especially if using custom cutters to harvest. It is also not easy to eliminate hulls and chaff by hand.

"With my cordless hand thresher, a farmer can check his grain, and if it's ready, tell the custom cutters to come and get it," says Quimby.

Quimby developed his first prototype more than 25 years ago and displayed it at trade shows and meetings from Kansas to Perth, Australia. He patented it as the Field Scout. The basic components include a V-shaped throat that strips the grains as the thresher is moved up the stem. The grains fall into a chamber studded with 5/8-in. tines and a rotating shaft with six 1 1/2-in. tines through it. They thresh out the grain, which falls through a screen into a catch basin that can hold 300 grams.

"The shaft on my first prototype was driven by a handheld kitchen mixer powered by flashlight batteries," says Quimby. "I used a glue gun to attach pieces of plastic to create a housing."



Cordless hand thresher strips grain from stems and cleans it, and collects it for testing.



Grain is threshed inside a chamber studded with small tines, and a rotating shaft with larger tines through it.

The new prototype works essentially the same as the original. The tines in the housing are made from heavy-duty trimmer line. Different size grains require different sized screens, which slip easily into place.

Hulls, chaff and other trash are directed through an exit hole in the back as the swinging arm motion collects more grain.

Quimby also took advantage of the growth in cordless equipment. The hand thresher is powered by a 2,000-rpm, cordless, right angle drill.

"It works great for a wide variety of grains, including wheat, barley, oats and rice," he says. "It even works great with milo."

The new unit weighs only 2 lbs., 4 oz. before adding the angle drill. That adds about 4 lbs. to the working weight. Pricing for the unit will depend on manufacturing and marketing costs.

The next step for Quimby will be to develop a simple 2-piece plastic molding that snaps together for mounting and dismounting the cordless drill. It will also form the housing for the threshing and clean grain chambers. He has submitted a patent with the new features and is eager to find a company interested in bringing the thresher to market.

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"Rollback dump truck" combines the advantages of a flatbed dump truck and an industrial rollback model, without the cost or hassle of multiple bodies.

## "Rollback Dump Truck" Is Two Trucks in One

"Our patented new rollback dump truck allows you to load equipment, haul it to a job, haul and dump material all day, and then haul it back home without needing a second truck or trailer. With customizable side options, it also works great to load and unload almost any kind of material from the side and also dump it," says Kevin Rampley, Jackson, Mo.

The Rampro EZ-Load truck is designed as a flatbed with stake pockets on 2-ft. centers. A patented solid lock and a pair of telescoping hydraulic cylinders allow dumping the load without any holdback.

"The lock holds the truck's subframe down when loading and unloading in the rollback mode. That allows an angle as shallow as 13 degrees for loading equipment onto the flatbed, or as high as 48 degrees for dumping any material," says Rampley.

"It combines the advantages of a flatbed dump truck and an industrial rollback model, without the cost or hassle of multiple bodies. Until now, if you wanted to load equipment onto a truck and then use the truck to dump, your only options were hook lift systems. You had to deal with switching truck bodies, and couldn't winch equipment or materials onto the truck."

The truck also comes with a powerful hydraulic winch for loading and unloading large logs and so forth.

Rampley says the Rampro EZ-Load has gained national interest from landscaping and tree service companies, concrete contractors, and city and county maintenance departments. Farmers will find many uses for it, too, he says.

"It works great to haul everything from big tree trunks to liquid fertilizer containers, skid loaders, and other farm equipment. You can use a skid loader or loader tractor to dump loads over the sides, or quickly remove the sides to allow hauling over-width loads. Some farmers install high plywood sides to haul material such as mulch or grain. Others install fold-down sides for forklift access."

The Rampro EZ-Load is available in 4 models. The Construction Pro is a 24-ft. tandem axle truck with 52,000 GVW and a 30,000-load capacity, and a 15,000-lb. hydraulic winch. The Landscape Buddy is a 20-ft. single axle model offering 2 load ranges: 33,000 GVW with 17,000-lb. load capacity, and 26,000 GVW with 10,000-lb. load capacity. (No CDL requirement). Both offer a 10,000-lb. winch.

The smallest model available, the Municipal, is a 16-ft. single axle truck with a 21,000 GVW and a 10,000-lb. load capacity. It also comes with a 10,000-lb. winch.

"Most people order a new truck and then have it drop shipped to us for refitting according to their needs," says Rampley. "The price to custom build a truck ranges from \$25,000 to \$40,000, depending on options."

You can watch videos of the EZ-Load truck in action on the company website.

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