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Quality of western Canadian peas

2011

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Introduction

This report presents the quality data for the 2011 harvest survey for western Canadian peas. Samples submitted by western Canadian producers to the Canadian Grain Commission's (CGC) Grain Research Laboratory (GRL) were collected for data analysis.

Growing and harvesting conditions

The prairie provinces experienced excessive rainfall early in the growing season, followed by drier conditions over the summer months. Favorable weather in fall resulted in improved pulse quality and yield.

Saturated soils from heavy rains in 2010 followed by heavier than normal snowfall in eastern and northern areas, and cool weather during April and May delayed planting in 2011. Dry weather in central and northern Alberta and northern Saskatchewan during May allowed fields to be seeded. However, flooding and excessive moisture in the southern prairies, especially in southeastern Saskatchewan and southwestern Manitoba, combined with cooler temperatures, minimized planting opportunities in May and June. Overall, planting progress stopped in mid June with approximately 86 per cent of the crops sown.

Weather during July and August turned hot and dry in the southern regions, and wet in the northern regions. Temperatures in Manitoba and Saskatchewan were above normal, which helped boost crop development. However, temperatures in Alberta were below normal, which slowed crop development.

Warm and dry conditions from late August through September allowed harvest to move ahead in all prairie regions. A severe frost in parts of the prairie provinces in mid September had minimal effect on the crops, as most were mature. Warm, dry conditions at the end of September and into October allowed a rapid completion of the harvest.

Production review

Pea production for 2011 was estimated to be 2.1 million tonnes, which was down 26% from 2010 and 24% from the 10-year average (Table 1). The decrease in production was the result of smaller harvested area in 2011. Saskatchewan accounted for 63% of Canadian pea production, while Alberta and Manitoba accounted for 36% and 1%, respectively.

Table 1 – Production statistics for western Canadian peas¹

	Harvested area		Production		Yield		Mean production ²
Province	2011	2010	2011	2010	2011	2010	2001-2010
	thousand hectares		thousand tonnes		kg/ha		thousand tonnes
Peas-dry							
Manitoba	10	29	20	63	2100	2100	117
Saskatchewan	611	931	1331	1862	2200	2000	2044
Alberta ³	293	362	765	938	2600	2600	607
Western Canada	914	1322	2116	2863	2300	2233	2768

¹ Statistics Canada, *Field Crop Reporting Series*, Vol. 90, No. 8.

² Statistics Canada, *Field Crop Reporting Series*, 2001-2010.

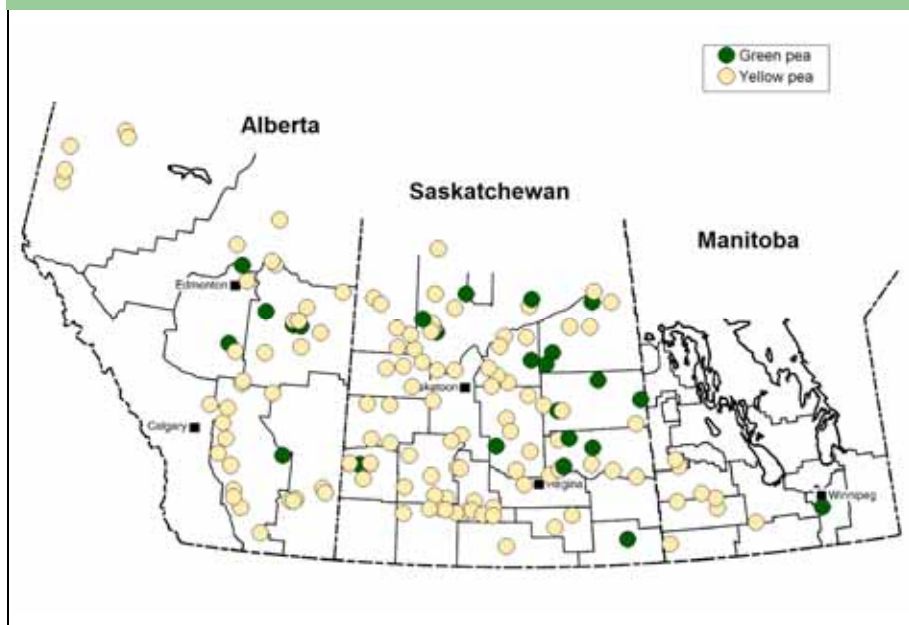
³ Includes the Peace River area of British Columbia.

