

Deciding When to Graze

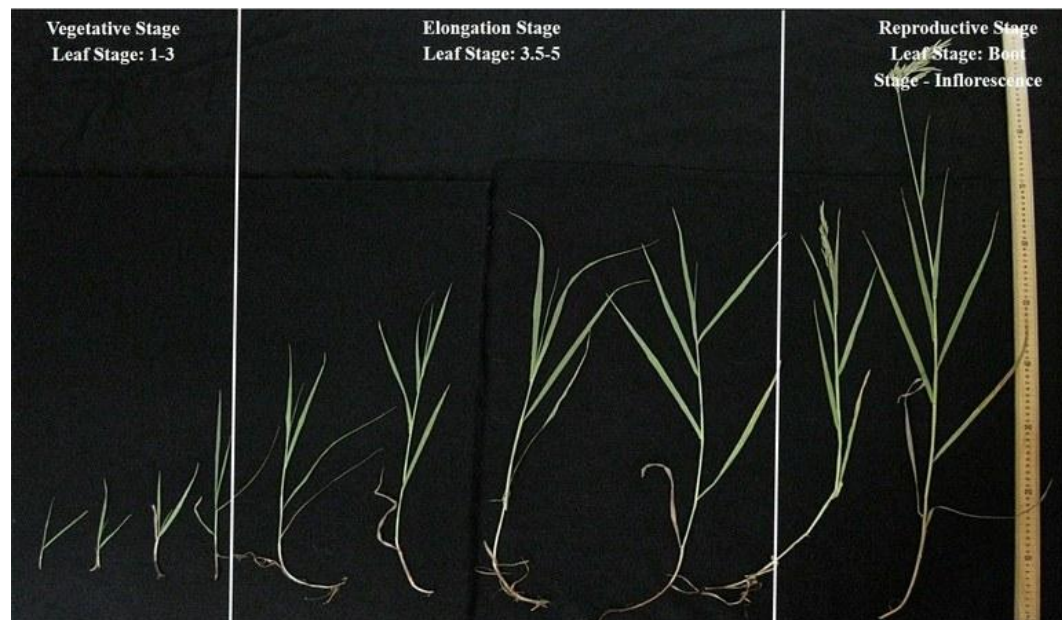
By John McGregor, MFGA Extension Support

One of the most important grazing management decisions forage producers make is selecting a start date for grazing tame and native pasture. Too early and it can reduce the amount of forage that's available for the grazing period and affect plant vigor by reducing leaf area that is needed to replace carbohydrates depleted over winter and during spring green-up.

Last month we looked at [Managing Grasses](#) and how they grow, in this article I want to look at grazing readiness. In the past, grazing may have begun once the pastures started to green up, dry up or be based on a calendar date that coincided with calving. After a year like 2018 you may want grazing to start early because forage is either in short supply or gone.

If the last scenario applies, one needs to consider a strategy of a **sacrifice** pasture or paddock so that only a limited area is used and managed to minimize damage to the rest of your pastures. It will still be necessary to supplement livestock until grass reaches grazing height on your other pastures.

Timing of grazing readiness depends on a number of factors, including the species of grass, available moisture, weather and past management. The general recommendation is not to start grazing based on plant growth or when the plants are 4-6 inches tall. A better/different method is to use the development stage to determine when to



This photo represents the morphological stages smooth brome transitions through; the vegetative stages of one- to three-leaf stage, elongation stage of three- to five-leaf and reproduction stage of the boot stage (five-leaf) to full inflorescences developed (Dupey, 2014).

start grazing. For tame grasses that would be the three-leaf stage and for native grasses the 3½ leaf stage.

We know that grass plants develop in an orderly and consistent manner. A new leaf becomes visible on a plant after the one preceding it is almost fully developed. The calendar time at which the first leaf appears and the rate at which each leaf develops is determined by the amount of thermal (heat) energy available for biological activity.

