

**BC Grain Producers Association  
2001  
Field Crop Variety Performance  
BC Peace River Region**

**Introduction and Acknowledgements**

This report summarizes the Field Crop Variety Performance Trials that are conducted by the *Research Committee* of the *BC Grain Producers Association*, and is the result of funding and partnering with the following organizations:

*Investment Agriculture Foundation of BC  
BC Peace River Grain Industry Development Council  
Peace River Agricultural Development Fund*

*AGRICORE* should also be recognized for their contribution of protein analysis and *PEACE TRACTOR* for their help with our machinery needs, as well as *BC Ministry of Agriculture, Food and Fisheries*. We should all thank these organizations for their financial support and or input to make our field-testing and the production of this book possible. Special thanks are extended to the cooperators who have generously given their time and effort in support of the variety and agronomic testing program. In 2001 the cooperators were:

*Dennis Meier, Dawson Creek  
Cameron Fines, Fort St. John*

Further thanks goes out to the field and lab team who helped make this a successful year. They are Research Assistant **Colleen Giesbrecht**, and Field Technicians **Jeff Anderson** and **Dean Mattson**.

This report, like past issues of "Field Crop Variety Performance Trials", reports all regional trial results. Readers of this report must interpret and use one-year data with considerable caution, particularly when viewing the scatter-point graphs on yield and maturity. A variety more often than not changes position on the graph after additional results are obtained, simply as the result of variable weather patterns averaged in over time. This publication reports the 2001 research results from both Dawson Creek and the Fort St. John site, with a summary of 1995-2001 data where available.

This book is produced without bias and is reported to the best of our ability from data collected. It should only be used as a guide, and where labels are available with your product, always follow label directions.

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# BC Grain Producers Association Reference & Terminology

## Station Years

The number of station years that the variety has been tested can be seen in the Yield tables inside the square brackets [ ]. A station year is one test site at one location in one year. For example, a canola trial conducted at three locations over two years would be six station years. We advise using caution if the data is based on less than six station years in total, or three years at any given location.

## Interpreting Yield Results

Yields this year are displayed as *percentage of the check varieties* and as *bushels per acre (bus/ac)*, where possible. Yields here are the result of *small plot production*, and the same level of production is unlikely to be achieved on a large-scale basis. Wet areas and variable soil fertility affect field scale production, in contrast to the research plots where consistency is attempted. The crops in this book are managed using the same level of inputs as field sized recommendations would suggest, but small plots are subject to *edge effect*. Edge effect is where the spaces around the individual plots allow the sun to penetrate, boosting yields, compared to the average plant that would be shadowed by the surrounding plants in field scale production. **The important concept here is that these effects are equal for all small plots in a given trial, and as such we can therefore compare varieties in each trial and look at resulting yields as relative to one another.**

Unfortunately statistics, which are vital, cannot be used on "percent of check variety". Thus we elected to show *bushels per acre* this year, (where possible), for the sole purpose of displaying statistical results. Treat *all* yields, (*percent of check* and *bushels per acre*), as relative.

Agronomic information for the check variety has been bolded in all the tables.

## Plant Breeders Rights

The Plant Breeders' Rights (PBR) gives plant breeders' "copyright" protection of a new variety for up to 18 years. Once a variety has been granted PBR, the breeder has control over the multiplication and sale of seed of a new variety. The breeder can take legal action for damages if someone infringes on their right. Farmers may save some seed for seeding the next year on their own farm. Sale of the crop as seed for planting purposes is not allowed. Some new transgenic herbicide tolerant varieties have additional restrictions through 'technical use agreements'.

Varieties protected by PBR can be identified by their PBR logo on a seed bag, seed tag or advertising material.

## Good Seed

The cost of certified seed is a small additional expense in relation to total crop production input costs, especially when changing to a different variety. Certified seed assures genetic purity, high germination rates and low percentage of other crop and weed seeds when compared to common seed. Certified seed can be purchased in bulk from authorized establishments.

