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Quality of western Canadian peas

2009

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Quality

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Introduction

This report presents the quality data for the 2009 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 a cool spring to start the 2009 growing season. Southern prairies experienced poor soil moisture in early spring, brought on by dry conditions since 2006 and below normal winter precipitation. Cool temperatures in spring delayed snowmelt and overall planting and germination. Moderate rainfall in early June helped improve crop germination.

Frost was reported in many regions into early June. Cool temperatures and dry conditions continued through to July in many of the prairie regions, except in north and central Alberta, which were hot and dry. The cool temperatures delayed crop development, but reduced the stress on the crops and helped maintain the crop conditions until the rains in mid July. The hot and dry conditions experienced in north and central Alberta led to some crop deterioration. Warmer temperatures were seen in the southern prairies in late August and September that helped boost crop development.

Mild temperatures in late August and September and later than normal fall frost helped late maturing crops to mature without significant damage, and the dry conditions helped preserve the crop quality. The warmer temperatures also enabled most crops to be harvested by mid October. Although warm dry conditions in late August and most of September advanced crop maturity, the prevailing cooler than normal growing period and dry conditions led to a later than normal harvest.

Production review

Pea production for 2009 was estimated to be 3.4 million tonnes, which was down from 2008, but still 27% higher than the 10-year average of 2.7 million tonnes (Table 1). The decrease in production in 2009 was the result of a smaller harvested area and a similar yield to 2008. Saskatchewan accounted for 77% of Canadian pea production, while Alberta and Manitoba accounted for 21% and 2%, respectively.

Table 1 – Production statistics for western Canadian peas ¹							
	Harves	ted area	area Production		Yield		Mean production ²
Province	2009	2008	2009	2008	2009	2008	1999-2008
	thousand	d hectares	thousar	nd tonnes	kg/ha		thousand tonnes
Peas-dry							
Manitoba	34	44	100	108	2910	2420	126
Saskatchewan	1149	1255	2613	2732	2270	2180	1966
Alberta ³	304	283	667	731	2200	2580	563
Western Canada	1487	1582	3379	3571	2300	2300	2656

Statistics Canada, Field Crop Reporting Series, Vol. 88, No. 8.
Statistics Canada, Field Crop Reporting Series, 1999-2008.
Includes the Peace River area of British Columbia.

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Harvest survey samples

Samples for the CGC's 2009 harvest survey were collected from producers across western Canada (Fig. 1). A total of 700 samples consisting of 556 yellow pea and 144 green pea samples were received at the CGC for analysis. All samples were graded and tested for protein content. Composites were prepared based on class (yellow and green), crop region and grade (No. 1 and No. 2). A total of 94 composite samples (59 yellow and 35 green pea composites) were obtained. All composites were tested for starch 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.



Quality of 2009 western Canadian peas

Protein content ranged from 16.4% to 27.5% for 2009 western Canadian peas, including yellow and green peas (Table 2). The average protein for 2009 western Canadian peas was 22.4%, which was lower than 2008 and the five-year average of 23.8% (Fig. 2). Grade level and province did not show much variation in protein content.

Table 3 shows the quality data for 2009 yellow peas. The average protein content for 2009 yellow peas in western Canada for both peas, No. 1 Canada yellow and peas, No. 2 Canada yellow were similar (22.2% and 22.3%, respectively), and also similar to that for 2008 yellow peas (22.6% and 23.1%, respectively). Starch contents were higher across western Canada in 2009 (42.9-48.6%) than in 2008 (42.9-47.5%).

Both 2009 peas, No. 1 Canada yellow (23.0 g) and peas, No. 2 Canada yellow (22.0 g), were heavier than those in 2008 (22.5 g and 21.7 g, respectively). However, water absorption of 2009 yellow peas (0.90 g H_2O/g seeds for No. 1 Canada and 0.87 g H_2O/g seeds for No. 2 Canada) was lower than that for 2008 (0.92 g H_2O/g seeds for No. 1 Canada and 0.94 g H_2O/g seeds for No. 2 Canada).

The cooking time for peas, No. 1 Canada yellow and peas No. 2 Canada yellow were similar (29.0 min and 29.2 min, respectively), and both were higher than 2008 (20.5 min and 18.4 min, respectively). The firmness of the seeds cooked to their cooking time was also higher in 2009 (23.4 N/g cooked seeds and 23.6 N/g cooked seeds, respectively) than in 2008 (22.9 N/g cooked seeds and 21.3 N/g cooked seeds, respectively).

Table 4 shows the quality data for peas, No. 1 Canada green and peas, No. 2 Canada green. The mean protein content for 2009 No. 1 Canada and No. 2 Canada green peas in western Canada were similar (22.2% and 22.3%, respectively). As with the green peas, starch contents were higher in 2009 (44.4%-49.0%) than in 2008 (43.3%-46.5).

Seed weights for 2009 and 2008 green peas were similar, but their ability to absorb water was lower in 2009 (0.52 – 1.05 g H₂O/g seeds) than in 2008 (0.70 – 1.07 g H₂O/g seeds). Cooking times for 2009 peas, No. 1 Canada green (24.8 min) and peas, No. 2 Canada green (28.5 min) were longer than cooking times for 2008 (16.7 min and 15.6 min, respectively). Cooked green peas were on average more firm than those from 2008 for both peas, No. 1 Canada green (23.6 N/g cooked seeds and 22.0 N/g cooked seeds, respectively) and peas, No. 2 Canada green (23.9 N/g cooked seeds and 22.8 N/g cooked seeds, respectively).

