Walking Your Fields®

Welcome to the first issue of *Walking Your Fields*® newsletter for the 2014 growing season. On behalf of your DuPont Pioneer Agronomy team, we will be producing this newsletter on a monthly basis through to October. For more detailed agronomic information please feel free to contact your local Pioneer Hi-Bred sales representative or check out ***www.pioneer.com***.

Spring Checkup

Plant 2014 is upon us and it's time to do some last minute checks before heading to the field. By now most of you have gone through the drill, air cart and other pieces of equipment. Here are some last minute equipment checks that can sometimes be overlooked and can create emergence issues.

1) Air pressure of tires on seeding tool. This is sometimes forgotten but 5 pounds difference in air pressure can result in seeding depth issues side to side.
2) Check your front to back levelling.
3) Turn hoses a ¼ to ½ turn to move the wear points.
4) Air seals on seed cart: cracked or worn seals will allow for air escape which can result in poor seed distribution and therefore lead to patchy emergence.
5) New drill "blues": this is more after delivery but take the time to ensure the drill is level as factory settings are not always right for your operation. Remember, factory settings are set for all of North America. As well, since canola is small seed, it should not be the first field seeded with your new drill. Look at wheat or some other large seed crop to work out the kinks.
6) Last year's trash may cause some issues. If you are feeling there is too much trash on your fields, the opportunity to heavy harrow should be taken, as it may mean an extra day wait but it will allow for good seed to soil contact and potentially allow the soil to warm up.
7) If you plan on seeding early with the risk you may be going into cold soils, it is critical to add some seed placed phosphate to help with early season growth.

Inside this issue:

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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.

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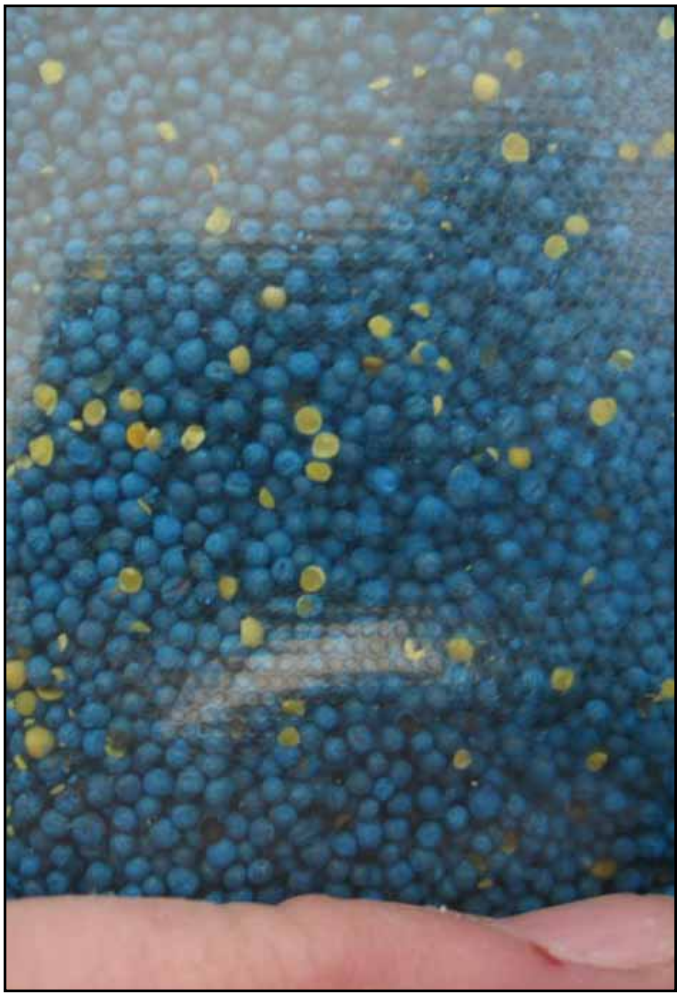
Critical "watch outs" as you start seeding:

1) Calibrate – Seeding rate should be adjusted to ensure a target of 8-10 plants/ft^2. Rather than target pounds/acre target the number of seeds per square foot or per foot of row. Survivability can be based on many factors. You should have a good idea on survivability over the last 3-4 years. (still not too late to do a stubble count on last year's canola crop)

2) Tube Sock Technology – Catch a seed sample on your outer most opener of your air drill. Inspect seed, looking for cracks and splits.



Seed sample, showing split seed. Photo Courtesy of Doug Moisey, DuPont Pioneer Area Agronomist, Alberta.

