Fall 2009

THINK GREEN! Newsletter

Ontario Forage Council

Forage Focus Conference

The Ontario Forage Council will host the eighth annual Forage Focus 2009 Conference on Tuesday, December 1st
in Napanee
Wednesday, December 2nd
in Shakespeare

Dr. David Combs, a professor in Dairy Science at the University of Wisconsin will be the feature speaker at the Forage Focus conferences this December 1 in Napanee and December 2 at Shakespeare. We are indeed privileged to be able to have him speak to us about forage nutrition, making good quality silage and his discussion on forage production. Visit our updated web site for further details as they develop. Glenn Friesen will share some of his secrets of how to make quality hay and new potential export opportunities. This will also be an excellent presentation with many practical "take-home" messages. Mark your calendar and pre-register early so that you won't miss this. www.ontarioforagecouncil.com

To Register: Call 1-877-892-8663
Deadline to Register: Nov 27th
Conference Cost: $35 (includes hot roast beef dinner and conference proceedings)

Never trouble another for what you can do for yourself.
Thomas Jefferson

Canada Post Publications Agreement #40949041

Forage Focus Conference

"Using Forages To Increase Your Profitability"

hosted by the Ontario Forage Council

December 1st in Napanee and December 2nd in Shakespeare

Keynote Speakers: David Combs, Professor ,
Dept of Dairy Science, University of Wisconsin &
Glenn Friesen, Business Development Specialist—Forages
Manitoba Agriculture, Food & Rural Initiatives

The Grey Bruce Farmers' Week Committee is excited to present 2 Special Events featuring:

Dr. Temple Grandin

New Date—November 26, 2009

For Livestock Producers:

Livestock Handling to Reduce Stress

Elmwood Community Centre, Elmwood
10:00 am -3:00 pm
Registration Price - $30.00 (Visa or Mastercard)
Hot Roast Beef Dinner Included

For Horse Enthusiasts:

Preventing Behaviour Problems

Harry Lumley Bayshore Community Centre, Owen Sound (1900 3rd Ave. E)
Doors open at 5:30 p.m. **Only $10 EACH!!**

Mandatory pre-registration for both events by Nov. 20th! To register, and for info, call 519-986-3756, email info@greyagservices.ca or go to www.greyagservices.ca

Buying or Selling Hay—Use the Hay Listings Service

Certainly we can expound the virtues of this site, but perhaps we are a little biased. So let me share a recent email that we received.

"*Just wanted to let you know that I think your website is wonderful. It is well designed and well needed. I'm in the horse industry and your website has allowed me to network with quality hay producers for my livestock. This is the first season I used it (2009) but plan on using it again for future harvests. Even went so far as to buy a transport trailer to facilitate in reaching the distant quality hay producers. Happy to see something like this facilitating networking for those of us left in the agricultural sectors. Keep up the good work!"* Lisa Tarini, Sudbury.

It is hard to believe that the Hay Listings Service at **www.ontariohaylistings.ca** has been online for over a year now. As of this morning, 315,470 people have visited the site! That is 291,198 more visitors than I reported one year ago. This service continues to be a free, efficient, easy, and effective method of selling or finding hay or straw. To date, we have 775 registered members, (+568 vs. last year at this time). There are currently 89 ads (81 for sale and 8 wanted). In Jan/Feb 09 there were 240 ads posted. We couldn't be happier with the response!

We would like to thank our Hay Listings Sponsors, Quality Seeds and Elmira Farm Services. Their generous support ensures the long-term sustainability of this site. Sponsorship opportunities will become available late 2009, with the new sponsors appearing on the site in January 2010. If you are interested in being a potential sponsor, please call or email our office as soon as possible.

By Lorie Smith

American Forage & Grasslands Annual Meeting
Grand Rapids, Michigan


Justin Dorland

It was a pleasure to be invited to attend and participate in the American Forage & Grasslands Annual Meeting in Grand Rapids Michigan on June 21 -24th. There were a number of excellent speakers and one of the highlights was the Forage Spokesperson competition. The 2008 Ontario Forage Master – Justin Dorland competed in the competition and gave an excellent presentation. Even though Justin did not win the competition, he did an admirable job.

