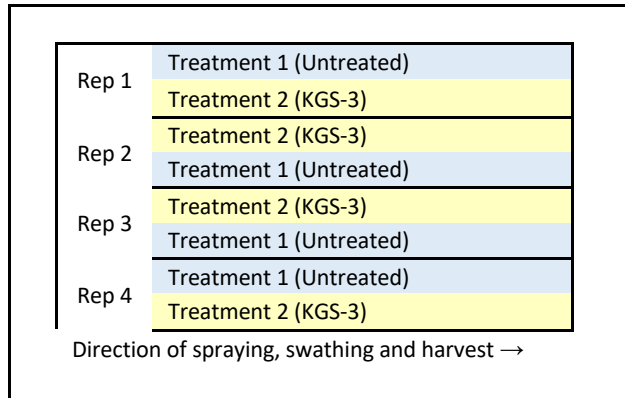# Research Trial Protocol: KGS-3 Bioinoculant

Research Objective: Determine the level of disease control and yield response of canola treated with a foliar application of KGS-3 antifungal bioinoculant.

Rep 1	Treatment 1 (Untreated)
	Treatment 2 (KGS-3)
Rep 2	Treatment 2 (KGS-3)
	Treatment 1 (Untreated)
Rep 3	Treatment 2 (KGS-3)
	Treatment 1 (Untreated)
Rep 4	Treatment 1 (Untreated)
	Treatment 2 (KGS-3)

Direction of spraying, swathing and harvest →

Treatments
1. Untreated
2. KGS-3

- Foliar applied at 2-3 leaf stage (1L/ac)
- 10 gal/ac water volume
- Do not tank mix with herbicides or insecticides

Trial Design and Layout
- Randomized Complete Block
- All treatments are replicated up to 4 times, minimum 3
- Position of treatments must be randomized within each replication (see example field map)
- Treatments should run the length of the field, excluding headlands

Grower/Location Consideration Considerations
- Must be a MCGA Member
- 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 explanations in Excel Data Collection File)
1. GPS Plot Points

a. Length and Width of Plot (total width and/or seeder width) as well as GPS waypoints taken at the four corners of the trial area and between each treatment (where flags are located on one end only).
2. Plant Disease Incidence and Severity
   a. Blackleg, Verticillium Strip and possible Sclerotina – swath/straight cut timing
   b. Detailed protocol TBD
3. Yield (Grain weight and moisture)
   a. Weight all grain from a single combine pass of each plot, the same combine must be used to harvest the entire trial.
   b. Use a **calibrated** weight wagon or grain cart. Sensitively must be <50kg on grain carts.
   c. Moisture content is required for each plot, Place 0.75 – 1 kg of seed from each strip in a sealable plastic bag and keep cool until moisture reading can be taken (within 3 days of harvest). Samples can be discarded after moisture measurement.
4. Weather Data
   a. Growing season (Apr – Sept) rainfall and temps acquired from closest MB Ag weather station. Link to website in excel file
5. Observational Data
   a. While at the research trials please take note if there is any major insect pressure/damage, weed control issues, disease pressure or lodging

Field Operation Records
The following information needs to be collected for each trial (included in Excel Data Collection File)
- Previous crop (last 3 years)
- Pre-seeding tillage (implement, # passes, timing)
- Seeding equipment (type, row spacing, opener type, width)
- Seeding date
- Canola variety (TKW)
- Seeding rate
- Additional seed treatments and/or inoculants
- Fertilizer applications (product, rate (actual nutrient/ac), placement, timing)
- Herbicide (product, rate, date, crop stage)
- Fungicide (product, rate, date, crop staging)
- Desiccant (if applicable, product, rate, date, crop stage)
- Swathing date (if applicable)
- Harvest date and method (Width, Combine, Grain Cart/Weight Wagon)

General Trial Management

Seeding
- The same variety from the same seed lot should be used throughout the entire trial.
- Use a consistent seed depth, and seeding speed for the entire trial
Fertility
- All nutrients must remain at a similar rate 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.

- No additional early season fungicide targeted at blackleg control should be applied across the trial area.

Swathing and Harvest Management
- If swathing, target 60% seed colour change or if there's differences in maturity between treatments, you can: (1) Swath treatments as each treatment is ready to swath (multiple trips to the trial with swather), (2) Swath treatments when the last one has reached 60% seed colour change (one trip)
- Minimum harvest length is 1000 ft
- When swathing, mark the swath that represents each plot with a flag that identifies which treatment it is.
- Each strip must be weighed individually (Ex. 3 treatments x 4 reps = 12 weighs)
- Harvest all strips on the same day, when possible, if two days are needed harvest all strips within a replicate on the same day.