

CROPEST ONTARIO

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The Corn Nitrogen Calculator

**Greg Stewart, Corn Specialist, OMAFRA,
Guelph**

The tantalizing yields of the last several years combined with higher corn prices may prompt some producers to unleash high nitrogen application rates in order to secure maximum yields and maximum profitability. The OMAFRA recommendations for nitrogen on corn are comprised in the Corn N Calculator and they do allow producers to take into consideration several factors including both corn yield and corn price. Using the Calculator will allow producers to examine various scenarios and hopefully select a nitrogen rate that will come close to optimizing returns.

The N Calculator can be found at www.gocorn.net and there are three different ways to use the Corn N Calculator:

1. *Nitrogen Calculator 2007 - Web Version*: Use this version for **on-line use only**.
2. *Nitrogen Worksheet - Paper Version*: Use this worksheet by printing and filling out manually.
3. *Nitrogen Calculator - Excel Version*: Use this version by downloading and filling out on your computer.



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Coping with Fertilizer Logistics in 2007

Keith Reid, Soil Fertility Specialist, OMAFRA, Stratford

This is the first year in almost two decades when the Ontario fertilizer industry is going to have to supply fertilizer for a two million acre plus corn crop, and it is coming in a year when there are also record planting intentions in the rest of North America as well. While I have been assured that the total supply of fertilizer for the province will meet everyone's needs, there is a distinct possibility that some dealers will run short of either product or application equipment at some point during the season. This risk is greatest if we have an extended stretch of good planting weather when we have everyone running at once.

While we all hope that we won't be caught in any spot shortages, we should be prepared to adjust our plans should the contingency arise. There are a number of options to choose from, to optimize crop yields in the instance where fertilizer is not available on the day we want to head to the field.

- Shut down and wait – This is the **least** desirable option, unless you are operating at the very beginning of the planting window. In almost all cases, you would be better to get the crop in the ground early, and worry about fertilizer later.
- Replace fertilizer with manure – This is a viable option for some farmers, particularly if they have neighbours who would normally be applying manure on their hay fields in summer. Things to watch out for are delays in planting if everything is not in place to apply the manure, and the potential for compaction.

- Switch starter fertilizer products – If you were planning to use MAP in a starter, and only DAP is available, you should be able to formulate a starter blend that still meets crop requirements. The difference in potential yield from different P sources is less than the difference from one day's delay in planting.
- Cut starter rates – I would not advocate planting without starter fertilizer unless your soil tests are high, but if you know there may be tight supplies, spreading the same fertilizer over more acres will generate more bushels than leaving some acres without starter.
- Switch N products – Be prepared to substitute urea for UAN, or vice-versa, if one is in short supply. Any of the granular N fertilizers provide equal nutrient availability, just watch the differences in price.
- Broadcast N and K post plant rather than preplant – We like to get the fertilizer broadcast and worked in before planting, but it is almost as available to the plants if it is spread over the top after planting. A shallow incorporation with a harrow will not disturb the seedbed.
- Switch to topdress or sidedress N application – Anhydrous ammonia or UAN, knifed between the rows, is an excellent source of N for corn. Some growers have had good success using the streamer nozzles to surface apply UAN on corn up to the 5-6 leaf stage, with little or no leaf burn.

By working with your dealer, you should be able to meet the crop's requirements for

nutrients even if we have a challenging year for fertilizer supply

Keeping Good Spray Records

**Helmut Spieser, Engineer, OMAFRA
Ridgetown**

The 2007 growing season is starting out in spits and spurts. We've seen our fair share of rain, been teased with sunny warm weather, but spring has not really kicked in to allow crops to be seeded into nice warm soil. This will likely change this week with warm, dry conditions forecast through this weekend. With this increased activity in the fields some herbicides will be applied before planting or soon after the crop has emerged. Farmers tend to get anxious when they are kept out of the field in the spring by wet weather for a number of days at a time. To compensate for this they may put in longer hours and also take short cuts. In this extremely busy time, the last thing you want to forget is maintaining your spray records.

