



LPES Small Farms Fact Sheets*



Photos courtesy of USDA NRCS.

The ABCs of Pasture Grazing

By Ben Bartlett, Michigan State University

Summary

Well-managed pastures are Always the Best Crop for the environment, for the grazing animal, and for you. A well-managed pasture is a dense, healthy crop of grass and legumes that can provide a security blanket for the land, good nutrition for the animal, and more money in your pocket. Achieving a well-managed pasture does not take a big investment. It does require animal and plant knowledge, identification of your goals, some equipment, and practice.

MWPS



*Now available online at www.lpes.org.



Why is a Well-Managed Pasture Always the Best Crop?

The best crop for the *environment* would protect the soil from wind and water erosion; catch the most rainfall possible to recharge the underground water system; hold, capture, and use nutrients applied in the form of manure and fertilizer; and provide a valuable product for human society. A well-managed pasture can do all this.

Managed grazing of pastures can provide nutritious grasses and legumes, or forage, rations for cattle, sheep, horses, goats, and other grazing animals. Pasture also gives the animals the freedom to exercise, choose their diet, and recycle their own manure (Figure 1). Pasture managed with controlled grazing can lower your costs by reducing equipment used, facility investments, and labor required. This results in the potential for *decreased costs and increased net profit*.

Pasture managed with controlled grazing can lower your costs.

Grazing for Productive and Environmentally Friendly Pastures

The four steps to a grazing plan are as follows:

1. Learn how plants grow and animals graze.
2. Identify your goals for your pasture.
3. Determine your fencing, water, and animal facility needs.
4. Practice, practice, practice the art of grazing.



Figure 1. Horses getting exercise and feed.

Photo courtesy of USDA-NRCS.



Step #1. Learn how plants grow and animals graze.

It rains, grasses and legumes grow, and the cow eats this forage. What else do you need to know? Animals can graze and forages will grow. But to achieve *your* goals, you need to know how plants grow and how animals graze.

To achieve your goals, you need to know how plants grow and how animals graze.

The three principles of plant growth are the growth cycle (Figure 2), what controls growth per year, and the importance of grazing management.

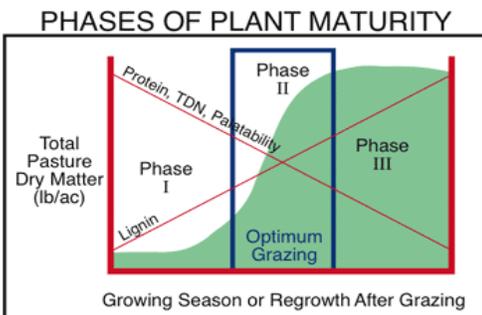


Figure 2. The three phrases of growth.

The growth cycle. Phase I is the first growth after dormancy or winter. It is supplied from the root reserves and is slow. There is limited plant growth but it is very high quality.

In Phase II, the green leaves are big enough to use energy from the sun. This process causes a fast growth rate and a rebuilding of reserves. A high quantity and high quality of forage results.

In Phase III, the growth rate slows as the plant produces seeds and plant decay begins. This yields a large quantity of feed but with decreasing quality.

The ideal grazing system would start grazing near the end of Phase II growth and stop grazing with enough green leaf for rapid regrowth.

These plant growth principles are usable for almost all environments and all kinds of plants.

Growth per year. Each plant can have one or more growth cycles per year but other factors influence the total amount of growth per year. Rainfall, temperature,



soil fertility, and length of day are the main factors that determine season long growth rate. These factors will also have different impact depending on the species or mix of forage species you are growing. To increase the total amount of forage produced, you need to identify the limiting growth factor such as length of day or rainfall. You can add fertility in the form of commercial fertilizer or manure and you can install irrigation, but you cannot control temperature and length of day. (For more information on manure management, see the Small Farms fact sheet titled "Manure on Your Farm: Asset or Liability?") While you cannot make more sunshine, it is important to realize that with cool season grasses the fastest growth will occur during the longest daylight if other factors are adequate. In areas with warm season forages and less rain-fall, growth will depend more on rainfall.

To increase the total amount of forage produced, you need to identify the limiting growth factor, such as rainfall or length of day.

Grazing management.