	Protein content, %				
Grade		2009		2008	
	mean	min.	max.	mean	
Manitoba					
Peas, No. 1 Canada	23.1	22.4	24.2	24.4	
Peas, No. 2 Canada	22.0	19.1	25.7	23.1	
Peas, No. 3 Canada	21.2	20.3	22.0	22.9	
All grades	22.4	19.1	27.1	23.3	
Saskatchewan					
Peas, No. 1 Canada	22.5	17.9	25.7	23.1	
Peas, No. 2 Canada	22.2	18.1	27.5	23.4	
Peas, No. 3 Canada	22.7	20.1	26.5	24.0	
All grades	22.4	17.9	27.5	23.3	
Alberta					
Peas, No. 1 Canada	22.0	16.4	24.9	22.6	
Peas, No. 2 Canada	22.9	19.5	25.5	22.8	
Peas, No. 3 Canada	22.8	18.1	24.9	23.7	
All grades	22.6	16.4	25.5	22.9	
Western Canada					
Peas, No. 1 Canada	22.4	16.4	25.7	23.0	
Peas, No. 2 Canada	22.3	18.1	27.5	23.3	
Peas, No. 3 Canada	22.7	18.1	26.5	23.9	
All grades	22.4	16.4	27.5	23.2	

Table 2 - Mean protein content for 2009 western Canadian peasby grade1

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



		,			
	Peas, No. 1 C	anada Yellow	Peas, No. 2 Canada Yellow		
Quality parameter	2009	2008	2009	2008	
Protein, % drv basis					
Number of samples	30	29	29	33	
Mean	22.2	22.7	22.3	23.0	
Standard deviation	0.9	1.1	0.9	1.1	
Minimum	20.0	18.7	20.0	21.3	
Maximum	23.8	24.6	23.8	25.4	
Starch, % dry basis					
Number of samples	30	29	29	33	
Mean	46.7	45.5	46.4	45.0	
Standard deviation	0.9	0.9	1.1	0.9	
Minimum	44.6	43.9	42.9	42.9	
Maximum	48.3	47.5	48.6	47.0	
100-seed weight, g/100 seeds					
Number of samples	30	29	29	33	
Mean	23.0	22.5	22.0	21.7	
Standard deviation	1.6	1.5	1.6	1.9	
Minimum	21.1	19.5	19.0	18.3	
Maximum	28.8	25.8	25.3	26.7	
Water absorption, g H ₂ O/g seeds					
Number of samples	30	29	29	33	
Mean	0.90	0.92	0.87	0.94	
Standard deviation	0.09	0.08	0.14	0.07	
Minimum	0.66	0.72	0.51	0.76	
Maximum	1.04	1.06	1.03	1.08	
Cooking time, min					
Number of samples	30	29	29	33	
Mean	29.0	20.5	29.2	18.4	
Standard deviation	9.4	8.6	8.6	8.0	
Minimum	10.2	9.3	9.5	7.8	
Maximum	40.0	39.8	40.0	40.0	
Firmness, N/g cooked seeds					
Number of samples	30	29	29.0	33	
Mean	23.4	22.9	23.6	21.3	
Standard deviation	3.1	2.8	3.5	2.8	
Minimum	16.7	17.5	17.1	16.5	

Table 3 – Quality data for 2009 western Canadian yellow peas

Maximum

30.7

27.5

31.5

30.2

Table 4 – Quality data for 2009 western Canadian green peas

	Peas, No. 1 Canada Green		Peas, No. 2 Canada Green	
Quality parameter	2009	2008	2009	2008
Protein, % dry basis				
Number of samples	18	17	17	15
Mean	22.2	23.3	22.3	22.7
Standard deviation	1.5	1.0	1.5	0.8
Minimum	19.6	21.6	19.0	21.1
Maximum	24.6	24.9	25.1	23.7
Starch, % dry basis				
Number of samples	18	17	17	15
Mean	46.8	44.7	46.7	44.8
Standard deviation	1.1	0.6	1.2	0.9
Minimum	44.4	43.4	44.7	43.3
Maximum	48.1	45.6	49.0	46.5
100-seed weight, g/100 seeds				
Number of samples	18	17	17	15
Mean	23.5	22.7	22.4	23.1
Standard deviation	2.8	2.9	3.3	3.3
Minimum	19.1	17.7	16.6	16.6
Maximum	28.7	28.3	27.8	28.9
Water absorption, g H ₂ O/g seeds				
Number of samples	18	17	17	15
Mean	0.86	0.93	0.89	0.90
Standard deviation	0.13	0.09	0.13	0.11
Minimum	0.52	0.70	0.64	0.74
Maximum	1.03	1.06	1.05	1.07
Cooking time, min				
Number of samples	18	17	17	15
Mean	24.8	16.7	28.5	15.6
Standard deviation	10.6	9.9	11.5	8.4
Minimum	9.4	8.6	9.9	8.1
Maximum	40.0	40.0	40.0	35.0
Firmness, N/g cooked seeds				
Number of samples	18	17	17	15
Mean	23.6	22.0	23.9	22.8
Standard deviation	3.9	2.3	5.2	2.6
Minimum	18.7	16.2	16.0	19.8
Maximum	32.1	27.2	38.1	30.2