You are encouraged or may be required to keep spray records to document the following:

- who sprayed
- what product was sprayed
- where was the field that was sprayed
- when was the field sprayed
- why was the field sprayed
- how was the field sprayed

There is no official spray record form which a farmer is expected to use to record their spray activities. There are a number of

different record sheets available from various chemical companies, farm software companies and OMAFRA Publication 75. Some individual agricultural supply outlets have developed their own spray record sheets to suit their needs. Keeping good spray records is good for you and your operation.

Keeping good spray records means many things to many people. It's hard to know exactly what constitutes a good spray record. We can all spot a set of records that we feel does not record sufficient information about a particular spray job. If your spray job has resulted in some off-target crop injury, the investigators will want sufficient information in your records to determine if you followed the label instructions as they pertain to the application and use of a particular product. They will also use your records to determine if you did everything possible to apply the material such as not to cause crop injury off-site.



Figure 1 – Spray droplets being applied by this self-propelled sprayer may be moved off-target by excess wind speeds.

Here is a list of some of the things that you should record every time that you spray. You may wish to add other items that you feel are also important or you can use a shorter list - the choice is up to you.

- date
- field sprayed
- crop sprayed
- crop stage of growth
- weed stage of growth
- soil conditions
- start time
- acres sprayed
- finish time
- herbicide sprayed
- herbicide rate
- nozzles used
- operating pressure
- travel speed
- application rate (GPA or L/ha)
- air temperature
- relative humidity
- wind speed
- wind direction
- sprayer cleanout
- boom cleanout

There are hand held devices which make measuring weather parameters like wind speed, wind direction, air temperature and relative humidity quick and easy. Some farmers may consider this list of parameters to record excessive. If there are no problems that occur as a result of your spraying, you may be right. If however, there is a drift problem the list of questions asked will be many times longer. If there is actual drift damage, everything you did or did not do will be called into question. It's better to record more information and not need it than to record insufficient information, because you can't make it up.

A number of handheld devices are available that can quickly and accurately display

wind speed. These pocket windmeters provide an easy to read digital readout of the instantaneous or average wind speed in a variety of units. A windmeter is an essential instrument that should be in every sprayer cab. The sprayer operator should use a windmeter at least at the start and completion of every spray job. Some models of windmeters can also measure air temperature and relative humidity. You have to decide if you need to measure these weather factors when spraying your crops.

To accurately measure wind direction, invest in a compass. It takes about five minutes to learn how to use a compass and from there it should become second nature. A compass provides an extremely accurate measure of wind direction. Instead of describing wind direction as SW or NE, which is actually describing a sector, a compass gives you're the bearing of the wind in degrees which is a line.

Here are a handful of additional suggestions from an environmental lawyer as to what you should do before spraying.

1. read the label
2. calibrate your sprayer
3. get adequate operator training
4. know sensitive crops in the area
5. check your insurance policy coverage
6. use common sense

Spray records should be part of your routine spraying procedure. Keeping detailed records may seem like a nuisance if you don't need them. When there is a spray problem that you know was not a result of your actions, it's nice to have your records to back you up. If you don't have an accurate device to measure wind speed or direction - buy one. If you do have a windmeter and a compass use them every

time you spray a field. These instruments are useless if you don't use them.



Windmeter Sources:

- Green Lea Ag Center 800-661-5019
- Graham Agriservices 905 786-2934
- Halltech Environmental 866-425-5832
- HJV Equipment Limited 866 476-2424
- Hoskins Scientific 905 333-5510
- CFE Industries Inc. 877-233-2255
- Forestry Suppliers Inc. 800 647-5368

Figure 2. This Kestrel model 1000 Pocket Wind Meter provides quick and accurate measurement of the wind speed in the field you are spraying. The digital display is easy to read and you can select the wind speed units you wish.

Canola Growers – “Get Ready for Weevils”!

**Tracey Baute, Field Crop Entomologist,
OMAFRA-Ridgetown**



Figure 3. Compass. With about five minutes of training you can use this inexpensive compass to precisely determine wind direction.

