



Late summer and fall cutting management of alfalfa

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The difficult alfalfa harvesting conditions in the spring during first cutting causes many farmers to get off schedule for harvesting alfalfa. This raises the question of best management for alfalfa harvest as the end of summer and fall approaches. Farmers have to balance the need for tonnage, forage quality and winter survival.

Alfalfa must either be cut early enough so it can regrow and then replenish root carbohydrates and proteins or so late that the alfalfa does not regrow less than 8 inches and use root carbohydrates. This has resulted in the recommendation of a 'no-cut' window from in September to killing frost for Michigan. However recent research in Quebec (1, 2) has helped to redefine this window by assuming that if 500 growing degree Days (GDD) accumulates after the last cutting there will still be enough regrowth of alfalfa for good carbohydrate accumulation before a killing frost and good winter survival and yield the following year. So a producer can cut in September as long as there is enough warm weather in the growing season remains (accumulation of 500 GDD) before a killing frost without hurting the stand. These GDD are calculated as the average of the daily minimum and maximum above 41°F until a killing frost (25°F).

The Quebec research also showed that cutting later in the fall was acceptable as long as there was less than 200 GDD accumulated after cutting. When less than 200 GDD's accumulated, there would be little regrowth to use up valuable stored carbohydrates and proteins in the alfalfa roots. This would result in good winter survival of the alfalfa plants.

Using climatological statistics as a guide for the future in a given growing season, one can then calculate the sum of these two probabilities to estimate the risk of winter injury or kill due to harvesting at different dates during September. These probabilities were calculated with 30 years of daily climatological data, 1971-2000 for 30 sites across Michigan. Graphs of the resulting daily probabilities at each site are listed alphabetically below. In each graph the top line of the graph represents the probability of accumulating either 500 GDD or less than 200 GDD after the indicated date and shows the probability no injury or kill to alfalfa stands harvested on that date.

For example, the graph for Alma, Michigan indicates an 85 percent probability of reaching 500 GDD before a killing frost if cutting alfalfa on September 15 while waiting to cut until October 27 shows the same probability of reaching less than 200 GDD before a killing frost. In contrast, the graph indicates worst probabilities of achieving either condition at approx. the 3rd of October, which occurs outside of the traditional 'no-cut' period. In general, one can see a geographical shift of the center of the adjusted no-cut period from early in the September-October period in northern areas of the state (especially those in interior sections away from the lakes) to later in the period across southern sections.

Forage quality of alfalfa changes little during September, so harvesting versus delaying cutting should be based on likelihood of winter injury or survival if the stand is to be kept. The purpose of these graphs is to give a probability of winter survival at various cutting dates in the fall so that farmers can determine the risk associated with harvesting at various dates.

References

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