

## PRECISION FEED MANAGEMENT

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Precision feed management demands a consistent supply of high quality forage

# What you need to put PFM into practice

**Precision feed management (PFM)** is a two-pronged strategy:

1. Precisely provide the nutrients cows require for optimum production without overfeeding, especially phosphorus (P) and nitrogen (N).

2. Feed diets high in forage and homegrown feeds.

These two strategies address both the single largest expense on a dairy and the largest contributor to nutrient imbalance – purchased feeds.

This article focuses on the second prong, feeding high forage diets. The benefits of feeding this type of diet are tremendous: healthy cows, support for high milk production, and economic and environmental savings. Specifically, producers employing PFM see better milk components, less acidosis and foot health problems, lower veterinary bills and culling rate, and increased lactations per cow.

For PFM, high forage diets:

- Supply neutral detergent fiber (NDF) at greater than 0.9% of body weight.
- Contain at least 60% forage.
- Are at least 60% homegrown.

High forage diets only work if you consistently supply high quality forage that's highly digestible. The forage must be palatable and provide effective physical fiber.

## Plan for high forage rations

The heart of PFM is a feed management plan that lays out how you will get the inventory of high quality forage your herd needs. The first step: Involve both your feed and crop advisers.

Work with your feed adviser to develop a forage inventory goal that incorporates quality standards and quantity. Review your forage test results from the past year with your adviser and determine where your forage quality falls short, preventing you from adding more forage to your ration.

Here are quality goals:

- Hay crops: 50 - 55% NDF for grasses; 38 - 42% NDF for alfalfa. This quality allows for the level of forage intake you're after.

- Corn silage: 40 - 45% NDF; 30 - 35% starch.

Based on your ration needs, project how many tons of each type of forage you require to feed a high forage ration for the year. Here's a rule of thumb: 25 to 30 pounds of dry matter per cow per day, or 5.5 to 6.5 tons of dry matter per cow per year, taking into account field, fermentation and feeding losses.

Now work with your crop adviser to estimate how many acres you need of each crop, using realistic yields given your land resources. An important step is to identify your "core hay" acres. These are the ones needed to supply your milking cows with a quality hay crop. Focus additional management and resources on these fields; they're critical to your success in meeting PFM goals.

Dairy managers must identify the two or three

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## Plan your work; work your plan

Here are five important questions you must answer to complete your precision feed management (PFM) plan:

1. Does the crop mix arrived at with your advisers match your land resources and conservation plan? ☐ Yes ☐ No
2. Is there opportunity to increase yield while maintaining quality? ☐ Yes ☐ No
3. Will you need more acres? ☐ Yes ☐ No
4. Do you have the machinery and labor capacity to harvest these crops in a timely manner to achieve the desired quality and quantity? ☐ Yes ☐ No
5. Will your storage facilities accommodate these amounts and allow for the proper allocation of feeds? ☐ Yes ☐ No

## FYI

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## THE MANAGER

### Save money with sound decisions

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nearly 10-cent higher IOPFC per cow. That's despite DDG's appearing to be a better buy on a cost per ton basis. Using IOPFC leads to the more profitable decision to feed the bypass soy product.

Cost wasn't the only consideration. The current ration already had high levels of DDG and adding more might depress butterfat levels because of excessive dietary unsaturated fat. Also, it could create poorer amino acid patterns, potentially decreasing milk protein and increasing phosphorus (P) intakes, which are already in excess of dietary P requirements.

IOPFC applies to field crops, too. Consider nitrogen (N) fertilization for corn and grasses. N prices are 400% higher today compared to five years ago. Farmers have made knee-jerk reactions to \$800 urea and eliminated N applications on grasses this year.

Farmers may have forgotten that N fertilization, judiciously used in combination with other N sources such as legumes, manure and sod breakdown, has large returns on investment. Without adequate N applications, some dairies are now forage deficient, and the forage they have is lower in protein. These dairies are forced into purchasing forage and more grain. Plus, they may have lower total milk production.

### Does PFM work?

As dairies have implemented PFM in various parts of New York,

we've seen positive economic and environmental impacts. Some early work showed more than a 30% increase in IOPFC when PFM was fully implemented. At the same time, manure N was reduced 17% and P reduced by 28%.

For an idea of the P reduction, consider that dical is 20% phosphorus. A 28% reduction in manure P excretion equates to approximately 5.5 tons less dical being purchased per 100 cows per year. That's a savings of more than \$5,500 to the dairy while decreasing P imports to the farm by 2,200 pounds.

One case study dairy has continued to expand its land base to begin growing high moisture ear corn to meet a portion of its grain needs. This has allowed the dairy to use its land more efficiently for manure application and crop rotations. Currently, the dairy's lactating herd's diet is 67% homegrown feed compared to 10 years ago when it was 42%.

A two-year Cornell Dairy Farm Business Summary study of years 2005 and 2006 indicates that, on average, PFM dairies produced 1,400 pounds more milk per cow but with operating expenses \$1.33 per cwt. lower compared to non-PFM cohorts.

These same PFM dairies reduced manure N and P excretions 10 and 25%, respectively, while reducing on-farm accumulations of these nutrients by more than 50%.

Precision feed management is a proven system. For successful implementation dairy managers must take charge of the process on their dairies. Use the benchmarks presented in *The Manager* to monitor and drive the process. ■

### What you need to put PFM into practice

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most limiting factors to delivering quality forage to their cows. Then they must decide what to do to improve in those areas. Devise a plan after seeking input from family, employees, peers and advisers.

Remember, it's your dairy and your goals; you drive the process. Don't be tempted to bite off more than you can handle. Finally, institute a system to monitor your changes to ensure you're moving in the right direction – toward precision feed management. Consistent movement toward your goal will result in success. ■

## Nutrients in balance

The Delaware County Precision Feed Management (PFM) project has measured the mass nutrient balance impact on a number of dairies over several years. On average, before PFM, dairies ended each year with 55 pounds more phosphorus (P) per cow than when the year began. To prevent losses to the environment, this extra P must be carefully managed.

After several years of progress toward PFM goals, the same farms averaged only 19 pounds of P per cow per year – a 66% decrease. Similar reductions were observed for nitrogen (N). With less than half the nutrients to deal with, nutrient management best management practices (BMPs) should be more effective.

### What is precision feed management?

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Feed, crop and cow advisers know the technical details of what a dairy must change to achieve PFM benchmarks. But managers must drive the process by communicating their goals, asking questions, making decisions and leading the implementation.

Implementing PFM revolves around four actions: monitor, assess, plan and implement. Monitoring requires on-farm records including feed and herd production testing. Effective assessment and planning tactics for implementation result from periodic meetings with farm advisers.

On the crop side, fall or winter meetings with crop advisers and nutritionists prepare managers for the following year's crop season. It's critical that managers integrate ration needs, such as ensuring adequate feed inventory required to feed a higher forage diet, with crop planning. This is best accomplished by getting your nutritionist and crop consultant in the same room at least once a year.

PFM is a continuous process to improve cropping, feeding and nutrient management. It takes time to implement. Our experience suggests that a dairy may take three to five years to work through the web of major changes required to implement PFM. That's followed by diligent monitoring and minor corrections. ■