How you control the animal's grazing can have a big impact on regrowth rates, pasture species, plant density, and nutrient recycling. If you allow animals to graze a long time in the same pasture, they will over-harvest the tasty plants and not put any grazing pressure on the undesirable species. If you graze pastures very frequently and short, like a mowed lawn, it will favor species like clover and the pastures will become more dense. Pastures grazed very short in the fall will be slower to grow in the spring due to decreased reserves (Figure 3).



Figure 3. Beef cattle waiting to graze the next pasture.

Photo courtesy of USDA-NRCS.

Pastures grazed very short in the fall will be slower to grow in the spring.

Your pastures are the product of how they have been grazed in the past. Your current grazing management will determine what your pasture looks like in the future.

Spend time in your pastures learning what forages you have, how they grow, and how you and the environment affect their growth.

These grazing principals work on irrigated or non-irrigated land and for sheep (Figure 4) or cattle grazing.



Figure 4. Sheep grazing irrigated land.

Photo courtesy of USDA-NRCS.

How animals graze.

Grazing animals go for the best plants first and get the most nutrition when first turned into a pasture. Therefore, we can control the level of animal performance by how much of the plant we make the animals eat. For high-input animals like dairy cows, pastures also need to be dense so the cow gets lots of forage with every bite.

How often do animals need a new pasture? The golden rule is that you move animals to a fresh area before they graze any plant regrowth. This could be as short as three days or maybe as long as six months. If animals are allowed to graze regrowth that is not given enough rest to restore root



reserves, the plant is weakened. This lack of rest is overgrazing.

The golden rule is that you move animals to a fresh area before they graze any plant regrowth.

Step #2. Identify your goals for your pasture.

There is not a “right” way to graze or manage your pasture because it depends on your goals. You might want to graze one way for maximum gain per acre or another way for maximum average daily gain per animal. You are in control, and your grazing system can change pasture plant species, plant density, regrowth rates, level of animal performance, and the diversity of the plant community.

Managed grazing puts you in control.

To create a successful grazing program, you need to write down short-term goals for your pastures and long-term goals for your grazing program. Test your grazing system practices against your long-term goals. The most important thing is that you set goals before you make plans and major investments. Where do you want to go? What profit or environmental or personal changes do you expect?

To create a successful grazing program, write down your short- and long-term goals.

Step #3. Determine your fencing, water, and animal facility needs.

Fencing. New fencing materials and fencing techniques have greatly increased the fencing options.

The first fencing decision is to decide where to use an electric (psychological) or a non-electric (physical) barrier



fence. Electric fence is generally lower cost and is the most common choice (Figure 5). Non-electric fences should be used where escape would be very undesirable, animals could be crowded against the fence, or there is danger to humans, especially children (Figure 6).



Figure 5. Electric psychological barrier fence.



Figure 6. Board physical barrier fence.

The fence must be effective. If the animals escape, you do not have controlled grazing. Design your fence for 99% of your animals and sell the 1% who are chronic escapers. Two more important items: the fence must be fixable and low cost over its usable life. Cheap materials may result in a high-cost fence in the long run since the cost of a fence is $\frac{1}{2}$ materials and $\frac{1}{2}$ labor.

Design your fence for 99% of your animals and sell the 1% who are chronic escapers.

To create a fencing plan,

- Determine fence location and legal boundaries.
- Determine what kind of animals you may be grazing.
- Draw your farm/ranch fencing plan on an aerial map.
- Design your fence, that is, the number of posts, wires, gates, etc.



- Make a fence-building priority plan; people rarely build all of their fence in one year.

A good fence includes well-built corner and end posts. See Figure 7 for an example of good end post construction.



Figure 7. Well-built post assembly.

Water. Many pasture systems use streams or ponds/reservoirs for animal watering. Animal access to the water needs to be managed to prevent environmental damage from hooves and too much manure. It may be necessary to fence the entire stream or pond and use a controlled and designed water access site (Figure 8). In many situations, water can be easily and cheaply moved to portable water tanks

via the new plastic pipe (Figure 9). The key is to monitor the streamside areas in your pasture to maintain a healthy ecosystem. (For more information about safeguarding the water on your farm, see the Small Farms fact sheet titled "Protecting the Water on Your Small Farm.")



Figure 8. Stream access site for cattle.
Photo courtesy of USDA NRCS.



Figure 9. Dairy cows drinking from portable water tank in pasture.
Photo courtesy of USDA NRCS.



Animal facilities.