A number of tours were offered, and I selected the University of Michigan State Tour where they have a Bio-Mass research project. It was an excellent opportunity to observe some of the projects which they are working on. $1.2 million has been allocated to the research project, and I believe we can learn a lot from their experiences. For more information on the Bio-Mass research check out **bioenergy.msu.edu**

Justin and I received a very warm welcome and certainly appreciated their hospitality. I am certain there may be opportunities to share information between our organizations in the future.

By Ray Robertson

Forages Are Part of a Much Bigger Picture

The Canadian Forage industry has been striving to develop a collective voice to represent the industry on a national basis. During the past several months, regional forage councils across Canada along with all the major national forage consuming livestock commodities have approved a draft constitution and guidelines and anticipate final approval in late 2009. This is an ambitious project, but forages represent one of the largest individual crops grown in most provinces. Being totally inclusive in representing the forage industry across Canada, the Canadian Forage and Grasslands Association will be a broad based organization that will include the major forage producer and consumer elements of the sector. Communication about and within the sector will be an important element. The association will also focus on addition to key areas such as, forage research, the economic impact of forages, hay certification criteria, initiating and participating in fact finding missions to address and take advantage of emerging export opportunities, etc. The Ontario Forage Council is represented on the working group in developing this vitally important forage initiative. *For further information feel free to contact Ray Robertson, Manager at the Ontario Forage Council. Phone 877-892-8663 or 519-986-1484 .*

Moisture Content and Bale Size Affect the Heating and Feed Value of Large Round Hay Bales

By Doug Yungblut,
This article was previously published in the Ontario Beef magazine

The rapid adoption of large round and square bales by Canadian farmers is a testament to their usefulness as a labour saving device. Many two storey barns how have hay mows that sit empty because of the back breaking work involved in filling them with traditional small square bales. Most of the hay research on moisture effects on hay quality was done with small square bales. A recent study at the U.S Dairy Forage Research Center in Wisconsin studied the impact of round bale size and moisture content on the amount and quality of hay that was produced.

The study was conducted over 2 seasons using second or third cut alfalfa with 9 to 32 % orchard grass. The alfalfa was in full bloom while the orchard grass was in the vegetative stage. All bales were made with a Ford-New Holland baler model BR 740A and wrapped with 2 layers of net wrap. Bales were stored outdoors on pallets, separated from each other. Bales were 1.19 m (47 in.) wide and 0.9, 1.2 and 1.5 m (35, 47 and 59 in., respectively) in diameter. There were three target moisture levels, 13 % (LM), 20.4% (IM) and 38.2% (HM).

All bales were sampled and weighed at time of baling and a thermocouple was inserted to measure temperature on a continuous basis. Bales were monitored until heating ceased which took 75 (LM), 91 (IM) and 105 (HM) days respectively. The HM bales were baled September 1 and heating only stopped in mid- December, at least partly due to the cold outside temperatures. After heating had ceased bales were weighed and sampled for a second time. Separate samples were taken at the surface and core of the stored bales to assess differences after outside storage.

Dry matter loss was the difference in bale weight between the time of baling and the post heating time. Two measures of heating were recorded, maximum temperature (Max) and heating degree days (HDD). HDD was calculated by recording the number of days and the number of degrees that a bale was above 30^0 C. For example, a bale that was 40^0 C for one day would record 10 HDD. Ground hay samples, taken after heating had ceased, were placed in nylon bags and placed in the rumens of fistulated cattle to measure the digestibility of the different hays. The reported result is *in vitro* true digestibility or IVTD.

Results

Bale moisture effects

The outcomes of the weight and moisture measurements of the bales before and after storage are summarized in Table 1. The target moistures were quite close to what was in the experimental design. Note the difference between the core and surface moisture of the bales after outside storage. This difference points out the importance of proper sampling when hay is to be used as part of a balanced ration.

