

Here are a few notes on canola that impact the way that we use our products with canola

- 1) Most P is taken up by the acidification of the root surface of canola by the formation of organic acid. Micronutrients in Micro Mix are important in the formation of these organic acids in the root zone. Organic acids also help reduce diseases in crops, again, a benefit of these products.
- 2) In Western Canada, the bulk of nitrogen taken up by canola is in the nitrate form, thus the importance of molybdenum for this crop. Canola does not fix nitrogen
- 3) Western Canada soils frequently have high potassium available, and canola usually has adequate potassium available to it. I would want to see soil tests to confirm this assumption for individual farms. Canola low in potassium wilt faster than plants with adequate potassium, grow slowly and have small cells.
- 4) Potassium levels in plants start out high, and decrease throughout growth cycle, and the bulk of the potassium accumulates in the stems, and seed are often low. Potassium may complex with phytate and not be available for plants use. This implies that late application of potassium, e.g Nutra-Boost, may increase yields. Solis in northeast Saskatchewan are often low in potassium.
- 5) Canola, being a brassica, is sensitive to sulfur deficiency. Sulfur competes with molybdenum and selenium for uptake roots. Side-dressing with ammonium sulfate prior to bolting can relieve sulfur deficiency. Foliar applied Nutra-Boost can provide sulfur faster than ammonium sulfate and presumably of the soil by the ammonium sulfate. Sulfur application can lower molybdenum levels in the plant, presumably by lowering soil pH reducing molybdenum availability to plant.
- 6) All brassica, including canola, are sensitive to low molybdenum, and exhibit individual deficiency symptoms, possibly because of molybdenum's role in sulfate metabolism (sulfite reductase).
- 7) Crops residues can provide sulfur to canola only when the sulfur content is above 0.15%, otherwise microorganisms consumes the sulfur and leave none for canola. With that said, bacteria in the soil can mineralize sulfur in organic matter but need nitrate, iron, and manganese to do so. Sulfur as sulfate in the soil is leachable the same as nitrate. When high nitrogen is applied to canola that is low in sulfur, nitrogen (presumably as nitrate) accumulates in the plant.
- 8) Magnesium and calcium deficiencies are rare in Western Canadian soils, but still want to see soil test results to confirm. However, high potassium and ammonium levels can induce magnesium deficiency
- 9) Canola, again being a brassica, needs more boron than most crops, and is most critical at flowering. Most boron comes for organic matter in soil, and so factors that influence mineralization (e.g soil temperature, moisture, microbial activity, etc.) influence boron availability. High calcium and potassium in soil can reduce boron uptake.
- 10) High manganese levels can induce copper deficiency in canola.
- 11) Zinc deficiency is not common in Western Canada, except with high pH soils and high P levels. Highest need for zinc is during flowering. again, we want soil and tissue tests