

# **Pulse Optimum Productivity Sites**

Project #99-PR-02

2001

Farming For the Future  
On Farm Demonstration Project

**Alberta Pulse Growers –Zone 4**

*Submitted By*

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## Abstract

A number of agronomic trials on field pea and other special crops were conducted at various locations in the Peace region. Newly registered green and yellow pea varieties were tested for yield and other agronomic data at 2 locations, Fairview and Manning.

A special purpose pea trial in Grande Prairie evaluated the performance of various niche pea cultivars in the region. CDC Sonata was the only cultivar to outyield the check variety Espace at this site. However, many of the other cultivars were close in yield to the check.

An intensive pea management trial was seeded at 3 locations looking at various seeding rates and time of spraying. No significant differences were found between seeding rates but there was a trend towards higher yield at a seeding rate of 7 plants/ft<sup>2</sup>. No significant differences were found for time of spraying as well although there was a trend towards higher yield when spraying 2 weeks after emergence.

A fababean variety trial in Fairview evaluated the performance of 7 varieties of fababeans including 2 new low tannin cultivars. All of the varieties yielded higher than the check variety Hertz-Freya.

An intercropping trial with mixtures of 2 pea varieties and barley and triticale was seeded in Fairview to determine dry matter and protein yields. Yield of the mixtures varied between 8 and 14 tonnes/ha of dry matter and 1.5 and 2.25 tonnes/ha of protein. There was little difference in yield between a straight barley and a barley-pea mixture. The addition of pea to the mix increased protein levels significantly.

## Objectives:

The objectives of this project were to gather information from a number of agronomic trials on field peas and other special crops grown in the Peace region.

## Grande Prairie Site:

The Grande Prairie site was located on NW12-72-6 W6, ½ km south of Clairmont on Hwy 2. Plots at this location were a Special Purpose Pea Trial and an Intensive Pea Management Trial. The field was in wheat in 2000 and had been lightly tilled in the fall of 2000, so all plots were minimum tilled into the wheat stubble. All trials were seeded with a six row plot seeder with 23 cm row spacing. Granular inoculant was applied with the pea seed at a rate of 5 lb/ac and 25 lb/ac of 11-51-0 was applied with the seed.

A 0 - 6 inch soil test was done to assess fertility. Table 1 shows soil test results for this site.

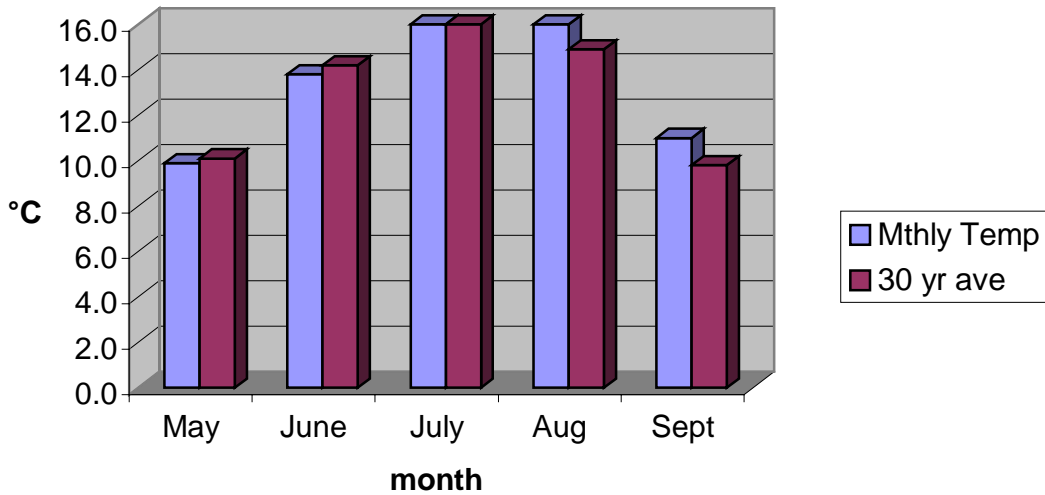
**Table 1: Soil Test Analysis for Grande Prairie Site (NW12-72-6 W6)**

<b>N lbs/ac</b>	<b>P lbs/ac</b>	<b>K lbs/ac</b>	<b>S lbs/ac</b>	<b>pH</b>
52	34	376	26	5.8

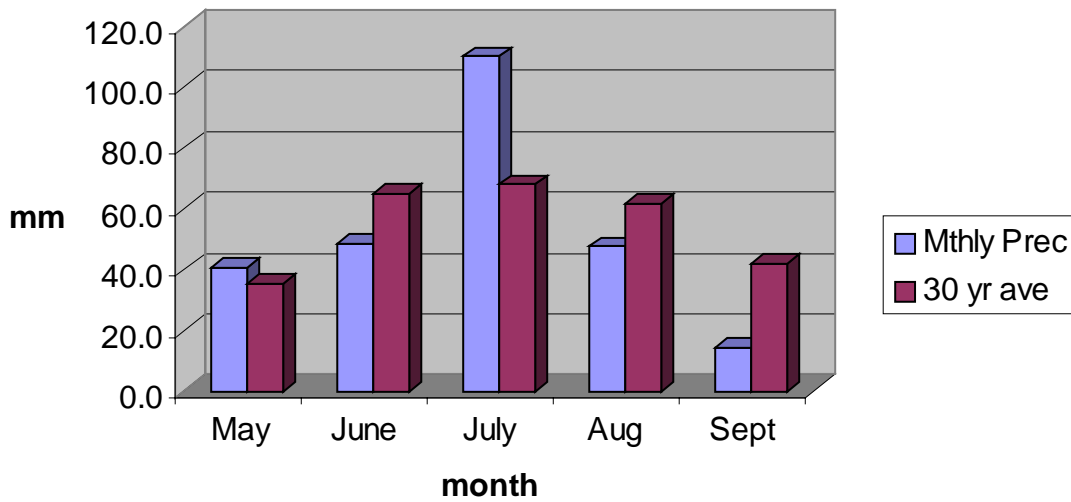
## 2001 Growing Season Weather at Grande Prairie Site:

The growing season started off dry at this site in 2001 with below average soil moisture conditions. Compounding these dry spring conditions were dry conditions in 2000 and very little snowfall during the winter of 2000 - 2001. However, rain fell during late May and got the crop germinated and growing. June saw less than average rainfall and July made up for lack of moisture with much higher than average rainfall and average temperatures. August and September were both drier and warmer than normal which allowed the crop to mature and provided near ideal conditions for harvest. Total growing season (May to Sept) precipitation for this site was 261.2 mm (10.3 inches). Monthly average temperatures and precipitation are given in Figures 1 and 2 along with 30 year averages for comparison.

