Quality Report
2013/2014 Season

South African Maize Crop

Index

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SOUTH AFRICAN
COMMERCIAL MAIZE QUALITY
2013/2014

Acknowledgments
With gratitude to:

* **The Maize Trust for financial support in conducting this survey.**
* **The Grain Silo Industry and its members for providing the samples to make this survey possible.**

1. Introduction

During the harvesting season (April to August), a representative sample of each delivery of maize at the various silos was taken according to the prescribed grading regulations. The sampling procedure for the samples used in this survey is described on page 84. A total of 930 composite samples, proportionally representing white and yellow maize of each production region, were received and analysed for quality. The samples consisted of 451 white and 479 yellow maize samples.

The quality attributes which were tested for, include:
a. RSA grading: All samples were graded according to the following factors, as defined in the South African grading regulation: defective kernels above and below 6.35 mm sieve, total defective kernels, foreign matter, other colour, total deviation and pinked kernels.
b. USA grading according to regulations on all samples to determine the following factors: Grain density expressed as Hectolitre mass, heat damaged, total damaged, broken corn and foreign matter (BCFM) and other colour.
c. Nutritional values (on all samples): Crude protein, crude fat and starch.
d. Physical Quality factors (on all samples): Hectolitre mass, 100 kernel mass, kernel size, breakage susceptibility, stress cracks and milling index.
e. All white maize samples were milled on the Roff laboratory mill and the whiteness index of the maize meal determined.
f. Mycotoxin analyses were performed on 350 samples representative of white and yellow maize produced per region.
g. Testing for the presence of Genetically Modified (GM) maize were performed on 100 samples representative of white and yellow maize produced per region.
Please refer to the methodologies followed on pages 84 - 88.

The maize crop quality survey is performed annually by the Southern African Grain Laboratory NPC (SAGL). SAGL was established in 1997 on request of the Grain Industry. SAGL is an ISO 17025 accredited testing laboratory and participates in one national and sixteen international proficiency testing schemes as part of our ongoing quality assurance procedures to demonstrate technical competency and international comparability.

The results are available on the SAGL website (www.sagl.co.za). The hard copy reports are posted to all the Directly Affected Groups and interested parties. The report is also available for download in a PDF format from the website.

In addition to the quality information, production figures (obtained from the Crop Estimates Committee (CEC)) relating to hectares planted, tons produced and yields obtained on a national as well as provincial basis, over an eleven season period, are provided in this report. SAGIS (South African Grain Information Service) supply and demand information over several years is provided in table and graph format. The national grading regulations as published in the Government Gazette of 8 May 2009, are also included.

The goal of this crop quality survey is to accumulate quality data on the commercial maize crop on a national level. This valuable data reveal general tendencies, highlight quality differences in the commercial maize produced in different local production regions and provide important information on the quality of commercial maize intended for export (if any).

The Maize Trust investment in the annual Crop Quality Surveys, has created a unique and extremely useful database of crop quality measurements over several seasons and regions. Up to now, the data has only been presented in table and graph format, but has never been used for trend analyses or to assist in the development of prediction models such as the Milling Index Model.

In order to address this issue, SAGL undertook a data mining project, titled "Data Mining of past eleven

years' Milling Index and Crop survey Results", funded by the Maize Trust. A complete statistical analysis of the maize quality data from the 2001/2002 to 2011/2012 seasons were performed for the following measurements: Protein (crude), starch, fat (crude), hectolitre mass, 100 kernel mass, total deviations (grading data), Roff Milling Index, Break 1 flour yield, Break 2 flour yield, Break 3 flour yield, Grits yield and Bran yield (all Roff milling data).

As part of the project, the possibility of developing a Geographic Information System (GIS) map system, where grain production regions (with the boundaries illustrated) are presented on a map of South Africa, was explored. SIQ (with additional data from Agbiz Grain on the regional boundary specifications) created a software package based on an open source GIS package (QGIS). These GIS maps show mean values for a trait for a specific region as an average for all seasons combined or as individual seasons on a year to year basis. The results of the crop quality traits are represented in a colour scale format – highest to lowest values are indicated by the darkest to the lightest colour. Mean values are showed as a legend. This GIS tool provides a good starting point but will however require further optimization in future.

The project outcome provides a decision making tool to the maize industry stakeholders to assist in the identification of potential problem areas in maize quality and to focus future research activities.

2. Production

The finalized commercial crop figure for commercial maize for the 2013/2014 season as overseen by the National Crop Estimates Liaison Committee (CELC) is 14 250 000 tons. This is the largest maize crop in 33 years and according to CEC figures also the highest yielding crop ever. White maize's contribution to the total production was 7 710 000 tons (54%) and that of yellow maize 6 540 000 tons (46%).

The total area utilized for maize production in the 2013/2014 season was 2 688 200 hectares, a decrease of 3.3% compared to the previous season. White maize was planted on 1 551 200 hectares and yellow maize on 1 137 000 hectares (1 617 200 and 1 164 000 hectares respectively in the 2012/2013 season).

The maize yield increased from 4.25 t/ha in the previous season to 5.30 t/ha this season. White maize yielded 4.97 t/ha and yellow maize 5.75 t/ha, representing increases of 43% and 8% respectively.

The national Crop Estimates Committee's (CEC) estimated total production figures was revised, using as basis for the calculations, the South African Grain Information Services' (SAGIS) published figures of actual deliveries. Figures to determine on-farm usage and retentions from the maize utilization survey, which was conducted by the Department of Agriculture, Forestry and Fisheries (DAFF) and the telephonic survey conducted by the National Crop Statistics Consortium (NCSC), were added to the SAGIS delivery figures to calculate the final crop production figures.

The final maize crop figure for the 2012/2013 season was also revised mainly due to the fact that the actual deliveries of maize for the period November 2013 to February 2014 was considerably more than projected. These increased actual deliveries as released by SAGIS, plus on-farm retentions, increased the final figure from 11 690 000 tons to 11 810 600 tons.

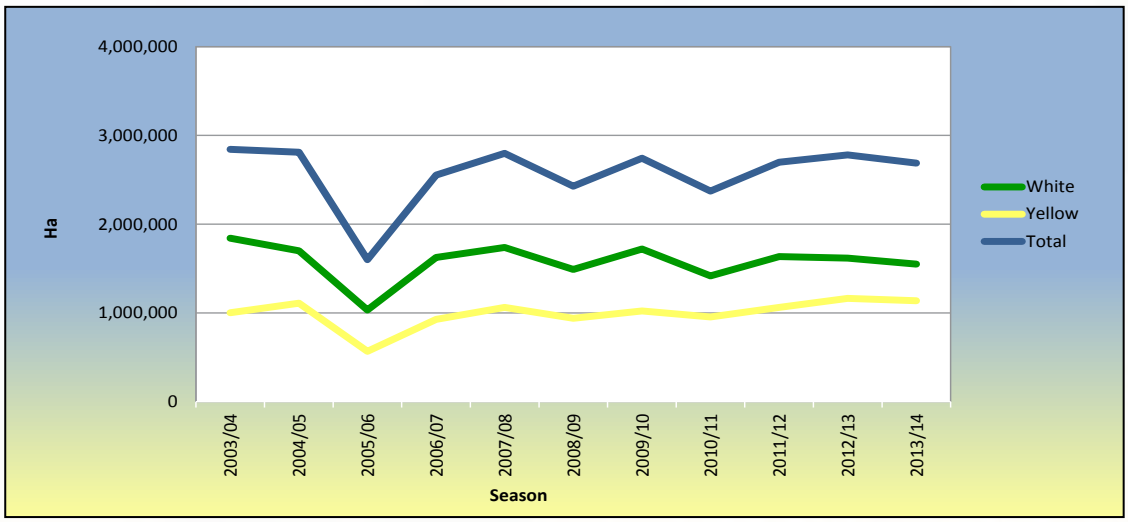
The major maize-producing provinces are the Free State, North West and Mpumalanga, contributing 84% of the total maize production in the RSA. The Free State produced 6 247 250 tons of maize on 1 195 000 hectares with a yield of 5.23 t/ha. North West produced 2 898 000 tons of maize on 665 000 hectares yielding 4.36 t/ha and Mpumalanga produced 2 782 200 tons of maize on 500 000 hectares with a yield of 5.56 t/ha. Yellow maize contributed 67% of the total maize production in Mpumalanga while the majority of maize produced in the Free State and especially North West is white.

Please see the graphs on pages 3 to 5 for national and provincial figures for area planted, production and yield over seasons.

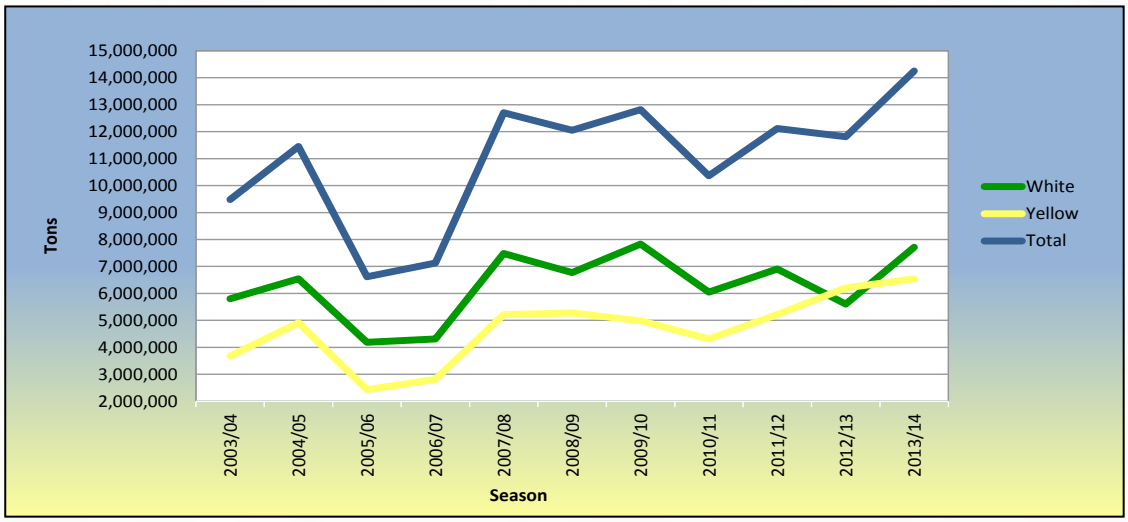
Favourable growing conditions also occurred in the USA and other maize producing countries in the Northern hemisphere, resulting in record crops and world maize production reaching new record levels in the 2013/2014 season.

According to the BFAP Baseline, Agricultural Outlook 2014 – 2023, maize plantings are expected to decrease slightly during 2015 and 2016 as a result of lower relative profitability and lower projected domestic prices. From 2017 to 2023, yellow maize planting is expected to increase at the expense of white maize, with the area under yellow maize production expected to reach a level of 1.2 million hectares. The increase in yellow maize is projected to be less than the reduction in white maize planting and as a result, total maize plantings will gradually decline toward the end of the baseline period to just over 2.4 million hectares. White and yellow maize yields are expected to average 5.4 t/ha and 5.9 t/ha respectively by 2023.

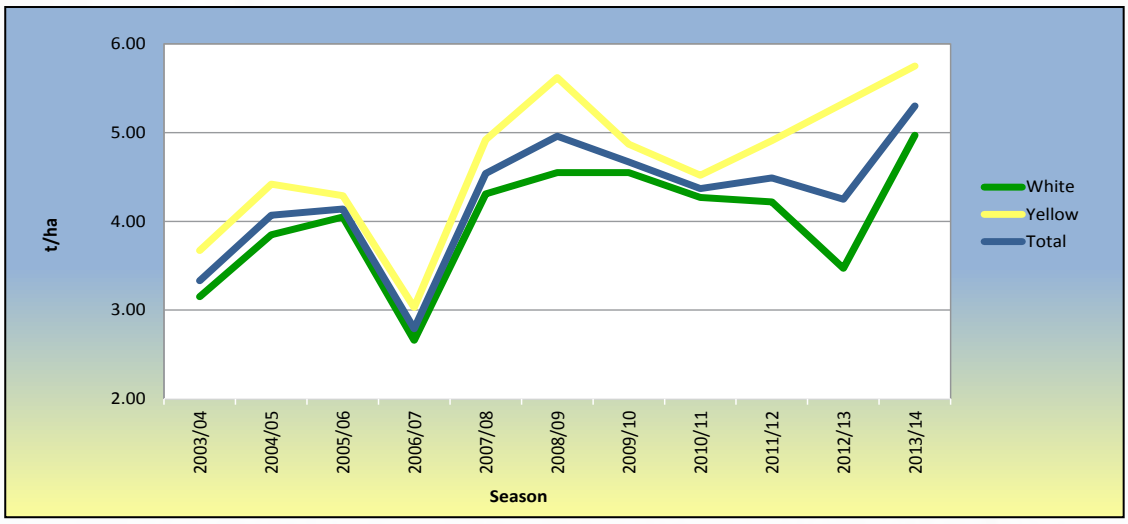
Graph 1: Total RSA area utilized for maize production from 2003/04 to 2013/14



Graph 2: Maize production in RSA from 2003/04 to 2013/14

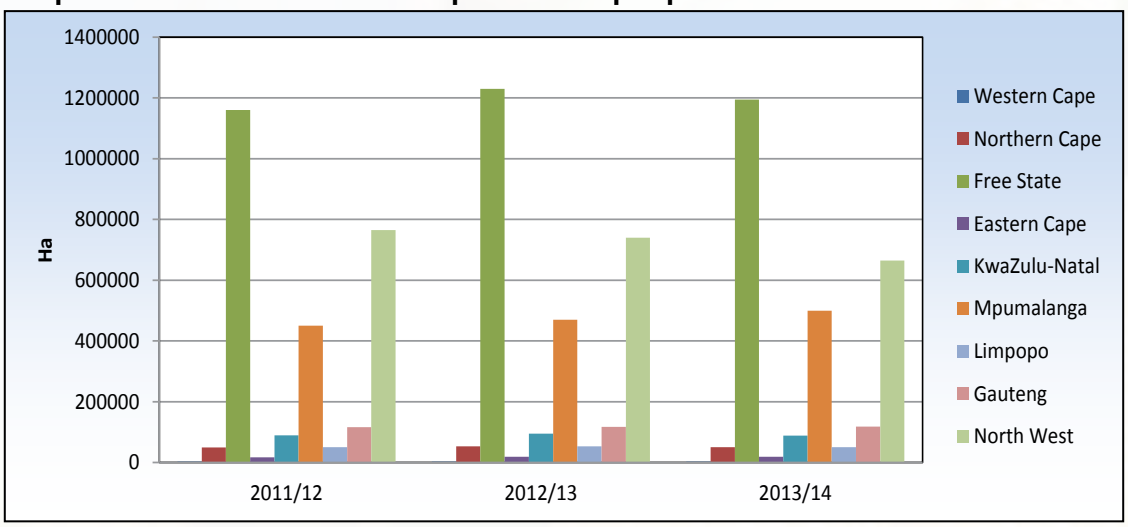


Graph 3: RSA Maize yield from 2003/04 to 2013/2014

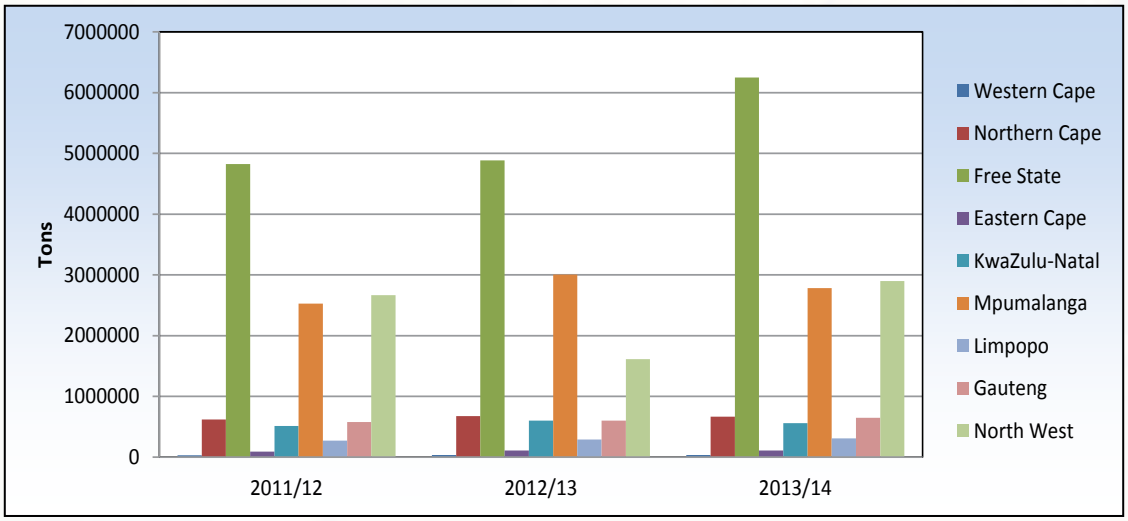


Information provided by the CEC.

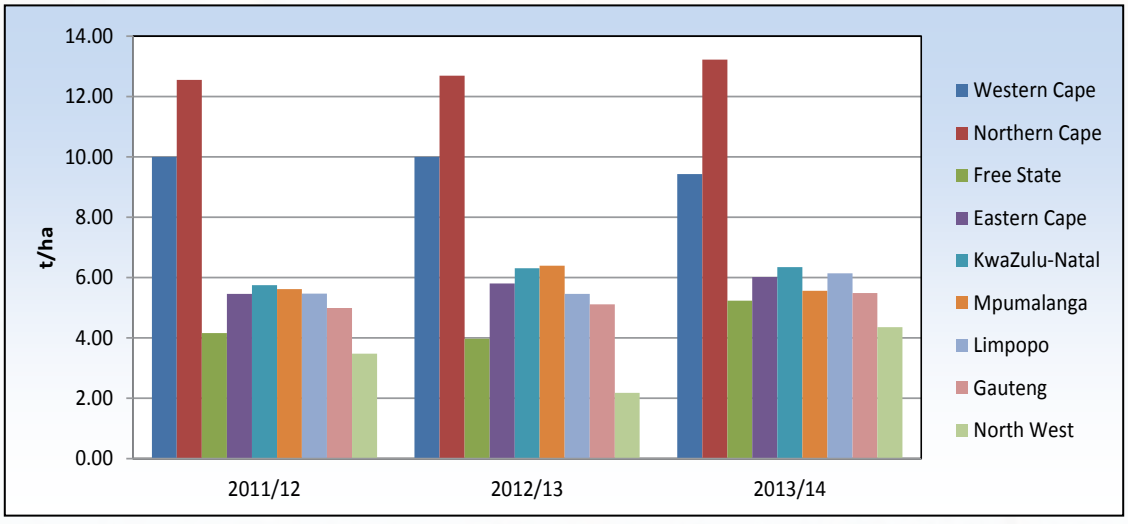
Graph 4: Area utilized for maize production per province over three seasons



Graph 5: Maize production per province over three seasons

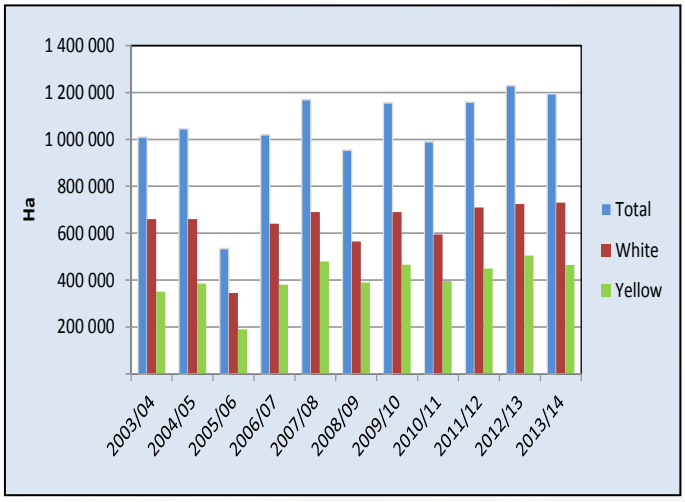


Graph 6: Maize yield per province over three seasons

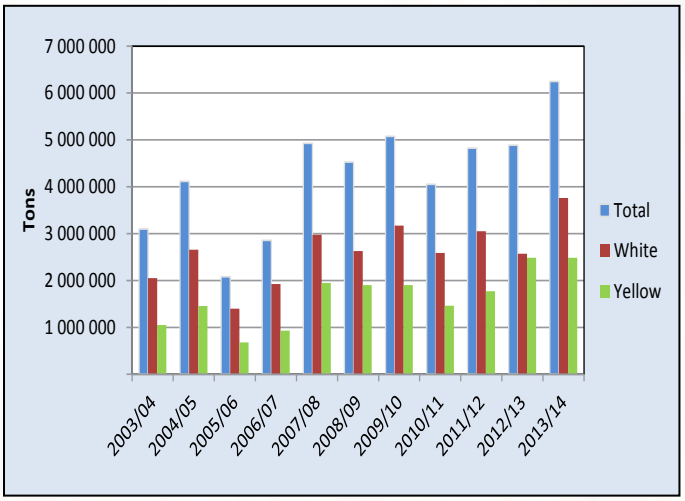


Information provided by the CEC.

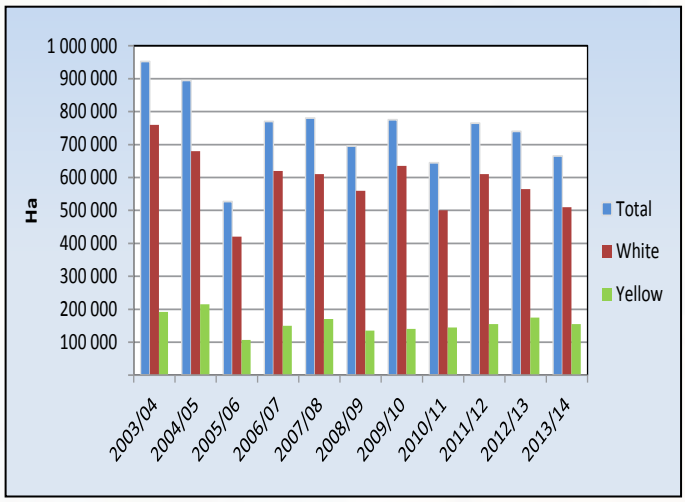
Graph 7: Area utilized for maize production in the Free State since 2003/04



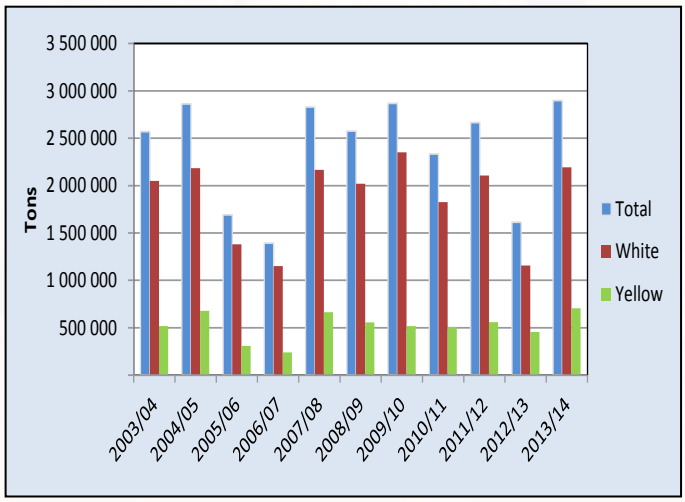
Graph 8: Maize production in the Free State since 2003/04



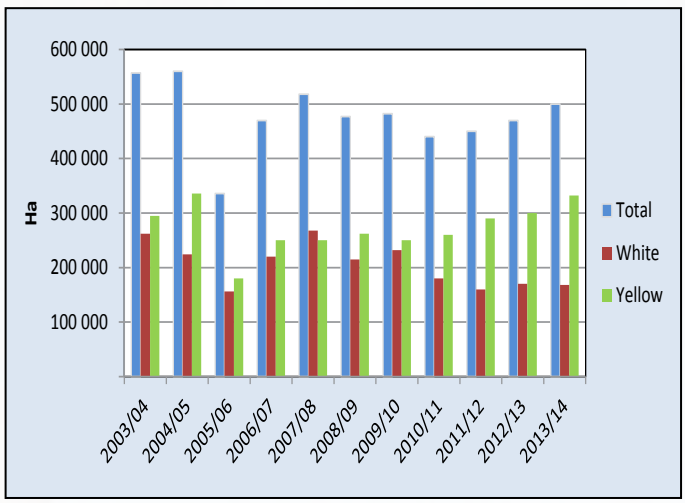
Graph 9: Area utilized for maize production in North West since 2003/04



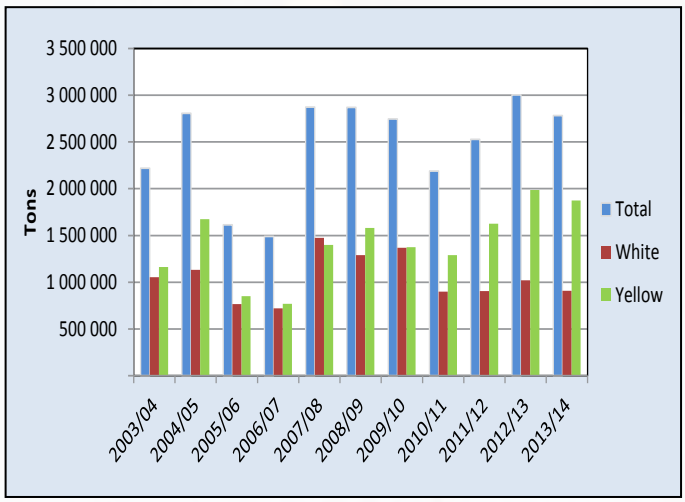
Graph 10: Maize production in North West since 2003/04



Graph 11: Area utilized for maize production in Mpumalanga since 2003/04



Graph 12: Maize production in Mpumalanga since 2003/04



Information provided by the CEC.

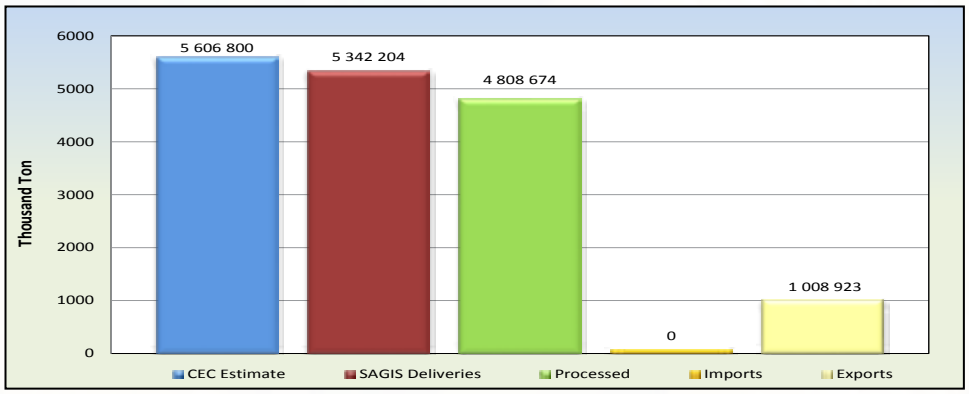
3. Supply and Demand

According to the BFAP Baseline, maize feed demand is projected to grow strongly over the period 2014 to 2023. Feed demand increased by 42% over the past ten years and is expected to further increase by 39%, which implies that by 2023 more than 7 million tons of maize will be fed to animals, compared to the approximately 4.7 million tons of maize consumed by the human population.

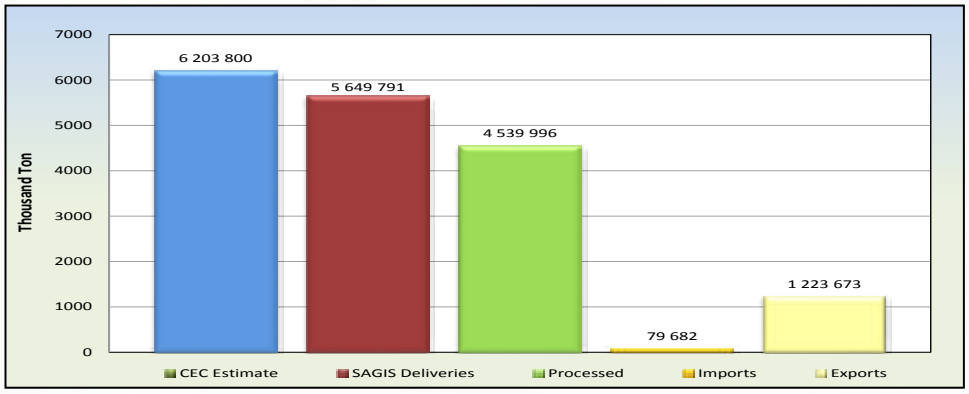
Domestic human consumption of white maize is projected to remain relatively constant over the long term. Any significant increase in white maize production will have to be absorbed by either the export market or by substituting yellow maize in the feed market at a discounted price. South Africa is expected to remain a net exporter of white maize as improved yields are anticipated to largely offset lower white maize plantings over the long term.

Please see SAGIS Supply and Demand figures and graphs below and on pages 7 to 12.

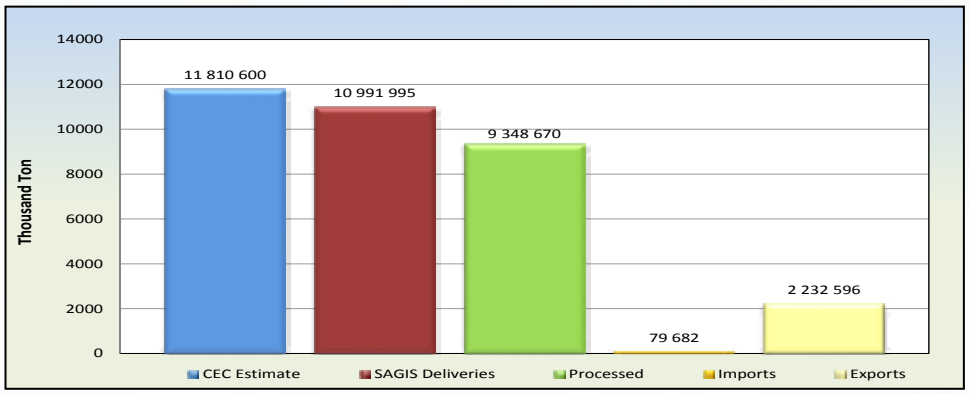
Graph 13: White maize supply and demand overview 2013/2014 marketing season



Graph 14: Yellow maize supply and demand overview 2013/2014 marketing season



Graph 15: Total maize supply and demand overview 2013/2014 marketing season



Information provided by SAGIS.

