

2020 Bourgault CANOLA TRIALS

Conducted by the Bourgault Agronomy Team



SEIZE

the Power of Placement.



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Seize the Power of Placement with the Bourgault TriMax™ Triple-Shoot System

Comparing side-banded nitrogen placement to mid row banded nitrogen placement in a triple-shoot configuration.

Objective

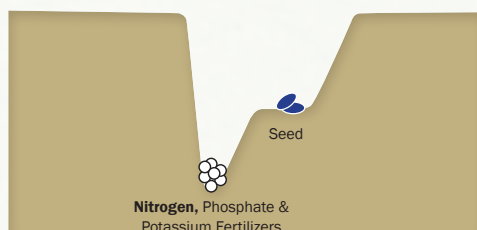
To compare nitrogen fertilizer placement in a side-band to a mid row band, and how it affects yield and plant stand in canola.

FERTILIZER STRATEGY 1

Applying all fertility requirements (**nitrogen**, phosphorous, and potassium) in a side-band approximately 1½" from the seed.

PLD Opener Double-Shoot

Typical Soil Profile



FERTILIZER STRATEGY 2

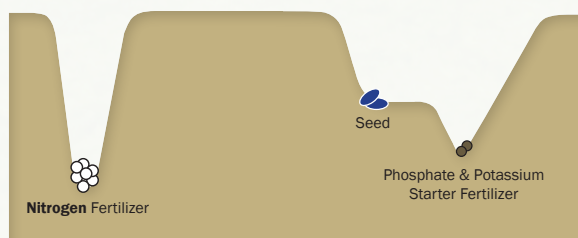
TRIMAX 

Applying starter fertility requirements (phosphorus and potassium) in a band approximately 1½" from the seed with the **nitrogen** in a separate band 6" from the seed (TriMax™ Triple-Shoot).

PLD TriMax™

Triple-shoot with MRBs® & TriMax™ distribution

Typical Soil Profile





Trial Details

WHEN & WHERE

- ▶ The trials were seeded on May 20th, 2020 on wheat stubble east of St. Brieux, Saskatchewan.

SOIL COMPOSITION

- ▶ The soil in this area is a dark grey chernozem with a clay loam texture. This soil is low in phosphorus and potassium.
Soil Testing: 19N-5P-130K-30S with organic matter of 4.7%

INPUTS

- ▶ *Seed:* Invigor 345PC was seeded at a rate of 5.6 lb/ac with a TSW of 5.7 g, giving a target of 10 seeds/ft².
- ▶ *Total nutrients applied (actual amounts):* 140N-50P-10K at time of seeding. Elemental sulfur and a large amount (150 lb/ac) of potash was applied the fall previous to seeding.

EQUIPMENT USED

- ▶ L7550 Air Seeder paired with a 30' PHD on 12" spacing equipped with ParaLink Dual™ Openers (PLD™ Openers) and Mid Row Bander® Fertilizer Applicators (MRB® Fertilizer Applicators).

PROCEDURES

- ▶ 400' by 30' Strip Trials replicated 3 times;
- ▶ Plant stands were taken in three areas of every strip and averaged;
- ▶ The middle 400' by 25' were swathed at appropriate timing and harvested 3 weeks later. A weigh wagon was used to determine gross bu/ac;
- ▶ Yield was adjusted by normalizing moisture and dockage to 10% and 0% respectively;
- ▶ Statistical analysis was performed using a 90% confidence level.

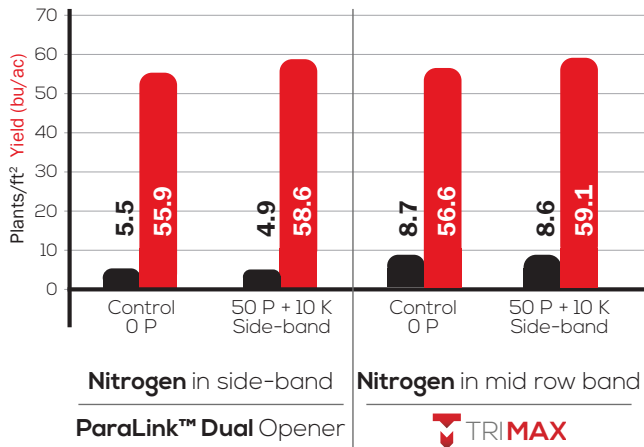


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nitrogen placement / side-band & mid row band



RESULTS

Using the exact same drill and openers allowed the Bourgault Agronomy Team to directly compare the effect of fertilizer placement on yield and plant stand in Canola. The comparison was achieved by disengaging the MRB® Fertilizer Applicators and directing the nitrogen to the side-banding fertilizer knife of the PLD™ Opener. The TriMax™ triple-shoot configuration was achieved by engaging the MRB® Fertilizer Applicators and placing nitrogen mid row.

NOTES:

1. When all of the nitrogen was placed in a side-band along with the phosphorus and potash, there was a delay in crop maturity by about 5 days in comparison to when the nitrogen was placed on its own in a mid row band. This delay was observed at the time of emergence and remained throughout the entire growing season, including flowering and swath timing.
2. There was a significant increase in plant stand when the nitrogen was placed in the mid row band versus the side-band.
3. There were no statistically significant differences in yield between either placements of nitrogen.
4. There were no statistically significant differences in yield or plant stand with the addition of phosphorus or potassium.

CONSIDERATIONS:

1. Placing high rates of nitrogen near seed greatly increases the risk of seed burn, resulting in a significant decrease in plant stand.

Moving nitrogen to a mid row band versus a side-band, increased the plant stand from 4.9 plants/ft², or 49% germination, to 8.6 plants/ft², or 86% germination

- 2.



These images show the stark difference in canola root development when urea is placed in close proximity to the seed (image on right) vs not in close proximity to the seed (image on left). Both photos were taken 5 days after being seeded.

Photo Credit: Mike Dolinski

Past observations have documented that when nitrogen is placed near a developing seedling, it has been shown that the root system is “pruned” resulting in an underdeveloped root system, which will reduce nutrient uptake and further delay the crop. It is very possible this pruning effect occurred when all nutrients were placed with the side-band knife.

3. When high rates of nitrogen are placed in the same band as phosphorus and potash, there will be a delay in early starter nutrient uptake. This negative condition, commonly referred to as “hot banding” is due to the toxic nitrogen radiating out from the side band denying the plant early access to the essential starter nutrient.
4. Having a lower plant count results in more branching of each individual canola plant. This leads to a further delay in maturity.

As Producers push for higher yields, fertilizer application rates are also increasing. This is especially true when utilizing variable rate fertilizer prescription maps, as some zones require very high rates of fertilizer to hit their full potential. Placing high rates of nitrogen in close proximity to the seed may increase seedling mortality and delay maturity, as seen in the 2020 canola trials. ■