

October 2002

Chairman's Message

The Ontario Forage Council has been working hard to enhance its mandate as an information and educational provider for the forage industry.

Our website www.ontarioforagecouncil.com has now been on-line for 2 months. Check it out, and give us your suggestions. If you are interested in what is happening in the forage industry, check out our events calendar and don't forget to contact us to have your own upcoming forage event included.

Speaking of events, the Forage Council's Fall Conference Series, "Forage Focus" will be held in early December in locations across Ontario.



Forage Focus Ontario Forage Council Conference

December 3, 4 and 5, 2002 in locations across Ontario

Keynote Speaker: Dr. Dan Undersander from the University of Wisconsin
See his article in this newsletter for a sample of his research.

We are excited to have keynote speaker Dan Undersander from the University of Wisconsin take part in the series.

With forages there is no single system or formula that is right for everyone. Every producer should strive to find the best management and handling system for their own farm.

Properly grown and harvested forage stands can challenge the profitability of most crops.

by Barton MacLean, Chair, OFC

Dr Dan Undersander is well known for his extensive forage research program and writing in such magazines as Hoard's Dairyman and other farm press. Forage Focus and the chance to hear and speak with Dr. Undersander in person is indeed an opportunity that you will not want to miss.

Dr. Undersander will challenge and bring new ideas to us.

Plan to attend at the location nearest you
Tuesday, December 3 – Drayton
Wednesday, December 4 – Woodstock
Thursday, December 5 – Winchester

For more conference details
check out our new website at
www.ontarioforagecouncil.com
or call 1-877-892-8663

The Ontario Forage Council – who we are and what we

Mission:

A lobbying, information and educational organization that provides a collective voice to represent the multi-level interests of the Ontario forage industry at provincial, national and international levels.

Objectives:

To act as the primary forage information source.

To assist in the objective development of research priorities, coordination of research projects, and patent registration related to forage production, management and marketing.

To promote the positive environmental impacts of forage and grassland on soil and water conservation, carbon sequestration, reclamation, wildlife habitat and aesthetic value.

To identify, receive and distribute funds to support development of the Ontario forage industry.

To develop and promote market innovations at the local and export levels (i.e. pharmaceutical and nutraceutical products)

To collaborate with other Ontario agricultural organizations for the development of information and educational materials and other service related projects for forages.

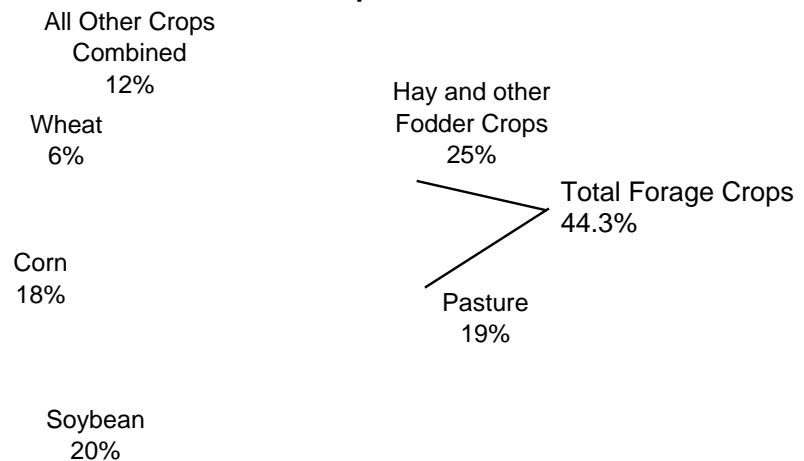
Short Term Goals

- build on the work of the Ontario Forage Council feasibility study done in the winter of 2000,
- explore activities of other provincial forage councils that could enhance Ontario forage programs,
- improve communications within the forage sectors, by providing a central point of contact and maintaining a data base for forage council members and their activities,
- create and facilitate an environment for mutual collaboration of all groups within Ontario industry to meet the needs of producers, researchers, extension and agribusiness suppliers,
- develop a committed membership base.

Long Term Goals

- develop a sustainable forage network for Ontario,
- become an active entity within the Canadian Forage Industry,
- increase value of forage production,
- develop a stronger voice for research and development,
- improve profitability for Ontario's forage industry,
- gain greater recognition for the value of forages for sustainable agricultural production,
- develop new products for added value.