With the summer like days we've been having, the canola crop is quickly advancing. Winter canola fields in the Thamesville area have already bolted and will be flowering by the end of the week. As soon as the flowers start opening up, cabbage seedpod weevil will be there and will need to be managed (see **Figure 1**)

Our on-farm research trials conducted last year, a project involving University of Guelph, OMAFRA and Agriculture and Agri-Food Canada researchers produced some great results and demonstrated the importance of managing CSW during early flowering. When you spray comes down to economics. If budget only allows for 1 application of insecticide, our research results indicate the best timing for one application is at mid flowering, that is, 7-10 days after the first flowers are noticed in

the field (**Table 1**). If budget allows, yield was better when two applications of insecticide could be made, one at first flower and a second application 7-10 days later, during mid flowering.

Spring canola fields tend to have less cabbage seedpod weevil moving into them and tend not to require insecticide

applications. Matador is the only product currently registered for CSW in Canada. See the product label for further details and restrictions. Matador is most effective when sprayed in the early morning or evening to avoid the heat of the day which can break down the chemical. Contact local beekeepers before you spray and spray in the evening when bees are least active in the field.

Table 1. Yield (Kg/ha @ 8.5% moisture) from winter canola field plots at three locations in Ontario sprayed with Matador™ at various timings during bloom, 2006.

Treatment	Thamesville	Grand Valley	Holstein
Untreated	2168 a	1034 a	1448 a
First flower	2380 ab	1114 a	1464 a
Mid-flower	2288 ab	1279 ab	1821 b
First and mid-flower	2469 b	1434 b	1867 b
First, mid & end flower	2454 ab	1270 ab	n/a

Values followed by the same letter are not significantly different, P<0.05, Tukey's mean separation test.

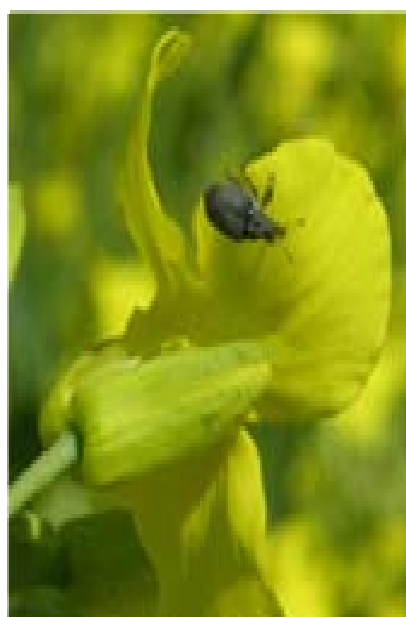


Figure 1. Adult Cabbage Seedpod Weevil (T. Baute, OMAFRA)

**OPTION 1,2,3 – A New “One-Pass”
Corn Herbicide for Ontario**

**Mike Cowbrough – OMAFRA
Dr. Kris Mahoney, Dr. Peter Sikkema and Dr.
Clarence Swanton - University of Guelph**

Option 1,2,3 is a new herbicide alternative from Bayer CropScience for annual grass and broadleaf weed control in field corn at the 1 to 3 leaf stage. It competes with other herbicide programs like Battalion and Callisto + Primextra II Magnum. However, when comparing all three programs, there are significant

differences in the level of weed control achieved on certain species.

OPTION 1,2,3 RATES: Option 1,2,3 contains 4 components, 2 of which are included in one pre-pack. The other 2 components (Aatrex 480 and 28% UAN) must be purchased separately and then tank-mixed at the following rates:

- 1) **Option 2.25 OD (foramsulfuron): 270 mL/ac +**
- 2) **Define 60 DF (flufenacet): 310 g/ac +**
- 3) **Aatrex 480: 710 mL/ac**
- 4) **28% UAN at 1 L/ac**

ACTIVITY ON WEEDS: Option 1,2,3 will control emerged and non-emerged weeds similar to Battalion. Callisto + Primextra II Magnum will control emerged broadleaf weeds but only emerged grasses up until the 1 to 2 leaf stage.

STRENGTHS: Option 1,2,3 has good control of Fall panicum, Yellow foxtail, Green foxtail and Velvetleaf.

WEAKNESSES: Option 1,2,3 does not adequately control Large Crabgrass.

