Quality of imported wheat
(1 October 2011 to 30 September 2012) (Previous season)

The quality of all wheat imported into South Africa is monitored by the SAGL. A subsample of all samples drawn by inspectors of the South African Agricultural Food, Quarantine and Inspection Services (SAAFQIS) of the Department of Agriculture, Forestry and Fisheries (DAFF) is forwarded to the SAGL for analysis. To assist with quality comparisons between local and imported wheat, the same scope of analysis is used for both sets of samples. The import quality results are published only at the end of each production and marketing season.

Please take note that according to the South African grading regulations (please see pages 93 to 105), Regulation 4 Standards for classes, Sub paragraph (2) A consignment shall be classified as Bread Wheat if -- (a) "the wheat in the consignment consists of at least 95 per cent (m/m) of one or more of the bread wheat cultivars specified in the cultivar list;" all imported wheat should be graded as Class Other Wheat. However, for comparison purposes, the wheat is graded by SAGL as if of local origin. For grading as well as dough and baking quality result of the imported wheat per country, please refer to pages 70 to 89. This imported wheat quality is compared to a summary of the local crop quality of the same (2011/2012) season.

To simplify the comparison between the quality of the different countries of import and South African wheat, the average quality per country was summarised in Table 7 on page 69. Please also take note of the number of samples analysed when comparing results, the higher the number of samples, the more reliable the average result will be.

Australian and Canadian wheat had the highest hectolitre mass results, indicating a potential for good (high) flour extraction. Screenings represent all material that passes through a standard sieve, 1.8 mm in this instance, with 3% the maximum allowed for grades 1 to 3 according to RSA grading regulations. Higher percentages screenings result in higher losses due to the removal of unmillable material. Romania and Russia had the highest levels of screenings.

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. The Canadian wheat had the highest protein content resulting in the highest gluten content. South African, Romanian and Australian wheat also showed good wet gluten contents. However, when evaluating gluten content, the protein content should also be taken into account. It then becomes evident that the South African wheat gluten/protein quality is better than that of Romania, also seen when comparing the farinogram, alveogram and extensogram results.

The difference between the wet and dry gluten contents is an indication of the water-holding capacity of the gluten proteins. High water-holding capacity is considered good quality for bread baking purposes. Canadian wheat has the highest capacity, followed by South Africa and Romania, with Ukrainian and Uruguayan wheat having the poorest gluten quality, closely followed by Germany, USA and Russia.

In general bakers prefer flour with higher water absorption, on average 61.0 to 63.0% for white bread flour, as this result in higher dough yields. The farinogram development times of the imported wheat (Australia, Canada and Romania excluded) were much shorter than the South African wheat. Russia, Ukraine and Uruguay showed extremely poor quality on the Farinogram, followed by Germany, Brazil, USA and Argentina.

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, Australian and South African wheat had the highest strength values followed by Argentina. The imported wheat samples tended to have short distensibility values on the alveogram which can result in lower loaf volumes. The short distensiblity values also resulted in high P/L values of more than 1.50. The P/L ratio is obtained by dividing the stability value (P) with the distensibility value (L).

The imported wheat samples, except for Canada, again showed a tendency towards longer mixogram mixing times. Australian and Romanian wheat lies on the upper limit of what is considered acceptable mixing times (2.8 to 3.5 minutes) in South Africa. The mixing time is an indication of the amount of time needed to mix the dough to optimum development. The longer the mixing time, the larger the risk that the dough will not be mixed to optimum development, which will negatively influence the bread quality and cause lower loaf volumes. Longer mixing times can also have cost implications due to higher energy inputs required. Shorter mixing times pose the risk of over mixing and dough becoming sticky.

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

A multi-mycotoxin analysis is performed on composite samples of the holds per shipment. None of the samples analysed raised any concerns.