## Seed Treatment

Choosing disease-resistant varieties and using certified, plump, treated seed goes a long way in the fight against plant disease. The cost of a fungicide or combined fungicide/insecticide seed treatment is a small price to pay for the amount of protection they can provide. Treated seed must not contaminate grain delivered to an elevator or be used for feed.

- ◆ Cereal seed should be treated to control true loose smut.
- ◆ Seed of rye, winter wheat and flax should be treated to control seedling blight. Winter wheat and rye also require protection against smut.
- ◆ Canola seed should be treated to control seed borne blackleg, damping off and early flea beetle attack.

## Ergot

Ergot can attack all varieties of wheat, barley, rye, triticale, and most common species of grass. Oat varieties are rarely attacked. Grain having 0.1% ergot is considered poisonous to livestock and should not be used as feed grain.

## Seed Inoculation

Peas can make much of their nitrogen (N) requirement from the air through a partnership with soil bacteria called Rhizobium. The pea seed must be inoculated immediately before seeding with a proper strain of bacteria specific to peas. Rhizobium are living organisms so read the expiry date on the package and follow inoculant label directions carefully. High soil nitrogen levels (over 60 kg N/ha) will reduce nodulation. Cool, dry, or excessively wet soils, provide a harsh environment for proper inoculation and under these conditions, a low level of nodulation formation will be seen. Granular inoculant was used on all pea trials reported in this publication.

## Seeding Rates

While the following range of seeding rates has given equal yields for each crop in trials, experience has shown that the top end of the range provides more consistent results. Risk can be reduced under conditions of stress that impair emergence by increasing seeding rates. In addition, higher seeding rates can reduce the amount of secondary tillering, produce earlier and more uniform maturity, and reduce the amount of green kernels.

Tests conducted by the Beaverlodge Research Station several years ago throughout the Peace showed that by increasing the seeding rate of wheat from 80 to 120 lbs/ac (90 to 134 kg/ha) that the time to maturity was reduced by two days.

Suggested Rates of Seeding		
Wheat	90 - 120 lb/ac	100 - 135 kg/ha
CPS Wheat	130 - 180 lb/ac	145 - 200 kg/ha
Barley	75 - 100 lb/ac	85 - 110 kg/ha
Oats	70 - 90 lb/ac	85 - 100 kg/ha
Flax	26 - 40 lb/ac	30 - 35 kg/ha
Rye	65 - 85 lb/ac	73 - 95 kg/ha
Peas	150 - 300 lb/ac	165 - 330 kg/ha
Polish Canola	5 - 8 lb/ac	6 - 9 kg/ha
Argentine Canola	5.5 lb/ac	6 kg/ha

Due to large differences in seed size with a crop like peas, seeding rates can vary considerably. A preferred way of dealing with seeding rate is to base it on a target number of viable seeds per square foot. Using the 1000 kernel weights, adjusting for percent germination and allowing for seed decay (3%), calculate the number of pounds of seed required per acre.

Crop	Type	Seeds / sq.ft	1000 K wt
Wheat	CWRS	24 - 25	35 - 44 g
	CPS/CWES	24 - 25	44 - 52 g
Barley	6 Row	24 - 25	35 - 43 g
	2 Row	24 - 25	44 - 53 g
Oats		24 - 25	38 - 47 g
Rye		24	30 - 35 g
Peas		8	200 - 345 g

#### Example

Target **8** pea plants per square foot, the variety has a 1000 K wt. of **250** grams, and you estimate that between seed decay and percent germination of the seed lot that you will have **90%** of the seeds grow into healthy plants.

$$\frac{8 \text{ plants/sq.ft} \times 250 \text{ (g/1000 K)}}{90 (\%)} \times 10 = 222 \text{ lb/acre}$$

You would plant 222 lbs. of pea seed/acre.

## BC Grain Producers Association 2001 Growing Conditions

In the early spring of 2001, prior to planting and into the first two weeks of May, the south Peace region was experiencing a drought situation, and the Dawson Creek site was no exception. In contrast, the Fort St. John site was under good soil moisture, and in fact it was delaying field preparations. If you note the seeding depths listed on the chart on page 6, noting dates, you can see our attempts to reach a compromise at Dawson Creek between reaching soil moisture and planting too deep.

