



When to Take Last Cut Using GDD

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Recent rains across Manitoba have pastures and hay fields greening up. With forage supplies extremely tight alfalfa fields that have started to grow and are tall enough to cut have many producers considering if they should take a final cut this fall.

Taking a late summer/early fall cut does come with some risks. The decision of when to take the last harvest with the least risk to the stand can be boiled down to two choices:

- 1) cut early enough in the fall (generally mid-August) to permit alfalfa to re-grow and replenish carbohydrate root reserves; or
- 2) cut late enough so that alfalfa does not re-grow and use up root reserves prior to winter dormancy.

Cutting in between those times (mid-August to mid-October) means more risk to the stand. Factors such as previous cutting management, age of stand, soil fertility, variety, and soil moisture affect the level of that risk. Using the [Critical Harvest Period](#) (CHP) offers the highest probability of good winter survival.

Another approach to fall harvest management uses growing degree-days (GDD) rather than calendar dates. Research conducted in Canada showed that alfalfa needs 500 GDD (based on degrees Celsius and base 5 C for alfalfa growth) between the last cutting and a killing frost to generate sufficient regrowth to provide good winter survival and yield potential the following year. Dan Undersander, University of Wisconsin Extension and retired forage specialist, wrote in a 2012 article "...we do not need to wait for a killing frost to take the last cutting. We must only wait until it is so cool that little or no regrowth will occur. Thus, harvesting in late fall, when less than 200 GDD will accumulate, minimizes winter injury."

The period between likely accumulation of 200 GDD to less than 500 GDD is a DO NOT CUT period (GDD calculated from degrees Celsius scale with base 5C). During this time period, there will be enough warmth and GDD accumulation for alfalfa to grow back and in so doing it will burn some root reserves without enough time (or GDDs) to replenish the reserves before winter sets in.

Working with some preliminary data generated by Timi Ojo, Agricultural Systems Modeler with MARD, the average GDD that accumulate throughout the province from August 1 to the end of October during the period from 2016 to 2020 is indicated in the table below.

2016-2020	Central	Eastern	Interlake	Northwest	Southwest
Aug 1-15	207	205	202	187	198
Aug 16-31	200	192	194	172	188
Sept 1-15	133	128	124	112	121
Sept 15-30	92	85	82	73	83
Oct 1-15	36	42	29	22	27
Oct 15-31	14	18	11	8	7

The table below shows the dates required to accumulate 500 GDD. The second set of dates provides some guidelines for taking a final fall cut possibly before a killing frost but late enough that after cutting there should be limited re-growth on the alfalfa.

For example, over the last five years (2016 – 2020), the Central region accumulated an average of 500 GDD between Aug 12 and October 15 and 200 GDD from September 6 to October 15. The ideal final cut in this region should NOT be done between August 12 and September 6 where there is a good chance of accumulating more than 200 GDD but less than 500 GDD before a hard frost of -5°C.

Cut-off Dates	Central	Eastern	Interlake	Northwest	Southwest
Accumulates 500 GDD	12-Aug	11-Aug	09-Aug	04-Aug	08-Aug
Accumulates 200 GDD	06-Sep	06-Sep	04-Sep	01-Sep	03-Sep

The dates shown indicates an accumulation of GDD between the date indicated and hard frost (below minus 5°C) date which is highly variable from year to year but Oct 15 can be used as an average date.

This GDD approach provides more exact timing for the date of last harvest and an opportunity to take advantage of better harvest conditions in the fall. It involves more risk because the grower must predict or consider the probability of either accumulating enough GDD for energy replenishment or GDD not accumulating enough to trigger regrowth that uses up energy reserves.

Fall cutting risk can be reduced but not eliminated. Stand health and survival will suffer more from fall cutting when we have early fall freezes, open and very cold winters, early springs with ice, late spring freezes that hit alfalfa after it uses up energy reserves to initiate early spring growth, and/or extreme rainfall and temperature variations.

If possible observe the fall rest period for forage legumes. Leaving standing stubble provide the opportunity to collect and hold snow necessary to insulate the alfalfa crown from freezing temperatures that can cause winter-kill.

Other resources:

<https://www.manitoba.ca/agriculture/crops/crop-management/forages/winter-survival-of-alfalfa.html>