**Figure 1: 2001 Monthly Temperature for Grande Prairie Airport**



**Figure 2: 2001 Monthly Precipitation for Grande Prairie Airport**



## **Fairview Site:**

The Fairview site was located on NW5-82-3 W6, Alberta Agriculture, Food And Rural Development's research farm located 3 km west and 1.5 km north of the town of Fairview. The plots located at this site were: regional field pea varieties, intensive pea management trial, pea silage trial, regional fababean varieties and an innovative oilseed trial. Plots here were also seeded with a six row plot seeder with 23 cm row spacing. Granular inoculant was applied with the pea seed at a rate of 5 lb/ac and 25 lb/ac of 11-51-0 was applied with the seed.

A 0 - 6 inch soil test was done to assess fertility. Table 2 shows soil test results for this site.

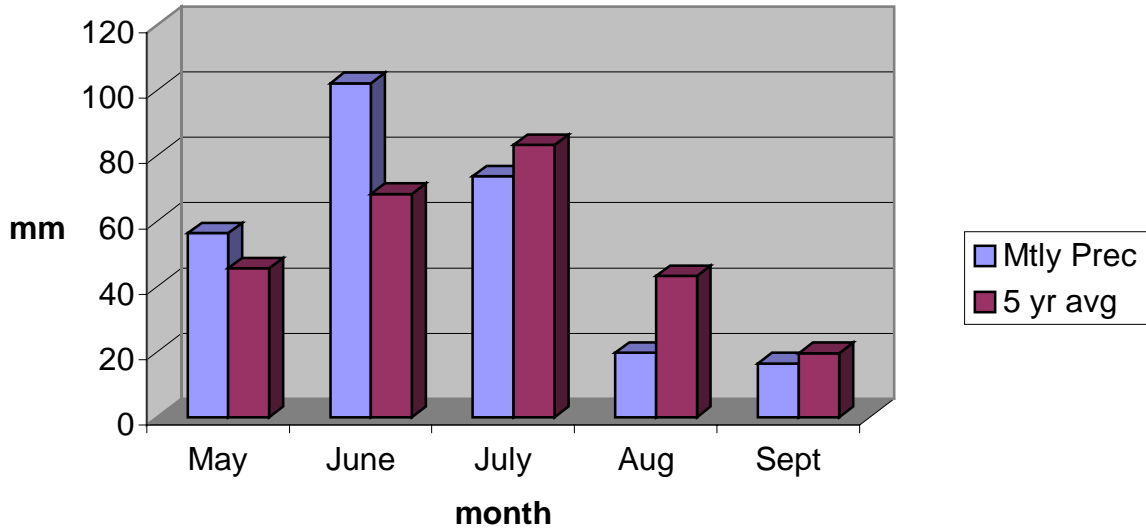
**Table 2: Soil Test Analysis for Fairview Site (NW5-82-3 W6)**

<b>N lbs/ac</b>	<b>P lbs/ac</b>	<b>K lbs/ac</b>	<b>S lbs/ac</b>	<b>pH</b>
52	34	376	26	5.8

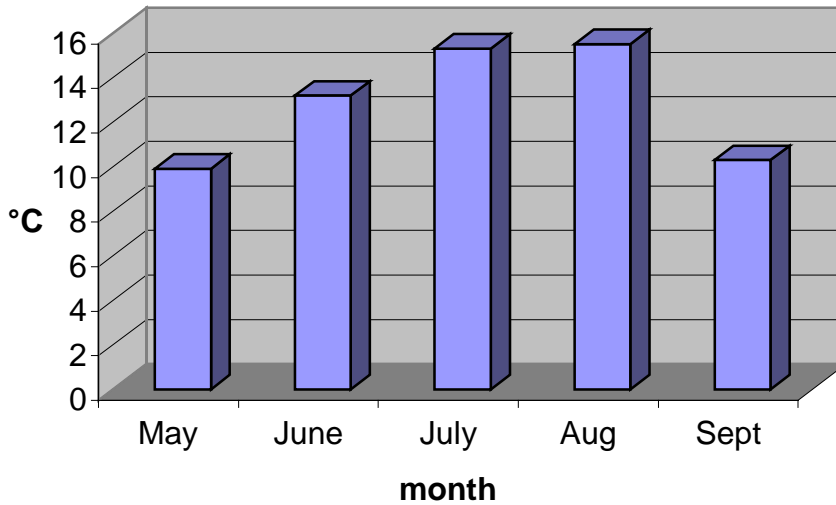
## **2001 Growing Season Weather at Fairview Site:**

2001 was an excellent year for weather at the Fairview Ag Research Farm. Although there was little snowfall over the winter of 2000 – 2001, spring soil moisture at the Fairview site was good due to adequate growing season rainfall in 2000 (425.9 mm). May & June both had good rainfall which got the plants up and growing. July had adequate rain to keep the crop growing while August and September were on the dry side which was perfect for maturing the crop and for harvesting. Total growing season (May to Sept) precipitation for this site was 268.3 mm (10.6 inches). Frost free period was from May 21 to Sept 5 for a total of 106 days.

**Figure 3: 2001 Monthly & 5 Year Average Precipitation at Fairview Ag Farm**



**Figure 4: Monthly Average Temperature for Fairview Ag Farm - 2001**



## Regional Field Pea Variety Trials – Fairview & Manning

Every year a number of new green and yellow pea varieties are registered. The regional field pea variety trials are one way that producers can find out more about how a specific variety performs in their area of the province. This year trials were located in Fairview and Manning. The Fairview site was seeded on May 3, sprayed with Odyssey at recommended rates on June 8 and harvested on September 12. The Manning site was seeded on May 11, sprayed with Odyssey at recommended rates on June 13 and harvested on September 14. The top yielding yellow varieties in Fairview were Integra, Swing, Cabaret, CEB 1484 and Miami. In Manning, the top yielding yellow varieties were Nicole, CEB 1484, DS Admiral, Integra and Cobra. The top yielding green varieties in Fairview were M98, Fabia, Millennium, Espace and AP9540-43. In Manning, the top yielding green varieties were Nitouche, SW Parade, Cascade, Logan and Fabia. Yield and other agronomic data are presented in Tables 3 – 6.

Results of these trials are incorporated into the 2001 Field Pea Yield Comparisons which is available as Agdex 140/32-1 from any Alberta Agriculture office or on the “Ropin’ the Web” website at: [www.agric.gov.ab.ca/crops/performance/spcrops/fieldpeas.html](http://www.agric.gov.ab.ca/crops/performance/spcrops/fieldpeas.html).

