

Quality of imported wheat (1 October 2010 to 30 September 2011) (Previous season)

The quality of all wheat imported into South Africa is also monitored by the SAGL. The range of analyses done on the local crop for the purpose of the annual crop quality survey is also done on the imported wheat. These results are only made available at the end of each season.

For grading as well as dough and baking quality results of the imported wheat per country, please refer to pages 69 to 82. This imported wheat quality is compared to a summary of the local crop quality of the same (2010/2011) season.

To simplify the comparison between the quality of the different countries of import and South African wheat the average values were compared, as with some of the countries, quite a difference in quality were observed between the different grades.

Looking at the average grading quality, specifically the whole wheat protein and hectolitre mass results, the Canadian wheat had the best grading quality, followed by the Brazilian and South African wheat.

The ability of wheat flour to produce dough with good gas-holding capability is attributable to gluten due to the fact that gluten imparts the elasticity and extensibility characteristics to the dough. Good quality gluten is capable of producing a loaf of bread with a high volume and good crumb texture. When evaluating gluten quality (strength), the protein content should also be taken into account. The Canadian and South African wheat showed the best average gluten quality.

In general bakers prefer flour with higher water absorption (60.0 – 65.0%) as this result in higher dough yields. The farinogram development times of the imported wheat (Australia and Canada excluded) were much shorter than the South African wheat. A short stability, as observed on the wheat from Germany and Uruguay, is an indication that the dough will not have a good tolerance to mixing and may be over- or under mixed very easily. In general, longer development times of 3.5 to 6.0 minutes and stabilities of 8.0 to 12.0 minutes will be an indication of good baking quality, which is associated with better protein quality. It is important to remember that higher protein content does not necessarily equates to better quality.

The alveogram strength is determined by the protein quality and the Canadian and South African wheat had the highest strength values. The imported wheat samples tended to have short distensibility values on the alveogram which may result in lower volumes. The short distensibility values also resulted in high P/L values (stability value divided by distensibility value). The ideal P/L value is between 0.80 and 1.20.

The imported wheat samples showed a tendency towards longer mixogram mixing times, especially Uruguay, but also Argentina, Germany and the USA. The mixing time is an indication of the amount of time needed to mix the dough to optimum development. The most acceptable range is between 2.8 to 3.5 minutes. The longer the mixing time, the larger the risk that the dough will not be mixed to optimum development, which may negatively influence the bread quality and cause lower loaf volumes. Longer mixing times can also have cost implications due to higher energy inputs required.

The Argentinean and Brazilian wheat showed the worst correlation between the protein content and 100g loaf volume.

Average quality data of imported wheat during the 2010/2011 season (previous season)

	Argentina	Australia	Brazil	Canada	Germany	Uruguay	USA	RSA
Protein, % (12% mb)	10.88	10.96	12.21	12.49	11.18	11.21	11.52	12.14
Hlm, kg/hl	81.3	79.5	81.0	81.4	79.1	77.5	80.3	80.3
Screenings, %	2.15	1.37	2.32	2.88	2.60	3.55	3.85	1.68
Number of samples	30	6	7	9	12	2	46	372
Extraction, %	74.1	73.7	72.7	72.7	74.1	70.2	72.5	74.9
Flour colour, KJ	-1.6	-2.6	-1.2	-2.0	-0.7	-1.6	-1.2	-1.8
Wet gluten, % (14% mb)	23.7	26.2	29.0	30.0	25.0	24.5	25.9	29.7
Dry gluten, % (14% mb)	8.5	9.4	10.1	11.1	8.9	8.4	9.2	10.4
Farinogram								
Water absorption, % (14% mb)	60.1	59.9	63.4	60.0	58.3	58.9	57.2	63.2
Development time, min	2.1	3.8	2.6	3.7	1.9	1.9	2.2	5.5
Stability, min	7.8	9.2	6.2	10.5	3.3	2.5	8.0	7.8
Alveogram								
Strength, cm²	31.1	31.5	35.5	38.2	29.9	29.8	31.7	36.2
P/L	2.72	1.39	2.14	1.10	1.59	1.77	1.24	1.29
Extensogram								
Strength, cm²	90	102	81	114	86	78	107	97
Mixogram								
Peak time, min	4.5	3.4	3.6	3.6	4.4	7.0	4.5	2.8
100 g Baking test								
Volume, cm³	677	828	766	877	727	760	801	832
Evaluation	4	0	4	0	3	1	1	1
Number of samples	30	6	7	9	12	2	46	99

