

MAKING PASTURE USE DECISIONS WITH THE GRAZING RESPONSE INDEX

Ruminant livestock production is primarily focused on the utilization of relatively marginal environments that are poorly suited for other agricultural practices. Producers must have the natural resources, in this case grasses and forbs, for grazing to produce a marketable product – pounds of live animal. Ultimately, producers are in the business of grass production, not the production of animal weight. The Stockman Grass Farmer Editor Alan Nation stated it aptly, “It is the stocking rate rather than individual cow performance that primarily determines who drives the Cadillac”.

For producers to know where they are going, they must know where they have been or where they are starting. Just as producers must be proficient at monitoring the health of their animals, they also need to be proficient at monitoring the health of their ultimate income source - the land. The Grazing Response Index (GRI), developed by Floyd Reed – United State Forest Service Range Staff Officer in Colorado, Steve Bishop – Region 5 Range Program Leader, and Dr. Roy Roath - Colorado State University Cooperative Extension Range Specialist, is a short-term monitoring method that can be used to obtain timely information about the effects of grazing event during a year.

The Grazing Response Index (GRI) is a simple and comprehensive grazing management tool that provides quick feedback and allows for timely adjustments without major time and money investment. Parameters within the GRI model include the fundamental grazing concepts of: not grazing the same place the same time every year, graze for the shortest time-frame possible, graze at a moderately heavy stocking rate, and give plants the opportunity to grow before and re-grow after the grazing cycle. Observations should not only be made on the pasture in general, but on specific location that shows deviation in animal use, or non-use, from the average.

A pre-grazing GRI survey may be used to establish a grazing sequence to your pasture rotation prior to and during the grazing season. Let’s assume that you have six pastures in a rotation.

1	2
★ 3	4
5	6

Your headquarters are located close (star) to the division fence between pastures 1 and 3. You have been grazing pasture 2 for 13 days and need to move to a new pasture. The current rotation pattern is 1, 3, 5, 6, 4, and 2, but it is later in the season and pastures 1 and 3 are good winter

pastures with protection and close to facilities. A GRI assessment is used to score the pastures. Pasture 1 scores a -1 since it is being grazed. Pastures 4 and 6 both score zero because they have recently been grazed, rains have been spotty and they have not had time to recover sufficiently. Pasture 5 scores a +2, it includes some bottom ground with a more diverse plant population. Pastures 3 and 1 both score +3, they have been grazed heavy but have had time to recover. You would like to save both of these pastures for later in the season for weaning and winter pasture. With a GRI score of +2, Pasture 5 shows enough recovery that it could be grazed again allowing more recovery time for Pastures 4 and 6 and still saving Pastures 3 and 1 for later in the year. This allows for “stockpiling” of forage supplies in Pastures 1 and 3, plus the formation of seed-heads to help in natural reseeding of grass species.

Surveying a pasture soon after the animals have been removed is used to assess the effects grazing has had on the plant community.

Grazing Response Index (GRI) matrixes are located on the reverse side of this brochure



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FREQUENCY DETERMINATION:

Frequency refers to the number of times plants are defoliated during the grazing period. Values may be assigned using the following table:

Number of Times Grazed	Days	Value
1	≤ 7	+ 1
2	7 - 14	0
3 or more	> 14	- 1

Values may also be obtained by dividing the number of days that a pasture was stocked by a value between seven (7) and fourteen (14). *This is the standard number of days that are required for a defoliated (grazed) plant to attain sufficient re-growth to be defoliated again, allowing for season of growth and type of environment.* Faster grow and re-growth, such as early spring plant development, allows for the lower numbers of seven (7) or ten (10). Ten (10) or fourteen (14) could be a more accurate observation in the late season or more arid environments when plant growth is slower.

Example:

We ran 200 cows on 640 acres for 13 days in mid-June (late spring moderate growth rate). Thirteen (13) grazing days divided by 8 equals 1.6; rounding up gives us a frequency of 2 defoliations per grazing period. This translates into a frequency value of zero.

Zero is a neutral figure indicating that the frequency had little to no effect on the resource. Positive values indicate too short

of a grazing period and negative values indicate too long of a grazing period.

INTENSITY:

Intensity describes the amount of plant leaf material removed during the grazing period. This accounts for the popular grazing adage – “Use half/ leave half”. Better plant recovery occurs with a greater amount of photosynthetic active material remaining after grazing. Intensity values may be assigned using the following table:

Level of Defoliation	% Used	Value
Light	< 40%	+ 1
Moderate	41 - 55%	0
Heavy	> : 56%	- 1

For a more accurate estimation, knowing what was available prior to grazing is helpful. Establishment of reference points with pre-grazing clippings or grazing cages is suggested. For assistance with these techniques, contact your local CSU Extension Office or NRCS staff.

Returning to our example:

Assuming a worst-case scenario, we will estimate that 60% of the available forage was used. This will give us a utilization value of negative 1 indicating too high of a stocking rate.

Again, zero would indicate a neutral effect on the resource from stocking rate and a positive number would indicate too light of a stocking rate or under utilization.

OPPORTUNITY:

Plants must be allowed sufficient time to re-grow and store energy before the next grazing event. Plant identification is not necessary but may aid in the observation of key forage species. The following chart may be used to assign Opportunity values:

Opportunity for Regrow	Value
Full Season	+ 2
Most of Season	+ 1
Some Chance	0
Little Chance	- 1
No Chance - Continuous Season-long Grazing	- 2

Back to the example:

Let's assume that we are having a drought and, because of extenuating circumstances, we have to move back to this pasture in 30 days. From the chart above, we could estimate and opportunity value of zero or negative one. So, with a Frequency value of zero plus a Intensity value of negative one, and an Opportunity value of negative one we end up with a GRI of negative two; $0 + (-1) + (-1) = -2$.

