

## DAIRY MODERNIZATION

By Kathy Barrett and Beth Dahl

Feed pushers and robots for barn cleaning are available in addition to robotic milkers

# Automated feed pushers

How many times have you walked through your barn and observed the many tasks being performed and thought, there's got to be an easier way? Robotic milking is gaining popularity on many farms, but other options of automation may also be a fit for your dairy operation, even if you don't have plans to step away from your milking parlor any time soon.

## Feed pushers keep your cows eating

There's nothing surprising about constant feed availability being beneficial to your cows' milk production. Research from recent years shows more frequent delivery of fresh feed reduces sorting, and supports improved access to feed for all cows, especially those that tend to be subordinate. View DeVries research online at <http://www.ncbi.nlm.nih.gov/pubmed/16162529>.

With the knowledge that milk production is directly impacted by feed intake, many farmers have made it standard protocol to improve bunk management and to increase the frequency of feed pushup between feedings. While this proves beneficial to cows, it requires additional labor or restructuring of existing labor routines.

One survey by DairyLogix assessed feeding related tasks on 115 dairy farms, ranging considerably in size and method of feed pushup. The survey found based on the average \$14.31 hourly wage, and the reported average feed pushup of four times daily, at

just over six minutes each time, that this task alone costs the average surveyed farm \$2,256 per year. Given these economics, or using those calculated for your farm, length of time for return on investing in automated bunk management can be estimated.

For example, using the above estimates, a fully automated, battery powered feed pusher with a \$25,000 price tag would take about 12 years to fully pay for itself on labor savings alone. However, farms using automated feed pushers report feed pushup frequency closer to 12 to 18 times per day, which, while difficult to quantify, would most certainly have an impact on dry matter intake and more importantly, milk production.

Aside from battery powered options, hydraulic and cable mounted feed pushers are also available at varying costs, each with pros and cons that might make one more attractive than another.

With a hydraulic or cable mounted scraper that runs the length of the feed bunk, investment cost is typically lower, with the same benefit of more frequent feed pushup. This reduces competition, sorting, and ensures cows have access to the feed put before them. Depending on the design, they may provide challenges in locating a return alley or obstructing feed delivery and cleanup.

A wheel-mounted, battery-operated feed pusher likely carries a higher price tag than the other two styles, but comes with the benefit of being out of the way when recharging or not in use. This is the more common type of automated feed pusher seen on New York dairies. Since it is a standalone piece of equipment it can be used in most facilities without making renovations. The pusher follows the line of the bunk to push feed up without disturbing the cows. It returns to the charger unit after each pass to recharge. The farmer sets how often and when the feed pusher makes a pass. The robot stops if some-

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Automated feed pusher

## FYI

■ **Kathy Barrett** is a member of the Cornell PRO-DAIRY Program. Email her at [kfb3@cornell.edu](mailto:kfb3@cornell.edu) or call 607.229.4357.

■ **Beth Dahl** is the former dairy modernization specialist for Cornell Cooperative Extension Northwest New York Dairy, Livestock & Field Crops.

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one steps in front of it or if something is in the alley.

The route the robot takes is determined when the system is installed. It can be changed later if so desired. The distance the robot is from the bunk is also set according to the preference of the producer. The number of passes can be set for as many times as the producer feels is beneficial both day and night. Having feed available consistently is especially valuable to the more timid cows who get pushed out of the way when feed is first delivered or pushed up only a couple of times a day.

The number of cows, location of and distance between barns, and additional management of feed bunks all have to be considered when determining which automated feed pusher is most beneficial. They all come with the opportunity to increase feed intake and improve your bottom line.

### How about a robot for barn cleaning?

Clean cows are important for milk quality and cow health, not to mention efficient milking routines. Limiting exposure of teat ends to dirt and pathogens helps keep udders healthy. No one wants anything but the best quality milk going through the milk system. The less time that is needed to clean a cow's udder when she gets milked, the less time needed to get the cow prepped, and the milking machine on. You may have seen a robot designed for barn cleaning at a farm show or perhaps on a dairy. Barn cleaning robots are



Automated manure scraper

designed for slatted floors. We don't see a lot of slatted floors on dairy farms in NY, but there are some. These robots work much the same way the feed pusher robots do. They are battery-powered and wheel-driven. When not cleaning they return to the charger to recharge. The route and timing is set to the producer's preference. For robotic milking systems with slatted floors they work nicely for cleaning the barn with minimal disturbance to the cows. □

### Precision feeding on a Western NY dairy *continued from page 24*

deliveries and cattle sales. Smith sites this level of accuracy and accountability as being absolutely essential to error control in their system. He attributes this focus to his grandfather who maintains an active role in decision making for the business.

With numerous technologically advanced pieces of equipment to oversee Smith is quick to point out the challenges that come with this direction of feed management.

"There are downfalls," he said. "You have remotes, antennas and a lot of equipment communication to maintain. And it's a different style of management. I have everything on my phone since I have to be able to observe and respond on the go."

Staying mobile with the constant influx of data to oversee isn't the only challenge. Being on the cutting edge of some technologies means Smith has to rely on tech support from other countries to diagnose any issues and perform most repair and maintenance work on his own. This is a challenge he has enjoyed.

Just like any other aspect of major capital investment on the farm, Smith is responsible for proving the value of these investments in precision feeding to the other partners at Lawnel. So far he feels the equipment and inventory controls have met their mark.

While attributing changes in cow performance to a single variable on the farm is difficult, Smith feels confident that they are realizing a two to three percent reduction in dry matter loss. With the change

from their previous mixer to the new self-loading vertical screw mixer they've seen a five pound increase in milk production per cow per day.

At the end of the day, Smith has faith in the technologies he applies to feeding cows.

"Just because the technology is there, you can't let it run on autopilot," he said. "You have to believe in it, but don't take it for granted, it still has to be managed."

Like GPS, yield maps and other precision farming technologies, Smith can't necessarily flip a switch and make drastic improvements in feeding. But he can use these tools to establish parameters to more accurately feed cows and manage inventories and costs, while establishing a baseline to help direct management decisions on long-term cropping and feeding strategies.

As for what's next for Lawnel's feeding system, Smith has his sights set on a handheld device using NIR capability to measure dry matter for each feeding. This will allow him to apply real-time dry matter measurement as feed is mixed. He will also be able to control quality and measure the value on a dry matter basis of incoming loads of corn in the fall.

Smith calls this rapid, frequent monitoring the holy grail in precision feeding.

"Being able to control dry matter intakes is what it's all about," he said, "and I can't wait to better have that ability." □