DuPont Pioneer Proving Ground™ Plots

Once again this season, DuPont Pioneer will establish more than 1000 corn, soybean, canola, and sunflower plots across Western Canada. These trials consist of 4 types of trials: Product Advancement Trials (PAT), Product Knowledge Plots (PKP), Side by Sides, and Agronomy Trials. Each of these trial types has a specific purpose:

PATs:
Evaluate and characterize pre-commercial products in real world on-farm conditions

PKPs:
Demonstrate new products and how they compare against internal and competitive checks

Side-by-Sides:
Compare new products against familiar products on a large scale basis

Agronomy Trials:
Provides data to support management practices, new traits and technologies

When planting on farm trials, follow these important tips for success:

1. Select a uniform area of the field, off headlands and away from tree rows or fence lines.
2. Remember to prime seeders to avoid gaps in strips.
3. Ensure any field irregularities (ditches, draws etc.) affect each strip evenly and avoid low areas in the field.
4. Plant strips left to right according to the planting order list (ie: strip 1 on left side of plot).
5. Place clearly marked stakes on left edge/row of strip.
6. Mark plot edges with flags so it is easily identifiable in the field.
7. Perform any field operations (cultivation, fertility, herbicide or fungicide applications) perpendicular to the strip direction to avoid overlaps or misses giving one strip an advantage over another.
8. Record GPS coordinates of the plot.
9. Remember this general rule of thumb: the purpose of establishing successful trials is to give each strip or treatment an equal chance of winning the trial.

If you have any questions or would like to conduct one of the DuPont Pioneer Proving Ground™ Trials, please contact your local Pioneer Hi-Bred sales representative. Join the largest field scale testing program in Western Canada.

Aster Yellows

2012 was a challenging year for canola growers in Western Canada. Insects, diseases, and various other environmental conditions all played a part in lower than expected yields. Of all the issues that were faced, one of the diseases that had a significant impact was Aster Yellows. Although Aster Yellows can infect many different species of plant, it tends to be very visual in canola. Some of the symptoms that were seen were sterile bladder-like pods, flowers becoming leaf like structures, stunting, yellowing, purpling, and poor seed production. These symptoms are most visual at the later stages of canola development, but springtime infection will have the biggest impact on canola yield. Aster Yellows disease symptoms can take 6-8 weeks before they are visible.

Generally, Aster Yellows infection rate averages around 2-3% in canola. In 2012, the infection rates were much higher, averaging around 12%. The cause of the disease is a phytoplasma that is spread by an insect called the Aster Leafhopper. Although a small number of the leafhoppers can overwinter here in Western Canada, the majority of them blow up from the US with the south winds in the spring. In 2012, the south winds came early and thus we observed more severe symptoms of Aster Yellows.

In order for a leafhopper to become infected it must first feed on an infected plant. There are a large number of host plants including both annual and perennial species. Once the Aster Leafhopper is infected the phytoplasma multiplies in the gut of the leafhopper. When the leafhopper feeds on uninfected plants, it transfers phytoplasma into the plant spreading the disease. The level of infection will depend on the plant stage and the amount of time that the infected leafhopper feeds (i.e. how much phytoplasma is transferred). A canola plant that has been infected early on in the season (i.e. cotyledon) will show the most severe symptoms than a plant that was infected at a later stage. Plants infected at a later stage of development or plants that were only fed on for a short period of time may not have as severe a level of infection. These plants may still produce pods, but there may be little or no seed production.

Currently there are no recommended control options for Aster Yellows. Once the plant is infected there is nothing that can be done. Spraying to control the leafhopper may seem like a viable option, but there are a few considerations that make it very difficult to achieve good results. First, the leafhopper is a migratory insect that moves around, so it is a very hard target if you decide to spray. Second, if you manage to get good control of the leafhopper with your spray application, the leafhopper may move in from adjacent fields that have not been sprayed or multiple flushes of leafhoppers may blow in on the south winds. Multiple sprayings becomes very uneconomical as well as having a detrimental effect on the many beneficial insects that are present.

So what can be done?

There is not much that can be done to control Aster Yellows although there are a few management strategies that may help decrease it. Early planting may help by having the crop up and growing before the insects arrive. A plant that is infected at a later stage of development will have a less severe infection. Having a weed free canola crop is also a good management practice for Aster Yellow control. Because the leafhopper prefers to feed on, and will only breed on grasses, it is important to have good weed control in your canola crop and keep it free of grassy weeds. Canola is not the preferred food source; the leafhopper is more likely to move on if it doesn't like what it is eating.