**Table 3: Yield & Other Agronomic Data – Regional Yellow Pea Trial – Fairview 2001**

Variety	Vine Ht. (cm)	1000 kwt (g)	Standability 1-erect 9-flat	Yield (bu/ac)
Integra	108	248	8	74.7
Swing	92	228	8	74.2
SW Cabaret <sub>1</sub>	90	208	8	68.0
CEB 1484 <sub>1</sub>	100	240	8	68.0
Miami	97	226	8	66.2
Cobra	102	223	8	60.9
Carrera	83	240	8	59.9
CDC Minuet*	98	181	8	58.4
Nicole	87	234	8	57.7
Delta	99	216	8	56.9
SW Salute* <sub>1</sub>	105	199	8	54.6
SW Admiral <sub>1</sub>	97	232	8	53.4
Eclipse*	92	227	8	52.2
DS Stalwarth*	110	227	8	51.8
CEB 1489* <sub>1</sub>	88	226	8	51.2
Badminton	91	246	8	42.1
Bravo	101	227	8	26.6

1 – first year in variety trials  
 - powdery mildew resistance

**Table 4: Yield & Other Agronomic Data – Regional Yellow Pea Trial – Manning 2001**

<b>Variety</b>	<b>Vine Ht.</b>	<b>1000 kwt</b>	<b>Standability</b>	<b>Yield</b>
	<b>(cm)</b>	<b>(g)</b>	<b>1-erect 9-flat</b>	<b>(bu/ac)</b>
Nicole	67	242	4	36.4
CEB 1484 <sub>1</sub>	83	224	5	35.1
DS Admiral <sub>1</sub>	90	231	4	33.1
Integra	89	257	4	31.9
Cobra	83	219	4	31.8
SW Salute* <sub>1</sub>	84	202	7	30.5
Miami	86	211	3	30.3
Eclipse*	79	202	5	29.1
Delta	85	224	5	29.0
Badminton	60	226	7	28.4
<b>Carrera</b>	<b>71</b>	<b>219</b>	<b>6</b>	<b>27.1</b>
DS Stalwarth*	91	215	4	25.4
SW Cabaret <sub>1</sub>	80	194	4	25.0
CDC Minuet*	75	173	5	24.8
CEB 1489* <sub>1</sub>	75	217	7	20.5
Swing	78	216	4	19.4
Bravo	85	201	3	14.3

1: first year in variety trials  
\* powdery mildew resistance

**Table 5: Yield & Other Agronomic Data – Regional Green Pea Trial – Fairview 2001**

<b>Variety</b>	<b>Vine Ht.</b>	<b>1000 kwt</b>	<b>Standability</b>	<b>Yield</b>
	<b>(cm)</b>	<b>(g)</b>	<b>1-erect 9-flat</b>	<b>(bu/ac)</b>
M98 <sub>1</sub>	83	245	8	77.8
Fabia <sub>1</sub>	110	234	8	74.1
Millennium	88	242	8	73.0
Espace	86	225	8	71.8
AP9540-43 <sub>1</sub>	108	209	8	70.9
SW Parade*	98	194	8	66.8
Toledo	98	243	8	66.7
Cascade	104	217	8	66.4
<b>Nitouche</b>	<b>102</b>	<b>245</b>	<b>8</b>	<b>64.0</b>
Venture	98	199	8	57.6
Logan	96	176	8	53.6
Scuba	88	218	8	49.5
CEB1171* <sub>1</sub>	94	232	8	46.4
Bluebird* <sub>1</sub>	75	206	8	45.7

1: first year in variety trials  
\* powdery mildew resistance

**Table 6: Yield & Other Agronomic Data – Regional Green Pea Trial – Manning 2001**

<b>Variety</b>	<b>Vine Ht.</b>	<b>1000 kwt</b>	<b>Standability</b>	<b>Yield</b>
	<b>(cm)</b>	<b>(g)</b>	<b>1-erect 9-flat</b>	<b>(bu/ac)</b>
Nitouche	77	238	4	34.8
SW Parade*	76	195	4	34.4
Cascade	83	216	3	33.4
Logan	78	160	3	33.0
Fabia <sub>1</sub>	71	221	3	32.7
Venture	69	191	4	32.2
Espace	75	203	4	31.1
AP9540-43 <sub>1</sub>	82	193	3	31.1
M98 <sub>1</sub>	62	232	4	30.4
CEB 1171* <sub>1</sub>	60	248	5	29.0
Toledo	75	234	3	28.1
Millennium	59	224	4	26.9
CDC Montero	63	184	6	25.8
Bluebird* <sub>1</sub>	61	225	6	23.6
Scuba	72	204	4	22.2
DS Dominator*	62	178	3	15.2

1: first year in variety trials

\* powdery mildew resistance

## **Special Purpose Pea Trial – Grande Prairie**

In Alberta, the majority of pea acres are devoted to green and yellow varieties. However, pea marketing and processing companies have identified other pea types with market potential. Marrowfats, orange cotyledon types, maples and others form a group commonly referred to as special purpose peas. Although present production is mainly marrowfat and maple types, niche market development may increase the demand for special purpose peas to 20% of our acreage.

### **Objectives:**

- Evaluate the yield performance and agronomic characteristics of various special purpose pea types to well adapted yellow and green cultivars at various agroclimatic locations in Alberta.

### **Materials and Methods:**

A total of eighteen special purpose pea cultivars and a yellow (Integra) and a green (Espace) check variety were seeded in a four replicated randomized complete block design at each of eight locations. Seed size was determined for all the varieties and seeding rates were calculated to establish 7 plants/ft<sup>2</sup> (75 plants/m<sup>2</sup>). All seeding was done in early May with the Grande Prairie site being seeded on May 4. Odyssey® herbicide was used at recommended rates for weed control at the Grande Prairie site. Data collection for each subplot consisted of flowering date (10% flower), standability rating, plant height, yield and 1000 kwt.

### **Results and Discussion:**

At the Grande Prairie site, yield of many of the various special purpose pea varieties were close to the yield of the green check variety Espace with one variety (CDC Sonata) yielding significantly higher. The yellow check, Integra had a lower yield than Espace and ten of the special purpose varieties had similar or slightly higher yields than Integra.

