

Starting Canola off Right

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There is an old adage that the two most important days for a crop are the day you plant and the day you harvest. Establishment is the greatest challenge in growing canola, because it is sown shallow where the soil is most subject to rapid drying. Consider these tips for quick, even emergence, rapid canopy closure, and higher yields.

- Don't let **soil compaction** squeeze your profits. Roots care about how deep they go. Most soil compaction and damage is done by the first trip over the field in the spring. The push to plant more acres and seed earlier can push you to go into fields when soils are marginally fit and compact the most. Yield losses of 15% to over 30% have been documented. Check soil conditions at tillage depth. Soil should crumble easily and not form a ball or ribbon when rolled in your hand.
- Be aware of **residual herbicides** used in the previous crop. Carry over can be greater following a dry year. Refer to OMAFRA Publication 75, *Guide to Weed Control* and product labels for more information.
- Seeding date. The ideal target seeding date is when **soil temperatures** are 5⁰ C or higher, but let soil conditions guide you on when to seed. Canola seedlings that have undergone several days of cold weather can withstand -8 to -12⁰ C temperatures. Canola seedlings that are rapidly growing are more susceptible to frost damage than plants growing under cold conditions. Canola at 3-4 leaf stage is more tolerant of frost than at the cotyledon stage.
- **Seeding rates** are usually given in lb/acre, but a preferred method is to begin with the desired final plant stand. The optimum plant stand is 7 – 10 healthy plants/sq foot. In 7.5 inch (19.5 cm) rows this is equivalent to 4.5 to 6 plants per foot (14.8 – 19.7 per m) of row. Target seeding rates need to account for large differences in seed size between varieties.

1000 Seed Weight gm	Target Seeding Rate lb/acre (kg/ha)	Seeds/ foot (m)	Grams of Seed per opener per 100 feet (30.5 m) of travel
3.5	3.3 (3.63)	5.7 (18.7)	2
4	3.7 (4.07)	5.7 (18.7)	2.3
4.5	4.2 (4.7)	5.7 (18.7)	2.6
5	4.7 (5.2)	5.7 (18.7)	2.8
5.5	5.1 (5.7)	5.7 (18.7)	3.4
6.0	5.6 (6.2)	5.7 (18.7)	3.4

Note: Seeding rate is based on 72% final stand and target population of 7 plants/sq foot (75 plants/sq m). Seeding rates should be adjusted 5-10% higher on soils prone to crusting, when seeding very early, or very late. A seeding rate calculator is on the Alberta Agriculture website at www.agric.gov.ab.ca/app19/calc/crop/otherseedcalculator.jsp.

- **Calibrate** seeding equipment before heading to the field! Bulking of seed with MAP (11-52-0), pelletized sulphur, or corn cob grits are options for improving seeding rate accuracy. Seeding through the grass seed box with the seed tubes inserted into the disc openers is another option. Do not use other fertilizers for bulking canola seed.

- **Speed kills.** Even emergence is more important than plant spacing. Drill bounce is more of a problem at speeds over 5.0 mph. A speed of 5.5 mph required an extra 1.5 lb/ac (1.7 kg/ha) more seed to achieve the same plant population compared to 5.0 mph.
- **Seed 1/2" to 1" deep** into a firm and slightly cloddy seedbed, keeping moisture near the surface. Deeper seeding reduces emergence and vigour, decreases seedling and root growth, and increases risk of crusting. Pack before and after planting in a dry year. If moisture is more than five cm (2 inches) deep, it is advisable to wait for moisture. Avoid having the seed start to germinate and run out of moisture.
- **Soil test before you invest!** Build a precision fertility program for each canola field by soil testing, with the potential to save fertilizer dollars. A basic soil test that tests for soil pH, organic matter, phosphorus and potash is usually all that is required for canola. Soil tests for boron and sulphur have not proven to be accurate in predicting the need for these nutrients. The phosphorus and potash requirements of spring canola are similar to oats, but less than barley or spring wheat. Canola example: recommended amount of phosphorus is 27 lb/ac phosphate (P205) and 18 lb/ac potash (K20) for soil testing low in soil phosphorus test (8 ppm) and medium potash test (80 ppm).
- The optimum **nitrogen rate** is 90 – 100 lbs/acre (102-114 kg/ha).
- **Starter Fertilizer:** The recommended **maximum rate of phosphorus fertilizer with the seed is 18 lb/ac (20 kg/ha). Nitrogen (except as MAP) or potash should not be applied with the seed.** Canola is very sensitive to fertilizer placed near the seed. Canola takes up 3 lbs/ac of phosphorus by the 5 leaf stage. In comparison, corn takes up 4 lb/ac and wheat 15 lb/ac in the first 30 days. Crops planted under early, cool conditions benefit the greatest from starter applied phosphorus. Western research has shown an economic response with an initial 10-15 lbs/ac (11 – 17 kg/ha) of phosphorus at planting time.
- A seed-applied inoculant called JumpStart is a natural occurring fungus (*Penicillium bilaii*) that grows on plant roots and makes residual soil P more available for plant uptake. When used on soils testing low or medium in P, accompanying fertilizer phosphate rates should not be reduced. On high to very high P testing soils, JumpStart may be used in place of the starter phosphate fertilizer. JumpStart is not residual and needs to be applied annually.
- Apply **20 – 30 lbs/ac (23-34 kg/ha) of sulphur** as ‘insurance’ against deficiency. A least cost approach for providing sulphur is to replace part of the spring urea application with ammonium sulphate (21-0-0-24). Replacing 50 pounds (22.7 kg) of urea with 100 pounds (45.4 kg) of ammonium sulfate will supply the same amount of nitrogen and 24 lbs (10.9 kg) of sulphate –S. Broadcasting is as effective as through the drill. Ammonium thiosulphate (liquid 12-0-0-26S) is another common source of sulphate-S. Elemental sulphur contains 90% sulphur, but only 5 -10% is available in the year of application and must be applied at least one year in advance to provide enough available sulphur.
- Heavy **flea beetle pressures** can thin stands, even where a seed treatment is used. Populations can explode under warm, sunny conditions. Flea beetles migrate in from overwintering sites, so scout the margins of fields first. Control is warranted when more than 10% of leaf area is lost. If caught early, only field margins require a foliar spray.
- **Spray weeds early for higher yields!** Trials have shown a 10% yield improvement by spraying at 1-2 leaf stage versus the 5–leaf stage. Concentrate on controlling weeds that emerge with the canola, and less on weeds that come up after the 4-6 leaf stage.