Quality of western Canadian peas

1999

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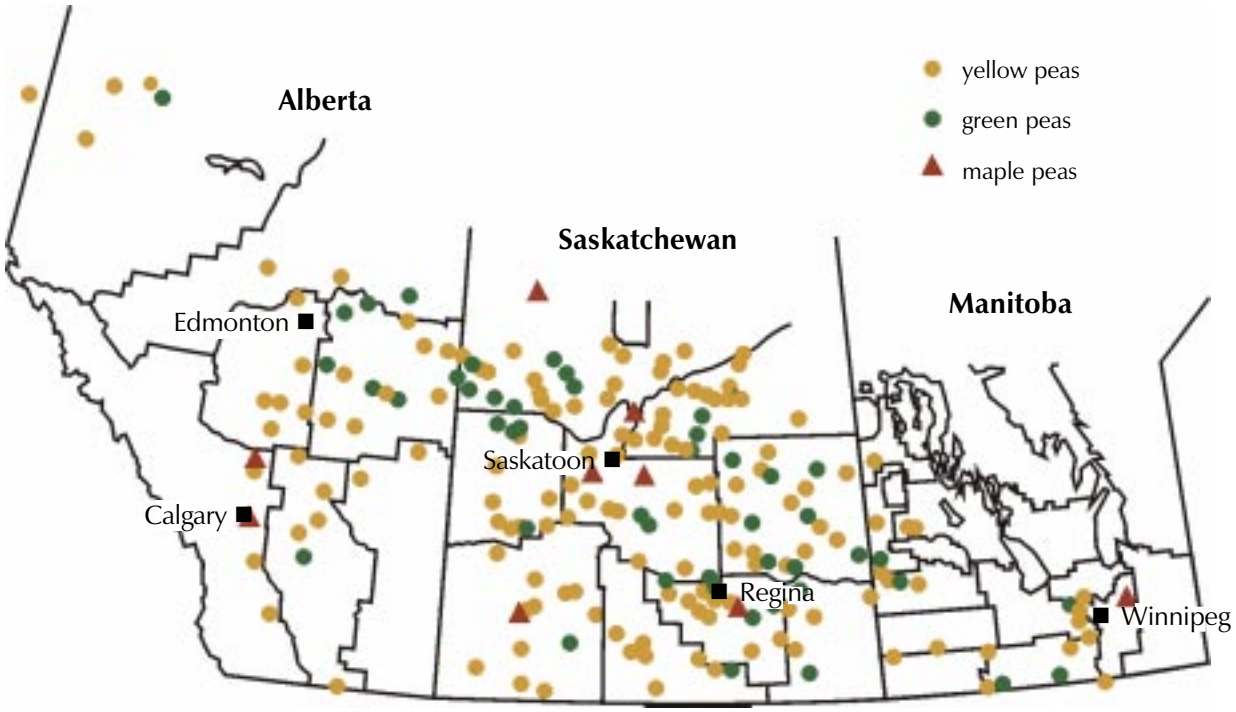
Introduction

This is the first comprehensive harvest survey report for western Canadian peas. The report presents quality data for 1999 including protein content, percentage dockage and percentage splits in dockage. Data are from analyses of pea samples submitted to the Grain Research Laboratory throughout the harvest period by western Canadian producers.

Figure 1 • Map of western Canada showing origin of 1999 harvest survey pea samples



Weather and production review

Weather review[1]

The weather review for the 1999 western Canadian peas harvest survey was provided by the Weather and Crop Surveillance department of the Canadian Wheat Board. A cool, wet spring in many prairie regions delayed the seeding of crops and led to an extended harvest period.

