Mind your P's & N's for economic and environmental sustainability!

Nutrients, such as nitrogen and phosphorus, can be lost at many different times in the on-farm nutrient cycle.

Saving nutrients leads to improved economic sustainability for the dairy producer -- fewer purchases of protein supplement for the herd and fertilizer for the field.

Saving nutrients also leads to improved environmental sustainability -- fewer nutrients such as P & N finding their way into surface water, groundwater, and air.
Research to maximize P & N utilization (and minimize loss) is a major goal at the U.S. Dairy Forage Research Center.

Nutrient Losses Examples of USDFRC research

Feed loss during storage
- Testing bunker cover materials, methods
- Measuring DM loss due to heating -- in large bales, both hay and baleage

Indigestible fiber
- Selecting & modifying forage plants for increased NDFD
- Identifying & quantifying rumen microbes that digest feed

Underutilized protein
- Seeking ways to reduce protein degradation of alfalfa -- in the rumen and during ensiling
  -- determining protective nature of tannins and PPO/o-diphenols

Unbalanced rations
- On-farm, daily monitoring of forage moisture
- Fine-tuning protein requirements
- Developing new standardized starch analysis

Farmstead and field volatilization and runoff
- Determining and measuring fate of ammonia
- Determining N&P losses in runoff from corn and alfalfa

Soil erosion from cropland
- Intercropping of legumes and corn

Mind your P's and N's with the Snap-Shot Assessment of Nutrient Use Efficiency

Measure and monitor feed, fertilizer, and manure use on dairy farms.

These materials and more are available on the USDFRC web site:

www.ars.usda.gov/mwa/madison/dfrc

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