The dry matter recoveries with the drier bales (IM and LM) were very good compared to some values in the literature. Recoveries of 95 and 96 % may have been partly due to the use of net wrap as compared to twine.

Table 1: Bale moisture and weight measurements

Parameter	Moisture Level	Average	Maximum	Minimum
Pre storage moisture %	HM	38.2	47	27
	IM	20	24	17
	LM	13	17	9
Post Storage surface moisture %	HM	27	33	20
	IM	25	31	21
	LM	14	15	13
Post storage core moisture %	HM	23	30	17
	IM	13	14	13
	LM	12	13	10
Pre storage weight kg	HM	362	693	138
	IM	306	478	144
	LM	306	494	141
Dry Matter recovery %	HM	88	94	85
	IM	95	98	91
	LM	96	97	94

Moisture Content and Bale Size Affect the Heating and Feed Value of Large Round Hay Bales

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Temperature measurements are summarized in Table 2. Keeping in mind that the temperature at which bales will undergo spontaneous combustion is in the 60 to 70^{0}C range, it would appear that some of the HM bales might have started burning if they had been in a closed environment. Moisture content, as expected had a major impact on both the amount of heating that occurred and the maximum temperature reached.

Parameter	Moisture	Average	Maximum	Minimum
HDD,	HM	913	1997	321
	IM	229	506	19
	LM	175	343	25
Max, ^{0}C	HM	67.4	77.2	54.4
	IM	49	52.7	45
	LM	44	48	40

Table 2: Bale temperature measurements

Bale Size effects

The impact of bale size of the extent of heating and maximum temperature is shown in Figure 1. There was surprisingly little difference between the different sized bales in the maximum temperature, though the largest bales were consistently the hottest. This would indicate that if hay does have to be baled wetter than the ideal, making smaller diameter bales would be a way of reducing the amount of heating which occurs.

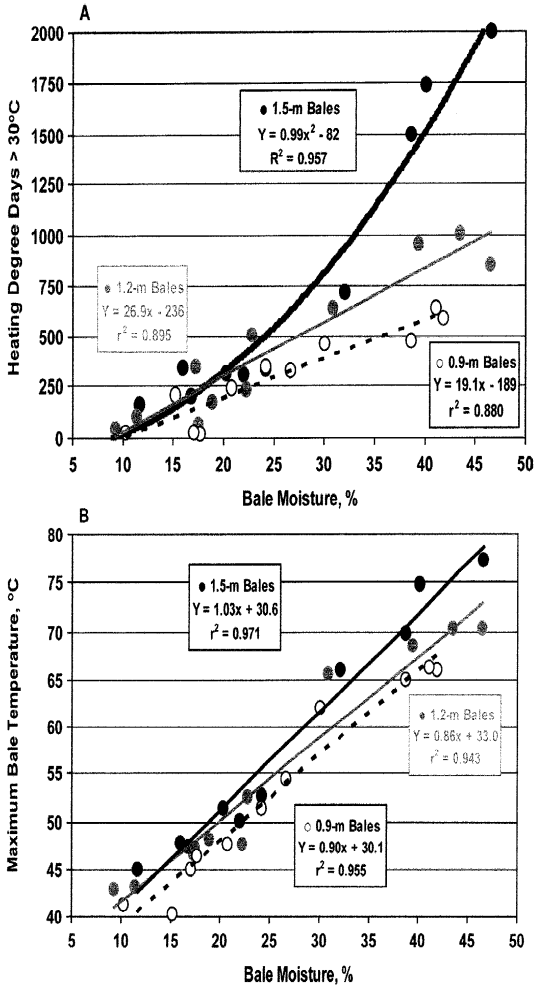

Figure 1: Impact of bale size on amount of heating (A) and maximum temperature (B)

The impact of bale temperature on the digestibility (IVTD) of the hay is shown in Figure 2 and is probably the most important aspect of this study. Reduced digestibility will have a direct impact on how much hay a cow can consume and the amount of energy it can derive from the hay. Both measures of temperature had a major impact on digestibility. The impact of HDD leveled off below 7 % loss but the affect of maximum temperature never did.

