



Canadian Grain Commission
Commission canadienne
des grains

ISSN 1920-9053



Quality of western Canadian peas

2010

Ning Wang

Program Manager, Pulse Research

Contact: Ning Wang

Program Manager, Pulse Research

Tel : 204 983-2154

Email: ning.wang@grainscanada.gc.ca

Fax : 204-983-0724

Grain Research Laboratory

Canadian Grain Commission

1404-303 Main Street

Winnipeg MB R3C 3G8

www.grainscanada.gc.ca

Canada 

Table of contents

Introduction	3
Growing and harvesting conditions.....	3
Production review	3
Western Canadian peas 2010.....	5
Harvest survey samples	5
Quality of 2010 western Canadian peas	6

Tables

Table 1 – Production statistics for western Canadian peas.....	4
Table 2 – Mean protein content for 2010 western Canadian peas by grade	7
Table 3 – Quality data for 2010 western Canadian yellow peas.....	9
Table 4 – Quality data for 2010 western Canadian green peas	10

Figures

Figure 1 – Map of western Canada showing origin of 2010 harvest survey pea samples.....	5
Figure 2 – Mean protein content of western Canadian peas	8

Introduction

This report presents the quality data for the 2010 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 good start to the 2010 growing season. However, cooler temperatures and excessive moisture present throughout the growing season delayed crop development and downgraded crop quality.

Above normal temperatures in the southern and western regions allowed an early start to planting. Late season rain and snowstorms helped replenish moisture in central and northern Alberta and in west central Saskatchewan. A series of storms in Saskatchewan and Manitoba during late May and early June delayed planting and caused flooding in previously planted fields. Overall planting progress stopped with approximately 80 per cent of the crops sown.

Cool, wet conditions persisted through July and August, especially in the southwestern Prairies. This pushed crop development three to four weeks behind normal, but reduced the stress on the crops. The Peace River region of Alberta and British Columbia experienced hot and dry conditions for most of the growing season.

Cool and wet conditions continued into September, which caused further crop development delays and quality degradation. A severe frost in Alberta and western Saskatchewan caused further damage to crops. Warm and dry conditions at the end of September and into October allowed a rapid completion of the harvest.

Production review

Pea production for 2010 was estimated to be 2.9 million tonnes, which was down from 2009, but still higher than the 10-year average of 2.8 million tonnes (Table 1). The decrease in production in 2010 was the result of a smaller harvested area and yield as compared to 2009. Saskatchewan accounted for 71% of Canadian pea production, while Alberta and Manitoba accounted for 27% and 2%, respectively.

Table 1 – Production statistics for western Canadian peas¹

Province	Harvested area		Production		Yield		Mean production ²
	2010	2009	2010	2009	2010	2009	2000-2009
	thousand hectares		thousand tonnes		kg/ha		thousand tonnes
Peas-dry							
Manitoba	29	34	63	100	2100	2910	127
Saskatchewan	931	1149	1862	2613	2000	2270	2065
Alberta ³	362	304	938	667	2600	2200	576
Western Canada	1322	1487	2863	3379	2233	2300	2768

