



Grass for Dairy Cows in the Northeast

Most cropland in the Northeast is better suited to perennial grass production than to legumes or row crop production. High grass yields are possible, but the majority of dairy farmers consider forage quality the Achilles Heel of grasses.

Nutrient Management Issues

Nutrient accumulation is common on dairy farms; an aggressive nutrient management plan is essential for minimal environmental impact. Grasses have some advantages when it comes to nutrient management. Compared to alfalfa, grasses have a greater response to manure, which can be applied multiple times during the season. Grasses use large quantities of nutrients, minimizing the risk of nutrient leaching or runoff. They can remove over twice the nitrogen per acre compared to corn.

Less than Ideal Soils

New York State has approximately 650 agricultural soil types, classified into five Soil Management Groups based on soil texture and parent material. Soils are also grouped based on drainage, many soils in the Northeast have inadequate drainage. These soil conditions make persistence of pure stands of alfalfa very difficult. Approximately 85% of the alfalfa seeded in NYS is seeded with a perennial grass companion.

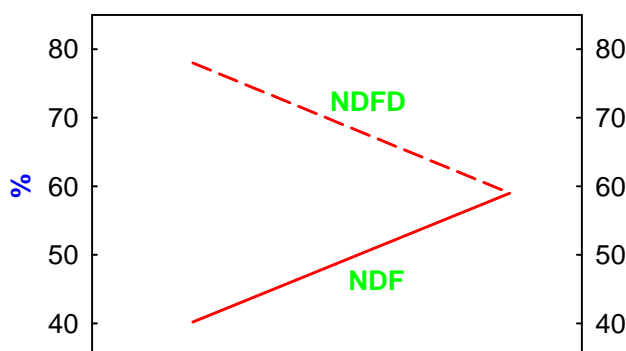
Why Alfalfa-Grass Mixtures?

Over 95% of alfalfa in California is seeded in pure stands, approximately 80% of alfalfa in the Midwest also is seeded in pure stands. Any grass in these regions tends to be viewed as a weed that lowers the value of the crop as dairy forage. Hence, the great interest in Round-up Ready alfalfa in those regions. Most agricultural land in the Northeast is well suited to perennial grasses. Grass is more likely to persist on these soils than alfalfa, and what starts as alfalfa management applied to mixtures usually ends up as grass management after one or two years.

Grass Forage Quality

While species and variety selection, as well as fertilization issues, are important, harvest management will determine the success or failure of grass silage as high producing dairy cow forage. Fiber digestibility is critical, but is not useful as a harvest date target, because there is no optimum level to aim for.

Forage quality is controlled by management, primarily harvest management. A spring harvest date target is based on optimum forage NDF for the class of livestock being fed. The NDF target for lactating dairy cow forage is 50-55%. A three-cut management is suggested for much of the Northeast, with the first two cuts taken at optimum NDF, followed by a fall cut suited for dry cow forage.



Mid-May to the end of May

Figure 1. A linear increase in NDF (about 0.85 units/day) is coupled with a linear decrease in fiber digestibility (NDFD)(about 0.85 units/day) as perennial grass matures in May.

Dry cow forage

Grass forage declines in K content with increased plant age. Fall-cut perennial grass will be relatively low in potassium. Fields can also be specifically managed to only produce dry cow forage. This involves selection of fields with relatively low soil K, avoiding manure or fertilizer K applications, and using a two-cut seasonal management for relatively mature

low-K grass forage.

Grass in Dairy Rations

While grass may be shunned by many dairy farmers outside the Northeast, it is embraced by most dairy farmers in the region. Improved management for high quality, advances in equipment, and innovations related to bale silage and other storage options have made grass silage a more attractive option for dairy farmers. Farmers producing grass silage tend to practice a higher level of grass management, and silage making can avoid many weather-related problems that lead to lower quality forage. High quality is essential, the higher the NDF, the more concentrate required, and the lower the forage proportion of the ration.



We have conducted a number of grass feeding trials with medium to high producing cows. Rather than use forage to concentrate ratios, which favors the higher quality forage, rations were balanced for maximum NDF in the diet that would not limit intake. This allowed most cows to attain their intake potential with optimal ruminal fills. It also maximized the use of homegrown feeds, which had a favorable impact on farm nutrient balance. While grass can be used as the primary fiber source in a dairy ration, our feeding trial results indicated that an alfalfa-grass mixture is a better fiber source than either pure grass or pure alfalfa.

Precision Feeding is the Key

Precision feed management combines feed management and environmental sustainability. PFM provides adequate (not excess) nutrients to the dairy cow, maximizing nutrients from homegrown feeds. Eventually this integration

of feeding and forage management leads to environmental and economic sustainability. To maximize the benefits of grass forage in dairy rations, all ration components must be monitored closely to maximize grass use and minimize over-feeding of nutrients.

PFM has measurable benchmark goals that increase use of homegrown feeds, optimize crop production to the feeding system, and minimize nutrient overfeeding. Farm management determines the limiting factors and decides which ones to focus on. If perennial grass is one of the homegrown forages available, it will certainly be one of the factors that must be addressed to succeed with PFM.

Summary

Milk production per cow is a major factor in determining dairy farm sustainability and profitability. Grass silage can produce as much milk per cow as alfalfa silage when rations are balanced. High quality perennial grass forage can be produced, but requires more intensive management than alfalfa. High quality perennial grass forage can fit well in the rations of high producing dairy cows.

Additional Resources

- 2011 Cornell Guide for Integrated Field Crops Management. Electronically accessible at: <http://ipmguidelines.org/Fieldcrops/>.

Disclaimer

This information sheet reflects the current (and past) authors' best effort to interpret a complex body of scientific research, and to translate this into practical management options. Following the guidance provided in this information sheet does not assure compliance with any applicable law, rule, regulation or standard, or the achievement of particular discharge levels from agricultural land.

For more information



Cornell University
Cooperative Extension

Grass Management Manual
<http://forages.org>

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