

Research Trial Protocol: Seed Placed Fertilizer

Research Question: How do biotic and abiotic factors influence seed placed fertilizer toxicity in canola grown across Manitoba?

Research Objective: To identify how biotic and abiotic factors are influencing the safety of rate and source of seed placed fertilizer for canola stand establishment across Manitoba.

Treatments

1. Untreated – no seed placed fertilizer
2. Normal Rate – grower’s standard seed placed fertilizer rate
3. High Rate – 1.5x of normal seed placed fertilizer rate

Trial Design and Layout

- This trial is designed with 3 treatments per field in a ramp-up layout and replicated by field location, rather than within a field, to ensure capture of a wide range of environmental and management conditions.
- Grower will turn off seed placed fertilizer for a small portion of a pass, turn seed placed fertilizer to normal rate and then turn seed placed fertilizer to 150% of normal seed placed rate (ensure each treatment is of long enough length to allow for full change of fertilizer rate). (See example map)

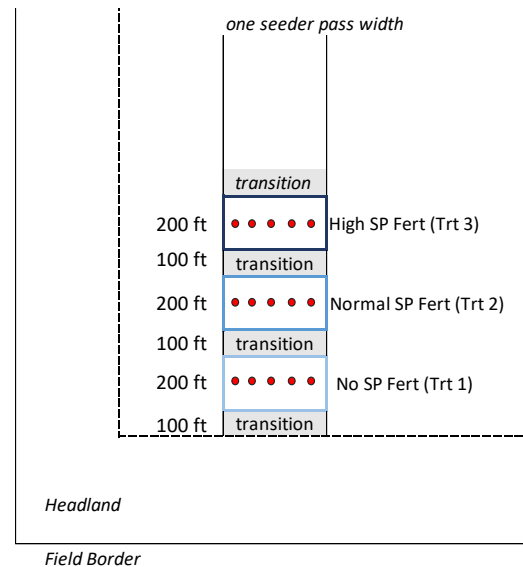


Figure 1: Trial map, red dots indicate plant count locations.

Grower/Location Consideration Considerations

- Must be a MCGA Member
- Must be able to adjust only seed placed fertilizer rate (without adjusting seed or other nutrient rates).
- Trial area should be placed in a relatively uniform portion of a field, avoiding major landscape changes, headlands, or areas with changes in past management history (ex. Half trial area falls on land previously manured or pasture)

Data Collection (Detailed in Excel Data Collection File)

1. General Crop Management Data (detailed outline in excel file)
 - a. Previous crop, tillage system, seeding date, variety, TKW, seed treatment, seeding rate, target plant density, seeding equipment, seeding depth, spread width, row spacing, opener type, opener width, seeder width, N fertilizer rate/source/placement, seed placed fertilizer rate/source, other fertilizer applications

2. Soil Sample
 - a. Spring – one composite sample from general trial area (min 15 cores)
 - b. 2 Depths: 0-15 cm (0-6”) + 15-60cm (6-24”)
 - c. All soil samples sent to Agvise laboratories – billed directly to MCGA Account
3. Plant Counts
 - a. Plant counts from 5 locations in each treatment at 3-4 leaf stage
4. Weather Conditions
 - a. Daily rainfall and temperatures from seeding date to 5 days after plant counts acquired from closest MB Ag weather station
5. Observational Ratings
 - a. Flea Beetle Ratings: Rating from 1 – 5 on flea beetle pressure in the field (1= no pressure, 5= re-seed)
 - b. Weed Pressure Ratings: Ratings from 1 – 5 on pre-in crop herbicide weed pressure (1=clean field, 5=complete ground cover)
 - c. Spring Soil Moisture Rating: Rating from 1 – 5 on spring moisture at field (1=below normal, 3=normal, 5=above normal)

General Trial Management

Seeding

- The same variety from the same seed lot should be used throughout the entire trial.
- Use a consistent seeding rate, seed depth, and seeding speed for the entire trial

Fertility

- All nutrients other than seed-placed fertilizer must remain at a similar rate/sources for the entire trial to avoid confounding factors

Pesticide applications

- Spray pest control products (herbicides, fungicides, and insecticides) across the entire trial as needed similar to the remainder of the field.