¹ Statistics Canada, *Field Crop Reporting Series, Vol. 89, No. 8.*

² Statistics Canada, *Field Crop Reporting Series, 2000-2009.*

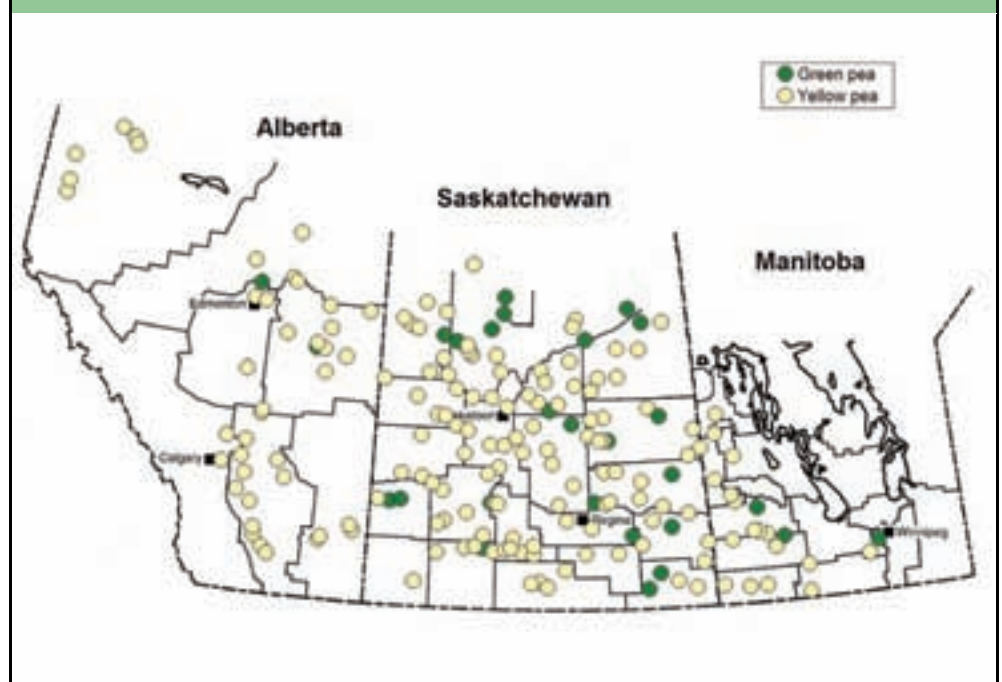
³ Includes the Peace River area of British Columbia.

Western Canadian peas _____ 2010

Harvest survey samples

Samples for the CGC's 2010 harvest survey were collected from producers across western Canada (Fig. 1). A total of 502 samples consisting of 416 yellow pea and 88 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) and 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.

Figure 1 – Map of western Canada showing origin of 2010 harvest survey pea samples



Quality of 2010 western Canadian peas

Protein content ranged from 18.8% to 30.1% for 2010 western Canadian peas, including yellow and green peas (Table 2). The average protein for 2010 western Canadian peas was 23.9%, which was higher than 2009, but similar to the five-year average of 23.8 % (Fig. 2).

Table 3 shows the quality data for 2010 yellow peas. The average protein content for 2010 yellow peas in western Canada for both peas, No. 1 Canada yellow and peas, No. 2 Canada yellow were similar (22.9% and 23.2% respectively), and slightly higher than for 2009 yellow peas (22.2% and 22.3% respectively). The mean starch contents for both peas, No.1 Canada yellow and peas, No. 2 Canada yellow were similar across western Canada in 2010 and in 2009.

Mean 100-seed weight (Table 3) for both 2010 peas, No. 1 Canada yellow (21.8 g) and peas, No. 2 Canada yellow (20.7 g), were lighter than those in 2009 (23.0 g and 22.0 g, respectively). However, water absorption of 2010 yellow peas (0.92 g H₂O/g seeds for No. 1 Canada and 0.95 g H₂O/g seeds for No. 2 Canada) was higher than that for 2009 (0.90 g H₂O/g seeds for No. 1 Canada and 0.87 g H₂O/g seeds for No. 2 Canada).

Peas, No. 1 Canada yellow in 2010 had longer cooking times (Table 3) than peas, No. 2 Canada yellow (20.6 min and 15.1 min respectively), and both were shorter than 2009 (29.0 min and 29.2 min respectively). Mean firmness value of the cooked seeds was similar for both 2010 and 2009 peas, No. 1 Canada yellow (23.2 N/g and 23.4 N/g, respectively), while 2010 peas, No.2 Canada yellow had lower mean firmness value than 2009 peas, No.2 Canada yellow.

Table 4 shows the quality data for peas, No. 1 Canada green and peas, No. 2 Canada green. The mean protein content for 2010 peas, No. 1 Canada and No. 2 Canada green in western Canada were similar (22.9% and 23.2% respectively). The mean starch contents for both peas, No. 1 Canada and No. 2 Canada green were lower in 2010 than in 2009.