Field Crops as a % of Total Crop and Pasture Acres in Ontario



Japanese Importer Recognizes Ontario Forage Quality from the Napanee Beaver

A Japanese importer is very interested in the quality of the packaged haylage that is produced by Hans Brunner and family of Tri-Forage Horsehae from Bath, Ontario. This produces a dust-free hay that appeals to the horse market. A business relationship is being developed which, if successful, will place Ontario hay in such places as the Japanese Imperial Palace and in mounted police stations across Europe. Currently 85% of their product is used in the United States horse market. There is a "prestige" of importing Canadian hay. Brunner credits his membership in the U.S. National Hay Association for developing these markets.



The methods used to evaluate the digestible energy of forages are evolving. For many years we have used Acid Detergent Fibre (ADF) and Neutral Detergent Fibre (NDF) to predict digestible energy. These are measured by wet chemistry techniques, as well as the cheaper and faster Near Infrared Reflectance Spectroscopy (NIRS) method. While ADF and NDF are good measures of the amount of fibre in a forage, they do not measure how digestible that fibre is.

In Vitro NDF Digestibility

A newer method used to estimate fibre digestibility is a calculation from lignin analysis. However, fibre digestibility is best determined by measuring the NDF digestibility (dNDF) during an in vitro fermentation in rumen fluid. In vitro NDF digestibility analysis is currently available from commercial feed testing labs. Researchers have also developed techniques for measuring dNDF using NIRS, and many US labs offer this routinely.

Determines Energy & Intake

NDF digestibility gives us more accurate estimates of TDN, NE and

intake potential. Increased NDF digestibility will result in higher digestible energy and increased forage intakes. Ration balancing is more precise, with more predictable animal performance. It also gives us the tools to better compare different forages.

First cuts tend to have higher fibre digestibility than later cuts.

If you have two haylage samples that both analyze 19% CP, 31% ADF and 42% NDF, would they be considered equal?

If NDF digestibility analysis results are available, and Forage #1 has dNDF of 40%, and Forage #2 has dNDF of 60%, we know there is a lot more milk or gain in Forage #2.

Agronomic Factors Affecting dNDF

Like the % NDF, maturity and harvest timing have the greatest influence on fibre digestibility. Early cut forage will have higher fibre digestibility than later cut forage. The dNDF of grass species can decline at a rate of 1.5 percentage

units per day of maturity. The NDF digestibility of alfalfa haylage can range from 35 to 70%. In general, grasses and corn silage have higher NDF digestibility than legumes due to less lignification. Growing conditions, such as temperature and moisture will also affect lignification and NDF digestibility. First cuts tend to have higher fibre digestibility than later cuts.

RFQ Index

Relative Feed Value (RFV) is a commonly used index of forage quality based on ADF and NDF. A new improved index is being developed called Relative Forage Quality (RFQ) that will use NDF and dNDF. This RFQ index will more accurately estimate intake of TDN, particularly of higher quality grasses.

Analysis

Consider requesting NDF digestibility when sending your forage samples away for analysis. Talk to your commercial forage testing lab and your nutritionist to discuss using this technology to improve forage quality, ration balancing and livestock performance.

Joel's article on Relative Forage Quality uses a lot of Dr. Undersander's research as its base and an article by Dr. Undersander follows which discusses their research on varietal differences to wheel traffic effects. These are just some examples of the practical research coming out of the University of Wisconsin program.

For information on hay donations to Western Canada call HAYWEST at 1-866-429-9378

Effect of Wheel Traffic on Alfalfa Yield

by Dan Undersander and Jim Moutray

In response to farmer concerns about the effect of wheel traffic on alfalfa yields, we began a study to look at these effects. Studies were established at the UW Arlington Research Station and ABI Research Station (Napier, IA) during the spring of 2000. Twenty alfalfa varieties/experimental lines were seeded in small plots. First cutting on all plots within a site were taken on June 18 at Napier, IA and on July 18, at Arlington, WI. Wheel traffic was applied five days after cutting by driving approximately a 100 Hp tractor across the plots covering the entire plots with both wheel tracts. This was repeated three times so that wheel traffic plots received six wheel tracks. This was an attempt to simulate driving over the field with tractor, chopper, and wagons, or tractor baler, and wagon. After first cutting, some plots were cut every 21 days and some every 35 days.