3) Check your seed depth on a consistent basis. When you stop the drill, walk back approximately 100 yards, where you were seeding at a normal speed, and check depth across the runs as well as down the runs. Then monitor as things change. It is critical to check when moving from field to field as soil conditions change and tool changes can occur as well.

Depiction of checking seed depth. Photo courtesy of Doug Moisey, DuPont Pioneer Area Agronomist, Alberta.

4) Monitor air flow as the day goes on since humidity and temperature can change and this can affect air flow to move the seed.

Depending on soil temperature, crop should start to emerge within 5-10 days and that is when your initial inspections of your fields should start. This is an opportunity to look for potential issues such as insects and diseases.

If you have any questions please call your local Pioneer Hi-Bred sales representative.

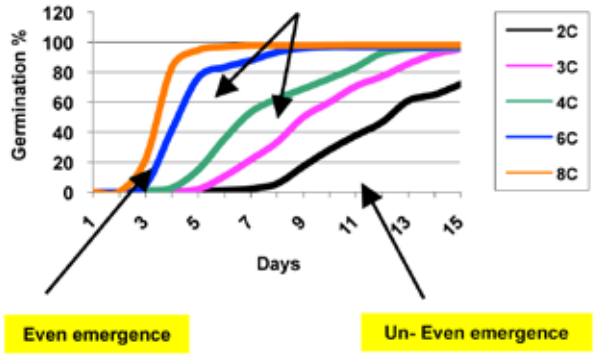
If you wish to continue to receive agronomic updates and other electronic communications from the DuPont Pioneer Agronomy Team, please visit **www.pioneer.com/register** to opt-in to receive the emails. On July 1, 2014, Canada's Anti-Spam Legislation (CASL) comes into effect. This new law requires that we obtain your permission (called an opt-in) to send you information electronically.

Managing Risk with Good Canola Stands

We have all heard that there are multiple risk factors that impact how good our canola stand will look 5 to 6 weeks after seeding. As agronomists, we often get the question "What are the two biggest risk factors we see on a yearly basis with stand establishment?" Well, there are more than 80 potential risk factors; two of these risk factors stand out. Soil temperature and seed size/seed rate.

Soil temperature: The warmer the soil, the better the establishment. An average soil temperature taken at between 8:30 a.m. and 4:30 p.m., for 2 to 3 days, to a depth of 1 ½ inches, will give you a good starting point. For rapid germination and emergence, target an average soil temperature of 8˚C. Canola will start to absorb water and germinate at soil temperatures as low as 2˚C. The longer it takes for seedling emergence, the greater the likelihood of seedling diseases occurring and, therefore, the greater the chance for reduced plant populations. Slow and uneven seed germination and emergence can result in poor stands and later uneven maturity.

Many fields fall between these lines....
With emergence occurring several days later!



Seed size and seeding rate: This is not as simple as setting your drill for 4.5 or 5.0 pounds per acre (lbs/ac). Seed size, target plant population, and percent survivability all play key roles on stand establishment 21 to 28 days after emergence. The following formula is an excellent way to determine what your approximate seeding rate in lb/ac should be;

$$\frac{\text{= 9.6 X seed size (1000 kwt*) X target plant population}}{\text{estimated seed survivability (\%)}}$$

To use actual numbers;

$$\frac{\text{= 9.6 X 4.5 X 8}}{\text{75}}$$

This example shows us a target seeding rate of 4.5 lbs/ac.

*** 1000 kwt means 1000 Kernel Weight.**

Growers who understand survivability and have managed their risk are often well above the average survivability for canola of 60%. If a grower's management practices are very sound and they are comfortable with constantly maintaining 70-80% survivability, then from the pure agronomic perspective, seed your canola at a rate that is equal to your 1000 kwt.

Image compares large seed (6.0 grams/1000kwt) seeded at 3 lbs on left and 5 lbs on the right. Photo courtesy of David Vanthuyne, DuPont Pioneer Area Agronomist, Saskatchewan.

Image compares the same seed size at seeding rate of 5 lbs on the left and 7 lbs on right. Photo courtesy of David Vanthuyne, DuPont Pioneer Area Agronomist, Saskatchewan.

Managing Autotoxicity in Alfalfa

Various plants produce a wide range of chemicals aimed at defending them from attacking pests. Among these chemicals are some that inhibit the growth of other plant species. The production of chemical compounds by a plant, that are toxic to members of the same species, is known as Autotoxicity. Allelopathy is the production of chemical compounds that cause harmful or beneficial effects of one plant species to another. Alfalfa is a plant species that exhibits autotoxicity. Once a stand of alfalfa is killed, autotoxic compounds are released into the soil environment.