SAGIS South African Grain Information Service
Suid-Afrikaanse Graan Inligtingsdiens

TOTAL MAIZE: SUPPLY AND DEMAND TABLE BASED ON SAGIS' INFO (TON)

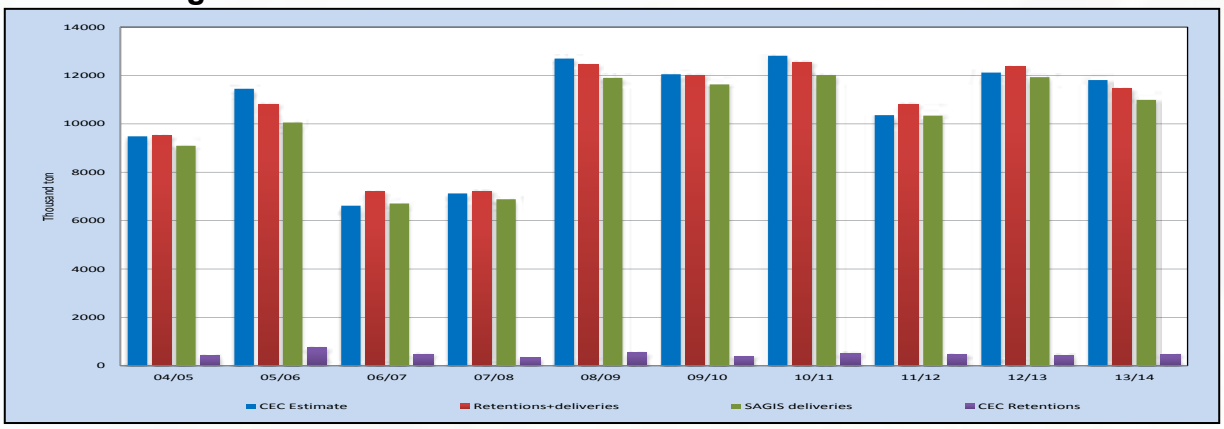
Publication date: 2015-03-24

	Marketing Season (May - Apr)																Current Season May-Jan	10 Year average
Season	**97/98**	**98/99**	**99/00**	**00/01**	**01/02**	**02/03**	**03/04**	**04/05**	**05/06**	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**	**14/15**	**2003/4-2012/13**
																		***	
																		10	
CEC (Crop Estimate)	8,488,000	7,082,000	6,716,000	10,141,000	7,225,000	9,732,000	9,392,000	9,482,000	11,450,000	6,618,000	7,125,000	12,700,000	12,050,000	12,815,000	10,360,000	12,120,656	11,810,600	14,250,000	10,653,126
CEC (Retention)		469,000	502,000	614,000	414,000	462,000	366,000	410,000	754,000	480,000	337,000	554,000	389,000	527,000	474,000	433,000	457,810	550,000	481,581
SUPPLY																			
Opening stock (1 May)	1,283,000	1,949,000	847,000	983,000	2,115,000	1,202,000	2,710,000	2,624,000	3,148,000	3,169,000	2,070,000	1,049,000	1,581,000	2,131,000	2,336,000	994,000	1,417,393	589,028	2,051,939
Prod deliveries	9,732,000	6,854,000	7,075,000	10,409,000	7,936,000	9,310,000	8,409,000	9,093,000	10,055,000	6,707,000	6,882,000	11,899,000	11,629,000	12,016,000	10,340,000	11,929,000	10,991,995	13,265,126	10,154,200
Imports	109,000	98,000	569,000	0	395,000	925,000	441,000	219,000	360,000	931,000	1,120,000	27,000	27,000	0	421,000	11,000	79,682	0	319,568
Surplus	0	0	0	0	0	0	40,000	0	0	32,000	29,000	30,000	68,000	77,000	54,000	42,000	122,608	29,669	45,461
Total Supply	**11,124,000**	**8,901,000**	**8,491,000**	**11,392,000**	**10,446,000**	**11,437,000**	**11,600,000**	**11,936,000**	**13,563,000**	**10,839,000**	**10,101,000**	**13,005,000**	**13,305,000**	**14,224,000**	**13,151,000**	**12,976,000**	**12,611,678**	**13,883,823**	**12,571,168**
DEMAND																			
Processed	6,383,000	6,341,000	6,362,000	6,852,000	7,151,000	6,983,000	7,243,000	7,283,000	7,462,000	7,660,000	8,029,000	8,613,000	8,658,000	8,857,000	8,941,000	8,935,000	9,348,670	8,216,134	8,378,667
-human	3,410,000	3,381,000	3,426,000	3,589,000	3,877,000	3,708,000	3,712,000	3,740,000	3,825,000	3,816,000	3,809,000	4,524,000	4,471,000	4,513,000	4,512,000	4,499,000	4,582,310	4,021,274	4,229,131
-animal	2,973,000	2,960,000	2,936,000	3,068,000	3,146,000	3,155,000	3,416,000	3,427,000	3,537,000	3,763,000	4,157,000	4,020,000	4,101,000	4,271,000	4,362,000	4,378,000	4,715,295	4,155,473	4,073,130
-gristing	n/a	n/a	n/a	195,000	128,000	120,000	115,000	116,000	100,000	81,000	63,000	69,000	86,000	73,000	67,000	58,000	51,065	39,387	76,407
-bio-fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Withdrawn by producers	211,000	0	0	500,000	325,000	301,000	299,000	255,000	315,000	241,000	217,000	273,000	291,000	267,000	142,000	138,000	148,909	122,535	228,791
Released to end-consumers	0	0	423,000	267,000	214,000	206,000	224,000	351,000	340,000	235,000	230,000	220,000	378,000	526,000	484,000	478,000	280,432	166,881	352,243
Net receipts(-)/disp(+)	0	0	0	2,000	63,000	35,000	25,000	18,000	28,000	36,000	42,000	49,000	51,000	44,000	15,000	62,000	12,043	37,414	35,704
Deficit	0	98,000	79,000	168,000	156,000	14,000	0	49,000	12,000	0	0	0	0	0	0	0	0	0	6,100
Exports	1,921,000	1,388,000	652,000	1,488,000	1,335,000	1,188,000	1,185,000	832,000	2,237,000	597,000	534,000	2,269,000	1,796,000	2,194,000	2,575,000	1,946,000	2,232,596	2,002,641	1,721,260
Total Demand	**8,515,000**	**7,827,000**	**7,516,000**	**9,277,000**	**9,244,000**	**8,727,000**	**8,976,000**	**8,788,000**	**10,394,000**	**8,769,000**	**9,052,000**	**11,424,000**	**11,174,000**	**11,888,000**	**12,157,000**	**11,559,000**	**12,022,650**	**10,545,605**	**10,722,765**
Ending Stock (30 Apr)	**2,609,000**	**1,074,000**	**975,000**	**2,115,000**	**1,202,000**	**2,710,000**	**2,624,000**	**3,148,000**	**3,169,000**	**2,070,000**	**1,049,000**	**1,581,000**	**2,131,000**	**2,336,000**	**994,000**	**1,417,000**	**589,028**	**3,338,218**	**1,848,403**
- processed p/month	531,900	528,400	530,200	571,000	595,900	581,900	603,600	606,900	621,800	638,300	669,100	717,800	721,500	738,100	745,100	744,583	779,056	821,613	698,224
- months' stock	4.9	2.0	1.8	3.7	2.0	4.7	4.3	5.2	5.1	3.2	1.6	2.2	3.0	3.2	1.3	1.9	0.8	4.1	3

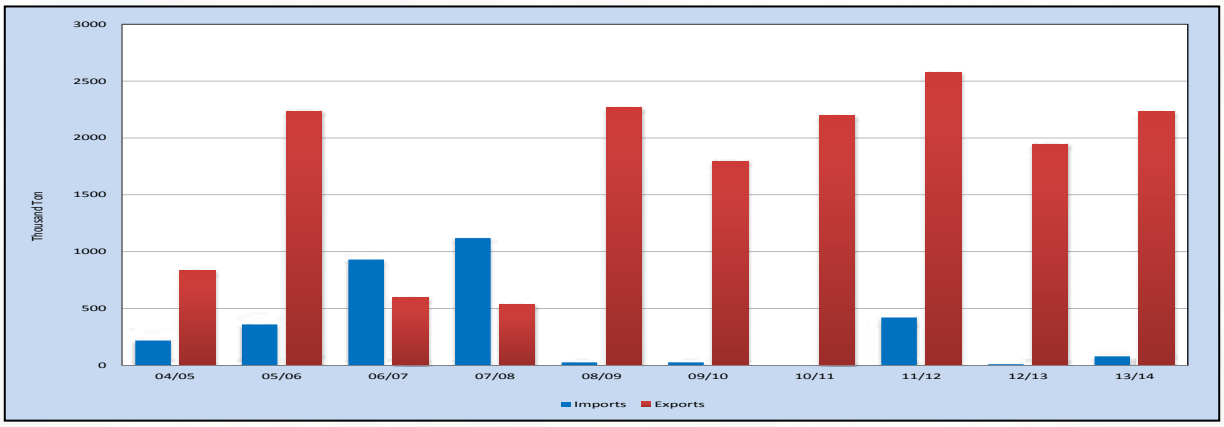
Note: 1998/1999 and 1999/2000 Includes storage on behalf of producers

Note: * Figures for current season up to date**

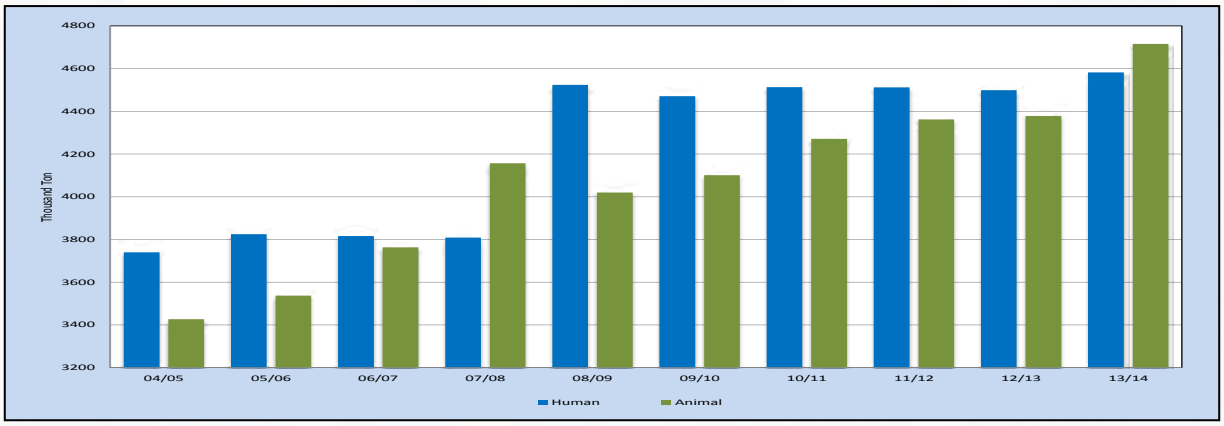
Graph 16: Maize: CEC Estimate, Retentions and SAGIS deliveries over 10 marketing seasons



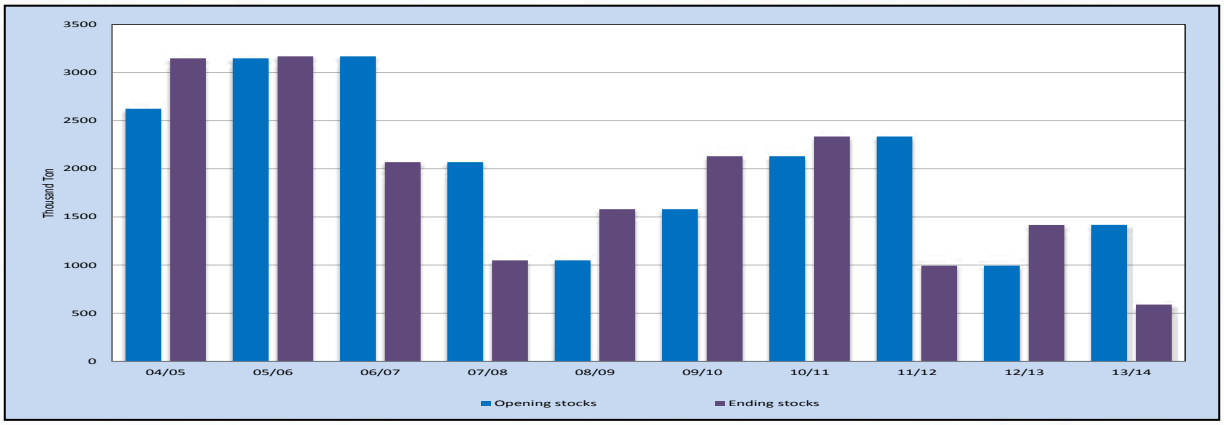
Graph 17: Maize: Imports and exports over 10 marketing seasons



Graph 18: Maize: RSA consumption over 10 marketing seasons



Graph 19: Maize: Opening and ending stocks over 10 marketing seasons



Information provided by SAGIS.

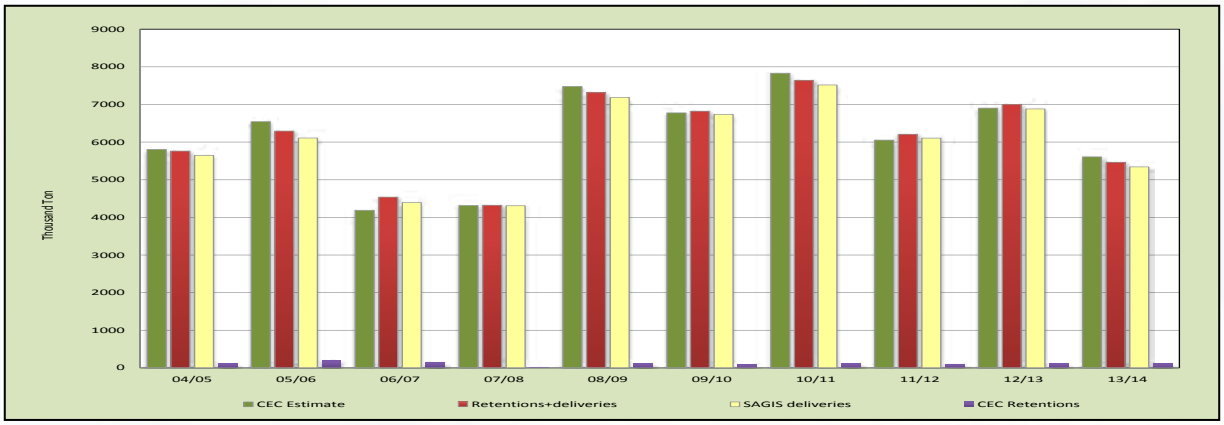
SAGIS South African Grain Information Service
Suid-Afrikaanse Graan Inligtingsdiens

WHITE MAIZE: SUPPLY AND DEMAND TABLE BASED ON SAGIS' INFO (TON)

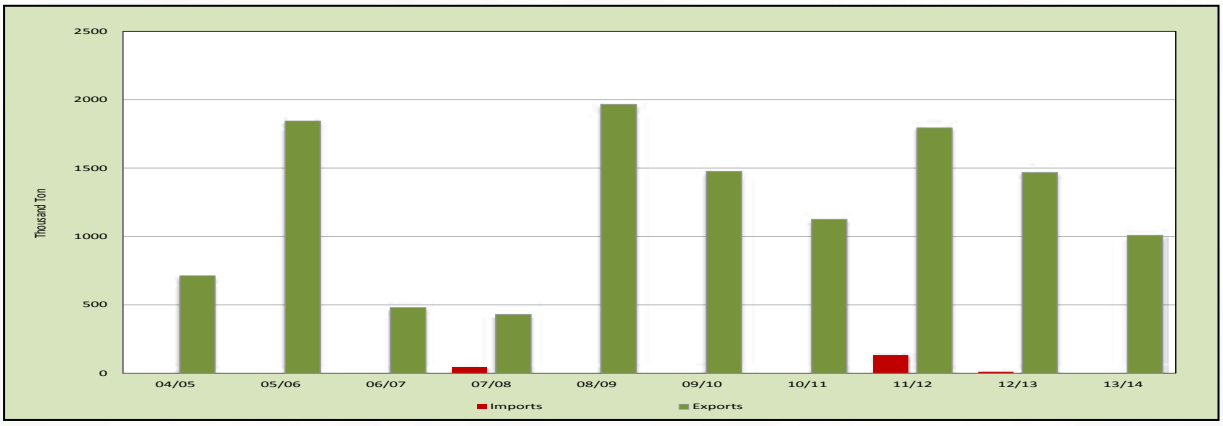
Publication date: 2015-03-24

	Season (May - Apr)																Current Season May-Jan	10 Year average
Season	**97/98**	**98/99**	**99/00**	**00/01**	**01/02**	**02/03**	**03/04**	**04/05**	**05/06**	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**	**14/15**	**2004/5-2013/14**
																		***	
																		9	
CEC (Crop Estimate)	4,614,000	4,383,000	4,141,000	6,155,000	4,110,000	5,538,000	6,366,000	5,805,000	6,541,000	4,187,000	4,315,000	7,480,000	6,775,000	7,830,000	6,052,000	6,903,656	5,606,800	7,710,000	6,149,546
CEC (Retention)		119,000	124,000	189,000	105,000	139,000	116,000	113,000	184,000	144,000	11,000	120,000	83,000	119,000	100,000	114,000	110,910	150,000	109,891
SUPPLY																			
Opening stock (1 May)	838,000	947,000	513,000	609,000	1,273,000	559,000	1,718,000	2,123,000	2,402,000	2,301,000	1,630,000	618,000	762,000	1,362,000	1,609,000	518,000	757,214	274,318	1,408,221
Prod deliveries	5,183,000	4,412,000	4,652,000	6,440,000	4,636,000	5,576,000	5,845,000	5,647,000	6,108,000	4,392,000	4,309,000	7,190,000	6,737,000	7,518,000	6,105,000	6,880,000	5,342,204	7,402,798	6,022,820
Imports	5,000	0	0	0	47,000	274,000	33,000	0	0	1,000	46,000	0	0	0	133,000	11,000	0	0	19,100
Surplus	0	17,000	0	0	0	0	40,000	0	4,000	20,000	19,000	25,000	48,000	45,000	18,000	22,000	69,859	8,436	27,086
Total Supply	**6,026,000**	**5,376,000**	**5,165,000**	**7,049,000**	**5,956,000**	**6,409,000**	**7,636,000**	**7,770,000**	**8,514,000**	**6,714,000**	**6,004,000**	**7,833,000**	**7,547,000**	**8,925,000**	**7,865,000**	**7,431,000**	**6,169,277**	**7,685,552**	**7,477,228**
DEMAND																			
Processed	3,584,000	3,586,000	3,687,000	4,342,000	4,202,000	3,679,000	4,212,000	4,313,000	4,186,000	4,385,000	4,751,000	4,922,000	4,555,000	5,871,000	5,374,000	5,047,000	4,808,674	5,004,453	4,821,267
-human	3,316,000	3,255,000	3,235,000	3,377,000	3,630,000	3,459,000	3,467,000	3,478,000	3,559,000	3,526,000	3,552,000	4,198,000	4,125,000	4,157,000	4,119,000	4,095,000	4,118,448	3,616,695	3,892,745
-animal	268,000	331,000	452,000	783,000	446,000	105,000	641,000	733,000	543,000	787,000	1,142,000	662,000	362,000	1,658,000	1,202,000	904,000	651,925	1,360,099	864,493
-gristing	n/a	n/a	n/a	182,000	126,000	115,000	104,000	102,000	84,000	72,000	57,000	62,000	68,000	56,000	53,000	48,000	38,301	27,659	64,030
-bio-fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Withdrawn by producers	87,000	0	0	349,000	164,000	144,000	144,000	107,000	101,000	112,000	107,000	111,000	81,000	108,000	46,000	36,000	32,409	41,363	84,141
Released to end-consumers	0	0	222,000	96,000	64,000	40,000	76,000	181,000	71,000	80,000	69,000	45,000	62,000	189,000	126,000	95,000	43,000	33,648	96,100
Net receipts(-)/disp(+)	0	0	0	7,000	43,000	11,000	12,000	17,000	11,000	27,000	28,000	27,000	10,000	22,000	7,000	28,000	1,953	23,903	17,895
Deficit	0	0	58,000	121,000	112,000	0	0	38,000	0	0	0	0	0	0	0	0	0		3,800
Exports	1,119,000	1,108,000	594,000	861,000	812,000	817,000	1,069,000	712,000	1,844,000	480,000	431,000	1,966,000	1,477,000	1,126,000	1,794,000	1,468,000	1,008,923	534,348	1,230,692
Total Demand	**4,790,000**	**4,694,000**	**4,561,000**	**5,776,000**	**5,397,000**	**4,691,000**	**5,513,000**	**5,368,000**	**6,213,000**	**5,084,000**	**5,386,000**	**7,071,000**	**6,185,000**	**7,316,000**	**7,347,000**	**6,674,000**	**5,894,959**	**5,637,715**	**6,253,896**
Ending Stock (30 Apr)	**1,236,000**	**682,000**	**604,000**	**1,273,000**	**559,000**	**1,718,000**	**2,123,000**	**2,402,000**	**2,301,000**	**1,630,000**	**618,000**	**762,000**	**1,362,000**	**1,609,000**	**518,000**	**757,000**	**274,318**	**2,047,837**	**1,223,332**
- processed p/month	298,700	298,800	307,300	361,800	350,200	306,600	351,000	359,400	348,800	365,400	395,900	410,200	379,600	489,300	447,800	420,583	400,723	500,445	401,771
- months' stock	4.1	2.3	2.0	3.5	1.6	5.6	6.0	6.7	6.6	4.5	1.6	1.9	3.6	3.3	1.2	1.8	0.7	4.1	3
Note: Figures in red: opening stock and ending stock differs																			
Note: * Figures for current season up to date**																			

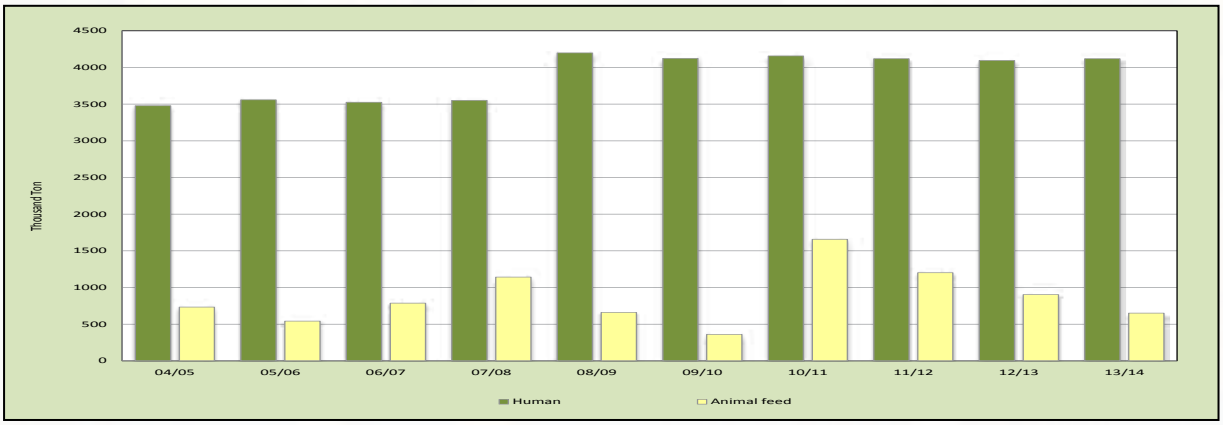
Graph 20: White Maize: CEC Estimate, Retentions and SAGIS deliveries over 10 marketing seasons



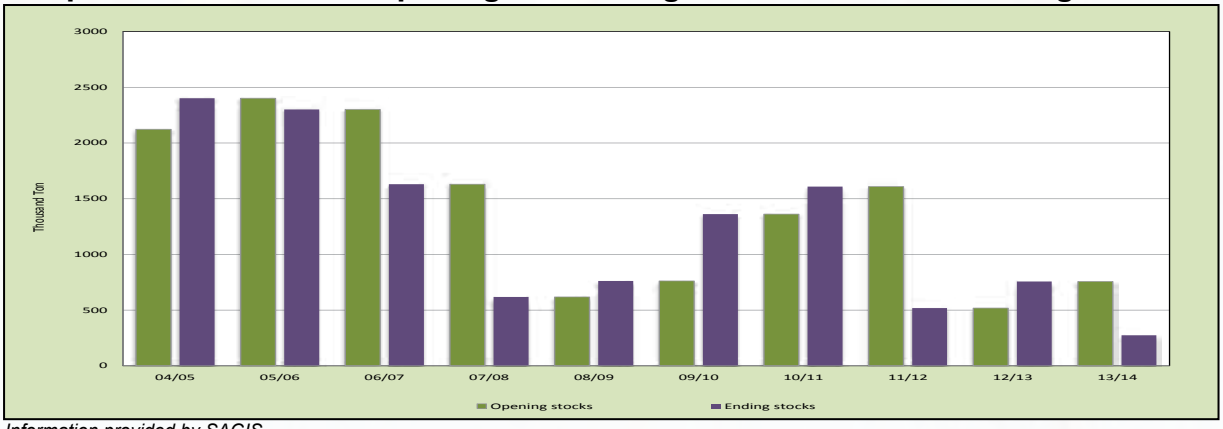
Graph 21: White Maize: Imports and exports over 10 marketing seasons



Graph 22: White Maize: RSA consumption over 10 marketing seasons



Graph 23: White Maize: Opening and ending stocks over 10 marketing seasons



Information provided by SAGIS.

SAGIS South African Grain Information Service
Suid-Afrikaanse Graan Inligtingsdiens

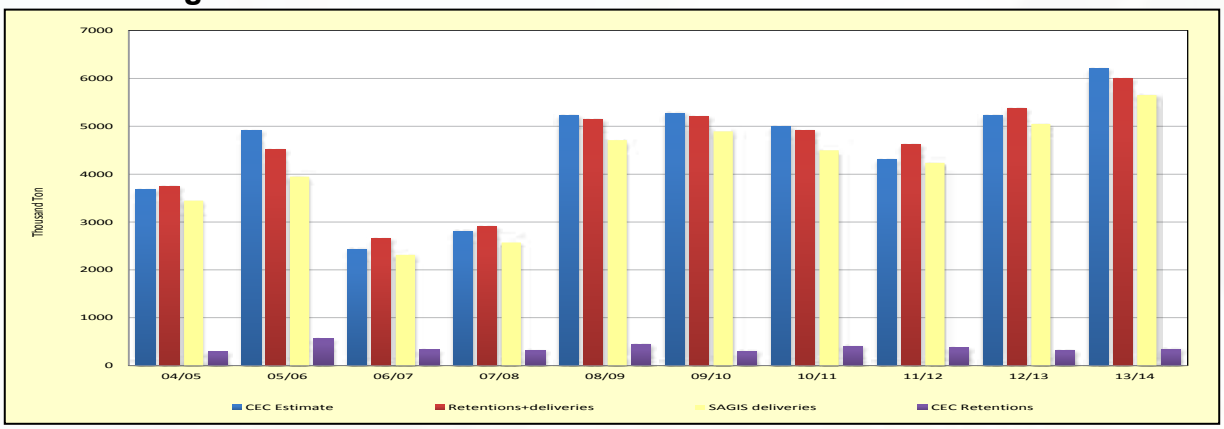
YELLOW MAIZE: SUPPLY AND DEMAND TABLE BASED ON SAGIS' INFO (TON)

Publication date: 2015-03-24

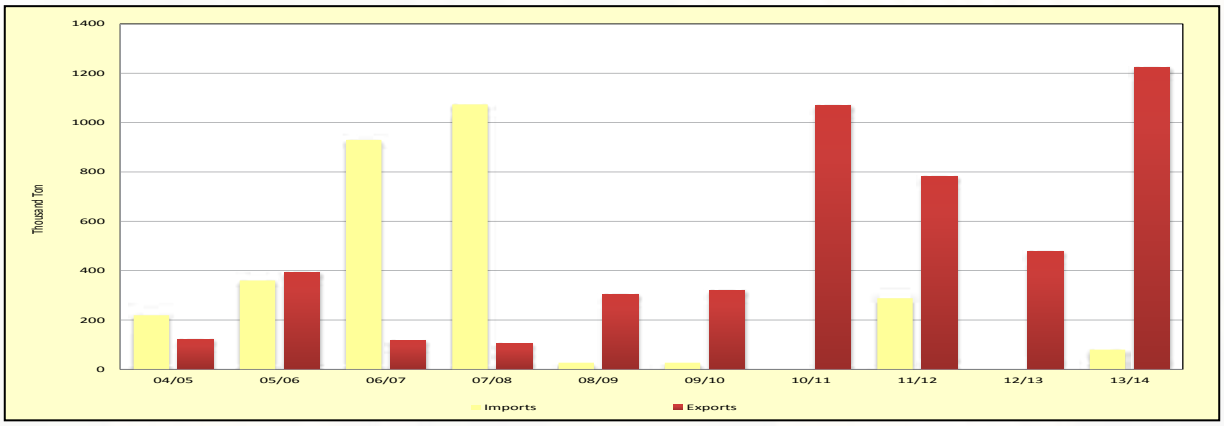
Season (May - Apr)																	Current Season May-Feb	10 Year average
Season	**97/98**	**98/99**	**99/00**	**00/01**	**01/02**	**02/03**	**03/04**	**04/05**	**05/06**	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**	**14/15**	**2004/5-2013/14**
																		***	
																		10	
CEC (Crop Estimate)	3,874,000	2,699,000	2,575,000	3,986,000	3,115,000	4,194,000	3,026,000	3,677,000	4,909,000	2,431,000	2,810,000	5,220,000	5,275,000	4,985,000	4,308,000	5,217,000	6,203,800	6,540,000	4,503,580
CEC (Retention)		350,000	378,000	425,000	309,000	323,000	250,000	297,000	570,000	336,000	326,000	434,000	306,000	408,000	374,000	319,000	346,900	400,000	371,690
SUPPLY																			
Opening stock (1 May)	445,000	1,002,000	334,000	374,000	842,000	643,000	992,000	501,000	746,000	868,000	440,000	431,000	819,000	769,000	727,000	476,000	660,179	314,710	643,718
Prod deliveries	4,549,000	2,442,000	2,423,000	3,969,000	3,300,000	3,734,000	2,564,000	3,446,000	3,947,000	2,315,000	2,573,000	4,709,000	4,892,000	4,498,000	4,235,000	5,049,000	5,649,791	5,862,328	4,131,379
Imports	104,000	98,000	569,000	0	348,000	651,000	408,000	219,000	360,000	930,000	1,074,000	27,000	27,000	0	288,000	0	79,682	0	300,468
Surplus	0	0	0	0	0	0	0	0	0	12,000	10,000	5,000	20,000	32,000	36,000	20,000	52,749	21,233	18,775
Total Supply	**5,098,000**	**3,542,000**	**3,326,000**	**4,343,000**	**4,490,000**	**5,028,000**	**3,964,000**	**4,166,000**	**5,053,000**	**4,125,000**	**4,097,000**	**5,172,000**	**5,758,000**	**5,299,000**	**5,286,000**	**5,545,000**	**6,442,401**	**6,198,271**	**5,094,340**
DEMAND																			
Processed	2,799,000	2,755,000	2,675,000	2,510,000	2,949,000	3,304,000	3,031,000	2,970,000	3,276,000	3,275,000	3,278,000	3,691,000	4,103,000	2,986,000	3,567,000	3,888,000	4,539,996	3,211,681	3,557,400
-human	94,000	126,000	191,000	212,000	247,000	249,000	245,000	262,000	266,000	290,000	257,000	326,000	346,000	356,000	393,000	404,000	463,862	404,579	336,386
-animal	2,705,000	2,629,000	2,484,000	2,285,000	2,700,000	3,050,000	2,775,000	2,694,000	2,994,000	2,976,000	3,015,000	3,358,000	3,739,000	2,613,000	3,160,000	3,474,000	4,063,370	2,795,374	3,208,637
-gristing	n/a	n/a	n/a	13,000	2,000	5,000	11,000	14,000	16,000	9,000	6,000	7,000	18,000	17,000	14,000	10,000	12,764	11,728	12,376
-bio-fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Withdrawn by producers	124,000	0	0	151,000	161,000	157,000	155,000	148,000	214,000	129,000	110,000	162,000	210,000	159,000	96,000	102,000	116,500	81,172	144,650
Released to end-consumers	0	0	201,000	171,000	150,000	166,000	148,000	170,000	269,000	155,000	161,000	175,000	316,000	337,000	358,000	383,000	237,432	133,233	256,143
Net receipts(-)/disp(+)	0	0	0	-5,000	20,000	24,000	13,000	1,000	17,000	9,000	14,000	22,000	41,000	22,000	8,000	34,000	10,090	13,511	17,809
Deficit	0	115,000	21,000	47,000	44,000	14,000	0	11,000	16,000	0	0	0	0	0	0	0	0	0	2,700
Exports	802,000	280,000	58,000	627,000	523,000	371,000	116,000	120,000	393,000	117,000	103,000	303,000	319,000	1,068,000	781,000	478,000	1,223,673	1,468,293	490,567
Total Demand	**3,725,000**	**3,150,000**	**2,955,000**	**3,501,000**	**3,847,000**	**4,036,000**	**3,463,000**	**3,420,000**	**4,185,000**	**3,685,000**	**3,666,000**	**4,353,000**	**4,989,000**	**4,572,000**	**4,810,000**	**4,885,000**	**6,127,691**	**4,907,890**	**4,469,269**
Ending Stock (30 Apr)	**1,373,000**	**392,000**	**371,000**	**842,000**	**643,000**	**992,000**	**501,000**	**746,000**	**868,000**	**440,000**	**431,000**	**819,000**	**769,000**	**727,000**	**476,000**	**660,000**	**314,710**	**1,290,381**	**625,071**
- processed p/month	233,300	229,600	222,900	209,200	245,800	275,300	252,600	247,500	273,000	272,900	273,200	307,600	341,900	248,800	297,300	324,000	378,333	321,168	296,453
- months' stock	5.9	1.7	1.7	4.0	2.6	3.6	2.0	3.0	3.2	1.6	1.6	2.7	2.2	2.9	1.6	2.0	0.8	4.0	2

Note: *** Figures for current season up to date

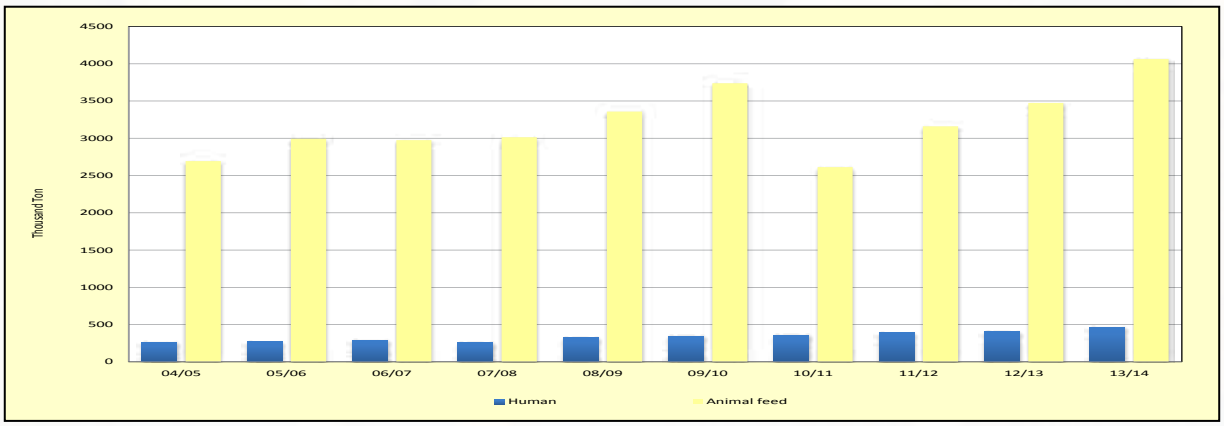
Graph 24: Yellow Maize: CEC Estimate, Retentions and SAGIS deliveries over 10 marketing seasons



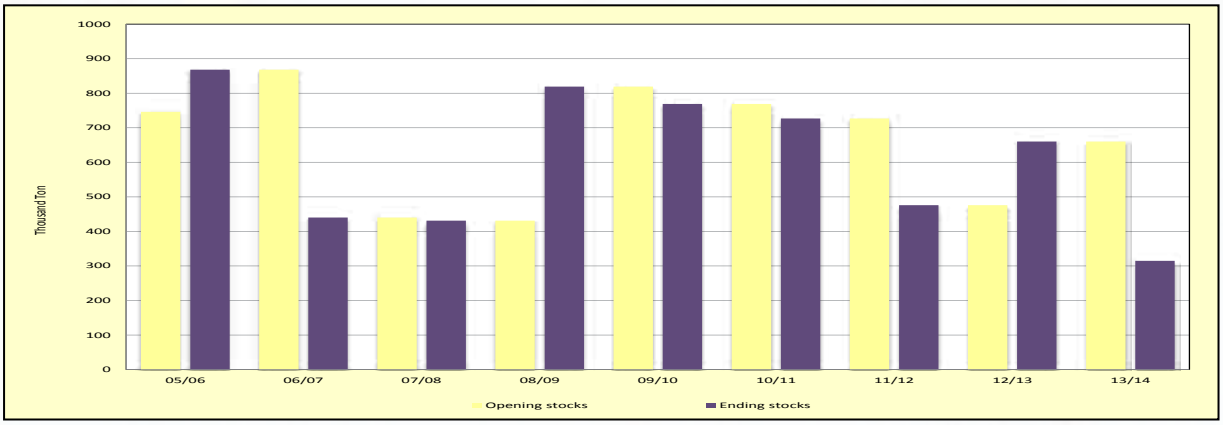
Graph 25: Yellow Maize: Imports and exports over 10 marketing seasons



Graph 26: Yellow Maize: RSA consumption over 10 marketing seasons



Graph 27: Yellow Maize: Opening and ending stocks over 10 marketing seasons



Information provided by SAGIS.

