

**THE SOUTHERN AFRICAN GRAIN LABORATORY NPC
DIE SUIDER AFRIKAANSE GRAANLABORATORIUM NPC**

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Enquiries: Wiana Louw

10 June 2025

FOR ATTENTION: Ms. Beatrix de Witt

Trust Administrators

THE CHAIRMAN

THE MAIZE TRUST

C/o AGRI MANAGE SOLUTIONS

Agri-Hub Office Park

Block D

477/478 Whiterite Street

The Willows

0040

Dear Madam

FINAL PROGRESS REPORT CONCERNING A PROJECT FUNDED BY THE MAIZE TRUST

Herewith the final progress report for the project titled: *SOUTH AFRICAN MAIZE CROP QUALITY SURVEY FOR THE 2022/2023 SEASON.*

The SAGL would like to thank the Maize Trust for their approval and allocation of funds for the annual South African Maize Crop Quality Survey since 1997/1998. All these projects have been completed successfully and within the set timeframe.

Please do not hesitate to contact us should you require additional information.

Yours sincerely

Wiana Louw
GENERAL MANAGER

DIRECTORS: E. Briedenhann (Chairman), D.B. Strydom (Vice Chairman), L. Breytenbach (Executive Committee Member), B. Mokgatle, G.L. Roos, E.H. Potgieter, C. Binnion, W.J. Groothof, A. v d Vyver

GENERAL MANAGER: Wiana Louw

FINAL PROGRESS REPORT CONCERNING A PROJECT FUNDED BY THE TRUST

It is with pleasure that SAGL report as follows:

(a) PROJECT NAMES:

SOUTH AFRICAN COMMERCIAL MAIZE CROP QUALITY SURVEY FOR THE 2022/2023 SEASON

Project leader:

J. Nortjé (On behalf of the SAGL)

(b) ACTIONS TAKEN:

Procedures were e-mailed to all Agbiz Grain members detailing the process for the taking of representative samples for this Quality Survey on the 16th of May 2023. Sample submission was telephonically followed up on a continuous basis.

(c) PROGRESS:

All crop quality analyses was completed and the results are available on the SAGL's website. The first results were available on the SAGL website on the 25th of August 2023. The last of the 350 mycotoxin results were uploaded onto the SAGL's website on the 7th of June 2024. Individual results were e-mailed to the respective grain storage companies on a weekly basis.

The report was finalised and was available on the SAGL website from the 30th of October 2024. Hard copy reports were available from the 14th of November 2024.

The delay in the completion of the project and the availability of the report was due to the fact that the 2021/2022 survey had to be finalized before the registration and analysis of the 2022/2023 season's samples could commence.

(d) RESULTS:

A total of 1 000 composite samples, representing white and yellow maize of each production region, were registered and analysed for quality. The samples comprised of 520 white and 480 yellow maize samples.

The average, minimum and maximum values of all samples per class and grade of both white and yellow maize from each production region are calculated and reported in respect of every quality parameter measured. Averages are compared to averages of previous seasons and graphs that show tendencies over seasons are also included in the report.

RSA GRADING

70% of white maize samples received for the purpose of the crop quality survey were graded as maize grade one, last season this figure was 50%. 69% of yellow maize samples received and graded were graded as grade one, compared to 65% the previous season.

The percentage total defective kernels above (larger than) and below (smaller than) the 6.35 mm sieve was 5.1% for both white and yellow maize, respectively 2.5% and 1.6% lower than the previous season. Defective white maize kernels above the 6.35 mm sieve decreased by 2.4% to 3.3% and yellow maize decreased by 1.5% to 2.8%. The percentage defective kernels below the 6.35 mm sieve for white maize decreased slightly from 1.9% to 1.7% while yellow maize equaled last season's 2.3%. The average percentage Diplodia infected kernels in white and yellow maize was 0.8% and 1.4% respectively this season, the previous season's averages were 1.2% and 1.5% respectively. Fusarium infected white maize kernels were 0.4% compared to the 1.7% of 2021/22 and that of yellow maize 0.5% compared to 1.6% previously.

The percentage of white maize samples that were downgraded to class other maize as a result of the percentage foreign matter exceeding 0.75%, was 6% (31 samples) and that of yellow maize 5%

(23 samples). No samples were downgraded as a result of other colour maize exceeding the 10% and 5% maximum permissible deviation for grade 3 white and yellow maize respectively. The average percentage combined deviations of white maize was 5.5% compared to the 8.0% of the 2021/22 season and that of yellow maize 5.4% compared to 6.9% previously.

