

Arkansas Grazing Lands

Technical Note 1.1

Instructions to use the Arkansas Grazing Stick

October 1st 2013

Introduction

Grazing management begins with inventorying the forage resources available. Many options are available to evaluate forage resources. The “grazing stick” provides an accurate estimate with supplemental information. The grazing stick can be used to 1) Estimate dry matter (DM) in pounds per inch, 2) Estimate days of grazing, and 3) Number of animals a pasture/paddock can sustain with its available resources. Below are instructions to use the grazing stick:

Step 1 – Determine DM in Pounds per Acre Inch

Identify the forage species or forage mixture. Use the ruler to measure the forage height in inches. Multiple replications of measuring the forage height within the paddock will provide a more accurate estimate.

Evaluate the pasture stand condition. Visually estimate if the pasture stand condition is fair, good, or excellent. Consider the stand density when determining a pasture stand condition.

Locate the edge of the grazing stick that provides information for “estimated dry matter in pounds per inch.” The information can be found at the top of the grazing stick. The below chart shows the same information contained on the grazing stick:

| Estimated dry matter in pounds per inch | | | |
|---|-----------------|---------|-----------|
| | Stand Condition | | |
| | Fair | Good | Excellent |
| Bermudagrass | 100-250 | 250-400 | 400-550 |
| Caucasian Bluestem | 100-200 | 200-300 | 300-400 |
| NWSG | 50-100 | 100-200 | 200-300 |
| Fescue + N | 150-250 | 250-350 | 350-450 |
| Fescue + Legumes | 100-200 | 200-300 | 300-400 |
| Red Clover or Alfalfa | 150-200 | 200-250 | 250-300 |
| Orchard + Legumes | 100-200 | 200-300 | 300-400 |
| Mixed Pasture | 150-250 | 250-350 | 350-450 |



Figure 1: Forage height being estimated on a paddock of dallisgrass.

Determine the estimated dry matter in pounds per inch based on the forage species and the pasture stand condition.

Multiply the average height (inches) of the forage in the paddock by the estimated dry matter in pounds per inch. The result is the total pounds of DM per acre.

For example: Assume the average forage height of a paddock of bermudagrass is measured to be 5 inches. The stand condition is considered “good” so 300 pounds per inch is determined to be an estimate. Five inches multiplied by 300 pounds per inch results in 1500 total lbs. of DM per acre.

Step 2 – Determine the Available Forage in Pounds per acre

The total pounds of DM per acre shouldn't be 100% utilized. The efficiency of the forage should be maximized to the participant's objectives while still protecting the existing plants, soil, and other natural resources. Grazing management is highly associated with the harvest efficiency of forages. The increased management of the livestock's grazing pressure results in increased grazing harvest efficiency. Below is a general estimate of grazing harvest efficiency based on grazing management strategies that is shown on the grazing stick:

| <u>Grazing Efficiency</u> Total Season | |
|---|-----|
| Continuous Grazing | 30% |
| Rotational Grazing with 4 Paddocks | 35% |
| Rotational Grazing with 8 Paddocks | 50% |

Additional information on grazing efficiency can be found on Arkansas NRCS Prescribed Grazing Fact Sheet.

Multiply the total pounds of dry matter per acre by the estimated efficiency to determine available forage in pounds per acre.

For example: A participant that is continuously grazing would have a grazing efficiency of approximately 30%. Fifteen hundred pounds of DM per acre multiplied by 30% is 450 lbs. of available forage. Conversely, a participant that is rotationally grazing with 8 paddocks would have a grazing efficiency of 50%. Fifteen hundred pounds of DM per acre multiplied by 50% is 750 lbs of available forage.

Step 3 – Determine Forage Intake Rate in Percent of Body Weight.

Several factors can provide significant impacts on the nutrient requirements for livestock. For mature cows, factors such as body weight (BW), stage of production, and level of milk production are significant factors to determine the net energy requirements. For simplicity, the grazing stick provides recommendations of the forage that livestock should consume based on percent of BW.

Determine the approximate weight of the animal. Determine the livestock species and any other more specific criteria that best reflects the situation. Multiply the livestock weight by the percent of forage intake of the animal. The result is an estimate of the pounds of DM required to provide to the animal per day. Below are the guidelines on the percent intake rate based on BW shown on the grazing stick:

| <u>Forage Intake Rate</u> in % of Body Weight | |
|--|--------------|
| Dry Cow | 2% |
| Lactating Cow | 3-4% |
| Dairy Cow | 2.5-3.5% |
| Stocker | 2.5-3.5% |
| Horse | 2-3% + Grain |
| Sheep | 3.5-4% |

Again, this is a general guideline that is routinely provided to the public. Remember that the quality of the forage provides a critical role in meeting the animal daily nutrient requirements.

For example: A participant has 25 head of 700-800 weight stockers that he/she is using to graze bermudagrass. The average weight is 750 lbs. The chart on the grazing stick shows the required intake rate of stocker is 2.5-3.5% of their BW. The participant desires average weight gain of the stockers. Seven hundred fifty pounds is multiplied by 3% which results in a demand of 22.5 lbs. of DM intake per day. An estimate of the entire herd would be 18,000 lbs. DM intake per day.

Step 4 – Calculating the Forage Supply and Animal Demand using the Grazing Stick

Determine the total pounds of DM per acre. Multiply the total pounds of DM by the grazing efficiency to provide total pounds of available forage per acre.

Estimate the weight of the species of livestock. Estimate the percent of intake according to the species of livestock and any further specific criteria. Multiply the estimated weight of the livestock by the percent of intake. The result will be the pounds of DM intake required per day.

The total pounds of available forage per acre is the “supply” available. The pounds of DM intake required per day is the “demand” required. Dividing the pounds of forage available by the animal demand provides the number of days the forage supply will sustain the animal demand. The above explanation provides a simplistic example for one animal and one acre.

The grazing stick provides calculations to help incorporate acres and number of animals for a realistic farm situation. Below are the calculations provided on the grazing stick:

Grazing Stick Calculations

$$\text{Days} = \frac{\text{Total lbs. Forage/Acre} \times \text{Acres} \times \% \text{ Grazing Efficiency}}{\text{Animal Wt.} \times \text{Intake Rate in \% BW} \times \text{animal \#}}$$

$$\text{Animal \#} = \frac{\text{Total lbs. Forage/Acre} \times \text{Acres} \times \% \text{ Grazing Efficiency}}{\text{Animal Wt.} \times \text{Intake Rate in \% BW} \times \text{days}}$$

Summary

Proper evaluation always begins with adequate measurement. Without measurement, it’s difficult to make any evaluation. Therefore, grazing management begins with inventorying the forage resources available.

Grazing sticks are valuable for assisting livestock producers on immediate management decisions. Hence, variation in the measurements must be considered for long-term planning. For example, total pounds of forage is strongly influenced by fertility, season, pests, precipitation, and climatic conditions. Animal nutrient demand is strongly influenced on the stage of production.

Grazing sticks can provide critical assistance to farmers on helping them develop grazing records. The use of grazing records can be instrumental in addressing animal/forage balance issues and resource concerns.

References

The Samuel Roberts Noble Foundation; Agriculture Publication; Grazing Stick Instruction Manual

University of Kentucky Cooperative Extension Service; Agriculture Publication; Using a Grazing Stick for Pasture Management