Introduction to Management
Intensive Grazing

Management intensive grazing is a method of improving pasture forage production and livestock performance. It essentially involves subdividing large areas of pastureland into smaller areas (paddocks) that are grazed when plants are ready (mainly indicated by height) in flexible rotation. In this way, high-quality forage is rationed out to meet livestock needs, while plants already grazed are protected from being eaten again until they have adequately recovered.

**Pasture Management**

**Recovery Periods** between grazings must change with variations in pasture plant growth rate. The key to successful grazing is adjusting recovery periods between grazings to conform with changes in plant growth rate.

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in plant growth rate; this is done mainly by observing plant height and the amount of pasture mass [total pounds of forage dry matter (DM)/acre] that accumulates over time between grazings. Many things influence recovery periods and decisions to graze, such as plant species and composition of the sward, soil moisture and fertility, current weather, season, future landscape that you desire, requirements to meet your next year’s objectives, and the intensity of grazing management that you want to apply.

For example, in spring when plant growth rate is rapid due to very favorable temperature and soil moisture conditions, recovery periods between grazings are short (e.g., 12 to 18 days), because plants rapidly recover and reach the pregrazing height and mass appropriate for the livestock that are grazing. In midsummer, when plant growth rate generally is slower due to higher temperatures and drier soil conditions, recovery periods need to be longer (e.g., 24 to 30 days). In autumn, plant growth rates usually increase with lower temperatures, then decrease as days shorten; recovery periods need to vary accordingly (e.g., 24 to 42 days).

**Grazing Height/Pasture Mass.** In general, pasture plants should be grazed when they reach 6 to 8 inches for cattle or horses, or 3 to 4 inches for sheep, goats, pigs, or poultry (2,100-2,400 lb DM/acre; short swards are more dense than tall ones), and should be grazed down to 1 to 2 inches (1,000-1,400 lb DM/acre) from the soil surface in each rotation. If plants grow taller, shading kills lower leaves and
Sheep grazing fall stockpiled pasture with a pre-grazing height of 6 inches to a post grazing height of 1-2 inches.

buds. A short residue exposes buds to full sunlight, resulting in a dense, leafy sward.

Paddock Occupation Period. The total time that animals occupy a paddock in any rotation should not be longer than 3 days, for optimum plant and animal production. Longer occupation periods result in overgrazing of the plants and lower DM intake; both decrease production. For highest nutrition and production, lactating animals should receive a fresh paddock after each milking; growing livestock should receive a fresh paddock every day.

Paddock Size must be adjusted according to the intensity of management desired, so that animals receive adequate amounts of forage and most of the forage produced is eaten. Paddock size during the grazing period mainly depends on amount of pasture mass available and allocated, forage quality, number of animals grazing, their energy requirement, and supplementation. Dry matter intake usually needs to be 3 to 5 percent of body weight per day.

Paddock Number. Depending on how frequently animals are moved, 12 to 36 paddocks are needed in spring to midsummer and 24 to 84 are needed in midsummer to fall. Inexpensive portable fencing can be used to subdivide pasture into the required number of paddocks.

Stocking Rate refers to the number of livestock carried or supported per acre during a year or season [expressed as animal units (AU), with 1 AU = 1000 lb liveweight; e.g., 1.4 AU/acre]. Stocking rate is important in balancing the feed requirements of livestock with the amount of pasture forage and other feed grown and used on a farm. It should be kept high to produce and use as much forage as possible.

Measuring dry matter to calculate paddock size on a dairy farm.

Stocking Density refers to the concentrated number of animals grazing a paddock at a given moment, expressed as AU/acre/time period (e.g., 200 AU/acre/12 hours). By its effect on grazing selectivity and intensity, stocking density greatly influ-
ences pasture plant growth and forage use, and should be kept as high as possible. Through its effect on herd or flock behavior and level of feed consumption, it also affects animals’ feed conversion efficiency. If the number and/or size of animals remain the same, decreasing paddock size increases stocking density. Increasing numbers and/or size of animals while paddock size remains constant, increases stocking density.

Surplus Forage usually is available during periods of rapid plant growth, especially in spring. About 50 to 75 percent of the total area that will be grazed during the season should be removed from the rotation in spring, and harvested and stored as hay or silage (conserved). Surplus forage should be harvested when it is 10 to 12 inches tall, to maintain high legume content and sward density, and avoid having stubble after cutting.