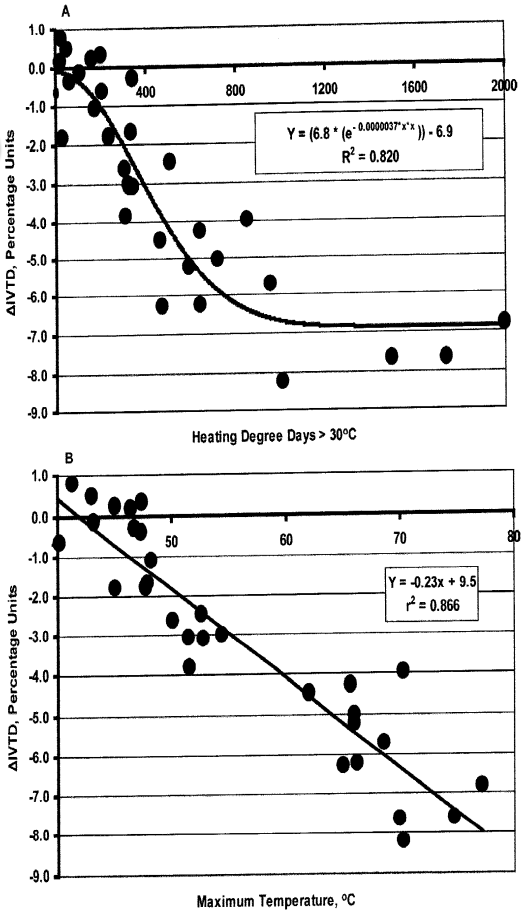

Figure 2: Impact of heating on digestibility of hay

Bottom line: Bale size and moisture content of large round bales have a major impact on the amount and quality of hay that is available for feeding. Accurate sampling and testing is vital in assessing the feeding value of hay.

This study was published in the Journal of Dairy Science, vol.92:2853-2874, June, 2009
Dr. Doug Yungblut, P.Ag. is an independent consultant to the livestock industry. He can be contacted at doug.yungblut@sympatico.ca or (905) 785-7765.

Orchardgrass—A Special Grass

Orchardgrass, a native of Europe, has been grown in North America for some 250 years. Consider it to be a niche grass for very early spring production under cooler conditions. It is most recommended in Ontario for intensively managed pasture or very early cut haylage.

The extensive root system of orchardgrass makes it more tolerant to drought than timothy; however bromegrass is more tolerant than orchardgrass. Brome would be the better choice under low rainfall and high temperatures. While orchardgrass will tolerate moderately wet soils reed canarygrass is much better in wet or flooded conditions.

For poor soils orchardgrass is a better choice than timothy or brome where it remains relatively productive on shallow and low fertile soils. On the other hand, orchardgrass is very competitive with the application of fertilizer especially nitrogen. When grown with legumes it tends to dominate the sward producing more grass than legume and eventually taking out the legume. Orchardgrass may also be grown with birdsfoot trefoil, however it is important to keep it grazed down to reduce competition to the trefoil. When using trefoil, use later orchardgrass varieties.

Orchardgrass will continue to produce well with only 30 per cent of full sunlight. While its ability to tolerate shade undoubtedly contributed to its name this grass does equally well with full light. It is also quite heat tolerant despite the fact that it does well under cool conditions. In the spring, growth starts earlier than other grass such as timothy and brome. It is also quite productive in the fall.

Under low fertility conditions most of the production is in the very early spring, however with high levels of fertility orchardgrass remains very competitive throughout the season.

Growth characteristics

Orchardgrass reproduces by both seed and tillers that give the bunch or clump appearance in the field. The continuous production of new tillers makes orchardgrass perennial in nature. Leaves are folded in the bud giving them a distinctive V-shape that makes this grass very easy to identify in the early vegetative stages.

The high feed value at early stages drops rapidly with increasing maturity of the first cut. Later cuts of leafy forage retain their feed quality much better. Orchardgrass is well suited to early spring pasture. It is also better suited to rotational grazing than continual grazing since animals will tend to regraze the same areas weakening those plants. It is quite tolerant to close grazing, but heavy grazing by sheep is especially hard on the stand making room for low producing blue grasses.

