

**Evaluation of Niche Market
Field Pea Cultivars**
Project #2000NE07
and
**Evaluation of Pulse Crop
Diversification Potential and
Cultivar Improvement in North
East Alberta**
Project # 2001NE06

Final Report
2002

Farming For the Future
On Farm Demonstration Project

Alberta Pulse Growers Commission - Zone 5

Submitted by

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**Alberta Agricultural Research Institute
On-Farm Demonstration Program**

Project Number: #2000NE007 and # 2001NE06
Project Name: Evaluation of Niche Market Pea Cultivars and
Evaluation of Pulse Crop Diversification Potential and Cultivar
Improvement in North East Alberta
Project Coordinator: Mark Olson, Pulse specialist
Project Cooperator: Alberta Pulse Growers Commission Zone 5
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Progress Report Interim Report Final Report

Year 3 of 3 year project.
(1,2,3) (1st, 2nd, 3rd)

I. Key Results and Conclusions:

In 2002, drought conditions at both Killam and Vermilion appeared soon after emergence (early June) and no reliable data was gathered after this point. The desi chickpea were not seeded at the Killam site as per plot plan. Both sites were taken to maturity but on August 28th, 240 head of cattle got into the Killam site overnight, and grazed it to the ground. The Vermilion site data, although under severe drought stress, was collected and can be found on page 5. The first significant rain at Vermilion came on July 25 (20mm). The first replicate was eliminated completely at this site due to poor emergence. The agronomic traits measured in this project are plant height, standability, 1000 kwt and yield. More consistent trial results on special purpose pea may be found the 2001 OFD report #2000NE007 progress report.

Although yield, allot of the time, determines whether a cultivar is worth growing, general plant characteristics can be equally important for farmers assessing which variety to grow. In the case of special purpose pea varieties, quality is critical for many of the niche markets that the product is being sold into.

II. Background:

The Alberta Pulse Growers Commission is very interested in new pea types to further pulse diversification in the south central Alberta. The opportunity to diversify is based on the cyclical nature of commodity prices. AAFRD has focused on crop diversification as an integral component of the further development of agriculture within the province. Field pea is well suited to the region, but presently only yellow and green pea is grown. Other pea types are grown in parts of Western Canada and around the world. Marrowfat, white and red cotyledon types, maples, black-eyed pea and others are available, but may not yield as high. This project was

designed to assess special purpose pea cultivars, and generate information on relative performance to standard yellow and green cultivars to provide niche opportunities.

III. Objectives:

The following objectives were set out for this project:

- 1) Establish a special purpose field pea trial at two locations in co-operation with various interested companies. A maximum of twenty niche varieties will be included.
- 2) Evaluate the performance and agronomic characteristics and compare to well adapted, high yielding yellow and green check cultivars.
- 3) Assess potential returns and required price for these niche-type cultivars compared to the check cultivars.
- 4) Evaluate marketing potential of these new cultivars and possible tonnage requirements.

The ultimate objective is to find niche type special purpose cultivars to further expand the market ability and diversification of the pulse industry in the Zone 2 region.

IV. Project Plan or Method Used

i) Treatments: A total of (13) special purpose pea cultivars and a green and yellow check cultivar were seeded at the Vermilion and Killam sites. The check varieties were Espace (green) and Integra (yellow). The Vermilion plots were sprayed for weeds on June 11 with Odyssey at the recommended rate and desiccated with Reglone on August 21. The Killam plots were sprayed for weeds on June 13 with ½ rate of Pursuit with Poast only.

ii) Replications: The project was conducted as a four replicate randomized complete block design in order to statistically analyse yield results. Other agronomic characteristics monitored were, plant height, standability, 1000 kwt and seed size.

The varieties were seeded according to proper agronomic practices including phosphorous application (75 lbs/acre of 11-51-0), granular inoculant, and proper weed control.

iii) Plot Size/# Annual Per Rep: each sub plot was four rows with a plot length of 4.5 m (14.76 ft).

iv) Experimental Design: a four replicate randomized complete block design.

v) Climate Information:

Growing Season Precipitation (mm)**

	May	June	July	August	Total	30 year (aver)
Killam	2.6	6.6	18.0	53.0	59.2	265.2
Vermilion	6.8	8.8	37.2	32.0	105.8	272.8

Growing Degree Days Above 5C**

	May	June	July	August	Total	30 year (aver)
Killam	147.3	359.9	442.4	326.8	1276.4	1203.6
Vermilion	156.6	357.0	423.8	272.3	1209.7	1193.5