The yield of each entry for wheel traffic compared to no wheel traffic is presented in the graphs at the end of this article. While all varieties showed some yield reduction due to wheel traffic, some entries were less affected than others. Some varieties yielded up to 0.5 t/a less with wheel traffic than similar yielding varieties without wheel traffic. Since this trait appears to be so greatly affected by environmental conditions, we feel that we need another year's data before we release varietal information.

Yield reductions due to wheel traffic can be related to physical damage to the soil and plant. Deep soil compaction is related to axle weight and surface soil compaction is related to contact weight (weight per surface area of wheel contact with soil).

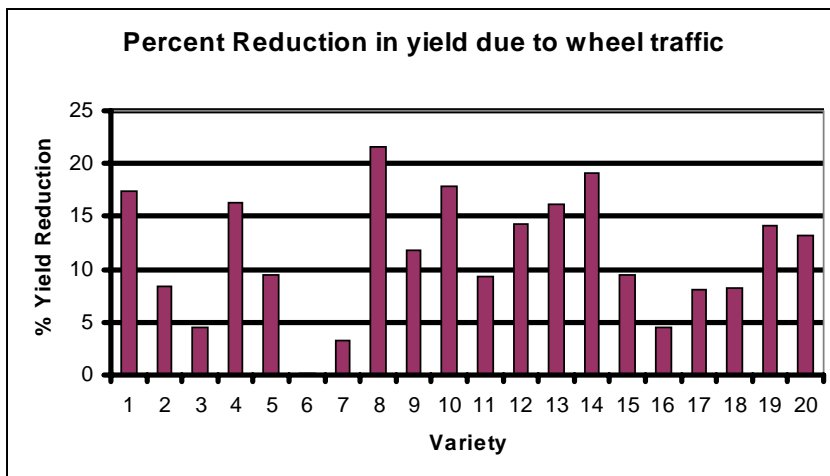
Wheel compaction usually only occurs on heavier soils. Wheel traffic damage to alfalfa crowns may result in cracking or breakage of the crown which will reduce the shoots produced and may allow entry of disease. In five days, shoots will have begun to regrow and if they are broken by wheel traffic this will result in a yield reduction.

The amount of wheel traffic yield reduction is likely going to vary from field to field and cutting to cutting depending on plant and soil conditions. In retrospect, it is likely that we increased wheel damage by waiting 5 days to apply it rather than applying it sooner. To the extent that the yield loss is due to damaged regrowth, the sooner the wheel traffic occurs after cutting, the less the damage will likely be. Chopping for silage at 1 day after mowing may cause less yield reduction than baling 4 to 5 days after mowing. We will be testing this next year. We also do not know whether it is better to drive in the same tracks as much as possible to spread the wheel traffic out over the field.

What can be done? While selection

for traffic tolerant varieties is going on and will improve yields of alfalfa over time, there are management practices minimizing field traffic that can likely reduce the impact of wheel traffic now. These are as follows:

1. Use small tractors when possible.
2. Avoid unnecessary trips across the field when harvesting
 - Mowing and conditioning in a single operation
 - Do full wagons have to be hauled the length of the field?
 - If bales are dropped and collected can this be done with less driving?
 - Do not drive on alfalfa field when harvesting crop of adjacent field.
3. Consider using larger harvesting equipment (there is some question about this because while less area is affected by wheel traffic, the affected area has greater weight applied to it
4. Drive on field as soon after cutting as possible (e.g. make silage from higher yielding fields, hay from lower yielding fields).



Forage Fertilization-Improve Profits by Improving Yields

by Bill Brown, Field Sales Agronomist, GROWMARK

One of the best ways to improve yields and quality is to add fertilizer to your forages. Forage stands that are more than 50% legumes do not require nitrogen fertilizers. Grass stands containing less than one-third legume require large amounts of nitrogen to optimize yield. The use of nitrogen will also increase the protein level in the grass.

Three applications of Nitrogen should be made to grass stands - the first application as early in the spring as possible and a second and third application after each subsequent cut. To avoid the danger of nitrate toxicity, no more than 150 lbs. of nitrogen/ac. should be applied at any on time.

Forage Fertilization
doesn't cost it pays!