Comparing flowering dates (10% flowering stage), most varieties were similar to the checks. Racer and Brown Marrowfat were the first varieties to flower but the maple types, Courier, Performance 4010 and CDC Maple started flowering later than the checks and continued flowering later than other varieties. Plant height was measured after flowering and the coloured flower types tended to be taller than the other varieties. Canseed-1, Performance 4010, QAS GMF-1223 and CDC Sonata were all taller than the check varieties Espace and Integra. Standability ratings for all special purpose types were much poorer than both of the checks. This could lead to difficulty in harvesting especially under wet conditions. Seed size varied by variety with the smallest seed obtained from Canseed-1 (135g/1000 seeds) and the largest seed obtained from the marrowfat types (334-386 g/1000 seeds). Results from the Grande Prairie site and from the 7 other Alberta sites are presented in Tables 7 and 8 along with the average yield from 2000.

Results from years 2000 and 2001 suggest that there are many new special purpose pea varieties suitable for niche market production in most regions of Alberta. There is good interest from Alberta pea marketers and processors for special niche markets. Local and international buyers and customers are being found and markets are being fully developed. However, production of these special purpose types is limited and not for everyone. The production under a total production contract for a single company for a specific market does hold some risk. High quality product is critical to maintain markets and provide processing opportunities. Poor quality will not sell!

**Table 7: Agronomic Data for Special Purpose Peas – Grande Prairie Site 2001**

Variety	Plant Height (cm)	Standability (1-9)*	1000 KWT (g/1000 seeds)	Yield (kg/ha)
	Average of 4 Replications			
<b>Espace</b>	52	4	237	3381 b
<b>Integra</b>	59	4	298	2754 bcdefgh
<b>Canseed – 1</b>	123	8	135	2577 cdefghi
<b>QAS GMF-1223</b>	76	6	368	1851 i
<b>Radke GMF</b>	51	8	386	3017 bcde
<b>U18 GMF</b>	49	8	334	2295 efghi
<b>U28 GMF</b>	56	8	340	3082 bcd
<b>U36 GMF</b>	52	8	363	3016 bcde
<b>Black Eye Green</b>	41	8	284	2244 fghi
<b>Brown Marrowfat</b>	54	8	348	2486 defghi
<b>Ceb 1487 Orange</b>	43	8	234	3146 bcd
<b>QAS Orange – 1478</b>	48	8	253	2564 cdefghi
<b>SDS Orange</b>	45	8	265	2764 bcdefgh
<b>U30 Orange</b>	55	7	255	2879 bcdefg
<b>Black Eye Yellow</b>	54	8	245	2076 hi
<b>CDC Maple</b>	59	8	166	3298 bc
<b>Courier</b>	64	8	229	3234 bcd
<b>Racer</b>	38	8	199	2175 ghi
<b>Perf 4010</b>	135	8	168	2738 bcdefgh
<b>CDC Sonata</b>	84	8	248	4264 a
<b>White Pea</b>	44	7	296	2946 bcdef
<b>Average</b>	61	7	269	2799
<b>LSD</b>				754.0
<b>C.V.%</b>				19.0

**NOTE:** 1. a,b...yields followed by the same letter are not statistically different  
 2. \*Standability scale: 1=perfectly upright, 9=flat

**Table 8: Overall Comparisons Between Special Purpose Pea Varieties as a Percentage of Espace at Various Locations in Alberta – 2000 & 2001**

Variety	2000 Average (5 sites)	Andrew %	Brooks %	Carstairs %	Grande Prairie %	Lacombe %	Namao %	Wainwright %	Westlock %	2001 Average %
<b>Espace</b>	100	100	100	100	100	100	100	100	100	100
<b>Integra</b>	95	91	88	73	81	120	91	93	90	91
<b>Canseed-1</b>	48	82	97	85	76	58	46	83	79	73
<b>QAS GMF-1223</b>	N/A	28	43	39	55	52	63	25	65	47
<b>Radke GMF</b>	75	63	75	72	89	81	88	88	88	81
<b>U18 GMF</b>	61	55	76	57	68	57	72	79	75	66
<b>U28 GMF</b>	74	67	62	90	91	77	81	77	66	78
<b>U36 GMF</b>	75	67	74	93	89	88	81	80	86	83
<b>Black eye Green</b>	93	87	72	70	66	82	97	102	83	84
<b>U33 Green*</b>	N/A	40	45	42	n/a	32	55	76	55	50
<b>Brown Marrowfat</b>	93	84	98	28	74	85	85	98	77	80
<b>CEB 1487 Orange</b>	N/A	92	92	70	93	89	97	106	95	92
<b>QAS Orange-1478</b>	N/A	104	130	100	76	86	100	99	109	96
<b>SDS Orange</b>	80	73	89	75	82	76	95	103	92	85
<b>U30 Orange</b>	101	101	108	111	85	96	100	92	107	100
<b>Black eye Yellow</b>	83	88	112	75	61	84	78	101	80	81
<b>CDC Maple</b>	N/A	94	94	111	98	57	75	96	82	88
<b>Courier</b>	80	88	72	99	96	65	85	96	83	87
<b>Racer</b>	80	71	91	45	64	49	84	78	71	66
<b>Perf 4010</b>	N/A	68	78	80	81	77	73	79	86	78
<b>CDC Sonata</b>	N/A	68	91	126	126	44	62	92	70	84
<b>White Pea</b>	101	76	99	89	87	66	99	104	99	89
<b>Espace Yield (kg/ha)</b>	3997	2489	3334	2569	3381	4068	4999	4570	4277	3711

\*No data for U33 Green at Grande Prairie site as no seed was available for seeding

Espace: green check

Integra: yellow check

## **Special Purpose Pea Types and Market Potential:**

Following is a brief discussion of the pea cultivars tested in 2001. 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.

### ***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. (780) 961-2111.

### ***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 (780) 961-2111.

### ***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 (780) 961-2111.

### ***Canseed – 1***

A very small sized (110 g/1,000 seeds) normal leaf type. Useful for biomass production for silage or plow down. Has potential in mixtures with cereals such as triticale. Contact company is Bill Leshner in Clive 403 782-2407.

### ***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 204 988-9750.

### ***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 (780) 961-2111.

### ***Integra (Check)***

A large yellow pea (280 g/1,000 seeds) with excellent standability and good yield potential. Contact company is St. Denis Seeds (780) 961-2111.

***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 (780) 961-2111.

***Radke GMF***

A large sized (286 g/1,000 seeds) semi-leafless green marrowfat with medium maturity. Large sized green marrowfats are primarily reconstituted (canned and used for mushy pea in England). They are also roasted and puffed for snack food. Contact company is Radke Seed Farms 780 674-5715.