Table 1. Visual control of Fall panicum, Yellow foxtail and Green foxtail 6 to 8 weeks after herbicide application.

Herbicide	% VISUAL CONTROL (6 to 8 weeks after application)			
	Fall panicum*	Yellow foxtail*	Green foxtail*	Velvetleaf**
Option 1,2,3	92	93	93	98
Battalion	81	88	85	81
Callisto + Primextra	45	99	99	100

Sources: * 6 comparative trials conducted by the University of Guelph in 2005 and 2006.

** 1 comparative trial conducted by the University of Guelph in 2006.

Table 2. Visual control of Large Crabgrass at 6 to 8 weeks after herbicide application.

Herbicide	% VISUAL CONTROL – LARGE CRABGRASS (6 to 8 weeks after application)
Option 1,2,3	51
Battalion	66
Callisto + Primextra	100

Source: 3 comparative trials conducted by the U of Guelph in 2005 & 2006.

SIMILARITIES: In public research trials, Option 1,2,3 effectively controlled a similar spectrum of common broadleaf and grass weeds (see below) as other comparable herbicide programs like Battalion and Callisto + Primextra II Magnum

- **Common lamb's-quarters**
- **Eastern black nightshade**
- **Pigweed species**
- **Wild mustard**
- **Wild buckwheat**
- **Common ragweed**
- **Barnyard grass**

PERENNIAL WEEDS: All three herbicide programs are generally not effective at controlling perennial weeds. Although certain perennial weeds may be susceptible to components within each of the three herbicide programs (i.e. Canada thistle and the Banvel II component of Battalion), such perennial weeds have usually not emerged at the recommended time of application.

COST: When comparing the suggested retail price minus any “automatic discounts”, all three herbicide programs are similarly priced at around \$32-33/ac.

Rebate programs were not considered since they are usually tied to volume purchases or early pay periods which are not necessarily achievable by all growers.

SUMMARY: When comparing Option 1,2,3 to similar products in public research trials, Option 1,2,3 demonstrated comparable control of many annual grass and broadleaf weeds, superior activity of fall panicum, and poor control of large crabgrass. Perennial weeds should not be targeted with Option 1,2,3, Battalion, or Callisto + Primextra II Magnum.

Early Season Diseases

Albert Tenuta, Field Crop Plant Pathologist, OMAFRA, Ridgeway

The May forecast by Environment Canada is for normal to slightly cooler temperatures with a likelihood of above average precipitation for most of Ontario. Cool, wet conditions can favour many early season soil pathogens. Some of the most common culprits in corn and soybeans are Pythium, Fusarium, Rhizoctonia as well as Phytophthora in just soybeans. There are a number of factors other than weather which is important in disease development.

We often recommend the best way to minimize the impact of these pathogens is to plant when soil temperatures are close to optimum which increases seed germination and growth. Although this

is ideal in some years it is difficult to get the crop planted in a timely fashion.

There are a number of things that you can do to reduce your risk to these early season diseases. First - Begin with a fungicide seed treatments which is still one of the most economical and effective disease management tools available to producers. Seed treatments are most beneficial under the following conditions: early planting (cool temperatures), fields with a lot of residue (no-till), planting in wet soil conditions, deep planting depth, field with a history of disease problems, are using low quality seed, and have a poor rotation.

Don't forget to take into account the general disease package of the variety. Although there is some degree of tolerance to some early season

diseases, there is very little genetic resistance available in most corn hybrids or soybean varieties. Thus, the need for seed treatments will provide added protection under these conditions. One of the best examples of resistance and tolerance is Phytophthora root rot in soybeans.

Other factors that you need to consider is the history of the field, soil type and tillage. Although most early season diseases are caused by organisms that survive in the soil for along time, the better the crop rotation the less build-up of these organisms. The same goes for soil type. Some organisms such as

Phytophthora and Pythium love wet saturated soils and therefore, are often found on clay soils or fields with drainage problems. Crop residues are great at minimizing erosion concerns but they can increase early disease problems by keeping soil conditions cooler and wetter so don't rush these fields.