Phosphate and Potash applications should be made according to a soil test. Phosphate is mainly needed to establish the stand, so the majority of the phosphorous can go on at that time, followed by small maintenance amounts with the Potash. Potash is where Alfalfa gets its big kick as it takes up as much as 480 pounds per acre depending on the yield. More potassium is needed on light soils as they do not release or hold potassium as well as the clay soils. Most Farmers apply a 1-4 or 1-3 ratio of phosphorous to potash after at least one of their cuts. Potash may be more effective in promoting persistence if it is applied within 6 weeks before the start of the fall rest



period. Therefore after the first or second cut is an ideal time to get it applied.

Boron is also important to Alfalfa. It is one of 16 elements essential to plants. Providing alfalfa with adequate boron is necessary for:

- Greener, leafier plants with high protein
- Faster regrowth after each cutting
- Longer stand life
- Improved winter hardiness
- Better water use efficiency and drought tolerance
- Increased root nodule development for fixing N
- Thicker stands to suppress weed and grass growth

A deficiency shows up mainly on high pH, sandy soils, and in droughty soils in dry conditions (quite often seen on knolls). A shortage of available boron to the alfalfa plant first affects flowering and reduces seed-set. As the

deficiency becomes more serious, the youngest upper leaves of the plant become yellow to red in different plants. Growth can be severely stunted and winter hardiness reduced.

Boron deficiency can usually be corrected or prevented by an application of 1-2 lbs. of active boron/ac. broadcast annually. Boron should not be banded at seeding. Most Farmers mix Boron with their Potash and Phosphorous and apply it after their first cut.

Forage Fertilization doesn't cost it pays!

check out the new OFC
website at
www.ontarioforagecouncil.com

Management of Alfalfa in the Seeding Year

by Jim Johnston and Karen Davies

Alfalfa can be established by direct seeding or by using a companion crop. If forage is required in the year of seeding, then direct seeding or a cereal silage companion crop are used. In short season areas (less than 2600 corn heat units), it is generally recommended that only 1 harvest of forage be taken in the seeding year. Work in northern Ontario has shown that in some years, the second growth following a cereal silage harvest is sufficient to justify harvesting it for stored feed. It is unclear whether taking a second cut in the establishment year is damaging to the subsequent alfalfa crop. This study was undertaken to assess forage yield in the seeding year and in the first production year from direct seeded alfalfa and from alfalfa seeded with an oat companion crop, when the seeding year growth was harvested either 1 or 2 times.

Results: In both establishment years, oat companion crops yielded significantly more than direct seeded alfalfa. The response to number of cuts in the seeding year varied. In 1998, direct seeded alfalfa yielded significantly more from 2 cuts than 1 cut, but there was no significant difference between 1 and 2 cuts for the oat companion crop. In 1999, yield was higher from 2 cuts than 1 cut for both the direct seeded alfalfa and for the oat companion crop.

Yield distribution in 1998 was weighted heavily in favour of the first cut, while in 1999 the yield was more evenly distributed.

Discussion: Our results show that oat companion crops will yield more forage in the seeding year than direct seeded alfalfa. Therefore, if forage yield in the seeding year is very important, a cereal silage companion crop would be recommended. Taking a second cut in the seeding year also increased forage yield in 3 of 4 situations. Under direct seeding, the second harvest in the seeding year is usually pure alfalfa. With an oat companion crop, the second cut often contains oat regrowth along with newly established alfalfa.

This is especially true when the oat companion crop is harvested at the late boot or early heading stage. Oats cut at this stage can have very heavy regrowth which can continue to compete with the underseeded alfalfa. Delaying the first cut until the oat heads are fully emerged will reduce the thickness and vigour of the cereal regrowth, providing better conditions for the underseeded alfalfa. Under dry soil conditions, oat regrowth will be minimal and the new seeding of alfalfa may also be slow to establish. Under this scenario, a second harvest in the seeding year will not be economical.

In the first production year following the 1998 seeding, direct seeded alfalfa outperformed alfalfa established under an oat companion crop. This finding has since been supported by other trials at New Liskeard. If forage yield in the seeding year is not critical, direct seeding of alfalfa should be considered due to increased hay yields in the first production year.

The effect of taking 1 vs 2 cuts in the seeding year varied. No effect on subsequent alfalfa yields occurred in 1999, but in 2000, taking 2 cuts in the seeding year resulted in a significant reduction in subsequent alfalfa yields.

