

Canola Stand Assessment

Setting your fields up for maximum yield potential starts with proper stand establishment. So within 10 to 14 days after seeding your canola, it is critical to start walking your fields by yourself or with your local Pioneer Hi-Bred sales representative to look at emergence.

With that in mind, take to the field a small shovel, a magnifying glass, a camera (or iPhone or other) and either a meter / yard stick or a Hula hoop (1/4m² Hula hoop is 21 inches in diameter) and start walking. If using a Hula hoop, throw it ahead of you, walk up and start to look at the stand. To determine the number of plants per square foot (plants/ft²): using a ¼ m² Hula hoop count, the number of plants in the rows and multiply by 4 and divide by 10. For those using a meter stick, stop at a random spot and look down a row. If it represents what you see across an area lay it down beside the row and count. Count a meter down the row and count across rows to get a square meter, and then divide by 10.8. Make note of the seed rows and the missing areas.

Missing Areas

The critical time is to assess in the first 10-20 days after seeding depending on soil and air temperatures. Emergence can happen quickly; plants can wither, die and disappear very quickly leaving no evidence. Look at the areas with no or little plant emergence and start to look closely at the soil surface.

1 Are there any plants visible? If not slowly dig away at the soil to find the seed. If you find a seed, is it hard or mushy? If it's hard then it has not germinated and could still possibly germinate. If it is mushy then it is a dead seed. The cause may be anything from being cracked at seeding to an infection from disease. If you cannot find seed then dig along the row until you find seed. Dig down into the fertilizer row to see if the seed is there and not on the seed shelf. If it is not there it may be as a result of seed not being delivered to the shelf. If some of the seed is in the fertilizer row, this suggests that the seed shelf was not established. If you find only a seed coat with nothing else, you may suspect either disease or insects, but will require further digging.

2 Are there plants wilted or dead on the surface? If so, using your shovel, carefully dig the plant up and look at the root system/hypocotyls and the stem. Is the stem cut off at the surface? Suspicion would lead to cut worm. Another cause may be a severe wind that can result in twisting which causes breakage that is sometimes magnified with stem feeding from Flea beetles. Look with the magnifying glass at the cut. Determine whether the cut is clean, shredded, has pot marks (bites) or has a withered look. Potential culprits of this may be: Cutworm (clean cut), wind/soil movement/Flea beetles (shredded/twisted/stems with pot marks), or Frost (withered tips/growing point).

3 Are there plants curled up, U shaped, accordion looking or severely twisted below surface? Look at the plants. Has the hypocotyls turned back towards the seed or has it travelled sideways? The suspicion would be crusting. Look at the seed row and feel for firmness. What are soil moisture conditions? If it is dryer, the plant may not have had enough turgid pressure to push through soil profile. In this case, you will also sometimes see accordion-looking hypocotyls. Look down the row and see if it continues to occur. If you see twisting and growing point damage, it may mean herbicide damage, frost or freezing at the soil surface which damages the growing point.

4 Are there hypocotyls cut off below the soil surface? The possible culprit may be cutworm or wireworm.

At the end of the day, the sooner you assess the stand and determine the causes the better to either control the issue or prepare for next seeding season. Remember to take plenty of high quality pictures to send if you need help diagnosing the causes of no emergence.

Critical factors to Assessing Frost Damage of Canola

Frost damage was extensive in many areas of Western Canada last spring. Damage ranged from leaf margin blackening to the entire removal (drying off) of all above ground plant tissue. In many instances, plant populations were reduced by as much as 75% in areas where temperatures remained below freezing for several hours on consecutive nights.

One critical factor to determine if canola plants will survive from a frost can be observed on the hypocotyls (stems). Because the growing point is located below and within the center of established plants, frost damage resulting in the removal (drying or blackening off) of all the leaves does not mean death.

The plant on the left will not survive because the hypocotyl has been pinched off due to severe frost (black arrow). The plant on the right will survive because the hypocotyl is still firm and pliable.