MAIZE IMPORTS PER COUNTRY / MIELIE INVOERE PER LAND

2013/14 Season / Seisoen (27 Apr 2013 - 25 Apr 2014)

FROM / VANAF	WHITE MAIZE / WITMIELIES			YELLOW MAIZE / GEELMIELIES			ALL MAIZE/ALLE MIELIES		
	FOR RSA VIR RSA TON	FOR AFRICA VIR AFRIKA TON	TOTAL TOTAAL TON	FOR RSA VIR RSA TON	FOR AFRICA VIR AFRIKA TON	TOTAL TOTAAL TON	FOR RSA VIR RSA TON	FOR AFRICA VIR AFRIKA TON	TOTAL TOTAAL TON
Ukraine	0	0	0	79 673	0	79 673	79 673	0	79 673
	0	**0**	**0**	**79 673**	**0**	**79 673**	**79 673**	**0**	**79 673**

MAIZE EXPORTS PER COUNTRY / MIELIE UITVOERE PER LAND

2013/14 Season / Seisoen (27 Apr 2013 - 25 Apr 2014)

TO / NA	WHITE MAIZE / WITMIELIES			YELLOW MAIZE / GEELMIELIES			ALL MAIZE/ALLE MIELIES		
	TO AFRICA NA AFRIKA TON	TO OVERSEAS NA OORSEE TON	TOTAL TOTAAL TON	TO AFRICA NA AFRIKA TON	TO OVERSEAS NA OORSEE TON	TOTAL TOTAAL TON	TO AFRICA NA AFRIKA TON	TO OVERSEAS NA OORSEE TON	TOTAL TOTAAL TON
Angola	6 102	0	**6 102**	1 440	0	**1 440**	7 542	0	**7 542**
Botswana	165 789	0	**165 789**	46 694	0	**46 694**	212 483	0	**212 483**
Cameroon	1 058	0	**1 058**	1 350	0	**1 350**	2 408	0	**2 408**
China	0	0	**0**	0	473	**473**	0	473	**473**
Italy	0	0	**0**	0	0	**0**	0	0	**0**
Japan	0	0	**0**	0	596 315	**596 315**	0	596 315	**596 315**
Korea	0	0	**0**	0	148 044	**148 044**	0	148 044	**148 044**
Lesotho	50 396	0	**50 396**	8 735	0	**8 735**	59 131	0	**59 131**
Mali	0	0	**0**	0	0	**0**	0	0	**0**
Mexico	0	190 097	**190 097**	0	0	**0**	0	190 097	**190 097**
Madagascar	0	0	**0**	0	8 368	**8 368**	0	8 368	**8 368**
Mozambique	80 151	0	**80 151**	22 542	0	**22 542**	102 693	0	**102 693**
Namibia	151 481	0	**151 481**	45 728	0	**45 728**	197 209	0	**197 209**
Nigeria	0	0	**0**	13 695	0	**13 695**	13 695	0	**13 695**
Swaziland	23 257	0	**23 257**	40 975	0	**40 975**	64 232	0	**64 232**
Taiwan	0	0	**0**	0	166 360	**166 360**	0	166 360	**166 360**
Zimbabwe	257 594	0	**257 594**	29 219	0	**29 219**	286 813	0	**286 813**
	735 828	**190 097**	**925 925**	**210 378**	**919 560**	**1 129 938**	**946 206**	**1 109 657**	**2 055 863**

4. Imported Maize

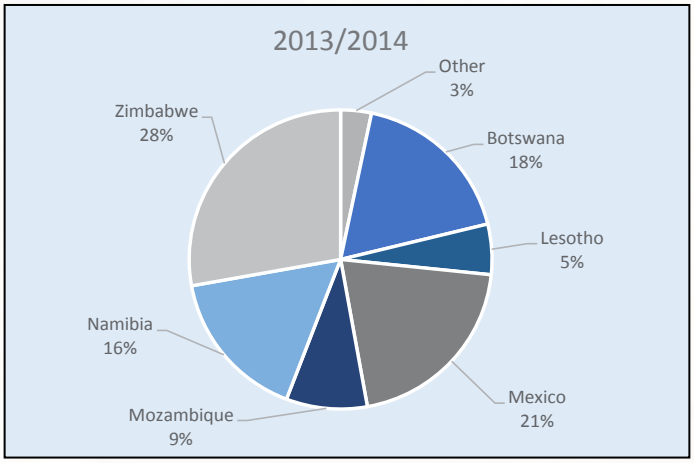
A total of 79 673 tons of yellow maize was imported from the Ukraine during the 2013/2014 season (27 April 2013 to 25 April 2014). Five samples of imported maize were received at the SAGL for quality analyses purposes. One of the samples was graded YM2 and four of the samples YM3 according to South African grading regulations. The main grade determining factor was the percentage defective kernels below the 6.35 mm sieve.

The percentage stress cracks observed on the imported maize is significantly higher than that of local maize. Breakage susceptibility, showed the same trend as can be expected. The imported maize kernels were on average smaller than locally produced maize. Protein results between imported and local maize compared well. South African maize of corresponding grades had lower fat and starch contents on average. The imported maize tested positive for Fumonisin B1, Deoxynivalenol and HT-2 toxin. None of these levels raised any concern.

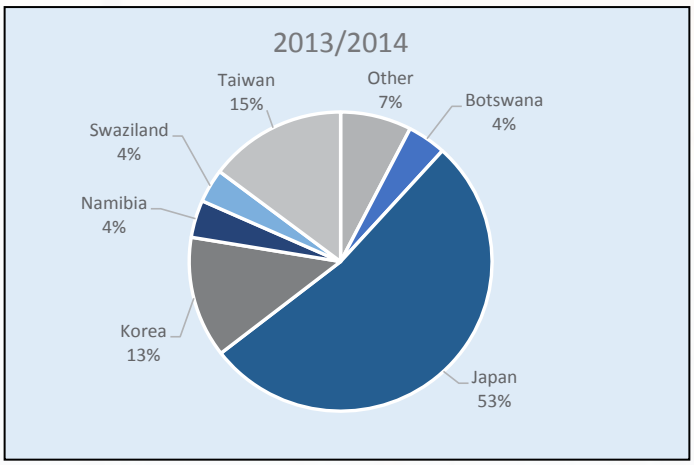
Please see the next page for a comparison of the quality of the imported maize versus the quality of the South African maize from the 2013/2014 season.

During the season under review, 925 925 tons of white maize and 1 129 938 tons of yellow maize were exported to both Africa and overseas. Please see graphs 28 and 29 below for the major destinations for RSA exports of maize.

Graph 28: Major destinations for RSA white maize exports during the 2013/2014 season



Graph 29: Major destinations for RSA yellow maize exports during the 2013/2014 season



IMPORTED MAIZE QUALITY

Quality of maize imported from 1 May 2013 to 30 April 2014 versus RSA crop quality 2013/2014

Country of origin	Ukraine		RSA Crop Average	
Class and grade yellow maize	**YM2**	**YM3**	**YM2**	**YM3**
RSA Grading				
Foreign matter, %	0.1	0.1	0.1	0.5
Defective kernels above 6.35 mm sieve, %	2.5	3.7	7.0	5.9
Defective kernels below 6.35 mm sieve, %	7.1	11.0	3.7	3.6
Total defective kernels, %	9.6	14.6	10.7	9.5
Other colour maize kernels, %	0.0	0.0	0.4	0.4
Total deviation, %	9.7	14.7	11.2	10.4
Pinked maize kernels, %	0.0	0.0	0.0	0.0
Physical Factors				
100 Kernel mass, g	26.6	25.8	30.0	30.5
Stress cracks, %	74	75	8	7
Milling Index	59.9	56.1	84.8	87.5
Kernel Size				
% above 10 mm sieve	1.2	5.2	12.1	12.6
% above 8 mm sieve	69.0	60.7	64.6	69.1
% belowe 8 mm sieve	29.8	34.1	23.3	18.4
Breakage susceptibility				
% Below 6.35 mm sieve	5.2	4.7	2.2	2.6
% Below 4.75 mm sieve	13.8	15.1	1.5	1.9
Nutritional Factors				
Protein, %	8.7	8.5	8.5	8.6
Fat, % (db)	4.2	4.3	3.7	4.0
Starch, % (db)	74.7	77.6	73.4	72.6
Number of samples	***1***	***4***	***95***	***8***
Mycotoxins				
Afla G_1 (µg/kg) [max. value]	0 [0]		0 [0]	0 [0]
Afla B_1 (µg/kg) [max. value]	0 [0]		0 [0]	0 [0]
Afla G_2 (µg/kg) [max. value]	0 [0]		0 [0]	0 [0]
Afla B_2 (µg/kg) [max. value]	0 [0]		0 [0]	0 [0]
Fum B_1 (µg/kg) [max. value]	11 [21]		140 [1223]	0 [0]
Fum B_2 (µg/kg) [max. value]	0 [0]		62 [519]	0 [0]
Fum B_3 (µg/kg) [max. value]	0 [0]		9 [93]	0 [0]
Deoxynivalenol (µg/kg) [max. value]	162 [212]		335 [2601]	280 [305]
15-ADON [max. value]	0 [0]		38 [292]	100 [199]
Ochratoxin A (µg/kg) [max. value]	0 [0]		0 [0]	0 [0]
Zearalenone (µg/kg) [max. value]	0 [0]		24 [354]	25 [49]
HT2 [max. value]	43 [47]		0 [0]	0 [0]
T-2 Toxin (µg/kg) [max. value]	0 [0]		0 [0]	0 [0]
Number of samples	***2***		***42***	***2***
GMO				
Cry1Ab, % [max value]	<0.4 [<0.4]		3.5 [>5.0]	-
Cry2Ab, % [max value]	<0.5 [<0.5]		2.3 [>5.0]	-
CP4 EPSPS, % [max value]	<0.25 [<0.25]		4.1 [>5.0]	-
Number of samples	***2***		***14***	***0***

5. Maize Crop Quality 2013/2014 - summary of results

5.1 RSA Grading

The maize crop was of good quality, with 70% of white and 77% yellow maize, graded as maize grade one. The percentage total defective kernels above and below the 6.35 mm sieve, 6.2% for white and 6.1% for yellow, compared well but was higher than the previous two seasons. The percentage defective kernels above the sieve increased compared to the two previous seasons, but the percentage defective kernels below the sieve decreased. Both the percentage Diplodia as well as Fusarium infected kernels were 0.4% higher than the previous season's 0.6% and 1.1% respectively. Foreign matter and other colour maize did not pose significant problems.

The average percentage combined or total deviations of white maize was 6.8% compared to the 4.9% of the 2012/2013 season, that of yellow maize was also higher, 6.4% compared to 4.8%. The average percentage total deviations on South African maize this season was 1.7% higher than the previous season.

Please refer to Table 4 on page 32.

5.2 USA Grading

Of the 930 maize samples graded according to USA grading regulations, 42% were graded US1, 31% US2, 11% US3, 7% US4, 6% US5, while mixed and sample grade represented 1% and 2% respectively. The percentage samples graded as US1 was significantly lower than the 79% of the previous season. The percentage samples graded as US2 was significantly higher than the 13% of the previous season. The main reason for downgrading the samples were the percentage total damaged kernels exceeding the maximum limit per grade.

5.3 Physical Quality factors

Hectolitre mass/Bushel weight/Test weight is applied as a grading factor in the USA grading regulations, but also routinely done at most intake points locally. White maize had an average hectolitre mass of 77.6 kg/hl compared to the 76.0 kg/hl of yellow maize. The hectolitre mass in total varied from 56.6 kg/hl to 81.9 kg/hl and averaged 76.8 kg/hl, slightly lower than the ten year average. Only 28 samples reported values below the minimum requirement (56.0 lbs or 72.1 kg/hl) for USA grade 1 maize, 15 of these samples were from Mpumalanga and 8 from the Free State.

The 100 kernel mass averaged 32.9 g which is 3.9 g higher than the previous season and also 0.6 g higher than the ten year average. White maize averaged 34.0 g and yellow maize 31.8 g.

The kernel size of both white and yellow maize were larger than the previous two seasons. The percentage yellow maize kernels above the 10 mm sieve were on average 9.8% lower than white kernels and the percentage kernels below the 8 mm sieve 7.4 % higher than that of white maize. The breakage susceptibility of both white and yellow maize compared well with the 2012/2013 season, although slightly higher. The % stress cracks varied from 0 – 53%, averaged 7% and was also slightly higher than previous seasons.

Please refer to Table 14 on page 50.

The milling index varied from 46.5 to 120.4 and averaged 90.9, 4.2 lower than the previous season. The average milling index for white maize is higher (93.0) than that of yellow maize (89.0).

5.4 Roff milling and whiteness index (WI)

The average % extraction of total meal in white maize obtained with the Roff mill averaged 79.0% (0.2% lower than the previous season) and varied from 73.5% to 84.8%.

The whiteness index averaged 25.3 for unsifted and 15.6 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 25.1 for unsifted maize meal. Sifted maize meal averaged 15.9.

The higher the WI value obtained, 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. The sample with the lowest sifted whiteness index of -18.0 this season also had the highest percentage of other maize namely 9.2%.

5.5 Nutritional Values

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

In general, white maize tends to have a higher fat content than yellow maize, but a lower starch content. No clear trend can be observed with regards to the protein content.

The average fat content of the 2013/2014 crop samples was 3.9%, equal to the weighted ten year average and 0.1% lower than the 2012/2013 samples. The average protein content (8.6%) was equal to the weighted ten year average and 0.6% lower than the 9.2% of the previous season. The starch content this season increased on average with 1.4% compared to the 71.6% of the previous season and is also 0.6% higher than the ten year weighted average of 72.4%.

The fat content of white maize was slightly lower (0.1%) than the previous season and 0.2% higher than that of yellow maize. The protein content of white maize was equal to that of yellow maize (8.6%). The starch content of both white and yellow maize is higher than the previous season by 1.5% and 1.2% respectively.

Please refer to Table 19 on page 62.

5.6 Genetic Modification (GM)

The SAGL screened 100 of the crop samples to test for the presence of the Cry1Ab, Cry2Ab and/or CP4 EPSPS traits. Important to remember is that the crop quality samples received by the SAGL are composite samples per class and grade, made up of individual deliveries to grain silos.

SAGL used the EnviroLogix QuickComb kit for bulk grain to quantitatively determine the presence of genetically modified maize.

The detection range for the Cry1Ab trait is 0.4% to 5%. 96% of the samples tested positive for Cry1Ab with values larger than 0.4% (Limit of quantification (LOQ)).

The detection range for the Cry2Ab trait is 0.5% to 5%. 90% of the samples gave values larger than the LOQ of 0.5% (positive results).

The detection range for the CP4 EPSPS trait is 0.25% to 5%. 94% of the samples tested positive for CP4 EPSPS with values larger than 0.25% (LOQ).

Values higher than 5%, the highest value of the detection range for all three traits, are reported as > 5%. This methodology has a precision coefficient of variation of 20%.

Please see Table 20 on page 64 for the results obtained as well as page 88 for a summary of the Events and Trade names/Brands represented by these three traits.

5.7 Mycotoxins

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

The average Fumonisin level (Sum of B_1, B_2 and B_3) on all 350 samples tested was 186 µg/kg (ppb) and ranged from 0 (not detected (ND)) to 5 357 µg/kg. This average is lower than the previous season's 257 µg/kg. Of the 350 samples tested, 143 samples (41%) tested positive for fumonisin levels and the average of these positive results was 456 µg/kg. The previous season, 45% of the samples tested positive, with an average of 571 µg/kg.

The highest Deoxynivalenol (DON) level detected was 6 134 µg/kg compared to the 617 µg/kg of last season. The average level of all samples tested this season was 289 µg/kg, 21 µg/kg the previous season. Nine percent of the samples tested positive for DON last season compared to the 69% of this season. The average of the positive results increased from 225 µg/kg in 2012/2013 to 417 µg/kg in 2013/2014.

Seventeen percent of the samples tested positive for 15-acetyl-deoxynivalenol (15-ADON) residues, the average of the positive results was 182 µg/kg. Only one sample tested positive the previous season.

Zearalenone residues were found in 12% of the samples, values ranged from 0 (ND) to 445 µg/kg. The average of the positive samples was 78 µg/kg compared to the 31 µg/kg of the previous season when 2% of the samples tested positive.

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. Please see mycotoxin results in Table 21 on pages 71 - 82.

Table 1: SOUTH AFRICAN MAIZE CROP QUALITY 2013/2014 (Weighted Averages)

Class and grade of maize	WM1	WM2	WM3	WCOM	YM1	YM2	YM3	YCOM	Weighted Ave.
RSA Grading									
Defective kernels above 6.35 mm sieve, %	2.9	6.9	12.4	11.7	3.0	7.0	5.9	9.2	4.3
Defective kernels below 6.35 mm sieve, %	1.5	2.1	2.1	5.9	1.7	3.7	3.6	2.3	1.9
Total defective kernels, %	4.4	9.0	14.5	17.6	4.7	10.7	9.5	11.5	6.2
Other colour maize kernels, %	0.2	0.6	1.0	0.4	0.1	0.4	0.4	2.1	0.3
Foreign matter, %	0.1	0.1	0.2	3.3	0.1	0.1	0.5	0.5	0.1
Combined deviation, %	4.7	9.8	15.6	21.3	4.9	11.2	10.4	14.1	6.6
Pinked maize kernels, %	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Physical Factors									
Hectolitre mass, kg/hl	77.8	77.2	76.5	75.1	76.3	75.2	74.5	74.1	76.8
100 Kernel mass, g	33.7	34.8	34.3	35.1	32.3	30.0	30.5	31.9	32.9
Stress cracks, %	6	9	8	24	7	8	7	19	7
Milling Index	94.3	90.7	87.1	92.3	90.4	84.8	87.5	75.5	90.9
Kernel Size									
% on top 10 mm	24.0	26.2	25.5	33.9	15.8	12.1	12.6	11.9	19.6
% on top 8 mm	65.6	62.7	63	59.4	67.6	64.6	69.1	70.7	65.9
% through 8 mm	10.4	11.1	11.5	6.7	16.7	23.3	18.4	17.4	14.4
Breakage susceptibility									
% Below 6.35 mm sieve	1.1	1.5	2.1	3.1	1.8	2.2	2.6	4.4	1.6
% Below 4.75 mm sieve	0.8	1.2	1.6	1.9	1.3	1.5	1.9	3.1	1.2
Nutritional Values									
Protein, %	8.6	8.6	8.3	9.2	8.6	8.5	8.6	8.4	8.6
Fat, % (db)	4.1	4.0	3.9	4.4	3.9	3.7	4.0	3.6	3.9
Starch, % (db)	72.8	72.9	73.0	71.9	73.1	73.4	72.6	73.3	73.0
Number of samples	***314***	***102***	***32***	***3***	***367***	***95***	***8***	***9***	***930***
Mycotoxins									
Total Aflatoxin, µg/kg (ppb) [max. value]	0 [0]	0 [0]	0 [0]	-	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]
Total Fumonisin, µg/kg (ppb) [max. value]	188 [2927]	193 [1195]	45 [283]	-	193 [5357]	210 [1720]	0 [0]	8 [25]	186 [5357]
Deoxynivalenol, µg/kg (ppb) [max. value]	217 [1351]	557 [1675]	1322 [6134]	-	198 [1504]	335 [2601]	280 [305]	37 [112]	289 [6134]
15-ADON, µg/kg (ppb) [max. value]	12 [269]	76 [287]	180 [861]	-	21 [300]	38 [292]	100 [199]	0 [0]	31 [861]
Ochratoxin A, µg/kg (ppb) [max. value]	0 [0]	0 [0]	0 [0]	-	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]
Zearalenone, µg/kg (ppb) [max. value]	2 [144]	11 [77]	87 [445]	-	4 [127]	24 [354]	25 [49]	4 [13]	9 [445]
HT-2 Toxin, µg/kg (ppb) [max.value]	0 [0]	0 [0]	0 [0]	-	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]
T - 2 Toxin, µg/kg (ppb) [max. value]	0 [0]	0 [0]	0 [0]	-	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]
Number of samples	***119***	***36***	***10***	***-***	***138***	***42***	***2***	***3***	***350***
GMO									
Cry1Ab, % Samples positive (>LOQ of 0.4%)	100	92	100	-	95	93	-	100	-
Cry2Ab, % Samples positive (>LOQ of 0.5%)	97	92	100	-	92	64	-	100	-
CP4 EPSPS, % Samples positive (>LOQ of 0.25%)	100	92	0	-	95	86	-	100	-
Number of samples	***33***	***13***	***1***	***-***	***38***	***14***	***-***	***1***	***100***

Note: Non detective mycotoxin results are reported as 0, see LOQ in Table 21 page 71.

RSA Production Regions

The RSA is divided into 9 provinces as illustrated in Figure 1.

Figure 1: RSA Provinces

Provincial map with gratitude to SiQ.

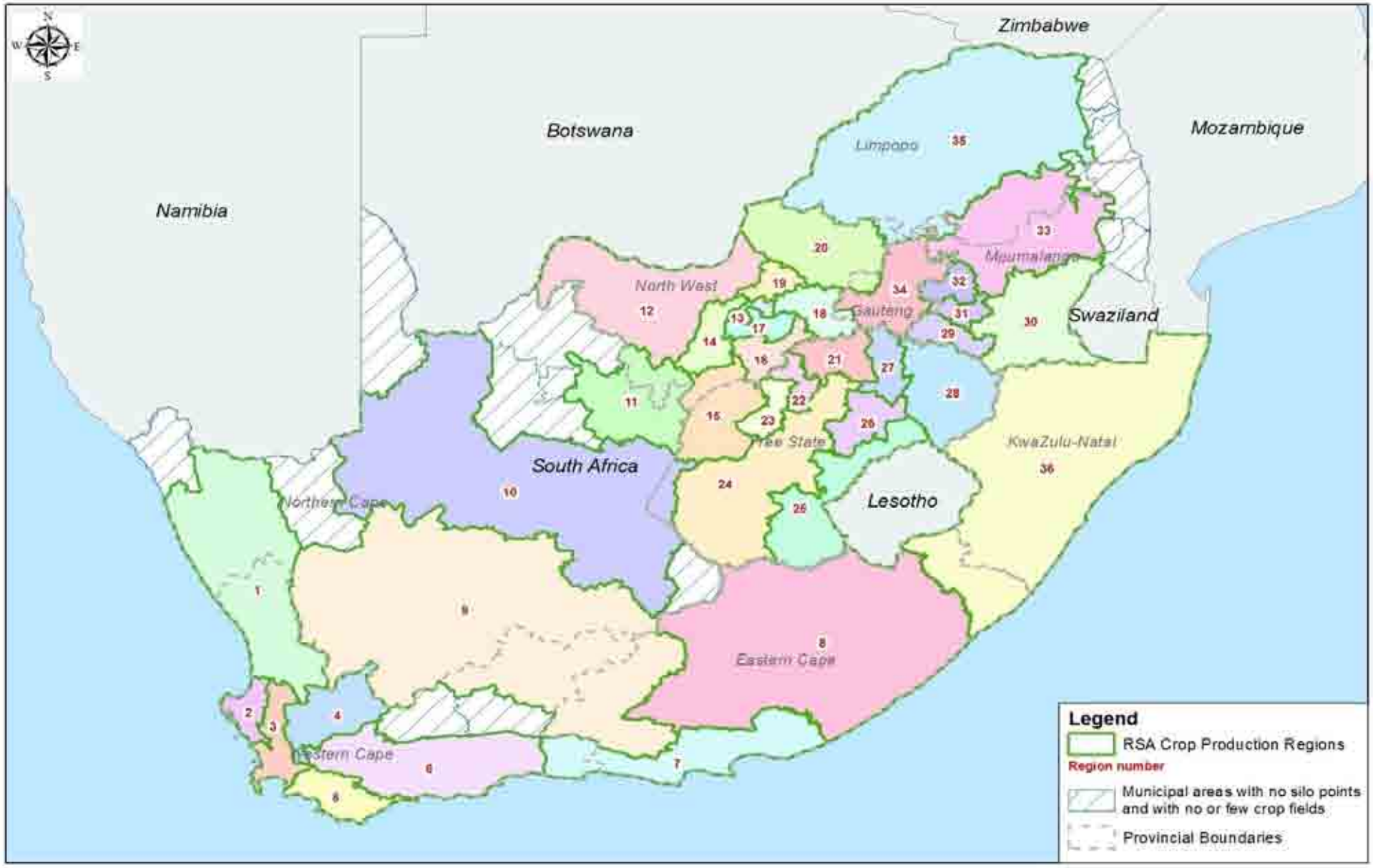
The 9 provinces are divided into 36 grain production regions.

The regions are distributed as follows:
Region 1: Namakwaland
Regions 2 and 3: Swartland
Regions 4 to 6: Rûens
Regions 7 and 8: Eastern Cape
Region 9: Karoo
Region 10: Griqualand West
Region 11: Vaalharts
Regions 12 to 20: North West
Regions 21 to 28: Free State
Regions 29 to 33: Mpumalanga
Region 34: Gauteng
Region 35: Limpopo
Region 36: KwaZulu-Natal

Please see the Crop Production Regions map on the next page.

The production regions from which maize samples have been received for the crop quality survey of the 2013/2014 production season, are named and described on pages 21 to 24. The silo/intake stands as well as the type of storage structure are provided.

Figure 2: RSA Crop Production Regions



Regional map with gratitude to Agbiz Grain and SiQ.

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

Region 10: Griqualand West Region

GWK	Douglas (Bags/Bins)	GWK	Trans Oranje (Bags/Bins/Bunkers)
GWK	Luckhoff (Bins)	OVK	Havenga Brug (Bins)
GWK	Marydale (Bins)	OVK	Morgenzon (Bins)
GWK	Modderrivier (Bags/Bins/Bulk)	OVK	Oranjerivier (Bins/Bunkers)
GWK	Prieska (Bins/Dams)	OVK	Prieska (Bins/Bunkers)
GWK	Rietrivier (Bins)	OVK	Rietrivier (Bins)

Region 11: Vaalharts Region

GWK	Barkly-Wes (Bins/Bulk)	Senwes	Jan Kempdorp (Bins)
GWK	Jan Kempdorp (Bags/Bunkers)	Senwes	Magogong (Bins)
Senwes	Hartswater (Bins)		

Region 12: North West Western Region

NWK	Blaauwbank (Bins)	NWK	Mareetsane (Bins)
NWK	Bührmannsdrif (Bins)	Suidwes Landbou	Kameel (Bins)
NWK	Kameel (Bins)	Suidwes Landbou	Vryburg (Bins)

Region 13: North West Central Region (Sannieshof)

NWK	Biesiesvlei (Bins)	NWK	Oppaslaagte (Bins)
NWK	Bossies (Bins)	NWK	Sannieshof (Bins)
NWK	Gerdau (Bins)		

Region 14: North West Southern Region

NWK	Barberspan (Bins)	NWK	Taaibospan (Bins)
NWK	Delareyville (Bins)	Suidwes Landbou	Amalia (Bins)
NWK	Excelsior (Bins)	Suidwes Landbou	Hallatshope (Bins)
NWK	Geysdorp (Bins)	Suidwes Landbou	Migdol (Bins)
NWK	Migdol (Bins)	Suidwes Landbou	Schweizer-Reneke (Bins)
NWK	Nooitgedacht (Bins)		

Region 15: North West South Eastern Region

Suidwes Landbou	Bloemhof (Bins)	Suidwes Landbou	Kingswood (Bins)
Suidwes Landbou	Christiana (Bins)	Suidwes Landbou	Kruising (Bunkers)
Suidwes Landbou	Hertzogville (Bins)	Suidwes Landbou	Poppieland (Bunkers)
Suidwes Landbou	Hoopstad (Bins)		

Region 16: North West Central Eastern Region

Senwes	Regina (Bins)	Suidwes Landbou	Makwassie (Bins)
Suidwes Landbou	Bamboesspruit (Bins)	Suidwes Landbou	Strydpoort (Bins)
Suidwes Landbou	Leeudoringstad (Bins)	Suidwes Landbou	Wolmaranstad (Bins)

Region 17: North West Central Northern Region (Ottosdal)

NWK	Boschpoort (Bags/Bins/Bulk)	NWK	Vermaas (Bins)
NWK	Kleinharts (Bins)	Senwes	Hartbeesfontein (Bins)
NWK	Ottosdal (Bins)	Senwes	Melliodora (Bins)
NWK	Rostrataville (Bins)	Senwes	Werda (Bins)

Grain Production Regions (continue)

Silo/Intake stands per region indicating type of storage structure

Region 18: North West Central Region (Ventersdorp)

NWK	Bodenstein (Bins)	Senwes	Makokskraal (Bins)
NWK	Coligny (Bins)	Senwes	Potchefstroom (Bins)
Senwes	Buckingham (Bins)	Senwes	Ventersdorp (Bins)
Senwes	Enselspruit (Bins)		

Region 19: North West Central Region (Lichtenburg)

Afgri	Lichtenburg (Bunkers)	NWK	Lottie Halte (Bins)
NWK	Grootpan (Bins)	NWK	Lusthof (Bins)
NWK	Halfpad (Bins)	NWK	Lichtenburg Silo 3 (Bins)
NWK	Hibernia (Bins)	NWK	Lichtenburg Silo 5 (Bins)

Region 20: North West Eastern Region

Afgri	Battery (Bins)	NWK	Koster (Bins)
Afgri	Brits (Bins)	NWK	Swartruggens (Bins)
NWK	Boons (Bins)	NWK	Syferbult (Bins)
NWK	Derby (Bins)		

Region 21: Free State North Western Region (Viljoenskroon)

Senwes	Attie (Bins)	Senwes	Vierfontein (Bins)
Senwes	Groenebloem (Bins)	Senwes	Viljoenskroon (Bins)
Senwes	Heuningspruit (Bins)	Senwes	Vredefort (Bins)
Senwes	Koppies (Bins)	Senwes	Weiveld (Bins)
Senwes	Rooiwal (Bins)		

Region 22: Free State North Western Region (Bothaville)

Senwes	Allanrigde (Bins)	Senwes	Schoonspruit (Bins)
Senwes	Bothaville (Bins)	Senwes	Schuttesdraai (Bins)
Senwes	Mirage (Bins)	Suidwes Landbou	Misgunst (Bunkers)
Senwes	Odendaalsrus (Bins)		

Region 23: Free state North Western Region (Bultfontein)

Senwes	Bultfontein (Bins)	Senwes	Tierfontein (Bins)
Senwes	Losdoorns (Bins)	Senwes	Wesselsbron (Bins)
Senwes	Protespan (Bins)	Senwes	Willemsrus (Bins)

Region 24: Free State Central Region

Senwes	Bloemfontein (Bins)	Senwes	Petrusburg (Bins)
Senwes	Brandfort (Bins)	Senwes	Theunissen (Bins)
Senwes	De Brug (Bins)	Senwes	Van Tonder (Bins)
Senwes	Geneva (Bins)	Senwes	Welgeleë (Bins)
Senwes	Hennenman (Bins)	Senwes	Winburg (Bins)
Senwes	Kroonstad (Bins)		

Grain Production Regions (continue)

Silo/Intake stands per region indicating type of storage structure

Region 25: Free State South Western Region

Afgri	Bethlehem (Bins)	OVK	Marseilles (Bins)
Afgri	Slabberts (Bins)	OVK	Modderpoort (Bins)
OVK	Clocolan (Bins)	OVK	Tweespruit (Bins)
OVK	Ficksburg (Bins)	OVK	Westminster (Bins)
OVK	Fouriesburg (Bins)		

Region 26: Free State South Eastern Region

Afgri	Kaallaagte (Bins)	Afgri	Monte Video (Bins)
Afgri	Libertas (Bins)	Afgri	Senekal (Bins)
Afgri	Marquard (Bins)	Senwes	Arlington (Bins)
Afgri	Meets (Bins)	Senwes	Steynsrus (Bins)

Region 27: Free State Northern Region

Senwes	Gottenburg (Bins)	Senwes	Mooigeleë (Bins)
Senwes	Heilbron (Bins)	Senwes	Wolwehoek (Bins)
Senwes	Hoogte (Bins)	VKB	Petrus Steyn (Bins)

Region 28: Free State Eastern Region

Afgri	Afrikaskop (Bins/Bunkers)	VKB	Jim Fouché (Bins)
Afgri	Eeram (Bins)	VKB	Memel (Bins)
Afgri	Harrismith (Bins)	VKB	Reitz (Bins)
Afgri	Kransfontein (Bins/Bunkers)	VKB	Tweeling (Bins)
VKB	Ascent (Bins)	VKB	Villiers (Bins/Bulk)
VKB	Cornelia (Bins)	VKB	Vrede (Bins)
VKB	Daniëlsrus (Bins)	VKB	Warden (Bins)
VKB	Frankfort (Bins)	VKB	Windfield (Bins)

Region 29: Mpumalanga Southern Region

Afgri	Balfour (Bins)	Afgri	Leeuspruit (Bins)
Afgri	Greylingstad (Bins)	Afgri	Platrand (Bins)
Afgri	Grootvlei (Bins)	Afgri	Standerton (Bins)
Afgri	Harvard (Bins)	Afgri	Val (Bins)
Afgri	Holmdene (Bins)		

Region 30: Mpumalanga Eastern Region

Afgri	Amersfoort (Bins)	Afgri	Maizefield (Bins)
Afgri	Carolina (Bins)	Afgri	Morgenzon (Bins)
Afgri	Davel (Bins)	Afgri	Overvaal (Bins)
Afgri	Eerstelingsfontein (Bunkers)	Afgri	Sandspruit (Bunkers)
Afgri	Ermelo (Bins)	TWK	Mkondo (Bins)
Afgri	Estancia (Bins)	TWK	Panbult (Bins)
Afgri	Lothair (Bins)		

Grain Production Regions (continue)

Silo/Intake stands per region indicating type of storage structure

Region 31: Mpumalanga Central Region

Afgri	Bakenlaagte (Bunkers)	Afgri	Klipfontein (Bunkers)
Afgri	Bethal (Bins)	Afgri	Leslie (Bins)
Afgri	Brakfontein (Bunkers)	Afgri	Palmietfontein (Bunkers)
Afgri	Devon (Bins)	Afgri	Trichardt (Bins)
Afgri	Kinross (Bins/Bunkers)	Afgri	Vaalkrantz (Bunkers)

Region 32: Mpumalanga Western Region

Afgri	Argent (Bins/Bunkers)	Afgri	Hawerklip (Bins)
Afgri	Dryden (Bins)	Afgri	Kendal (Bins)
Afgri	Eloff (Bins)	Afgri	Ogies (Bins)
Afgri	Endicott (Bins)		

Region 33: Mpumalanga Northern Region

Afgri	Arnot (Bins)	Afgri	Middelburg (Bins)
Afgri	Driefontein (Bins)	Afgri	Pan (Bins)
Afgri	Lydenburg (Bins)	Afgri	Stoffberg (Bins)
Afgri	Marble Hall (Bins)	Afgri	Wonderfontein (Bins)

Region 34: Gauteng Region

Afgri	Bloekomspruit (Bins)	Afgri	Nigel (Bins)
Afgri	Bronkhorstspruit (Bins)	Afgri	Pretoria Wes (Bins)
Afgri	Glenroy (Bins)	Afgri	Vogelvallei (Bunkers)
Afgri	Goeie Hoek (Bins)	Senwes	Middelvlei (Bins)
Afgri	Kaalfontein (Bins)	Senwes	Oberholzer (Bins)
Afgri	Kliprivier (Bunkers)	Senwes	Raathsvlei (Bins)
Afgri	Meyerton (Bunkers)		

Region 35: Limpopo Region

Afgri	Northam (Bins)	NTK	Nylstroom (Modimolle) (Bins)
NTK	Alma (Bins)	NTK	Potgietersrus (Mokopane) (Bins)
NTK	Lehau (Bins)	NTK	Roedtan (Bins)
NTK	Naboomspruit (Mookgophong) (Bins)	NTK	Settlers (Bins)
NTK	Nutfield (Bins)	NTK	Warmbad Bela-Bela (Bins)

Region 36: KwaZulu-Natal Region

Afgri	Bergville (Bins/Bunkers)	Afgri	Paulpietersburg (Bins)
Afgri	Bloedrivier (Bins)	Afgri	Pietermaritzburg (Bins)
Afgri	Dannhauser (Bins)	Afgri	Vryheid (Bins)
Afgri	Dundee (Bins)	Afgri	Winterton Silo (Bins/Bunkers)
Afgri	Mizpah (Bins)		

Main production regions – summary of results

The quality of the maize produced in the three main maize production regions (North West, Mpumalanga and Free State) compared very well overall. General trends observed between provinces differed little from last season. The figures given below are all weighted averages.