The air temperature on any spring day differs from year to year, so the amount of heat energy available for plant development on any calendar date, hence development stage, also will vary from year to year. The correlation between development (leaves) and growth (height) is obvious. From a management viewpoint, initiating grazing at a specific development stage can be repeated each year, whereas initiating grazing at a growth stage would be difficult.

Growing Degree Days (GDDs)

When we look at how quickly a plant develops we know that air temperature is the main environmental factor that drives this rate. Each leaf produced on a stem requires a specific amount of accumulated heat, or heat units. The temperature when plants initiate development, or the base temperature, is 0 C (32 F) for cool-season and 5 C (40 F) for warm-season grasses. The temperature or heat units that a plant needs to accumulate to produce a leaf can be expressed as growing degree days, or GDDs. For any calendar day, the number of GDDs for that day is the average of the hourly minimum and hourly maximum temperature in the same 24-hour period minus the base temperature.

Daily Weather Summary for Steinbach			
From: April 15, 2018 To: June 09, 2018			
	Actual	Normal	Normal%
Number of Days	56		
Growing Degree Days	443	317	140
Crop Heat Units	778	582	134
Total Precipitation	53	108	49

GDDs are calculated by the formula:

Cool season grasses (daily max. + daily min.)/2 – 0°C= ____ GDDs.

Warm season grasses (daily max. + daily min.)/2 – 5°C= ____ GDDs.

The daily GDDs are totaled to determine the total GDDs accumulated from the initiation of spring growth to any other date. In this example, we see that from April 15th to June 9th, 443 (base 5C) GDDs or 640 (base 0) were accumulated. This information is

available on the Mb Ag weather website under [Seasonal Report](#) and reported based on 5C, which works for warm season grasses. To gather the information for cool season grasses you could use the [Daily Report](#) to get the daily max and min temperatures to calculate GDDs based on 0 C. Totalling the TAvG column should give you the accumulated GDDs for the period you are interested in.

The date to start recording temperatures for calculating GDDs to determine development stage of perennial forage grasses is quite different than for cereals. In cereals, emergence dates are determined easily, but in perennial grasses, the time that growth and development begin in the spring is less obvious. Research at Mandan determined that the time to start accumulating GDDs is on the first day that the average daily air temperature (daily maximum + daily minimum ÷ 2) exceeded 0 C for five consecutive days.

Going back to our example and calculating GDDs for Brome grass which requires 375 GDDs (base 0C) to reach the 3 leaf stage we would see that it would have reached that stage around the 22nd of May in 2018. Intermediate Wheatgrass requires about 250 GDDs and it would be at the 3 leaf stage around the 13th of May. If we were looking at the grazing readiness of June grass (warm season) which requires 480 GDDs (base 5C) we would still be short about 35 GDDs by the 9th of June.

Summary

Monitoring the grazing readiness of your pastures prior to turnout is important. If grazing starts at the proper developmental stage, the plants will be more tolerant of grazing stress and will maintain the higher vigor needed to continue forage production during the grazing season and following years.

Using the GDD approach to determine grazing readiness can minimize the guesswork of when grazing can begin on any pasture. Because the spring season and grazing readiness vary from year to year, the GDD approach will help you determine the best date to begin grazing.

Finding information on GDDs for grasses isn't cut and dried. There are a number of sources (outlined below) that you can source. The caution here is that none are from Manitoba and although there may not be a lot of difference it is important to complement GDD data with field observations. Ideally, specific plants should be tagged and revisited over the course of the growing season, and leaf stage should be recorded on each visit.

When sourcing data be aware that GDDs can be expressed based on degrees Celsius or Fahrenheit. To convert F to C you can use the formula $F/9 \times 5 = C$.

One final note, although this article suggests that grazing can be initiated at the 3 to 3.5 leaf stage, this should be considered as a minimum starting point and depending on your grazing management you should adjust accordingly.

[Determining range readiness and growing degree-days \(GDDs\)](#)

[Determining Grazing Readiness Video](#)

[Determining Grazing Readiness for Native and Tame Pastures](#)