USA GRADING

Of the 1 000 maize samples graded according to USA grading regulations, 59% were graded US1, 23% US2, 7% US3, 5% US4 and both US5 and sample grade 3% each. The percentage samples graded as US1 varies substantially over seasons, varying from 27% to 62%, 30%, 41% and 51% over the previous five seasons. The percentage samples graded as US2 was lower than the 31% of the previous season. Grades 3, 4 and 5 compared to the percentages of samples in season 2020/21. The main reason for downgrading the samples was (as in previous seasons) the percentage total damaged kernels exceeding the maximum limit per grade, followed by broken corn and foreign material.

PHYSICAL QUALITY CHARACTERISTICS

Bushel weight/Test weight is applied as a grading factor in the USA grading regulations and is also routinely done at most intake points locally for stock verification purposes. White maize had an average test weight of 76.3 kg/hl compared to the 76.4 kg/hl of yellow maize. The average test weights of white and yellow maize were respectively 0.8 kg/hl and 1.0 kg/hl higher than in the previous season. The test weight in total varied from 69.1 kg/hl to 82.2 kg/hl.

21 samples (2.1%) reported Bushel weight values below the minimum requirement (56.0 lbs or 72.1 kg/hl) for USA grade 1 maize. One sample originated in the Eastern Cape, five were from the North West production regions, eight from the Free State, four from Mpumalanga, two from Gauteng and one from KwaZulu Natal. In the previous season 6.8% of the samples were below the minimum requirement.

The 100 kernel mass ("as is" basis) of white maize was 35.3 g (35.1 g in 2021/22) and averaged higher than yellow maize's 31.6 g (last season 31.1 g). This trend is also observed in previous seasons. The percentage white maize kernels above the 10 mm sieve (24.5%) decreased by 3.7% compared to the previous season. The percentage yellow maize kernels above the 10 mm sieve (7.0%) was 2.4% lower than last season. The percentage yellow maize kernels above the 10 mm sieve was on average 17.5% lower than white kernels and the percentage yellow kernels below the 8 mm sieve was 18.4% higher than that of white maize. Overall, yellow maize kernels remain smaller than white maize kernels as observed over previous seasons.

The percentages maize below the 6.35 mm and 4.75 mm sieves provides an indication of the breakage susceptibility. White maize was slightly less susceptible to breakage than during the previous season, while yellow maize was equal to the previous season. The percentage stress cracks observed varied overall from 0 to 63% and averaged 8%. White and yellow maize both averaged 8%, the previous season both averaged 11%.

The milling index obtained from the SAGL Milling Index 2023 model, varied from an average of 71 (68 in 2021/22) for white maize to an average of 72 (equal to 2021/22) for yellow maize. Grit Yield All (GYA) values averaged 63 for both white and yellow maize, 62 and 63 respectively in the previous season.

ROFF MILLING AND WHITENESS INDEX (WI)

The average % extraction of total meal in white maize obtained with the Roff mill, averaged 76.9% (0.7% higher than the previous season) and varied from 71.1% to 81.0%. The development of the new model for Milling Index was commenced in the 2012/13 season.

The whiteness index averaged 40.4 for unsifted and 36.8 for sifted maize meal. Sieving the sample eliminates differences in the readings as a result of particle size. The whiteness index of the previous season averaged 38.9 and 35.7 for unsifted and sifted maize meal respectively.

The higher the WI value, the whiter the meal sample. The main contributing factors causing differences in WI values are the presence of other colour maize like yellow maize, the presence of defective kernels, the type of cultivar as well as the soil composition.

NUTRITIONAL VALUES

The maize industry requested that crude fibre be added to the scope of analysis performed on the annual maize crop quality survey. With the assistance of Foss, a calibration was developed on the Infratec 1241 Grain Analyser (NIT) during the 2017/18 season. The calibration is updated annually with the latest season's results.

The average fat content of white maize equaled the 4.0% of the previous four seasons. Yellow maize also averaged 4.0%, 0.1% higher than the previous season. The 10-year average fat content of white maize is 4.1% and that of yellow maize 4.0%. The average protein content of yellow maize was 8.6%, while white maize averaged 8.2%. The 10-year average for yellow and white maize respectively is 9.0% and 8.7%.

The average starch contents of both white maize (75.1%) and yellow maize (73.9%) were 0.9% and 1.2% lower than in the previous season. Ten-year averages for white and yellow maize are 74.0% and 73.3% respectively. The average crude fibre content of white maize was 2.1% and that of yellow maize 2.2%, similar to the previous season.

The fat, starch, protein and crude fibre nutritional components are reported as % (g/100 g) on a dry base.