The problem

Orchardgrass has the poorest winter survival of any of the recommended grass varieties in Ontario. More recent varieties have improved survival rate significantly making orchardgrass a more competitive species. Recommended varieties have a big range of maturity dates dividing them into early and late maturity. Pay particular attention to these dates in deciding if it is for very early pasture or matching with a suitable legume species such as alfalfa. With alfalfa choose a late maturing orchardgrass. There are currently two early and four late varieties on the recommended list. Always check the latest forage varieties at *GoForages.ca*. This web site maintained by the Ontario Forage Crops Committee is now being updated as new varieties come on throughout the year.

By John Madill,
This article was previously published in the Farmers Forum

The Ontario Forage Expo 2009

The 2009 Ontario Forage Expo was held at the farm of Fritz and Gise Trauttmansdorff's Dunlea Farms at Jerseyville. It was co-sponsored by the Ontario Forage Council and Wentworth Soil and Crop Improvement Association. The crowd of close to 200 enjoyed the field demonstrations of haying equipment and hearing about the Dunlea Farms Operation. Fritz shared information about their farm operation of 2000 acres of cash crop which included about 600 acres of hay. Most of the hay is sold for horses in the eastern United States but he has also shipped hay to England and Ireland. He stressed that it is important to "Always store large square bales on pallets. If they are stored on concrete or on the ground, they pull moisture from below and the whole bottom layer can be spoiled." As well, he noted that "Even with preservatives, if hay is baled too wet it will discolour even though it is well preserved." He stores all of his hay as large square bales and then breaks them down into small square bales for shipping. Thank you to the Trauttmansdorff family and all the exhibitors, sponsors and participants for making this such a successful day. Special guests from the Quebec Forage Council also attended to observe the demonstrations and were most impressed with the organization of the day and the excellent attendance.

Taking That Fall Cutting Of Alfalfa?

With the sunny weather we have experienced this September, it has been very tempting to cut some forage for haylage or baleage. But how do we evaluate the risk this contributes to winterkill?

Alfalfa Winterkill In 2009

Alfalfa winterkill experienced across Ontario in 2009 was unprecedented. Contributing factors included saturated soils going into winter, poor winter hardening due to wet autumn conditions and an early onset of winter, very cold winter temperatures during periods of minimal snow cover, water ponding, ice sheeting, alfalfa crown and root diseases, and frost heaving. A major contributing factor was cutting alfalfa during the fall. With extended wet summer conditions and the need to make some quality forage, it is understandable why many took that risk. However, this was one year when this practice led to significant winterkill, even in areas where winterkill is less common.

Many fields that didn't winterkill have been weakened, and are at a greater risk of continued decline in plant health. Digging some alfalfa crowns and roots and doing an assessment for disease and plant health can help in making fall cutting and rotation decisions.

Critical Fall Harvest Period

In order to reduce the risk of alfalfa winterkill, it is generally recommended that alfalfa not be cut during the Critical Fall Harvest Period. This is the 6 week period (450 Growing Degree Days) before the average date of killing frost. This is the approximate time that a harvested alfalfa plant takes to regrow and store sufficient root reserves to survive the winter. Early in the period the alfalfa will use the existing root reserves for regrowth, "emptying the tank". Later in the period, the alfalfa stores photosynthesis produced carbohydrates as root reserves, "refilling the tank". Cutting in the middle of the Critical Period is usually higher risk than cutting at the beginning or end. The actual date of killing frost seldom occurs on the average date, so the beginning of the Critical Fall Harvest Period is a guideline only.

Even when winterkill does not occur, cutting during the Critical Period typically results in loss of vigour and yield the following spring. It can sometimes be difficult to observe, but still be significant. Research shows that the yield sacrificed by not harvesting during the Critical Fall Harvest Period is usually regained in first-cut yield the following year. The decision to cut should be weighed against the immediate need for forage. If you do decide to cut, consider leaving some check strips that you can use for comparison next year.

