



Using a Grazing Stick to Create a Forage Inventory

UW-Madison Division of Extension

Every Grazer Needs a Grazing Stick

Few exercises are more important to a grazing operation than managing your forage inventory. A forage inventory involves monitoring how much forage is available at various points of the season, as well as projecting forage availability throughout the season to ensure the farm is on track to meet its production goals. In spring a forage inventory determines when pastures are ready to be grazed, while during the summer slump it can help to avoid running out of pasture. By managing your forage inventory, you can extend the grazing season as long as possible and maintain a robust, healthy pasture for many years. The simplicity of a grazing stick should not be mistaken as a lack of usefulness or accuracy. Grazing sticks are widely used with success across the world. While there are more high-tech tools you can use, a grazing stick is the most simple, practical and helpful tool for taking a forage inventory and managing pasture yield and quality.

What a Grazing Stick Tells Us

Like other, more costly forage measuring devices, the grazing stick provides an estimate of current forage availability in a particular paddock. Like any tool, some skill and knowledge is needed to use a grazing stick accurately. While the guidelines for well-managed grazing such as maintaining proper residual height are fairly universal, predictions for forage quantity can be highly variable. An accurate estimate of pasture yield requires consideration of climate, soil type, soil fertility, grass species, density of the sward, and whether there are legumes present. Regardless of what you use to measure, these things must be considered to estimate forage yield and determine when to graze. In the remainder of this publication, we will walk through how to consider each factor while creating a forage inventory.



Figure 1. Grazing sticks are an important tool for determining when grazing can begin in the spring.

How a Grazing Stick Works

A grazing stick estimates forage yield based on the **height** and **density** of standing pasture forage as well as the type of forage present. A yield estimate is only helpful if it is accurate, so it is important that graziers have a realistic assessment of the density of their forage and productivity of their soil. Overestimating available forage can result in prematurely running out of pasture or overgrazing, both of which can cause long-term damage. A grazing stick can help a farmer estimate the forage density, allowing one to, over time, develop an “eye” for what a good, marginal, or poor stand looks like for their forage species and soil type. Following is the process of using a grazing stick to estimate forage yield:

1. **Identify species present in pasture** – it is important to know what you have growing in your pasture; plant species structure has a significant impact on forage yield estimation.



◀ UW-Extension publications A3637 and A3787 can help to identify grasses and legumes in your pastures.

Figure 2. The dot scale is one method of assessing forage density, an important factor for estimating forage yield.



2. **Estimate forage density** – GrassWorks grazing sticks have a dot graph on one side for visually assessing forage density. Slide the stick into the sward horizontally at ground level and count the dots you can see while looking straight down from a standing position. The stick estimates density based on the number of dots visible. This should be done at multiple locations to establish an average stand density for the paddock you’re measuring.
3. **Measure average forage height** – forage height is measured by holding the grazing stick vertically in the pasture vegetation. The height is read not at the height that the tallest leaves reach, but at the height of the densest part of the vegetation. In the photo on page 1, the height reading would not be at 9” where the tallest leaves reach, but at 6 or 7” where the stand is thickest. This measurement should be made at 10 to 20 locations representative of each paddock, with an average height calculated.
4. **Calculate forage yield** – the chart on the stick and in Figure 3 provides a forage availability estimate based on the average height and density of the sward. These estimates have been calibrated for each species or combination using clipped and dried samples. Subtract 4” (residual height) from the average pasture height and multiply that value by the estimated pounds of dry matter per acre/inch. *Residual height is critical to pasture productivity. While 4” is the recommended minimum, leaving more residual by “taking half and leaving half” is a best-management rule of thumb.*
5. **Replicate** – this process should be completed multiple times for the entire farm throughout the grazing season. Frequency should increase when favorable conditions result in rapid growth or when dry hot conditions begin to limit forage availability.

An Example:

In the chart, we see that a pasture with a medium density of orchardgrass/red clover has 250-300 lb dry matter/inch. If you’ve measured sward height at 10” the estimated forage availability is 2500-3000 lb/acre (10” x 250-300 lb/inch). Leaving a residual of 4” gives you 6” of grazable forage, or about 1500-1800 lb/acre. Assuming a 1000 lb animal unit requires 40 lb of dry matter per day (4% of body weight = 2.5% consumed, 1.5% trampled), an acre of pasture will feed 1 animal unit for 38-45 days or 38-45 animal units for 1 day.

Forage Type	Sward Density:		
	High	Medium	Low
Alfalfa/Grass	250-300	200-250	150-200
Bluegrass Mix + N	350-400	200-250	100-150
Bluegrass/Clover	350-400	250-300	150-200
Bromegrass/Orchardgrass + N	250-300	200-250	100-150
Bromegrass/Orchardgrass + Clover	300-350	250-300	150-200
Meadow Fescue	250-300	200-250	100-150
Meadow Fescue + Clover	300-350	250-300	150-200
Perennial Ryegrass + N	350-400	200-250	100-150
Perennial Ryegrass + Clover	350-400	250-300	150-200
Tall Fescue + N	350-400	250-300	150-200
Tall Fescue + Clover	350-400	300-350	150-200

Figure 3. Estimated pounds of dry matter (DM) per inch per acre based on sward density for common types of pasture forages.

Putting the Forage Inventory Into Practice

Once a forage inventory is complete, the final and most important step is to determine how it should influence management decisions. This will depend on time of year. Here are a few common considerations:

- **Spring – determining when to begin grazing:** forage growth is rapid in spring (about 100 lbs DM/acre/day), but there must be enough available forage to suit the number of animals for 10-20 days before grazing should start
- **Mid-Summer – anticipating summer slump and avoiding running out of pasture:** forage growth slows (40-45 lbs DM/acre/Day), so there must be enough forage to suit the number of animals for 30 days or more. If there is not, consider destocking or supplementing with stored feeds.
- **Determining when a paddock is ready to be grazed:** using the ‘take-half-leave-half’ rule of thumb, a paddock is ready to graze when there is at least as much grazeable forage as the amount of residual you wish to leave. E.g., if you are leaving 4” of residual, there must be at least 8” of growth in the pasture.
- **Determining when extra forage should be harvested:** when the forage inventory on previously grazed paddocks becomes enough to feed the number of animals for 30 or more days, the next rotation can begin and any paddocks remaining ungrazed can be harvested to provide winter feed and to maintain high quality forage in those paddocks.

Authors

Jason Cavadini, Grazing Outreach Specialist, UW-Madison Division of Extension
 Laura Paine, Outreach Coordinator, Grassland 2.0
 Adam Abel, Grazing Specialist, USDA – Natural Resources Conservation Service
 Derrick Raspor, Resource Conservationist, USDA – Natural Resources Conservation Service

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