The Free State (77.0 kg/hl) and North West (76.9 kg/hl) had the highest hectolitre mass. Mpumalanga averaged 76.4 kg/hl. Mpumalanga however had the highest 100 kernel mass of 33.2 g and North West the lowest of 32.0 g. The Free State averaged 32.7 g.

The percentage stress cracks observed in the three regions compared well, with the Free State averaging 6%, North West 7% and Mpumalanga 8%. North West and Mpumalanga had the same percentage of maize passing through the 6.35 mm sieve with the breakage susceptibility test namely 1.5%, which was only 0.1% higher than that of the Free State.

The percentage of kernels above the 10 mm sieve varied little between the provinces. Mpumalanga had the highest percentage of kernels above the 10 mm sieve (20.1%) and the Free State the lowest with slightly smaller kernels (19.4%). The North West province had the lowest percentage total defective kernels of 5.1%, followed by the Free State with 5.4% and Mpumalanga with 5.5%.

The average milling index on both white and yellow maize was lower compared to the previous season. Mpumalanga averaged 87.8 (90.8), the Free State 92.0 (96.4) and North West 94.1 (101.4). The values in brackets are the averages for the 2012/2013 season. Mpumalanga also had the lowest percentage total extraction on the Roff laboratory mill, namely 78.7%, closely followed by North West with 78.8%. The Free State had an average extraction rate of 79.7%.

The meal obtained from the white maize in North West gave an average whiteness index of 28.0 (unsifted) and 17.8 (sifted). The Free State had an average of 25.5 (unsifted) and 15.7 (sifted) and Mpumalanga 23.5 (unsifted) and 14.0 (sifted).

There were no significant differences in the nutritional components. The Free State had the highest fat content of 4.0 %, followed by Mpumalanga with 3.9% and North West with 3.8%. The protein content in Mpumalanga was 8.5% and in North West and the Free State both 8.6%. North West and the Free State had starch contents of 73.3% and 72.9% respectively. Mpumalanga's starch content was 73.0%.

TABLE 2: RSA GRADING OF WHITE MAIZE (2013/2014)

Number of samples	Region	% Defective Kernels						%			%			%			%			%			%			%			%		
		Above 6.35 mm sieve			Below 6.35 mm sieve			Total defective			Foreign matter			Other Colour			Total Deviations			Pinked Kernels			Diplodia Kernels			Fusarium Kernels			Cobrot Kernels		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM1																															
7	Region 12	2.6	1.6	4.7	2.4	0.6	3.6	5.0	3.2	7.0	0.1	0.0	0.3	0.1	0.0	0.3	5.1	3.2	7.6	0.0	0.0	0.0	0.5	0.0	1.1	0.9	0.4	2.0	1.4	0.5	3.1
3	Region 13	3.0	2.2	4.1	1.7	1.5	2.0	4.8	3.7	6.1	0.2	0.2	0.2	0.1	0.0	0.3	5.0	3.9	6.6	0.0	0.0	0.0	0.7	0.5	1.0	1.0	0.5	1.9	1.7	1.1	3.0
26	Region 14	2.9	1.0	5.9	1.4	0.1	4.4	4.3	2.3	6.4	0.1	0.0	0.3	0.2	0.0	1.1	4.6	2.3	6.7	0.0	0.0	0.1	0.3	0.0	1.1	0.7	0.0	1.9	1.0	0.0	2.8
3	Region 15	3.6	2.3	5.6	1.1	0.6	1.5	4.7	3.5	6.2	0.0	0.0	0.1	0.0	0.0	0.0	4.8	3.5	6.2	0.0	0.0	0.0	0.4	0.3	0.6	1.2	1.1	1.4	1.6	1.4	1.7
9	Region 16	2.4	1.3	4.6	1.5	0.7	2.4	3.8	2.5	6.3	0.1	0.0	0.1	0.5	0.0	2.1	4.4	2.5	6.5	0.0	0.0	0.0	0.5	0.0	1.5	0.7	0.0	1.6	1.3	0.5	2.8
9	Region 17	3.7	2.3	5.8	1.6	0.8	2.8	5.3	3.6	6.6	0.1	0.0	0.2	0.1	0.0	0.5	5.6	3.7	6.7	0.2	0.0	1.3	0.8	0.4	1.2	1.1	0.5	1.9	1.8	0.9	3.1
6	Region 18	2.3	1.0	3.4	2.6	1.9	4.0	4.8	3.2	6.2	0.2	0.0	0.3	0.2	0.0	0.6	5.2	3.4	6.5	0.0	0.0	0.0	0.5	0.0	1.0	0.8	0.1	1.0	1.3	0.1	2.1
5	Region 19	3.1	1.1	5.0	1.8	1.1	2.4	4.9	3.5	6.9	0.2	0.1	0.2	0.2	0.0	0.7	5.3	4.0	7.6	0.0	0.0	0.0	0.8	0.4	1.2	1.1	0.4	1.7	1.9	0.9	2.9
5	Region 20	3.4	2.3	4.3	1.6	0.8	2.5	5.0	3.1	6.9	0.1	0.0	0.2	0.2	0.0	0.5	5.3	3.1	7.3	0.0	0.0	0.2	0.7	0.0	1.2	1.2	0.4	1.6	1.9	0.4	2.8
39	Region 21	2.6	0.8	5.3	1.7	0.6	2.8	4.3	1.7	6.9	0.2	0.0	0.3	0.1	0.0	0.5	4.5	2.0	7.1	0.0	0.0	0.2	0.5	0.0	1.5	0.7	0.0	2.0	1.2	0.0	3.5
28	Region 22	2.3	1.3	4.1	1.6	0.4	4.2	3.8	2.2	6.5	0.1	0.0	0.3	0.1	0.0	1.0	4.0	2.4	6.6	0.0	0.0	0.2	0.5	0.0	1.5	0.7	0.0	2.4	1.2	0.7	2.4
12	Region 23	2.6	1.2	4.9	1.0	0.4	2.1	3.6	1.9	7.0	0.0	0.0	0.1	0.1	0.0	0.2	3.7	1.9	7.0	0.0	0.0	0.2	0.4	0.0	0.8	1.0	0.0	2.7	1.4	0.0	3.2
42	Region 24	2.8	0.6	6.2	1.5	0.3	3.1	4.3	1.7	6.9	0.1	0.0	0.3	0.1	0.0	0.6	4.5	2.0	7.4	0.0	0.0	0.0	0.5	0.0	1.2	0.7	0.0	1.8	1.3	0.0	2.6
7	Region 25	3.3	2.0	4.8	2.1	0.9	3.9	5.4	3.2	6.5	0.2	0.1	0.3	0.2	0.0	0.8	5.8	3.3	7.0	0.0	0.0	0.0	0.7	0.0	1.3	1.0	0.6	1.3	1.6	0.6	2.4
4	Region 26	3.3	2.9	3.8	1.4	0.4	2.8	4.7	3.9	6.2	0.1	0.1	0.1	0.6	0.3	0.7	5.4	4.7	7.0	0.0	0.0	0.2	0.3	0.0	0.7	1.4	0.8	2.2	1.7	0.8	2.8
1	Region 27	2.5	-	-	1.1	-	-	3.6	-	-	0.1	-	-	0.4	-	-	4.1	-	-	0.1	-	-	0.2	-	-	0.4	-	-	0.6	-	-
4	Region 28	3.9	1.8	6.1	0.6	0.1	1.7	4.5	1.9	6.5	0.0	0.0	0.1	0.1	0.0	0.3	4.6	1.9	6.9	0.0	0.0	0.0	0.6	0.0	1.6	0.4	0.0	1.0	1.0	0.0	2.3
22	Region 29	3.6	0.9	6.3	1.1	0.1	2.8	4.6	2.2	7.0	0.1	0.0	0.2	0.3	0.0	1.2	5.0	2.6	7.8	0.2	0.0	1.4	0.9	0.0	1.5	1.2	0.2	3.6	2.2	0.2	5.0
15	Region 30	2.9	1.2	5.5	1.0	0.4	2.0	3.9	2.1	6.6	0.1	0.0	0.2	0.3	0.0	1.7	4.4	2.6	6.7	0.1	0.0	0.5	0.8	0.0	1.8	1.0	0.2	1.9	1.7	0.5	3.7
11	Region 31	3.3	0.9	6.2	1.6	0.8	3.1	4.8	3.1	7.0	0.2	0.1	0.3	0.7	0.0	1.9	5.8	3.9	7.4	0.0	0.0	0.0	1.0	0.3	2.5	1.1	0.0	2.5	2.1	0.3	4.0
5	Region 32	4.6	3.6	5.5	1.0	0.5	1.3	5.7	4.2	6.7	0.0	0.0	0.1	0.5	0.0	1.5	6.2	5.5	7.3	0.1	0.0	0.5	1.3	0.9	2.1	1.7	1.3	2.2	3.0	2.5	4.3
10	Region 33	3.4	2.2	5.0	1.4	0.6	2.4	4.8	3.5	6.3	0.1	0.1	0.3	0.4	0.0	1.3	5.3	3.6	7.7	0.0	0.0	0.0	1.0	0.7	1.5	1.1	0.6	2.0	2.1	1.5	3.0
18	Region 34	3.3	2.1	5.5	1.1	0.3	3.2	4.3	2.4	6.7	0.1	0.0	0.2	0.4	0.0	1.7	4.8	2.6	7.9	0.1	0.0	1.1	0.6	0.0	1.3	1.2	0.8	1.8	1.9	1.3	2.9
6	Region 35	3.3	2.0	5.7	0.9	0.3	1.3	4.2	2.5	6.4	0.1	0.0	0.2	0.1	0.0	0.4	4.4	2.5	6.4	0.1	0.0	0.4	0.6	0.2	1.3	0.9	0.0	1.7	1.5	0.8	2.1
17	Region 36	2.4	1.2	4.6	2.1	0.4	3.3	4.4	2.2	6.7	0.2	0.0	0.3	0.5	0.0	1.5	5.1	2.8	7.5	0.0	0.0	0.0	0.5	0.0	1.3	0.8	0.0	1.8	1.3	0.0	2.7
314	**Ave. WM1**	**2.9**			**1.5**			**4.4**			**0.1**			**0.2**			**4.7**			**0.0**			**0.6**			**0.9**			**1.5**		
	Min. WM1		**0.6**			**0.1**			**1.7**			**0.0**			**0.0**			**1.9**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. WM1			**6.3**			**4.4**			**7.0**			**0.3**			**2.1**			**7.9**			**1.4**			**2.5**			**3.6**			**5.0**

TABLE 2: RSA GRADING OF WHITE MAIZE (2013/2014) (continue)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Total Deviations			% Pinked Kernels			% Diplodia Kernels			% Fusarium Kernels			% Cobrot Kernels		
		Above 6.35 mm sieve			Below 6.35 mm sieve																										
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM2																														
1	Region 12	6.0	-	-	1.6	-	-	7.6	-	-	0.1	-	-	0.5	-	-	8.2	-	-	0.0	-	-	1.5	-	-	1.4	-	-	2.8	-	-
2	Region 13	5.5	5.3	5.7	2.0	1.9	2.0	7.4	7.2	7.7	0.2	0.2	0.2	0.4	0.3	0.5	8.0	7.9	8.1	0.0	0.0	0.0	1.1	0.9	1.3	2.2	1.4	3.0	3.3	2.6	3.9
3	Region 14	3.8	1.0	8.1	3.9	0.2	6.4	7.7	7.4	8.3	0.1	0.0	0.1	0.1	0.0	0.2	7.8	7.5	8.4	0.1	0.0	0.4	0.2	0.0	0.7	1.0	0.3	2.2	1.3	0.3	2.9
2	Region 16	3.7	3.5	4.0	4.5	3.7	5.2	8.2	7.7	8.7	0.1	0.1	0.1	0.6	0.0	1.2	8.9	7.8	9.9	0.1	0.0	0.2	1.0	1.0	1.0	1.2	1.1	1.3	2.2	2.1	2.3
1	Region 18	5.7	-	-	1.9	-	-	7.6	-	-	0.1	-	-	0.0	-	-	7.7	-	-	0.0	-	-	0.5	-	-	2.5	-	-	3.0	-	-
2	Region 19	6.0	5.5	6.4	3.4	1.3	5.6	9.4	6.8	12.0	0.3	0.2	0.4	3.5	1.8	5.3	13.2	12.2	14.2	0.0	0.0	0.0	1.4	1.4	1.5	2.7	2.5	2.9	4.2	4.0	4.3
3	Region 20	7.1	5.0	9.5	1.4	0.4	2.1	8.5	7.1	9.9	0.2	0.1	0.3	0.8	0.6	1.3	9.5	7.9	10.6	0.0	0.0	0.0	2.5	1.1	4.7	2.6	2.2	3.2	5.1	3.5	8.0
5	Region 21	5.2	2.7	7.4	2.1	0.6	4.4	7.3	4.1	9.3	0.2	0.1	0.5	0.4	0.0	1.4	8.0	4.6	10.7	0.1	0.0	0.2	0.8	0.3	1.3	1.1	0.4	1.5	1.8	0.6	2.8
1	Region 22	9.9	-	-	2.1	-	-	12.0	-	-	0.1	-	-	0.2	-	-	12.2	-	-	0.0	-	-	3.5	-	-	3.1	-	-	6.6	-	-
2	Region 23	7.1	5.8	8.4	1.4	0.8	2.0	8.5	7.8	9.2	0.0	0.0	0.0	0.0	0.0	0.0	8.5	7.8	9.2	0.1	0.0	0.2	1.8	1.2	2.5	3.0	2.1	3.9	4.8	3.3	6.3
2	Region 24	6.0	5.6	6.5	1.5	1.0	2.0	7.5	7.5	7.6	0.1	0.1	0.1	2.1	0.0	4.1	9.7	7.6	11.7	0.0	0.0	0.0	1.2	0.9	1.4	2.2	1.9	2.4	3.3	3.3	3.4
5	Region 27	5.8	2.9	9.2	2.5	1.3	4.5	8.3	7.4	10.6	0.1	0.0	0.3	0.2	0.0	0.5	8.6	7.6	10.9	0.0	0.0	0.0	1.5	0.6	3.3	1.5	0.0	2.9	3.1	2.0	6.2
8	Region 28	7.8	5.9	10.2	2.1	0.7	6.3	10.0	6.6	12.4	0.1	0.0	0.5	0.2	0.0	0.8	10.3	7.7	12.9	0.2	0.0	1.0	1.6	0.0	4.6	1.6	0.0	2.9	3.3	1.0	7.5
9	Region 29	5.9	3.5	10.3	1.9	0.6	3.3	7.8	6.5	10.9	0.1	0.0	0.3	0.5	0.0	1.4	8.5	7.3	11.9	0.1	0.0	0.4	1.5	0.0	2.5	2.1	0.7	4.5	3.6	1.3	6.5
6	Region 30	6.0	4.5	6.7	1.9	0.4	3.7	7.9	7.1	9.4	0.2	0.1	0.3	1.3	0.0	3.0	9.4	7.4	12.6	0.0	0.0	0.0	1.5	1.0	1.9	2.3	1.4	3.5	3.8	2.9	4.5
9	Region 31	6.7	5.6	8.2	1.8	1.0	4.6	8.6	7.1	10.2	0.2	0.1	0.3	1.0	0.0	5.1	9.8	7.3	14.7	0.0	0.0	0.0	1.6	0.5	2.1	2.0	0.5	3.1	3.6	1.0	4.8
18	Region 32	8.4	3.8	11.7	1.9	0.6	5.3	10.2	7.8	12.8	0.1	0.0	0.2	0.2	0.0	0.7	10.5	8.0	13.4	0.2	0.0	1.1	1.7	0.3	3.5	3.1	1.1	5.7	4.8	1.4	8.7
7	Region 33	8.3	6.5	10.7	1.7	0.3	2.5	10.0	8.0	13.0	0.2	0.1	0.3	0.7	0.0	2.6	11.0	8.2	14.1	0.0	0.0	0.0	2.2	1.4	3.2	2.6	1.6	3.8	4.8	3.5	6.2
12	Region 34	7.7	3.2	11.4	2.0	0.8	5.7	9.7	6.4	12.6	0.1	0.0	0.4	0.7	0.0	2.4	10.5	7.2	13.8	0.1	0.0	0.7	1.5	0.2	4.1	3.0	1.1	6.0	4.4	1.3	10.1
1	Region 35	11.7	-	-	0.9	-	-	12.6	-	-	0.0	-	-	0.0	-	-	12.6	-	-	1.4	-	-	0.0	-	-	6.8	-	-	6.8	-	-
3	Region 36	5.7	4.7	6.3	3.0	2.2	4.2	8.7	7.3	10.5	0.2	0.1	0.3	0.8	0.0	1.3	9.7	8.6	11.9	0.0	0.0	0.0	1.3	1.1	1.5	2.4	1.6	3.0	3.6	2.7	4.2
102	**Ave. WM2**	**6.9**			**2.1**			**9.0**			**0.1**			**0.6**			**9.8**			**0.1**			**1.5**			**2.4**			**3.9**		
	Min. WM2		**1.0**			**0.2**			**4.1**			**0.0**			**0.0**			**4.6**			**0.0**			**0.0**			**0.0**			**0.3**	
	Max. WM2			**11.7**			**6.4**			**13.0**			**0.5**			**5.3**			**14.7**			**1.4**			**4.7**			**6.8**			**10.1**

TABLE 2: RSA GRADING OF WHITE MAIZE (2013/2014) (continue)

Number of samples	Region	% Defective Kernels						%			%			%			%			%			%			%			%		
		Above 6.35 mm sieve			Below 6.35 mm sieve			Total defective			Foreign matter			Other Colour			Total Deviations			Pinked Kernels			Diplodia Kernels			Fusarium Kernels			Cobrot Kernels		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM3																															
1	Region 15	3.3	-	-	1.6	-	-	5.0	-	-	0.6	-	-	0.3	-	-	5.8	-	-	0.0	-	-	0.3	-	-	0.7	-	-	1.0	-	-
1	Region 18	14.7	-	-	2.4	-	-	17.0	-	-	0.3	-	-	0.0	-	-	17.3	-	-	0.0	-	-	3.4	-	-	5.0	-	-	8.5	-	-
1	Region 23	15.4	-	-	1.0	-	-	16.4	-	-	0.0	-	-	0.0	-	-	16.4	-	-	0.0	-	-	9.2	-	-	4.9	-	-	14.1	-	-
1	Region 25	2.4	-	-	2.1	-	-	4.5	-	-	0.6	-	-	0.0	-	-	5.3	-	-	0.0	-	-	0.3	-	-	1.9	-	-	2.2	-	-
4	Region 27	11.6	7.9	15.1	3.3	2.2	5.7	15.0	13.3	17.5	0.1	0.0	0.3	0.4	0.0	0.6	15.5	13.9	18.1	0.1	0.0	0.5	2.1	1.0	4.1	3.9	2.4	5.6	6.0	3.3	8.0
1	Region 28	11.8	-	-	8.9	-	-	20.7	-	-	0.1	-	-	0.2	-	-	21.0	-	-	0.0	-	-	0.5	-	-	3.0	-	-	3.5	-	-
4	Region 29	10.2	1.2	23.8	1.3	0.2	2.2	11.5	1.4	25.7	0.2	0.0	0.5	3.9	0.0	9.2	15.6	9.9	25.9	0.1	0.0	0.2	4.8	0.0	16.1	1.0	0.5	1.2	5.8	1.2	16.6
1	Region 30	2.0	-	-	1.8	-	-	3.8	-	-	0.6	-	-	0.1	-	-	4.5	-	-	0.0	-	-	0.3	-	-	0.0	-	-	0.3	-	-
5	Region 32	12.2	10.9	13.4	2.0	1.4	2.4	14.2	13.1	15.9	0.1	0.0	0.2	0.3	0.0	1.2	14.5	13.2	16.0	0.0	0.0	0.1	2.5	1.4	5.1	3.7	1.8	5.4	6.2	3.3	10.5
5	Region 33	15.9	10.8	20.7	1.3	0.4	2.3	17.2	13.1	21.1	0.3	0.2	0.4	1.1	0.0	3.4	18.5	13.8	23.5	0.0	0.0	0.0	4.8	2.1	6.7	5.6	3.8	7.8	10.4	5.9	13.9
8	Region 34	15.1	5.4	24.7	1.6	0.6	3.2	16.7	8.7	27.8	0.1	0.0	0.6	0.7	0.0	1.2	17.5	10.1	29.1	0.1	0.0	0.2	3.3	0.7	5.0	5.6	2.2	9.0	8.9	2.9	13.7
32	**Ave. WM3**	**12.4**			**2.1**			**14.5**			**0.2**			**0.9**			**15.6**			**0.0**			**3.2**			**4.0**			**7.2**		
	Min. WM3		**1.2**			**0.2**			**1.4**			**0.0**			**0.0**			**4.5**			**0.0**			**0.0**			**0.0**			**0.3**	
	Max. WM3			**24.7**			**8.9**			**27.8**			**0.6**			**9.2**			**29.1**			**0.5**			**16.1**			**9.0**			**16.6**
CLASS: COM																															
1	Region 28	8.9	-	-	9.8	-	-	18.6	-	-	4.1	-	-	0.0	-	-	22.8	-	-	0.0	-	-	0.9	-	-	7.1	-	-	8.0	-	-
1	Region 31	22.0	-	-	2.4	-	-	24.4	-	-	4.5	-	-	0.3	-	-	29.2	-	-	0.0	-	-	0.8	-	-	0.5	-	-	1.3	-	-
1	Region 34	4.1	-	-	5.7	-	-	9.8	-	-	1.2	-	-	0.9	-	-	11.9	-	-	0.0	-	-	1.1	-	-	0.8	-	-	1.9	-	-
3	**Ave. COM**	**11.7**			**5.9**			**17.6**			**3.3**			**0.4**			**21.3**			**0.0**			**0.9**			**2.8**			**3.7**		
	Min. COM		**4.1**			**2.4**			**9.8**			**1.2**			**0.0**			**11.9**			**0.0**			**0.8**			**0.5**			**1.3**	
	Max. COM			**22.0**			**9.8**			**24.4**			**4.5**			**0.9**			**29.2**			**0.0**			**1.1**			**7.1**			**8.0**
451	**Ave. white maize**	**4.6**			**1.7**			**6.2**			**0.1**			**0.4**			**6.8**			**0.0**			**1.0**			**1.5**			**2.5**		
	Min. white maize		**0.6**			**0.1**			**1.4**			**0.0**			**0.0**			**1.9**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. white maize			**24.7**			**9.8**			**27.8**			**4.5**			**9.2**			**29.2**			**1.4**			**16.1**			**9.0**			**16.6**
930	**Ave. maize**	**4.3**			**1.9**			**6.2**			**0.1**			**0.3**			**6.6**			**0.0**			**1.0**			**1.5**			**2.5**		
	Min. maize		**0.5**			**0.1**			**1.4**			**0.0**			**0.0**			**1.7**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. maize			**32.3**			**10.5**			**33.6**			**4.5**			**9.2**			**33.7**			**1.4**			**20.1**			**28.2**			**30.9**

TABLE 3: RSA GRADING OF YELLOW MAIZE (2013/2014)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Total Deviations			% Pinked Kernels			% Diplodia Kernels			% Fusarium Kernels			% Cobrot Kernels		
		Above 6.35 mm sieve			Below 6.35 mm sieve																										
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM1																														
11	Region 10	1.3	0.6	3.4	2.3	1.7	3.1	3.6	3.1	5.1	0.1	0.0	0.1	0.0	0.0	0.0	3.7	3.1	5.2	0.0	0.0	0.0	0.4	0.0	2.0	0.4	0.0	0.9	0.8	0.0	3.0
3	Region 11	1.6	1.3	2.1	2.1	1.7	2.5	3.8	3.0	4.4	0.0	0.0	0.1	0.0	0.0	0.0	3.8	3.0	4.4	0.0	0.0	0.0	0.2	0.0	0.6	1.1	0.7	1.5	1.3	1.1	1.5
6	Region 12	1.9	1.2	2.7	1.5	0.9	2.6	3.4	2.7	5.3	0.1	0.0	0.2	0.0	0.0	0.0	3.5	2.7	5.5	0.0	0.0	0.0	0.5	0.2	0.7	0.6	0.4	1.0	1.1	0.9	1.4
4	Region 13	2.3	1.7	3.4	2.1	1.4	2.5	4.3	3.4	5.4	0.2	0.1	0.3	0.1	0.0	0.3	4.6	3.6	5.8	0.0	0.0	0.0	0.6	0.4	0.9	0.7	0.5	1.0	1.3	1.0	1.8
15	Region 14	2.1	1.0	3.7	1.2	0.4	2.0	3.3	1.8	5.4	0.1	0.0	0.2	0.1	0.0	0.5	3.4	2.1	5.7	0.0	0.0	0.0	0.3	0.0	1.0	0.5	0.0	1.3	0.9	0.3	2.3
3	Region 15	1.9	1.5	2.6	2.7	1.8	3.7	4.6	4.3	5.2	0.0	0.0	0.1	0.2	0.0	0.3	4.8	4.5	5.5	0.0	0.0	0.0	0.3	0.0	1.0	1.3	1.0	1.4	1.6	1.4	1.9
4	Region 16	3.2	2.1	5.5	1.8	1.2	2.4	4.9	3.6	7.4	0.2	0.1	0.2	0.5	0.0	1.2	5.6	4.2	7.9	0.0	0.0	0.0	0.3	0.0	0.5	1.0	0.6	1.6	1.4	1.0	1.6
6	Region 17	2.0	1.4	2.8	1.7	1.2	2.1	3.7	3.1	4.9	0.1	0.0	0.2	0.3	0.0	0.7	4.1	3.2	5.7	0.0	0.0	0.0	0.4	0.0	0.8	0.5	0.4	0.6	0.9	0.4	1.4
9	Region 18	2.3	1.1	4.2	2.5	0.4	3.3	4.8	3.5	6.1	0.1	0.0	0.2	0.2	0.0	1.0	5.1	3.9	6.7	0.0	0.0	0.0	0.5	0.0	1.0	0.9	0.4	3.1	1.4	0.5	4.2
8	Region 19	2.8	1.2	4.4	2.0	1.3	2.5	4.8	3.0	6.8	0.2	0.1	0.2	0.4	0.0	1.6	5.4	3.6	7.0	0.0	0.0	0.0	0.5	0.0	1.1	0.9	0.4	1.4	1.4	0.5	2.4
7	Region 20	3.6	2.1	4.7	1.5	0.5	3.5	5.2	3.3	7.6	0.1	0.0	0.1	0.0	0.0	0.2	5.2	3.3	7.7	0.0	0.0	0.0	0.7	0.2	1.3	1.2	0.5	2.4	1.9	0.7	3.4
14	Region 21	2.2	1.0	4.3	1.6	0.9	2.5	3.9	2.1	5.2	0.1	0.0	0.3	0.2	0.0	1.0	4.2	2.7	5.5	0.0	0.0	0.0	0.3	0.0	1.2	0.8	0.0	2.0	1.1	0.0	2.9
7	Region 22	1.7	0.7	3.5	1.4	0.7	2.2	3.1	2.2	4.2	0.1	0.0	0.1	0.1	0.0	0.7	3.3	2.2	4.8	0.0	0.0	0.0	0.4	0.0	1.6	0.4	0.0	0.8	0.8	0.0	2.0
7	Region 23	1.6	1.1	2.6	1.4	0.7	2.0	3.0	2.0	3.9	0.1	0.1	0.2	0.4	0.0	1.9	3.5	2.5	4.2	0.0	0.0	0.0	0.2	0.0	0.8	0.6	0.0	1.0	0.8	0.0	1.3
10	Region 24	2.2	0.6	4.2	1.9	0.4	2.9	4.1	2.4	5.9	0.1	0.0	0.2	0.2	0.0	0.5	4.4	2.6	5.9	0.0	0.0	0.0	0.5	0.0	0.9	0.7	0.0	1.3	1.1	0.0	2.0
23	Region 25	3.1	1.5	5.6	1.8	0.5	3.7	4.9	2.8	8.0	0.1	0.0	0.3	0.0	0.0	0.2	5.0	2.9	8.2	0.0	0.0	0.0	0.6	0.0	1.3	1.4	0.5	4.3	2.0	0.7	4.9
10	Region 26	2.6	1.4	4.1	2.0	1.3	2.9	4.6	3.4	5.9	0.1	0.0	0.2	0.1	0.0	0.7	4.8	3.5	6.1	0.0	0.0	0.0	0.6	0.0	1.1	1.0	0.0	1.8	1.5	0.0	2.7
15	Region 27	3.9	1.7	6.5	2.0	0.3	3.4	5.9	3.1	8.1	0.1	0.0	0.1	0.1	0.0	1.2	6.0	3.2	8.4	0.0	0.0	0.2	0.7	0.0	2.3	1.6	0.5	3.3	2.3	0.7	4.9
27	Region 28	3.2	1.0	7.6	1.5	0.1	2.4	4.6	1.8	8.8	0.1	0.0	0.2	0.0	0.0	0.8	4.8	1.9	8.9	0.0	0.0	0.0	0.5	0.0	2.5	1.1	0.0	3.9	1.6	0.0	6.4
53	Region 29	3.1	1.2	7.0	1.2	0.4	2.6	4.3	1.6	7.4	0.1	0.0	0.2	0.0	0.0	0.7	4.4	1.7	7.4	0.0	0.0	0.0	0.7	0.0	2.0	1.0	0.0	4.0	1.7	0.0	5.4
27	Region 30	3.3	1.5	5.9	1.9	0.4	3.2	5.2	2.6	7.4	0.1	0.0	0.3	0.1	0.0	1.6	5.4	2.6	9.0	0.0	0.0	0.0	0.6	0.0	1.7	0.9	0.0	2.4	1.5	0.0	4.1
22	Region 31	3.3	1.5	7.3	1.9	1.0	4.0	5.3	2.7	8.3	0.2	0.0	0.3	0.0	0.0	0.3	5.5	2.8	8.6	0.0	0.0	0.0	0.9	0.0	2.1	1.1	0.4	2.5	2.0	0.7	4.5
30	Region 32	4.5	1.9	7.4	1.8	0.7	3.1	6.3	3.3	8.9	0.0	0.0	0.2	0.1	0.0	0.8	6.5	3.3	9.0	0.0	0.0	0.0	1.5	0.4	3.6	1.9	0.7	3.5	3.4	1.4	5.9
10	Region 33	4.1	1.4	6.3	1.8	0.7	3.9	5.9	2.2	7.7	0.2	0.1	0.2	0.1	0.0	0.6	6.2	2.2	8.4	0.0	0.0	0.0	1.3	0.5	2.7	1.3	0.5	2.1	2.6	1.0	4.0
19	Region 34	3.5	1.9	5.6	1.7	0.8	3.3	5.1	3.1	8.3	0.1	0.0	0.3	0.2	0.0	1.5	5.4	3.3	8.7	0.0	0.0	0.0	1.0	0.5	2.5	1.7	0.7	4.2	2.7	1.4	5.2
6	Region 35	3.5	2.1	5.3	1.5	0.4	2.7	4.9	3.2	7.6	0.0	0.0	0.1	0.0	0.0	0.0	5.0	3.2	7.6	0.0	0.0	0.0	0.6	0.0	1.2	1.3	0.0	3.1	2.0	0.0	4.3
11	Region 36	2.6	1.2	4.9	2.5	1.1	3.7	5.1	2.7	7.4	0.1	0.0	0.3	0.4	0.0	1.0	5.6	3.7	8.1	0.0	0.0	0.0	0.6	0.2	1.1	1.0	0.4	1.6	1.5	0.7	2.6
367	**Ave. YM1**	**3.0**			**1.7**			**4.7**			**0.1**			**0.1**			**4.9**			**0.0**			**0.7**			**1.1**			**1.8**		
	Min. YM1		**0.6**			**0.1**			**1.6**			**0.0**			**0.0**			**1.7**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. YM1			**7.6**			**4.0**			**8.9**			**0.3**			**1.9**			**9.0**			**0.2**			**3.6**			**4.3**			**6.4**