Seeding

The 1999 growing season started earlier than usual in parts of the Prairies as warmer than normal temperatures in the second half of April encouraged planting. The warm, dry conditions continued into the first week of May and producers in some regions, especially southern Alberta and southeastern Manitoba, managed to seed most of their crops by this time. This was not the case for the rest of the prairie region, especially eastern Saskatchewan and western Manitoba, where seeding was delayed by heavier than normal snow cover and excessive soil moisture levels. May precipitation over most of the southern and central Prairies was significantly above normal, while amounts in northern regions were closer to normal. Temperatures in May also turned cooler with most prairie locations reporting deviations of one to two degrees below normal. These conditions slowed seeding progress and resulted in serious planting delays. The wet conditions continued through the first half of June, which resulted in continued planting delays in the eastern half of the Prairies.

Growing Season

The wet conditions persisted through June across most of the Prairies. In areas where crops were planted and emerging, these soil moisture levels resulted in above average stands with excellent yield potential. The frequent rainfall pattern continued through July helping to maintain crop conditions. Temperatures remained cooler than normal through June and July, with stations reporting monthly averages ranging from 0.5°C to 3.0°C below normal. The coolest temperatures were reported in the western regions of the Prairies during June and July. The cooler weather during late July and early August provided ideal conditions for flowering and the yield potential in most regions was above normal. August brought a change in the weather as rains generally tapered off and temperatures climbed to normal or above normal across the Prairies. The warm temperatures encouraged crop development, although most regions were still 10 to 15 days behind normal development at the end of the month.

The only exception to the wetter than normal conditions in June and July was the Peace River region of Alberta. This region received below normal precipitation during June, which caused stress to crops. Dry conditions persisted in the region through July and August reducing yields significantly.

[1] Burnett, Bruce, The 1999 Western Canadian Growing Season in Review. Weather and Crop Surveillance. Canadian Wheat Board.

Harvest

The lateness of pulse crops across the prairie region raised concerns about the potential for severe quantity or quality loss due to frost. The first sub-zero temperatures were reported in the foothills of southern and central Alberta and east central Alberta during the first week of September. During the same week parts of northern and west-central Saskatchewan reported light frosts. The reminder of the Prairies did not report freezing temperatures until the second half of September. In most regions, the first frost in 1999 was very close to or after the average frost date for the region.

Harvest began in southeastern Manitoba and southern Alberta by the middle of August, but these regions were the exception rather than the rule. The bulk of the western Canadian harvest started in September and finished in October. Precipitation during September and October was below normal, especially in the western half of the Prairies. This helped maintain the quality of grain, despite the prolonged harvest. The eastern half of the Prairies received normal to above normal precipitation during September and October, which resulted in some deterioration of crop quality.

Production review

Production of peas decreased by 4% to 2.26 million tonnes as shown in Table 1. A 23% decrease in harvested area was offset by higher yields. An estimated 65% of the peas produced were yellow with 30% green and 5% other types. The total supply increased by about 10% to 2.73 thousand tonnes[2].

Table 1 • Production statistics for western Canadian peas—1999[1]

Province	Harvested area	Production	Yield
	thousand hectares	thousand tonnes	kg/ha
Manitoba	42.5	104.2	2500
Saskatchewan	617.1	1653.3	2700
Alberta[2]	189.8	504.8	2680
Western Canada	**849.4**	**2262.3**	**2700**

[1] Statistics Canada, Field Crop Reporting Series. September estimate of Production of Principal Field crops, Canada, Vol. 78, No. 7

[2] Includes the Peace River area of British Columbia

Harvest survey samples

Samples for the Canadian Grain Commission harvest survey are collected from producers across western Canada. The 1999 survey samples consisted of 196 yellow peas, 108 green peas, five maple peas, six feed peas and 25 sample grade peas, for a total of 340 samples. It is important to note that the samples reported by grade and province do not necessarily represent the actual distribution of grade or production in that province. There were, however, sufficient samples to provide good quality information for each province although, due to the relatively low production, there was a minimal sampling from Manitoba.