Seed weights (Table 4) for 2010 peas, No. 1 Canada and No. 2 Canada green (21.0 g and 21.7 g, respectively) were lower than those in 2009 (23.5 g and 22.4 g, respectively). Mean water absorption for peas, No. 1 Canada green were similar for 2010 (0.85 g H₂O/g seeds) and 2009 (0.86 g H₂O/g seeds), however, peas, 2010 No. 2 Canada green absorbed more water than 2009 (0.95 g H₂O/g seeds and 0.89 g H₂O/g seeds, respectively). Mean cooking times for 2010 peas, No. 1 Canada (16.0 min) and No. 2 Canada (12.1 min) green were shorter than for 2009 (24.8 min and 28.5 min, respectively), but the mean firmness values of the cooked green pea were similar for 2010 and 2009.

Table 2 – Mean protein content for 2010 western Canadian peas by grade¹

Grade	Protein content, %			
		2010		2009
	mean	min.	max.	mean
Manitoba				
Peas, No. 1 Canada	23.2	22.4	25.0	23.1
Peas, No. 2 Canada	23.3	19.4	26.8	22.0
Peas, No. 3 Canada	24.3	23.9	25.2	21.2
All grades	23.5	19.4	26.8	22.4
Saskatchewan				
Peas, No. 1 Canada	23.5	21.0	27.3	22.5
Peas, No. 2 Canada	24.0	21.2	29.2	22.2
Peas, No. 3 Canada	24.6	21.8	29.0	22.7
All grades	24.1	20.2	30.1	22.4
Alberta				
Peas, No. 1 Canada	22.6	18.8	26.0	22.0
Peas, No. 2 Canada	23.1	18.8	26.4	22.9
Peas, No. 3 Canada	23.9	20.4	27.2	22.8
All grades	23.4	18.8	28.6	22.6
Western Canada				
Peas, No. 1 Canada	23.3	18.8	27.3	22.4
Peas, No. 2 Canada	23.7	20.4	29.2	22.3
Peas, No. 3 Canada	24.3	20.2	29.0	22.7
All grades	23.9	18.8	30.1	22.4