Managed grazing is a low-cost system, but investing in adequate facilities like good fencing is critical. Other animal facilities include handling equipment for gathering and working animals; lanes for mud-free, wet weather travel; and shade for extremely hot weather. Every pasture, every kind of animal, and every part of the country will have different challenges to a productive grazing system. Your responsibility as the manager is to identify the problems and apply solutions.

Managed grazing is a low-cost system, but investing in adequate facilities like good fencing is critical.

How do you design a fence, build a stream access site, or determine the correct fence charger? Local experts are often the best source of this information. Get to know your

fence builders, extension agent, NRCS staff, and other land and animal experts in your area. Some of these organizations also have cost share programs for grazing and environmental conservation practices. The Internet and various websites are other important sources of information.

If you do the right thing at the right time, grazing animals are good for grazing land.

Step #4. Practice, practice, practice the art of grazing.

A well-managed grazing system will improve the health and the productivity of a pasture. If you do the right thing at the right time, grazing animals are good for grazing land. Knowledge of plant growth and how animals graze will help you do the right thing. Do not worry about having the correct size or number of pastures or be overwhelmed by the details of a grazing system. The most



important thing is to get started on an improved grazing system. Your experience on your farm, combined with new grazing knowledge, is the best teacher. A well-managed pasture can improve the environment and your bottom line.

Points to Remember

- Have a goal. Why are you grazing? What will success look like?
 - Understand both the why and the how to. If you do not know why you are doing something, do not do it. More fences are just more fences, not a grazing system.
- Practice, monitor, re-plan, practice, monitor, re-plan. You may never get it all right, but with increasing knowledge and practice, you can get a little closer.



Author

Ben Bartlett, Dairy and Livestock Agent, Michigan State University, can be reached at 906-439-5880 or bartle18@msu.edu.

For More Information

Small Farm Resources

Contact The Stockman Grass Farmer, 800-748-9808, to purchase *Intensive Grazing Management: Forage, Animals, Men, Profits*.

Contact the Iowa State University Extension Distribution Center, 515-294-5247 or www.extension.iastate.edu, to purchase *Pasture Management Guide for Livestock Producers*, 1998.

Contact the University of Wisconsin Extension, 877-947-7827 or cecommerce.uwex.edu, to purchase *Wisconsin Pastures for Profit*, 2002.

Contact University of Missouri Extension Publications, 800-292-0969 or muextension.missouri.edu, to purchase the 1996 *Missouri Grazing Manual*.

Contact Ben Bartlett, MSU Extension, 906-439-5880, to purchase *Watering Systems for Grazing Livestock*, 1998.

Contact University of Wisconsin Extension, 877-947-7827 or cecommerce.uwex.edu, to purchase the CD Pastures for Horses, *A Guide to Rotational Grazing*, 2003.

<http://forages.oregonstate.edu>—Oregon State University Forage Information website

<http://www.sare.org>—Sustainable Agriculture Research and Education

<http://www.attra.org>—National Sustainable Agricultural Information Service

<http://www.uwex.edu/ces/forage/links.htm>—University of Wisconsin Forage and Extension Links

USDA-CSREES Small Farm hotline—800-583-3071

Acknowledgments

The author wishes to thank Dan Undersander, University of Wisconsin; Terry Gompert, University of Nebraska Extension; Woody Lane, Lane Livestock Services; and Kevin Ogles, NRCS Grazing Specialist, for their review of this fact sheet.

The author also wishes to thank Diane Huntrods, the LPES Project Manager, for editing this fact sheet and coordinating its completion.



Financial Support

The LPES Small Farms Fact Sheets were developed with support from the USDA-CSREES, U.S. EPA's National Agriculture Assistance Center, and University of Nebraska Cooperative Extension at Lincoln, under Cooperative Agreement Number 2003-39490-14107.

*Copyright © 2005 by MidWest Plan Service.
Iowa State University, Ames, Iowa 50011-3080.*

Copyright

For copyright permission, contact MidWest Plan Service (MWPS) at 515-294-4337. Organizations may reproduce this fact sheet for non-commercial use, provided they acknowledge MWPS as the copyright owner and include the following credit statement:

Reprinted from the LPES Small Farms Fact Sheets, authored by Ben Bartlett, Michigan State University, courtesy of MWPS, Iowa State University, Ames, Iowa 50011-3080
Copyright © 2005.