TABLE 3: RSA GRADING OF YELLOW MAIZE (2013/2014) (continue)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Total Deviations			% Pinked Kernels			% Diplodia Kernels			% Fusarium Kernels			% Cobrot Kernels		
		Above 6.35 mm sieve			Below 6.35 mm sieve																										
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM2																														
2	Region 11	1.0	0.5	1.5	4.3	4.1	4.5	5.3	5.1	5.5	0.0	0.0	0.1	0.0	0.0	0.0	5.3	5.1	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.6	0.3	0.0	0.6
1	Region 13	4.4	-	-	2.7	-	-	7.1	-	-	0.1	-	-	0.5	-	-	7.7	-	-	0.0	-	-	1.2	-	-	1.3	-	-	2.5	-	-
1	Region 15	2.9	-	-	6.6	-	-	9.5	-	-	0.0	-	-	0.2	-	-	9.7	-	-	0.0	-	-	0.0	-	-	0.3	-	-	0.3	-	-
2	Region 16	2.3	1.8	2.8	4.9	4.5	5.3	7.2	6.2	8.2	0.1	0.1	0.1	0.1	0.0	0.1	7.4	6.5	8.3	0.0	0.0	0.0	0.3	0.0	0.6	1.3	0.9	1.6	1.6	1.6	1.6
1	Region 17	6.1	-	-	2.8	-	-	8.9	-	-	0.2	-	-	0.8	-	-	9.9	-	-	0.0	-	-	1.6	-	-	2.1	-	-	3.6	-	-
2	Region 18	1.5	1.1	1.9	6.8	5.1	8.5	8.4	7.1	9.7	0.2	0.1	0.2	1.9	0.0	3.7	10.4	9.7	11.0	0.0	0.0	0.0	0.2	0.0	0.4	0.7	0.2	1.1	0.9	0.2	1.5
2	Region 20	7.9	7.1	8.7	3.2	3.0	3.4	11.1	10.5	11.7	0.1	0.1	0.2	0.0	0.0	0.0	11.2	10.7	11.7	0.0	0.0	0.0	2.3	1.8	2.7	3.2	2.5	3.9	5.4	4.3	6.6
3	Region 21	4.6	2.2	7.3	4.7	1.9	7.7	9.2	8.5	9.9	0.1	0.0	0.3	0.3	0.0	0.8	9.6	9.2	10.0	0.0	0.0	0.0	0.9	0.5	1.1	1.7	1.0	2.2	2.6	2.1	3.0
1	Region 23	8.2	-	-	4.9	-	-	13.0	-	-	0.1	-	-	0.0	-	-	13.2	-	-	0.0	-	-	1.2	-	-	2.9	-	-	4.1	-	-
1	Region 24	1.1	-	-	6.8	-	-	7.9	-	-	0.2	-	-	0.4	-	-	8.5	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
1	Region 25	6.6	-	-	3.6	-	-	10.2	-	-	0.1	-	-	0.0	-	-	10.2	-	-	0.0	-	-	0.0	-	-	1.8	-	-	1.8	-	-
7	Region 27	4.9	1.4	10.1	4.5	2.6	6.6	9.4	4.1	12.7	0.2	0.1	0.4	0.1	0.0	0.4	9.7	4.5	12.9	0.0	0.0	0.0	1.8	0.0	5.1	1.6	0.0	3.0	3.3	0.0	7.4
5	Region 28	9.0	4.0	14.7	2.5	1.1	4.5	11.5	8.5	15.9	0.1	0.0	0.2	0.4	0.0	1.1	12.0	8.6	17.2	0.0	0.0	0.0	0.8	0.0	2.6	1.9	1.3	3.4	2.7	1.3	5.1
7	Region 29	11.1	7.2	17.2	2.7	1.5	4.9	13.7	8.8	18.8	0.2	0.0	0.4	0.4	0.0	2.4	14.3	9.1	19.0	0.0	0.0	0.0	4.7	1.6	10.6	3.8	2.0	7.8	8.5	4.0	17.0
7	Region 30	4.9	2.3	7.2	5.0	1.9	8.5	9.9	8.2	11.1	0.2	0.1	0.3	0.0	0.0	0.0	10.1	8.3	11.4	0.0	0.0	0.0	1.2	0.0	2.5	1.6	0.4	2.5	2.7	0.5	4.7
14	Region 31	6.8	1.8	10.8	3.6	1.0	7.7	10.4	4.5	14.2	0.2	0.0	0.3	0.8	0.0	4.8	11.4	6.3	18.6	0.0	0.0	0.0	1.7	0.3	2.7	2.7	0.8	4.8	4.3	1.3	7.1
18	Region 32	9.2	2.3	14.5	3.1	0.8	5.3	12.3	7.7	16.5	0.1	0.0	0.3	0.1	0.0	2.1	12.5	7.7	16.6	0.0	0.0	0.0	2.5	0.6	5.2	4.7	0.8	11.5	7.2	1.8	14.3
4	Region 33	9.9	5.0	15.4	2.1	1.3	3.0	11.9	8.0	17.7	0.2	0.1	0.2	0.9	0.0	3.2	13.0	9.8	17.9	0.0	0.0	0.0	2.9	1.1	4.8	3.3	1.6	5.7	6.3	2.7	9.6
11	Region 34	6.7	1.1	17.6	2.7	0.5	6.4	9.3	3.8	18.1	0.1	0.0	0.4	0.6	0.0	3.0	10.0	4.2	18.1	0.0	0.0	0.0	2.1	0.0	11.5	3.4	0.0	8.3	5.5	0.0	16.7
2	Region 35	11.5	8.3	14.7	3.7	1.9	5.5	15.2	13.8	16.6	0.1	0.0	0.2	0.0	0.0	0.0	15.3	13.8	16.8	0.0	0.0	0.0	1.4	0.0	2.8	7.6	7.3	7.9	9.0	7.3	10.7
3	Region 36	3.7	2.3	4.7	6.4	4.4	8.5	10.1	6.6	12.5	0.2	0.1	0.2	0.7	0.0	1.0	10.9	7.8	12.6	0.0	0.0	0.0	1.0	0.8	1.4	1.4	0.8	1.7	2.4	1.5	3.1
95	**Ave. YM2**	**7.0**			**3.7**			**10.7**			**0.1**			**0.4**			**11.2**			**0.0**			**1.9**			**2.9**			**4.8**		
	Min. YM2		**0.5**			**0.5**			**3.8**			**0.0**			**0.0**			**4.2**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. YM2			**17.6**			**8.5**			**18.8**			**0.4**			**4.8**			**19.0**			**0.0**			**11.5**			**11.5**			**17.0**

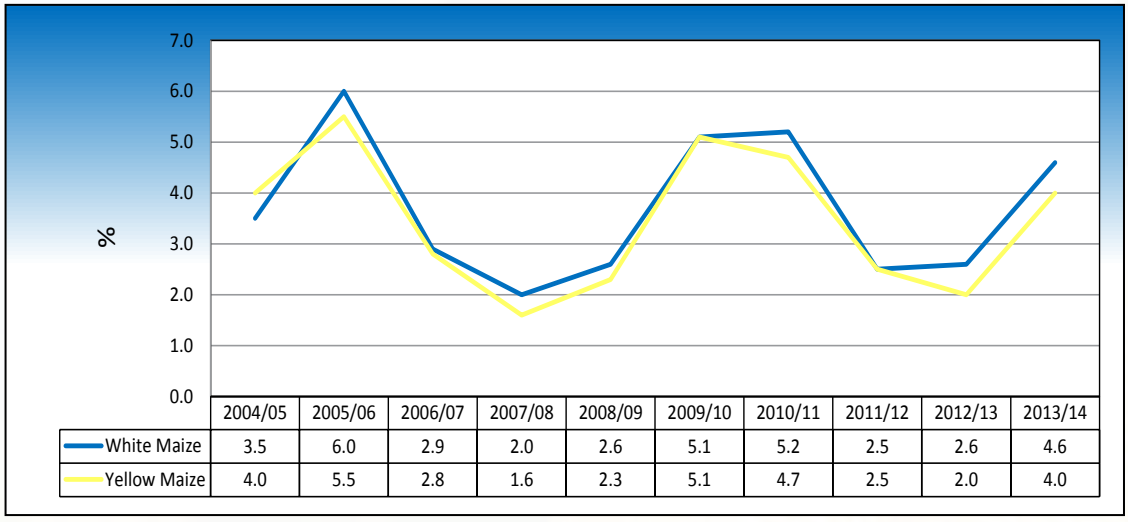
TABLE 3: RSA GRADING OF YELLOW MAIZE (2013/2014) (continue)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Total Deviations			% Pinked Kernels			% Diplodia Kernels			% Fusarium Kernels			% Cobrot Kernels		
		Above 6.35 mm sieve			Below 6.35 mm sieve																										
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM3																														
2	Region 27	14.9	13.2	16.6	4.3	2.0	6.6	19.2	15.3	23.2	0.4	0.2	0.6	0.1	0.0	0.1	19.7	16.0	23.4	0.0	0.0	0.0	6.2	4.3	8.1	5.4	3.3	7.5	11.6	11.4	11.8
3	Region 29	1.7	1.6	1.8	1.5	0.7	1.9	3.2	2.4	3.6	0.7	0.6	0.7	0.1	0.0	0.3	3.9	3.1	4.4	0.0	0.0	0.0	0.1	0.0	0.4	0.7	0.4	1.1	0.8	0.4	1.4
2	Region 32	4.5	3.2	5.8	2.6	0.9	4.4	7.1	4.1	10.2	0.6	0.6	0.7	1.0	0.0	2.0	8.8	6.8	10.8	0.0	0.0	0.0	1.6	0.7	2.6	1.6	1.0	2.2	3.2	1.7	4.8
1	Region 33	3.1	-	-	10.5	-	-	13.5	-	-	0.3	-	-	0.8	-	-	14.5	-	-	0.0	-	-	0.5	-	-	0.5	-	-	1.0	-	-
8	**Ave. YM3**	**5.9**			**3.6**			**9.5**			**0.5**			**0.4**			**10.4**			**0.0**			**2.1**			**2.1**			**4.2**		
	Min. YM3		**1.6**			**0.7**			**2.4**			**0.2**			**0.0**			**3.1**			**0.0**			**0.0**			**0.4**			**0.4**	
	Max .YM3			**16.6**			**10.5**			**23.2**			**0.7**			**2.0**			**23.4**			**0.0**			**8.1**			**7.5**			**11.8**
CLASS: COM																														
3	Region 25	2.0	1.5	2.6	2.6	0.2	6.3	4.5	2.6	8.1	1.2	0.8	1.9	0.0	0.0	0.0	5.7	3.6	8.9	0.0	0.0	0.0	0.6	0.4	0.7	1.0	0.6	1.4	1.6	1.2	2.1
1	Region 28	3.6	-	-	1.6	-	-	5.3	-	-	0.2	-	-	5.8	-	-	11.2	-	-	0.0	-	-	0.8	-	-	1.1	-	-	1.9	-	-
2	Region 29	17.1	2.9	31.3	1.5	1.3	1.6	18.6	4.6	32.6	0.4	0.1	0.8	0.0	0.0	0.0	19.0	5.4	32.6	0.0	0.0	0.0	10.1	0.0	20.1	5.7	1.8	9.5	15.7	1.8	29.6
1	Region 31	4.6	-	-	5.2	-	-	9.8	-	-	0.3	-	-	5.3	-	-	15.4	-	-	0.0	-	-	1.1	-	-	1.9	-	-	2.9	-	-
2	Region 32	17.2	2.1	32.3	1.5	1.3	1.8	18.7	3.8	33.6	0.0	0.0	0.1	3.9	0.0	7.8	22.6	11.6	33.7	0.0	0.0	0.0	1.4	0.0	2.7	14.5	0.9	28.2	15.9	0.9	30.9
9	**Ave. COM**	**9.2**			**2.3**			**11.5**			**0.5**			**2.1**			**14.1**			**0.0**			**2.9**			**5.2**			**8.1**		
	Min. COM		**1.5**			**0.2**			**2.6**			**0.0**			**0.0**			**3.6**			**0.0**			**0.0**			**0.6**			**0.9**	
	Max. COM			**32.3**			**6.3**			**33.6**			**1.9**			**7.8**			**33.7**			**0.0**			**20.1**			**28.2**			**30.9**
479	**Ave. yellow maize**	**4.0**			**2.1**			**6.1**			**0.1**			**0.2**			**6.4**			**0.0**			**1.0**			**1.5**			**2.5**		
	Min. yellow maize		**0.5**			**0.1**			**1.6**			**0.0**			**0.0**			**1.7**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. yellow maize			**32.3**			**10.5**			**33.6**			**1.9**			**7.8**			**33.7**			**0.2**			**20.1**			**28.2**			**30.9**
930	**Ave. maize**	**4.3**			**1.9**			**6.2**			**0.1**			**0.3**			**6.6**			**0.0**			**1.0**			**1.5**			**2.5**		
	Min. maize		**0.5**			**0.1**			**1.4**			**0.0**			**0.0**			**1.7**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. maize			**32.3**			**10.5**			**33.6**			**4.5**			**9.2**			**33.7**			**1.4**			**20.1**			**28.2**			**30.9**

TABLE 4: GRADING QUALITY OF SOUTH AFRICAN WHITE AND YELLOW MAIZE 2004/05 - 2013/14

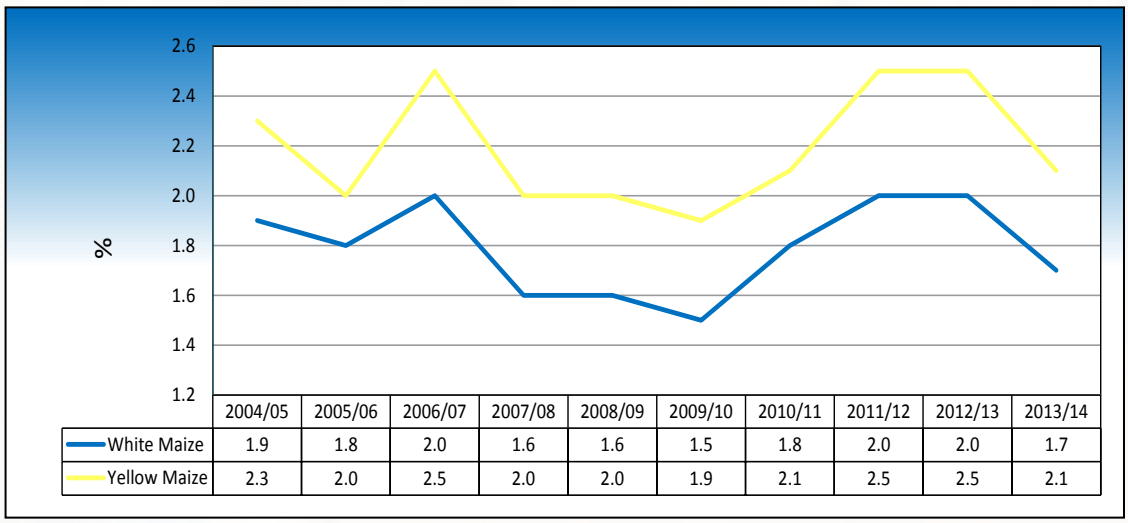
Season	Number of samples	% Defective kernels above 6.35 mm sieve			% Defective kernels below 6.35 mm sieve			% Foreign matter			% Other colour			% Total deviations		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
White Maize																
2004/05	601	3.5	0.5	28.5	1.9	0.1	16.4	0.2	0.0	0.5	0.3	0.0	12.3	5.9	1.3	31.1
2005/06	593	6.0	0.5	27.9	1.8	0.0	8.8	0.2	0.0	0.7	0.3	0.0	5.0	8.3	1.0	31.2
2006/07	563	2.9	0.1	34.9	2.0	0.1	11.6	0.1	0.0	0.7	0.2	0.0	13.5	5.3	0.4	38.8
2007/08	483	2.0	0.3	13.6	1.6	0.0	10.3	0.2	0.0	0.7	0.2	0.0	5.2	3.9	0.5	18.5
2008/09	483	2.6	0.4	16.9	1.6	0.0	5.5	0.2	0.0	4.0	0.2	0.0	5.0	4.5	1.0	20.2
2009/10	458	5.1	1.0	40.1	1.5	0.2	14.0	0.1	0.0	0.4	0.2	0.0	6.5	6.9	1.4	41.4
2010/11	413	5.2	0.5	67.1	1.8	0.1	13.3	0.2	0.0	0.8	0.4	0.0	23.2	7.5	0.9	95.1
2011/12	577	2.5	0.3	21.6	2.0	0.0	8.1	0.1	0.0	1.1	0.3	0.0	43.7	5.0	0.7	51.2
2012/13	508	2.6	0.0	20.8	2.0	0.2	11.4	0.1	0.0	1.5	0.3	0.0	6.5	4.9	1.0	22.4
2013/14	451	4.6	0.6	24.7	1.7	0.1	9.8	0.1	0.0	4.5	0.4	0.0	9.2	6.8	1.9	29.2
Weighted Average		**3.7**			**1.8**			**0.2**			**0.3**			**5.9**		
Minimum			**0.0**			**0.0**			**0.0**			**0.0**			**0.4**	
Maximum				**67.1**			**16.4**			**4.5**			**43.7**			**95.1**
Yellow Maize																
2004/05	399	4.0	0.6	27.2	2.3	0.3	9.4	0.2	0.0	0.6	0.1	0.0	2.8	6.6	1.0	31.5
2005/06	307	5.5	0.8	23.7	2.0	0.0	9.8	0.2	0.0	0.4	0.4	0.0	16.7	8.1	1.3	32.7
2006/07	337	2.8	0.0	67.7	2.5	0.2	17.3	0.2	0.0	1.9	0.2	0.0	4.6	5.7	0.9	70.0
2007/08	417	1.6	0.3	8.4	2.0	0.2	7.3	0.1	0.0	0.4	0.1	0.0	4.3	3.9	0.6	11.0
2008/09	327	2.3	0.5	15.1	2.0	0.0	10.6	0.2	0.0	3.1	0.2	0.0	13.3	4.7	0.9	29.6
2009/10	342	5.1	0.3	23.8	1.9	0.1	12.9	0.2	0.0	4.1	0.1	0.0	4.2	7.2	0.6	25.0
2010/11	280	4.7	0.8	30.9	2.1	0.1	9.6	0.2	0.0	0.4	0.2	0.0	6.2	7.2	1.3	36.9
2011/12	423	2.5	0.4	66.3	2.5	0.2	22.9	0.1	0.0	3.6	0.2	0.0	5.6	5.2	1.0	90.4
2012/13	492	2.0	0.2	23.1	2.5	0.1	14.0	0.1	0.0	1.8	0.2	0.0	8.4	4.8	0.8	25.0
2013/14	479	4.0	0.5	32.3	2.1	0.1	10.5	0.1	0.0	1.9	0.2	0.0	7.8	6.4	1.7	33.7
Weighted Average		**3.3**			**2.2**			**0.2**			**0.2**			**5.9**		
Minimum			**0.0**			**0.0**			**0.0**			**0.0**			**0.6**	
Maximum				**67.7**			**22.9**			**4.1**			**16.7**			**90.4**
White and Yellow Maize																
2004/05	1000	3.7	0.5	28.5	2.1	0.1	16.4	0.2	0.0	0.6	0.2	0.0	12.3	6.2	1.0	31.5
2005/06	900	5.9	0.5	27.9	1.9	0.0	9.8	0.2	0.0	0.7	0.3	0.0	16.7	8.2	1.0	32.7
2006/07	900	2.9	0.0	67.7	2.2	0.1	17.3	0.2	0.0	1.9	0.2	0.0	13.5	5.4	0.4	70.0
2007/08	900	1.8	0.3	13.6	1.8	0.0	10.3	0.1	0.0	0.7	0.1	0.0	5.2	3.9	0.5	18.5
2008/09	810	2.5	0.4	16.9	1.8	0.0	10.6	0.2	0.0	4.0	0.2	0.0	13.3	4.6	0.9	29.6
2009/10	800	5.1	0.3	40.1	1.7	0.1	14.0	0.1	0.0	4.1	0.2	0.0	6.5	7.1	0.6	41.4
2010/11	693	5.0	0.5	67.1	1.9	0.1	13.3	0.2	0.0	0.8	0.3	0.0	23.2	7.4	0.9	95.1
2011/12	1000	2.5	0.3	66.3	2.2	0.0	22.9	0.1	0.0	3.6	0.3	0.0	43.7	5.1	0.7	90.4
2012/13	1000	2.3	0.0	23.1	2.3	0.1	14.0	0.1	0.0	1.8	0.3	0.0	8.4	4.9	0.8	25.0
2013/14	930	4.3	0.5	32.3	1.9	0.1	10.5	0.1	0.0	4.5	0.3	0.0	9.2	6.6	1.7	33.7
Weighted Average		**3.5**			**2.0**			**0.1**			**0.2**			**5.9**		
Minimum			**0.0**			**0.0**			**0.0**			**0.0**			**0.4**	
Maximum				**67.7**			**22.9**			**4.5**			**43.7**			**95.1**

Graph 30: Percentage Defective Kernels above the 6.35 mm sieve over 10 seasons



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
White Maize	3.5	6.0	2.9	2.0	2.6	5.1	5.2	2.5	2.6	4.6
Yellow Maize	4.0	5.5	2.8	1.6	2.3	5.1	4.7	2.5	2.0	4.0

Graph 31: Percentage Defective Kernels below the 6.35 mm sieve over 10 seasons



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
White Maize	1.9	1.8	2.0	1.6	1.6	1.5	1.8	2.0	2.0	1.7
Yellow Maize	2.3	2.0	2.5	2.0	2.0	1.9	2.1	2.5	2.5	2.1

Graph 32: Percentage Total deviations over 10 seasons

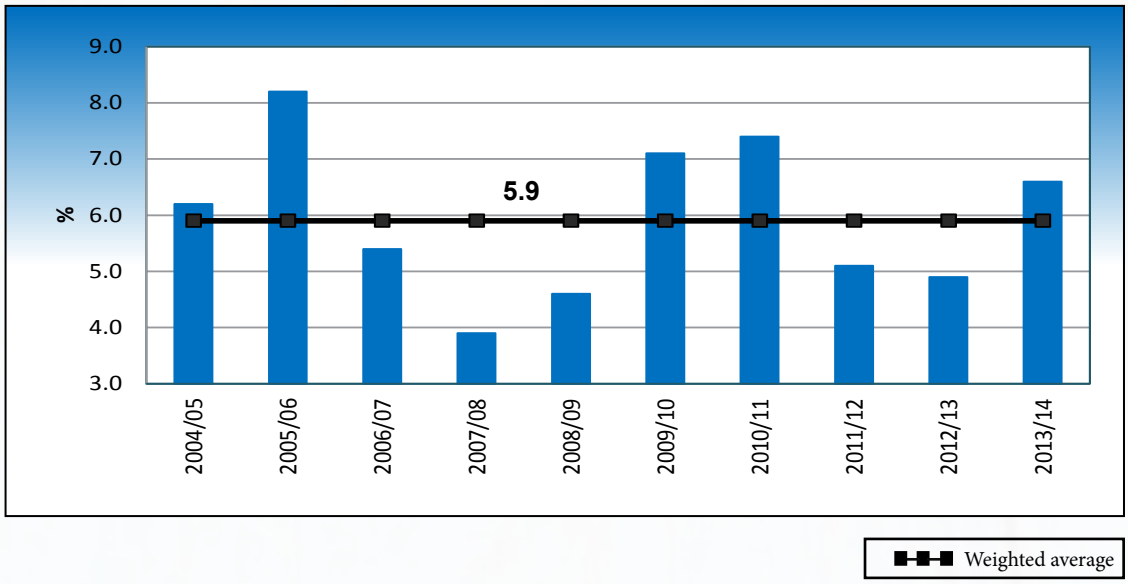


TABLE 5: USA GRADING OF WHITE MAIZE (2013/2014)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight (lbs)			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: US No.1																
5	Region 12	0.0	0.0	0.0	1.9	1.6	2.3	1.0	0.6	1.5	61.0	60.6	61.2	0.0	0.0	0.0
2	Region 13	0.0	0.0	0.0	2.6	2.3	2.8	0.5	0.4	0.6	59.8	59.3	60.2	0.0	0.0	0.0
18	Region 14	0.0	0.0	0.0	2.1	1.0	3.0	0.7	0.0	1.9	60.6	58.6	61.6	0.3	0.0	1.1
2	Region 15	0.0	0.0	0.0	2.6	2.3	3.0	0.2	0.2	0.3	61.8	61.8	61.8	0.0	0.0	0.0
6	Region 16	0.0	0.0	0.0	2.0	1.5	2.8	0.5	0.3	1.0	60.9	59.3	62.6	0.4	0.0	0.7
2	Region 17	0.0	0.0	0.0	2.4	2.3	2.6	0.3	0.2	0.3	60.8	60.6	61.0	0.0	0.0	0.0
5	Region 18	0.0	0.0	0.0	2.2	1.0	2.9	0.9	0.1	1.9	59.0	57.4	60.3	0.2	0.0	0.6
2	Region 19	0.0	0.0	0.0	1.7	1.1	2.3	0.3	0.3	0.4	59.5	59.2	59.8	0.4	0.0	0.7
2	Region 20	0.0	0.0	0.0	2.5	2.3	2.6	0.4	0.1	0.6	60.1	60.1	60.1	0.3	0.0	0.5
25	Region 21	0.0	0.0	0.0	2.0	0.8	2.9	0.6	0.1	1.2	60.9	59.9	62.1	0.1	0.0	0.5
24	Region 22	0.0	0.0	0.0	2.1	1.3	3.0	0.6	0.1	1.9	60.9	57.6	62.5	0.1	0.0	1.0
8	Region 23	0.0	0.0	0.0	1.8	1.2	2.4	0.2	0.1	0.5	62.4	60.9	62.9	0.0	0.0	0.2
23	Region 24	0.0	0.0	0.0	2.0	0.6	3.0	0.5	0.2	1.1	60.4	58.4	61.6	0.1	0.0	0.6
4	Region 25	0.0	0.0	0.0	2.3	2.0	2.8	1.1	0.6	1.7	58.9	57.0	60.1	0.0	0.0	0.2
1	Region 26	0.0	-	-	3.0	-	-	1.0	-	-	58.2	-	-	0.3	-	-
1	Region 27	0.0	-	-	2.5	-	-	0.2	-	-	60.5	-	-	0.4	-	-
1	Region 28	0.0	-	-	1.8	-	-	0.1	-	-	61.4	-	-	0.0	-	-
6	Region 29	0.0	0.0	0.0	2.0	0.9	2.8	0.5	0.3	0.8	61.1	59.8	62.0	0.5	0.0	1.2
8	Region 30	0.0	0.0	0.0	2.2	1.2	2.9	0.5	0.2	0.8	60.9	59.4	62.1	0.4	0.0	1.7
5	Region 31	0.0	0.0	0.0	2.0	1.1	3.0	1.0	0.5	1.6	58.5	57.0	59.8	1.0	0.0	1.9
3	Region 33	0.0	0.0	0.0	2.6	2.3	3.0	0.6	0.2	0.9	61.2	60.7	61.4	0.1	0.0	0.2
6	Region 34	0.0	0.0	0.0	2.5	2.1	2.9	0.4	0.0	0.8	59.3	56.7	61.7	0.4	0.0	1.0
4	Region 35	0.0	0.0	0.0	2.4	2.0	2.9	0.4	0.1	0.8	60.9	59.8	62.2	0.1	0.0	0.3
10	Region 36	0.0	0.0	0.0	1.7	1.4	3.0	0.9	0.0	1.5	59.7	57.9	61.1	0.5	0.0	1.3
173	**Ave. US No.1**	**0.0**			**2.1**			**0.6**			**60.5**			**0.2**		
	Min. US No.1		**0.0**			**0.6**			**0.0**			**56.7**			**0.0**	
	Max. US No.1			**0.0**			**3.0**			**1.9**			**62.9**			**1.9**
GRADE: US No.2																
2	Region 12	0.0	0.0	0.0	4.7	4.7	4.7	0.8	0.2	1.3	60.6	60.0	61.1	0.3	0.2	0.3
1	Region 13	0.0	-	-	4.3	-	-	1.0	-	-	59.5	-	-	0.3	-	-
9	Region 14	0.0	0.0	0.0	3.9	1.0	4.7	0.2	0.1	0.6	60.5	55.8	62.1	0.1	0.0	0.4
1	Region 15	0.0	-	-	3.3	-	-	0.9	-	-	61.0	-	-	0.3	-	-
4	Region 16	0.0	0.0	0.0	3.8	3.1	4.6	1.3	0.4	2.1	59.9	58.4	60.9	0.3	0.0	1.2
6	Region 17	0.0	0.0	0.0	3.9	3.1	4.6	0.6	0.2	1.0	59.8	58.6	60.8	0.2	0.0	0.5
1	Region 18	0.0	-	-	3.7	-	-	1.2	-	-	59.4	-	-	0.3	-	-
2	Region 19	0.0	0.0	0.0	3.7	3.4	4.0	0.6	0.3	0.8	59.6	59.4	59.8	0.0	0.0	0.0
3	Region 20	0.0	0.0	0.0	4.2	3.9	4.5	0.6	0.1	1.1	61.1	60.5	61.5	0.2	0.0	0.3
13	Region 21	0.0	0.0	0.0	3.7	3.1	4.9	0.7	0.2	1.5	60.2	58.1	61.5	0.1	0.0	0.3
4	Region 22	0.0	0.0	0.0	3.5	3.1	4.1	0.5	0.1	0.9	61.0	60.3	61.5	0.2	0.0	0.5
4	Region 23	0.0	0.0	0.0	4.3	3.6	4.9	0.4	0.2	1.1	61.8	60.8	63.7	0.1	0.0	0.2
18	Region 24	0.0	0.0	0.0	3.8	3.1	5.0	0.6	0.2	1.4	60.7	59.8	63.0	0.0	0.0	0.6
4	Region 25	0.0	0.0	0.0	4.2	3.5	4.8	0.9	0.4	1.8	59.4	58.3	60.1	0.4	0.2	0.8
3	Region 26	0.0	0.0	0.0	3.5	3.3	3.8	0.3	0.1	0.5	59.5	58.4	60.8	0.7	0.7	0.7
2	Region 27	0.0	0.0	0.0	3.9	2.9	4.9	1.6	0.7	2.6	60.9	59.4	62.4	0.0	0.0	0.0
2	Region 28	0.0	0.0	0.0	3.9	3.2	4.7	0.2	0.1	0.3	62.2	62.2	62.2	0.0	0.0	0.0
19	Region 29	0.0	0.0	0.0	4.1	3.1	4.9	0.6	0.0	1.9	61.2	59.6	62.9	0.3	0.0	1.4
7	Region 30	0.0	0.0	0.0	3.4	3.1	3.9	0.6	0.2	1.1	60.6	59.6	61.4	0.2	0.0	0.8
5	Region 31	0.0	0.0	0.0	4.2	3.6	5.0	0.6	0.3	0.9	60.0	58.4	62.5	0.5	0.0	1.1
4	Region 32	0.0	0.0	0.0	4.0	3.6	4.4	0.8	0.3	2.2	60.3	56.8	62.1	0.4	0.0	1.5
6	Region 33	0.0	0.0	0.0	3.6	3.3	4.4	0.7	0.1	0.9	59.4	57.3	60.9	0.6	0.0	1.3
11	Region 34	0.0	0.0	0.0	3.5	2.7	4.3	0.7	0.1	2.8	59.7	55.5	62.0	0.5	0.0	1.7

TABLE 5: USA GRADING OF WHITE MAIZE (2013/2014) (continue)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight (lbs)			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: US No.2																
1	Region 35	0.0	-	-	4.7	-	-	0.5	-	-	61.3	-	-	0.4	-	-
8	Region 36	0.0	0.0	0.0	3.8	1.7	4.9	1.0	0.8	1.3	58.2	54.6	60.3	0.7	0.0	1.5
140	**Ave. US No.2**	**0.0**			**3.8**			**0.7**			**60.3**			**0.3**		
	Min. US No.2		**0.0**			**1.0**			**0.0**			**54.6**			**0.0**	
	Max. US No.2			**0.0**			**5.0**			**2.8**			**63.7**			**1.7**
GRADE: US No.3																
1	Region 12	0.0	-	-	6.1	-	-	0.8	-	-	58.9	-	-	0.5	-	-
2	Region 13	0.0	0.0	0.0	5.7	5.5	5.9	0.7	0.6	0.8	60.1	59.4	60.8	0.4	0.3	0.5
1	Region 14	0.0	-	-	5.9	-	-	0.0	-	-	61.0	-	-	0.6	-	-
1	Region 15	0.0	-	-	5.6	-	-	0.2	-	-	61.6	-	-	0.0	-	-
1	Region 17	0.0	-	-	5.8	-	-	0.2	-	-	59.9	-	-	0.0	-	-
1	Region 18	0.0	-	-	5.8	-	-	1.0	-	-	58.9	-	-	0.0	-	-
2	Region 19	0.0	0.0	0.0	6.0	5.2	6.8	1.7	1.0	2.5	58.8	58.6	59.0	1.2	0.5	1.8
2	Region 20	0.0	0.0	0.0	6.1	5.3	7.0	1.1	1.0	1.2	59.8	59.5	60.1	0.9	0.6	1.3
4	Region 21	0.0	0.0	0.0	4.8	2.9	5.8	1.2	0.5	3.2	60.5	59.2	61.2	0.0	0.0	0.0
1	Region 23	0.0	-	-	5.8	-	-	0.2	-	-	60.8	-	-	0.0	-	-
2	Region 24	0.0	0.0	0.0	5.9	5.6	6.2	0.2	0.2	0.2	61.4	60.2	62.6	0.2	0.0	0.5
2	Region 27	0.0	0.0	0.0	5.9	5.7	6.1	0.7	0.6	0.9	60.7	60.3	61.1	0.4	0.2	0.5
4	Region 28	0.0	0.0	0.0	6.1	5.9	6.2	1.3	0.1	3.6	60.2	58.4	61.1	0.3	0.0	0.5
4	Region 29	0.0	0.0	0.0	6.3	5.4	6.9	0.5	0.1	1.2	59.2	54.6	61.3	0.4	0.0	0.8
5	Region 30	0.0	0.0	0.0	6.2	5.5	6.9	0.5	0.3	0.8	60.4	58.9	62.1	0.4	0.0	1.5
6	Region 31	0.0	0.0	0.0	6.2	5.8	6.8	0.8	0.5	2.1	59.4	57.8	59.9	0.5	0.0	2.0
6	Region 32	0.0	0.0	0.0	6.2	5.2	6.9	1.0	0.2	4.0	61.1	60.6	61.4	0.2	0.0	0.7
2	Region 33	0.0	0.0	0.0	5.8	5.2	6.5	0.7	0.6	0.8	59.6	59.5	59.6	0.5	0.0	1.0
9	Region 34	0.0	0.0	0.0	5.2	2.9	6.5	1.3	0.1	4.0	58.6	53.4	62.0	0.6	0.0	1.9
1	Region 35	0.0	-	-	5.7	-	-	0.1	-	-	60.9	-	-	0.0	-	-
2	Region 36	0.0	0.0	0.0	6.4	6.4	6.5	1.1	0.9	1.3	59.5	59.3	59.6	0.6	0.0	1.3
59	**Ave. US No.3**	**0.0**			**5.9**			**0.9**			**59.9**			**0.4**		
	Min. US No.3		**0.0**			**2.9**			**0.0**			**53.4**			**0.0**	
	Max. US No.3			**0.0**			**7.0**			**4.0**			**62.6**			**2.0**
GRADE: US No.4																
1	Region 14	0.0	-	-	8.1	-	-	0.1	-	-	61.1	-	-	0.0	-	-
1	Region 20	0.0	-	-	9.5	-	-	0.1	-	-	60.2	-	-	0.6	-	-
2	Region 21	0.0	0.0	0.0	7.4	7.4	7.4	0.4	0.2	0.5	60.4	60.0	60.8	1.1	0.8	1.4
1	Region 22	0.0	-	-	9.9	-	-	0.4	-	-	61.3	-	-	0.2	-	-
1	Region 23	0.0	-	-	8.4	-	-	0.5	-	-	62.9	-	-	0.0	-	-
2	Region 27	0.0	0.0	0.0	8.6	8.0	9.2	1.2	0.5	1.9	59.0	58.2	59.8	0.0	0.0	0.0
3	Region 28	0.0	0.0	0.0	8.0	7.1	8.8	0.3	0.1	0.6	60.7	58.3	62.3	0.3	0.0	0.8
1	Region 29	0.0	-	-	7.2	-	-	0.1	-	-	59.5	-	-	0.0	-	-
3	Region 31	0.0	0.0	0.0	7.9	7.1	8.4	0.7	0.5	0.9	59.1	57.7	60.0	0.4	0.0	0.8
8	Region 32	0.0	0.0	0.0	8.3	7.3	9.6	0.5	0.1	1.4	60.5	58.2	61.9	0.2	0.0	0.6
4	Region 33	0.0	0.0	0.0	8.4	7.1	9.4	0.7	0.4	1.1	59.5	58.4	60.1	0.2	0.0	0.5
1	Region 34	0.0	-	-	7.4	-	-	0.4	-	-	61.4	-	-	0.0	-	-
28	**Ave. US No.4**	**0.0**			**8.2**			**0.5**			**60.2**			**0.3**		
	Min. US No.4		**0.0**			**7.1**			**0.1**			**57.7**			**0.0**	
	Max. US No.4			**0.0**			**9.9**			**1.9**			**62.9**			**1.4**
GRADE: US No.5																
1	Region 18	0.0	-	-	14.9	-	-	0.8	-	-	57.6	-	-	0.0	-	-
2	Region 27	0.0	0.0	0.0	11.8	10.2	13.4	1.3	1.1	1.4	58.4	57.7	59.1	0.5	0.5	0.6
4	Region 28	0.0	0.0	0.0	10.3	8.9	11.8	2.7	0.4	6.9	58.6	56.7	61.2	0.1	0.0	0.2
2	Region 29	0.0	0.0	0.0	11.7	10.3	13.2	0.6	0.3	0.9	61.2	60.9	61.5	0.5	0.0	1.0

