

What is Management-intensive Grazing (MiG) and what can it do for my farm?

Dr. Dennis Hancock
Extension Forage Specialist
University of Georgia

Dr. John Andrae
Extension Forage Specialist
Clemson University

Management-intensive grazing (MiG; sometimes called “rotational grazing”) is a topic frequently discussed among forage producers. Many testimonials have been made regarding the benefits of MiG. Some claim that simply implementing a MiG system will allow doubling or even tripling stocking rates and total elimination of fertilizer inputs. These claims rarely are truly realized; however, MiG does offer substantial benefits to forage-based livestock producers. Benefits include improved animal productivity, increased plant persistence, conservation of environmental resources, and improved animal temperament. This article will serve as a general overview of MiG and examples are taken in part from Southern Forages 4th Edition and a large three year grazing study conducted by Drs. Carl Hoveland, Mark McCann, and Nick Hill at the University of Georgia.

What is MiG?

MiG is any grazing method that utilizes repeating periods of grazing and rest among two or more paddocks or pastures. “Rotational grazing” is commonly used as a general term and there are many other terms used by producers and scientists for MiG. A few of these include **rotational grazing, managed grazing, intensive grazing, rational grazing, controlled grazing, and rotational stocking**. However, MiG is a preferred description because it places emphasis on the “management” aspects of improved grazing systems.

Several methods of MiG grazing are used, including **rotational stocking, buffer grazing, strip grazing, creep grazing, deferred grazing, limit grazing, first-last grazing, mixed species grazing, sequence grazing, and frontal grazing**. Each of these methods will have specific situations where they are best applied. For example, limit grazing is an excellent practice for improving utilization of winter annual forages by mature beef cows, rotational stocking is beneficial when stocker cattle graze winter annuals or paddocks containing clovers, and creep grazing can be used to improve calf weaning weights on bermudagrass pastures. Some grazing methods can be combined for further flexibility. **Deferred grazing** allows the stockpiling of forage (e.g., stockpiled tall fescue or bermudagrass), and this stockpiled forage can be efficiently grazed later in the season using either **frontal** or **strip grazing** systems. More information on these terms can be found in a related factsheet entitled “Common Grazing Methods and Some Specific Farm Applications” (<http://www.caes.uga.edu/commodities/fieldcrops/forages/questions/023FAQ-grazmethods.pdf>).

For simplicity, further discussion in this article will use the more general term “MiG” since it encompasses all of these improved grazing methods. The principles discussed herein can be applied to each of these grazing methods and the impact they generally have on animal requirements, plant needs, and environmental conditions (drought, muddy soils, stream protection etc.).

Why Should I Implement MiG?

Forages are often inefficiently utilized when pastures are continuously stocked. Many times grazing animals will only utilize 30-40% of the forage in a pasture with the rest refused or wasted. There are many reasons for this waste. The grazing herd, like people, is typically lazy and will heavily graze areas close to shade

or water and ignore more distant areas. Animals also prefer young, tender, and leafy portions of forages and refuse stemmy mature material when allowed a choice. When there is an excessive amount of forage present, the grazing animal frequently returns to grazed areas to utilize fresh regrowth and refuse large amounts of previously ungrazed forage because it is too "tough".

Effects on Animal Performance

Many times the benefits of implementing MiG are exaggerated. Claims of doubling or even tripling stocking rate are sometimes made. Don't believe these claims! It is certainly possible to increase stocking rate and decrease hay and fertilizer inputs using MiG. Stocking rate increases of 35-60% have been reported in the scientific literature (Table 1). However, as a general rule, stocking rates should only be increased by 10-25% during the first few years, so as to allow your pastures and forage management skills to improve. In the meantime, any excess forage production can be harvested as hay or mowed and returned to the soil.

Table 1. Increase in gain per acre in rotational compared to continuous grazing.

| State | % Increase |
|----------|------------|
| Arkansas | 44 |
| Georgia | 37 |
| Oklahoma | 35 |
| Virginia | 61 |

There are situations where MiG is not particularly helpful from an animal performance perspective. Forcing the grazing animal to consume forage to a predetermined height eliminates their ability to select high quality leaves and often reduces individual animal performance (daily gain per head). This is particularly important when animals with high nutrient requirements like stocker cattle or replacement heifers are rotationally grazed on relatively low-quality forages, such as bermudagrass or bahiagrass. Remember that although individual animal performance is reduced, it is possible to increase stocking rate resulting in higher gain per acre. For producers grazing animals with lower nutrient requirements, like mature cows, this can be a great advantage. In a three year study conducted in central Georgia, rotational stocking improved cow-calf stocking rate by about 38% and improved calf production per acre by 37%. Individual cow or calf performance was not affected in this study (Table 2).