***U18 GMF***

A very large sized (342 g/1,000 seeds) normal leafed green marrowfat with medium maturity. Large sized green marrowfats are primarily reconstituted (canned and used for mushy pea in England). They are also roasted and puffed for snack food. Contact company is Klempnauer Seeds / Columbia Seeds Co. Ltd 403 665-2420.

***U28 GMF***

A very large sized (356 g/1,000 seeds) semi-leafless green marrowfat with medium-late maturity. Large sized green marrowfats are primarily reconstituted (canned and used for mushy pea in England). They are also roasted and puffed for snack food. Contact company is Klempnauer Seeds / Columbia Seeds Co. Ltd 403 665-2420.

***U30 Orange***

A large sized (260 g/1,000 seeds) semi-leafless white flowered pea cultivar with an orange cotyledon. Potential as a substitute in or to extend markets using split red lentil. Contact company is Klempnauer Seeds / Columbia Seeds Co. Ltd 403 665-2420.

***U36 GMF***

A large sized (272 g/1,000 seeds) semi-leafless green marrowfat with medium maturity. Large sized green marrowfats are primarily reconstituted (canned and used for mushy pea in England). They are also roasted and puffed for snack food. Contact company is Klempnauer Seeds / Columbia Seeds Co. Ltd 403 665-2420.

***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 (780) 961-2111.

***QAS GMF 1223 or Samsom***

This large seeded (350 g/1,000 seeds) marrowfat is high yielding and displays good lodging resistance. Samsom 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 1 877 791-0500.

***U33 Green***

A small seeded (145g/1,000 seeds) processing pea cultivar. Seeds are wrinkled and blocky, with green cotyledon. Contact company is Klempnauer Seeds / Columbia Seeds Co. Ltd 403 665-2420.

***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 (780) 961-2111.

***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 306 873-3777.

***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 1 877 791-0500.

***CDC Maple***

This small seeded (143g/1,000 seeds) is a maple type pea cultivar. This variety is powdery mildew resistant. This variety has recently been renamed CDC Acer. Contact company is Crop Development Center in Saskatoon 306 966-5006.

***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 1 877 791-0500.

***CDC Sonata***

A medium sized (220g/1,000 seeds) forage type pea cultivar. This variety has a medium to late maturity and it is also powdery mildew resistant. Contact company is Crop Development Center in Saskatoon 306 966-5006.

## **Intensive Pea Management Trial – Grande Prairie, Fairview & Manning**

Most producers are aware that management factors play a key role in achieving consistently high yields with field peas. This trial looked at how 2 key management factors affect yield. Seeding rates of 3, 7 and 10 plants per square foot (psf) and time of spraying (no spray and spraying 1, 2, 3 and 4 weeks after emergence (wae)) were looked at.

Because of high variability at all sites, (CV's of 27.6 in Grande Prairie, 25.7 in Fairview and 49.2 in Rycroft) it is difficult to draw definite conclusions from these plots this year. The high variability at all 3 sites was most probably due to the high precipitation that fell over the summer. This caused flooding in lower parts of the plots and in Rycroft the entire plot was under water for a couple of days. This is also reflected by the low yield in Rycroft. As such, I will only comment on trends from these results and not on significant differences.

Seeding rate showed similar results at both the Grande Prairie and Fairview sites with a seeding rate of 7 psf giving the highest yield while the 3 and 10 psf seeding rates were very similar to each other. In Rycroft, 10 psf returned the highest yield followed by 7 psf and then 4 psf. When averaged across the 3 sites, 7 psf yielded higher than both the 4 and 10 psf. Yield results are presented in Figures 5 – 8.

Time of spraying had more differences between sites. At the Grande Prairie site, There was a decreasing trend in yield from no spraying down to spraying 3 wae. Spraying 4 wae resulted in a similar yield to spraying 2 wae. At the Fairview site, spraying 2 wae gave the highest yield followed by no spraying, spraying 3 wae, 4 wae and finally spraying 1 wae. At the Rycroft site, spraying 2 wae also gave the highest yield followed by spraying at 3 wae, 4 wae, 1 wae and not spraying at all. When averaged across the 3 sites, spraying 2 wae gave the highest yield. Yield results for time of spraying are presented in Figures 9 – 12.

Figure 5: IPM Seeding Rate – Grande Prairie 2001 Figure 6: IPM Seeding Rate – Fairview 2001

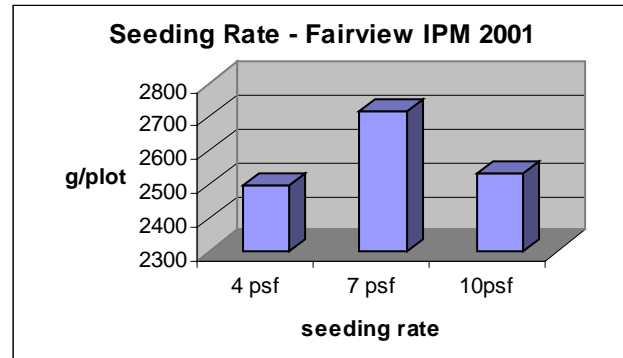
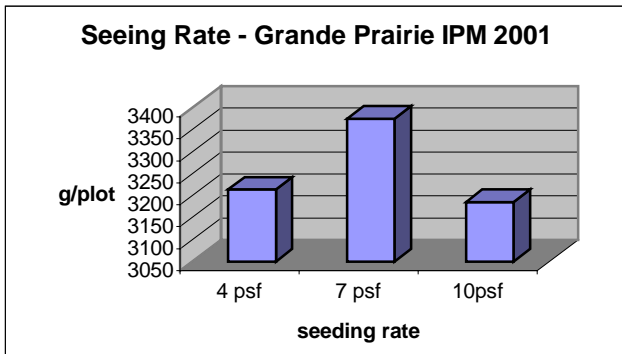


Figure 7: IPM Seeding Rate – Rycroft 2001

Figure 8: IPM Seeding Rate – Ave of 3 Sites

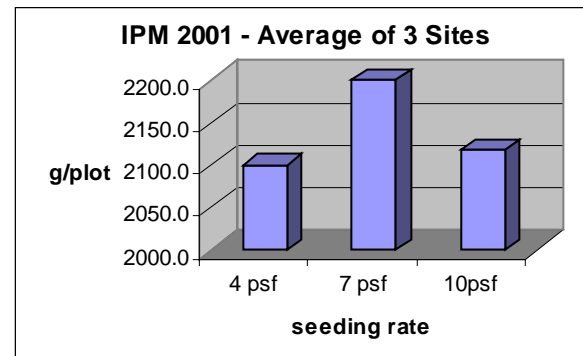
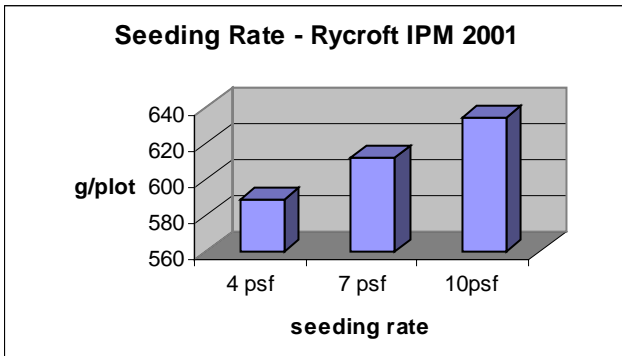


