

DAIRY MODERNIZATION

By Beth Dahl

Lawnel Farms uses precision feeding to increase efficiency and milk production.

# Precision feeding on a Western NY dairy

When it comes to feeding cow Amos Smith doesn't mess around.

Since taking the first step into precision feeding in 2004 with FeedWatch, the owners at Lawnel Farm in Piffard, NY have made it a habit to stay ahead of the curve by applying the latest technology to one of the most critical aspects of dairy farming.

"We saw feed management and feeding as an area of opportunity and really wanted to improve inventory control and better manage costs," said Smith, who with sister Kirsty, is the fourth generation at Lawnel Farm.

It's easy to recognize Smith's enthusiasm for his charge of overseeing the feeding of 3,000 mouths each day. Since joining his family on the farm after returning from college in 2006 he has applied that enthusiasm to meeting farm goals of improved environmental sustainability and greater efficiency with labor and other resources. With FeedWatch, the whole process of feeding is simplified.

"It removes a lot of potential human error," Smith said. But as they've learned in the ten years since first installing the system, "you can't use it to micro-manage feeding."

Instead, Smith can set parameters for the amount

and order to add each ration ingredient. In turn, feedback detailing the accuracy with which the feeder prepared each ration is received. This rapid exchange of information allows for fluid changes to rations and head counts, and allows Smith to provide incentives and input to employees based on compliance.

In 2007 Lawnel owners took another step forward by adding an RMH Mixellent self-loading mixer to their feeding system. Smith first saw this technology in action on farms in Italy during a Cornell dairy trip. The self-loading mixer drives efficiency and replaces three pieces of equipment formerly used in feeding.

Perhaps, more importantly, it adds to his ability to customize rations and improve consistency of each batch of feed. This degree of precise ration preparation would be difficult to achieve by even the best feeder. And the mixer is able to do it quickly and ensure more even batches, which helps regulate dry matter intakes. Moreover, the mixer communicates wirelessly to feed bins, and monitors inventories and reduces waste. Because it is a self-contained unit, Smith believes the mixer provides a sort of insurance policy by limiting the likelihood of employee mishaps and reducing equipment requiring repair and maintenance.

The next addition to the Lawnel feed and feeding system came in 2011 with the installation of Weigh Right scales. These unmanned truck scales are linked to FeedWatch and serve a two-fold purpose:

- improve the accuracy that Smith can monitor incoming and outgoing loads of feed, milk and cattle
- add a level of accountability and ensure accurate weight records

The scales are used daily for loads of milk, and also for preparing inventory during harvest, feed

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**FYI**

■ 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. □

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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." □