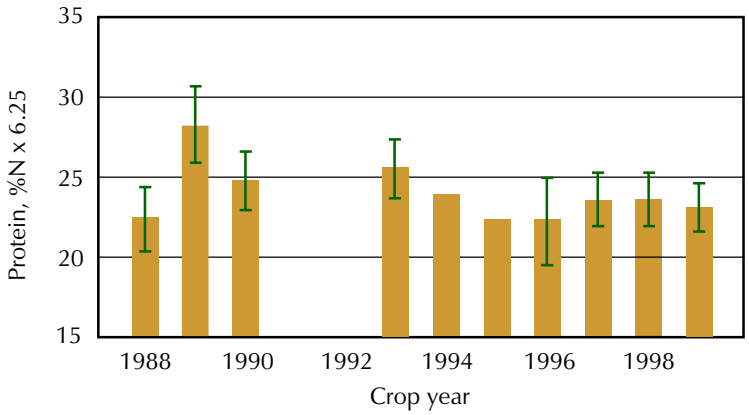
[2] Agriculture and Agri-Food Canada Policy Branch, Market Analysis Division. Canada: special Crops Situation and Outlook for 1999-00. December 6, 1999. http://www.agr.ca/policy/winn/biweekly/English/scsd/1999/dec99sce/dec99sce.pdf

Quality of 1999 western Canadian peas

This is the first comprehensive harvest survey report on western Canadian peas. It is not possible to make comparisons with previous years' data except for commenting on the long term trend in protein content based on previous survey work as shown in Figure 2. The average protein content for 1999 is 23.3% which is slightly lower than 1998 and also lower than the long term average of 24.0%. Cool maturation periods, such as were experienced in 1999, have been shown to result in lower protein levels.

Protein content ranges from 26.5% in maple peas to 23.0% in yellow peas as shown in Table 2. There is not much difference in protein content by grade level as shown in Tables 3 and 4, although the lower graded No. 3 Canada Yellow peas appear to have slightly more protein than the better quality yellow peas. Peas from Manitoba and Saskatchewan show slightly higher levels of protein than peas from Alberta. Dockage and percentage splits in dockage do not vary beyond the levels expected in the grades and the dockage levels in the top grades of peas are low. There is little difference in protein content between varieties of peas in the survey as shown in Table 5.

Figure 2 • Protein content[1] of western Canadian peas[2]



[1] bars show means with standard deviations.

[2] Composite samples only were tested in 1994 and 1995.

Table 2 • Quality data for 1999 western Canadian peas by type

Type	Number of samples	Protein content, %			Splits in dockage, %			Dockage, %		
		mean	min.	max.	mean	min.	max.	mean	min.	max.
Yellow	196	23.0	17.7	26.9	1.3	–	8.0	2.1	–	44.8
Green	108	23.4	19.8	28.3	1.1	–	7.0	2.0	0.1	14.9
Maple	5	26.5	25.7	27.0	0.8	0.4	1.2	1.1	0.6	1.6
Feed	6	24.5	21.9	29.6	3.7	0.1	15.8	6.8	2.4	16.0
Sample	25	23.8	21.6	26.9	1.7	0.1	10.5	2.6	0.3	10.9
All types	**340**	**23.3**	**17.7**	**29.6**	**1.3**	**–**	**15.8**	**2.2**	**–**	**44.8**