This is not unexpected, since winter survival varies from year to year depending on weather conditions. It is apparent that taking a second cut in the seeding year does impose more stress on the alfalfa, leaving it more susceptible to damage during a harsh winter. In this study, the maximum yield obtained from a second cut in the seeding year was about 1200 kg/ha. In the first production year, the yield reduction between 1 and 2 treatments was over 3000 kg/ha. It is quite possible that this yield reduction would continue into the second production year, although we did not measure those yields. Given the relatively low yields to be gained by taking a second cut in the seeding year relative to the potential loss of yield in the following year(s), it seems wise to refrain

from taking a 2nd cut in the seeding year unless a serious feed shortage dictates that the crop be harvested a second time.

In the event that taking a second cut in the seeding year was necessary, one could delay harvest until after the critical period to ensure maximum root reserves in the new alfalfa plants. This would still be risky in windswept areas where little snow accumulates.

Conclusions:

1. In the seeding year, cereal companion crops usually yield more forage than direct seeded alfalfa.
2. In the first production year, alfalfa established by direct seeding will usually outyield alfalfa established via an oat companion crop.
3. Taking 2 cuts of forage in the seeding year will, in certain years, increase the risk of winter damage and result in lower forage yields in the first production year. Taking the 2nd cut in the seeding year is not recommended for short season areas unless exceptional circumstances dictate otherwise.

This article was prepared by Jim Johnston and the New Liskeard Agricultural Research Station technical staff. Jim is following his long-term plan and has gone farming full time in the New Liskeard area. Jim has had a very productive 10 years here in the north: first as a lecturer and forage agronomy researcher at NLCAT and then as a half-time forage agronomy researcher and half-time sheep researcher. Jim was able to bring plant and animal research together resulting in cost-efficient and productive systems for sheep and beef producers. We wish Jim and his family all the best in the future.

John Rowsell,
Head, Northern Stations, U of Guelph

Editorial Note: We have been advised at the time of this printing that this position will not be filled. We will certainly miss Jim's contributions at the research level and regret the loss of this forage research position.

More days on grass = profit

Simply stated, profit is the difference between revenue and expenditures. In the beef cow calf business, increasing the revenue for calves and stockers will depend on factors such as health, genetics, and weight. Another way to increase profit is to produce the same product at a lower cost. Less days using conserved feed is a big opportunity, as data shows as much as 69% of the annual costs associated with the average beef cow is the feeding of conserved feed in winter.

Enter grazing management and a productive grazing system. The Ontario pasture and grassland acreage on which intensive grazing management is practiced is still disappointingly low. In many cases pastures are overgrazed, develop poor species profiles and are too worn out to allow late season grazing. A longer grazing season is possible through attention to each component of a pasture system.

“Stockpiling” of pasture material has been researched at Research Stations at New

Liskeard and Elora over the last 7 years. The results have shown that stockpile grazed dry beef cows perform similarly to cows fed dry hay in confinement. More recent research at New Liskeard investigated the possibility of using fall grazing for beef cows with summer born calves at side with good results.

The fall grazing concept has been field tested and demonstrated by a number of Ontario producers. Many of the participants found that forage quality is of surprisingly high quality well into December and some have even grazed these stockpiles successfully in spring. To employ an extended grazing season, the following factors need to be considered:

- Pasture rest dates should be between July 15 and Oct 15. The earlier the rest date, the higher the yield, but quality is compromised. The class of cattle to be grazed needs to be considered so that forage quality is matched to animal needs. Use a later rest date for young and rapidly growing cattle.
- Total rest is required for the pasture from the rest date until animal turnout in mid-October or November.

- To ensure good winter survival, don't overgraze the pasture.
- Snow cover will provide a water source, but might inhibit pasture intake.
- Watch animal condition (Body Condition Score) carefully.
- Send cows into fall in moderate condition (BCS 3). Fat insulates, and flesh is easier put on in fall than in winter, especially for recently dried beef cows.

Producers using crops other than perennial pastures have accomplished reduced use of stored feed as well. These have included whole plant corn, corn stover, fall rye and sorghum. As long as sorghum and corn have dried down after frosting, they can be grazed safely.

A little planning, or keeping tabs on local opportunities may be helpful in extending cheap forage availability and reducing costs on your farm. Keep an eye out for research updates from the University of Guelph research stations such as New Liskeard and Elora to stimulate ideas and new learning. Good Luck.

