

Grazing Management for Dairy Cattle

Dennis Johnson¹ and Hugh Chester-Jones²

¹West Central Research and Outreach Center, University of Minnesota, Morris

²Southern Research and Outreach Center, University of Minnesota, Waseca

Introduction

The challenges of managing a grazing system for dairy cattle are quite different than managing a confinement dairy system. The manager of a grazing system must be flexible and constantly adjusting to changing situations. Managers of confinement systems are usually very production oriented, seeking their profit from high levels of output. The grazer is focused on cost control and making innovative use of the unique features of his or her farm.

Goals with a Grazing System

Goals usually relate to the matter of profit. Animals probably will not milk as much or may not grow as rapidly on pasture as in intensive confinement units, but satisfactory growth and production may be achieved on pasture with costs that are drastically reduced. Certainly a startup-grazing farm can be established at a far lower cost than a startup confinement system. Other goals relate to the environment. Many parcels of land are not well suited to row crop production, but may be very productive when grazed and kept under perennial cover. Most farmers are conservationists with a strong sense that they are stewards, not owners of their property. Quality of life for the farmer is a third issue. A survey of intensive dairy graziers revealed a group of farmers who were able spend more time doing the farm tasks they enjoy when doing grass based farming.

Pasture Improvement

Pasture renovation is a way to increase forage production by growing more productive species. Forage production from pastures that consist primarily of short grasses (bluegrass, etc.) can be improved by the inclusion of more productive grasses (bromegrass, orchardgrass, reed canarygrass, etc.). Grass pastures can be further improved with the inclusion of legumes. Legumes improve the distribution of forage growth through the growing season, increase forage intake by grazing animals, and improve animal performance. In addition, the N the supplied by legumes to grasses results in more grass growth in summer. Legumes can provide 80 to 100 lb N per acre to grasses in a pasture. Further, over 80% of the legume N grazed by livestock is returned to the pasture through manure and urine.

There are many ways to improve pastures. They include conventional seeding using tillage, to reduced or no-till seeding, to frost seeding. Of these methods, conventional tillage has the best chance for success, but is also the most expensive. Using a no-till drill on pastures can also have a high rate of success, particularly if vegetation is suppressed with herbicides prior to planting. A 1/2 rate of glyphosate (Roundup, Jury, etc.) when plants reach about 4 inches in height in spring will usually suppress but not kill most pasture grasses. The seed then can be no-till drilled into the sod. Grass growth is reduced while the legumes establish. After the eight week grazing restriction for glyphosate, grazing can resume. Frost seeding is relatively inexpensive and can result in improved pastures. Frost seeding is better suited to legumes than

grasses. Frost seeding consists of broadcasting seed on the soil in late fall or early spring and letting the freezing and thawing incorporate the seed into the soil. This method has a fairly high risk for stand failure. However, it can also result in good stands of legumes, and is particularly well suited to rocky pastures where conventional equipment cannot be used. Red and white clover tend to be best suited to this type of seeding as they have a higher rate of germination when frost seeded than many of the other legumes. For interseeding pastures without the use of herbicides several management practices can help to increase the odds for success. They are: 1) Graze existing pastures heavily in the summer and fall before seeding to suppress the existing grasses. It is best if grazing results in some soil showing. 2) Apply or plant seed in pasture in late fall or early spring. 3) If frost or broadcast seeding use a legume which has relatively inexpensive seed, with good seedling vigor, and with tolerance to the soil conditions (red or white clover can work well). 4) During legume seedling development, use short periods of heavy grazing to reduce the shading of the seedlings by grasses. Light grazing allows livestock to select the legumes. Grazing periods longer than 5 days during establishment may be detrimental to establishing legumes.

Herd Management

Pasture or grazing system management often becomes the center of the grazer's attention and monitoring skills. But the cow must also be considered. Herd fertility is a serious problem in many herds. Seasonal graziers match the stage of the lactation cycle to coincide with the trends in grass production. The grazing season for most Minnesota herds runs from about May 10th to October 15th with a flush of grass growth in May and June. Legumes continue growth more successfully during the warmer portions of the summer. Confinement dairies calve the year around and individual calving intervals may average 14 months with 40% calving intervals. That is not acceptable for a seasonal calving dairy herd. Many graziers are considering crossing the predominant Holstein strain cattle with Jersey, Brown Swiss or more exotic genetic strains in order to improve reproductive rates and calf livability. Grazing offers an opportunity to reduce culling and health care costs through improved fitness, thus offering the opportunity to sell heifers at higher prices. Adequate levels of milk production must be maintained. Production per cow is almost certain to be lower with grazing than with confinement housing. Production per cow is important, but production per acre is normally the standard for measuring performance of grazing systems. As research yields new information production per cow is likely to increase. How to harvest the milk? Farmers converting to grazing have a new set of milking issues to contend with. Often the old milking stable is substantially depreciated and inefficiently utilized as a milking center. Many graziers wish to reduce time spent milking even as they increase herd size. Low cost renovations of stall-barns to New Zealand style swing-over designs are becoming popular.

Supplementing Diets

Supplementary feeds are designed to complement the characteristics of the pasture forage at a reasonable cost. Table 1 shows that grasses and legumes benefit from different supplement formulations. Neither grass nor legume pasture will meet the energy requirement of the high producing dairy cow. Levels of Neutral Detergent Fiber (NDF), especially in grasses, will limit the ability of the cow to maximize dry matter intake. High quality legumes or grasses provide adequate levels of protein, although requirements for bypass protein may not be met.

Table 1. Nutrient recommendations^a for cows in early lactation and nutrient composition of pastures.

Nutrient	Recommendation	Grass	Grass-Legume	Legume
NE _L , Mcal/lb	0.78	0.65 - 0.70	0.66 - 0.72	0.68 - 0.74
CP, % of DM	19	18 - 22	21 - 23	23 - 25
Escape protein	7.2	4.6 - 4.3	4.2 - 5.7	4.6 - 5.0
NDF, % of DM (min)	28	50	44	38
NFC ^b , % of DM	36 - 40	15 - 20	15 - 20	20 - 25

^a NRC (National Research Council, 1989) recommendations.

^b Nonfiber carbohydrate.

There remain unanswered questions on appropriate supplementation for grazing cows. Cows on all forage diets should respond to supplementation with high-energy feeds. Unfortunately cereal grains replace forage in the diet. A typical energy supplement consists of 10 to 16 lb of finely ground shelled corn with salt and minerals. That works out to 1 lb of supplement for every 4 to 5 lb of milk produced each day. Stored forage or additional grain may be provided to adjust for seasonal changes in pasture performance.