

# Seed canola early for high yields

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There are some clear advantages to seeding canola early, including high yield and mitigating pest issues. One of our canola yield challenge winners gave some great advice: this spring, ensure that your planting equipment is ready to go early in the season so you are prepared to get the canola crop off to a quick start.

## Insect Pests

Front of mind in Ontario are issues with insect pests. Good stand establishment and rapid, early growth is ideal for mitigating issues caused by insect pests. Flea beetle emergence from overwintering sites will peak at soil temperatures of 15° C, and it may take up to 3 weeks for all adults to emerge. Insecticide seed treatments control flea beetle for about 3 to 4 weeks, but slow early growth can mean that protection is lost before canola has passed out of the susceptible growth stage. At the 3-4 leaf stage, canola is often better able to outgrow the feeding damage.

Rapid, early growth is also ideal where swede midge is a concern. Swede midge adults emerge from the soil in mid-May to early June and larvae feed on the growing point at the center of the plant. A crop that bolts early may escape significant damage, and risk of swede midge damage is not a concern after flowering is initiated on secondary branches. Canola planted in late May or early June in areas with a history of swede midge faces high risk of damage.

## Frost

Spring frost can be an issue with early planting because the growing point is above ground and exposed between the cotyledons (seed leaves).

However, a light frost may be tolerated, particularly if canola has reached the 3-4 leaf stage. Canola plants that emerge in cooler conditions and “harden” over several days of cold weather may be more tolerant of frost than rapidly growing plants established during warmer conditions. However, soil conditions are another key factor dictating when to plant.

## Soil Conditions

Germination can occur at soil temperatures as low as 1 or 2° C, but emergence will be more rapid at higher temperatures. Data posted by Canola Council of Canada suggests that if temperatures stay at 3° C it may take up to 14 days before full germination is achieved. At 6° C it will take only 8 days. However, beginning seeding at 3 or 4° C soil temperature is a reasonable target if soil conditions are fit for planting and temperatures are expected to rise. Even though soil conditions may be cool, early seeding will typically result in higher yields as long as adequate plant stands are established.

Good soil moisture in the seed zone and adequate seed-to-soil contact are important for emergence. Residue should be evenly distributed and a firm seed bed will improve seed placement.



Seeding early is likely the best bet in 2016 as conditions are expected to be dry in late spring. With late seeding there may not be adequate moisture to seed at the recommended 1/2” to 1” depth, and deeper seeding will reduce emergence rates. If you are seeding into very cool soils, a shallow seed depth may reduce stress and time to emergence if there is adequate moisture near the surface or rains expected. Regardless, seed slowly to get the best accuracy. A uniform stand will likely yield more than a non-uniform stand, even at the same plant population.

## Seeding Rate and Plant Population

We know that canola plants are “plastic” and can branch out and compensate for yield at lower populations. So what are the benefits of a dense stand?

- buffer losses to insect pests, frost and other stresses,
- faster canopy fill for light capture and out-competing weeds
- reduced branching, earlier flowering and more even maturity,
- yield at 5 plants/ft<sup>2</sup> ranges from 78 to 100% of yield potential, at 10 plants/ft<sup>2</sup> it ranges from 92 to 100% of yield potential (N. Harker, AAFC Lacombe, AB) .

Now that we have established the value of a higher population, consider what the ideal seeding rate is for the given conditions. Seed size and emergence are important factors in determining your seeding rate. In very good spring conditions we will see up to 75% emergence in Ontario, but in average conditions we typically get 60% of planted seeds emerging.

Is a 5 lb/ac seeding rate enough to achieve 4.5 - 6 plants per foot of row on 7.5” rows (or 7-10 plants per square foot)? Let’s look at an example.

Example seed info: Thousand Seed Weight (TSW)

4.75 g, 7.5” rows:

- At 5 lb/ac we put down 6.9 seeds per foot
- If 75% emerge we have 5.2 plants per foot (within the ideal range)
- If 60% emerge we have 4.1 plants per foot (not within the ideal range)
- If TSW is higher, fewer seeds are being planted

Consider the conditions you are planting into and decide on the best seeding rate for an adequate population. You should also factor in the percent germination found on the seed tag. Certified No. 1 canola has a minimum 90% germination.

- Seedling survival = % germination on seed tag X % expected emergence  
e.g. seedling survival = 0.90 x 0.75 = 0.675
- Seeding rate lb/ac = desired population per square foot X TSW in grams ÷ seedling survival ÷ 10.4  
e.g. seeding rate =  
 $10 \times 4.75\text{g} \div 0.54 \div 10.5 = 6.7 \text{ lb/ac}$

For very early or very late plantings the seeding rate could be bumped up by 5 to 10% to compensate for lower emergence rates. Of course, the cost of seed is also a factor in your decisions.

After emergence, take your hula hoop or quadrant to the field and determine what the population is. Keep a record of the seeding rate and percent emergence so you can make further improvements next year.