



Grass Harvest Management

Grass is the most common crop ensiled in the world. Much of the cropland in the Northeast is better suited to perennial grass production than to legumes or row crop production. Although it is possible to make hay in the Northeast in the spring, the odds are against it. Significant advances have been made in recent years in recognizing the potential of well-managed grasses for silage, but on average the level of management is still not as high as with alfalfa.

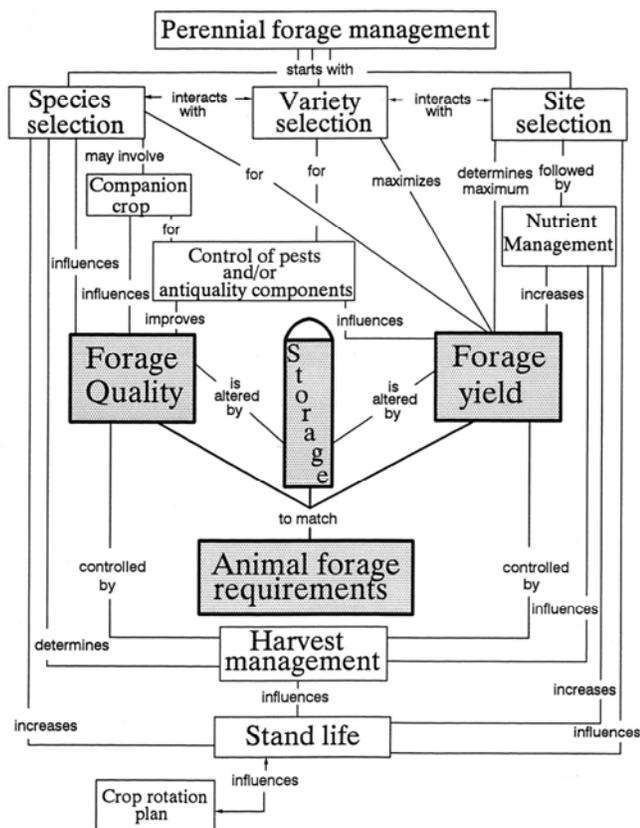


Figure 1. Flow diagram of forage management.

There are several critical management decisions involved in establishing a grass forage crop (Fig. 1). Once established, harvest management is the focal point of the forage management system. By controlling forage maturity, harvest management controls forage quality and has a major impact on yield.

Three Cuts vs. Four Cuts

Three harvests per season are possible in northern NY and up to 4 harvests per season in southern NY. Yield is maximized with 3 cuts per season (Fig. 2). Four-cut yields range from 75 to 85% of 3-cut yields. Two harvests per season also will yield approximately 85% of 3-cut yields. Two cuts of mature forage are appropriate for dry cow/heifer forage and are discussed in Grass Information Sheet #25.

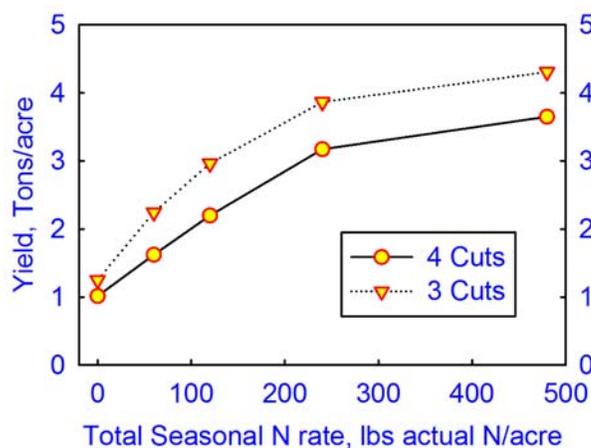


Figure 2. Dry matter yield as influenced by N application rate and number of cuts/season. Averages of 2 grass species (timothy and reed canarygrass), 3 sites, 3 years, and 4 replicates.

“Intensive” Three-cut Management

We suggest three cuts/season for much of the Northeast. The first two cuts are taken for lactating dairy feed, with a goal of 50-55% NDF. Wide swathing management with silage harvest the same day as mowing will provide the highest forage quality, and is discussed in Grass Information Sheet #21. A third harvest in the fall for heifer/dry cow forage can be taken when convenient.

The general harvest management scheme is to harvest in mid-late May at a late boot stage just before heading. The second harvest should occur 30-35 days later, as the quality decline in regrowth is as rapid as in spring

growth. Regrowth tends to look leafy and immature, but is deceptive. Most cool-season grasses produce a stem during regrowth, with rapid elongation. Some species produce a flowering head and some, like reed canarygrass, do not. Although no head appears, reed canarygrass produces a stem during regrowth with a rapid increase in NDF content. If harvested in a timely fashion, the first two harvests should be of optimum fiber content with an acceptable CP content (approx. 15-18% CP).

Two spring/early summer harvests of perennial grass will produce about 65-85% of the total annual yield in a three-cut system (Table 1). Focusing N application on grass growth for the first two cuts slightly increases the proportion of annual yield in cuts 1+2. A longer season site (Ithaca) will have a smaller proportion of yield in cuts 1+2 compared to a shorter season high elevation site (Freeville).

Table 1. Proportion of the annual yield in the first two cuts of a three-cut system. Application of 200 lbs N/acre at spring greenup and split N application in the spring and after 1st and 2nd cuts. Averages of 3 grass species (orchardgrass, reed canarygrass and tall fescue), 3 years, and 4 replicates.

Cut 1+2 yield proportion		
N treatment	Ithaca	Freeville
0-0-0	65%	83%
100-50-50	65%	80%
100-100-0	70%	82%
200-0-0	74%	85%

Take a third harvest in September or early October. No matter when the fall harvest is made, this forage will be low in CP, low in NDF and relatively low in digestibility/digestible fiber content. Fertilizing the summer/fall regrowth with N will increase yield for the third harvest somewhat, but will have almost no impact on quality. It will not increase the CP content of fall-cut grass. Fall-cut grass also tends to be lower in potassium than spring cut forage, making it a reasonable dry cow feed.

Summary

Harvest management controls forage quality of grass stands, and high forage quality is essential if a lactating dairy quality forage is desired. Three harvests per season will maximize dry matter yield and a majority of the forage will be acceptable for lactating cows, with timely harvest of cuts 1 and 2. Three harvests also will result in lower harvest management costs than four harvests.

Additional Resources

- 2011 Cornell Guide for Integrated Field Crops Management. Electronically accessible at: <http://ipmguidelines.org/Fieldcrops/>.
- Cherney, J.H., D.J.R. Cherney, and D. Parsons. 2006. Grass Silage Management Issues. p. 37-49. In Proceedings from "Silage for Dairy Farms: Growing, Harvesting, Storing, and Feeding". NRAES-181. 23-25 Jan., 2006. Harrisburg, PA. Natural Resource, Agriculture, Engineering Service, Ithaca, NY.
- Cherney, D.J.R. and J.H. Cherney. 2006. Split application of nitrogen on temperate perennial grasses in the Northeast USA. Online. Forage and Grazinglands doi: 10.1094/FG-2006-1211-01-RS.
- Hall, M.W., J.H. Cherney and C.A. Rotz. 2007. Chapter 8. Saving Forage as Hay or Silage. Pages 121-134. In (E. Rayburn, ed.) Forage Utilization for Pasture-Based Livestock Production. NRAES-173. Natural Resource, Agriculture, and Engineering Service. Ithaca, NY.

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



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

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