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Quality of western Canadian pea beans

2011

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

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Introduction

This report presents the quality data for the 2011 harvest survey for western Canadian pea beans. 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

In 2011, Manitoba accounted for 100% of western Canadian pea bean production. Harvested area and production (Table 1) were down from 2010 (38% and 30% respectively), but the yield improved. Production in 2011 (14 thousand tonnes) was 30% lower than 2010 (20 thousand tonnes) and 75% lower than the 10-year average (56 thousand tonnes).

Table 1 – Production statistics for western Canadian pea beans[1]

	Harvested area		Production		Yield		Mean production[2]
Province	2011	2010	2011	2010	2011	2010	2001-2010
	thousand hectares		thousand tonnes		kg/ha		thousand tonnes
Pea beans							
Manitoba	8	13	14	20	1800	1600	56
Saskatchewan	-	-	-	-	-	-	-
Alberta[3]	-	-	-	-	-	-	-
Western Canada	**8**	**13**	**14**	**20**	**1800**	**1600**	**56**

[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 pea beans 2011

Harvest survey samples

Samples for the CGC harvest survey were collected from producers across Manitoba, Canada (Fig. 1). For the 2011 harvest survey, 36 pea bean samples from Manitoba were received at the CGC for analysis. All samples were graded and analyzed for protein, starch and ash content. Only those samples receiving a grade of pea bean, No. 1 Canada, pea bean, No. 1 Canada Select, pea bean, Extra Canada No. 1 or pea bean, No. 2 Canada were tested for 100-seed weight, water absorption, cooking time and firmness of cooked beans. 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 bean samples

Quality of 2011 western Canadian pea beans

Protein content for 2011 western Canadian pea beans (Table 2) ranged from 21.7% to 28.0% with a mean value of 24.6%, which was higher than for 2010 (24.0%), but lower than the five-year average (25.1%) (Fig. 2).

Pea beans, No. 1 Canada in 2011 had higher mean protein contents (24.2%) as compared to those (23.7%) in 2010 (Table 3) and lower mean starch contents (38.5% and 39.3%, respectively). Pea beans, No. 2 Canada had higher mean protein and starch contents for 2011 (24.4% and 40.9%, respectively) than 2010 (23.5% and 39.0%, respectively). Mean ash content was similar for both pea bean, No. 1 Canada and pea bean, No. 2 Canada. The mean 100-seed weight was higher for 2011 (19.0 g for No. 1 Canada and 19.0 g for No. 2 Canada) than 2010 (16.8 g for No. 1 Canada and 17.5 g for No. 2 Canada), while the mean water absorption was similar.

The mean cooking time for 2011 pea beans was similar to 2010. Mean firmness values of cooked seeds in 2011 were higher for both pea bean, No. 1 Canada (24.7 N/g cooked seeds) and pea bean, No. 2 Canada (25.2 N/g cooked seeds) than 2010 (23.2 N/g cooked seeds and 21.7 N/g cooked seeds, respectively).

Table 2 – Mean protein content for 2011 western Canadian pea beans by grade[1]

	Protein content, %			
Grade	2011			2010
	mean	min.	max.	mean
Manitoba				
Pea beans, Extra No. 1 Canada	24.8	22.7	26.4	23.8
Pea beans, No. 1 Canada Select	25.9	23.7	28.0	23.7
Pea beans, No. 1 Canada	24.1	22.3	25.2	24.2
Pea beans, No. 2 Canada	24.4	23.5	25.3	23.9
Pea beans, No. 3 Canada	24.3	21.7	25.7	-
Pea beans, No. 4 Canada	23.7	22.0	25.0	24.7
All grades	**24.6**	**21.7**	**28.0**	**24.0**