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A monthly newsletter containing timely agronomic information. Produced by DuPont Pioneer and provided with compliments of your Pioneer Hi-Bred sales representative.

Walking Your Fields®

Welcome to the first issue of *Walking Your Fields®* newsletter for the 2013 growing season. On behalf of your DuPont Pioneer Agronomy team, you will be receiving this newsletter on a monthly basis through October. For more detailed agronomic information please feel free to contact your local Pioneer Hi-Bred sales representative or check out ***www.pioneer.com***.

Agronomy Trials Manager Introduction

As the new Agronomy Trials Manager for Western Canada, I am very excited to introduce myself; I'm Glenda Clezy. I joined the DuPont Pioneer team in January. I spent ten years prior to starting with DuPont Pioneer working with E. I. DuPont Canada Co. on the crop protection side as a Field Biologist in Saskatchewan. I am looking forward to the season as we have many exciting trials planned. Hopefully we get some more "spring-like" weather across the prairies soon so everyone can get out into the field.

A couple of the projects that we are starting to look at this year include a look at a new seed treatment from DuPont that has just been approved by the Pest Management Regulatory Agency and our first chance to see a new shatter resistant hybrid in a field scale trial. We are continuing to work on canola plant populations based on thousand kernel weight (TKW) versus pounds per acre (lb./ac.) recommendations. We are also continuing to work with E. I. DuPont Canada Co. and the Crop Protection group to get a "hands on" look at Vertisan® and Acapela™ fungicides in crops such as canola, soybean and sunflower. I am filled with the anticipation of getting out to see most of the trials this year, and to bring you the results of the trials in future Walking Your Fields® issues. Thank you to all who participate in our field trials; your efforts provide a lot of value and information to the entire team. I look forward to working with all of you this year.

Inside this issue:

ALBERTA

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Building Your 2013 Canola Fertility Plan

Did you have poor canola yields in 2012? Are you anticipating higher residual nutrients as a result? You should plan to take advantage of the yield benefits of growing canola on another crop's stubble (e.g. wheat), and use that previous crop's yield last year for estimating nutrient removed. Based on the Manitoba Soil Fertility Guide, the nitrogen (N) removal with 45 bushels/acre (bu./ac.) harvested wheat seed at 16% protein would be: **16% ÷ 5.7 = 2.8% N x 2700 lbs (45 bu./ac. x 60 lb./bu.) = 76 lb./ac. of N removed**

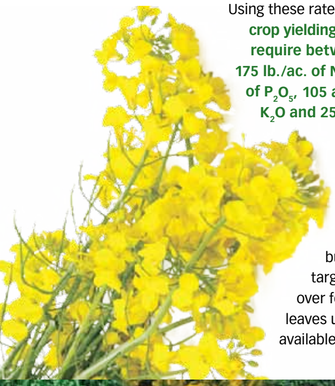
As you develop your plan for fertilizing your canola in 2013, there are really two questions you need to answer to estimate your fertilizer needs:

1 How much nutrient will my canola require?

The following table summarizes uptake rates of macronutrients for canola.

Canola	N	P_2O_5	K_2O	S
Total Uptake (per bushel produced in lb./ac.)	**2.9-3.5**	**1.3-1.6**	**2.1-2.5**	**0.5-0.6**

Adapted from information available through Canadian Fertilizer Institute
***N** – Nitrogen, **P_2O_5** - Phosphorus, **K_2O** - Potassium, **S** - Sulphate*



Using these rates of uptake **a canola crop yielding 50 bu./ac. will require between 145 and 175 lb./ac. of N, 65 and 80 lb./ac. of P_2O_5, 105 and 125 lb./ac.of K_2O and 25 and 30 lb./ac. of S** available for uptake. Adjust these rates for your canola yield goal. Set an aggressive but realistic yield target, to minimize over fertilization that leaves unused nutrient available for loss or fixation.

Factor in your farm's average canola yields in the past, spring conditions that influence yield potential (e.g. delayed planting), and changes made to your genetics or production practices to improve those yields.

2 How much nutrient can my soil supply?

The best answer to this question starts with taking a soil test using an appropriate sampling method. A random sample of at least 20 cores per field provides a good snapshot of the average level of available nutrients when the sample was collected. For tracking nutrient levels over time or intensive fertilizer management like variable rate technology (VRT), grid sampling on a GPS marked 1 to 5 acre grid provides a more useful assessment of field variability, but is more expensive with the number of samples per field. A compromise is to intensively sample a small benchmark area (e.g. ¼ acre) within yield zones determined from previous years' yield maps.