Other ways of keeping plants well grazed and vegetative during periods of rapid growth include the following:

✦ Graze twice as many animals during spring to midsummer as after midsummer, then the excess animals have to be fed elsewhere or sold.

✦ Rotate fast by moving animals to fresh paddocks more than once or twice a day, topgrazing all paddocks every 5 days.

✦ Use big breaks (subdivisions of large paddocks) with portable fencing so that the entire pasture is top-grazed every 5 days.

✦ Set stock (continuous graze) by opening all paddock gates to allow animals to top-graze the entire pasture, leaving a high residual mass of 2,000 lb DM/acre (4 to 5 inches tall).

Surplus forage must be conserved—preferably by conserving rather than by just clipping—to maintain pasture plants in a vegetative and highly nutritious stage of growth during the entire season. After an adequate recovery period, indicated by plant regrowth, some paddocks that were conserved can be included in the rotation. Some paddocks may need to be conserved again before being included in the rotation, depending on growing conditions, plant regrowth, forage accumulation, number of animals grazing, and their energy and forage dry matter intake requirements. Increasing the area being grazed by bringing conserved paddocks back into the rotation, lengthens recovery periods as the season progresses and plant growth rate slows.

Farmers discuss pasture water systems at a pasture walk.

Pasture Nutrition

Water is the nutrient needed in largest amounts by livestock, so an adequate supply of good quality, clean, cool water must be available at all times. If you wouldn’t drink from the water source, don’t force your animals to drink from it!

For highest plant and animal production, it’s best to provide water in all paddocks. If water is
near where the animals are grazing, they need to walk less to drink, and nutrients from manure remain in paddocks where they're needed, not in lanes, around water tanks or ponds, or in streams. Livestock must be excluded from stream and river banks in humid environments to improve quality of water flowing through farms. This directly benefits the farm in terms of better quality drinking water for livestock and increased plant and wildlife diversity along the waterways. It also benefits everyone downstream by reducing the load of nutrients and sediment from manure and bank erosion that the water carries. Federal and state agencies encourage fencing of stream and river banks, and will provide technical and financial assistance for doing it. Ask your local NRCS and Extension people for help in fencing and providing alternative ways for your livestock to drink.

**Supplemental Protein** generally is not needed for livestock grazing well-managed pasture because the forage averages 23 percent crude protein. Depending on forage energy content, supplemental energy can increase milk yield of pastured cows, but it may be best not to feed more than 12 lb grain/cow/day more than that substitutes expensive feed for inexpensive pasture forage.

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**Mineral Needs** of livestock vary widely. The best way to make certain that adequate levels of minerals are present in pasture forage is to feed the soil with compost, manure, lime, and fertilizer, and maintain as complex a plant mixture in the pasture as possible. No one plant species is good at everything, and one plant species can’t satisfy all of the mineral and other nutritional needs of grazing livestock. Generally in the Northeast, salt and selenium should be provided to grazing livestock. Depending on local soils, other minerals may be needed in your area.

**Lane and Fence Construction**

**Lanes.** Build all-weather lanes so you can put animals in paddocks where and when plants are ready to graze. Make lanes as short and direct as possible so animals can reach all paddocks with the least amount of walking. Make lanes only as wide as needed, because forage in them usually becomes soiled and wasted; they should be just wide enough to allow the animals and necessary machinery to get through. Shape lanes so water drains off, by crowning them 6 to 12 inches high at
center. Don’t use gravel-size stone on lane surfaces because it damages hooves.

**Electric Fencing.** To manage grazing, livestock must be controlled. This means that you have to be able to place animals where you want them for as long as you want them there. Proper grazing management requires dependable fencing. Fortu-

nately, having good fencing no longer is a problem.

With the development of low-impedance electric fence energizers in New Zealand, controlling livestock became easier and less expensive than it had been with ordinary fence chargers and non-electric fences. Energizers are available to fit all needs and circumstances. There are models that run on 120 or 220 volts, 12-volt auto or marine batteries, solar energy, or flashlight or lantern batteries. The various models have different power outputs, suitable for different livestock and kinds of fencing. Discuss your fencing and livestock situation with an experienced dealer to select the energizer that will meet your needs. Usually it’s best to buy a more powerful energizer than you think you’ll ever need.

