Soil
FACTSHEET

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Fertilizer Management for Canola in Central B.C.

Nutrient requirements for canola are high, but in general central B.C. soils do not have sufficient nutrient levels to achieve adequate yields. Therefore, canola production can be improved with proper fertilization.

Nitrogen

Soil organic matter is the major reservoir of nitrogen. When organic matter levels are low, nitrogen release to crops is inadequate to maintain good growth. Central British Columbia soils are low in nitrogen.

When canola does not obtain enough nitrogen, the older lower leaves will yellow. This occurs as plant tissue nitrogen is redistributed from older to younger top growth leaves.

Research throughout western Canada has shown that canola has very high nitrogen requirements. In central British Columbia, nitrogen rates in the order of 90 – 100 kg/ha are recommended for adequate yields.

Nitrogen fertilizer placement can greatly affect the germination of canola. Seed placed nitrogen fertilizer should **not** exceed 10 kg/ha. The balance should be placed out of seed contact, either by broadcasting and incorporation, or by side banding below and to the side of the seed. Urea is equivalent to ammonium nitrate when broadcast and incorporated, but if banded, urea should be placed a minimum distance of 5 cm below and to the side of the seed.

Nitrogen fertilizer efficiency may be reduced when applied in the fall, due to a process called denitrification. Denitrification occurs under wet soil conditions, and results in soil nitrogen being transformed into a gas and lost to the air. If fall applications are desirable, then ammonium fertilizers (urea included) should be applied when soil temperatures are cool and there is little chance of encountering a warm spell. Broadcast nitrogen should be incorporated before winter.

Phosphorus

Soil phosphorus availability is low in central B.C., and most soils require additions to produce adequate canola yields.

Phosphorus deficiencies result in poorly developed root systems, reduced seed production, and delayed maturity. Severe phosphorus deficiencies show up as a purplish color on leaves.

The minimum phosphorus requirement of canola in central B.C. is 30 kg/ha $P_2 0_5$. Canola germination can be reduced if phosphorus placed with the seed exceeds 20 kg/ha $P_2 0_5$. Phosphorus above 20 kg/ha should be either broadcast or banded. Phosphorus mobility is limited, and therefore, canola roots must grow to the phosphorus supply to use it.

Broadcasting phosphorus is less efficient than seed placement or banding. Higher rates for broadcast phosphorus may be necessary to adequately supply the canola crop.

Potassium

Most soils in central B.C. contain adequate potassium levels for canola production. The exceptions are the coarse textured river benchland soils along the Nechanko, Fraser and Bulkley Rivers.

Severe potassium deficiencies will show on older bottom leaves with edges becoming yellow or scorched.

The maximum recommended rate for seed placed potassium is 15 kg/ha K_20.

Sulphur

Plant available sulphur is released from soil organic matter by bacterial decomposition. Both organic matter and soil bacteria levels are low in central B.C., resulting in generally low soil sulphur levels. Canola has a high sulphur requirement.

Sulphur deficient canola shows yellowing on younger top leaves and has small seed pods. Under severe deficiencies, the yellowing progresses to the entire plant. Specific soil and climate conditions may cause a pink coloration on leaf undersides, progressing to purpling on older leaf margins. Leaves may roll inwards and appear cupped.

Canola responds to sulphur when applied at a rate of between 20 – 25 kg/ha. The balance of nitrogen to sulphur is important for canola production. Canola will respond to sulphur only when adequate nitrogen is supplied; and using nitrogen alone on sulphur deficient soils, may not improve crop growth. Supplying sulphur with fertilizers such as 34-0-0-11S will generally supply adequate levels of nitrogen and sulphur.

Boron

Boron levels in central B.C. are low, and canola has a high boron requirement. Boron deficiency symptoms in canola include stunted plant, delayed maturity, and pod sterility.

A severe deficiency can be corrected with an application of 4 – 5 kg/ha actual boron. Boron fertilizer can be purchased in two forms: Borate – 68 (21% Boron) is a fine granular fertilizer, similar in size to 21-0-0. However, it does not spread evenly when mixed with other fertilizer.

Borate-40 (12% Boron) is prilled and is similar in size to urea. Field distribution is more even than Borate-68.

Boron can be placed evenly by using a seed drill. The timing of boron applications may affect cereal crops such as barley. Barley has a low boron requirement. Therefore, if canola is to follow a barley crop, in the rotation, boron should not be applied until after the barley has been harvested. Barley crops following canola are generally not affected by boron toxicity, unless the canola's boron uptake was limited due to a dry year.

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