The other critical factor is to look at the growing point of a damaged plant. A light green to lime green color in the very center of the plant (growing point) is a good indicator that the plant will survive. This can be accomplished by peeling back the leaves like a banana.

The last critical factor is to allow the plants enough **TIME** to recover from a frost or multiple frosts, before fully assessing the extent of the damage. New leaves may take as long as a week to emerge. Research supports that plant densities as low as 2 to 3 plants/ft² (20 to 30 plants/m²) will still make a viable crop.



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Walking Your Fields

Welcome to the second 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.

Late seeding

We recently had some questions for a grower "If you could pick 1 day to seed your entire crop, what would that date be?" The answer he gave was "May 15." The answer to this question is of course going to vary depending on who you talk to, their location, the crop, past experiences, and whole host of other variables that lead to "The Date". Reality is that an entire farm cannot be seeded in one day, and this spring, many areas will be just starting seeding by May 15. So, what can producers do to be successful when they know that they will be seeding some of the crop in late?

When it comes to canola, the first thing is to know your seed. There is a wide range of maturities which are usually classified as early, mid, and late maturity. When planting is delayed, it is important to seed later maturing canola varieties first, then mid, and early varieties after that. This will give each product the best chance to reach its full yield potential and give you the most return. Switching from a later maturing product to an earlier product is all about risk. Later maturing products generally have higher yield potential but have more chance of damage due to late season frost. The decision will ultimately be made by the farmer, who will have to assess how much risk they are willing to take.

If you could pick 1 day to seed your entire crop, what would that date be?

Before you decide to switch to an early maturing product, here are a few considerations that can help with maturity. When thinking about these recommendations, it all comes back to good stand establishment and agronomic practices. First, seeding shallow (1/2 to 3/4 inch) will get the canola up and out of the ground quickly and evenly, assuming good seedbed conditions. Second, is slow down! This may be the hardest thing to do in a late planting season, but, the slower you go the more consistent and even your seed placement

will be. A speed of 4 MPH (6.44 KM/H) is recommended for canola. An increased seeding rate is also a tool that can be used to gain a few days in maturity. A thin stand of canola will take longer to mature than a stand that has lots of plants and is even. A target of 8-10 plants/ft² final plant stand is a good guideline for late seeding. Fertility is also an important consideration when talking maturity. Seed placed phosphorous will help early growth of the canola by giving the "POP UP" effect, getting the canola up and growing. Nitrogen is also a very important nutrient for canola. But, slightly reducing the nitrogen rate can speed up canola maturity. Reducing nitrogen rate as a tool to manage maturity will be a balance, as reducing nitrogen will also reduce overall yield.

A final suggestion is to scout your canola crop often. There are many pests that may come along during the growing season that can cause a delay in maturity. These should be managed as needed to give the crop the best chance to reach its full yield potential.

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Critical Time for Weed Removal

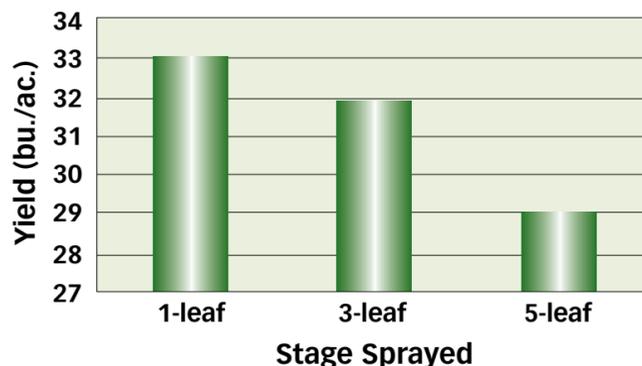
The decision on when (or if) to spray for weeds can be a difficult one when your goal is to maximize your yield potential and ultimately your return on investment. In order to maximize your yield, it is important to understand the critical or optimal time to apply a herbicide. Much research has been conducted into the critical time for weed removal, and ultimately there is no one final answer for every crop or field. The critical time for weed removal will vary slightly based on time of seeding, time of weed emergence, type of weeds present and the competitive ability of the crop versus the weeds present.