[1] N x 6.25; dry matter basis

Table 3 • Quality data for 1999 western Canadian yellow peas

Grade	Number of samples	Protein content, %			Splits in dockage, %			Dockage, %		
		mean	min.	max.	mean	min.	max.	mean	min.	max.
Manitoba										
No. 1 Can. Yellow	1	23.3	23.3	23.3	1.0	1.0	1.0	1.1	1.1	1.1
No. 2 Can. Yellow	11	22.7	19.0	25.6	1.0	0.1	2.8	1.3	0.2	2.8
Extra No. 3 Can. Yellow	1	24.6	24.6	24.6	3.0	3.0	3.0	4.5	4.5	4.5
No. 3 Can. Yellow	8	24.1	23.0	25.1	1.4	0.5	3.0	2.1	0.1	5.9
All grades	**21**	**23.3**	**19.0**	**25.6**	**1.2**	**0.1**	**3.0**	**1.8**	**0.1**	**5.9**
Saskatchewan										
No. 1 Can. Yellow	32	22.7	18.7	25.6	0.8	0.1	2.8	1.3	0.2	3.5
No. 2 Can. Yellow	61	22.8	20.1	26.9	1.0	–	4.0	1.8	0.3	9.13
Extra No. 3 Can. Yellow	4	22.6	21.5	23.5	4.8	3.0	8.0	5.6	4.0	10.1
No. 3 Can. Yellow	39	23.6	20.9	26.4	1.6	–	8.0	3.1	–	44.8
All grades	**136**	**23.0**	**18.7**	**26.9**	**1.3**	**–**	**8.0**	**2.2**	**–**	**44.8**
Alberta										
No. 1 Can. Yellow	5	22.5	21.1	23.5	1.1	0.1	2.2	1.4	0.1	2.2
No. 2 Can. Yellow	22	22.5	17.7	25.0	1.6	0.1	4.8	2.4	0.1	7.9
Extra No. 3 Can. Yellow	2	23.0	21.2	24.7	4.2	3.4	5.0	4.4	3.5	5.2
No. 3 Can. Yellow	10	23.0	20.8	26.5	1.2	–	2.6	1.6	0.2	4.1
All grades	**39**	**22.6**	**17.7**	**26.5**	**1.6**	**–**	**5.0**	**2.2**	**0.1**	**7.9**
Western Canada										
No. 1 Can. Yellow	38	22.7	18.7	25.6	0.8	0.1	2.8	1.3	0.1	3.5
No. 2 Can. Yellow	94	22.7	17.7	26.9	1.2	–	4.8	1.9	0.1	9.13
Extra No. 3 Can. Yellow	7	23.0	21.2	24.7	4.3	3.0	8.0	5.1	3.5	10.1
No. 3 Can. Yellow	57	23.6	20.8	26.5	1.5	–	8.0	2.7	–	44.8
All grades	**196**	**23.0**	**17.7**	**26.9**	**1.3**	**–**	**8.0**	**2.1**	**–**	**44.8**

[1] N x 6.25; dry matter basis

Table 4 • Quality data for 1999 western Canadian green peas

Grade	Number of samples	Protein content, %			Splits in dockage, %			Dockage, %		
		mean	min.	max.	mean	min.	max.	mean	min.	max.
Manitoba										
No. 1 Can. Green	4	23.7	22.6	24.8	1.1	0.1	3.5	1.5	0.3	3.8
No. 2 Can. Green	3	23.0	22.7	23.4	0.8	0.5	1.4	1.0	0.7	1.6
No. 3 Can. Green	3	23.6	22.2	25.5	0.4	0.2	0.8	0.9	0.4	1.2
All grades	**10**	**23.5**	**22.2**	**25.5**	**0.8**	**0.1**	**3.5**	**1.2**	**0.3**	**3.8**
Saskatchewan										
No. 1 Can. Green	31	23.6	20.7	25.3	1.0	0.1	3.0	2.1	0.4	6.2
No. 2 Can. Green	28	23.2	20.5	26.1	1.0	0.1	5.0	1.8	0.4	9.2
No. 3 Can. Green	19	23.4	21.5	25.9	1.8	–	7.0	3.1	0.1	14.9
All grades	**78**	**23.4**	**20.5**	**26.1**	**1.2**	**–**	**7.0**	**2.2**	**0.1**	**14.9**
Alberta										
No. 1 Can. Green	2	23.5	21.1	25.8	1.5	1.3	1.6	2.0	1.9	2.0
No. 2 Can. Green	6	23.7	22.3	25.1	0.6	0.1	1.3	1.1	0.1	2.1
No. 3 Can. Green	12	23.4	19.8	28.3	1.4	0.2	4.5	1.8	0.5	5.0
All grades	**20**	**23.5**	**19.8**	**28.3**	**1.2**	**0.1**	**4.5**	**1.6**	**0.1**	**5.0**
Western Canada										
No. 1 Can. Green	37	23.6	20.7	25.8	1.0	0.1	3.5	2.0	0.3	6.2
No. 2 Can. Green	37	23.3	20.5	26.1	0.9	0.1	5.0	1.6	0.1	9.2
No. 3 Can. Green	34	23.4	19.8	28.3	1.5	–	7.0	2.4	0.1	14.9
All grades	**108**	**23.4**	**19.8**	**28.3**	**1.1**	**–**	**7.0**	**2.0**	**0.1**	**14.9**

