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Quality of western Canadian pea beans

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Introduction

This report presents the quality data for the 2010 harvest survey for western Canadian pulse crops 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 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

In 2010, Manitoba accounted for 100% of western Canadian pea bean production. Harvested area, production and yield (Table 1) were all down from 2009 (20%, 29% and 6%, respectively). Production in 2010 (28 thousand tonnes) was 67% lower than the 10-year average (61 thousand tonnes).

Table 1 – Production statistics for western Canadian pulses[1]

	Harvested area		Production		Yield		Mean production[2]
Province	2009	2010	2009	2010	2009	2010	2000-2009
	thousand hectares		thousand tonnes		kg/ha		thousand tonnes
Pea beans							
Manitoba	13	16	20	28	1600	1710	61
Saskatchewan	-	-	-	-	-	-	-
Alberta[3]	-	-	-	-	-	-	-
Western Canada	**13**	**16**	**20**	**28**	**1600**	**1710**	**61**

[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 pea beans 2010

Harvest survey samples

Samples for the CGC harvest survey were collected from producers across Manitoba, Canada (Fig. 1). For the 2010 harvest survey, 22 pea bean samples from Manitoba were received at the CGC for analysis. All samples were graded and analyzed for protein and total starch content. Only those samples receiving a grade of Pea beans, No. 1 Canada, Pea beans, No. 1 Canada Select, Pea beans, Extra Canada No. 1 or Pea beans, 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 2010 harvest survey pea bean samples

Quality of 2010 western Canadian pea beans

Protein content for 2010 western Canadian pea beans (Table 2) ranged from 21.5% to 25.3% with a mean value of 23.9%. The average protein for 2010 western Canadian pea beans was lower than both the 2009 and the five-year average (25.7% and 25.5%, respectively) (Fig. 2).

Pea beans, No. 1 Canada in 2010 had lower protein contents as compared to those in 2009 (Table 3), but higher starch contents. The mean 100-seed weight was lower for 2010 (16.8 g for No. 1 Canada and 17.5 g for No. 2 Canada) than 2009, but the water absorption was greater (0.94 g H_2O/g seeds No. 1 Canada and 0.94 g H_2O/g seeds No. 2 Canada).

The mean cooking time for 2010 pea beans, No. 1 Canada, was longer than for 2009. Mean firmness value of cooked seeds in 2010 was lower for pea beans, No. 1 Canada than that in 2009.

Table 2 – Mean protein content for 2010 western Canadian pea beans[1]

	Protein content, %			
Grade	2010			2009
	mean	min.	max.	mean
Manitoba				
Pea beans, Extra No. 1 Canada	23.8	22.5	25.1	-
Pea beans, No. 1 Canada Select	23.7	23.0	25.1	-
Pea beans, No. 1 Canada	24.2	23.4	25.1	25.7
Pea beans, No. 2 Canada	23.9	21.9	25.0	27.3
Pea beans, No. 3 Canada	-	-	-	-
Pea beans, No. 4 Canada	24.7	23.9	25.3	-
All grades	**24.0**	**21.9**	**25.3**	**25.7**

[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

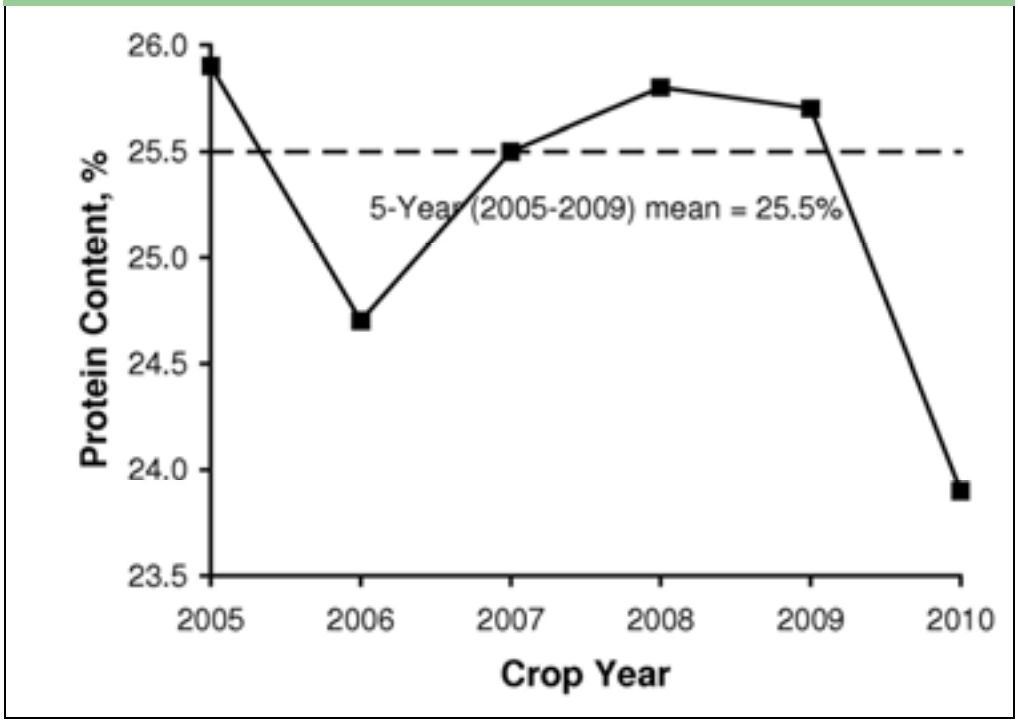

Table 3 – Quality data for 2010 western Canadian pea beans

Quality parameter	Pea beans, No. 1 Canada[1]		Pea beans, No. 2 Canada	
	2010	2009	2010	2009
Protein, % dry basis				
Number of samples	17	13	5	NA[2]
Mean	23.7	25.7	23.5	NA
Standard deviation	0.7	1.2	1.5	NA
Minimum	21.9	22.9	21.1	NA
Maximum	24.6	27.6	24.9	NA
Starch, % dry basis				
Number of samples	17	13	5	NA
Mean	39.3	36.6	39.0	NA
Standard deviation	0.8	0.8	1.5	NA
Minimum	38.3	35.5	36.9	NA
Maximum	40.8	38.3	41.2	NA
100-seed weight, g/100 seeds				
Number of samples	17	13	5	NA
Mean	16.8	18.2	17.5	NA
Standard deviation	2.5	1.1	1.1	NA
Minimum	8.3	16.8	16.3	NA
Maximum	19.2	20.0	19.2	NA
Water absorption, g H_2O/g seeds				
Number of samples	17	13	5	NA
Mean	0.95	0.88	0.94	NA
Standard deviation	0.12	0.10	0.05	NA
Minimum	0.77	0.67	0.86	NA
Maximum	1.25	1.03	0.98	NA
Cooking time, min				
Number of samples	17	13	5	NA
Mean	16.4	14.9	16.4	NA
Standard deviation	2.7	2.6	3.0	NA
Minimum	13.3	11.8	14.2	NA
Maximum	25.2	21.7	21.5	NA
Firmness, N/g cooked seeds				
Number of samples	17	13	5	NA
Mean	23.5	25.7	21.7	NA
Standard deviation	3.5	2.7	3.0	NA
Minimum	16.5	22.8	19.0	NA
Maximum	29.2	33.0	26.7	NA

[1] Including Pea beans, Extra No. 1 Canada, Pea beans, No. 1 Canada and Pea beans, No. 1 Canada Select.
[2] NA=not available due to a small number of samples received.