Keep in mind though the benefits from seed treatments often go beyond just stand count. An increase in seedling establishment and early season plant health can reduce later season plant stresses that can increase yield, quality and reduce diseases

Specialist's Corner

“Weird Weeds” Questions and Answers

Mike Cowbrough, Weed Specialist, OMAFRA, Guelph

Below is a summary of commonly asked questions from the past week relating to herbicide control options for obscure and/or problematic weeds.

Q: What herbicides will control Black medic in corn and soybeans?

A: In corn, research trials conducted by Dr. Swanton and Dr. Tardif (University of Guelph) have shown that PeakPlus, Battalion, Marksman (high rate), ummit, Distinct, Ultim Total and Option + Distinct have all provided excellent control of Black medic.

Unfortunately in soybeans, the post-emergent herbicides have not offered any satisfactory level of control. A pre-plant burndown of glyphosate at 1-2 L/ac has provided the best level of control.

Q: What controls Downy brome in corn?

A: Not much, we have done very limited work in Ontario. Ultim has offered suppression (70% visual control) of downy brome and has performed better than Option (50% visual control). Based on field observations, glyphosate (RR corn only) or Liberty (LL corn only) would be your best management options.

Q: What will control Henbit in wheat?

A: Field observation in Ontario have suggested that Refine Extra offers control of henbit, while MCPA, 2,4-D, and bromoxynil/MCPA are generally ineffective. Research conducted by the University of Kentucky’s Department of Agronomy has also shown that Refine Extra will control henbit.

Q: What will control Corn speedwell in cereals?

A: Research conducted by Dr. Sikkema (University of Guelph) has demonstrated that MCPA, Refine Extra, and dichlorprop/2,4-D offer excellent control of corn speedwell.

More in depth information on most of the above weed species can be found by going to www.ontario.ca/crops and clicking on the “weeds” link and then the “problem weeds in field crops” link

**Winter Wheat Update
As of May 2, 2007**

Jen Mullen, Assistant to Peter Johnson, Cereal Program, OMAFRA, Stratford

The most advanced, vigorous and uniform stands are on early-planted and well-drained fields across the region. The first node (Zadok Stage 31) is very evident in the sandy soils of Essex County, and is just moving (Zadok 30) in the loam soils of South Bruce/North Huron Counties. Wheat planted into poorly-drained soils is lagging in development across the region (Z 21-23 in Essex and Middlesex, Z12-14 in South Bruce).

The red clover in underseeded fields is at the cotyledon-unifoliate stage in Middlesex and unifoliate-first trifoliate in Essex. Currently, no significant disease problems have been observed. Septoria is beginning to appear at very low levels in most fields, typically on older, dying leaves. Isolated

lesions of powdery mildew have also been observed in dense, advanced stands. Currently, no insect problems have been found to date.

Table 1 – Weed species and stages observed in Essex, Middlesex, Huron/Bruce.

Species	Stage		
	Essex	Middlesex	Huron/Bruce
Chickweed	Mid-full flower		4-6” trails
Shepherd’s purse	Mid-full flower		90% Rosette – bolting, 10% flowering
Fleabane	2-4” rosette		
Prickly lettuce	4-5” rosette		2-4” rosette
Lambsquarters/spreading atriplex	4-6 leaf	Cotyledon	Cotyledon-2 leaf
Ragweed	80% 2 leaf, 20% cotyledon	90% cotyledon 10% 2 leaf	90% cotyledon 10% 2 leaf
Lady’s thumb		1 st leaf	
Prostrate knotweed	1 st leaf		1 st leaf
Stinkweed			4-5 leaf rosette
Yellow rocket			6-7 leaf rosette
Wormseed mustard			Bolting
Dandelion	20% flowering	10% flowering	6-8” rosette, heads emerging
Wild Carrot	4-5” rosette		4-5” rosette
Cleavers			4-6” trails
Volunteer clover	5-8” rosette	2-4” rosette	
Burdock			6-8” rosette
Plantain			4-5” rosette
Tansy ragwort			Begin flowering
Roundleaf mallow			3-4 leaf rosette
Horsetail	4-6” tall (veg)	2-4” tall (veg)	
Canada thistle		4-5 leaf rosette	