MYCOTOXINS

None of the 350 samples analysed this season, tested positive for Aflatoxin, Ochratoxin A, T-2 toxin or HT-2 toxin residues.

The average Fumonisin level (Sum of B₁, B₂ and B₃) on all 350 samples tested was 38 µg/kg (ppb), compared to the previous season's average of 111 µg/kg. Levels ranged from not detected (ND) to 3 127 µg/kg. Of the 350 samples tested, 48 samples (14%) tested positive for fumonisin levels and the average of these positive results was 283 µg/kg. The previous season, 16% of the samples tested positive, with an average of 709 µg/kg.

The highest Deoxynivalenol (DON) level detected this season was 2 205 µg/kg, compared to the 6 879 µg/kg of last season. The average level of all samples tested this season was 116 µg/kg, 621 µg/kg the previous season. Both the percentage of positive results as well as the average of the positive results decreased this season and compared to the previous five seasons. 83% of the samples tested positive for DON last season with the average of the positive results 749 µg/kg. This season, 36% of the samples tested positive with an average of 320 µg/kg.

Only 4% of the samples tested positive for 15-acetyl-deoxynivalenol (15-ADON) residues, compared to 31% the previous season. The average of the positive results was 176 µg/kg compared to 211 µg/kg in the previous season.

Zearalenone residues were found in 3% of the samples, 16% during the previous season. Values ranged from ND to 328 µg/kg. The average of the positive samples was 78 µg/kg compared to the 58 µg/kg of the previous season.

Mycotoxin levels lower than the limit of quantitation (< LOQ) as well as limit of detection (< LOD) were seen as having tested negative for calculation purposes.

(e) PROBLEMS ENCOUNTERED:

The timelines for the availability of results and completion of the 2022/2023 crop quality report had to be postponed by approximately six months, due to the delay in the completion of the analyses on the remaining 40% of the 2021/2022 maize crop survey samples.

(f) MILESTONES NOT BEEN ACHIEVED:

None.

(g) ADEQUACY OF FUNDING:

The project was successfully completed within the allocated budget.

The statement of funds granted by the Trust is attached to this report.

(h) UTILISATION OF RESULTS:

- ✓ Data highlights possible differences in the quality of commercial maize produced in different regions for the purpose of local marketing.
- ✓ Data provides important information on the quality of commercial maize intended for export.
- ✓ Data serves as basis for comparison between quality of local maize and imported maize.
- ✓ Data can reveal general tendencies over seasons.
- ✓ Data adds value to research projects and can be used as basis to direct future research projects.
- ✓ Data can be used when grading regulations needs to be revised or when new quality norms are investigated.
- ✓ The annual maize crop quality surveys provide an ideal opportunity to evaluate the occurrence status of mycotoxins throughout all production regions in South Africa.
- ✓ Reliable analytical data is accumulated to establish a database to enable industry to comment on proposed legislative levels and to supply reliable data for targeted research project to effectively manage the mycotoxin levels in maize.

(i) DISTRIBUTION OF REPORTS:

The report is available on the SAGL website (www.sagl.co.za) in an easy-to-page format. It can also be downloaded as a PDF document.



SAGL

The Southern African Grain Laboratory NPC

Registered Number: 1997/018518/08

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<p>The Maize Trust P.O.Box 74626 Lynnwood Ridge Pretoria 0040</p>	<p>Account number MAI001</p>	<p>Page No: 1</p>
<p>REFERENCE : Beatrix De Witt</p>		
<p>Enquiries: Janet Stolp / Natasja Lamprecht</p>		

	Date	Amount Approved (Excl. VAT)	Amount Paid (Excl. VAT)	Amount to be paid (Excl. VAT)
Maize crop quality survey 2022/2023				
Applied		R 4,974,118		
Approved 2 June 2023		R 4,974,118		
Payment received - July 2023			R 2,984,471	
Payment received - March 2024			R 994,824	
Payment 20%				R 994,824
Maize Crop Quality 2022/2023				
Money was spent as indicated:				
Analyses	R 4,742,322			
Print & distribution of report	R 25,301			
Courier costs	R 48,808			
Web maintenance / Compiling / processing / administration of report	R 157,687			
TOTAL SPENT	R 4,974,118			
Total(VAT exclusive) approved	R 4,974,118			
Difference	R 0			
TOTAL DUE		R 4,974,118	R 3,979,295	R 994,824
Banking details:				
The Southern African Grain Laboratory	SAGL	Standard Bank	Ref No	MAI001
		Branch code		051001
		Account No		012184454

2025/05/21