[1] N x 6.25; dry matter basis

Table 5 • Quality of 1999 western Canadian peas by variety[1]

Variety	Number of samples	Protein content, %			Splits in dockage, %			Dockage, %		
		mean	min.	max.	mean	min.	max.	mean	min.	max.
Yellow										
Alfetta	26	22.6	20.3	25.0	1.5	0.2	8.0	2.1	0.3	10.1
Carneval	73	22.5	17.7	26.4	1.6	0.2	8.0	2.9	0.3	44.8
Carrera	10	24.3	23.5	26.1	2.0	0.3	5.0	2.4	0.3	5.4
Delta	9	24.0	22.2	25.6	0.4	–	0.9	0.8	–	1.4
Eiffel	10	22.8	21.0	24.8	0.8	–	2.2	1.1	0.1	2.5
Grande	21	23.8	20.8	26.9	0.9	0.1	3.0	1.5	0.2	4.4
Highlight	9	23.4	20.3	26.1	1.0	–	3.0	1.8	–	4.4
Profi	13	22.6	20.1	25.1	1.1	–	4.2	1.4	0.1	4.2
Green										
Espace	13	21.8	19.8	23.0	0.8	0.1	2.1	1.1	0.1	2.2
Keoma	30	23.4	21.1	26.1	1.3	0	7.0	2.8	0.1	14.9
Majoret	44	23.8	21.1	28.3	1.2	0.1	4.5	1.9	0.3	6.2
Radley	5	23.9	21.4	24.9	0.9	0.2	2.7	1.3	0.7	3.0
Scuba	7	22.6	21.2	23.5	0.7	0.5	1.6	1.1	0.7	1.7

[1] Varieties represented by at least five samples in the survey

Methods

Protein

Protein content is determined by near-infrared (NIR) spectroscopy using an NIRSystems 6500 scanning near-infrared spectrometer. The instrument is calibrated and results are verified by the AOAC Official Method 992.23 – Crude Protein in Cereal Grains and Oilseeds Generic Combustion Method using a LECO FP-428 Nitrogen and Food Protein Determinator. Protein content is reported as percentage, N x 6.25, calculated on a dry matter basis.

Dockage

Dockage is determined according to procedures defined in the Canadian Grain Commission's *Official Grain Grading Guide,* August 1, 1999, Chapter 16, Peas. The procedures are followed with the exception that the samples are not divided with a Boerner-type divider into two representative portions. Dockage is assessed on the gross weight of the uncleaned sample. Results are reported as a percentage.

Splits, in dockage

Split peas, in dockage, are those removed through sieving and as specified in the Composition of dockage in the Canadian Grain Commission's *Official Grain Grading Guide,* August 1, 1999, Chapter 16, Peas. Results are reported as a percentage of splits in the dockage.

Grading

All 1999 harvest survey pea samples were inspected by the staff of the Special Crops unit, Industry Services Headquarters, Canadian Grain Commission as per the Canadian Grain Commission's *Official Grain Grading Guide,* August 1, 1999, Chapter 16, Peas.