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## MA NRCS Pasture Stick Instructions

1. The first step is to determine the density of the pasture stand and forage biomass. With the side of the pasture stick with the “grid and dots” facing upward, slide the stick into the pasture biomass so that it is lying flat on the ground. Count the number of dots that are visible through the pasture biomass. The fewer dots that are visible, the higher the pasture’s forage density will be.
2. Next, determine the predominant forage species of the pasture stand.
3. For this example, we will use a forage species of “Orchardgrass and Clover” and a density of “1-2” dots visible.
4. This equals an estimated “Dry Matter/Acre/Inch” of 250-300 pounds of dry matter/acre in EACH inch of available forage.
5. Determine the height of available forage in inches. This is equal to the total height of the pasture stand minus the planned residual height of the pasture. The residual height is what remains in the paddock AFTER the animals are rotated to a new paddock. Animals should begin grazing a pastures when the plants are 8-12” tall; at this vegetative stage of growth, the protein and energy levels of the forage are optimal for maximum animal performance. For example, if a pasture that has a height of 10” and residual height of 4” is planned, then 6” of forage will be available.
6. From Step # 4, multiply the density (250-300 pounds/acre/inch of dry matter) times the available forage height (6”) equals ~1,800 pounds of dry matter per acre.
7. If there is 1,800 # of dry matter/acre available, we must determine how much will be utilized and how much will be refused and/or trampled. This utilization rate will vary from pasture to pasture and will require adjustment based upon the intensity of management. Animals that are moved on a frequent basis (1X/day) tend to have higher utilization rates (75-90%) and less refusal/less trampling. If we estimate that the utilization rate will be 75%, then of the 1,800 # of available dry matter, we estimate 1350 # of dry matter/acre will be consumed by the animals.
8. The next step is to obtain the daily dry matter intake requirement for the animal species to be grazed. Consult Table 1 for typical livestock weights and Table 2 for typical “Daily Dry Matter Intake as a Percentage of Body Weight.” For a lactating beef cow that weighs 1,000 pounds, the animal’s dry matter requirement is ~3.0% or 33 pounds of dry matter/day.
9. From Steps # 7 and # 8, we can estimate that one acre of pasture will supply 1350 # DM and could feed 40 animals for one day.

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10. Variations of these estimates can be made for differing herd sizes or differing residency periods in the same paddock as illustrated below.

$$\text{Animal Number} = \frac{\text{Available inches of forage} \times \text{pounds of forage per acre inch} \times \text{Acres} \times \text{Grazing Efficiency}}{\text{Animal Weight} \times \text{Daily Forage Intake}}$$

$$= 6'' \times 300 \times 1 \text{ Ac} \times 75\% / 1000 \times 3.0\% = 40 \text{ animals per acre for 1 day} \\ \text{or 20 animals per acre for 2 days} \\ \text{or 13 animals per acre for 3 days}$$

$$\text{Days} = \frac{\text{Available inches of forage} \times \text{pounds of forage per acre inch} \times \text{Acres} \times \text{Grazing Efficiency}}{\text{Animal Weight} \times \text{Daily Forage Intake} \times \text{Number of Animals}}$$

$$= 6'' \times 300 \times 1 \text{ Ac} \times 75\% / 1000 \times 3.0\% \times 10 \text{ animals} = 4 \text{ days}$$

11. Rest or recovery periods for paddocks that have been recently grazed will vary depending on grazing management, the time of year, and the overall soil health of the pasture. Pastures that are overgrazed (very little residual biomass) take much longer to recover. Pasture regrowth is also much quicker during the cooler and wetter months of the growing season (April through early June). Soil health levels (high soil organic matter levels, high soil fertility, and soils that are not compacted) also have an impact on the regrowth of pastures. See Table 4 for general guidelines on the number of days of rest that paddocks will require depending on the time of year.

12. If you have any questions, contact Tom Akin, Conservation Agronomist at [thomas.akin@ma.usda.gov](mailto:thomas.akin@ma.usda.gov) or at 413-253-4365.

## References

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**TABLE 1**

	<b><u>Animal Type</u></b>	<b><u>Approx. Average Weight (lbs)</u></b>
Beef		
	Feeder	875
	Calf	250
	Breeding Stock	1000
Dairy		
	Mature Cow	1400
	Heifer / Heifer Calf	550
	Calf (0-2 months old)	150
	Bull / Bull Calf	875
Deer		
	Red Deer, Mature Doe	250
Equine	Horse, Mature	1250
Goats		
	Goat, Mature	170
	Kid, 1 year old	100
Poultry		
	Broiler	2.2
	Layer	4
	Pullet (>3 mo. Old)	4
	Turkey On Feed	15
	Turkey - Breeding Stock	20
Sheep		
	Lamb, 1 yr old	150
	Sheep, Ewe and Lamb	200
	Sheep, Mature	170
Swine		
	Nursery Pig	50
	Growing Pig	110
	Finishing Pig	185
	Gestating Sow	275
	Sow and Litter	375
	Boar	350

**TABLE 2**  
**Daily Dry Matter Intake As A Percentage of Body Weight**

Dry Beef Cow	1.5 - 2.0 %	Stocker and Heifer Cattle	2.5 - 3.0 %
Lactating Beef Cow	2.0 - 3.0 %	Lactating Dairy Cow	3.0%
Horse	2.0 - 2.5 %	Bull	1.5 - 2.0 %
Sheep and Goats	3.5%		

**TABLE 3**  
**Typical Grazing Periods By Animal Type**

<b>Animal Type</b>	<b>Notes</b>	<b>Days</b>
Lactating dairy cows	A fresh paddock after each milking is optimal	0.5 - 2 days
Milking sheep or goats		1 - 2 days
Growing Stock (Steers, Heifers, Lambs)		3 - 4 days
Beef Cow/ Calf, Ewe/ Lamb		3 - 4 days
Most Adult Non-Lactating Stock		4 - 7 days

**TABLE 4**  
**Average Grazing Paddock Rest Periods for New England**

April	12-15 days	July	30 days
May	18 days	August	36 days
June	24 days	September	42 days