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

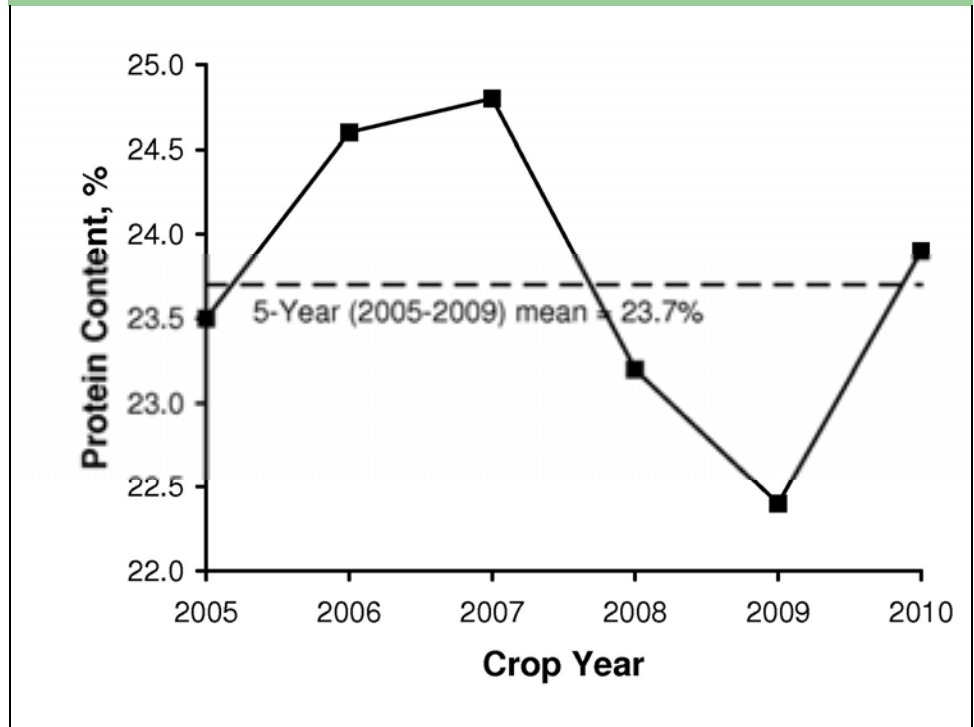


Table 3 – Quality data for 2010 western Canadian yellow peas

Quality parameter	Peas, No. 1 Canada Yellow		Peas, No. 2 Canada Yellow	
	2010	2009	2010	2009
Protein, % dry basis				
Number of samples	22	30	28	29
Mean	22.9	22.2	23.2	22.3
Standard deviation	1.0	0.9	0.8	0.9
Minimum	21.0	20.0	21.0	20.0
Maximum	25.1	23.8	24.2	23.8
Starch, % dry basis				
Number of samples	22	30	28	29
Mean	46.9	46.7	46.3	46.4
Standard deviation	1.4	0.9	1.4	1.1
Minimum	44.0	44.6	44.3	42.9
Maximum	48.7	48.3	48.9	48.6
100-seed weight, g/100 seeds				
Number of samples	22	30	28	29
Mean	21.8	23.0	20.7	22.0
Standard deviation	1.8	1.6	1.6	1.6
Minimum	18.5	21.1	17.2	19.0
Maximum	24.8	28.8	24.5	25.3
Water absorption, g H₂O/g seeds				
Number of samples	22	30	28	29
Mean	0.92	0.90	0.95	0.87
Standard deviation	0.14	0.09	0.08	0.14
Minimum	0.51	0.66	0.80	0.51
Maximum	1.05	1.04	1.13	1.03
Cooking time, min				
Number of samples	22	30	28	29
Mean	20.6	29.0	15.1	29.2
Standard deviation	10.9	9.4	7.5	8.6
Minimum	7.0	10.2	7.6	9.5
Maximum	40.0	40.0	40.0	40.0
Firmness, N/g cooked seeds				
Number of samples	22	30	28	29
Mean	23.2	23.4	21.1	23.6
Standard deviation	3.2	3.1	2.0	3.5
Minimum	19.4	16.7	17.0	17.1
Maximum	34.4	31.5	24.9	30.7

Table 4 – Quality data for 2010 western Canadian green peas

Quality parameter	Peas, No. 1 Canada Green		Peas, No. 2 Canada Green	
	2010	2009	2010	2009
Protein, % dry basis				
Number of samples	14	18	10	17
Mean	22.9	22.2	23.2	22.3
Standard deviation	1.4	1.5	1.6	1.5
Minimum	20.8	19.6	20.2	19.0
Maximum	24.9	24.6	25.1	25.1
Starch, % dry basis				
Number of samples	14	18	10	17
Mean	45.4	46.8	44.4	46.7
Standard deviation	1.4	1.1	1.1	1.2
Minimum	43.2	44.4	42.7	44.7
Maximum	47.3	48.1	46.0	49.0
100-seed weight, g/100 seeds				
Number of samples	14	18	10	17
Mean	21.0	23.5	21.7	22.4
Standard deviation	3.6	2.8	3.8	3.3
Minimum	14.8	19.1	17.2	16.6
Maximum	27.8	28.7	29.1	27.8
Water absorption, g H₂O/g seeds				
Number of samples	14	18	10	17
Mean	0.85	0.86	0.95	0.89
Standard deviation	0.15	0.13	0.15	0.13
Minimum	0.52	0.52	0.71	0.64
Maximum	1.01	1.03	1.12	1.05
Cooking time, min				
Number of samples	14	18	10	17
Mean	16.0	24.8	12.1	28.5
Standard deviation	9.8	10.6	4.1	11.5
Minimum	6.2	9.4	7.2	9.9
Maximum	42.5	40.0	20.2	40.0
Firmness, N/g cooked seeds				
Number of samples	14	18	10	17
Mean	23.4	23.6	22.3	23.9
Standard deviation	3.4	3.9	2.5	5.2
Minimum	20.0	18.7	18.1	16.0
Maximum	34.0	32.1	26.8	38.1