Grazing Response Index (GRI)

An adapted method for tame forages

Helping you make pasture management decisions

The GRI method is a simple tool that guides you to evaluate three factors during the current growing season. The resulting score can be used to make decisions about grazing to improve or maintain pasture health in the upcoming growing season.

This short-term monitoring tool is easy to implement, requires little equipment and does not take up a great deal of time. Before you begin, you will need:

- A place to record days in and days out of the pastures you graze (can be as simple as a calendar)
- A camera
- Grazing cages to exclude forages for visual reference
- GRI worksheet and instructions to record scores (pages 2-3, below)

Scoring under the GRI method is based on three factors that can all be affected by grazing management and have significant impacts on plant health. These factors are:

Frequency

The number of times that plants are grazed or defoliated during a growing season. This factor is based on research indicating that native plants take 7-10 days to regrow after being grazed. Successive defoliation events before a plant has time to regrow negatively impacts its health and ability to recover. Tame forages can often be grazed twice or multiple times during a growing season without negatively impacting plant health. In adapting this method for use on tame forages, it was determined that only the longest grazing period would be scored if more than one grazing period occurs during a season.

Intensity

Intensity measures how much leaf area was removed during grazing. Plants use the energy from photosynthesis or root reserves to grow. More leaf area left means more photosynthetic capacity to recover without relying on stored reserves. Grazing exclusion cages are a simple and visual way to compare the growth potential of ungrazed plants with the grazed areas. Photos are also a useful reference when measuring intensity.

Opportunity for Regrowth

Assigning a score to opportunity for regrowth requires that the manager consider the time the plants had to rest prior to being grazed and between grazing periods. The quality of the rest period is also important to consider, as environmental conditions can have a significant impact on whether plants regrow successfully. For long-term health of pastures, it is important that plants be allowed the opportunity to rebuild root reserves and take in the nutrients they require. A healthy ecosystem cycles water and nutrients effectively and forages are an integral part of this system, both above and below the ground.

To learn more about the GRI method, visit the Saskatchewan Forage Council website at www.saskforage.ca and look for the completed GRI report under “Completed Projects”.
Watch our Grazing Response Index YouTube video at: youtu.be/fwbKVTaW8eE

GRAZING RESPONSE INDEX (GRI) –WORKSHEET FOR TAME FORAGES

Use the GRI method to evaluate each pasture or multiple sites within a pasture. Select representative sites based on your management objectives. Add values for frequency, intensity and opportunity to determine the total GRI score.

Property or Operation Name_____

Observation Date_____ **Name of Observer**_____

Frequency Index	
Number of times grazed	**Index value**
1	1
2	0
3 or more	-1

Intensity Index		
Grazing Intensity	**Utilization (%)**	**Index Value**
Light	<60	1
Moderate	61-85	0
Heavy	>86	-1

Opportunity Index	
Opportunity to Grow or Regrow	**Index Value**
Full Season	2
Most of Season	1
Some Chance	0
Little Chance	-1

Pasture/Field Name	Date in-Date Out	Grazing Days	Frequency	Intensity	Opportunity	GRI (Total)

INSTRUCTIONS FOR GRI (TAME PASTURE) ASSESSMENT

1. Frequency Index

To estimate the number of times the plants could be grazed, divide the number of grazing days during the growing season by the 7- or 10-day regrowth period. Use local knowledge of plant growth rate as affected by time of year and weather conditions to determine whether to use 7- or 10-day regrowth period in your calculation. If the pasture was grazed for more than one grazing period during the growing season, select the longest grazing period only to score using this index.

Grazing only once (index value = 1) will positively affect plants. Grazing twice in sequence (index value = 0) would have relatively little effect. Continuing to graze 3 or more times in sequence (index value = -1) will negatively impact plants. For example, if your livestock are in a field for a total of 13 days during the growing season, then plants could have been grazed up to 2 times, generating a frequency index value of 0.

2. Intensity Index

Intensity is measured at the end of the grazing period and is described using three levels of defoliation: light, moderate and heavy. Grazing exclusion cages are placed in representative areas to provide a visual reference to determine the percentage of the foliage that was removed during grazing. For tame forages, estimate the percentage of leaf material removed from the plants and assign the corresponding score.

3. Opportunity Index

Opportunity for regrowth is assessed at the end of the growing season based on two factors: the apparent level of recovery of the vegetation and the knowledge of whether the plants had a full opportunity for growth before grazing. A six-week period for regrowth would be considered a full season of regrowth and receive a score of 2 under average conditions on tame pasture. It should be noted that this is a somewhat subjective measurement. The important point to remember when scoring is that it is not just a measure of time, but also quality of rest period. Time of year grazed, the amount of precipitation received, insect infestations, early killing frosts, a late start to the growing season and any other factors that impact potential for regrowth must be considered in scoring for this index factor.

Overall GRI Score

Once you have scored each of the three factors, the scores are added together. The final score represents the expected response of the plants to the grazing management of the current year. If the score is positive, this indicates that the management is generally beneficial to plant and pasture health. A negative score means that plant or pasture health may be negatively impacted if the current management practices continue. A score of zero is neutral and little change would therefore be expected to plant health.

If your GRI score is negative, it may be helpful to look at which factors contributed to the negative score to help determine what changes you can make to improve pasture health. For example, creating a few extra paddocks with temporary cross fence may be a small change you can make to decrease the number of times plants are grazed in a period, which will improve the frequency score. This may also provide better regrowth opportunity for the plants, meaning that one change could affect two factors and improve your overall GRI score significantly!

Further information on the GRI method is available from the Agriculture and Agri-Food Canada (AAFC) publication listed below. The AAFC publication was created for the GRI method on native forage. The tame forage assessment is an adaptation of the original GRI method, and is based on an ADOPT demonstration project undertaken by the Saskatchewan Forage Council, Ducks Unlimited Canada, and partners.

Reference: Grazing Response Index (GRI) factsheet. Agriculture and Agri-Food Canada.
http://publications.gc.ca/collections/collection_2014/aac-aafc/A59-22-2014-eng.pdf

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