The drought was short lived, and by late May and early June it was tough to stop the rain at either site. Water saturated soils and cool temperatures in late spring - early summer than hindered good seedling growth for all crops. Crops did recover at both stations as standing water was not a concern where any of the plots were located. In fact, due to a lack of "ponding", the crops took full advantage of the moisture and the warm temperatures in late July early August, to put out some incredible yields.

Lodging was never a large issue surprisingly, (which can be noted in the data); except strong winds during thunderstorms in July blew over all canola plots to a point it was pointless to do any lodging or height data. The canola rebounded somewhat prior to harvest, and still managed to produce higher than normal yields for the area.

Hail was plentiful in the south Peace region over the summer of 2001, but all hail managed to miss the plots, sometimes by less than half a mile.

Once mid August was here, the skies dried up across the entire BC Peace region, which made combining a snap, but caused a hard pan to form on the soil surface, making fall field preparations and planting horrific on the equipment.

This dry weather also played havoc with maturation of argentine canola, delaying colour change and condensing any big differences between varieties at the plots.

Refer to the back of this report for a total weather report via graphs. Clearly the excessive rainfall everyone was reporting show true at both our research stations, but especially at Dawson Creek, where it was well above normal.

## Interpreting Data

The yield for each variety is reported on a regional basis for the Dawson Creek and Fort St. John areas as well as an average for the entire BC Peace. Also, the number of years each variety has been tested is given for each of the two regions. In the following examples, the number of years is indicated in [ ] right after the yield. "Station years" are the total number of times a variety has been tested in these trials.

Six Row Barley		Yield as % of Harrington							
Variety	Type	Dawson Creek		Fort St. John		B.C. Peace			
		2001 Yield	1993-2001 Avg. Stn. Yrs.	2001 Yield	1993-2001 Avg. Stn. Yrs.	2001 Yield	1993-2001 Avg. Stn. Yrs.		
AC HARPER	feed	113	[3]	125	105	[5]	125	109	[8]

Number of years the variety was tested at each station

**Statistical Values** Entries into the Regional trials in 2001 were replicated (or repeated) four times at both locations. The only exception is for peas at Fort St. John, replicated only three times, due to a lack of room.

**Coefficient of Variance (CV value)**, is a number given as a percentage, that basically tells us how statistically sound or reliable a given data set is. Generally, any value less than or equal to 15% is considered to be acceptable or "sound" data. This means if you were to repeat the trial under similar conditions, you would likely get the same results, or at least we are 95% confident that we would. We tend to be a little more lenient on this 15% for such things as disease or insect data, as such things are normally highly variable due the nature of the beast, but we do not like to see yield data from a single trial with a high CV value. Anything less than 10% is considered excellent, which most of 2001 data is.

**Least Significant Difference test (LSD value)**, are those little letters behind the *data means*. Basically, if two or more *data means* (or averages) have the same letter behind their number, they are NOT significantly different from one another according to statistics. Therefore means or averages with the same letter should not be viewed as one being "superior" or "inferior" from the other or others of the same letter. LSD takes variability into account, and compares "apples" to "apples".

Example:

Variety	Dawson Creek	
	2001 Yield	1993-2001 Avg. Stn. Yrs.
Super X	105 ab	102 [3]
Superdooper Y	107 a	105 [3]
So-So 101	100 b	98 [2]
Old Goody	95 c	97 [6]

← In this example some people might think variety "Superdooper Y" is superior to variety "Super X" and "So-So 101". This is not true according to statistics, "Superdooper Y" is superior to variety "So-So 101", but is equivalent to "Super X" in yield because both "Superdooper" and "Super X" have the letters "a" with them. In this example "Super X" is not superior (or significantly different), from variety

"So-So 101" either, as both have a "b" behind their means. Also, "Superdooper Y", "Super X", and "So-So 101" are superior to, (or a better term is significantly different from), "Old Goody". Note in this report we only have LSD values for 2001 data, and thus you should still take great notice of the long term averages. **For any varieties with less than three station years of data, you must compare data with caution.**