Table 2. Effects of rotational stocking on performance of beef cattle grazing bermudagrass and endophyte-free tall fescue in central Georgia.

| Item | Continuous | Rotational | Difference* |
|----------------------------|------------|------------|-------------|
| Cow weight at calving, lbs | 1037 | 1017 | NS |
| Cow weight at weaning, lbs | 1090 | 1071 | NS |
| Stocking rate, cows/acre | 0.5 | 0.69 | +38% |
| Pregnancy rate, % | 93 | 95 | NS |
| Weaning weight, lb | 490 | 486 | NS |
| Calf production, lb/ac | 243 | 334 | +37% |

* NS = not statistically significant

Effects on Plant Persistence

While increased animal production per acre is often what sells producers on a MiG system, plant performance is also improved. Many plants respond well to short grazing and long rest periods. Rest periods allow plants to produce new leaves which collect energy, transform it into sugars, and store these sugars so that more leaves can be produced following the next grazing cycle. Not only is regrowth potential improved, but root depth and stand life are improved as well.

Practicing controlled grazing also decreases the amount of trampling and pugging (hoof damage) of plants and soils (particularly on wet prepared fields). This can improve productivity and persistence of forages.

Under MiG in the central Georgia study conducted by Hoveland and others, endophyte-free tall fescue productivity and persistence was greatly improved. This resulted in less hay feeding in the rotational stocked system (Table 3). In fact, over the three year grazing study, cattle in the rotationally stocked system required

31% less hay per head. If this hay were priced at \$110 per dry ton, an annual average savings of \$41.30 per cow would be realized for each of the three years. Reductions in supplement costs and labor for feeding hay would also add to the advantage of MiG.

Table 3. Pounds of winter hay fed per cow as affected by grazing method during three year study. Cows grazed bermudagrass/endophyte-free tall fescue mixture. (From Hoveland, McCann and Hill, 1997).

| | 1988-1989 | 1989-1990 | 1990-1991 | 3-year Average |
|-------------|-----------|-----------|-----------|----------------|
| Rotational | 1310 | 1480 | 2240 | 1680 |
| Continuous | 1750 | 1900 | 3650 | 2430 |
| Decrease, % | -25% | -22% | -39% | -31% |

MiG systems can also improve legume establishment and persistence. Clover can be broadcast seeded and trampled in by animals grazing small paddocks in late winter. MiG also allows flash grazing of paddocks to prevent small legume seedlings from grass shading. After clovers are established, the improved grazing control allows producers to favor clover regrowth.

Intangible effects

There are many benefits of practicing MiG that are difficult to quantify. Notice that the scope of this article's subtitle "What can it do for my farm?" is much larger than merely animal performance. Two of the most important benefits MiG offers your farm are 1) improved control and 2) improved flexibility.

Control: Cross fencing and water developments in large pastures effectively transfer the grazing decisions from the grazing animal to the farm manager. Before a pasture is cross-fenced, the grazing animals determine 1) where they want to eat, 2) what they want to eat or (more importantly) what they will refuse to eat, 3) how long they will eat, and 4) how often they will return to eat. Once cross-fences are erected the farm manager controls how many animals graze a set amount of acres for a set amount of time. Once available forage has been efficiently utilized, animals are allowed to move to another paddock and cannot return until forage is ready for another grazing.

Flexibility: Producers soon realize that there is no "set" schedule for rotating pastures and that the length of rest and grazing periods will change with weather and forage growth rate. This added flexibility is an often overlooked advantage to practicing MiG. Paddocks can be removed from the rotation for overseeding or complete stand renovation. Individual paddocks can also be skipped during times of rapid growth and stockpiled for later grazing or hay harvest. Low-lying paddocks with drainage problems can be left ungrazed during wet periods to minimize trampling injury and improve stand productivity and longevity.

Summary

Practicing MiG offers many advantages for most producers. Less forage is wasted by animals, which normally allows stocking density to increase. MiG systems also improve the persistence of some forage species and can greatly decrease hay requirements when managed appropriately. Recent fencing and watering equipment developments have made grazing systems easier and cheaper to implement. These advances have "opened the door" for many producers to adopt improved grazing management practices. Other reasons for implementing grazing systems include improved nutrient distribution and environmental stewardship. Animal handling is also usually improved with MiG systems. Frequent movement and exposure to people usually improves animal temperament. This frequent exposure also allows the farm manager to detect diseases or other problems quicker so that they can be treated in a timely manner.

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