

Fall Use of Alfalfa Haylands

Everyone is looking at the high feed prices and considering fall and winter options this year. A few growers are just now taking late first cuts, some are taking second cuts while others have already turned animals onto haylands to try to recover from this summer's dry conditions. Bjorn Berg, Alberta Agriculture's Forage Development Officer in Lethbridge is cautious "because there are always unintended consequences to unusual events, and this past summer was anything but usual".

Hardening in / Storing winter reserves

"Alfalfa needs about 40 days of uninterrupted growth before a killing frost," says Berg "to store a good reserve of carbohydrates along with a cap of protein for the winter."

Normally, the first thing a producer can do is let the alfalfa grow during this period. If it's an irrigated field, the second thing to do is reduce the water applied. Heavy fall watering increases the water in the plant tissues resulting in frost damage to those tissues and frost heaving during the subsequent winter. The third thing to do is ensure the field has stubble high enough to catch and retain an insulating snow layer.

Winter as a drought period

The process of getting the field ready for winter is called 'hardening', because producers can manipulate the field conditions to harden the plants and enhance survival over winter. Winter is basically a drought with cold temperatures. Hardening forces the plant to reduce the water content of its tissues, to prevent freezing damage, and store sufficient reserves for the winter so that it can regrow the following spring.

Response of plants to drought

Haylands are usually a mix of grasses and legumes; the plants do not harden the same way.

"During a drought, have you ever wondered why the alfalfa is so green while the grass is brown and short? It's because the plants have two different responses to dry conditions" says Berg, "Many of our common grass plants respond to low moisture by shrinking their root systems." The plant gradually goes dormant so it can survive the dry conditions with the least energy expenditure.

Eventually each grass plant has a small bunch of roots near the soil surface close to the plant crown, and a small number of brown, senescent leaves on the surface.

"If we can't rest grass and it stays drought-stricken, the roots stay in the top 3 inches of the soil. It gets sod-bound and unproductive, and," Berg observes "you would too if you were living on the most nutrient-deficient, dried out bit of land".

"Alfalfa has an opposite response" says Berg. As it hardens in to drought, alfalfa extends its root system, building reserves and searching for whatever water may be still be

available deeper in the soil. Before it goes completely dormant, the alfalfa plant will have a few, very green leaves and a thin, deep tap-root.

Benefits of fall harvest

During a drought another factor comes into play: producers haven't sufficient pasture or hay to adequately sustain their herd. There is a strong temptation to overharvest the hayland during its fall hardening period. The benefit may be significant.

"The feed produced from these fields is usually very high quality stuff, although the volumes may not be great" says Berg.

With some older or poorer feed to mix in, this might make the difference between getting through the winter or selling stock today. If the stand is older or due for a renovation, the late harvest can be considered a treatment that will weaken the stand preparing it for renovating next spring.

Risks of late season harvest

The risks must also be considered. During a drought, the majority of growth in the field will be alfalfa. Harvesting this plant during the early part of its hardening-in period may significantly affect its ability to withstand the winter and initiate growth next spring.

Under normal conditions, well-managed stands between two and four years of age will lose about 15% of the resident plants each year. This is a natural thinning process that occurs in all alfalfa stands. Heavy use in the critical hardening-in period on a drought-stricken stand could result in attrition as high as 50%.

In Alberta, a mid-winter warming with no snow cover followed by a severe temperature drop has been a common occurrence during the last two decades. Fields become iced, roots freeze, crowns are starved of oxygen, and fungus invades the damaged tissues in the early spring. Many well-managed alfalfa stands have been decimated; those in poor condition didn't stand a chance.

Bloat

Contrary to popular belief, the risk of bloat is higher during fall grazing than any other season. Berg notes that grazing research at Kamloops, BC and Lethbridge, Alberta showed the risk of bloat in cattle increased in the fall because the alfalfa is highly digestible and animals consume it exclusively.

Turning the animals in just after a killing frost is doubly risky. Frozen leaves mean ruptured cells in the plant tissues. This enhances the release of gas and the creation of stable bloat foams in the animal's stomach.

The Bottom Line

If you must harvest your hayland alfalfa late this year, cut high to leave some stubble, or leave strips uncut to catch snow (if we get any), suggests Berg. For our winter-hardy alfalfa cultivars, a killing frost is -10C for two hours or -6C all night.

Cut as close to a killing frost as practicable (remember, dry down is more difficult in the cooler weather) or several days after so the leaves can dry a bit. If you are using the field for late-season pasture, again don't overharvest, (try strip grazing and leave some stubble), watch for early signs of bloat (generally 1 hour after the start of grazing in the morning or evening), and be prepared to move animals to a grassy field for 24-48 hours after the killing frost.

More information:

<http://alfalfa.okstate.edu/webnews/variety698.htm>

<http://www.agf.gov.bc.ca/resmgmt/publist/600Series/665000-5.pdf>

<http://www.colostate.edu/Depts/SLVRC/CROPWATER/2007SRMAC/2007SRMACSparkswinterkill.pdf>

<http://www.co.bay.mi.us/Docs/CitizenCorps/AvoidingWinterInjuryToAlfalfa.pdf>