Other Contributing Risk Factors

Sufficient top growth produced during the Critical Fall Harvest Period is required to hold snow that helps insulate overwintering crowns against cold temperature damage. Insufficient top growth and snow holding capacity can also contribute to alfalfa frost heaving. Cut alfalfa initiates regrowth from crown buds and axillary buds, not the cut end of the stem, so cutting higher does not reduce usage of root reserves. However, cutting higher does allow for holding more snow as insulation.

Older stands with less disease resistance, low potassium soil tests, poor varieties and poor soil drainage all increase the risk of winterkill. Aggressive cutting schedules can also increase the risk. Cutting intervals of less than 30 days between cuts increases the risk of winterkill, while intervals over 40 days (allowing flowering), reduces the risk.

Some areas of the province, such as the Ottawa Valley, have a higher historical risk of winterkill. In situations where forage inventories are adequate, increasing the risk of winterkill by fall cutting is far less acceptable.

Late Fall Cuttings After The Critical Fall Harvest Period

Risk can be reduced (but not eliminated) by cutting towards the end of alfalfa growth, as close as possible to a killing frost. A killing frost occurs when temperatures reach -4 °C for several hours. After a killing frost, alfalfa feed value will quickly decline, as leaf loss occurs and rain leaches nutrients. Leaving at least 6 inches of stubble will help trap snow to insulate the alfalfa crowns during cold weather. Stubble will also protrude through winter ice sheeting, should that occur. Try to limit late cuttings to fields that are otherwise lower risk – well drained, good fertility and pH, etc.

Smothering?

There is always the question of smothering in heavy forage stands that are left unharvested. Heavy stands of grasses or red clover can sometimes smother over the winter because the top growth forms a dense mat. In contrast, alfalfa loses most of its leaves as soon as there is a hard frost, and the remaining stems remain upright and seldom pose any risk of smothering.

More Information

Refer to OMAFRA Factsheet 91-072 "Alfalfa Winterkill Risk Factors" at www.omafra.gov.on.ca/english/crops/facts/91-072.htm, or Figure 3 - 4 of the new Publication 811 "*Agronomy Guide For Field Crops"* for more information, including a map detailing the Critical Fall Harvest Period in your area.

by Joel Bagg,,
Forage Specialist, OMAFRA

Rotational Grazing

What is rotational grazing? As I talk to farmers across the province about grazing management, I have come to realize that rotational grazing means different things to different people.

The dictionary definition of rotation is "to change or alternate in a particular sequence; regular variation". To a crop producer, rotation means a different crop or sequence of crops in a field over a number of years. When we talk about rotation in relation to grazing, the most important factor is the state of the grass growth. The guiding principal of rotational grazing is to give the grass crop every opportunity to grow and produce forage for the livestock. The rotation refers to the movement of the livestock from one paddock to another during the grazing season.

According to the University of Guelph and OMAFRA Beef Cow-Calf Benchmarking Study, the biggest cost component is feed. When asked about grazing practices, over half of the participants reported that they were rotational grazing. However, there was a big range in the results that they were achieving.

Grazing & Rest Periods

The concept behind rotational grazing is to harvest the grass quickly and then give the forage time to recover and re-grow. This is accomplished by giving the livestock enough grass for the prescribed feeding period and then moving them to a new field. The more frequent these moves, the more productive the pastures will be. The maximum length of time in a paddock should be 5 days. Why 5 days? Grass starts to re-grow five days after it is harvested. When does a hay field begin to green-up after being cut? There is usually new growth started in 5-6 days. In a pasture, this new growth is candy to the livestock and they quickly re-graze it. This re-grazing depletes the root reserves of the plants, reducing plant vigour and subsequent growth.

An optimal rotational grazing system has the livestock moving to fresh grass every 1 to 3 days. If the grazing period is longer, there will be reduced performance by both the livestock and the grass. Think of the pasture field as a feed bunk. Would you expect livestock to perform well if the feed bunk was only filled every five days? Fresh feed encourages consumption and increased consumption means increased performance.