Because energizers don’t short out easily, animals (livestock or predators) that touch the fence always receive a strong electrical shock that makes them respect the fence and avoid it. This dependable shocking power is why energized fences can be psychological or mental barriers, rather than physical barriers. Mental-barrier fences can be greatly simplified, and cost much less to build and/or maintain than physical-barrier fences, such as woven wire, multiple-strand barbwire or nonelectric, smooth wire fences. (Never electrify barbwire, because animals or people can be cut badly by the muscle spasm resulting from the shock.)

**Economics of Grazing**

**Economic Benefits** of feeding livestock under management intensive grazing reflect the improved quantity and quality of forage produced from pasture. This results in purchasing less grain, concentrates, hay, and silage. Because less of these need to be fed, the amount of labor is reduced. It takes two to three times as much labor to feed the large amount of silage, hay, grain, and concentrates

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required by confined animals as it does to feed the reduced amount needed by animals under management intensive grazing.

Other benefits include less labor for manure handling and decreased bedding expense, because animals are confined less when grazing. Because

Join a farm discussion group or attend a pasture walk.

fewer crops have to be planted, fertilized, cared for in controlling pests, harvested, stored, and fed for animals on pasture-based farms, less labor is needed in these activities. It follows that less machinery use and repair, fuel, seed, fertilizer, pesticides, and electrical power are needed with

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decreased cropping. With reduced cropping, soil erosion and water pollution decrease.

Other benefits may not be immediately quantifiable, such as improved herd management due to closer observation of animals when moving them in the pasture. Herd health generally improves. Both of these aspects can save veterinary expenses, and result in improved conception, production, and longevity of livestock. On dairy farms, milk quality may improve by grazing cows on well-managed pasture, and result in premiums received for the milk.

As pasture forage quality improves, cows can be selected to perform better on high-quality pasture forage; less supplement will be required, thereby improving farm profitability even more. The contrast in profitability between pasture-based and confinement dairying likely will become greater, in favor of pasture-based dairying.

For More Information

Who to Contact

Find a successful, experienced grazier in your area who can demonstrate techniques, help answer questions, and make suggestions for implementing your plans. Participate in pasture walks and join a graziers’ discussion group. For information on discussion groups or a pasture walk schedule in Vermont, contact the Vermont Grass Farmers Association at (802) 656-3834. They can also give you contact numbers through which you can obtain information about grazing activities in the other New England states.

Recommended Reading/Viewing

Monthly Publications:

- The Stockman Grass Farmer, edited by Allan Nation. Subscriptions available. P.O. Box 9607, Jackson, MS 39286-9607. Phone: (800) 748-9808; Fax: (601) 981-8558.

- Pasture Talk, the Northland’s Grass-based Dairy and Pasture Beef Publication. The GreenBull Press; P.O. Box 716, River Falls, WI 54022. Phone: (715) 426-7392.
Books:
- *Grass Farmers by Allan Nation.*
- *Greener Pastures on Your Side of the Fence* by Bill Murphy.
- *Holistic Resource Management by Allan Savory.* Center for Holistic Management, 1010 Tijeras NW, Albuquerque, NM 87102. Phone: (505) 842-5252; Fax: (505) 843-7900.
- *Intensive Grazing Management by Burt Smith.*
- *Pastured Poultry Profits by Joel Salatin.*
- *Pasture Profits with Stocker Cattle by Allan Nation.*
- *Quality Pasture by Allan Nation.*
- *Salad Bar Beef by Joel Salatin.*
- *Shelter and Shade by John and Bunny Mortimer.*

Videos:
- *Grass Dairying by John Cockrell.* 30 min.
- *Milking Systems—New Zealand Style* by Vaughn Jones. 17 min.
- *Pastured Poultry Profits by Joel Salatin.* 45 min.
- *The Making and Feeding of Silage by Vaughn Jones.* 45 min.

Many of these books and videos are available through the Stockman Grass Farmer at the address listed under monthly publications.

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INTRODUCTION TO MANAGEMENT INTENSIVE GRAZING 7
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