



GRASS-BASED AND SEASONAL DAIRYING

LIVESTOCK PRODUCTION GUIDE

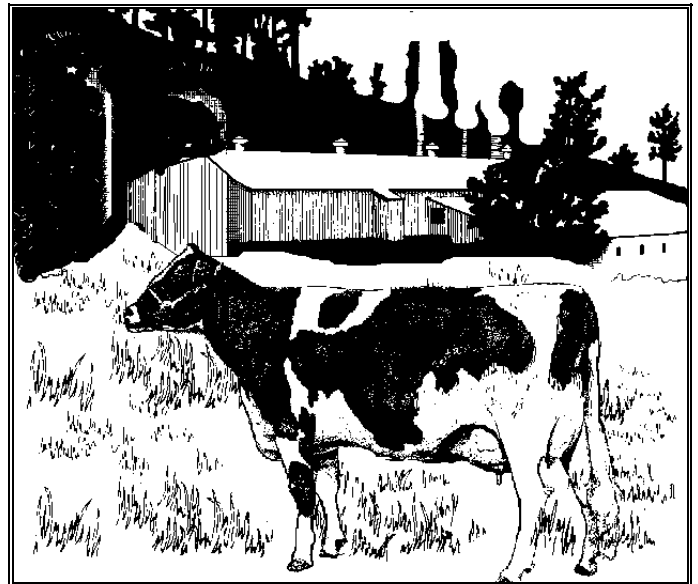
ATTRA is the national sustainable agriculture information center funded by the USDA's Rural Business -- Cooperative Service.

Abstract: Grass-based dairies use skilled management and controlled rotational grazing. Managers offer dairy quality forages for the entire grazing season. It is a challenge to supplement this forage diet for optimal milk production and profitability. Some graziers are taking the next step to seasonal dairying. They choose to dry off the whole herd at once, thus earning a vacation from all milking. However, management is even more difficult in such a system. Certain breeds or individual cows are more adapted to a seasonal grass-based system. Many graziers report improved health when cows are on pasture most of the year. Special equipment for fencing and water systems has been developed and is increasingly available. Additional resources are listed.

By Alice Beetz
 NCAT Agriculture Specialist
 December 1998

Introduction

Grass-based dairies differ from confinement dairies because cows harvest their own feed, reducing the need for costly supplemental feed and other purchased supplies. However, they require considerably more management skill. Seasonal operations have increased challenges in breeding all cows in a short period and in planning for loss of income during the off season. Animals must be selected for the farm's grazing system. Because there is a growing number of this type of dairy, new information resources and producer networks are being developed throughout the country. New types of equipment and facilities are also becoming available.



Although the production of high quality milk must remain a central goal, this system demands that you also manage the forage as an important crop in itself. It can be useful to think of the milk as a means of marketing the forage.

Monitoring forage resources, proper feed supplementation, adjusting stocking rates, and controlling grazing duration will require the manager's attention in order to maximize milk production using forage resources.

Choice of forages in a grazing program

A key decision in a grass-based dairy that is already utilizing its existing forage resources is to

Contents	
Choice of forages	1
Maintaining forages	2
Seasonal dairying	2
Breeds	3
Equipment	3
Health	4
Resources	4
References	4
Enclosures	5
Other Useful Resources	5
Websites	5

choose additional forages that give high production over the entire milking season. In the earlier days of rotational grazing, high pasture diversity and lower fertilizer inputs were valued. Now dairy graziers with high utilization rates can justify using higher N levels. They are also adding special-use pastures of fewer species in order to extend the grazing season. Local NRCS or Extension personnel can help in choosing forages that are productive in the area. Using summer and winter annuals through no-till establishment can be economically viable in a dairy grazing program.

Maintaining the forages

Soil or forage samples indicate the nutrient status of the pastures. Once amendments are made, and the organic matter is maximized, fewer adjustments may be needed to maintain good fertility. Because manure is returned to the pasture, many nutrients will cycle back to the soil. Nevertheless, soil tests should be periodically repeated in order to ensure high production. Further information about soil fertility management in pasture systems is available upon request from ATTRA.

If animals do not have the chance to continuously graze down preferred forages, these desirable forage plants are maintained in the pasture. In many cases, the plant community becomes more diverse. Plants adapted to the varied soil and moisture conditions of the landscape thrive in their microclimates. See the box on ATTRA publications related to pasture and grazing management.

