



Forage Yield Response to Cutting Height and Cutting Time at Dawn or Dusk

By Dale Cowan, CCA-ON

Cutting Height?

Research done by M.J. Ottman and M.T. Rogers in 2000 has shed some light on the affect cutting height and time of day has on forage yield. The optimum cutting height varies from two to four inches. The cutting height determines where the new growth will originate, from the crown or stem buds. Low cutting height stimulates the crown buds to grow whereas higher cutting height suppresses crown buds and encourages stem bud growth.

Crown buds are usually more productive so lower cutting height may be favoured. However, there are circumstances where higher cutting height is desirable. If first cut is taken late and crown re-growth is already initiated, then leaving the crown growth will help the second cut yields and reduce the amount of time for second cut growth to generate from new crown buds. In the summer months, higher cutting height may be desirable as crown growth is usually reduced at that time. As well, frequent early cutting may also reduce crown bud growth.

Cutting at Dawn or Dusk?

Plant physiologists have long reported that plants have higher sugar content in the late afternoon compared to early morning. USDA scientists in Idaho reported greater intake and measured increase preference to afternoon versus morning-cut forage for cattle, sheep and goats.

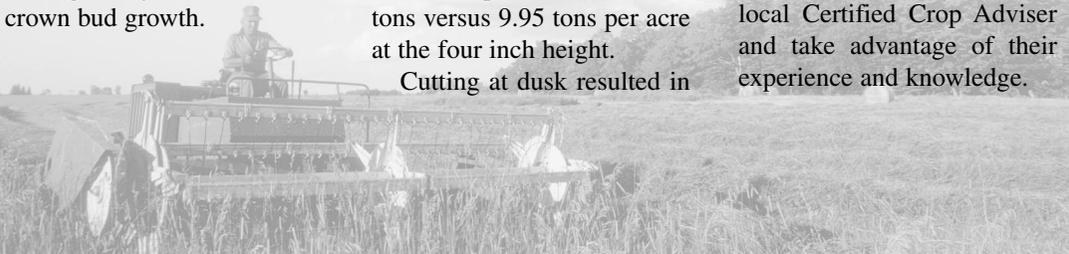
The research further examined the impact that dawn or dusk cutting had on dry matter yield. Replicated plots consisting of two treatments, eight replications cut on a 28-day interval were studied. The treatment was two or four inch cutting height. Alfalfa was cut and weighed one hour after dawn and one hour after dusk.

The research results demonstrated that yields were higher on the two inch cutting height for two reasons: there was more physical mass by taking more stem and, secondly, more crown bud growth. Stem density was greater at the four inch height but did not translate into more yields. At the two inch height, total tons per acre were 12.5 tons versus 9.95 tons per acre at the four inch height.

Cutting at dusk resulted in

3.7% higher yields on average than cutting the following dawn. Higher yields occur at dusk since carbohydrates are lost at night due to respiration. In healthy stands of forage, the accumulation of photosynthate during the day is usually greater than the respiration loss at night and a net dry matter gain is realized. However, when alfalfa was cut at dusk and weighed the following morning the loss in weight due to respiration, ongoing in the cut forage, lost similar dry weight as the forage cut at dawn. Therefore, any yield advantage from dusk harvesting can only be realized in direct cut green chopping for immediate feeding since the dry weight loss overnight is the same in cut or uncut forage.

Therefore, cutting height impacts yield far greater than time of day cutting, except under green chopping feeding systems. Alfalfa forage production is the single most important production practice on ruminant livestock farms. There are many more agronomic and quality aspects to producing top quality forage. Contact your local Certified Crop Adviser and take advantage of their experience and knowledge.



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There are over 500 Certified Crop Advisers (CCA) in Ontario. Each CCA has demonstrated their knowledge about Ontario crop production by passing the required exams. In addition, they have the crop advisory experience, the education, the commitment to continuing education and have signed a comprehensive code of ethics, which places the grower's interests first.

This industry driven program helps ensure that Ontario crop producers are well served by those providing their crop production advice. This article was written by one of those CCA's.