Western Canadian peas _____ 2011

Harvest survey samples

Samples for the CGC's 2011 harvest survey were collected from producers across western Canada (Fig. 1). A total of 304 samples consisting of 256 yellow pea and 48 green pea samples were received at the CGC for analysis. All samples were graded and tested for protein content. Composite samples were prepared based on class (yellow and green), crop region and grade (No. 1 and No. 2). All composites were tested for protein content, starch content, ash content, 100-seed weight, water absorption, cooking time and firmness of cooked peas. It is important to note that the samples reported by grade do not necessarily represent the actual distribution of grade.

Figure 1 – Map of western Canada showing origin of 2011 harvest survey pea samples



Quality of 2011 western Canadian peas

Protein content ranged from 17.8% to 28.7% for 2011 western Canadian peas, including yellow and green peas (Table 2). The average protein for 2011 western Canadian peas was 22.8%, which was lower than 2010 (23.9%) and the five-year average of 23.8 % (Fig. 2).

Table 3 shows the quality data for 2011 yellow peas. The average protein contents for 2011 yellow peas for both pea, No. 1 Canada yellow and pea, No. 2 Canada yellow were same (22.1% and 22.1%, respectively), and lower than for 2010 yellow peas (22.9% and 23.2%, respectively). The mean starch contents for both pea, No.1 Canada yellow and pea, No. 2 Canada yellow were similar across western Canada in 2011 (49.0% and 48.8%, respectively) and higher than 2010 (46.9% and 46.3%, respectively). The ash content was similar for yellow peas across western Canada in 2011.

Mean 100-seed weights (Table 3) for both 2011 pea, No. 1 Canada yellow (21.6 g) and pea, No. 2 Canada yellow (21.2 g), were similar to those in 2010 (21.9 g and 20.7 g, respectively). However, water absorption values of 2011 yellow peas (0.89 g H₂O/g seeds for No. 1 Canada yellow and 0.90 g H₂O/g seeds for No. 2 Canada yellow) were slightly lower than that for 2010 (0.92 g H₂O/g seeds for No. 1 Canada yellow and 0.95 g H₂O/g seeds for No. 2 Canada yellow).

Peas, No. 1 Canada yellow in 2011 had shorter mean cooking times (Table 3) than in 2010 (15.8 min and 20.6 min, respectively), while peas, No. 2 Canada yellow in 2011 had similar mean cooking times to 2010 (15.0 min and 15.1 min, respectively). Mean firmness value of the cooked seeds was similar for both 2011 and 2010 pea, No. 1 Canada yellow (23.0 N/g cooked seeds and 23.2 N/g cooked seeds, respectively), while 2011 pea, No.2 Canada yellow had higher mean firmness value than 2010 pea, No.2 Canada yellow (22.0 N/g cooked seeds and 21.1 N/g cooked seeds, respectively).

Table 4 shows the quality data for pea, No. 1 Canada green and pea, No. 2 Canada green. The mean protein content for 2011 pea, No. 1 Canada green was slightly lower than 2010 (22.5 % and 22.9%, respectively), while the mean protein content for pea, No. 2 Canada green in 2011 was higher than in 2010 (23.8% and 23.2%, respectively). The mean starch contents for both pea, No. 1 Canada and No. 2 Canada green were higher in 2011 than in 2010. Ash content was similar for both peas, No. 1 Canada and No. 2 Canada green.

Mean 100-seed weights (Table 4) for 2011 pea, No. 1 Canada and No. 2 Canada green (17.6 g and 20.4 g, respectively) were lower than those in 2010 (21.0 g and 21.7 g, respectively). In 2011, mean water absorption for pea, No. 1 Canada green and pea, No. 2 Canada green were similar to 2010. Mean cooking times for 2011 pea, No. 1 Canada green (13.1 min) were slightly shorter than for 2010 (14.9 min), however, for pea, No. 2 Canada green they were longer (14.9 min and 12.1 min, respectively). Mean firmness values of the cooked green peas were lower in 2011 than in 2010.