TABLE 5: USA GRADING OF WHITE MAIZE (2013/2014) (continue)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight (lbs)			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: US No.5																
10	Region 32	0.0	0.0	0.0	11.5	10.1	13.4	0.7	0.2	1.3	59.9	58.2	61.2	0.3	0.0	1.2
3	Region 33	0.0	0.0	0.0	11.2	10.9	11.8	1.1	0.9	1.3	57.8	55.6	59.3	0.8	0.0	1.6
8	Region 34	0.0	0.0	0.0	12.0	10.6	14.6	0.4	0.1	1.0	60.5	59.2	61.4	0.6	0.0	1.2
1	Region 35	0.0	-	-	11.7	-	-	0.1	-	-	61.7	-	-	0.0	-	-
31	**Ave. US No.5**	**0.0**			**11.6**			**0.9**			**59.7**			**0.4**		
	Min. US No.5		**0.0**			**8.9**			**0.1**			**55.6**			**0.0**	
	Max.US No.5			**0.0**			**14.9**			**6.9**			**61.7**			**1.6**
GRADE: Sample																
1	Region 23	0.0	-	-	15.4	-	-	0.2	-	-	63.4	-	-	0.0	-	-
1	Region 27	0.0	-	-	15.1	-	-	0.9	-	-	58.8	-	-	0.5	-	-
1	Region 29	0.0	-	-	23.8	-	-	0.9	-	-	60.8	-	-	0.2	-	-
1	Region 31	12.6	-	-	22.6	-	-	5.7	-	-	58.8	-	-	0.3	-	-
3	Region 33	0.0	0.0	0.0	19.0	17.2	20.7	0.6	0.3	1.0	56.7	54.5	58.4	1.2	0.0	3.4
3	Region 34	0.0	0.0	0.0	21.1	16.7	24.7	0.5	0.2	0.8	60.3	60.1	60.6	0.8	0.4	1.2
10	**Ave. Sample**	**1.3**			**19.7**			**1.1**			**59.3**			**0.7**		
	Min. Sample		**0.0**			**15.1**			**0.2**			**54.5**			**0.0**	
	Max. Sample			**12.6**			**24.7**			**5.7**			**63.4**			**3.4**
GRADE: Mixed Grade																
1	Region 16	0.0	-	-	1.4	-	-	0.4	-	-	60.7	-	-	2.1	-	-
1	Region 19	0.0	-	-	5.7	-	-	0.6	-	-	59.3	-	-	5.3	-	-
1	Region 24	0.0	-	-	6.6	-	-	0.4	-	-	60.7	-	-	4.1	-	-
2	Region 29	0.0	0.0	0.0	1.9	1.2	2.7	0.5	0.4	0.5	60.3	59.9	60.6	7.7	6.2	9.2
2	Region 30	0.0	0.0	0.0	5.6	4.6	6.6	1.6	0.7	2.5	59.8	59.6	59.9	2.9	2.8	3.0
1	Region 31	0.0	-	-	7.1	-	-	1.3	-	-	55.0	-	-	5.1	-	-
1	Region 33	0.0	-	-	8.3	-	-	0.1	-	-	60.2	-	-	2.6	-	-
1	Region 34	0.0	-	-	10.1	-	-	0.5	-	-	61.3	-	-	2.4	-	-
10	**Ave. Mixed Grade**	**0.0**			**5.4**			**0.7**			**59.7**			**4.3**		
	Min. Mixed Grade		**0.0**			**1.2**			**0.1**			**55.0**			**2.1**	
	Max. Mixed Grade			**0.0**			**10.1**			**2.5**			**61.3**			**9.2**
451	**Ave. white maize**	**0.0**			**4.6**			**0.7**			**60.3**			**0.4**		
	Min. white maize		**0.0**			**0.6**			**0.0**			**53.4**			**0.0**	
	Max. white maize			**12.6**			**24.7**			**6.9**			**63.7**			**9.2**
930	**Ave. maize**	**0.0**			**4.3**			**0.7**			**59.7**			**0.3**		
	Min. maize		**0.0**			**0.5**			**0.0**			**44.0**			**0.0**	
	Max. maize			**12.6**			**32.3**			**6.9**			**63.7**			**9.2**

TABLE 6: USA GRADING OF YELLOW MAIZE (2013/2014)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight (lbs)			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: US No.1																
10	Region 10	0.0	0.0	0.0	1.0	0.6	1.8	0.9	0.4	1.2	61.3	58.8	62.9	0.0	0.0	0.0
5	Region 11	0.0	0.0	0.0	1.4	0.5	2.1	0.7	0.4	1.5	60.5	59.8	61.4	0.0	0.0	0.0
6	Region 12	0.0	0.0	0.0	1.9	1.3	2.8	0.5	0.3	0.6	59.1	58.4	59.7	0.0	0.0	0.0
3	Region 13	0.0	0.0	0.0	2.0	1.8	2.1	0.6	0.5	0.7	59.5	58.4	60.1	0.1	0.0	0.3
13	Region 14	0.0	0.0	0.0	1.8	1.0	2.5	0.4	0.0	0.6	59.6	57.2	60.9	0.0	0.0	0.5
3	Region 15	0.0	0.0	0.0	1.9	1.5	2.6	0.8	0.2	1.6	60.3	59.1	62.4	0.2	0.0	0.3
3	Region 16	0.0	0.0	0.0	2.4	2.1	2.6	0.6	0.5	0.7	60.1	59.1	61.0	0.5	0.0	1.2
6	Region 17	0.0	0.0	0.0	2.0	1.4	2.8	0.4	0.2	0.6	58.8	57.4	60.0	0.3	0.0	0.7
8	Region 18	0.0	0.0	0.0	2.2	1.3	2.9	1.1	0.1	1.9	59.3	58.8	59.9	0.2	0.0	1.0
5	Region 19	0.0	0.0	0.0	2.2	1.2	2.9	0.6	0.5	0.7	59.2	58.2	59.8	0.4	0.0	1.1
2	Region 20	0.0	0.0	0.0	2.3	2.1	2.5	0.3	0.1	0.6	59.6	59.4	59.8	0.0	0.0	0.0
11	Region 21	0.0	0.0	0.0	1.8	1.0	2.8	0.6	0.2	1.2	59.6	58.4	61.5	0.2	0.0	1.0
6	Region 22	0.0	0.0	0.0	1.4	0.7	2.2	0.5	0.1	1.0	60.1	58.7	62.1	0.2	0.0	0.7
7	Region 23	0.0	0.0	0.0	1.6	1.1	2.6	0.3	0.1	0.8	60.5	59.8	61.5	0.4	0.0	1.9
6	Region 24	0.0	0.0	0.0	1.4	0.6	2.5	0.6	0.2	1.3	60.2	59.6	62.0	0.3	0.0	0.5
13	Region 25	0.0	0.0	0.0	2.2	1.5	2.8	0.7	0.2	1.1	58.7	57.3	60.4	0.0	0.0	0.2
7	Region 26	0.0	0.0	0.0	2.2	1.4	2.9	0.7	0.4	1.1	59.4	58.4	61.1	0.1	0.0	0.7
6	Region 27	0.0	0.0	0.0	2.1	1.4	3.0	1.0	0.5	1.7	59.3	58.0	60.6	0.0	0.0	0.0
14	Region 28	0.0	0.0	0.0	2.1	1.0	2.8	0.5	0.0	1.0	58.2	57.0	59.5	0.0	0.0	0.3
31	Region 29	0.0	0.0	0.0	2.2	1.2	3.0	0.6	0.0	1.4	59.7	57.4	62.9	0.0	0.0	0.7
14	Region 30	0.0	0.0	0.0	2.4	1.5	3.0	0.8	0.3	1.8	58.5	56.9	60.5	0.0	0.0	0.3
10	Region 31	0.0	0.0	0.0	2.1	1.5	2.6	0.7	0.4	1.3	58.4	57.2	59.6	0.1	0.0	0.3
6	Region 32	0.0	0.0	0.0	2.6	1.9	3.0	0.7	0.2	1.3	59.5	59.0	59.8	0.0	0.0	0.2
2	Region 33	0.0	0.0	0.0	2.0	1.4	2.6	0.5	0.2	0.8	59.4	58.8	60.0	0.0	0.0	0.0
10	Region 34	0.0	0.0	0.0	2.2	1.3	3.0	0.9	0.1	1.9	60.0	58.3	61.7	0.4	0.0	2.7
3	Region 35	0.0	0.0	0.0	2.4	2.1	2.9	0.4	0.0	0.7	59.0	56.3	60.6	0.0	0.0	0.0
7	Region 36	0.0	0.0	0.0	1.8	1.4	2.3	1.1	0.3	1.7	59.2	58.4	60.6	0.3	0.0	1.0
217	**Ave. US No.1**	**0.0**			**2.0**			**0.7**			**59.4**			**0.1**		
	Min. US No.1		**0.0**			**0.5**			**0.0**			**56.3**			**0.0**	
	Max. US No.1			**0.0**			**3.0**			**1.9**			**62.9**			**2.7**
GRADE: US No.2																
1	Region 10	0.0	-	-	3.4	-	-	0.4	-	-	59.4	-	-	0.0	-	-
2	Region 13	0.0	0.0	0.0	4.0	3.5	4.5	0.3	0.3	0.4	59.5	59.4	59.6	0.4	0.3	0.5
2	Region 14	0.0	0.0	0.0	3.9	3.6	4.2	0.2	0.1	0.4	59.5	59.2	59.8	0.1	0.0	0.2
2	Region 16	0.0	0.0	0.0	2.3	1.8	2.8	2.8	2.6	2.9	59.7	59.6	59.8	0.1	0.0	0.1
1	Region 18	0.0	-	-	4.2	-	-	0.0	-	-	59.9	-	-	0.0	-	-
3	Region 19	0.0	0.0	0.0	4.1	3.2	4.6	0.8	0.6	1.1	59.0	58.4	60.0	0.5	0.0	1.6
5	Region 20	0.0	0.0	0.0	4.2	3.8	4.7	0.6	0.1	1.9	59.5	58.8	60.2	0.0	0.0	0.2
4	Region 21	0.0	0.0	0.0	4.0	3.2	4.4	0.6	0.2	1.6	58.9	57.1	60.8	0.2	0.0	0.8
1	Region 22	0.0	-	-	3.5	-	-	0.1	-	-	58.9	-	-	0.0	-	-
4	Region 24	0.0	0.0	0.0	3.6	3.3	4.2	0.7	0.4	0.9	59.8	59.3	60.6	0.0	0.0	0.0
11	Region 25	0.0	0.0	0.0	3.9	1.5	4.9	0.9	0.1	2.2	58.9	57.7	61.4	0.0	0.0	0.0
3	Region 26	0.0	0.0	0.0	3.7	3.3	4.1	0.6	0.2	0.9	59.9	59.2	60.4	0.0	0.0	0.0
9	Region 27	0.0	0.0	0.0	3.9	3.1	4.7	0.6	0.2	1.2	59.1	55.5	61.5	0.1	0.0	0.4
10	Region 28	0.0	0.0	0.0	3.7	3.1	4.8	0.5	0.1	1.3	58.2	55.5	60.5	0.0	0.0	0.0
24	Region 29	0.0	0.0	0.0	3.8	1.8	5.0	0.6	0.1	1.3	59.3	55.5	60.7	0.0	0.0	0.3
15	Region 30	0.0	0.0	0.0	3.6	2.8	4.6	0.8	0.2	2.9	57.5	54.3	60.4	0.1	0.0	1.6
12	Region 31	0.0	0.0	0.0	3.6	2.2	4.9	0.9	0.4	1.4	58.6	54.8	61.7	0.5	0.0	3.5
16	Region 32	0.0	0.0	0.0	4.0	2.3	5.0	0.8	0.1	2.9	59.9	58.0	61.5	0.2	0.0	2.0
4	Region 33	0.0	0.0	0.0	3.8	3.2	4.8	0.8	0.6	1.1	58.4	56.3	59.8	0.2	0.0	0.6
13	Region 34	0.0	0.0	0.0	3.9	3.3	5.0	0.5	0.1	2.0	60.4	56.7	62.6	0.4	0.0	3.0

TABLE 6: USA GRADING OF YELLOW MAIZE (2013/2014) (continue)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight (lbs)			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
2	Region 35	0.0	0.0	0.0	4.2	4.1	4.3	0.2	0.1	0.4	59.5	58.0	61.0	0.0	0.0	0.0
3	Region 36	0.0	0.0	0.0	3.4	2.4	4.8	1.8	0.9	2.6	58.7	57.0	60.6	0.5	0.0	1.0
GRADE: US No.2																
147	**Ave. US No.2**	**0.0**			**3.8**			**0.7**			**59.1**			**0.2**		
	Min. US No.2		**0.0**			**1.5**			**0.0**			**54.3**			**0.0**	
	Max. US No.2			**0.0**			**5.0**			**2.9**			**62.6**			**3.5**
GRADE: US No.3																
1	Region 16	0.0	-	-	5.6	-	-	0.8	-	-	59.7	-	-	0.4	-	-
1	Region 17	0.0	-	-	6.3	-	-	1.0	-	-	57.9	-	-	0.8	-	-
1	Region 18	0.0	-	-	2.0	-	-	3.8	-	-	60.4	-	-	3.7	-	-
3	Region 25	0.0	0.0	0.0	4.7	1.8	6.6	1.3	0.1	3.1	58.2	57.0	59.4	0.0	0.0	0.0
5	Region 27	0.0	0.0	0.0	6.0	5.3	7.0	0.8	0.1	1.8	58.7	55.8	61.7	0.3	0.0	1.2
4	Region 28	0.0	0.0	0.0	5.7	2.6	6.8	0.7	0.3	1.1	57.1	52.9	59.6	0.2	0.0	0.8
2	Region 29	0.0	0.0	0.0	6.3	5.5	7.0	0.3	0.1	0.5	59.5	58.2	60.7	0.0	0.0	0.0
3	Region 30	0.0	0.0	0.0	5.7	5.2	6.0	0.6	0.1	1.2	58.7	57.6	59.4	0.0	0.0	0.0
5	Region 31	0.0	0.0	0.0	5.8	5.1	6.5	0.9	0.7	1.1	59.1	58.4	60.6	0.0	0.0	0.0
11	Region 32	0.0	0.0	0.0	5.9	5.2	7.0	0.6	0.1	2.9	59.6	58.0	61.0	0.1	0.0	0.8
6	Region 33	0.0	0.0	0.0	5.2	3.4	6.3	1.2	0.2	3.1	58.0	55.2	59.4	0.8	0.0	3.2
2	Region 34	0.0	0.0	0.0	5.8	5.6	6.0	2.0	0.5	3.4	60.7	60.6	60.7	0.8	0.0	1.5
1	Region 35	0.0	-	-	5.3	-	-	0.5	-	-	59.1	-	-	0.0	-	-
2	Region 36	0.0	0.0	0.0	5.0	5.0	5.1	2.0	0.7	3.3	59.6	59.1	60.0	0.8	0.5	1.0
47	**Ave. US No.3**	**0.0**			**5.6**			**1.0**			**58.9**			**0.3**		
	Min. US No.3		**0.0**			**1.8**			**0.1**			**52.9**			**0.0**	
	Max. US No.3			**0.0**			**7.0**			**3.8**			**61.7**			**3.7**
GRADE: US No.4																
2	Region 20	0.0	0.0	0.0	8.0	7.3	8.7	1.0	0.7	1.3	58.7	58.6	58.7	0.0	0.0	0.0
2	Region 21	0.0	0.0	0.0	4.8	2.2	7.3	2.5	0.3	4.7	59.1	58.2	59.9	0.1	0.0	0.1
1	Region 23	0.0	-	-	8.3	-	-	1.2	-	-	60.3	-	-	0.0	-	-
1	Region 24	0.0	-	-	1.1	-	-	4.6	-	-	59.2	-	-	0.4	-	-
1	Region 27	0.0	-	-	4.6	-	-	4.5	-	-	61.5	-	-	0.0	-	-
2	Region 28	0.0	0.0	0.0	8.0	7.6	8.5	0.4	0.0	0.8	54.4	51.5	57.2	0.4	0.0	0.7
3	Region 29	0.0	0.0	0.0	7.9	7.3	8.9	1.2	1.0	1.6	58.2	56.5	59.1	0.2	0.0	0.7
2	Region 30	0.0	0.0	0.0	7.4	7.4	7.4	1.3	0.8	1.8	59.1	58.6	59.6	0.0	0.0	0.0
7	Region 31	0.0	0.0	0.0	8.5	7.4	9.7	1.1	0.5	2.1	58.8	56.4	61.4	0.7	0.0	4.8
10	Region 32	0.0	0.0	0.0	8.8	7.1	9.9	0.9	0.1	2.0	58.4	54.9	60.1	0.2	0.0	2.1
1	Region 33	0.0	-	-	8.3	-	-	0.8	-	-	56.9	-	-	0.0	-	-
2	Region 34	0.0	0.0	0.0	8.1	7.3	9.0	0.8	0.8	0.8	59.9	59.0	60.7	0.3	0.0	0.5
1	Region 35	0.0	-	-	8.3	-	-	0.4	-	-	59.3	-	-	0.0	-	-
35	**Ave. US No.4**	**0.0**			**7.8**			**1.2**			**58.5**			**0.3**		
	Min. US No.4		**0.0**			**1.1**			**0.0**			**51.5**			**0.0**	
	Max. US No.4			**0.0**			**9.9**			**4.7**			**61.5**			**4.8**
GRADE: US No.5																
1	Region 18	0.0	-	-	1.2	-	-	6.2	-	-	59.6	-	-	0.0	-	-
2	Region 27	0.0	0.0	0.0	11.7	10.1	13.2	1.1	1.0	1.2	58.0	57.7	58.2	0.1	0.0	0.1
2	Region 28	0.0	0.0	0.0	12.7	10.6	14.7	0.8	0.5	1.1	56.8	55.1	58.4	0.7	0.3	1.1
2	Region 29	0.0	0.0	0.0	10.9	10.1	11.6	1.0	0.9	1.1	58.5	57.9	59.1	1.2	0.0	2.4
2	Region 31	0.0	0.0	0.0	10.5	10.1	10.9	0.5	0.3	0.8	59.5	59.0	60.0	0.0	0.0	0.0
7	Region 32	0.0	0.0	0.0	11.1	10.2	14.5	0.9	0.3	1.4	58.2	57.0	60.4	0.0	0.0	0.3
1	Region 33	0.0	-	-	11.1	-	-	0.8	-	-	57.9	-	-	0.3	-	-
2	Region 34	0.0	0.0	0.0	11.0	10.8	11.1	0.3	0.2	0.3	57.8	57.0	58.6	0.0	0.0	0.0
1	Region 35	0.0	-	-	14.7	-	-	0.5	-	-	60.4	-	-	0.0	-	-
2	Region 36	1.0	0.0	1.9	4.5	4.2	4.7	3.3	1.5	5.1	58.2	57.7	58.6	0.3	0.0	0.5

TABLE 6: USA GRADING OF YELLOW MAIZE (2013/2014) (continue)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight (lbs)			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: US No.5																
22	**Ave. US No.5**	**0.1**			**10.3**			**1.3**			**58.3**			**0.2**		
	Min. US No.5		**0.0**			**1.2**			**0.2**			**55.1**			**0.0**	
	Max. US No.5			**1.9**			**14.7**			**6.2**			**60.4**			**2.4**
GRADE: Sample Grade																
1	Region 15	0.0	-	-	2.9	-	-	0.2	-	-	44.0	-	-	0.2	-	-
1	Region 27	0.0	-	-	16.6	-	-	2.8	-	-	58.4	-	-	0.0	-	-
3	Region 29	0.0	0.0	0.0	21.3	15.6	31.3	0.6	0.2	1.5	58.7	56.9	59.6	0.0	0.0	0.0
1	Region 32	0.0	-	-	32.3	-	-	0.1	-	-	56.5	-	-	0.0	-	-
1	Region 33	0.0	-	-	15.6	-	-	1.2	-	-	56.6	-	-	0.0	-	-
1	Region 34	0.0	-	-	17.6	-	-	0.1	-	-	61.4	-	-	0.0	-	-
8	**Ave. Sample Grade**	**0.0**			**18.6**			**0.8**			**56.6**			**0.0**		
	Min. Sample Grade		**0.0**			**2.9**			**0.1**			**44.0**			**0.0**	
	Max. Sample Grade			**0.0**			**32.3**			**2.8**			**61.4**			**0.2**
GRADE: Mixed Grade																
1	Region 28	0.0	-	-	3.8	-	-	0.8	-	-	55.4	-	-	5.8	-	-
1	Region 31	0.0	-	-	4.9	-	-	2.1	-	-	55.3	-	-	5.3	-	-
1	Region 32	0.0	-	-	2.1	-	-	0.6	-	-	57.5	-	-	7.8	-	-
3	**Ave. Mixed Grade**	**0.0**			**3.6**			**1.2**			**56.1**			**6.3**		
	Min. Mixed Grade		**0.0**			**2.1**			**0.6**			**55.3**			**5.3**	
	Max. Mixed Grade			**0.0**			**4.9**			**2.1**			**57.5**			**7.8**
479	**Ave. yellow maize**	**0.0**			**4.0**			**0.8**			**59.1**			**0.2**		
	Min. yellow maize		**0.0**			**0.5**			**0.0**			**44.0**			**0.0**	
	Max. yellow maize			**1.9**			**32.3**			**6.2**			**62.9**			**7.8**
930	**Ave. maize**	**0.0**			**4.3**			**0.7**			**59.7**			**0.3**		
	Min. maize		**0.0**			**0.5**			**0.0**			**44.0**			**0.0**	
	Max. maize			**12.6**			**32.3**			**6.9**			**63.7**			**9.2**

TABLE 7: GRADES AND GRADE REQUIREMENTS FOR MAIZE ACCORDING TO RSA GRADING REGULATIONS

Description of deviation		Maximum percentage of deviation allowed (m/m)					
		White maize			Yellow maize		
		GRADE					
		WM1	WM2	WM3	YM1	YM2	YM3
I	Defective maize kernels	7	13	30	*	*	*
	above 6.35 mm grading sieve	*	*	*	9	20	30
	below 6.35 mm grading sieve	*	*	*	4	10	30
II	Other colour maize kernels	3	6	10	2	5	5
III	Foreign matter (excluding glass, stone, coal, dung or metal)	0.3	0.5	0.75	0.3	0.5	0.75
IV	Total deviations in terms I, II and III collectively, provided such deviations are individually within the limits specified above	8	16	30	9	20	30
V	Pinked maize kernels	12	12	12	*	*	*

If the maize does not comply with the standards for Class White Maize of Class Yellow Maize, it shall be classified as Class Other Maize.

* Not specified

Grading Regulations for maize, as published in the Government Gazette No. 32190 of 8 May 2009, Regulation No. R.473.

TABLE 8: GRADES AND GRADE REQUIREMENTS FOR MAIZE ACCORDING TO USA GRADING REGULATIONS

			Maximum limits of -		
			Damaged kernels		
Grades	Minimum test weight per bushel (pounds)		Heat damaged kernels (percent)	Total (percent)	Broken corn and foreign meaterial (percent)
U.S. No. 1	56.0	72.1 kg/hl	0.1	3.0	2.0
U.S. No. 2	54.0	69.5 kg/hl	0.2	5.0	3.0
U.S. No. 3	52.0	66.9 kg/hl	0.5	7.0	4.0
U.S. No. 4	49.0	63.1 kg/hl	1.0	10.0	5.0
U.S. No. 5	46.0	59.2 kg/hl	3.0	15.0	7.0
U.S. Sample Grade	< 46.0	<59.2 kg/hl	>3.0	>15.0	>7.0
U.S. Mix Grade	When % other colour in yellow maize samples >5 % and white maize samples >2 %				

U.S. Sample grade is corn that:

a) Does not meet the requirements for the grades U.S. Nos. 1, 2, 3, 4 or 5; or

b) Contains stones which have an aggregate weight in excess of 0.1 percent of the sample weight, 2 or more pieces of glass, 3 or more crotalaria seeds (Crotalaria spp.), 2 or more castor beans (Ricinus communis L.), 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), 8 or more cockleburs (Xanthium spp.) or similar seeds singly or in combination, or animal filth in excess of 0.20 percent in 1,000 grams; or

c) Has a musty, sour, or commercially objectionable foreign odor; or

d) Is heating or otherwise of distinctly low quality.

Source: Offical United States Standard of Grain (excluding metric conversions).

TABLE 9: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE (2013/2014)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM1																												
7	Region 12	78.3	77.2	78.8	34.9	32.3	37.2	25.3	20.8	34.7	64.5	57.5	71.2	10.2	5.8	14.7	1.4	0.5	2.5	1.1	0.4	1.6	11	4	20	99.0	90.1	105.5
3	Region 13	76.8	76.3	77.5	32.7	30.9	33.8	27.7	24.0	29.7	63.2	59.5	67.0	9.0	7.3	10.8	0.9	0.7	1.1	0.8	0.6	1.0	10	1	21	88.2	83.7	93.7
26	Region 14	78.0	71.8	79.9	33.4	30.2	36.2	25.7	15.1	40.7	65.2	53.9	71.6	9.0	4.6	13.3	1.4	0.3	5.9	1.0	0.3	3.8	7	0	22	96.4	87.2	111.1
3	Region 15	79.5	79.3	79.6	33.8	32.8	35.3	24.1	22.1	26.8	67.2	65.8	68.5	8.7	7.4	9.4	1.9	1.1	2.9	1.4	0.8	2.1	1	0	3	101.5	100.1	102.9
9	Region 16	78.2	76.3	80.6	33.4	32.0	35.3	23.6	8.1	36.9	64.5	58.8	69.2	11.9	4.3	22.7	0.7	0.2	2.5	0.5	0.1	1.7	5	1	18	97.1	92.2	101.9
9	Region 17	77.2	75.4	78.6	32.5	28.0	34.6	26.5	18.5	35.9	64.7	57.0	72.7	8.8	7.1	9.4	1.1	0.5	1.8	0.9	0.5	1.5	6	3	12	88.0	78.6	94.8
6	Region 18	76.0	73.9	77.6	31.6	26.0	34.0	19.1	8.3	28.1	67.9	55.7	81.1	13.0	7.6	23.4	2.0	0.2	7.2	1.3	0.2	4.0	8	0	24	91.7	82.8	101.6
5	Region 19	76.4	75.4	76.9	32.4	31.3	34.2	25.0	18.6	30.2	65.4	63.2	69.1	9.6	6.6	12.3	0.9	0.6	1.1	0.7	0.5	0.9	6	1	8	83.7	73.7	91.4
5	Region 20	78.1	77.4	79.2	34.2	30.7	40.9	19.2	3.1	25.7	68.8	64.8	71.3	12.0	4.2	26.1	1.8	1.1	2.8	1.3	0.8	1.8	9	6	13	95.1	88.8	99.5
39	Region 21	78.1	74.8	79.9	33.4	27.9	36.5	22.6	4.9	42.9	66.5	52.6	74.8	11.0	2.3	27.5	1.1	0.3	3.0	0.9	0.3	2.1	3	0	16	96.8	83.4	102.8
28	Region 22	78.5	74.1	80.4	33.2	30.3	36.0	27.1	3.3	41.6	63.7	53.5	74.5	9.2	4.4	35.4	0.9	0.2	2.9	0.8	0.2	2.5	4	0	30	98.6	94.1	106.3
12	Region 23	80.0	78.2	81.9	33.3	31.2	36.5	27.1	20.3	34.4	65.4	59.9	71.2	7.5	4.2	10.8	0.8	0.2	2.0	0.7	0.2	1.9	3	0	10	102.0	90.7	109.0
42	Region 24	78.0	75.1	81.1	34.5	27.9	38.7	25.1	8.3	44.2	66.3	51.2	82.7	8.6	1.1	20.8	0.9	0.2	2.0	0.7	0.2	1.6	5	0	16	95.5	79.6	107.5
7	Region 25	76.0	73.3	77.3	32.1	28.8	35.8	18.9	13.1	29.9	68.8	64.2	71.9	12.4	5.9	16.4	1.2	0.3	3.7	1.0	0.2	2.7	8	1	13	74.0	60.8	95.6
4	Region 26	76.2	74.9	78.3	32.1	30.5	34.0	11.2	4.9	19.2	68.3	59.7	73.9	20.6	9.4	35.4	1.6	0.5	2.8	1.4	0.5	2.6	4	3	5	80.3	63.3	98.4
1	Region 27	77.9	-	-	32.8	-	-	17.0	-	-	69.9	-	-	13.1	-	-	1.4	-	-	1.1	-	-	3	-	-	99.1	-	-
4	Region 28	79.5	78.7	80.1	34.8	32.4	37.3	26.9	17.7	36.5	65.6	57.0	72.3	7.6	4.6	10.0	1.2	0.2	3.1	0.8	0.1	1.8	2	0	3	96.2	91.2	103.7
22	Region 29	78.9	77.0	81.0	33.8	28.3	37.6	22.0	6.6	34.8	67.1	60.9	74.9	10.9	3.9	32.5	0.8	0.3	1.9	0.7	0.3	1.8	6	0	16	94.1	84.8	102.0
15	Region 30	78.2	76.7	79.9	34.4	29.9	39.4	26.5	8.2	41.3	62.0	53.8	76.0	11.5	4.0	22.4	0.5	0.0	1.2	0.4	0.0	0.9	4	1	13	91.5	81.0	99.6
11	Region 31	76.4	73.3	80.5	36.1	29.9	46.3	29.2	3.9	56.5	60.5	40.6	79.1	10.3	2.9	29.1	0.9	0.3	1.6	0.7	0.1	1.4	10	1	26	91.9	83.8	107.6
5	Region 32	77.9	73.1	79.9	32.5	29.4	36.8	17.4	0.7	34.3	68.2	58.9	72.8	14.3	6.8	26.5	1.4	0.5	2.5	1.1	0.5	2.0	7	1	19	91.1	76.9	100.0
10	Region 33	77.1	73.8	79.0	33.3	26.5	37.4	24.4	15.6	34.1	63.3	57.0	69.2	12.3	8.9	21.0	1.0	0.3	2.3	0.8	0.2	1.8	8	1	19	88.7	78.8	99.1
18	Region 34	76.6	68.7	79.8	33.4	27.8	37.5	21.8	6.6	41.7	67.7	55.2	75.0	10.5	3.1	20.8	1.4	0.3	3.8	1.1	0.3	2.1	10	3	28	93.0	75.9	107.7
6	Region 35	78.5	77.0	80.1	33.9	29.3	36.6	23.9	13.6	42.2	65.1	54.4	73.1	11.1	3.4	15.1	1.7	0.6	3.0	1.4	0.5	2.4	3	0	4	98.0	90.1	107.7
17	Region 36	76.1	70.3	78.7	34.1	28.2	38.3	21.2	10.5	56.4	67.4	38.3	74.0	11.5	5.3	16.9	1.0	0.1	2.8	0.8	0.1	1.8	5	0	13	93.3	77.5	103.0
314	**Ave. WM1**	**77.8**			**33.7**			**24.0**			**65.6**			**10.4**			**1.1**			**0.8**			**6**			**94.3**		
	Min. WM1		**68.7**			**26.0**			**0.7**			**38.3**			**1.1**			**0.0**			**0.0**			**0**			**60.8**	
	Max. WM1			**81.9**			**46.3**			**56.5**			**82.7**			**35.4**			**7.2**			**4.0**			**30**			**111.1**

