Cover Crop Grazing Considerations for Crop-Livestock Producers

A FARMER'S GUIDE TO GRAZING | 4 OF 4

According to USDA-NRCS, research has shown that effective implementation of grazing practices can improve the soil health of grazing lands. 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.[17] These practices can also increase the profitability of livestock operations through improved adaptability to environmental conditions, enhanced forage utilization, and improved animal health.[15]

In this series of four Farmer's Guides to Grazing, we focus on the economic, forage, and soil health benefits of grazing practices. The guides synthesize literature on the economic, forage, and soil health benefits of intensive grazing (also known as management-intensive grazing), seasonal grazing practices, and grazing cover crops. **This *fourth* guide focuses on the economic, soil health, and crop yield benefits of grazing cover crops.**

The primary purpose of planting cover crops is to protect and enrich soils during the off-season. For example, planting cover crops may help reduce erosion, improve soil structure, and increase soil organic matter. The selection of specific cover crops may vary across operations based on specific cropping and grazing needs.[18] The conventional methods for termination of cover crops include the use of herbicides or tillage.[18] However, termination of cover crops by grazing allows the cover crop to serve a dual purpose as a winter feed source for livestock.

Maples Stock Farm in Alabama

MAPLES STOCK FARM

We've summarized the findings of 16 studies that evaluated the economic, forage, and soil health impacts of grazing cover crops compared to not grazing cover crops.

1. Six studies evaluated the **economic costs and benefits** associated with grazing cover crops.[7,10,12,13,14,16] Siri-Prieto et al. (2007) found that integrating cover crop grazing, specifically oat and annual ryegrass, into a cotton production system generated additional income for producers in Alabama, particularly on the livestock side of the operation, by reducing the cost of gain.[13] A two-year study conducted in Mississippi suggested that integrated crop-livestock systems may enhance overall farm profitability through the grazing of oats or a mixture of oats and crimson clover.[7] Tobin et al. (2020) reported that implementing an integrated crop-livestock system in South Dakota, in which cover crops were grazed, increased farm profit by $17.43 per acre in the first year and $43.61 per acre in the second year, largely due to large upfront infrastructure investments in year 1.[16] In contrast, a five-year study in the Great Plains concluded that revenues from grazing stocker cattle were insufficient to offset the input costs associated with establishing cover crops—specifically seed, fuel, and chemical expenses.[12] Infrastructure improvements, such as portable fencing and water systems, may represent cost-effective strategies to support the viability of cover crop grazing.[14] Additional factors influencing producer decisions include current hay prices and the cost of supplemental management practices, such as tillage to address soil compaction.[10]
2. Eight studies evaluated the impacts of grazing cover crops on **soil health**.[1,2,3,5,6,8,9,10,11] Rushing et al. (2023) found that grazing cover crops in Mississippi was associated with an increase in soil organic matter.[8] In Georgia, studies reported that grazing cover crops had no effect on soil nitrogen but increased biologically active carbon under no-till management,[5] and that grazing did not affect soil bulk density but reduced water infiltration rates.[3] Research conducted in the Great Plains indicated that soil organic matter, fertility, moisture, compaction, and aggregation were generally unaffected by cover crop grazing.[1,6] Santos et al. (2022) concluded that while moderate or low-intensity grazing of cover crops typically does not negatively impact soil health, heavy grazing may reduce soil cover.[9] Additional studies suggest that higher grazing intensity,

particularly under wet soil conditions, may increase the risk of soil compaction.[10,11]

3. Five studies evaluated **commodity crop yields** following livestock grazing of cover crops.[1,2,4,6,13] Studies found that grazing cover crops had little or no effect on corn silage or wheat yields in the Great Plains.[1,6] In Missouri, grazing cover crops lowered no-till corn yields; however, soybean yields remained relatively unaffected.[2] A three-year study in Georgia found that corn and soybean yields were sometimes negatively impacted by cover crop grazing, possibly due to severe drought conditions during the study; however, wheat yields were positively affected.[4] In Alabama, the integration of cover crop grazing into the cropping system showed no adverse effects on cotton yields.[13]

Key Takeaways

1. **Grazing cover crops may have little or no impact on soil health**.[1,2,3,5,6,8,9,10,11] Studies have shown that grazing cover crops has little effect on soil fertility and other soil properties. However, high intensity grazing on wet soils could increase soil impaction from grazing cover crops, which may require additional management prior to planting commodity crops.
2. **Effects of grazing cover crops on commodity crop yields varies**.[1,2,4,6,13] Commodity crop yields may be influenced by tillage, grazing intensity, and cover crop selection.
3. **Grazing cover crops may provide economic benefit for some producers**.[7,10,12,13,14,16] In the Southeast, studies have shown that returns may improve with an integrated crop-livestock system. However, in other parts of the country such as the Great Plains, the economic benefits of grazing cover crops may not offset the costs.

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