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Quality of western Canadian peas

2012

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Introduction

This report presents the quality data for the 2012 harvest survey for western Canadian peas. Western Canadian producers submitted samples by to the Canadian Grain Commission's (CGC) Grain Research Laboratory (GRL) for data analysis.

Growing and harvesting conditions

The Prairie provinces experienced sufficient rainfall early in the growing season, followed by hot and dry conditions over the summer months. Favorable weather in fall resulted in good quality and yield.

Adequate soil moisture and favourable weather conditions aided seeding in the Prairie provinces. Some frost affected Manitoba and Alberta in late May, but seeding was still 95% complete by early June. By the end of May, pulse crops were observed to be at normal stages of development and in good to excellent condition.

Hot and dry weather in July and August advanced crops quickly, except in northern Alberta where the cool, wet weather caused crop development delays. Some heat stress on the crops was noted, but approximately 90% of crops were still in good to excellent condition in early August.

Harvest began in early August for peas across all three provinces. Rain in Alberta, rain and hail in Saskatchewan, and frost in some parts of Manitoba, slowed harvest in September. However, because of the early start, 96% of peas were harvested by the beginning of October, well ahead of schedule. Some areas had slightly lower yields than expected because of the hot conditions in July and August.

Production review

Pea production for 2012 was estimated to be 2.8 million tonnes, which was up 33% from 2011 and similar to the 10-year average (Table 1). The increase in production was the result of a 40% increase in harvested area from 2011. Saskatchewan accounted for 61% of Canadian pea production, while Alberta and Manitoba accounted for 37% and 2%, respectively.

Table 1 – Production statistics for western Canadian peas¹

Province	Harvested area		Production		Yield		Mean production ²
	2012	2011	2012	2011	2012	2011	2002-2011
	thousand hectares		thousand tonnes		kg/ha		thousand tonnes
Peas-dry							
Manitoba	22	10	59	20	2700	2100	102
Saskatchewan	911	611	1734	1331	1900	2200	2030
Alberta ³	378	293	1037	765	2700	2600	629
Western Canada	1311	914	2830	2116	2200	2300	2760

¹ Statistics Canada, *Field Crop Reporting Series, Vol. 91, No. 8.*

² Statistics Canada, *Field Crop Reporting Series, 2002-2011.*

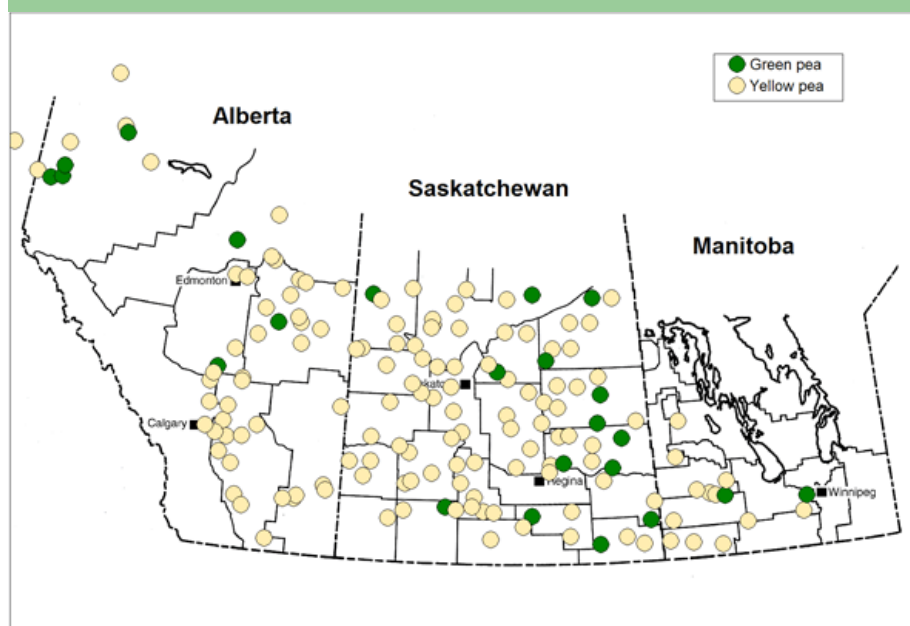
³ Includes the Peace River area of British Columbia.

Western Canadian peas _____ 2012

Harvest survey samples

Samples for the CGC's 2012 harvest survey were collected from producers across western Canada (Fig. 1). A total of 399 samples consisting of 343 yellow pea and 56 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 chemical composition (protein, starch and ash content), functional properties of ground samples (water hydration capacity and emulsion capacity), physical and cooking characteristics (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 2012 harvest survey pea samples



Quality of 2012 western Canadian peas

Protein content ranged from 18.4% to 29.4% for 2012 western Canadian peas, including yellow and green peas (Table 2). The average protein for 2012 western Canadian peas was 23.5%, which was higher than 2011 (22.8%) and similar to the five-year average of 23.4 % (Fig. 2).

