

Exploring New Barley Varieties

Barley producers and consumers expect high yields and competitive agronomic performance, including traits such as standability, disease resistance, as well as excellent grain quality. Comparing new and established varieties is essential for consumers to obtain agronomic information that helps ensure the right variety for their operations. When selecting a variety, producers must consider several factors, including market demand, maturity, disease resistance, seed size, yield, and quality.

Objective:

The objective of this field-scale trial is to compare new varieties against established varieties of barley under various management, soil and weather conditions throughout Saskatchewan.

Project Overview:

Cooperators will implement a replicated field-scale trial in barley, using their own equipment and otherwise normal practices. An agronomist or 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 field-scale trials will also be pooled to examine the results across different environments and varieties. 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.

Treatments:

Producers will choose three barley varieties, including established and emerging varieties. The treatments will compare three varieties:

- 1) Variety 1
- 2) Variety 2
- 3) Variety 3

The producer will calculate their seeding rate based on thousand kernel weight (TKW), germination rate, and estimated seedling mortality to achieve desired plant population. They will then seed a low, average, and high seeding rate based on the desired plant population. Treatments will be replicated four times, for a total of 12 strips. Apart from seeding rates, all strips must be managed the same agronomically including seeding date, variety, seeding depth, fertility and pesticide application. Variable rate fertility 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	9	10	11	12
TRT	1	3	2	3	1	2	3	2	1	2	1	3
Treatment	Variety 1	Variety 3	Variety 2	Variety 3	Variety 1	Variety 2	Variety 3	Variety 2	Variety 1	Variety 2	Variety 1	Variety 3

Data collection:

Agronomists or trial managers will ensure that the cooperator seeds the trial according to the protocol and will complete the following in-season data collection. A data collection spreadsheet will be provided and must be used to submit all data.

1. Seed tests will be collected for each grower, for each variety, and submitted to an accredited seed lab in Saskatchewan (unless the co-operator has said tests already completed).
2. Seed test: must include TKW, germination, and fungal screen. If a current seed test is not available, a seed sample should be submitted to an accredited lab of choosing.
3. Plant density will be assessed at the 2-4 leaf stage. A minimum of 8 counts will be conducted in each treatment strip. Optionally, plant counts can be done separately by field position within treatments (hilltop, midslope, depression).
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 in 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/or photos describing visual treatment differences in flowering, maturity, disease pressure and plant health. NDVI imagery at key growth stage(s) would also be an asset. Photos and updates should be provided to the protocol lead throughout the season.
7. Yield will be determined separately for each treatment strip using a weigh wagon or calibrated grain cart scale. Cooperators will communicate with trial managers regarding the harvest date.
8. Grain samples (approximately 1 kg, bags will be provided) will be collected separately for each treatment strip for quality analysis (12 samples). Shipping information will be provided.
9. The following management and agronomic data will be recorded precisely:
 - Variety, seeding rates, TKW and germ
 - Fertilizer products, rates, placement, timing
 - Equipment type, openers, row spacing
 - Crop protection: seed treatment, pesticide applications
 - Previous crop and residue accumulation
 - General notes on weed, insect, disease infestations, and notable weather events
10. Daily precipitation will be recorded using a weather station positioned at or within 0.5 miles of the trial site. If a weather station is not available, a rain gauge can be provided. Daily average temperature will be recorded from a weather station within 25 km of the trial site or the nearest Environment Canada station. Precipitation and temperature should be recorded from May 1 to August 31, regardless of the seeding and harvest dates.

For more information or to participate in the program contact:

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