A FARMER'S GUIDE TO GRAZING | 1 OF 4

According to USDA-NRCS, research has shown that effective implementation of grazing practices can improve the soil health of grazing lands.[13] Grazing practices refer to a set of grazing patterns and stocking densities. Optimized livestock rotation, improved forage utilization, and adequate forage recovery periods can provide agronomic benefits such as increased soil organic matter, improved soil infiltration, increased forage availability, reduced soil erosion, and carbon sequestration.[13] These practices can also increase the profitability of livestock operations through improved adaptability to environmental conditions, enhanced forage utilization, and improved animal health.[10]

In this series of three Farmer's Guides to Grazing, we will focus on the economic, forage, and soil health benefits of grazing practices. The guides will synthesize relevant literature addressing the economic benefits of intensive grazing (also known as management-intensive grazing), the forage and soil health benefits of intensive grazing, and the economic, forage, and soil health benefits of seasonal grazing practices. Our review of the current literature returned 21 studies that compare intensive grazing methods with continuous, conventional grazing, with this first guide focusing on the economic benefits.

Amy Danch in Oregon

Although evidence shows that intensive grazing practices improve pasture and soil health, less than half of U.S. cow-calf producers have adopted intensive grazing methods.[7,15] This limited adoption may be due in part to an increase in smaller operations (<20 head) over time, but results vary by region.[9,16] Installation costs, labor shortages, and land ownership may also pose significant barriers to the adoption of intensive grazing practices.[17]

Ideal rotation frequency and stocking density differ for each operation depending on forage availability and quality. The table below highlights a few common grazing patterns and how we define rotation frequency, stocking rate, and stocking density.

We've summarized the findings of 10 studies that report impacts on operational costs and economic returns. Since cattle weight gain directly impacts profitability, we also included studies that report cattle performance under intensive grazing management compared to conventional grazing methods. Within the literature, we reviewed:

- 4 studies reported **increased expenses under intensive grazing compared to conventional grazing methods.**[6,7,15,17] Intensive grazing practices require multiple paddocks, which increases the cost of fencing, infrastructure (e.g., water systems), and labor.[6,7,17] However, producers who are already equipped with some of the needed infrastructure may have reduced installation costs and see the benefits of switching to rotational grazing more quickly.[15] Windh et al. (2019) evaluated the cost of continuous and rotational grazing on both contiguous and non-contiguous pastures and found that fencing, which accounts for roughly 70–80% of total costs, was approximately 40% higher for non-contiguous pastures. Additionally, when a 3,200-acre pasture was divided into ten 320-acre pastures for rotational grazing, labor costs nearly doubled. Although costs of infrastructure and labor may increase, producers may expect to see decreased need for

GRAZING PATTERN	ROTATION FREQUENCY*	STOCKING RATE/DENSITY†
Continuous (Conventional)	No rotation	Set stocking rate and density
Traditional Rotational	Set rotation frequency	Stocking rate and density vary
Adaptive Multi-Paddock (AMP) Rotational	Rotation frequency varies based on forage availability/ quality, which is continuously monitored.	Stocking rate and density vary based on forage availability/quality.
Mob	Rotation frequency varies based on forage availability/ quality, which is continuously monitored (like AMP); cattle often moved more frequently and at higher densities.	Stocking rate and density vary based on forage availability/quality; increased stocking density is possible due to increased rotation frequency.

* Rotation frequency refers to the timing of grazing cattle and rest periods for forage production..

† Stocking rate describes the herd size and grazing units used in a grazing system over a specific period of time. Stocking density refers to the number of acres allocated per animal.[14]

supplemental forages under rotational grazing with adequate forage recovery periods.[6,15]

- 5 studies reported **higher net returns under intensive grazing**.[2,6,7,8,15] Though producers may incur higher costs in the short run, **intensive grazing may increase long-term economic performance**. The utilization of multiple paddocks and increased rotation frequency often permit higher stocking densities. With adequate forage growth, higher stocking densities may allow producers to yield more pounds of beef per acre,[15] resulting in lower costs per head.[2] Some research suggests that the benefits of intensive grazing may be more pronounced in larger operations.[2,8,15] Reasonably high stocking densities on more paddocks may reduce income variability and increase net returns.[8] Larger operations are also better equipped to take advantage of economies of scale and further decrease costs per head.[2] Wang et al. (2018) estimated the 5-year and 30-year profitability of grazing systems and found that multi-paddock grazing had an economic advantage over continuous grazing on large commercial ranches in the long run. The economic advantages of multi-paddock grazing, however, are less pronounced on smaller ranches or short-term leases.
- 4 studies evaluated changes in cattle performance.[3,4,11] Reviews of grazing studies indicate that most studies found cattle gain as much or more weight under continuous grazing versus rotational grazing.[1,4,11] Stocking rate and stocking density also play a significant role in animal productivity on grazing lands.[11] Reduced forage quality due to too-high stocking rates may negatively impact weight gains for cattle.[1] However, intensive grazing with proper attention paid to forage availability and quality may allow for higher stocking densities without major impacts on cattle performance.[3]

Key Takeaways for Intensive Grazing Management

1. **Potential long-term increased profitability:**[2,6,7,8,15] Intensive grazing may result in increased profitability in the long-term, especially for larger operations. Intensive grazing allows producers to increase forage utilization at higher stocking densities without major impacts on cattle performance.
2. **Increased short-term costs:**[6,7,15,17] Costs may increase with intensive grazing management practices. Producers considering intensifying their rotation need to consider the high upfront costs of labor, fencing, and water. Producers that already have some of that infrastructure can expect to see profitability quicker. Rotational grazing may also reduce the need for supplemental forages due to an extended grazing season.
3. **Larger operations may benefit:**[2,8,15] Larger operations may be able to spread costs further, reducing costs per head. Large operations may also be able to utilize more paddocks, increase stocking density, and increase pounds of beef produced per acre.
4. **Low impact on cattle gains:**[1,4,11] Research shows conventional grazing may result in equal or increased cattle weight gains in the short run when compared to intensive grazing. When stocking density and rotation frequency are properly managed, however, producers may implement intensive grazing with little impact on cattle weight gains. Improved forage availability through intensive grazing may result in more pounds of beef produced per acre.

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