There are a number of ways to incorporate feeds of differing value in a wintering program, such as when a producer has a good haylage as well as a mature hay source. On paper, these two feeds in combination have an average digestibility, energy and nitrogen content (crude protein) which produces a balanced diet. For example, the ration might require a 50:50 mix of the haylage and the hay, which is easily dealt with in a TMR in bulk forage systems. This is not always possible.

On farm, the problem arises that feeds are often stored as large round or large square bales. The way many have dealt with this problem is by offering equal numbers of the two bales. For example, if four bales are fed per day, two would be high quality and two would be low. This leads to a problem of favouring larger cows in better condition as they will become the ‘boss cows’. The competition for feeding space will not let this system work. Just as the rich get richer, the fat

Wintering Livestock Using Alternate Day Feeding

by *Christoph Wand* ~ OMAF

get fatter. This competition is often not detected by the producer, as he/she is often too busy to spend extra time observing livestock until well after feed is delivered. The preferred method of dealing with this issue from the nutritional point of view would be a TMR.

An alternative method that has been developed at Ag-Canada's Lacombe Research Station is giving preliminary results indicating that feeding the good feed one day, and the poor feed the next day is an acceptable method for beef cows. This supports research results in growing animals, where protein levels could be alternated with good results. This system would allow the producer to feed only balelage on one day, and only hay the next to mature cows. Using the

long turnover time seen in the rumen and the body's ‘buffering’ ability, this system allows the animals to utilize the two or more feeds effectively as one ration. The Lacombe research addressed feeding different forages and a concentrate energy or protein supplement on an alternating basis. After two winters of data, the practice proved to be effective. Caution must be employed with concentrate that is alternated in and out of the ration, as it may lead to acidosis when fed as more than 15% of the total (two day) diet (*i.e.* two days worth of grain in one feeding).

With the experiences of such research, the alternate feeding of forages, supplements and grain appears to be an effective means of offering two or more different feeds. This may be helpful in reducing the need for equipment use. Most importantly, it allows feeding two or more ‘big bale’ feeds without creating a feeding space competition that hurts young or thin breeding females.

Preliminary feed testing this year indicates that for the first cut protein was lower and fibre higher than in past years. The cooler spring encouraged more grass growth than normal.

Forage Sampling Results for 2002

by Jennifer MacDonald- Sharpe Farm Supply

A proper analysis can give significant clues not only to the feed value of your forage but also how to better manage your forages for improved quality.

Did your forage analysis come back with undesirable results? You are not alone!

This year's first cut hay, generally, produced great yields with poor quality.

The best explanation for the situation was the cool wet spring. Legumes, specifically alfalfa, do not flourish in a cool, wet environment. The grass portion of the crop overcame these conditions producing large volumes. Protein was reduced in some cases by 10% due to the low legume content of the sample.

For those of you who did not test your forage you should start. A proper analysis can give significant clues not only to the feed value of your forage but also how to better manage your forages for improved quality.

Simple steps to sampling

1. Identify lots that have either been harvested together, are from the same field or are of similar nature.
2. Sample your lot as close to the time of feeding it out as possible.
3. Use a core sampler for dry hay (most feed suppliers lend them out), Sample 12-15 inches into the bale. Trying to get a sample that best represents a cross section of that bale. A good a rule of thumb is to sample 20 % of the bales in that lot (usually 10-20 core samples).

Remember: the more core samples taken, the better that composite sample reflects the true value of your forage.

4. Compile the samples in a dry clean pail.
5. Place the composite into a sealed bag and send it to be analyzed as soon as possible.
6. After the results are received take the time to analyze the information.

Upcoming Events

October 2 - 6	World Dairy Expo, Madison, Wisconsin
November 21 & 22	The Canadian Hay Association's National Convention, Calgary.
December 3, 4, & 5	The Ontario Forage Conference December 3 – Woodstock December 4 - Drayton December 5 –Winchester Featuring Dr. Dan Sandersander
December 3 & 4	Manitoba Grazing School, Brandon
December 4 - 6	Western Canadian Grazing Conference.
Please visit the Ontario Forage Council website at www.ontarioforagecouncil.com for further details on these events	

New OMAF Publication: "Agronomy Guide For Field Crops"

To order call 888-466-2372.
or go to www.gov.on.ca/OMAF

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