Soil test results also provide information about things like organic matter (OM) content that can affect nutrient supply. For example, mineralization during the season can provide between 6 and 20 lb./ac. of nitrogen, up to 5 lb./ac. of phosphate and about 2 to 3 lb./ac. of sulphur for every 1% OM in the soil (source: Canola Watch, Feb. 9, 2012, Canola Council). Stresses that limit biological activity in the soil will reduce rates of mineralization, while conditions ideal for crop growth tend to favour it, so choose realistic estimates of your OM nutrient release. Mineralization plus soil test available nutrient levels provide an estimate of nutrient supply from the soil. Subtract this supply from your required nutrient from Question 1 for an estimate of fertilizer needs.

One final point – In situations where maximum seed emergence is essential (e.g. large seed planted at rates of 5 lb./ac. or less), be cautious with seed placement. For most nutrients other than the first 20 lb./ac. of actual phosphate, placement in a band away from the seed row is just as effective without the risk of seed mortality.

Seed Size and emergence

Each spring the question of what seeding rate should be used to achieve maximum net profits is heard again and again. The idea of using poundage per acre as a flat rate (i.e. 5 pounds per acre (lb./ac.)) cannot be applied with today's hybrids as a result of seed size. Discussion and thoughts need to be centered on targeting "X" amount of seeds planted to obtain an average of 7-8 plants /square foot (ft^2) 21 days after emergence. Research has shown that the critical level of plant populations in canola is 5 plants per square foot with recommended levels of 7-12 plants/ft^2 to maximize yield (minimum 7 for cushion to allow for in-season losses). At these suggested levels maturity can be maintained barring hail etc. Ground cover can be achieved quickly to help cover soil to reduce moisture loss as well as combat weeds and can help in distributing the stress load from insect pressure.

As seed size can vary from lot to lot calibration becomes part of the seeding processes when thousand seed weight (TSW) varies by more than 1 gram (g). The traditional blanket application of 5lbs/ac or reducing down by 10% at a 6.5 g TSW using 60% survival (mortality and germ included) will only potentially give you 4.6 plants/ft^2. Raising survivability to 75% will give you 5.7 plants/ft^2. This is within the range but puts the field on the cusp of the curve for high yields. This is a tight rope that we do not want during the growing season.

The calculation is as follows: (Need help with this? Contact your local Pioneer Hi-Bred sales representative to help.)

Formula for setting Canola Seeding Rate based on Seed Size:

Use this formula to set a seeding rate based on seed size:

Seeding Rate (lb./ac.) = [9.6 x desired plant density (plants/ft^2) x TSW (grams)] ÷ estimated seed survival (%, expressed as a whole #)

Example: If seed is 4 grams per 1,000 (TSW), desired plant population is 10 plants per square foot, and estimated seed survival is 60%, then the seeding rate should be 6.4 lb./ac.

(9.6 x 10 plants/ft^2 x 4.0 g) ÷ 60 = 6.4 lb./ac. (7.4 kg/ha)
Rates of Survivability: A good starting point is 60%.

So what critical factors do we need to think about to maximize survivability?

- Start with your drill- Is it ready to go, is it level and are all openers in good shape?
- Take a sample of the seed after it has passed through your seeding tool – is there visible damage? Then look at your wind speed
- Soil Temperature- minimum 5°C as the starting point at seed depth (if lower bump seeding rate upwards)
- Seed Depth – Target ½ inch to 1 inch below the press wheel furrow, check your depth in the field as you seed as well as when you move to other fields
- Slow Down- There is no right speed but it is the speed which plants the majority of seed at the depth of ½ to 1" below the press wheel furrow. Slowing down allows for the openers to establish a seed shelf as wheel as maintain fertilizer and seed separation
- Fertility with the seed - place a minimal amount of starter phosphate (P) with the seed place the remaining in the fertilizer row. Starter P should range at 5-7 lb./ac. actual. Minimize nitrogen and avoid potassium in the seed row as the salt affect will inhibit germination
- Scout early and often for insects such as flea beetles and cutworms
- Pre-seed spray for weeds or a quick follow up after seeding to minimize weed pressure

Remember, this is a very small seed going into a harsh environment and the quicker the plant can germinate and emerge the better the survival chances

Any questions, please contact your local Pioneer Hi-Bred sales representative.

Poor emergence

Better emergence

Adequate plant stand