Table 3 shows the quality data for 2012 yellow peas. The average protein content for 2012 yellow peas in western Canada for both Peas, No. 1 Canada Yellow and Peas, No. 2 Canada Yellow were similar (22.7% and 23.0%, respectively), and higher than that for 2011 yellow peas (22.1% and 22.1%, respectively). The mean starch contents for both Peas, No.1 Canada Yellow and Peas, No. 2 Canada Yellow were similar across western Canada in 2012 (47.3% and 47.3%, respectively), but lower than those in 2011 (49.0% and 48.8%, respectively). The ash content was similar for yellow peas across western Canada in 2012 and 2011.

Both peas, No. 1 and No. 2 Canada yellow had mean water hydration capacity values of 0.85 g H₂O/g . Emulsion capacity was similar for yellow peas No. 1 (289.6 mL oil/g sample) and No. 2 Canada (289.3 mL oil/g sample).

Mean 100-seed weight (Table 3) for both 2012 peas, No. 1 Canada Yellow (20.0 g) and peas, No. 2 Canada yellow (19.4 g), were lower than those in 2011 (21.6 g and 21.2 g, respectively). Water absorption of 2012 yellow peas (0.93 g H₂O/g seeds for No. 1 Canada and 0.89 g H₂O/g seeds for No. 2 Canada) was similar to those for 2011 (0.94 g H₂O/g seeds for No. 1 Canada and 0.90 g H₂O/g seeds for No. 2 Canada).

Peas, No. 1 and No. 2 Canada Yellow had shorter cooking times (Table 3) in 2012 (13.0 min and 11.0 min, respectively) than in 2011 (15.8 min and 15.0 min, respectively). Mean firmness value of the cooked seeds was similar for both 2012 and 2011 Peas, No. 1 Canada Yellow (23.1 N/g and 23.0 N/g, respectively), while 2012 Peas, No.2 Canada Yellow had higher mean firmness value than 2011 Peas, No.2 Canada Yellow (22.9 n/g and 22.0 N/g, respectively).

Table 4 shows the quality data for Peas, No. 1 Canada green and Peas, No. 2 Canada Green. The mean protein content for 2012 Peas, No. 1 Canada Green was higher than 2011 (23.0 % and 22.5%, respectively), while the mean protein content for Peas, No. 2 Canada Green in 2011 was similar (23.5% and 23.8%, respectively). The mean starch contents for Peas, No. 1 Canada and No. 2 Canada Green were lower in 2012 than in 2011. The ash content was similar for green peas across western Canada in 2012 and 2011.

Mean water hydration capacity (Table 4) of the 2012 green pea flour was similar for No. 1 Canada (0.88 g H₂O/g sample) and No. 2 Canada (0.86 g H₂O/g sample) samples. Emulsion capacity was similar for Peas No. 1 Canada, Green (289.7 mL oil/g sample) was greater than No. 2 Canada, Green (286.3 mL oil/g sample).

Seed weights (Table 4) for 2012 Peas, No. 1 Canada and No. 2 Canada Green (18.4 g and 20.6 g, respectively) were higher than those in 2011 (17.6 g and 20.4

g, respectively). In 2012, mean water absorption for Peas, No. 1 Canada green and Peas, No. 2 Canada Green were higher than 2011. Mean cooking times for 2012 peas, No. 1 and No. 2 Canada (11.1 min and 13.0 min, respectively) were shorter than for 2011 (14.9 min and 14.9 min, respectively). Mean firmness values of the cooked green peas were higher in 2012 than those in 2011.

Table 2 – Mean protein content for 2012 western Canadian peas (yellow and green combined) by grade¹

Grade	Protein content, %			
		2012		2011
	mean	min.	max.	mean
Manitoba				
Peas, No. 1 Canada	23.9	21.4	27.0	22.0
Peas, No. 2 Canada	23.7	22.5	25.3	22.7
Peas, No. 3 Canada	24.1	23.8	24.5	23.2
All grades	23.8	21.4	27.0	22.7
Saskatchewan				
Peas, No. 1 Canada	23.4	19.5	27.3	22.6
Peas, No. 2 Canada	23.7	19.7	28.2	22.5
Peas, No. 3 Canada	24.2	20.7	29.4	23.4
All grades	23.8	19.5	29.4	22.8
Alberta				
Peas, No. 1 Canada	22.6	20.6	24.5	21.5
Peas, No. 2 Canada	22.7	18.4	25.9	22.7
Peas, No. 3 Canada	23.8	21.1	27.6	23.2
All grades	23.1	18.4	28.1	22.6
Western Canada				
Peas, No. 1 Canada	23.1	19.5	27.3	22.4
Peas, No. 2 Canada	23.3	18.4	28.2	22.6
Peas, No. 3 Canada	24.1	20.7	29.4	23.3
All grades	23.5	18.4	29.4	22.8