Table 2 – Mean protein content for 2011 western Canadian peas by grade¹

Grade	Protein content, %			
		2011		2010
	mean	min.	max.	mean
Manitoba				
Peas, No. 1 Canada	22.0	21.2	23.4	23.2
Peas, No. 2 Canada	22.7	21.0	25.0	23.3
Peas, No. 3 Canada	23.2	22.7	24.8	24.3
All grades	22.7	21.0	25.0	23.5
Saskatchewan				
Peas, No. 1 Canada	22.6	18.6	25.5	23.5
Peas, No. 2 Canada	22.5	17.8	25.0	24.0
Peas, No. 3 Canada	23.4	21.0	28.7	24.6
All grades	22.8	17.8	28.7	24.1
Alberta				
Peas, No. 1 Canada	21.5	18.9	23.5	22.6
Peas, No. 2 Canada	22.7	19.4	28.2	23.1
Peas, No. 3 Canada	23.2	18.1	28.3	23.9
All grades	22.6	18.1	28.3	23.4
Western Canada				
Peas, No. 1 Canada	22.4	18.6	25.5	23.3
Peas, No. 2 Canada	22.6	17.8	28.2	23.7
Peas, No. 3 Canada	23.3	18.1	28.7	24.3
All grades	22.8	17.8	28.7	23.9

¹ Protein content (N x 6.25) is determined by near infrared measurement calibrated against the Combustion Nitrogen Analysis reference method.