<p>Related ATTRA Materials Sustainable Pasture Management Rotational Grazing Meeting the Nutritional Needs of Ruminants on Pasture Matching Livestock & Forage Resources Assessing the Pasture Soil Resource Nutrient Cycling in Pastures Sustainable Soil Management</p>

Duration of grazing and rest intervals in rotational grazing are not usually determined by

the calendar. Factors that affect these decisions include: forage availability and its rate of growth, cow numbers and stage of lactation, and the number of paddocks available. Moving animals from a paddock before plants are overgrazed allows cows access to new, succulent growth at frequent intervals. Some grass dairies provide a fresh paddock after each milking to ensure plenty of high quality feed at all times. Most grazing management decisions with dairy animals should be based on meeting the nutritional needs of these high-producing livestock.

The dairy grazer must maintain flexibility in order to respond to changing forage supply. During periods of rapid plant growth, cows can be quickly moved through paddocks or excess forage can be harvested as hay or silage for feeding later. During slow plant growth periods, delayed rotation allows plants in each paddock a longer recovery time after each grazing period. In winter, the use of stockpiled (growth and accumulation during late growing season) cool-season grasses or small grains alone or with brassicas or root crops, can delay the time when hay or silage feeding must begin. Grain and stalks left in corn or milo fields after harvest can also provide adequate nutrition for dry cows.

Supplementary feed is used in most grass dairies to establish the proper protein to carbohydrate ratio. Energy, not protein is often the most limiting component in a well-managed pasture-based system. Because cows will select higher quality feed when grazing (grazing behavior influences intake) recommendations based on harvested forages do not necessarily hold true. The enclosed article by Howe lists some of the factors to consider. The ATTRA publication *Meeting the Nutritional Needs of Ruminants on Pasture* provides more depth on this subject and is available upon request.

Seasonal dairying

Dairying in the U.S. has traditionally produced milk on a year-round basis with a feeding system of silage, hay, and grain. However, seasonal dairying is becoming more popular. It was first practiced in New Zealand where little grain is

grown and government subsidies disappeared years ago. Seasonal systems match the reproductive cycle of the cows to availability of forage. The highest nutrient requirements of the cow--during calving and lactation--are timed to occur in the season of highest quality and quantity, usually Spring.

In seasonal dairying, since all the cows dry off at once, it is not necessary to milk for a couple of months during the year. The idea is to avoid the period of highest cost milk production. (In very hot, humid climates, summer might be the time to dry off the cows.) Many dairy producers appreciate this rare opportunity for time off from milking, but all must adjust to a period of no income from milk. As more dairies have become seasonal, milk processors have begun indicating that they may dock these producers, especially in certain parts of the country, where there is already an oversupply of milk in the spring of the year.

Synchronized breeding is critical to the seasonal dairy. The goal is for all cows to calve within a 6 to 8 week period. Success depends on body condition, adequate nutrition, and good all-round reproductive management. Getting cows bred in a short time period may be the biggest challenge in a seasonal dairy program. Producers are finding that getting cows off concrete and into pasture aids in detecting estrus in cows.

Unfortunately, producers are also learning that vegetative forages are very high in rumen degradable protein and low in energy. Therefore, there can be a tendency for cows to lose condition because of decreased available energy, and some grain feeding must be done.

Breeds

Some dairy breeds may be better able to use high quality forage. However, there is considerable variation among individuals within breeds. Culling those that aren't adapted to a forage-based system is essential to achieving a profitable grass-based dairy operation. Raising replacement heifers on pasture and selecting those that perform well

and breed more efficiently can accomplish this objective.

The dairy industry has focused on high production under confinement for many generations of cows. High milk production has been bred into cows at the expense of body condition. A lactating animal's nutrients go first to milk production, then to its fetus if it is pregnant, and finally to body maintenance requirements. Thus, many U.S. dairy cows with high milk producing genes will tend to lose condition and will not milk to their genetic potential in a grass-based setting. For this reason, some grass-based dairies are importing genetics from New Zealand, where no grain is fed to dairy animals.