[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 pea beans

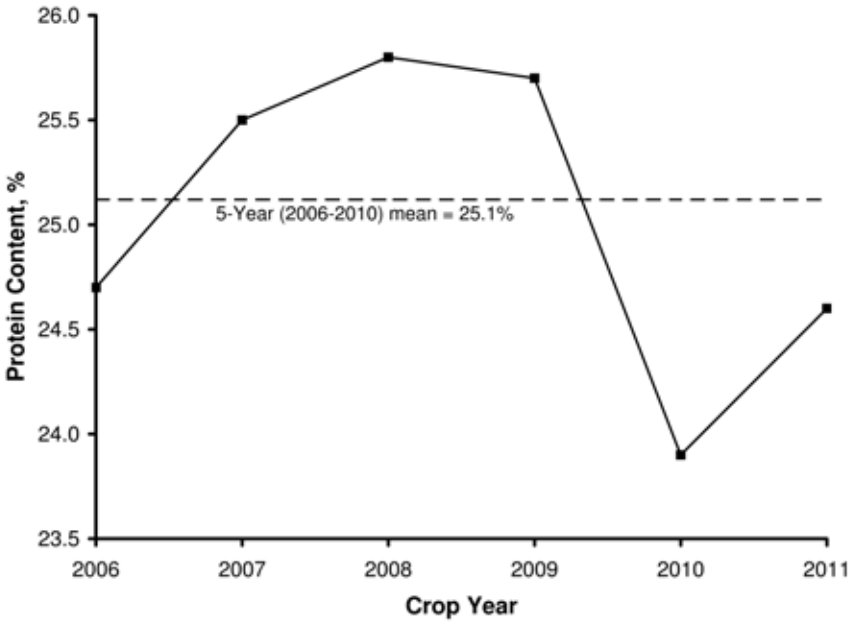

Table 3 – Quality data for 2011 western Canadian pea beans

Quality parameter	Pea beans, No. 1 Canada[1] 2011	Pea beans, No. 1 Canada[1] 2010	Pea beans, No. 2 Canada 2011	Pea beans, No. 2 Canada 2010
Protein, % dry basis				
Number of samples	25	17	2	5
Mean	24.2	23.7	24.4	23.5
Standard deviation	1.3	0.7	1.6	1.5
Minimum	22.3	21.9	23.5	21.1
Maximum	28.0	24.6	25.3	24.9
Starch, % dry basis				
Number of samples	25	17	2	5
Mean	38.5	39.3	40.9	39.0
Standard deviation	2.1	0.8	2.3	1.5
Minimum	35.6	38.3	39.2	36.9
Maximum	46.1	40.8	42.5	41.2
Ash, % dry basis				
Number of samples	25	-[2]	2	-[2]
Mean	4.0	-	4.0	-
Standard deviation	0.2	-	0.1	-
Minimum	3.7	-	3.9	-
Maximum	4.4	-	4.1	-
100-seed weight, g/100 seeds				
Number of samples	25	17	2	5
Mean	19.0	16.8	19.0	17.5
Standard deviation	1.5	2.5	1.5	1.1
Minimum	16.4	8.3	17.9	16.3
Maximum	22.4	19.2	20.1	19.2
Water absorption, g H_2O/g seeds				
Number of samples	25	17	2	5
Mean	0.93	0.95	0.93	0.94
Standard deviation	0.03	0.12	0.01	0.05
Minimum	0.87	0.77	0.92	0.86
Maximum	0.99	1.25	0.93	0.98
Cooking time, min				
Number of samples	25	17	2	5
Mean	17.1	16.4	16.0	16.4
Standard deviation	2.9	2.7	0.5	3.0
Minimum	13.4	13.3	15.7	14.2
Maximum	24.0	25.2	16.4	21.5
Firmness, N/g cooked seeds				
Number of samples	25	17	2	5
Mean	24.7	23.5	25.2	21.7
Standard deviation	1.7	3.5	4.6	3.0
Minimum	21.5	16.5	21.9	19.0
Maximum	27.4	29.2	28.4	26.7

[1] Including Pea beans, Extra No. 1 Canada, Pea beans, No. 1 Canada and Pea beans, No. 1 Canada Select.
[2] No data available.