Figure 2 – Mean protein content of western Canadian peas

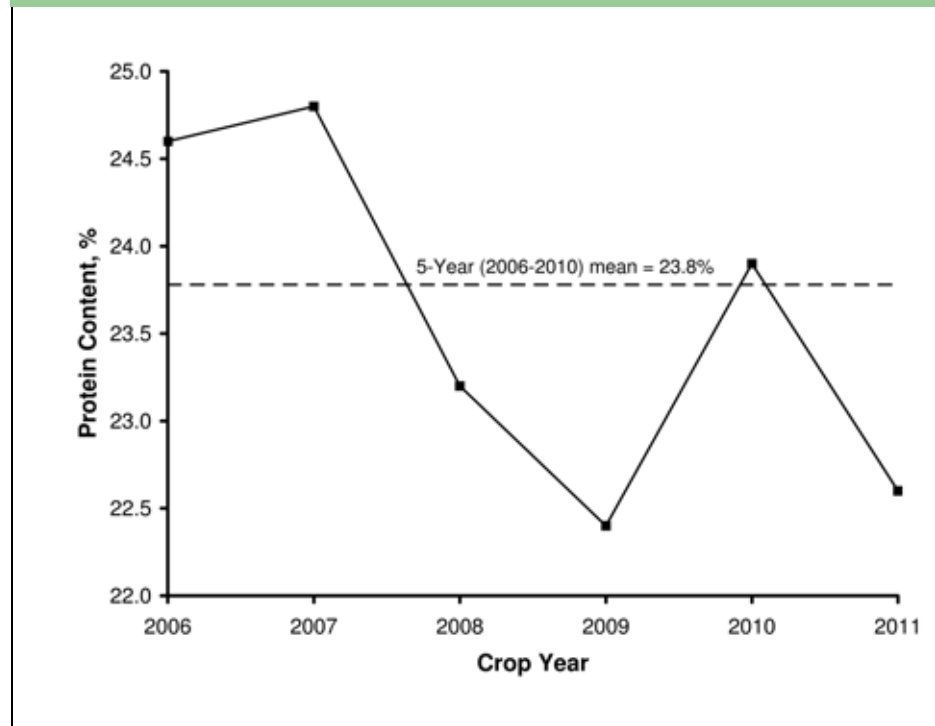


Table 3 – Quality data for 2011 western Canadian yellow peas

Quality parameter	Peas, No. 1 Canada Yellow		Peas, No. 2 Canada Yellow	
	2011	2010	2011	2010
Protein, % dry basis				
Number of composites	21	22	19	28
Mean	22.1	22.9	22.1	23.2
Standard deviation	0.8	1.0	0.9	0.8
Minimum	20.6	21.0	20.2	21.0
Maximum	23.5	25.1	23.7	24.2
Starch, % dry basis				
Number of composites	21	22	19	28
Mean	49.0	46.9	48.8	46.3
Standard deviation	0.7	1.4	0.9	1.4
Minimum	47.5	44.0	46.8	44.3
Maximum	50.1	48.7	50.1	48.9
Ash, % dry basis				
Number of composites	21	- ¹	19	- ¹
Mean	2.7	-	2.7	-
Standard deviation	0.1	-	0.1	-
Minimum	2.5	-	2.5	-
Maximum	3.1	-	3.0	-
100-seed weight, g/100 seeds				
Number of composites	21	22	19	28
Mean	21.6	21.8	21.2	20.7
Standard deviation	1.4	1.8	1.8	1.6
Minimum	19.1	18.5	17.1	17.2
Maximum	25.8	24.8	25.9	24.5
Water absorption, g H₂O/g seeds				
Number of composites	21	22	19	28
Mean	0.89	0.92	0.90	0.95
Standard deviation	0.11	0.14	0.09	0.08
Minimum	0.62	0.51	0.68	0.80
Maximum	1.04	1.05	1.01	1.13
Cooking time, min				
Number of composites	21	22	19	28
Mean	15.8	20.6	15.0	15.1
Standard deviation	7.6	10.9	7.2	7.5
Minimum	7.2	7.0	8.5	7.6
Maximum	37.5	40.0	38.8	40.0
Firmness, N/g cooked seeds				
Number of composites	21	22	19	28
Mean	23.0	23.2	22	21.1
Standard deviation	1.6	3.2	1.5	2.0
Minimum	19.4	19.4	19.6	17.0
Maximum	26.3	34.4	25.8	24.9

¹ No data available.

Table 4 – Quality data for 2011 western Canadian green peas

Quality parameter	Peas, No. 1 Canada Green		Peas, No. 2 Canada Green	
	2011	2010	2011	2010
Protein, % dry basis				
Number of composites	9	14	7	10
Mean	22.5	22.9	23.8	23.2
Standard deviation	1.7	1.4	3.3	1.6
Minimum	19.3	20.8	20.0	20.2
Maximum	24.4	24.9	29.9	25.1
Starch, % dry basis				
Number of composites	9	14	7	10
Mean	47.7	45.4	47.0	44.4
Standard deviation	1.7	1.4	2.1	1.1
Minimum	44.5	43.2	42.9	42.7
Maximum	49.7	47.3	49.6	46.0
Ash, % dry basis				
Number of composites	9	¹	7	¹
Mean	2.8	-	3.0	-
Standard deviation	0.2	-	0.4	-
Minimum	2.6	-	2.6	-
Maximum	3.2	-	3.6	-
100-seed weight, g/100 seeds				
Number of composites	9	14	7	10
Mean	17.6	21.0	20.4	21.7
Standard deviation	3.0	3.6	2.8	3.8
Minimum	14.4	14.8	14.7	17.2
Maximum	23.0	27.8	23.6	29.1
Water absorption, g H₂O/g seeds				
Number of composites	9	14	7	10
Mean	0.87	0.85	0.92	0.95
Standard deviation	0.19	0.15	0.23	0.15
Minimum	0.61	0.52	0.59	0.71
Maximum	1.14	1.01	1.25	1.12
Cooking time, min				
Number of composites	9	14	7	10
Mean	13.1	16.0	14.9	12.1
Standard deviation	7.1	9.8	11.5	4.1
Minimum	6.0	6.2	6.6	7.2
Maximum	26.5	40.0	39.4	20.2
Firmness, N/g cooked seeds				
Number of composites	9	14	7	10
Mean	20.3	23.4	20.8	22.3
Standard deviation	3.6	3.4	3.1	2.5
Minimum	11.3	20.0	17.5	18.1
Maximum	23.0	34.0	25.4	26.8

¹ No data available.