Some producers are now saying that Holsteins, because of their large size, are difficult to maintain on a yearly calving schedule. They are looking at smaller dairy breeds such as Jerseys, either as purebreds or to cross with Holsteins or New Zealand Friesians, to meet their goals. Some traditional breeds have also received attention. Several producers in the United States are evaluating sires from New Zealand in their breeding program to decrease the size of cows and increase their ability to produce on pastures.

Equipment

To implement any rotational grazing system requires an investment in fencing. High-tensile electric fencing materials are cheaper and easier to install than conventional fencing. Energizers produce a short-duration, high voltage impulse that is very effective in controlling livestock, especially when a "training paddock" is used to introduce new individuals into the system. Temporary as well as permanent electric fencing materials are available. These offer even more flexibility in managing animal and plant resources. If local distributors do not offer these improved fencing materials, check the advertisements in *The Stockman Grass Farmer* (1) (call for free sample copy) or call ATTRA for a list of suppliers.

Providing access to water is another capital expense when setting up the rotational grazing

system. Some experienced producers, recognizing the value of an adequate water supply system, have expressed regret that they did not initially invest more time and money in design and equipment for this purpose. Designing a water system for future expansion may be the best option for beginners with limited available funds.

Some systems use alleyways to give animals access to one water source from several paddocks. Others use above-ground or buried pipes. Whatever design is chosen, the area around the water source will suffer from heavy traffic and is a potential source of parasites, diseases, and erosion. Portable water tanks that connect to a permanent pipe system are available and offer advantages that may justify the expense of installing and moving them. ATTRA has more information on water and fencing systems for grass-based dairies.

Health

Many farmers find that switching to grass-based dairying improves herd health. By getting cows out of the barn, cow comfort is improved. Grassy pastures tend to be drier and cleaner than confinement facilities, and fresh, well-managed forage is more nutritious. Farmers report that they don't have the pneumonia, scours and mastitis they did when their cows were raised in a high-input, confinement setting. Refer to the enclosed article "Keeping the Vet at Bay" for further information.

Resources

Several universities – particularly, Wisconsin, Vermont, Minnesota, Missouri, Ohio State, and Penn State – are investigating grass-based dairying. Their dairy and animal science departments or Extension services can be contacted for excellent publications on the various aspects of managing a grass-based dairy system.

You may already be aware of *The Stockman Grass Farmer* (1), published in Jackson, Mississippi. Articles are often written by

innovative practitioners describing their experiences. The advertisements and articles in this publication offer tips on equipment, consultants, and training workshops. "The Grass Farmer's Bookshelf," is another valuable feature of each issue. It lists available books, videos, and audio. A free sample issue can be obtained by calling the 800 number and asking for the last issue that focused on grass dairying.

The magazine *Hoard's Dairyman* (2) often publishes articles on grass and seasonal dairying. Other farm magazines may offer articles about this type of dairy management as well. The "Other Useful Resources" section below lists books for further information on various aspects of grass dairying. The publications listed in this section may be available through the Interlibrary loan services of the local library if booksellers cannot order them.

Larry Tranel at the University of Wisconsin has developed a computer program called "Seasonal Dairy," which is available through *The Stockman Grass Farmer* (1). This program uses cost estimates to help farmers decide if seasonal, grass-based dairying would be more profitable for them than conventional dairying. Tranel has also recently published a book on the economics of seasonal dairying called *Dollars and Sense*. It is listed below under "Other Useful Resources."

The Dairy Pasture Ration Balancer is another computer resource, developed by Ed Rayburn of West Virginia and available for \$35. It can be downloaded from the Website listed (3).

An electronic resource available online is "graze-I" at listserv@taranaki.ac.nz. To subscribe send a message to the above address that says, "subscribe graze-I" followed by your e-mail address. Many web sites also provide information useful to dairy graziers (see list below).

References:

- 1) The Stockman Grass Farmer
P.O. Box 9607
Jackson, MS 39286-9909
(800) 748-9808

References: (continued)

- 2) Hoard's Dairyman
28 Milwaukee Ave. W.
P.O. Box 801
Fort Atkinson, WI 53538-0801
(414) 563-5551
- 3) Ed Rayburn
West Virginia University
P.O. Box 6108
Morgantown, WV 26506-6108
(304) 293-2219 ext. 4209
www.caf.wvu.edu/~forage/

Enclosures:

Anon. 1996. Keeping the vet at bay. The Land Stewardship Letter. December. p. 8.

