

High Yielding Barley with Alternative Seeding Implements

In today's market there are multiple different seeding implements a Saskatchewan producer can utilize. While the most common seeding implements have similar features, recently there has been new options become available in the marketplace that offer very different seeding systems. Comparison of seeding systems aims to determine if alternative systems can add value for Saskatchewan barley farmers targeting high yield production systems. . Ultimately, the goal is to identify the seeding drill that offers the best agronomic and economic benefits for barley production.

Objective:

To compare alternative seeding systems and their performance in high yield agronomic programs, in terms of seed placement, emergence, growth, yield and overall efficiency.

Project Overview:

Cooperators will conduct a replicated field-scale trial in a barley field of their choice, using their own equipment and an alternative drill as a trial, conducted in 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:

- 1) Current seeding implement
- 2) Alternative seeding system

The producer must either own two different drills, partner with another producer, or demo a new implement. Treatments will be replicated four times, for a total of 8 strips. Apart from seeding equipment, all treatments must be managed the same agronomically including applied variety, fertilizer, seeding rate, seeding date, seed treatment, and pesticide applications. Variable seeding and fertility rates may be used, as long as 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	Seeder #1	Seeder #2	Seeder #2	Seeder #1	Seeder #1	Seeder #2	Seeder #1	Seeder #2

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. Observations should be recorded on seed depth uniformity, soil disturbance, and seed-to-soil contact. Additionally, record comments on factors like ease of operation, maintenance, cost-effectiveness, and adaptability to various soil types and field conditions.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. Grain samples (approx. 1 kg) will be collected separately for each plot for quality analysis.
9. 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
10. 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:

Mitchell Japp
Research & Extension Manager, SaskBarley
Cell: 1-306-535-4536
mjapp@saskbarley.com

Kayla Slind
Lead Research Associate, WARC
Office: 1-306-247-2001
Cell: 1-306-843-7984
kayla.slind@warc.ca