All of the research into the ideal time for weed removal shows a trend that the earlier you can remove the weeds that are competing with the crop, the more likely you will see an increase in yield. What does this mean in reality? In general, if you are using a pre-seed or pre-emergent herbicide application, and the crop emerges quickly with no weed competition, you may be able to delay your in-crop herbicide application to a later stage of the crop. If you have weeds emerging at the same time, or prior to the emergence of the crop, these are the weeds that have a high potential to rob you of yield, and need to be removed as soon as possible.

Weed control research in canola has shown that yields in canola can be reduced significantly by weed competition. A typical recommendation for canola is to remove weeds that are present at the time of crop emergence no later than the 4 leaf stage of canola. Ideally, if the weeds can be removed prior to the three leaf stage you are in a better position to maximize canola yield. The longer the herbicide application is delayed, and weeds are competing with the crop, the more likely is the opportunity for weed pressure to cause yield loss. What about waiting for the second flushes, or later emerging weeds before spraying? Because of the plasticity of canola, and the ability of the crop to compete and cover the ground once it reaches the 6-8 leaf stage, the impact of new weeds emerging is greatly reduced. Studies have shown that in general, later emerging weeds in canola have very little impact on final yield if the field has been weed free in the early stages.

Timing of weed removal studies have also been conducted in Ontario looking at the "ideal" time of weed removal in corn and soybean. Similarly in canola, previous research has been conducted by the Canola Council of Canada on the critical time of weed removal and the effects on yield in Alberta (Figure 1). The critical time for removal of weeds will vary depending on the environment, weeds present, time of weed emergence vs. crop emergence, crop type and type of weeds present. A typical recommendation for corn, where weeds have emerged at the same time as the crop is the 3-8 leaf stage with optimal from the 3-5 leaf stage. Soybean studies indicated that critical herbicide timings, where the weeds have emerged prior to or with the crop, range from the 1st to 3rd trifoliolate leaf stage.

Effect of Time of Weed Removal and Yield of Canola in Alberta Fields (average of all trials) Fig. 1.



Reference: Canol@Fact, June 2006, Canola Council of Canada. www.canolacouncil.org

To maximize your yield, remember to scout your fields early, compare emergence of the weeds to the crop and apply your herbicide at the optimum time for your crop. Always ensure that the herbicide you have selected is registered for the stage of the crop that you applying it to and for the control of the weeds present.

Herbicides added to Glyphosate to Control Roundup Ready® Canola Volunteers in Corn

Many conventional corn herbicides have re-surfaced again to be utilized in controlling volunteer canola with the Roundup Ready® trait in corn with the Roundup Ready® trait across Western Canada. Some of these conventional herbicides have had negative effects on corn development and ultimately yield. A multi-year study has been conducted to calculate the effects of various in-crop herbicides added to glyphosate.

The study included the following herbicide treatments compared to a single application of glyphosate as a treated check plot.

Treatment	Application Rate/Acre	Stage
Glyphosate Only (Check)	1 L/ac. (360g ae)	V3-V4
Glyphosate + Dicamba	1 L/ac. (360g ae) + 0.243 L/ac.	V3-V4
Glyphosate + 2,4-D	1 L/ac. (360g ae) + 0.4 L/ac. (600g/L)	V3-V4
Glyphosate + MCPA Amine	1 L/ac. (360g ae) + 0.45 L/ac.	V3-V4
Glyphosate + Bromoxynil	1 L/ac. (360g ae) + 0.48 L/ac.	V3-V4
Glyphosate + Bromoxynil (Split Application)	1 L/ac. (360g ae) + 0.48 L/ac.	V3-V4