Figure 9: IPM Time of Spraying – Gr Prairie 2001 Figure 10:IPM Time of Spraying – Fairview 2001

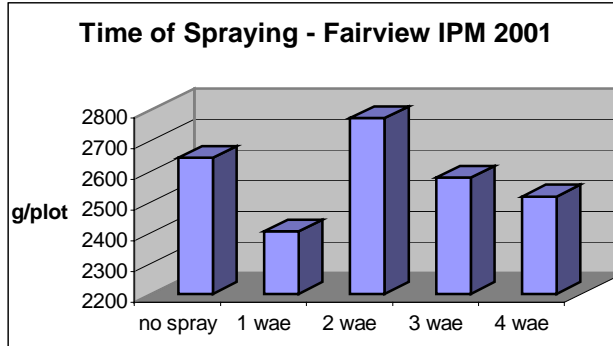
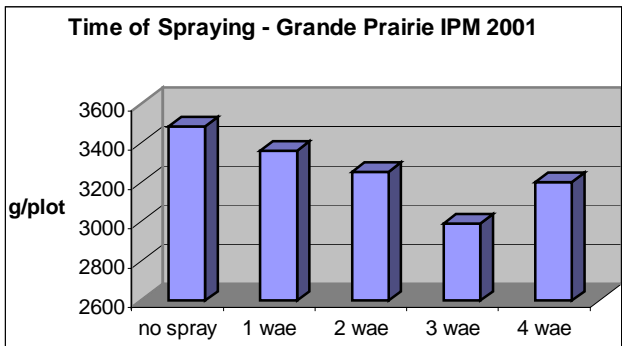
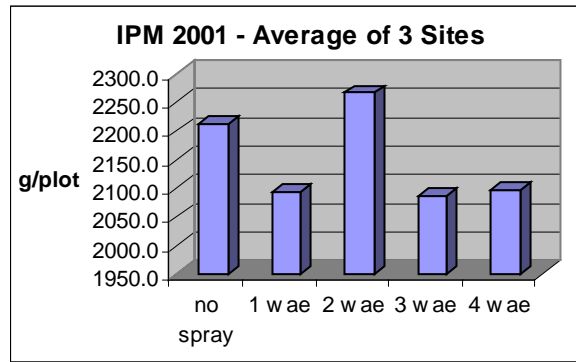
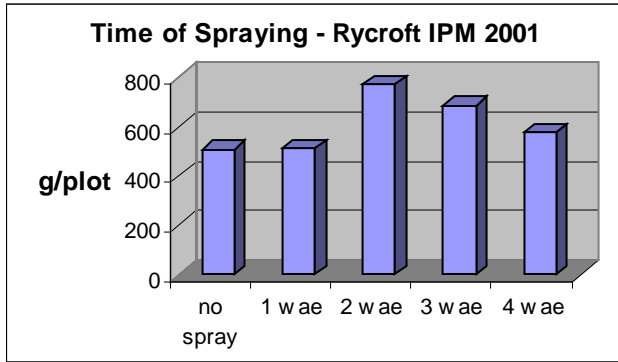


Figure 11: IPM Time of Spraying – Rycroft 2001 Sites

Figure 12: IPM Time of Spraying – Ave of 3



## Fababean Regional Variety Trial – Fairview

Fababeans are another cool season pulse crop that has potential in the Peace. Recently, new higher yielding varieties and white flowered human consumption varieties have been released. The human consumption varieties have the potential of opening up a whole new niche market for producers who are looking to diversify especially in the cooler, wetter northern regions of Alberta.

This trial was seeded on May 3 using a six row plot seeder with 23 cm spacing with four replicates. Liphatec granular inoculant was applied with the seed at a rate of 5 lb/ac and 25 lb/ac of 11-51-0 were added with the seed at time of seeding. Plots were sprayed on June 8 with Odyssey herbicide at a rate of 17 g/ac. Harvest occurred on October 16. Seed was cleaned, moisture tested and had 1000 kwt done. Results are presented in Table 9.

**Table 9: Yield & 1000 kwt of Fababean Varieties - Fairview 2001**

Variety	1000 kwt (g)	Yield (bu/ac)
Melodie	550	66.4
CDC Fatima	580	59.2
CDC Blitz	495	55.0
Divine	637	54.2
CEB 96921*	595	50.1
Earlybird*	454	44.7
Hertz-Freya	428	34.4

\* low-tannin varieties

Hertz Freya: check variety

As can be seen, all of the newer varieties are yielding higher than the older check variety Hertz-Freya with Melodie coming in at almost twice the yield. Even the zero tannin human consumption varieties Earlybird and CEB 96921 are yielding 10 to 15 bu/ac higher than the check. However, maturity may be an issue with some of these newer varieties as they were all fairly late maturing and were not harvested until October 16 after a few good frosts.

## **Fababean Variety Descriptions:**

### **Hertz-Freya**

An older variety that was registered in 1975. It is of medium height, early maturing and relatively small seed size.

### **CDC Blitz**

A tall variety (82 cm) with medium maturity and medium seed size. Developed by the Crop Development Centre at the University of Saskatchewan and distributed by Proven Seeds.

### **CDC Fatima**

A medium height (75 cm), medium maturing, medium seed size variety. Also developed by the Crop Development Centre at the University of Saskatchewan and distributed by Roy Legumex and Walker Seeds.

### **Melodie**

A newly registered variety with medium seed size. Distributed by Roy Legumex.

### **Divine**

A newly registered variety with medium seed size. Distributed by Roy Legumex.

### **Earlybird**

A new low tannin white flowered variety with small seed size.

### **CEB 96921**

A new low tannin white flowered variety with medium seed size.