Number of Paddocks Required

For each group of livestock that you have on pasture, there should be a minimum of 10 paddocks to give the grass an opportunity to recover from the grazing. Twenty paddocks will go a long way to encouraging increased animal intake. Thirty paddocks will allow you to realize the full potential of both the pasture and the grazing livestock. This may seem like a lot of paddocks, but with the use of electric fence, including some temporary or portable fence, it does not need to be insurmountable. Cattle trained to electric fence and accustomed to moving every 1-2 days to fresh grass will meet you at the gate for their next move.

Increased Season Long Carrying Capacity

Grass growth varies during the season. Rapid growth occurs in May and June. Much slower growth happens during July and August, when temperatures are higher and moisture is less available. Pasture managers who use an effective rotational system find that they have increased grass growth and carrying capacity throughout the season and a dramatically reduced need for feeding hay.

Rotational grazing means fresh grass every 1-3 days and a sufficient rest period for the grass to grow to the optimum grazing height (20-40 cm). Rotational grazing at this level will provide the most high quality forage at the least cost. Refer to the following websites:

www.omafra.gov.on.ca/english/crops/field/forages.html

www.ontarioforagecouncil.com

www.foragebeef.ca.

by Jack Kyle,
Grazier Specialist, OMAFRA

Alfalfa and Soil pH

Alfalfa has the greatest sensitivity to acid soils of any crop we grow, so managing soil pH is a critical part of profitable alfalfa production. Alfalfa simply will not grow below a soil pH of 6.0, while other field crops are quite happy down to 5.5 or even 5.0. The impact of low pH on alfalfa growth is two-fold, since it will hurt the plant directly but will also keep the *Rhizobia* in the nodules from working so the crop suffers from nitrogen deficiency.

Soil pH is a measure of the concentration of hydrogen ions in the soil solution, on a scale of 1 to 14. Low values denote acid conditions, while high values indicate alkaline conditions and a pH of 7.0 is neutral. Most soils in southern Ontario started out with alkaline parent materials (although there are exceptions in the Niagara peninsula and on some shallow soils over granite in eastern Ontario), but natural processes cause the upper soil layers to become acid over time. Some of our management techniques, like applications of nitrogen fertilizer, hasten this process. The speed of pH decline will depend on how alkaline the parent material was to start with, and the soil pH. Sandy soils will become acid much faster than clay soils.

Soil testing is the only reliable way to determine your soil pH. In areas where acid soils are known to be a problem, Crop Insurance will not pay a claim for a new seeding failure unless you can show a soil test with a pH above 6.0, but it is far better to manage the soil before you get to this stage.

If you have an acid soil, there will be two different pH measurements listed on the report. The first is the pH of the soil solution, which tells you if you have a problem or not. The second is the buffer pH, which is an indication of how much acidity is stuck to the soil particles. This, in turn, tells us how much lime we need to apply to increase the soil pH. The amount of lime is given i n the following table: ⇨

Buffer	Target soil pH = 6.5 (Lime if soil pH below 6.1)
	T/ha Lime to apply (Ag Index 75)
7.0	2
6.8	2
6.6	3
6.4	4
6.2	6
6.0	9
5.8	12
5.6	15
5.4	19
5.2	20
<5.0	20

It is important to apply the limestone evenly, and to mix it well into the soil. A disk or cultivator is more effective than mouldboard plowing, since the lime will have greater contact with the soil. The reaction to raise the soil pH will take some time, so lime for next spring's alfalfa seeding must be applied this fall, and a year ago would have been better for maximum effect.

Soil acidity is often variable across the landscape, so field observation of where alfalfa survival has been poor can help to target limestone applications to where they will be most effective. Eroded knolls will often have higher pH than the hollows, so sampling by topography can uncover trends that would not be visible with a single sample of the entire field.

by Keith Reid,
Soil Fertility Specialist, OMAFRA

The Ontario Forage Council thanks the Ontario Ministry of Agriculture, Food & Rural Affairs for its support

Ontario

The Ontario Forage Council thanks Gencor for the use of the Boardroom, and for their support.

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