** Unverified data from Environment Canada.

This information does not reflect environmental conditions prior to seeding and post harvest. The fall/winter of 2001/2002 and spring of 2002 was very dry in Alberta and Western Canada. The total growing season precipitation was 22% of the 30 year average for Killam and 39% of the 30 year average for Vermilion. The growing degree days for Killam was 106 % of the 30 year average. In contrast, the growing degree days at Vermilion were 101% of the 30 year average. The distribution of precipitation and amount of water in the various rainfall events paint a better picture of the 2002 growing season. In May, precipitation and temperatures were well below last year and the 30 year average. June and July were much hotter than usual; pulse crops in general are adversely affected by temperature above 25°C. The rain received in August was too late to have any positive effects on crop growth and final yield.

vi) **Seeding:** Killam was seeded on May 14th and Vermilion on May 9th.

V. Discussion of Results:

In 2002, drought conditions at both Vermilion and Killam appeared soon after emergence (early June) and no reliable data was gathered after this point. The agronomic traits measured in this project were plant height, standability, 1000 kwt and yield. Statistical analysis has not been applied to the data collected below, and although treatments appear to be different they may not be.

Table 1. Niche Market Field Pea Cultivar Raw Data Vermilion Location 2002

Type	Height (cm)*	Standability (1-9)*	Kernel Weight g/1000*	Average yield grams/plot*	% of check*
Espace	22	1	205	188	100
Integra	18	1	250	111	59
QAS 1478	22	1	211	237	126
Ceb 1487	21	1	197	101	54
SDS orange	13	1	244	101	54
Courier	21	1	224	273	145
Samson	21	1	299	109	58
Racer	22	1	179	109	58
Black eye green	18	1	219	114	61
Black eye yellow	19	1	175	111	59
White pea	22	1	251	115	61
Brown MF	20	1	304	131	70
Perf 4010	22	1	170	214	114
GMF	19	1	125	162	86
U30 orange	17	1	211	205	109
Site Ave.	20	1	n/a	152	80

*based on the mean of three replicates

i) Special Purpose Pea Types and Market Potential

Following is a brief discussion of the pea cultivars tested in 2002. The market use descriptions for the special purpose pea cultivars are based on discussions with exporters. Most of these cultivars are NOT REGISTERED to date and require production contracts. The author of this report would like to acknowledge Ken Lopetinsky, Alberta Pulse Research Agronomist, for the following varietal descriptions of the special purpose field pea cultivars.

Espace (Check)

A medium small green pea (215 g/1,000 seeds) with excellent standability and good yield potential. Present check cultivar for green pea Regional Test Program. Contact company is St. Denis Seeds.

Integra (Check)

A large yellow pea (280 g/1,000 seeds) with excellent standability and good yield potential. Contact company is St. Denis Seeds.

QAS Orange 1478

A medium sized (269g/1,000 seeds) cultivar with an orange cotyledon. Seeds are smooth and round, the variety has potential as a substitute in or to extend markets using split red lentil. Contact company is Quality Assured Seeds, Kent Hall.

CEB 1487 Orange

Yields 9% higher than Carneval, 2% higher than CDC Mozart and 2% lower than Carrera. This semi-leafless orange cotyledon pea has a 243 g/1,000 seed weight and a similar maturity to Carrera. It is two days earlier than Carneval and three days earlier than CDC Mozart. Seeds are round and smooth. This variety tends to yield higher in wetter areas. The contact company is Walker Seeds.

SDS Orange

Semi-leafless, large sized (270 g/1,000 seeds) cultivar with an orange-red cotyledon. Potential as a substitute in or to extend markets using split red lentil. Contact company is St. Denis Seeds.

Courier

A medium small seed size (200 g/1, 000 seeds) maple type with potential for the pigeon market. Contact company is Canterra Seeds Ltd.

QAS GMF 1223(Samson)

This large seeded (350 g/1,000 seeds) marrowfat is high yielding and displays good lodging resistance. Samson is a variety with medium maturity that yields 8% higher than Guido and the semi-leafless nature of the plant ensures a quick and uniform dry down. This variety is in demand and can command an attractive selling price in the Asian roasted snack pea market. Contact company is Quality Assured Seeds, Kent Hall.

Racer

Medium small seed size (180 g/1,000 seeds) maple type with potential in the pigeon pea market. Contact company is St. Denis Seeds.

Black Eye Green

A small sized (150 g/1,000 seeds) semi-leafless white flowered type with green cotyledon and a black hylum. Potential as an addition with other pea types for parfait soup mixes and as a replacement for black eyed bean in various parfait mixes. From Cebeco, contact company is St. Denis Seeds.

