

Incorporating Plant Growth Regulators on Saskatchewan Barley Farms

The use of plant growth regulators (PGRs) in high yielding and high moisture areas can provide benefit by reducing lodging risk in cereals. Spring barley varieties have been shown to vary in their response to treatment with PGR trinexapac-ethyl (Moddus), and the response can also vary with growing conditions. PGR application can also impact barley yield and quality.

Objective:

To quantify the agronomic and economic impact of PGR (Moddus) application on barley compared to an untreated check across various management, soil, and weather conditions.

Project Overview:

Cooperators will implement a replicated field-scale trial in a barley field of their choice, using their own equipment and otherwise normal practices. An agronomist/trial manager will provide support throughout the season, including setting up the trial and collecting data. Statistical analysis of the data will be conducted following harvest, and a report with your results including economic analysis will be provided. Data from all on-farm trials will also be pooled to examine the results across different management, soil, and weather conditions. Results from all trials will be publicly available, however individual farm data will be kept anonymous, apart from the location of the trial (nearest town or R.M.). Collaborators will be invited to join a network of producers who are conducting on-farm research through field tours and a year-end result meeting and banquet. This program is only available to registered barley producers in Saskatchewan.

Treatments:

Option A:

- 1) Untreated check
- 2) Treated with Moddus

Option B (not shown):

- 1) Untreated Check
- 2) Single Application
- 3) Dual (split) application

Recommended application timings:

- Single application: BBCH growth stage 30-32, applied according to label directions
- Dual application: BBCH growth stage 21-24 and again at BBCH, 37-39, applied according to label directions

Treatments will be replicated four times, for a total of 8 or 12 strips. Apart from PGR application, all treatments must be managed the same agronomically including applied fertilizer, seeding date, variety, seed treatment, and pesticide applications. Variable seeding and fertility rates may be used, as long the trial area is done in a representative area of the field. Treatments will be randomly arranged within blocks in the field. The location of the treatment strips will be marked with GPS and by placing tall flags in the field at time of seeding. An example randomized field plan is shown below. Layouts will be provided.

Rep	1		2		3		4	
Plot	1	2	3	4	5	6	7	8
TRT	1	2	2	1	1	2	1	2
Treatment Desc	Untreated Check	Moddus	Moddus	Untreated Check	Untreated Check	Moddus	Untreated Check	Moddus

Data Collection:

Agronomists will complete the following in-season data collection. A data collection spreadsheet will be provided and must be used to submit data.

1. Spring soil samples will be collected at each trial site prior to seeding and fertilizer application to assess residual soil nutrient levels (regardless of whether soil sampling was previously completed). Trial site managers will collect a minimum of 12 soil cores throughout the trial area, separated by 0-6" and 6-24" depths. A single composite sample for each depth will be submitted directly to AgVise Laboratories for Test F2. Shipping and Purolator information will be provided.
2. Plant density will be assessed at the 2-4 leaf stage. A minimum of 8 counts will be conducted in each treatment in one block. Visual ratings to compare to the counted treatments can be used for the remaining treatment blocks.
3. Height will be assessed on each treatment strip separately at the soft dough to late dough stage. A minimum of 20 plants will be measured over 4 different locations in each treatment strip.
4. Lodging will be assessed on each treatment strip separately at the soft dough to late dough stage. A visual rating should be representative of the plot. Where differences occur throughout the plot, take separate ratings.
5. The trial should be visited regularly to collect notes, observations, and photos describing any other visual treatment differences in lodging, weed pressure, maturity, and disease pressure. NDVI imagery at key growth stage(s) would also be an asset.
6. Yield will be determined separately for each treatment strip using a weigh wagon or calibrated grain cart scale. Cooperators will communicate with agronomists regarding the harvest date. Digital yield maps would also be an asset.
7. Grain samples (approximately 1 kg) will be collected separately for each treatment strip for quality analysis.
8. The following management and agronomic data will be recorded precisely:
 - a. Variety and seed quality information
 - b. Equipment type, seeding depth, seeding speed, row width
 - c. Applied fertilizer rates, products/blends, placement, timing
 - d. Crop protection: seed treatment, pesticide applications
 - e. Previous crop and residue accumulation
 - f. Soil moisture conditions at seeding time
 - g. General notes on weed, insect, disease infestations, and notable weather events
9. Daily precipitation will be recorded using a weather station should ideally be positioned at or within 0.5 miles of the trial site. A rain gauge will be provided to provide site-specific precipitation data. The rain gauge should be observed weekly. Daily average temperature will be recorded from a weather station within 25 km of the trial site. Precipitation and temperature should be recorded from May 1 to August 31, regardless of seeding and harvest dates.

For more information or to participate in the program contact:

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