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Quality of western Canadian pea beans

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Introduction

This report presents the quality data for the 2009 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 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. Wet conditions in mid October delayed harvest of some edible beans.

Production review

In 2009, Manitoba accounted for 100% of western Canadian pea bean production. Production and harvested area were down about 25% from 2008, while yield increased by about 5% (Table 1). Production in 2009 (28 thousand tonnes) was 59% lower than the 10-year average (67 thousand tonnes).

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

	Harvested area		Production		Yield		Mean production[2]
Province	2009	2008	2009	2008	2009	2008	1999-2008
	thousand hectares		thousand tonnes		kg/ha		thousand tonnes
Pea beans							
Manitoba	16	22	28	36	1710	1630	67
Saskatchewan	-	-			-	-	-
Alberta[3]	-	-	-	-	-	-	-
Western Canada	**16**	**22**	**28**	**36**	**1710**	**1630**	**67**

[1] Statistics Canada, *Field Crop Reporting Series, Vol. 88, No. 8.*
[2] Statistics Canada, *Field Crop Reporting Series*, 1999-2008.
[3] Includes the Peace River area of British Columbia.

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Harvest survey samples

Samples for the CGC harvest survey were collected from producers across Manitoba, Canada (Fig. 1). For the 2009 harvest survey, 14 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 2009 harvest survey pea bean samples

Quality of 2009 western Canadian pea beans

Protein content for 2009 western Canadian pea beans (Table 2) ranged from 22.9% to 27.6% with a mean value of 25.7%. The average protein for 2009 western Canadian pea beans was similar to both the 2008 and the five-year average (25.8% and 25.4%, respectively) (Fig. 2).

Pea beans, No. 1 Canada in 2009 had similar protein contents to those in 2008 (Table 3) and slightly lower starch contents (36.6% and 37.6%, respectively). The mean 100-seed weight and water absorption were similar for 2009 (18.2 g and 0.88 g H_2O/g seeds, respectively) and 2008 (17.9 g and 0.92 g H_2O/g seeds, respectively).

The mean cooking time for 2009 pea beans, No. 1 Canada were slightly shorter than for 2008 (14.9 min and 15.9 min, respectively). Firmness of cooked seeds was similar in 2009 and 2008 (25.7 N/g cooked seeds and 26.1 N/g cooked seeds, respectively).

Table 2 – Mean protein content for 2009 western Canadian pea beans[1]

	Protein content, %			
Grade	2009			2008
	mean	min.	max.	mean
Manitoba				
Pea beans, Extra No. 1 Canada	-	-	-	25.2
Pea beans, No. 1 Canada Select	-	-	-	26.3
Pea beans, No. 1 Canada	25.7	22.9	27.6	25.8
Pea beans, No. 2 Canada	27.3	27.3	27.3	25.6
Pea beans, No. 3 Canada	-	-	-	-
Pea beans, No. 4 Canada	-	-	-	25.0
All grades	**25.7**	**22.9**	**27.6**	**25.8**

[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 pea beans

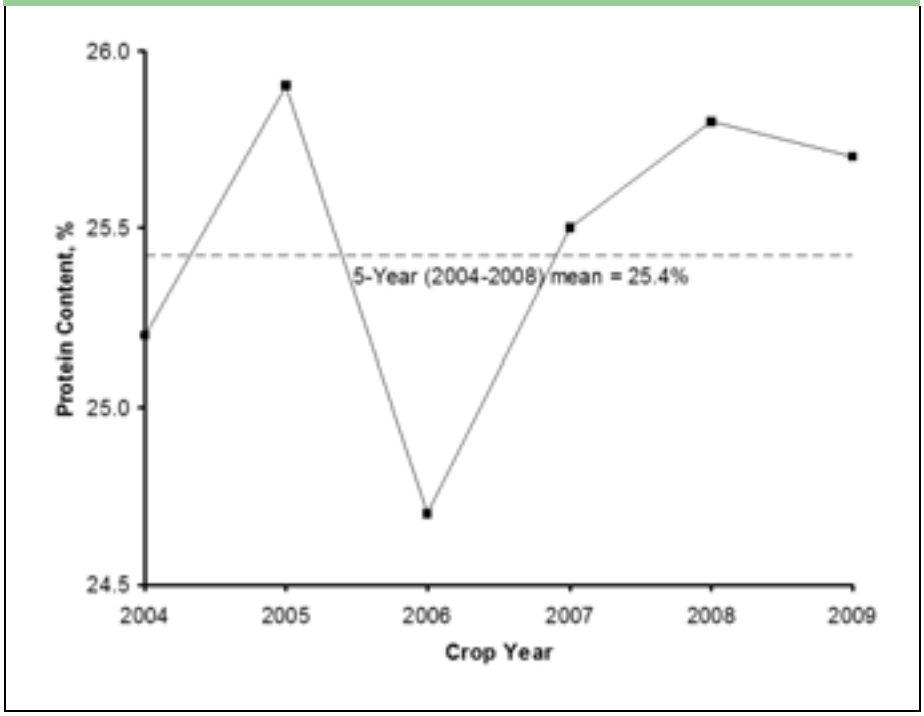

Table 3 – Quality data for 2009 western Canadian pea beans

Quality parameter	Pea beans, No. 1 Canada[1]		Pea beans, No. 2 Canada	
	2009	2008	2009	2008
Protein, % dry basis				
Number of samples	13	32	NA[2]	NA
Mean	25.7	25.9	NA	NA
Standard deviation	1.2	0.7	NA	NA
Minimum	22.9	24.7	NA	NA
Maximum	27.6	27.4	NA	NA
Starch, % dry basis				
Number of samples	13	32	NA	NA
Mean	36.6	37.6	NA	NA
Standard deviation	0.8	1.2	NA	NA
Minimum	35.5	35.5	NA	NA
Maximum	38.3	40.4	NA	NA
100-seed weight, g/100 seeds				
Number of samples	13	32	NA	NA
Mean	18.2	17.9	NA	NA
Standard deviation	1.1	0.8	NA	NA
Minimum	16.8	16.7	NA	NA
Maximum	20.0	19.8	NA	NA
Water absorption, g H_2O/g seeds				
Number of samples	13	32	NA	NA
Mean	0.88	0.92	NA	NA
Standard deviation	0.10	0.05	NA	NA
Minimum	0.67	0.77	NA	NA
Maximum	1.03	0.98	NA	NA
Cooking time, min				
Number of samples	13	32	NA	NA
Mean	14.9	15.9	NA	NA
Standard deviation	2.6	1.4	NA	NA
Minimum	11.8	12.6	NA	NA
Maximum	21.7	18.9	NA	NA
Firmness, N/g cooked seeds				
Number of samples	13	32	NA	NA
Mean	25.7	26.1	NA	NA
Standard deviation	2.7	1.7	NA	NA
Minimum	22.8	21.8	NA	NA
Maximum	33.0	29.4	NA	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.