Black Eye Yellow

A medium small (215 g/1,000 seeds) semi-leafless white flowered type pea with a yellow cotyledon and a black hylum. Potential similar to black eye green. From Cebeco, contact company is St. Denis Seeds.

White Pea

Large sized (280 g/1,000 seeds) semi-leafless white flowered type with high potential as a chickpea substitute in India and other countries. Mainly a whole pea market type that can be decorticated. Contact company is St. Denis Seeds.

Solido(Brown Marrowfat)

A very large sized (340 g/1,000 seeds) semi-leafless brown marrowfat which has potential as a substitute for peanuts in peanut butter. Also has potential in the starch market. From Cebeco, contact company is St. Denis Seeds.

Perf 4010

Small seeded (145g/1,000 seeds) silage type pea cultivar. This maple type is late maturing and has poorer standability compared to the common grain types. Contact company is Quality Assured Seeds, Kent Hall.

ii) Marketability and price

While there was no reliable data for the 2002 trials, 2001 results suggest that the majority of the special field pea cultivars yield less than the green and yellow checks. To equal the returns of the standard yellow and green pea varieties currently grown in Western Canada, a premium for special purpose cultivars will be needed to entice farmers to grow these new types.

On the following page is a price matrix based on conventional pea types; green and yellow (Table 2). Farmers utilizing this matrix should be aware this is the price per bushel to equal returns for conventionally grown types. A premium over and above the prices calculated in this matrix will be needed to offset risk of some cultivars due to poor standability, difficulty of harvest, late maturity, slower movement of product off the farm, and possibly later payment for product.

The author of this report would like to acknowledge Ken Lopetinsky, Alberta Pulse Research Agronomist, for the development of this price matrix .

Table 2. Price Matrix; % Yield of Check Varieties and \$/Bushel Required

% Yield of Check Varieties	Green and Yellow Field Pea Prices							
		\$7.50	\$7.00	\$6.50	\$6.00	\$5.50	\$5.00	\$4.50
50		15.00	14.00	13.00	12.00	11.00	10.00	9.00
55		13.63	12.72	11.82	10.91	10.00	9.09	8.18
60		12.50	11.66	10.83	10.00	9.17	8.33	7.50
65		11.53	10.76	10.00	9.23	8.46	7.69	6.92
70		10.71	10.00	9.29	8.57	7.86	7.14	6.43
75		10.00	9.33	8.67	8.00	7.33	6.67	6.00
80		9.37	8.75	8.13	7.50	6.88	6.25	5.63
85		8.82	8.23	7.65	7.06	6.47	5.88	5.29
90		8.33	7.77	7.22	6.67	6.11	5.56	5.00
95		7.89	7.37	6.84	6.32	5.79	5.26	4.74

Adapted from K.J. Lopetinsky 2000

VI. Conclusions:

The drought of 2002 devastated the plots at both Vermilion and Killam. No meaningful information was obtained in 2002.

Further data collection will be required to gain a higher degree confidence in the 2001 results. Based on 2001 results, cultivars to watch closely in future years and in other trials across the province besides those mentioned under key results are QAS orange, U30 orange, black eye green black eye yellow, white pea, U36 GMF and Ceb 1487 orange.

VII. Extension Activities:

A field day at Killam was attended by approximately two dozen growers on July 30/2002. The Vermilion site was located on the Vermilion Lakeland College Student farm and signs along with plot plans were made available before the Vermilion fair. The compiled 2001 results from all sites across Alberta were shared with 150 growers at the Southern Alberta Conservation Association (SACA) conference in Medicine Hat on December 4/2002.

VIII. Recommendations/Acknowledgments:

No recommendations can be made from the 2002 trials. Alberta Pulse Growers Commission Zone 5 would like to acknowledge the staff of BRRG (Alvin Eyolfson) and LARA (Jeremy Robinson) for all their hard work and cooperation on the projects.

Thank you to Ken Lopetinsky, Alberta Pulse Research Agronomist, for taking the leadership role in this research on special purpose field pea cultivars. Ken and his technical staff assisted in the seed set up for the two trials.

The directors of APGC Zone 5 and the project coordinator (Mark Olson took over the reigns for Terry Buss) would like to thank the On Farm Demonstration Committee NorthEast Region for their support of pulse projects.

Last, a special thanks to our farmer-cooperators; Lakeland College and Darrel Holmstrom. Their assistance and donation of their land for research purpose is greatly appreciated.

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