*See Provincial Crop Protection Guides for more information on herbicide application rates and timing; **active ingredient equivalent

Herbicide Injury Symptoms:



Glyphosate + Bromoxynil - 7-10 days



Glyphosate + Banvil - 10 days post



Glyphosate 2,4-D - 10 day post



Stunted development MCPA vs Bromoxynil



Glyphosate + MCPA - 10 days post

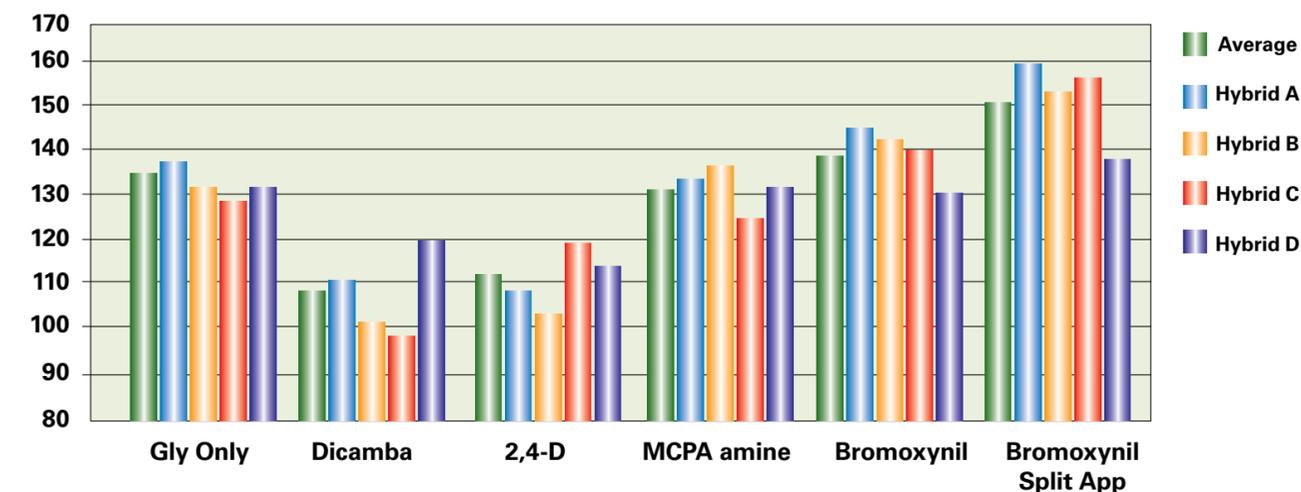
Results:

The results from this study showed a severe yield and test weight reduction in corn when Dicamba or 2,4-D products were included in tank mixes. Severe brittle snap was also observed, in all the 2,4-D treatments in all hybrids. The highest yielding treatment was the Bromoxynil which did show good control of weeds when applied using a minimum of 10 gallons per acre under warm growing conditions. Each of the Dicamba, 2,4-D and MCPA treatments caused significant plant height reduction and delayed development in corn. Each herbicide treatment was applied to four leading Western Canadian corn hybrids from multiple seed companies. No differences in corn hybrid tolerance were observed from any of the herbicide treatments.

Ultimately the highest yielding treatment was the Bromoxynil herbicide treatment applied separately from glyphosate. Bromoxynil applied separately did not stunt the corn crop at all, nor did it inhibit crop development at any stage. Some minor leaf burn was observed but the corn plants quickly out grew this minor injury.

Average Herbicide Injury Scores by Herbicide Treatment

21-24 Days Post Application



Tips when applying Bromoxynil in Corn:

- Apply during warm temperatures
- Use minimum of 10 gallons per acre water volume
- Higher yields and lower crop injury was observed when bromoxynil was applied sequentially following the glyphosate application

If you have any questions please call your local Pioneer Hi-bred sales representative and always read and follow herbicide label directions. See Provincial Crop Protection guides on more information on registered application rates and timings of products listed in this article.