TABLE 9: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE (2013/2014)
(continue)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM2																												
1	Region 12	75.8	-	-	29.2	-	-	16.5	-	-	71.2	-	-	12.3	-	-	0.9	-	-	0.6	-	-	3	-	-	85.6	-	-
2	Region 13	77.4	76.5	78.2	32.2	29.3	35.0	28.5	22.6	34.3	62.2	58.8	65.6	9.4	6.9	11.8	0.8	0.7	0.8	0.5	0.5	0.5	4	0	7	87.8	83.7	91.9
3	Region 14	78.1	77.1	78.7	33.8	30.5	38.1	38.0	22.9	67.1	55.0	30.4	68.5	7.0	2.5	9.9	2.8	2.3	3.4	1.9	1.4	2.3	17	2	30	99.2	92.1	106.0
2	Region 16	76.4	75.1	77.6	35.1	33.6	36.6	36.9	30.0	43.7	56.4	51.8	60.9	6.8	4.5	9.1	2.6	2.3	2.8	1.8	1.6	1.9	19	14	24	95.0	90.1	99.9
1	Region 18	75.8	-	-	31.3	-	-	34.1	-	-	57.9	-	-	8.0	-	-	1.1	-	-	1.0	-	-	1	-	-	83.8	-	-
2	Region 19	76.1	75.9	76.3	37.8	33.7	41.8	45.5	19.6	71.3	48.5	23.4	73.5	6.1	5.3	6.9	1.5	1.4	1.5	1.0	1.0	1.0	22	21	22	94.8	94.5	95.1
3	Region 20	77.2	76.6	77.5	36.3	33.8	39.7	21.8	14.0	26.2	67.3	63.9	73.2	10.9	9.9	12.8	1.1	0.5	1.9	1.0	0.5	1.7	7	4	10	86.6	80.9	97.4
5	Region 21	77.5	76.2	78.3	33.5	31.4	35.4	23.2	18.5	29.9	66.2	61.9	71.8	10.6	3.9	15.5	1.4	0.6	3.0	1.1	0.6	2.3	6	1	10	93.9	87.0	97.0
1	Region 22	78.9	-	-	33.9	-	-	22.9	-	-	65.4	-	-	11.7	-	-	2.5	-	-	1.6	-	-	7	-	-	97.8	-	-
2	Region 23	79.6	78.3	80.9	33.6	32.4	34.8	25.7	19.6	31.7	64.9	59.6	70.1	9.5	8.7	10.3	1.6	1.2	2.0	1.2	0.7	1.7	9	7	11	103.6	98.5	108.7
2	Region 24	77.8	77.5	78.1	30.3	28.9	31.7	23.5	22.9	24.1	67.0	66.4	67.5	9.6	8.4	10.7	1.2	0.9	1.4	1.0	0.8	1.1	7	6	7	95.8	93.1	98.5
5	Region 27	78.0	76.5	80.3	34.7	34.1	35.5	18.3	1.6	23.6	68.0	65.4	70.8	13.7	5.6	32.5	2.3	1.7	3.1	1.5	1.2	1.7	12	5	26	92.5	83.8	98.7
8	Region 28	77.6	75.0	80.2	35.2	32.3	43.1	23.6	9.3	33.0	64.9	59.3	68.6	11.5	2.5	22.2	1.5	0.2	3.2	1.1	0.1	2.7	7	0	17	91.8	80.4	99.1
9	Region 29	77.2	70.3	79.5	35.0	27.8	38.5	23.8	1.7	38.8	64.5	55.0	75.0	11.6	5.0	37.0	1.7	0.4	3.7	1.2	0.4	2.1	11	2	32	90.0	70.4	100.7
6	Region 30	77.5	75.9	79.9	33.5	28.6	36.4	19.4	6.5	46.4	65.9	49.5	75.6	14.7	4.1	30.0	0.8	0.3	1.8	0.6	0.3	1.1	10	5	17	91.2	80.4	99.3
9	Region 31	75.6	70.9	77.2	37.1	30.2	41.6	43.2	2.9	57.9	49.2	38.5	72.3	7.6	3.2	24.8	1.1	0.1	3.6	0.8	0.1	2.1	9	0	33	86.9	66.6	92.5
18	Region 32	77.8	74.9	79.7	34.3	30.4	37.6	17.4	2.3	38.0	65.7	51.9	78.6	16.9	5.2	37.7	1.6	0.7	5.4	1.3	0.7	3.9	7	2	26	91.2	63.1	103.6
7	Region 33	76.0	71.6	77.5	36.7	32.8	46.5	32.4	23.7	42.7	60.0	55.0	67.3	7.7	2.3	14.2	1.1	0.4	2.0	0.9	0.3	1.6	8	1	18	80.5	69.7	96.4
12	Region 34	77.1	73.7	79.0	34.3	30.0	40.4	27.5	9.7	46.5	63.9	50.5	75.4	8.6	3.0	15.6	1.7	0.7	3.6	1.3	0.6	2.7	7	0	23	90.1	84.1	97.2
1	Region 35	79.4	-	-	37.7	-	-	46.3	-	-	48.7	-	-	5.0	-	-	1.9	-	-	1.7	-	-	5	-	-	93.1	-	-
3	Region 36	75.7	74.1	76.8	37.0	34.6	39.9	24.3	22.2	28.0	68.1	66.0	69.8	7.6	6.0	9.4	1.8	0.7	3.1	1.4	0.7	2.3	9	4	16	96.8	87.4	103.3
102	**Ave. WM2**	**77.2**			**34.8**			**26.2**			**62.7**			**11.1**			**1.5**			**1.2**			**9**			**90.7**		
	Min. WM2		**70.3**			**27.8**			**1.6**			**23.4**			**2.3**			**0.1**			**0.1**			**0**			**63.1**	
	Max. WM2			**80.9**			**46.5**			**71.3**			**78.6**			**37.7**			**5.4**			**3.9**			**33**			**108.7**

TABLE 9: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE (2013/2014)
(continue)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM3																												
1	Region 15	78.5	-	-	28.3	-	-	18.8	-	-	62.2	-	-	19.0	-	-	0.4	-	-	0.4	-	-	1	-	-	99.2	-	-
1	Region 18	74.1	-	-	30.2	-	-	15.0	-	-	71.0	-	-	14.0	-	-	0.1	-	-	0.1	-	-	0	-	-	84.1	-	-
1	Region 23	81.6	-	-	35.6	-	-	18.7	-	-	76.0	-	-	5.3	-	-	1.8	-	-	1.4	-	-	4	-	-	105.4	-	-
1	Region 25	77.0	-	-	32.2	-	-	23.6	-	-	71.0	-	-	5.4	-	-	4.9	-	-	2.7	-	-	25	-	-	94.7	-	-
4	Region 27	75.4	74.9	76.1	33.2	29.0	35.3	10.5	5.3	22.4	71.5	66.1	78.5	18.0	10.6	28.6	3.2	1.4	5.1	2.7	1.0	4.2	6	2	10	82.3	73.5	86.1
1	Region 28	74.0	-	-	33.8	-	-	15.5	-	-	64.9	-	-	19.6	-	-	4.0	-	-	3.6	-	-	2	-	-	84.5	-	-
4	Region 29	78.1	77.1	79.1	33.0	31.5	33.7	22.4	9.1	38.2	64.7	55.3	75.0	12.9	5.7	23.5	2.8	1.5	3.9	1.9	1.3	2.5	15	6	32	92.2	85.6	97.0
1	Region 30	76.5	-	-	26.7	-	-	9.2	-	-	70.3	-	-	20.5	-	-	2.5	-	-	1.3	-	-	6	-	-	79.6	-	-
5	Region 32	77.1	74.9	78.8	37.0	35.0	39.5	30.3	15.1	53.1	58.3	41.0	67.8	11.4	5.9	17.1	1.7	1.1	2.1	1.3	0.6	1.8	6	1	12	85.0	78.7	94.8
5	Region 33	74.1	70.1	76.3	32.8	29.5	38.0	28.2	14.7	43.5	60.4	50.6	66.7	11.4	5.9	21.3	0.9	0.3	2.4	0.7	0.1	1.7	12	4	37	73.9	62.5	90.5
8	Region 34	77.1	75.2	78.3	37.2	34.3	41.9	36.4	16.2	52.3	57.9	44.9	76.9	5.7	2.8	10.1	2.1	1.4	3.1	1.7	1.2	2.5	7	1	17	93.4	85.0	102.9
32	**Ave. WM3**	**76.5**			**34.3**			**25.5**			**63.0**			**11.5**			**2.1**			**1.6**			**8**			**87.1**		
	Min. WM3		**70.1**			**26.7**			**5.3**			**41.0**			**2.8**			**0.1**			**0.1**			**0**			**62.5**	
	Max. WM3			**81.6**			**41.9**			**53.1**			**78.5**			**28.6**			**5.1**			**4.2**			**37**			**105.4**
CLASS: COM																												
1	Region 28	73.0	-	-	31.8	-	-	31.6	-	-	58.7	-	-	9.7	-	-	1.3	-	-	0.8	-	-	17	-	-	89.6	-	-
1	Region 31	75.7	-	-	39.1	-	-	44.5	-	-	53.2	-	-	2.3	-	-	3.6	-	-	2.3	-	-	28	-	-	88.2	-	-
1	Region 34	76.5	-	-	34.5	-	-	25.6	-	-	66.3	-	-	8.1	-	-	4.5	-	-	2.6	-	-	27	-	-	99.2	-	-
3	**Ave. COM**	**75.1**			**35.1**			**33.9**			**59.4**			**6.7**			**3.1**			**1.9**			**24**			**92.3**		
	Min. COM		**73.0**			**31.8**			**25.6**			**53.2**			**2.3**			**1.3**			**0.8**			**17**			**88.2**	
	Max. COM			**76.5**			**39.1**			**44.5**			**66.3**			**9.7**			**4.5**			**2.6**			**28**			**99.2**
451	**Ave. white maize**	**77.6**			**34.0**			**24.7**			**64.7**			**10.6**			**1.3**			**1.0**			**7**			**93.0**		
	Min. white maize		**68.7**			**26.0**			**0.7**			**23.4**			**1.1**			**0.0**			**0.0**			**0**			**60.8**	
	Max. white maize			**81.9**			**46.5**			**71.3**			**82.7**			**37.7**			**7.2**			**4.2**			**37**			**111.1**
930	**Ave. maize**	**76.8**			**32.9**			**19.6**			**65.9**			**14.4**			**1.6**			**1.2**			**7**			**90.9**		
	Min. maize		**56.6**			**18.6**			**0.3**			**23.4**			**1.1**			**0.0**			**0.0**			**0**			**46.5**	
	Max. maize			**81.9**			**46.5**			**71.3**			**82.7**			**64.8**			**14.5**			**9.9**			**53**			**120.4**

TABLE 10: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE (2013/2014)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM1																												
11	Region 10	78.7	75.7	80.9	32.9	30.5	35.4	2.1	0.9	3.9	64.7	48.4	73.2	33.2	23.3	50.7	0.9	0.2	2.4	0.8	0.2	1.9	4	0	10	89.3	70.2	101.2
3	Region 11	78.5	77.9	79.0	30.2	29.6	31.1	2.7	2.0	3.8	61.0	57.1	63.9	36.4	33.9	40.9	2.2	1.2	2.8	1.9	1.0	2.4	6	4	9	90.5	89.3	92.9
6	Region 12	76.1	75.2	76.9	30.3	27.8	32.5	13.0	8.0	21.1	68.9	65.6	72.4	18.1	13.3	22.8	1.7	1.3	2.5	1.1	0.6	1.7	13	10	17	95.6	89.9	100.9
4	Region 13	76.5	75.2	77.4	30.5	27.1	32.2	12.6	9.5	17.2	69.0	65.5	73.4	18.5	13.6	25.0	1.6	1.3	1.7	1.0	0.8	1.2	3	0	5	94.8	91.2	97.1
15	Region 14	76.7	73.7	78.4	29.8	22.5	32.3	10.7	3.7	18.6	70.0	50.1	75.0	19.3	11.8	46.2	1.7	0.9	2.6	1.3	0.4	2.2	6	0	18	97.8	89.5	103.6
3	Region 15	77.6	76.1	80.3	33.4	28.3	38.2	9.0	3.3	14.1	69.0	61.7	74.7	22.0	11.2	35.0	1.9	1.8	2.0	1.6	1.4	1.7	6	2	11	93.6	81.7	105.6
4	Region 16	77.2	76.0	78.5	30.0	25.6	32.1	18.1	9.0	28.6	65.4	63.6	66.7	16.5	7.8	24.3	1.8	1.2	2.9	1.3	0.9	2.1	3	2	6	97.7	92.9	103.2
6	Region 17	75.7	73.9	77.2	31.3	25.2	43.1	13.1	8.7	23.3	70.5	64.4	75.4	16.5	11.2	26.9	1.7	1.0	2.7	1.3	0.9	2.2	7	2	11	92.9	88.9	97.9
9	Region 18	76.3	75.7	77.1	30.1	28.2	32.9	13.5	6.9	22.4	68.9	61.6	77.9	17.6	11.0	27.0	1.4	0.7	2.9	1.1	0.6	2.3	4	1	10	96.1	92.2	102.4
8	Region 19	76.0	74.9	77.2	30.3	25.9	32.9	16.3	8.4	31.1	66.7	57.6	72.4	17.0	11.3	23.5	1.6	1.1	2.2	1.2	0.8	1.9	6	2	13	91.9	84.8	99.5
7	Region 20	76.6	75.7	77.5	32.2	29.4	33.3	14.0	4.4	22.3	66.3	62.3	72.0	19.6	12.2	31.7	2.8	1.3	5.6	2.3	1.0	5.0	7	4	11	87.2	60.7	96.5
14	Region 21	76.7	74.3	79.1	30.4	28.1	32.6	10.8	4.6	19.3	69.7	63.1	75.5	19.5	12.1	30.6	2.1	1.0	3.8	1.7	0.6	2.4	4	0	9	98.6	75.7	107.4
7	Region 22	77.1	75.6	79.9	31.6	28.1	37.0	14.3	4.7	28.2	68.9	59.6	74.5	16.7	6.1	30.0	1.5	0.9	3.0	1.3	0.8	2.6	4	0	8	100.9	92.4	109.4
7	Region 23	77.8	76.9	79.2	29.7	26.7	33.3	7.6	2.1	13.5	71.0	65.6	79.7	21.4	13.0	32.3	2.2	1.6	2.9	1.8	1.2	2.5	3	0	11	103.2	101.9	104.6
10	Region 24	77.3	76.3	79.8	30.7	27.3	35.0	11.9	4.5	30.6	66.1	55.9	71.9	22.1	5.6	39.4	1.4	0.7	2.6	1.1	0.6	1.9	8	2	20	99.4	90.6	116.6
23	Region 25	75.7	73.8	79.0	30.8	27.2	36.1	12.7	5.8	19.9	70.4	64.7	78.6	16.9	10.6	24.1	2.8	0.6	13.7	2.0	0.3	7.2	9	1	53	79.1	67.2	98.6
10	Region 26	76.7	75.2	78.7	33.1	28.9	38.0	18.1	5.8	33.7	65.3	60.0	70.0	16.6	4.5	29.2	1.3	0.3	2.2	0.9	0.0	1.8	5	0	13	87.7	75.5	95.7
15	Region 27	76.5	73.2	79.4	32.3	27.9	38.7	13.5	0.3	26.1	64.8	53.8	74.1	21.6	8.0	43.4	2.2	0.9	4.3	1.6	0.7	3.2	12	4	28	90.1	68.2	101.8
27	Region 28	74.4	66.3	77.9	33.9	28.5	38.3	22.7	11.0	39.2	66.3	58.1	73.7	11.0	2.7	24.3	1.3	0.3	4.6	1.0	0.3	4.1	4	0	16	84.5	73.3	97.3
53	Region 29	76.7	71.4	80.9	34.4	28.1	41.1	19.1	9.2	48.5	68.5	48.0	76.8	12.4	2.6	20.0	1.4	0.3	3.3	1.1	0.2	2.5	6	0	24	91.4	66.0	111.2
27	Region 30	74.8	70.2	77.9	32.7	26.4	39.0	19.1	7.3	35.9	67.1	53.6	75.1	13.8	5.5	29.3	1.7	0.3	5.1	1.1	0.2	3.3	8	1	30	86.8	79.2	96.6
22	Region 31	75.9	70.6	79.4	33.2	29.2	40.6	19.4	8.6	41.7	66.9	55.0	73.0	13.8	3.3	26.1	1.3	0.2	4.2	0.9	0.1	3.0	9	2	42	86.5	71.7	98.4
30	Region 32	77.0	74.7	79.2	32.0	25.5	39.7	17.7	8.1	41.9	67.0	50.5	75.8	15.3	6.0	24.8	2.2	0.8	3.7	1.7	0.7	2.7	9	1	28	90.8	80.0	120.4
10	Region 33	75.2	72.5	77.0	32.8	27.4	35.9	17.2	3.6	28.6	66.0	58.0	74.1	16.8	7.2	38.4	1.1	0.3	3.2	0.9	0.3	2.4	7	2	17	80.1	73.1	88.2
19	Region 34	77.7	73.0	80.6	33.1	30.7	37.8	18.3	8.9	46.4	67.1	49.7	77.9	14.6	3.9	23.8	2.7	0.6	14.5	1.9	0.4	8.2	6	0	15	96.5	82.3	105.6
6	Region 35	76.2	72.5	78.5	31.0	25.3	36.2	9.5	1.8	19.6	67.2	58.4	77.0	23.3	15.7	34.4	2.2	0.9	5.9	1.9	0.8	5.2	4	1	8	86.9	67.0	104.1
11	Region 36	75.6	73.4	78.0	33.3	28.9	37.2	14.4	8.3	26.3	68.1	59.6	74.7	17.5	10.0	26.4	1.1	0.4	2.1	0.8	0.2	1.7	5	2	11	87.5	78.4	105.2
367	**Ave. YM1**	**76.3**			**32.3**			**15.8**			**67.6**			**16.7**			**1.8**			**1.3**			**7**			**90.4**		
	Min. YM1		**66.3**			**22.5**			**0.3**			**48.0**			**2.6**			**0.2**			**0.0**			**0**			**60.7**	
	Max. YM1			**80.9**			**43.1**			**48.5**			**79.7**			**50.7**			**14.5**			**8.2**			**53**			**120.4**

TABLE 10: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE (2013/2014)
(continue)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM2																												
2	Region 11	76.9	76.9	76.9	30.9	30.4	31.3	2.4	2.2	2.6	62.7	59.3	66.1	34.9	31.3	38.5	2.6	1.3	3.8	2.0	1.2	2.7	3	0	6	85.6	79.2	92.0
1	Region 13	76.7	-	-	27.3	-	-	12.1	-	-	69.2	-	-	18.7	-	-	1.2	-	-	0.9	-	-	1	-	-	97.5	-	-
1	Region 15	56.6	-	-	18.6	-	-	6.4	-	-	56.4	-	-	37.2	-	-	3.0	-	-	1.0	-	-	3	-	-	93.5	-	-
2	Region 16	76.8	76.7	76.9	27.1	25.0	29.2	4.8	3.9	5.7	71.0	67.9	74.1	24.2	20.2	28.2	2.2	2.0	2.3	1.9	1.7	2.0	9	8	10	97.8	93.0	102.5
1	Region 17	74.5	-	-	27.9	-	-	12.0	-	-	65.3	-	-	22.7	-	-	1.2	-	-	0.9	-	-	12	-	-	89.3	-	-
2	Region 18	77.3	76.7	77.8	31.9	31.0	32.7	16.7	11.4	22.0	70.2	67.1	73.2	13.2	10.9	15.4	0.7	0.1	1.3	0.5	0.1	1.0	3	1	5	98.5	97.2	99.8
2	Region 20	75.5	75.4	75.6	28.9	28.7	29.0	9.7	4.0	15.3	66.7	64.2	69.2	23.7	15.5	31.8	2.6	1.4	3.7	1.9	0.8	2.9	5	5	5	89.4	88.3	90.5
3	Region 21	75.2	73.5	77.1	29.2	27.8	30.5	14.6	10.5	20.1	64.7	63.0	67.2	20.7	16.1	26.5	1.8	0.9	2.6	1.4	0.7	1.9	5	3	6	90.6	83.7	103.2
1	Region 23	77.7	-	-	27.7	-	-	5.1	-	-	59.0	-	-	35.9	-	-	1.7	-	-	1.0	-	-	6	-	-	82.0	-	-
1	Region 24	76.2	-	-	29.6	-	-	21.6	-	-	65.8	-	-	12.6	-	-	1.7	-	-	1.4	-	-	8	-	-	101.8	-	-
1	Region 25	74.8	-	-	33.9	-	-	3.2	-	-	68.6	-	-	28.2	-	-	4.8	-	-	4.2	-	-	7	-	-	69.0	-	-
7	Region 27	75.3	71.4	79.1	30.2	23.9	33.6	7.6	2.1	12.3	64.4	52.4	73.6	28.0	17.7	39.1	3.1	1.9	4.7	2.2	1.4	3.6	15	4	24	86.4	73.6	105.7
5	Region 28	72.8	70.1	76.8	28.0	23.2	31.9	10.0	3.1	25.8	59.2	32.4	73.5	30.8	7.8	64.5	2.6	1.8	3.2	2.0	1.6	2.5	2	0	4	72.0	46.5	91.0
7	Region 29	75.1	72.8	76.6	32.5	28.8	35.5	15.9	5.1	52.7	65.7	44.2	73.3	18.4	3.1	33.8	2.0	0.7	3.1	1.5	0.6	2.7	8	2	16	78.4	60.9	96.1
7	Region 30	74.7	69.9	76.8	28.3	23.7	33.5	12.9	4.3	19.2	56.8	35.0	69.2	30.3	12.0	54.2	1.4	0.4	3.3	0.8	0.3	1.7	10	1	22	81.9	62.5	92.2
14	Region 31	75.0	70.5	79.0	30.6	25.5	41.0	13.9	1.1	34.3	63.4	37.8	74.7	22.7	5.4	57.7	1.8	0.5	8.1	1.3	0.1	5.1	10	1	29	80.0	65.6	95.1
18	Region 32	75.1	70.7	77.8	28.4	23.7	34.3	11.1	3.5	25.9	67.5	60.1	75.6	21.4	11.3	32.0	2.5	1.4	4.8	1.7	0.7	3.5	8	1	27	85.8	72.8	105.0
4	Region 33	73.8	72.9	74.6	29.9	26.3	32.9	11.1	4.4	17.0	68.2	64.2	72.4	20.7	13.5	31.4	1.3	0.4	1.8	0.8	0.4	1.1	8	3	12	69.6	54.4	85.7
11	Region 34	76.8	73.4	79.0	32.9	26.6	39.9	15.3	0.3	28.9	67.5	34.9	77.5	17.2	7.2	64.8	2.3	1.1	3.5	1.7	0.8	2.7	11	1	23	92.2	58.9	105.8
2	Region 35	77.1	76.3	77.8	30.9	30.7	31.0	1.9	1.7	2.1	52.3	49.5	55.1	45.8	43.2	48.4	3.5	2.9	4.0	2.6	1.8	3.3	3	3	3	91.5	90.6	92.3
3	Region 36	76.9	75.5	77.9	32.7	30.1	35.8	21.6	11.1	38.5	64.4	54.1	69.8	14.0	7.4	19.1	1.4	1.0	2.2	1.1	0.7	1.8	6	2	11	93.2	88.6	99.2
95	**Ave. YM2**	**75.2**			**30.0**			**12.1**			**64.6**			**23.3**			**2.2**			**1.5**			**8**			**84.8**		
	Min. YM2		**56.6**			**18.6**			**0.3**			**32.4**			**3.1**			**0.1**			**0.1**			**0**			**46.5**	
	Max. YM2			**79.1**			**41.0**			**52.7**			**77.5**			**64.8**			**8.1**			**5.1**			**29**			**105.8**

TABLE 10: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE (2013/2014)
(continue)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM3																												
2	Region 27	75.0	74.9	75.1	28.8	27.7	29.9	6.5	1.4	11.5	68.7	65.2	72.1	24.9	16.4	33.4	2.9	1.9	3.8	2.1	1.7	2.4	8	7	8	84.8	81.1	88.4
3	Region 29	74.9	73.9	76.5	32.3	30.7	35.0	16.0	13.2	19.5	70.8	70.0	72.1	13.2	10.5	16.5	2.1	2.0	2.3	1.6	1.6	1.6	6	4	7	86.5	79.3	93.3
2	Region 32	75.3	74.7	75.9	31.2	31.2	31.2	15.2	10.8	19.6	72.1	71.2	73.0	12.7	7.4	18.0	3.3	2.2	4.3	2.3	1.6	2.9	8	6	10	94.5	89.1	99.9
1	Region 33	71.0	-	-	26.7	-	-	9.2	-	-	58.5	-	-	32.3	-	-	2.1	-	-	1.6	-	-	11	-	-	82.2	-	-
8	**Ave. YM3**	**74.5**			**30.5**			**12.6**			**69.1**			**18.4**			**2.6**			**1.9**			**7**			**87.5**		
	Min. YM3		**71.0**			**26.7**			**1.4**			**58.5**			**7.4**			**1.9**			**1.6**			**4**			**79.3**	
	Max. YM3			**76.5**			**35.0**			**19.6**			**73.0**			**33.4**			**4.3**			**2.9**			**11**			**99.9**
CLASS: COM																												
3	Region 25	75.1	73.4	77.6	33.4	30.9	35.3	12.2	4.4	19.2	70.0	66.0	73.0	17.8	14.8	22.6	8.0	3.7	14.0	5.5	2.4	9.9	22	12	28	73.8	68.9	76.8
1	Region 28	71.3	-	-	29.4	-	-	17.0	-	-	69.3	-	-	13.7	-	-	1.4	-	-	1.1	-	-	0	-	-	75.4	-	-
2	Region 29	76.4	76.0	76.7	34.6	34.1	35.1	12.4	12.3	12.5	72.2	71.4	72.9	15.5	14.6	16.3	1.9	1.4	2.3	1.5	1.2	1.8	6	3	9	77.1	71.4	82.8
1	Region 31	71.2	-	-	31.4	-	-	19.8	-	-	71.2	-	-	9.0	-	-	2.3	-	-	1.4	-	-	30	-	-	69.1	-	-
2	Region 32	73.4	72.8	74.0	28.6	24.7	32.4	4.4	3.5	5.2	70.9	67.1	74.7	24.8	21.8	27.7	4.3	3.6	4.9	3.0	2.5	3.4	31	12	50	79.6	71.6	87.6
9	**Ave. COM**	**74.1**			**31.9**			**11.9**			**70.7**			**17.4**			**4.4**			**3.1**			**19**			**75.5**		
	Min. COM		**71.2**			**24.7**			**3.5**			**66.0**			**9.0**			**1.4**			**1.1**			**0**			**68.9**	
	Max. COM			**77.6**			**35.3**			**19.8**			**74.7**			**27.7**			**14.0**			**9.9**			**50**			**87.6**
479	**Ave. yellow maize**	**76.0**			**31.8**			**14.9**			**67.1**			**18.0**			**1.9**			**1.4**			**7**			**89.0**		
	Min. yellow maize		**56.6**			**18.6**			**0.3**			**32.4**			**2.6**			**0.1**			**0.0**			**0**			**46.5**	
	Max. yellow maize			**80.9**			**43.1**			**52.7**			**79.7**			**64.8**			**14.5**			**9.9**			**53**			**120.4**
930	**Ave. maize**	**76.8**			**32.9**			**19.6**			**65.9**			**14.4**			**1.6**			**1.2**			**7**			**90.9**		
	Min. maize		**56.6**			**18.6**			**0.3**			**23.4**			**1.1**			**0.0**			**0.0**			**0**			**46.5**	
	Max. maize			**81.9**			**46.5**			**71.3**			**82.7**			**64.8**			**14.5**			**9.9**			**53**			**120.4**

TABLE 11: PHYSICAL QUALITY FACTORS OF WHITE MAIZE (2013/2014)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
	WHITE																											
8	Region 12	78.0	75.8	78.8	34.2	29.2	37.2	24.2	16.5	34.7	65.4	57.5	71.2	10.5	5.8	14.7	1.4	0.5	2.5	1.0	0.4	1.6	10	3	20	97.3	85.6	105.5
5	Region 13	77.0	76.3	78.2	32.5	29.3	35.0	28.0	22.6	34.3	62.8	58.8	67.0	9.2	6.9	11.8	0.9	0.7	1.1	0.7	0.5	1.0	7	0	21	88.0	83.7	93.7
29	Region 14	78.0	71.8	79.9	33.4	30.2	38.1	27.0	15.1	67.1	64.2	30.4	71.6	8.8	2.5	13.3	1.5	0.3	5.9	1.1	0.3	3.8	8	0	30	96.7	87.2	111.1
4	Region 15	79.2	78.5	79.6	32.4	28.3	35.3	22.8	18.8	26.8	65.9	62.2	68.5	11.3	7.4	19.0	1.5	0.4	2.9	1.2	0.4	2.1	1	0	3	100.9	99.2	102.9
11	Region 16	77.9	75.1	80.6	33.7	32.0	36.6	26.0	8.1	43.7	63.0	51.8	69.2	11.0	4.3	22.7	1.1	0.2	2.8	0.7	0.1	1.9	7	1	24	96.7	90.1	101.9
9	Region 17	77.2	75.4	78.6	32.5	28.0	34.6	26.5	18.5	35.9	64.7	57.0	72.7	8.8	7.1	9.4	1.1	0.5	1.8	0.9	0.5	1.5	6	3	12	88.0	78.6	94.8
8	Region 18	75.7	73.9	77.6	31.4	26.0	34.0	20.5	8.3	34.1	67.1	55.7	81.1	12.5	7.6	23.4	1.6	0.1	7.2	1.1	0.1	4.0	6	0	24	89.8	82.8	101.6
7	Region 19	76.3	75.4	76.9	33.9	31.3	41.8	30.9	18.6	71.3	60.5	23.4	73.5	8.6	5.3	12.3	1.1	0.6	1.5	0.8	0.5	1.0	10	1	22	86.8	73.7	95.1
8	Region 20	77.8	76.6	79.2	35.0	30.7	40.9	20.2	3.1	26.2	68.3	63.9	73.2	11.6	4.2	26.1	1.5	0.5	2.8	1.2	0.5	1.8	8	4	13	91.9	80.9	99.5
44	Region 21	78.0	74.8	79.9	33.4	27.9	36.5	22.6	4.9	42.9	66.4	52.6	74.8	10.9	2.3	27.5	1.1	0.3	3.0	0.9	0.3	2.3	4	0	16	96.5	83.4	102.8
29	Region 22	78.5	74.1	80.4	33.2	30.3	36.0	27.0	3.3	41.6	63.8	53.5	74.5	9.2	4.4	35.4	1.0	0.2	2.9	0.8	0.2	2.5	4	0	30	98.6	94.1	106.3
15	Region 23	80.1	78.2	81.9	33.5	31.2	36.5	26.3	18.7	34.4	66.1	59.6	76.0	7.6	4.2	10.8	0.9	0.2	2.0	0.8	0.2	1.9	4	0	11	102.5	90.7	109.0
44	Region 24	78.0	75.1	81.1	34.3	27.9	38.7	25.1	8.3	44.2	66.3	51.2	82.7	8.6	1.1	20.8	1.0	0.2	2.0	0.7	0.2	1.6	5	0	16	95.5	79.6	107.5
8	Region 25	76.1	73.3	77.3	32.1	28.8	35.8	19.5	13.1	29.9	69.0	64.2	71.9	11.5	5.4	16.4	1.7	0.3	4.9	1.2	0.2	2.7	10	1	25	76.6	60.8	95.6
4	Region 26	76.2	74.9	78.3	32.1	30.5	34.0	11.2	4.9	19.2	68.3	59.7	73.9	20.6	9.4	35.4	1.6	0.5	2.8	1.4	0.5	2.6	4	3	5	80.3	63.3	98.4
10	Region 27	77.0	74.9	80.3	33.9	29.0	35.5	15.0	1.6	23.6	69.6	65.4	78.5	15.3	5.6	32.5	2.6	1.4	5.1	2.0	1.0	4.2	9	2	26	89.0	73.5	99.1
14	Region 28	77.5	73.0	80.2	34.7	31.8	43.1	24.5	9.3	36.5	64.7	57.0	72.3	10.8	2.5	22.2	1.5	0.2	4.0	1.2	0.1	3.6	6	0	17	92.4	80.4	103.7
35	Region 29	78.3	70.3	81.0	34.0	27.8	38.5	22.5	1.7	38.8	66.1	55.0	75.0	11.3	3.9	37.0	1.3	0.3	3.9	1.0	0.3	2.5	8	0	32	92.8	70.4	102.0
22	Region 30	78.0	75.9	79.9	33.8	26.7	39.4	23.8	6.5	46.4	63.4	49.5	76.0	12.8	4.0	30.0	0.7	0.0	2.5	0.5	0.0	1.3	6	1	17	90.9	79.6	99.6
21	Region 31	76.0	70.9	80.5	36.7	29.9	46.3	35.9	2.9	57.9	55.3	38.5	79.1	8.8	2.3	29.1	1.1	0.1	3.6	0.8	0.1	2.3	10	0	33	89.6	66.6	107.6
28	Region 32	77.7	73.1	79.9	34.5	29.4	39.5	19.7	0.7	53.1	64.9	41.0	78.6	15.4	5.2	37.7	1.6	0.5	5.4	1.3	0.5	3.9	7	1	26	90.1	63.1	103.6
22	Region 33	76.1	70.1	79.0	34.3	26.5	46.5	27.8	14.7	43.5	61.6	50.6	69.2	10.6	2.3	21.3	1.0	0.3	2.4	0.8	0.1	1.8	9	1	37	82.7	62.5	99.1
39	Region 34	76.8	68.7	79.8	34.5	27.8	41.9	26.7	6.6	52.3	64.5	44.9	76.9	8.9	2.8	20.8	1.7	0.3	4.5	1.3	0.3	2.7	9	0	28	92.3	75.9	107.7
7	Region 35	78.6	77.0	80.1	34.4	29.3	37.7	27.1	13.6	46.3	62.7	48.7	73.1	10.2	3.4	15.1	1.7	0.6	3.0	1.4	0.5	2.4	3	0	5	97.3	90.1	107.7
20	Region 36	76.1	70.3	78.7	34.6	28.2	39.9	21.6	10.5	56.4	67.5	38.3	74.0	10.9	5.3	16.9	1.2	0.1	3.1	0.9	0.1	2.3	6	0	16	93.8	77.5	103.3
451	**Ave. white**	**77.6**			**34.0**			**24.7**			**64.7**			**10.6**			**1.3**			**1.0**			**7**			**93.0**		
	Min. white		**68.7**			**26.0**			**0.7**			**23.4**			**1.1**			**0.0**			**0.0**			**0**			**60.8**	
	Max. white			**81.9**			**46.5**			**71.3**			**82.7**			**37.7**			**7.2**			**4.2**			**37**			**111.1**

