Canola Fertility Discussion

Rich Koenig
What are your main canola fertility questions and concerns?
What Sources Say About Canola

• ...a high nitrogen, phosphorus, potassium, sulfur and boron requirement

• ...very efficient at scavenging nutrients from soil

• ...residue is high in nutrients (a rotation benefit?)
Canola Growth, Development, and Fertility

Synopsis

The purpose of this guide is to summarize current information on canola growth and fertilizer requirements. Canola is a relatively new crop to the Pacific Northwest and little fertility research has been conducted in this region. The information contained in this guide is intended to serve as a reference until the results of ongoing, local research are available. Canola is distinct from wheat in terms of growth habit, nutrient uptake, and nutrient removal in the seed. According to published research and fertilizer recommendations, canola requires more nitrogen and sulfur than wheat to achieve the same yields. Soil test-based requirements for phosphorus and potassium are similar to wheat, but boron requirements are higher. Because canola plant residue is higher in nitrogen and phosphorus than wheat straw, cycling of nutrients from residue to the subsequent crop may be an important rotational benefit of canola.
# Canola Nitrogen (N) Use

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<thead>
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<th>Removal in the seed</th>
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Pounds of nitrogen [N] per 100 lbs of seed ---
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Plant Nitrogen (N)

- Canola
  - Seed: 6 pounds of N/100 lbs seed
  - Residue: 2 pounds of N/100 lbs seed

- Soft white wheat
  - Seed: 2 pounds of N/100 lbs seed
  - Residue: 1 pound of N/100 lbs seed

- Hard red spr wheat
  - Seed: 3 pounds of N/100 lbs seed
  - Residue: 1 pound of N/100 lbs seed
Plant Nitrogen (N)

- Canola: >95% of seed N remains in meal (0% in oil)
- Soft white wheat: Of the residue N, 65% is in leaves, 20% is in stems, 15% is in pods
- Hard red spr wheat: Seed and Residue

Pounds of N/100 lbs seed
More N in the residue of canola than in the residue of wheat

A similar pattern holds for other nutrients:

*Canola residue is loaded with nutrients*
## Canola Phosphorus (P$_2$O$_5$) Use

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<td>1.1</td>
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*Recommendations are based on soil test phosphorus concentration and similar to wheat.*
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*from various university fertilizer guides for canola and WSU guides for wheat
Other Facts About Canola Nutrient Use

- High sulfur use crop (higher even than red wheats)
- Potassium (potash) use is the same as wheat
- High boron requirement (similar to alfalfa)

- Canola is highly efficient at scavenging nitrogen, phosphorus, and sulfur from soil
- Most (>95%) of the nitrogen in canola seed remains in the meal (not in the oil)
Take-Home Messages

• *Per 100 lbs of seed*, canola has a high nitrogen, phosphorus and sulfur fertility requirement for growth
  - More of these nutrients are removed from the field in the seed
  - Residue leaves more nutrients in the field than wheat

• However, canola is very efficient at absorbing or scavenging nutrients from soil

• The vast majority of nutrients in canola seed remain in the meal (the meal is a great nutrient/fertility source)
Other Nutrients (see FS 045E)

- Requirements similar to hard red spring wheat
  - Phosphorus by soil test, starter rates
  - Potassium (rarely needed)
  - Sulfur by soil test (<40 lb S/acre)
    - 20-30 lb S/acre
  - Boron by soil test
    - Normally ½ to 1 lb/acre