

## Stand Establishment in Canola – Why is it so Critical?

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### Introduction

Obtaining proper stand establishment is the most essential step a producer needs to achieve in order to realize the maximum yield potential from canola hybrids. Today's canola products offer higher yield potential than ever seen before. This is due to improved genetics, better technologies and sound agronomic practices. However, some management practices can have negative implications for your crop. They can favour conditions for pests and ultimately increase the early season stress on canola.

### Why is establishment important?

When good stand establishment is achieved, your chances of obtaining the high yield potential that many new canola products offer is greatly increased. Canola has a tremendous ability to compensate when faced with various stresses. However, a canola plant cannot do this unless it is first well established. There are numerous factors that influence emergence and stand establishment.

*Table 1: Factors influencing stand establishment*

1. **Crop Rotations**
2. **Seed Quality**
3. **Seedbed Condition**
  - a. Moisture
  - b. Soil Texture
4. **Seeding Date**
5. **Seeding Rate**
6. **Seeding Depth**
7. **Soil Fertility**
8. **Climatic Conditions**
9. **Herbicide Carryover**
10. **Seedling Pest Pressure**
  - a. Insect (Flea Beetle, Cutworm, etc.)
  - b. Disease (Seedling Blight, Damping Off, etc.)

Any source of stress on a canola plant will not only reduce yield potential, but also increase the effect other stresses have

on emerging plants. For example if seeding rate is reduced, it now takes fewer flea beetles to reach economic thresholds—since the same number of insects are feeding on fewer plants. The negative effects of stress factors will be less apparent in good stands but very obvious in stressed fields. The result is simple—less stress factors results in better establishment.

And take note, growers can control all but two of these factors: insect densities and climatic conditions.

*Figure 1: Spring Planting*



*Photo: Courtesy of the Canola Council*

### Manage to Reduce Early Stress

Canola is a small seeded crop and does not contain the same energy reserves that larger seeded crops have. Thus, the results of stress placed on emerging canola seedlings will be amplified. Most factors affecting stand establishment can be controlled through management practices.

**Proper seed placement** (1/2 – 1 inch) into warm, firm, moist soil is the most important of agronomic practice a grower can do. All too often, accurate seed placement is sacrificed in efforts to save time. The result is poor stand establishment and net yield losses. Canola yield potential is determined in the first 24 days of plant development. At this early stage,

canola is not very competitive, so rapid establishment is critical to maximize crop performance.

**Don't cut seeding rates.** Although this is an input cost and canola does have a tremendous ability to compensate under ideal growing conditions, stresses will build up and yield potential will be reduced. Cutting seeding rates adds another stress to your crop. Consider the following example:

- Canola sown at a seeding rate of 3.5 lbs/acre.
- Thousand Kernel Weight (TKW) = 5.8 grams
- Seed placed 2 inches deep
- Soil conditions are cool and wet.
- Field history is canola-wheat-canola-wheat

Factors to consider in this example:

- Large TKW combined with reduced seeding rate will drastically reduce the number of viable seeds planted. (~275,000 seeds/acre @ 2/3 established = ~4 plants/ft<sup>2</sup>)
- Various stresses applied to these seeds will further reduce establishment.
- Cool wet soil will promote seedling disease development
- Once established, the reduced stand will be more prone to damage from flea beetle feeding as the same number of flea beetles are feeding on fewer plants.

These is an example of how a few stresses on the crop can add up and reduce the stand establishment of the canola. Some of these factors could have been managed by the grower to help ensure an adequate plant population was established.

**Figure 2: Crucifer Flea Beetle Feeding**



*Photo: Courtesy of the Canola Council*

**Table 2: Diagnosing Poor Canola Stand Establishment**

Observation	Contributing Factors	Management Solutions
Seed found at various depths	Planter traveling too fast causing seed bounce	Slower planting speed and insure proper depth settings of ½-1½”
Poor emergence following rain	Soil may crust during periods of heavy rain followed by warm temperatures	Avoid planting into saturated soils or prior to forecasted heavy rains
Uneven emergence—ungerminated seeds found at ½”	Seed may have been planted above moisture	Plant ½- 1 ½ “ deep into moisture
Seedlings emerge slow and display pinched roots at or below soil surface	Seedling disease	Use a seed applied fungicide. Planting canola once every 3-4 years will reduce disease incidence.
Seedlings emerge slowly and develop yellow leaf edges and then fall	Cutworm feeding	Scout for cutworms and apply foliar insecticide during the evening while they are feeding. Look for a greenish underside of the cutworm as an indication of feeding.
Cotyledons have pin hole in leaf tissue	Indicative of flea beetle feeding	Use a insecticide seed treatment like Helix <sup>1</sup> or Helix Xtra
Seeds germinate uniformly, but produce a thin stand	Large seed or improper seeding rate	Apply seed at 4.5 – 5.5 lbs per acre. Consider the TKW of larger seed at seeding and adjust accordingly.

### Start Well to End Well

Stand establishment is the most critical step to insure the maximum returns from their canola crop. By reducing the amount of stress on the young plants, growers can ensure plants develop through their most vulnerable stage and produce a viable canola stand, leading to maximized yields come harvest time.