

## MANAGEMENT SUMMARY

**Title of project:** Quality analyses of Imported Wheat during the 2010/2011 RSA wheat production season.

**Applicant:** The Southern African Grain Laboratory

**Objective of project:** The accumulation of data on the quality of the wheat imported during the 2010/2011 RSA wheat production season.

The objective has been achieved.

**Motivation:**

- This project supplies information on the quality of the wheat imported from different countries into South Africa.
- Qualitative tendencies of imported wheat over a period of years are shown with this project.
- This data is used to measure the quality of wheat produced internationally and imported into South Africa against the quality of locally produced wheat.
- This information is valuable to wheat breeders, commercial and emerging farmers, as well as the milling and baking industries and will enable role players in industry to make informed decisions.

**Expected completion date:** The project has been completed.

During the first seven months of the 2010/2011 season, problems were experienced with a significant number of shipment samples not being forwarded to SAGL for analysis. A meeting was convened between DAFF, the Grain Silo Industry and the SAGL and as a result a Service Level Agreement (SLA) between DAFF and SAGL was drawn up. Following the meeting the number of samples forwarded to SAGL increased significantly.

The total amount invoiced was slightly less than the amount applied for as a result of fewer samples received as mentioned above.

**Progress achieved to date:** In total 113 samples were received and analysed from 8 countries of import. These samples consisted of 30 samples from Argentina, 6 samples from Australia,

7 samples from Brazil, 9 samples from Canada, 12 samples from Germany, 1 sample from Pakistan (container sample), 2 samples from Uruguay and 46 samples from the USA.

The samples were graded according to RSA grading regulations, milled on the Bühler mill and moisture, protein, colour and rheological analyses were done.

A total number of 46 composite samples per shipment, per country of origin were analysed for Aflatoxin G<sub>1</sub>, B<sub>1</sub>, G<sub>2</sub>, B<sub>2</sub>, Fumonisin B<sub>1</sub>, Deoxynivalenol, Ochratoxin A, Zearalenone and T2 toxin content. This is more than the 35 composite samples budgeted for in the project proposal and due to the number of shipments received.

**Summary of results obtained:** On average the imported wheat compared to the 2010/2011 wheat crop quality average as follows:

*SA wheat crop average:* WWF protein content was 12.14 %, hectoliter mass was 80.3 kg/hl, farino water absorption was 63.2 %, alveo strength 36.2 cm<sup>2</sup> and distensibility 81 mm, extensograph strength was 97 cm<sup>2</sup> and mixo mixing time 2.8 minutes.

*Argentina:* WWF protein content was 1.26 % lower, hectoliter mass was 1.1 kg/hl higher, farino water absorption was 3.1 % lower, alveo strength 5.1 cm<sup>2</sup> weaker and distensibility 33 mm shorter, extensograph strength 7 cm<sup>2</sup> weaker and mixo mixing time 1.7 minutes longer.

*Australia:* WWF protein content was 1.18 % lower, hectoliter mass was 0.8 kg/hl lower, farino water absorption was 3.3 % lower, alveo strength 4.7 cm<sup>2</sup> weaker and distensibility 15 mm shorter, extensograph strength 5 cm<sup>2</sup> stronger and mixo mixing time 0.6 minutes longer.

*Brazil:* WWF protein content was 0.07 % higher, hectoliter mass was 0.7 kg/hl higher, farino water absorption was slightly (0.2 %) higher, alveo strength slightly (0.7 cm<sup>2</sup>) weaker and distensibility 25 mm shorter, extensograph

strength 16 cm<sup>2</sup> weaker and mixo mixing time 0.8 minutes longer.

*Canada:* WWF protein content was 0.35 % higher, hectoliter mass was 1.1 kg/hl higher, farino water absorption was 3.2 % lower, alveo strength 2 cm<sup>2</sup> stronger and distensibility equal to the crop average, extensograph strength 17 cm<sup>2</sup> stronger and mixo mixing time 0.8 minutes longer.

*Germany:* WWF protein content was 0.96 % lower, hectoliter mass was 1.2 kg/hl lower, farino water absorption was 4.9 % lower, alveo strength 6.3 cm<sup>2</sup> weaker and distensibility 20 mm shorter, extensograph strength 11 cm<sup>2</sup> weaker and mixo mixing time 1.6 minutes longer.

*Pakistan:* WWF protein content was 0.38 % lower, hectoliter mass was slightly (0.3 kg/hl) higher, farino water absorption was 3.5 % higher, alveo strength 11.4 cm<sup>2</sup> weaker and distensibility 24 mm shorter, extensograph strength significantly (58 cm<sup>2</sup>) weaker and mixo mixing time 1 minutes shorter.

*Uruguay:* WWF protein content was 0.93 % lower, hectoliter mass was 2.8 kg/hl lower, farino water absorption was 4.3 % lower, alveo strength 6.4 cm<sup>2</sup> weaker and distensibility 27 mm shorter, extensograph strength 19 cm<sup>2</sup> weaker and mixo mixing time significantly (4.2 minutes) longer.

*USA:* WWF protein content was 0.62 % lower, hectoliter mass was equal to the crop average, farino water absorption was 6.0 % lower, alveo strength 4.5 cm<sup>2</sup> weaker and distensibility 12 mm shorter, extensograph strength 10 cm<sup>2</sup> stronger and mixo mixing time 1.7 minutes longer.

The quality of flour milled from wheat received from Pakistan and Uruguay were noticeably weaker than South African wheat from the 2010/2011 season. German flour was weaker and American and Argentinean flour quality were not as good as the local flour quality.

The Brazilian wheat and flour quality (except for

the Extensograph) compared well with the local quality. The Australian wheat and flour quality of the samples received were not as good as in previous seasons. The Canadian wheat and flour quality were stronger (better) than the local wheat flour quality for 2010/2011.

The 2010/2011 imported wheat quality data is available on the SAGL website. This data will also be included in the 2011/2012 Wheat crop quality report which will be distributed during June 2012.

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