The age of the existing alfalfa stand will also affect autotoxicity. Younger plants (those one year old or less) contain fewer toxins than older plants. This means that failed seedings or even new seedings that winterkill, can be seeded back to alfalfa with little yield loss. The time interval between eliminating an old stand and planting a new one has an important influence on the effects of autotoxicity. The greater this interval, the lower the incidence of autotoxicity will be.

Autotoxicity affects the development of the seedling's root system. Toxins inhibit the ability of the root to elongate. This reduces seedling emergence. Emerged plants are stunted and may show purpling because of their inability to take up adequate amounts of phosphorus. Surviving plants will develop a root system that is shallow and more highly branched than that of an unaffected plant. This smaller root system reduces the plant's ability to take up water and nutrients. This affect will persist throughout the life of the plant. Stands affected by autotoxicity during the seedling year will have reduced yields not only in that year but in subsequent years as well.

Managing Autotoxicity

The best way of managing autotoxicity in alfalfa is to rotate to some other crop for at least 1 year. If alfalfa must follow alfalfa, the best choice is to kill the old alfalfa in the year prior to re-establishment. The degree of toxicity is directly related to the amount of time between killing the old stand and establishing the new stand. Also, tillage practices directly affect autotoxicity. As tillage intensifies, autotoxicity incidence declines.

Plants that are healthy in fall, and then winterkill, will not release the toxins from the roots until they thaw. Even if thawing takes place during a winter warm up, little leaching or microbial degradation of these compounds will take place until spring. This means that the autotoxic effect of a winterkilled stand would be similar to that of a stand killed in early spring. There will be significant yield reductions if these stands are spring seeded back to alfalfa unless they are less than two years old. These stands should be rotated out of alfalfa, or late summer seeded following oats or some other annual crop.

Assessing Alfalfa Stands

The decision to keep an alfalfa stand or replace it is a difficult choice for alfalfa growers every year. To properly assess forage stands, plants need to be dug up. Look for leaf and bud development, resistance to bark peeling and a good internal root color (white to cream colored). Plants with broken lateral roots have poor chances of survival, particularly in a dry spring.

Assessing alfalfa plant health.

Estimating Yield Potential of Alfalfa

Alfalfa can attain maximum yields over a range of plant stand densities. Therefore plant density is a poor estimator of yield because individual plants range in the number of stems produced. Stem density is the best indicator of yield potential. Figure 1 gives an estimate of potential yield of an alfalfa stand relative to the number of stems. Table 3 outlines the yields potential of an alfalfa stand based on the number of stems per square foot. Table 4 outlines the minimum number of healthy plants/foot2 for a desirable alfalfa stand based on stand age.

Alfalfa Stem Count and Yield Potential

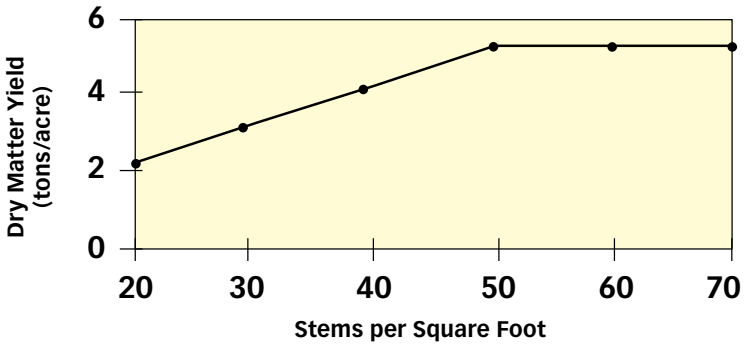


Figure 1: Alfalfa yield potential based on stem count

Table 3: Yield potential based on the number of stem/ft²

Stems/ft²	% of Maximum Yield
> 55	100%
40 to 50	75% to 92%
< 40	Replace Stand

Table 4: Plant Count (# per square foot)

Establishment	20+ Plants/ft²
Year 1	12 – 20 Plants/ft²
Year 2	8 – 12 Plants/ft²
Year 3 or Older	5 Plants/ft²

To assess an alfalfa stand, count the number of plants to estimate the stand density. The best time to do plant counts is in the spring, after the plants have broken dormancy, to assess the health of the plants in the stand.

Other factors to consider when assessing alfalfa stands:

- other forage species in the stand
- your forage needs throughout the year
- alternative forage options
- crop rotation
- availability of equipment options in the area

Alfalfa Varieties

DuPont Pioneer has an outstanding line-up and good supply of high yielding alfalfa varieties for you farm operation. Visit your local Pioneer Hi-Bred sales representative to discuss your alfalfa requirements for this spring.

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DuPont Pioneer now has FREE Applications available through the App Store on iTunes®

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