## **Field Pea/Cereal Mixed Cropping for Silage Production Trial**

Intercropping barley and field pea is not a common practice in Alberta, although such a cropping system may be well suited to the wetter regions of the province. The most common intercropping practice in Alberta is seeding a wide variety of grasses with leguminous species for hay, silage and pastures. One potential benefit of field pea-barley combinations is the opportunity to increase total silage yield, as well as protein digestibility, total digestible nutrients (TDN), digestible energy (DE), and mineral content. Potential disadvantages may be competition for other limiting resources such as moisture, increased crop lodging and crop management problems such as seeding, fertilizer utilization, weed control and maturity differences of the two crops.

### **Objectives:**

- Evaluate the performance of sole and mixed crop systems which produce the highest biomass and protein yields

- Evaluate the seeding rate response of barley and triticale in both sole crop and mixed cropping systems
- Determine the performance of Swing (bred for grain yield) versus Performance 4010 (bred as a silage pea) in sole and mixed cropping systems

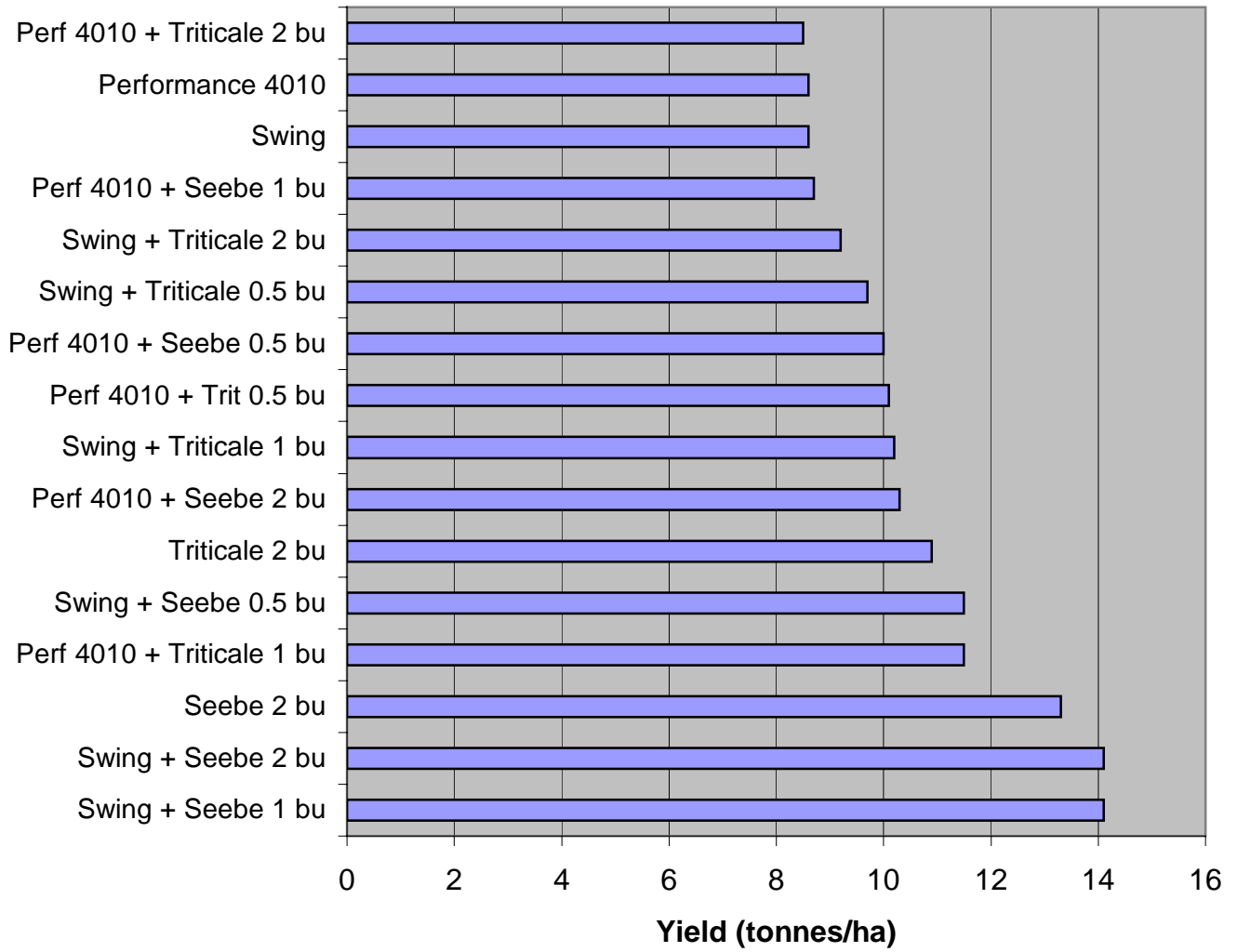
### **Materials and Methods:**

Two field pea cultivars (Swing & Performance 4010) were tested in combination with three seeding rates (0.5, 1.0 & 2.0 bu/ac) of either barley or triticale. Sole crop barley and triticale treatments were sown at 2.0 bu/ac. The plots were harvested as the cereal crop was going into the milk stage. Data was collected on wet and dry matter yields, protein content, ADF, NDF, as well as calcium and phosphorus content. Data was analyzed using SAS Inc. PROC GLM.