Anon. 1997. PFI 1996 On-farm trial results - III. Practical Farmer. Summer. p. 19-23.

Anon. 1998. Seasonal grass dairying said to be a way for Midwest to compete with California. Stockman Grass Farmer. March. p. 18.

Dietman, Paul. 199?. Making the Transition: Six Wisconsin Dairy Farm Families Talk About the Switch to Management Intensive Grazing. Center for Integrated Agricultural Systems, College of Agricultural and Life Sciences Research Division. UW-Madison, Madison, WI.
23 p.

Howe, Gus. 1995. Nutrition crucial to grazing cows. New England Farmer. June. p. 24.

Klausner, IS.D., et al. 1998. Improving dairy farm sustainability I: An approach to animal and crop nutrient management planning. Journal of Production Agriculture. April-June. p. 163-4, 225-33.

McNair, Joel. 1998. Looking back on a decade of grass-based dairying. Wisconsin Agriculturist. April. p. 8-9.

Shirk, Glenn. 1998. The profit zone of milk production. Pasture Talk. February. p. 8.

Other Useful Resources:

[Most of these books are listed as out of print. Interlibrary Loan services at local libraries may be able

to obtain a copy. There are also out of print book services. Bibliofind.com, specializes in out of print books; amazon.com, and barnesandnoble.com also provide services.]

Bingham, Sam with Allan Savory. 1990. Holistic Resource Management Workbook. Island Press, Washington, D.C.

Available through bookstores for about \$25.

Hodgson, John. 1990. Grazing Management: Science into Practice. John Wiley & Sons, Inc., New York, NY. ISBN 0-582-45010-1. 203 p.

Barnes & Noble offer for \$60; Amazon says it's out of print

Nicol, A.M. (ed.) 1987. Livestock Feeding on Pasture. Occasional Publication No. 10. New Zealand Society of Animal Production. Private Bag, Hamilton, New Zealand. ISBN 0111-3976. 145 p.

Very difficult to obtain; try Interlibrary Loan services.

Tranel, Larry. 1994. Dollars and Sense. Greenpark Press, Jackson, MS. 130 p.

Out of print; may not be in libraries; try book services to obtain.

Wilkinson, J.M. 1984. Milk and Meat From Grass. Granada, New York, NY. 149 p.

Out of print.

Websites: (remember these change frequently)

Center for Dairy Profitability (University of Wisconsin-Madison)

<http://www.wisc.edu/dairy-profit/>

Dairy MAP(Management and Profitability

<http://www-as.cas.psu.edu/dairymap/>

Dairy Farming (J. Rankin, Ireland)

<http://www.loughries.demon.co.uk//>

Mark Varner's Bookmarks

<http://www.wam.umd.edu/~markv/bookmark.htm>

The Vermont Dairy Profitability Project

<http://farm.fic.niu.edu/cae/caepubs/dairy/vt.dairy.html>

Owenlea Holsteins

<http://www.bright.net/~fwo/>

Other Useful Resources: (continued)

Forgey Homepage

<http://sunsite.unc.edu/farming-connection/grazing/forgey/forghome.htm>

e-dairy Homepage

<http://www.liszt.com/read/e-dairy/>

Not Just Cows

<http://www.morrisville.edu/~drewwe/njc/>

West Virginia University Homepage (many links)
www.caf.wvu.edu/~forage/

By Alice Beetz
NCAT Agriculture Specialist

December 1998

THE ATTRA PROJECT IS OPERATED BY THE NATIONAL CENTER FOR APPROPRIATE TECHNOLOGY UNDER A GRANT FROM THE RURAL BUSINESS-COOPERATIVE SERVICE, U.S. DEPARTMENT OF AGRICULTURE. THESE ORGANIZATIONS DO NOT RECOMMEND OR ENDORSE PRODUCTS, COMPANIES, OR INDIVIDUALS. ATTRA IS LOCATED IN THE OZARK MOUNTAINS AT THE UNIVERSITY OF ARKANSAS IN FAYETTEVILLE AT P.O. BOX 3657, FAYETTEVILLE, AR 72702. ATTRA STAFF MEMBERS PREFER TO RECEIVE REQUESTS FOR INFORMATION ABOUT SUSTAINABLE AGRICULTURE VIA THE TOLL-FREE NUMBER 800-346-9140.