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

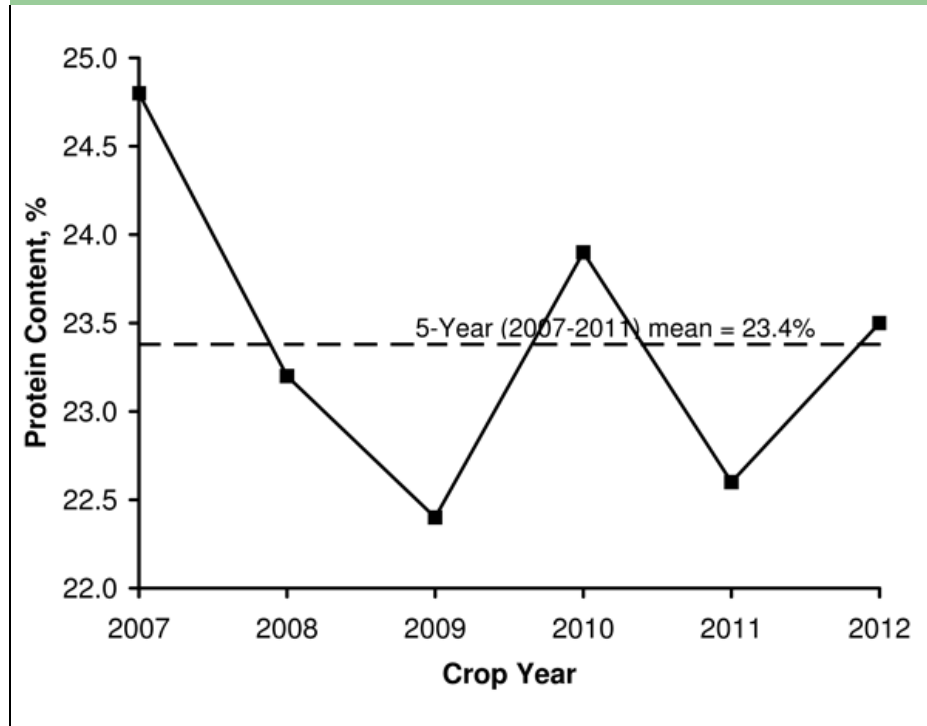


Table 3 – Quality data for 2012 western Canadian yellow pea composites by grade

Quality parameter	Peas, No. 1 Canada Yellow		Peas, No. 2 Canada Yellow	
	2012	2011	2012	2011
Chemical composition				
Protein content, % dry basis	22.7	22.1	23.0	22.1
Starch content, % dry basis	47.3	49.0	47.3	48.8
Ash content, % dry basis	2.6	2.7	2.7	2.7
Functional property				
Water hydration capacity, g H ₂ O/g sample	0.85	- ¹	0.85	- ¹
Emulsion capacity, mL oil/g sample	289.6	-	289.3	-
Physical characteristic				
100-seed weight, g/100 seeds	20.0	21.6	19.4	21.2
Water absorption, g H ₂ O/g seeds	0.93	0.89	0.94	0.90
Cooking characteristic				
Cooking time, min	13.0	15.8	11.0	15.0
Firmness, N/g cooked seeds	23.1	23.0	22.9	22.0

¹ No data available.

Table 4 – Quality data for 2012 western Canadian green pea composites by grade

Quality parameter	Peas, No. 1 Canada Green		Peas, No. 2 Canada Green	
	2012	2011	2012	2011
Chemical composition				
Protein content, % dry basis	23.0	22.5	23.5	23.8
Starch content, % dry basis	46.0	47.7	45.7	47.0
Ash content, % dry basis	2.9	2.8	2.8	3.0
Functional property				
Water hydration capacity, g H ₂ O/g sample	0.88	- ¹	0.86	- ¹
Emulsion capacity, mL oil/g sample	289.7	-	286.3	-
Physical characteristic				
100-seed weight, g/100 seeds	18.4	17.6	20.6	20.4
Water absorption, g H ₂ O/g seeds	0.99	0.87	0.94	0.92
Cooking characteristic				
Cooking time, min	11.1	13.1	13.0	14.9
Firmness, N/g cooked seeds	22.1	20.3	22.6	20.8

¹ No data available.