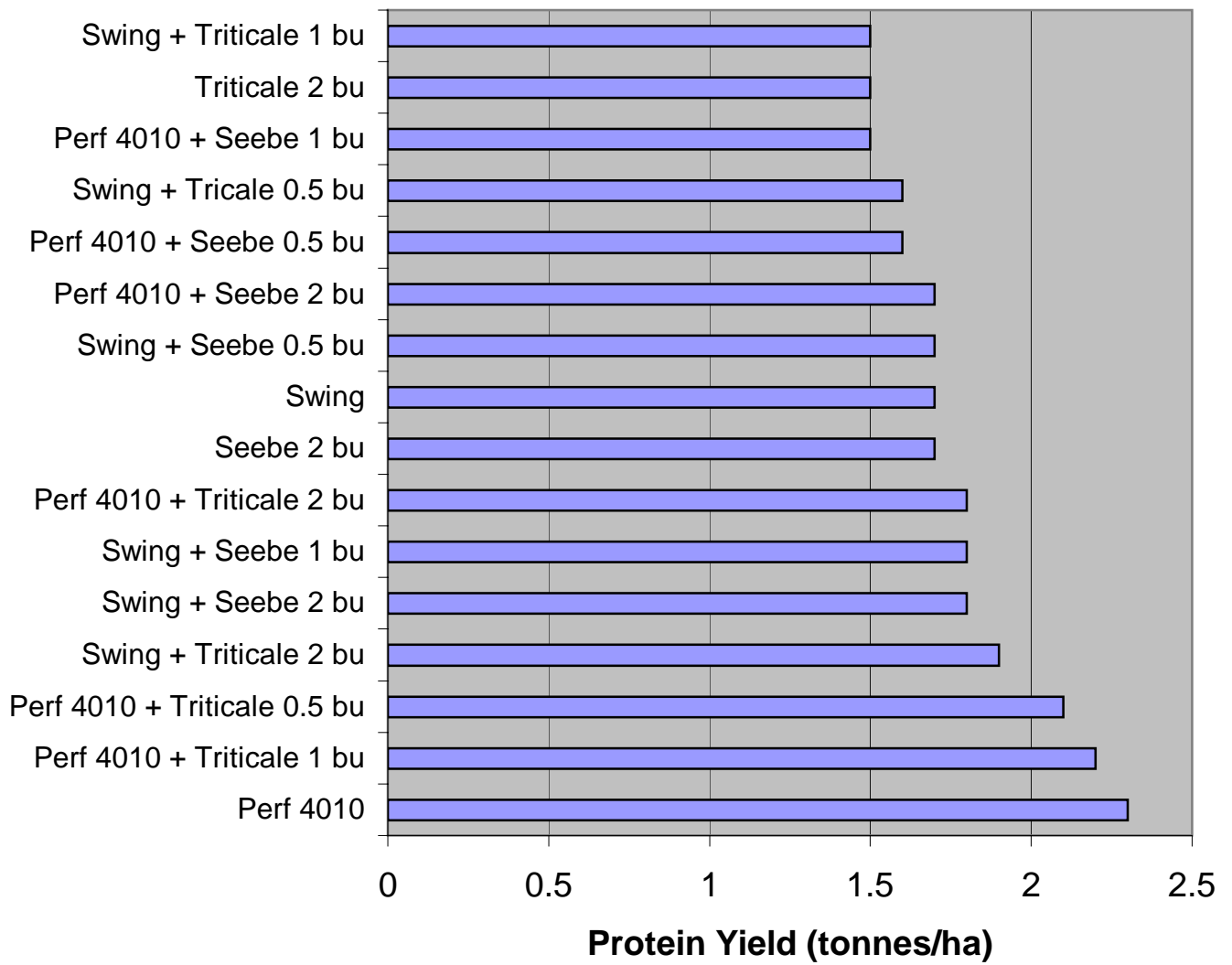
### **Results and Discussion:**

The 5 highest yielding treatments at this location were Swing pea plus Seebe barley at 1 bu/ac (14.1 t/ha), Swing pea plus Seebe barley at 2 bu/ac (14.1 t/ha), Seebe barley at 2 bu/ac (13.3 t/ha), Performance 4010 pea plus Triticale at 1 bu/ac (11.5 t/ha) and Swing pea plus Seebe barley at 0.5 bu/ac (11.5 t/ha). The range of yields between treatments was 8.5 to 14.1 tonnes per hectare. The data shows that the inclusion of Swing pea along with barley lead to a slight increase in silage biomass yields over a cereal alone. There was no clear indication that there was a yield advantage to using higher cereal seeding rates. Yield results of the different treatments are presented in Figure 13. The highest protein yielding treatment was Performance 4010 pea (2.3 t/ha) and the lowest yielding treatments were Triticale at 2 bu/ac (1.5 t/ha), Performance 4010 pea plus Seebe barley at 1 bu/ac (1.5 t/ha) and Swing pea plus triticale at 1 bu/ac (1.5 t/ha). The top three treatments all had Performance 4010 pea either by itself or in the mixture and 9 of the top 10 treatments had pea in the mixture. This indicates that the inclusion of pea in the mixture is a good way of increasing protein yield over a cereal alone. Yield results of the different treatments are presented in Figure 14. The inclusion of pea in the silage showed a trend towards higher phosphorus and calcium levels and lowered both acid detergent fibre (ADF) and neutral detergent fibre (NDF) levels. ADF is used to calculate digestible energy (DE) and the lower the number the higher the DE. NDF is a measure of the palatability of the feed and here again the lower the number the higher the palatability. Phosphorus, calcium, ADF and NDF levels for the various treatments are presented in Table 10. In conclusion, although total biomass yield is not greatly influenced, there appears to be valid reasons for the inclusion of pea in a silage mixture especially if silage quality is a consideration. This trial was also carried out at five other locations in northern Alberta (CDC North, Barrhead, Lamont, Vermilion and Beaverlodge) with similar results.

**Figure 13: Silage Biomass Yield (tonnes/ha) for Sixteen Treatments - Fairview 2001**



**Figure 14: Silage Biomass Protein Yield (tonnes/ha) for Sixteen Treatments - Fairview 2001**



**Table 10: Phosphorus, Calcium, ADF & NDF for 16 Treatments of Pea-Cereal Silage, Fairview 2001**

<b>Treatment</b>	<b>Phosphorus (%)</b>	<b>Calcium (%)</b>	<b>ADF (%)</b>	<b>NDF (%)</b>
Performance 4010	0.035	0.11	2.42	3.00
Perf 4010 + Trit 1 bu	0.035	0.13	3.97	5.51
Perf 4010 + Trit 0.5 bu	0.033	0.12	3.29	4.58
Seebe 2 bu	0.029	0.09	4.68	8.26
Swing + Seebe 2 bu	0.029	0.10	4.60	7.83
Swing + Seebe 1 bu	0.028	0.11	4.18	6.99
Perf 4010 + Trit 2 bu	0.028	0.09	3.20	4.64
Swing + Trit 2 bu	0.028	0.11	3.97	6.22
Swing + Seebe 0.5 bu	0.026	0.11	3.98	6.13
Perf 4010 + Seebe 0.5 bu	0.026	0.09	3.15	4.60
Perf 4010 + Seebe 2 bu	0.026	0.09	3.43	5.35
Swing	0.025	0.10	2.78	3.68
Swing + Trit 0.5 bu	0.024	0.10	3.51	5.27
Perf 4010 + Seebe 1 bu	0.024	0.08	2.99	5.00
Swing + Trit 1 bu	0.022	0.08	3.45	5.31
Triticale 2 bu	0.022	0.07	3.50	5.98

**Extension Activities:**

The Grande Prairie site was part of the AARI on farm demo committee tour, the Fairview site was part of the Alberta Pulse Growers and the MD of Fairview's tours and the Manning site was part of NPARA's tour. In all, it is estimated that 200 people viewed the plots on these various tours.

**Acknowledgements:**

These trials would not have been possible without the cooperation and assistance of many people. Thank-you to the following people and organizations for their contributions of time, energy and resources.

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