TABLE 12: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE (2013/2014)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
YELLOW																												
11	Region 10	78.7	75.7	80.9	32.9	30.5	35.4	2.1	0.9	3.9	64.7	48.4	73.2	33.2	23.3	50.7	0.9	0.2	2.4	0.8	0.2	1.9	4	0	10	89.3	70.2	101.2
5	Region 11	77.8	76.9	79.0	30.4	29.6	31.3	2.6	2.0	3.8	61.7	57.1	66.1	35.8	31.3	40.9	2.3	1.2	3.8	1.9	1.0	2.7	5	0	9	88.6	79.2	92.9
6	Region 12	76.1	75.2	76.9	30.3	27.8	32.5	13.0	8.0	21.1	68.9	65.6	72.4	18.1	13.3	22.8	1.7	1.3	2.5	1.1	0.6	1.7	13	10	17	95.6	89.9	100.9
5	Region 13	76.6	75.2	77.4	29.9	27.1	32.2	12.5	9.5	17.2	69.0	65.5	73.4	18.5	13.6	25.0	1.5	1.2	1.7	1.0	0.8	1.2	2	0	5	95.3	91.2	97.5
15	Region 14	76.7	73.7	78.4	29.8	22.5	32.3	10.7	3.7	18.6	70.0	50.1	75.0	19.3	11.8	46.2	1.7	0.9	2.6	1.3	0.4	2.2	6	0	18	97.8	89.5	103.6
4	Region 15	72.4	56.6	80.3	29.7	18.6	38.2	8.4	3.3	14.1	65.8	56.4	74.7	25.8	11.2	37.2	2.2	1.8	3.0	1.5	1.0	1.7	5	2	11	93.6	81.7	105.6
6	Region 16	77.1	76.0	78.5	29.0	25.0	32.1	13.7	3.9	28.6	67.3	63.6	74.1	19.1	7.8	28.2	1.9	1.2	2.9	1.5	0.9	2.1	5	2	10	97.7	92.9	103.2
7	Region 17	75.5	73.9	77.2	30.8	25.2	43.1	12.9	8.7	23.3	69.7	64.4	75.4	17.4	11.2	26.9	1.6	1.0	2.7	1.3	0.9	2.2	8	2	12	92.4	88.9	97.9
11	Region 18	76.5	75.7	77.8	30.4	28.2	32.9	14.1	6.9	22.4	69.1	61.6	77.9	16.8	10.9	27.0	1.3	0.1	2.9	1.0	0.1	2.3	4	1	10	96.5	92.2	102.4
8	Region 19	76.0	74.9	77.2	30.3	25.9	32.9	16.3	8.4	31.1	66.7	57.6	72.4	17.0	11.3	23.5	1.6	1.1	2.2	1.2	0.8	1.9	6	2	13	91.9	84.8	99.5
9	Region 20	76.4	75.4	77.5	31.4	28.7	33.3	13.1	4.0	22.3	66.4	62.3	72.0	20.5	12.2	31.8	2.8	1.3	5.6	2.2	0.8	5.0	7	4	11	87.7	60.7	96.5
17	Region 21	76.4	73.5	79.1	30.2	27.8	32.6	11.4	4.6	20.1	68.8	63.0	75.5	19.7	12.1	30.6	2.1	0.9	3.8	1.6	0.6	2.4	4	0	9	97.2	75.7	107.4
7	Region 22	77.1	75.6	79.9	31.6	28.1	37.0	14.3	4.7	28.2	68.9	59.6	74.5	16.7	6.1	30.0	1.5	0.9	3.0	1.3	0.8	2.6	4	0	8	100.9	92.4	109.4
8	Region 23	77.8	76.9	79.2	29.4	26.7	33.3	7.3	2.1	13.5	69.5	59.0	79.7	23.2	13.0	35.9	2.2	1.6	2.9	1.7	1.0	2.5	4	0	11	100.6	82.0	104.6
11	Region 24	77.2	76.2	79.8	30.6	27.3	35.0	12.7	4.5	30.6	66.0	55.9	71.9	21.2	5.6	39.4	1.4	0.7	2.6	1.1	0.6	1.9	8	2	20	99.6	90.6	116.6
27	Region 25	75.6	73.4	79.0	31.2	27.2	36.1	12.3	3.2	19.9	70.3	64.7	78.6	17.4	10.6	28.2	3.4	0.6	14.0	2.4	0.3	9.9	11	1	53	78.2	67.2	98.6
10	Region 26	76.7	75.2	78.7	33.1	28.9	38.0	18.1	5.8	33.7	65.3	60.0	70.0	16.6	4.5	29.2	1.3	0.3	2.2	0.9	0.0	1.8	5	0	13	87.7	75.5	95.7
24	Region 27	76.0	71.4	79.4	31.4	23.9	38.7	11.2	0.3	26.1	65.0	52.4	74.1	23.8	8.0	43.4	2.5	0.9	4.7	1.8	0.7	3.6	13	4	28	88.6	68.2	105.7
33	Region 28	74.1	66.3	77.9	32.8	23.2	38.3	20.6	3.1	39.2	65.3	32.4	73.7	14.1	2.7	64.5	1.5	0.3	4.6	1.2	0.3	4.1	4	0	16	82.3	46.5	97.3
65	Region 29	76.4	71.4	80.9	34.1	28.1	41.1	18.4	5.1	52.7	68.4	44.2	76.8	13.2	2.6	33.8	1.5	0.3	3.3	1.2	0.2	2.7	6	0	24	89.4	60.9	111.2
34	Region 30	74.8	69.9	77.9	31.8	23.7	39.0	17.8	4.3	35.9	65.0	35.0	75.1	17.2	5.5	54.2	1.7	0.3	5.1	1.1	0.2	3.3	9	1	30	85.8	62.5	96.6
37	Region 31	75.4	70.5	79.4	32.2	25.5	41.0	17.3	1.1	41.7	65.7	37.8	74.7	17.0	3.3	57.7	1.5	0.2	8.1	1.0	0.1	5.1	10	1	42	83.6	65.6	98.4
52	Region 32	76.1	70.7	79.2	30.6	23.7	39.7	14.8	3.5	41.9	67.5	50.5	75.8	17.7	6.0	32.0	2.4	0.8	4.9	1.8	0.7	3.5	9	1	50	88.8	71.6	120.4
15	Region 33	74.5	71.0	77.0	31.6	26.3	35.9	15.1	3.6	28.6	66.1	58.0	74.1	18.9	7.2	38.4	1.2	0.3	3.2	0.9	0.3	2.4	7	2	17	77.5	54.4	88.2
30	Region 34	77.4	73.0	80.6	33.1	26.6	39.9	17.2	0.3	46.4	67.2	34.9	77.9	15.6	3.9	64.8	2.5	0.6	14.5	1.8	0.4	8.2	8	0	23	95.0	58.9	105.8
8	Region 35	76.4	72.5	78.5	31.0	25.3	36.2	7.6	1.7	19.6	63.5	49.5	77.0	29.0	15.7	48.4	2.5	0.9	5.9	2.0	0.8	5.2	4	1	8	88.1	67.0	104.1
14	Region 36	75.9	73.4	78.0	33.2	28.9	37.2	15.9	8.3	38.5	67.3	54.1	74.7	16.8	7.4	26.4	1.1	0.4	2.2	0.9	0.2	1.8	5	2	11	88.7	78.4	105.2
479	**Ave. yellow**	**76.0**			**31.8**			**14.9**			**67.1**			**18.0**			**1.9**			**1.4**			**7**			**89.0**		
	Min. yellow		**56.6**			**18.6**			**0.3**			**32.4**			**2.6**			**0.1**			**0.0**			**0**			**46.5**	
	Max. yellow			**80.9**			**43.1**			**52.7**			**79.7**			**64.8**			**14.5**			**9.9**			**53**			**120.4**

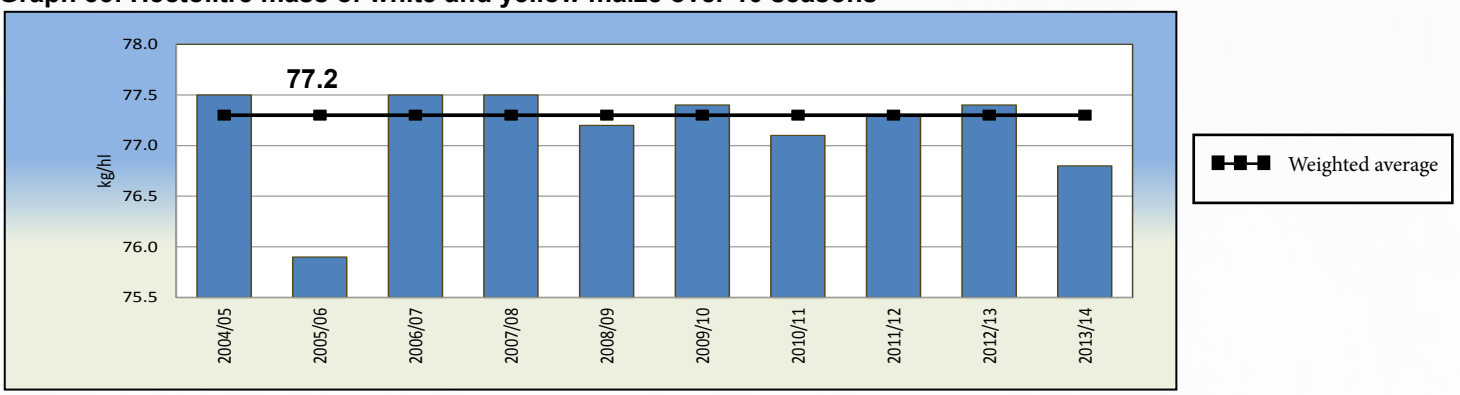
TABLE 13: PHYSICAL QUALITY FACTORS OF WHITE AND YELLOW MAIZE (2013/2014)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
WHITE AND YELLOW																												
11	Region 10	78.7	75.7	80.9	32.9	30.5	35.4	2.1	0.9	3.9	64.7	48.4	73.2	33.2	23.3	50.7	0.9	0.2	2.4	0.8	0.2	1.9	4	0	10	89.3	70.2	101.2
5	Region 11	77.8	76.9	79.0	30.4	29.6	31.3	2.6	2.0	3.8	61.7	57.1	66.1	35.8	31.3	40.9	2.3	1.2	3.8	1.9	1.0	2.7	5	0	9	88.6	79.2	92.9
14	Region 12	77.2	75.2	78.8	32.5	27.8	37.2	19.4	8.0	34.7	66.9	57.5	72.4	13.7	5.8	22.8	1.5	0.5	2.5	1.1	0.4	1.7	11	3	20	96.5	85.6	105.5
10	Region 13	76.8	75.2	78.2	31.2	27.1	35.0	20.2	9.5	34.3	65.9	58.8	73.4	13.8	6.9	25.0	1.2	0.7	1.7	0.8	0.5	1.2	5	0	21	91.7	83.7	97.5
44	Region 14	77.5	71.8	79.9	32.2	22.5	38.1	21.5	3.7	67.1	66.1	30.4	75.0	12.4	2.5	46.2	1.6	0.3	5.9	1.2	0.3	3.8	7	0	30	97.1	87.2	111.1
8	Region 15	75.8	56.6	80.3	31.1	18.6	38.2	15.6	3.3	26.8	65.9	56.4	74.7	18.5	7.4	37.2	1.9	0.4	3.0	1.3	0.4	2.1	3	0	11	97.2	81.7	105.6
17	Region 16	77.6	75.1	80.6	32.0	25.0	36.6	21.6	3.9	43.7	64.5	51.8	74.1	13.8	4.3	28.2	1.4	0.2	2.9	1.0	0.1	2.1	7	1	24	97.0	90.1	103.2
16	Region 17	76.5	73.9	78.6	31.8	25.2	43.1	20.6	8.7	35.9	66.9	57.0	75.4	12.5	7.1	26.9	1.3	0.5	2.7	1.1	0.5	2.2	7	2	12	89.9	78.6	97.9
19	Region 18	76.2	73.9	77.8	30.8	26.0	34.0	16.8	6.9	34.1	68.3	55.7	81.1	15.0	7.6	27.0	1.4	0.1	7.2	1.0	0.1	4.0	5	0	24	93.7	82.8	102.4
15	Region 19	76.1	74.9	77.2	32.0	25.9	41.8	23.1	8.4	71.3	63.8	23.4	73.5	13.1	5.3	23.5	1.3	0.6	2.2	1.0	0.5	1.9	8	1	22	89.5	73.7	99.5
17	Region 20	77.0	75.4	79.2	33.1	28.7	40.9	16.4	3.1	26.2	67.3	62.3	73.2	16.3	4.2	31.8	2.2	0.5	5.6	1.7	0.5	5.0	7	4	13	89.7	60.7	99.5
61	Region 21	77.6	73.5	79.9	32.5	27.8	36.5	19.5	4.6	42.9	67.1	52.6	75.5	13.4	2.3	30.6	1.4	0.3	3.8	1.1	0.3	2.4	4	0	16	96.7	75.7	107.4
36	Region 22	78.2	74.1	80.4	32.9	28.1	37.0	24.5	3.3	41.6	64.8	53.5	74.5	10.7	4.4	35.4	1.1	0.2	3.0	0.9	0.2	2.6	4	0	30	99.0	92.4	109.4
23	Region 23	79.3	76.9	81.9	32.1	26.7	36.5	19.7	2.1	34.4	67.2	59.0	79.7	13.0	4.2	35.9	1.4	0.2	2.9	1.1	0.2	2.5	4	0	11	101.8	82.0	109.0
55	Region 24	77.8	75.1	81.1	33.6	27.3	38.7	22.6	4.5	44.2	66.2	51.2	82.7	11.2	1.1	39.4	1.0	0.2	2.6	0.8	0.2	1.9	6	0	20	96.3	79.6	116.6
35	Region 25	75.7	73.3	79.0	31.4	27.2	36.1	13.9	3.2	29.9	70.0	64.2	78.6	16.1	5.4	28.2	3.0	0.3	14.0	2.2	0.2	9.9	10	1	53	77.8	60.8	98.6
14	Region 26	76.5	74.9	78.7	32.9	28.9	38.0	16.1	4.9	33.7	66.2	59.7	73.9	17.7	4.5	35.4	1.4	0.3	2.8	1.1	0.0	2.6	5	0	13	85.6	63.3	98.4
34	Region 27	76.3	71.4	80.3	32.1	23.9	38.7	12.3	0.3	26.1	66.4	52.4	78.5	21.3	5.6	43.4	2.5	0.9	5.1	1.9	0.7	4.2	11	2	28	88.7	68.2	105.7
47	Region 28	75.1	66.3	80.2	33.4	23.2	43.1	21.8	3.1	39.2	65.1	32.4	73.7	13.1	2.5	64.5	1.5	0.2	4.6	1.2	0.1	4.1	5	0	17	85.3	46.5	103.7
100	Region 29	77.1	70.3	81.0	34.1	27.8	41.1	19.8	1.7	52.7	67.6	44.2	76.8	12.5	2.6	37.0	1.4	0.3	3.9	1.1	0.2	2.7	7	0	32	90.6	60.9	111.2
56	Region 30	76.0	69.9	79.9	32.6	23.7	39.4	20.2	4.3	46.4	64.4	35.0	76.0	15.5	4.0	54.2	1.3	0.0	5.1	0.9	0.0	3.3	7	1	30	87.8	62.5	99.6
58	Region 31	75.6	70.5	80.5	33.8	25.5	46.3	24.0	1.1	57.9	61.9	37.8	79.1	14.0	2.3	57.7	1.4	0.1	8.1	1.0	0.1	5.1	10	0	42	85.7	65.6	107.6
80	Region 32	76.7	70.7	79.9	31.9	23.7	39.7	16.5	0.7	53.1	66.6	41.0	78.6	16.9	5.2	37.7	2.1	0.5	5.4	1.6	0.5	3.9	9	1	50	89.2	63.1	120.4
37	Region 33	75.5	70.1	79.0	33.2	26.3	46.5	22.6	3.6	43.5	63.4	50.6	74.1	13.9	2.3	38.4	1.1	0.3	3.2	0.9	0.1	2.4	8	1	37	80.6	54.4	99.1
69	Region 34	77.1	68.7	80.6	33.8	26.6	41.9	22.5	0.3	52.3	65.7	34.9	77.9	11.8	2.8	64.8	2.1	0.3	14.5	1.5	0.3	8.2	8	0	28	93.5	58.9	107.7
15	Region 35	77.4	72.5	80.1	32.6	25.3	37.7	16.7	1.7	46.3	63.1	48.7	77.0	20.2	3.4	48.4	2.1	0.6	5.9	1.7	0.5	5.2	3	0	8	92.4	67.0	107.7
34	Region 36	76.0	70.3	78.7	34.0	28.2	39.9	19.3	8.3	56.4	67.4	38.3	74.7	13.3	5.3	26.4	1.1	0.1	3.1	0.9	0.1	2.3	5	0	16	91.7	77.5	105.2
930	**Ave. w & y**	**76.8**			**32.9**			**19.6**			**65.9**			**14.4**			**1.6**			**1.2**			**7**			**90.9**		
	Min. w & y		**56.6**			**18.6**			**0.3**			**23.4**			**1.1**			**0.0**			**0.0**			**0**			**46.5**	
	Max. w & y			**81.9**			**46.5**			**71.3**			**82.7**			**64.8**			**14.5**			**9.9**			**53**			**120.4**

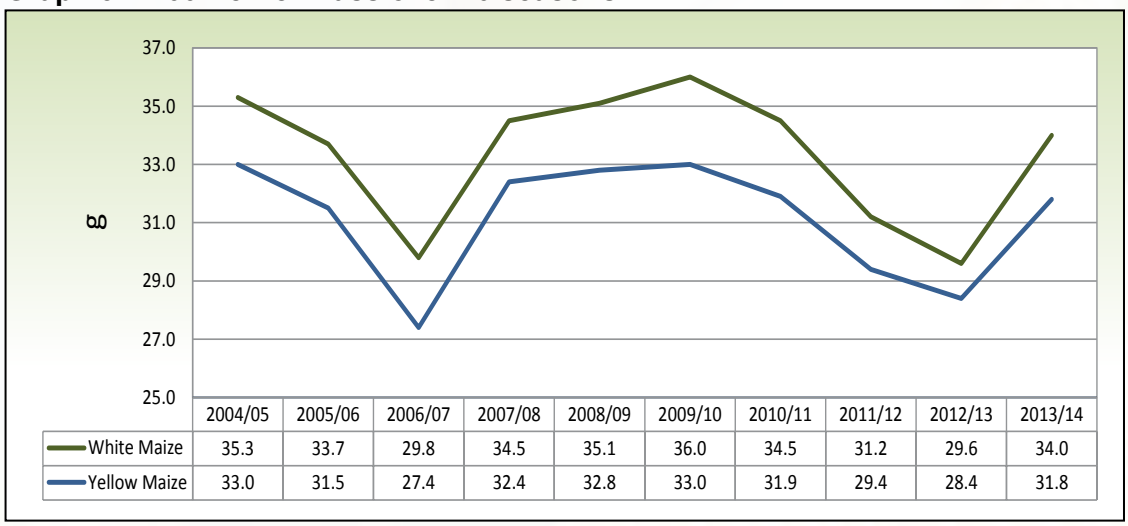
TABLE 14: PHYSICAL QUALITY FACTORS OF WHITE AND YELLOW MAIZE 2004/05 - 2013/14

Season	Number of samples	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve					
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
White Maize																									
2004/05	601	77.9	68.9	83.2	35.3	26.3	44.3	29.7	0.8	59.7	60.1	31.3	80.3	10.2	0.1	54.5	1.4	0.1	8.0	1.1	0.0	6.2	5	0	23
2005/06	593	76.2	58.3	81.6	33.7	18.0	44.7	30.1	0.0	73.9	59.4	24.2	75.0	10.5	1.2	75.8	2.1	0.2	12.6	1.6	0.1	10.4	4	0	36
2006/07	563	78.1	68.1	82.8	29.8	19.4	40.1	17.1	0.2	51.7	63.3	16.7	78.2	19.6	0.8	81.6	1.5	0.0	12.1	1.0	0.0	11.5	3	0	27
2007/08	483	78.2	65.3	81.6	34.5	17.0	45.6	24.5	0.4	69.7	63.8	23.3	84.2	11.7	1.0	76.2	1.2	0.1	9.7	0.9	0.0	7.3	4	0	44
2008/09	483	77.6	61.6	82.8	35.1	27.1	44.0	26.2	0.5	46.4	63.3	43.1	84.0	10.5	2.1	51.0	1.5	0.2	11.7	1.1	0.1	8.7	5	0	50
2009/10	458	77.9	60.2	84.4	36.0	24.1	59.1	26.3	1.2	90.7	62.6	9.2	82.0	11.2	0.1	53.5	1.5	0.2	24.3	1.2	0.1	23.1	4	0	36
2010/11	413	77.7	71.3	81.8	34.5	25.0	44.0	24.9	1.4	55.8	63.5	33.5	83.9	11.6	1.7	65.1	1.6	0.0	8.4	1.2	0.0	5.9	5	0	31
2011/12	577	78.2	71.8	82.0	31.2	71.4	44.4	18.8	0.8	63.3	64.9	26.2	79.7	16.3	2.8	72.4	0.8	0.0	8.6	0.6	0.0	4.9	5	0	25
2012/13	508	78.2	69.7	82.9	29.6	17.7	46.0	15.1	0.0	59.9	65.0	16.2	80.5	20.0	3.1	83.5	1.0	0.0	6.6	0.7	0.0	4.6	4	0	37
2013/14	451	77.6	68.7	81.9	34.0	26.0	46.5	24.7	0.7	71.3	64.7	23.4	82.7	10.6	1.1	37.7	1.3	0.0	7.2	1.0	0.0	4.2	7	0	37
Weighted Average		**77.7**			**33.3**			**23.7**			**62.9**			**13.3**			**1.4**			**1.0**			**4**		
Minimum			**58.3**			**17.0**			**0.0**			**9.2**			**0.1**			**0.0**			**0.0**			**0**	
Maximum				**84.4**			**59.1**			**90.7**			**84.2**			**83.5**			**24.3**			**23.1**			**50**
Yellow Maize																									
2004/05	399	76.8	68.4	81.0	33.0	21.5	44.4	19.8	1.0	46.9	64.3	32.9	82.3	15.9	1.4	66.1	1.7	0.2	24.4	1.2	0.0	12.9	5	0	21
2005/06	307	75.4	53.4	81.9	31.5	22.0	40.1	19.0	1.1	53.1	65.4	43.3	80.1	15.7	3.2	50.8	2.5	0.1	17.6	1.7	0.0	11.7	5	0	24
2006/07	337	76.4	70.2	81.2	27.4	16.6	38.6	8.5	0.0	34.2	61.7	17.1	79.5	29.8	6.4	82.9	2.1	0.2	10.9	1.3	0.0	6.0	4	0	24
2007/08	417	76.7	69.3	79.9	32.4	24.4	42.9	15.2	0.3	50.9	66.0	39.6	78.6	18.8	2.8	60.1	1.9	0.3	15.2	1.3	0.1	8.3	5	0	58
2008/09	327	76.6	69.9	81.2	32.9	24.2	45.4	15.7	1.3	52.8	66.5	44.3	79.9	17.8	1.6	44.6	1.8	0.1	10.3	1.3	0.0	9.9	6	0	32
2009/10	342	76.6	69.0	81.6	33.0	23.3	42.5	14.3	0.0	41.7	68.5	50.9	79.9	17.2	4.0	47.7	2.1	0.4	10.3	1.6	0.3	8.4	5	0	27
2010/11	280	76.2	69.0	81.5	31.9	22.0	40.4	14.4	1.1	43.7	68.6	39.5	79.6	16.9	1.9	58.7	2.1	0.5	8.1	1.6	0.0	5.0	5	0	24
2011/12	423	76.1	68.1	81.0	29.4	14.5	40.9	11.3	0.0	38.3	63.9	13.7	79.4	24.8	6.5	86.3	1.3	0.2	15.6	1.0	0.0	8.3	6	0	27
2012/13	492	76.6	67.8	81.6	28.4	15.2	41.3	9.8	0.0	42.6	61.7	10.1	80.9	28.5	3.4	89.9	1.7	0.1	8.2	1.1	0.0	5.4	5	0	31
2013/14	479	76.0	56.6	80.9	31.8	18.6	43.1	14.9	0.3	52.7	67.1	21.4	79.7	18.0	2.6	64.8	1.9	0.1	14.5	1.4	0.0	9.9	7	0	53
Weighted Average		**76.4**			**31.1**			**14.1**			**65.2**			**20.7**			**1.9**			**1.3**			**5**		
Minimum			**53.4**			**14.5**			**0.0**			**10.1**			**1.4**			**0.1**			**0.0**			**0**	
Maximum				**81.9**			**45.4**			**53.1**			**82.3**			**89.9**			**24.4**			**12.9**			**58**
White & Yellow Maize																									
2004/05	1000	77.5	68.4	83.2	34.4	21.5	44.4	25.7	0.8	59.7	61.8	31.8	82.3	12.5	0.1	66.1	1.5	0.1	24.4	1.1	0.0	12.9	5	0	23
2005/06	900	75.9	53.4	81.9	32.9	18.0	44.7	26.3	0.0	73.9	61.4	24.2	80.1	12.3	1.2	75.8	2.3	0.1	17.6	1.6	0.0	11.7	4	0	36
2006/07	900	77.5	68.1	82.8	28.9	16.6	40.1	13.9	0.0	51.7	62.7	16.7	79.5	23.4	0.8	82.9	1.7	0.0	12.1	1.1	0.0	11.5	3	0	27
2007/08	900	77.5	65.3	81.6	33.5	17.0	45.6	20.2	0.3	69.7	64.8	23.3	84.2	15.0	1.0	76.2	1.5	0.1	15.2	1.1	0.0	8.3	4	0	58
2008/09	810	77.2	61.6	82.8	34.2	24.2	45.4	21.9	0.5	52.8	64.6	43.1	84.0	13.4	1.6	51.0	1.6	0.1	11.7	1.2	0.0	9.9	5	0	50
2009/10	800	77.4	60.2	84.4	34.7	23.3	59.1	21.1	0.0	90.7	65.1	9.2	82.0	13.7	0.1	53.5	1.8	0.2	24.3	1.4	0.1	23.1	4	0	36
2010/11	693	77.1	69.0	81.8	33.5	22.0	44.0	20.7	1.1	55.8	65.6	33.5	83.9	13.8	1.7	65.1	1.8	0.0	8.4	1.3	0.0	5.9	5	0	31
2011/12	1000	77.3	68.1	82.0	30.4	14.5	44.4	15.6	0.0	63.3	64.5	13.7	79.7	19.9	2.8	86.3	1.0	0.0	15.6	0.7	0.0	8.3	6	0	27
2012/13	1000	77.4	67.8	82.9	29.0	15.2	46.0	12.5	0.0	59.9	63.4	10.1	80.9	24.2	3.1	89.9	1.4	0.0	8.2	0.9	0.0	5.4	5	0	37
2013/14	930	76.8	56.6	81.9	32.9	18.6	46.5	19.6	0.3	71.3	65.9	23.4	82.7	14.4	1.1	64.8	1.6	0.0	14.5	1.2	0.0	9.9	7	0	53
Weighted Average		**77.2**			**32.3**			**19.6**			**63.9**			**16.5**			**1.6**			**1.1**			**5**		
Minimum			**53.4**			**14.5**			**0.0**			**9.2**			**0.1**			**0.0**			**0.0**			**0**	
Maximum				**84.4**			**59.1**			**90.7**			**84.2**			**89.9**			**24.4**			**23.1**			**58**

Graph 33: Hectolitre mass of white and yellow maize over 10 seasons

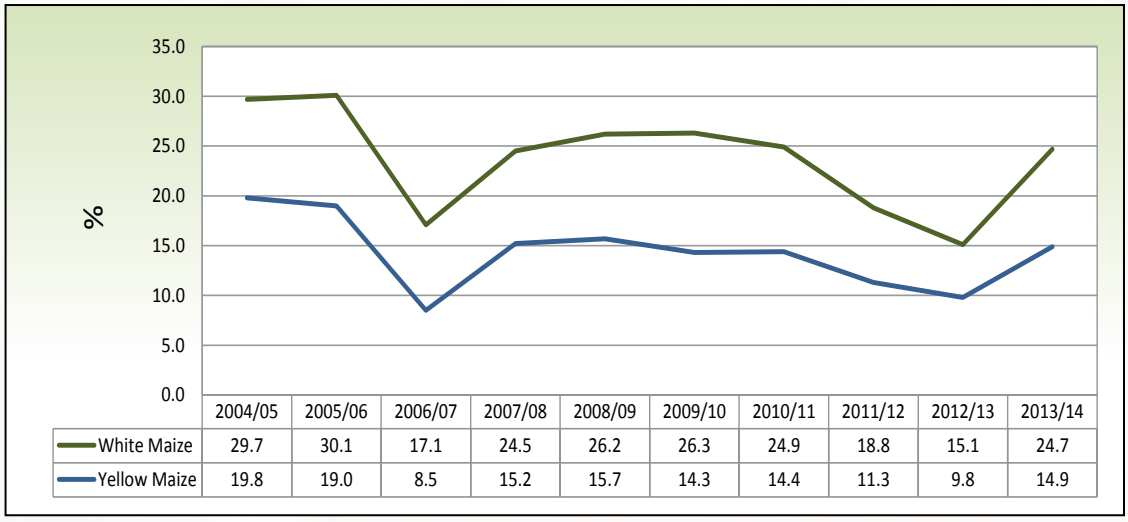


Graph 34: 100 Kernel mass over 10 seasons



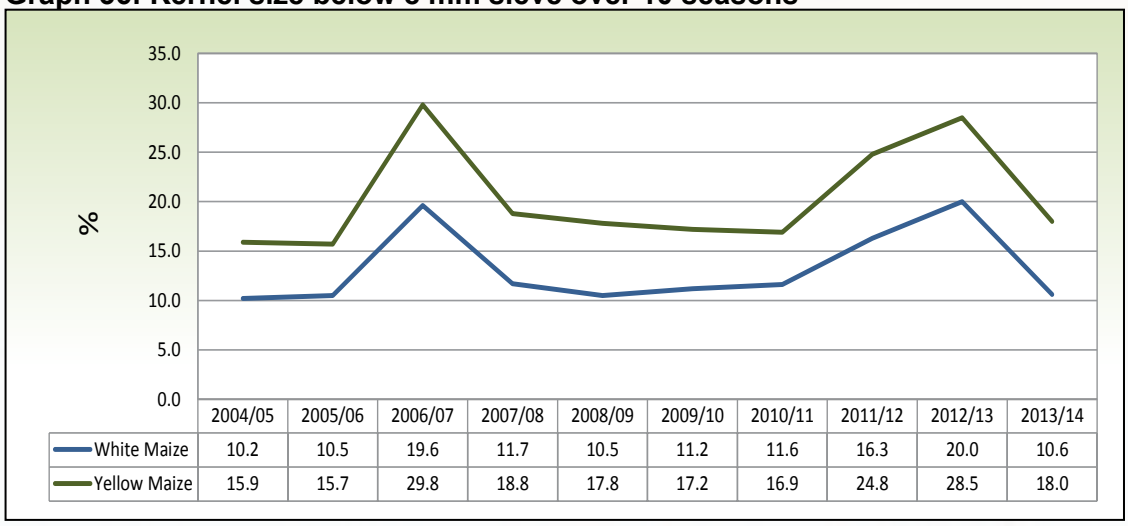
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
White Maize	35.3	33.7	29.8	34.5	35.1	36.0	34.5	31.2	29.6	34.0
Yellow Maize	33.0	31.5	27.4	32.4	32.8	33.0	31.9	29.4	28.4	31.8

Graph 35: Kernel size above 10 mm sieve over 10 seasons



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
White Maize	29.7	30.1	17.1	24.5	26.2	26.3	24.9	18.8	15.1	24.7
Yellow Maize	19.8	19.0	8.5	15.2	15.7	14.3	14.4	11.3	9.8	14.9

Graph 36: Kernel size below 8 mm sieve over 10 seasons



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
White Maize	10.2	10.5	19.6	11.7	10.5	11.2	11.6	16.3	20.0	10.6
Yellow Maize	15.9	15.7	29.8	18.8	17.8	17.2	16.9	24.8	28.5	18.0

TABLE 15: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2013/2014)

Number of samples	Region	Roff Milling																			Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Bran and Germ, %			Extraction, % (Total meal)			Whiteness index unsifted			Whiteness index sifted 87:13		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM1																										
7	Region 12	13.5	12.3	15.5	12.0	11.4	12.8	24.1	22.3	25.5	28.8	27.0	30.4	21.5	20.1	23.5	78.5	76.5	79.9	27.9	23.2	34.4	18.2	14.9	21.8
3	Region 13	15.1	14.2	15.7	12.6	12.4	12.8	25.0	23.7	26.2	26.2	25.7	26.7	21.1	20.3	22.4	78.9	77.6	79.7	31.3	23.9	44.5	24.8	17.3	39.1
26	Region 14	14.1	11.8	15.7	12.8	11.4	16.2	24.1	22.5	27.1	28.0	25.9	31.4	21.0	18.8	23.7	79.0	76.3	81.2	28.0	19.6	32.0	18.0	11.9	24.3
3	Region 15	13.5	12.7	14.2	12.5	12.2	12.8	25.3	24.8	26.1	28.8	28.0	29.6	19.9	18.5	21.0	80.1	79.0	81.5	24.5	21.1	26.4	16.0	13.4	17.5
9	Region 16	13.7	12.6	15.0	12.4	11.5	14.4	24.4	22.1	25.3	28.2	27.1	30.3	21.3	18.7	23.2	78.7	76.8	81.3	28.6	24.4	33.5	17.4	14.6	20.7
9	Region 17	15.6	14.6	16.4	13.1	12.0	13.8	25.4	23.1	27.9	25.2	22.5	28.4	20.6	18.6	22.8	79.4	77.2	81.4	26.8	22.8	33.8	16.9	12.7	20.1
6	Region 18	15.5	13.5	17.1	12.9	12.0	14.3	23.5	20.9	28.2	26.7	23.2	28.8	21.4	17.2	24.2	78.6	75.8	82.8	28.0	19.4	36.1	16.8	5.6	24.0
5	Region 19	14.9	14.2	15.5	12.9	12.2	14.2	23.8	21.6	25.6	27.2	26.0	28.8	21.2	18.6	24.3	78.8	75.7	81.4	30.8	27.8	34.1	20.7	19.5	22.5
5	Region 20	14.8	12.8	15.8	13.3	12.0	14.6	24.8	22.1	26.6	25.8	23.1	28.0	21.3	19.5	23.0	78.7	77.0	80.5	26.0	21.3	30.2	16.1	12.5	19.4
39	Region 21	14.4	11.3	18.8	13.1	9.4	15.4	25.4	23.0	28.7	27.3	22.0	33.9	19.8	15.8	22.6	80.2	77.4	84.2	25.1	18.9	31.8	14.5	6.6	22.0
28	Region 22	13.8	9.8	16.9	13.1	11.1	19.0	24.6	20.9	29.3	28.3	23.1	34.4	20.3	15.2	23.2	79.7	76.8	84.8	26.3	19.7	31.9	16.7	8.6	22.3
12	Region 23	13.5	11.4	15.2	13.4	11.5	15.1	25.4	22.6	28.9	27.8	24.4	31.8	19.9	17.9	22.9	80.1	77.1	82.1	25.6	19.9	29.4	17.2	12.1	21.7
42	Region 24	13.7	12.2	17.0	13.4	11.5	22.1	24.9	14.0	28.4	27.8	23.0	30.3	20.2	17.3	24.8	79.8	75.2	82.7	25.4	21.0	31.5	16.2	9.2	21.1
7	Region 25	17.3	15.4	18.9	12.9	11.9	14.0	22.6	21.0	27.7	23.8	21.1	26.2	23.4	20.1	26.5	76.6	73.5	79.9	29.3	18.9	34.7	19.6	17.2	21.7
4	Region 26	17.8	15.8	20.7	14.0	13.1	15.2	24.3	21.4	26.1	23.0	21.9	24.1	20.8	17.1	23.0	79.2	77.0	82.9	23.8	19.6	29.2	14.6	10.5	21.8
1	Region 27	14.8	-	-	13.2	-	-	22.3	-	-	29.5	-	-	20.2	-	-	79.8	-	-	26.3	-	-	17.2	-	-
4	Region 28	14.6	13.1	15.4	13.5	13.1	13.8	22.8	22.2	23.2	29.3	28.4	30.6	19.8	19.5	20.4	80.2	79.6	80.5	26.4	24.3	28.2	17.2	14.1	18.6
22	Region 29	14.4	11.3	23.8	12.9	11.3	14.7	24.2	21.7	27.5	28.0	20.4	31.6	20.4	16.0	23.5	79.6	76.5	84.0	23.6	17.2	29.1	14.1	7.4	19.3
15	Region 30	14.5	12.6	17.0	12.6	11.5	14.8	23.8	21.9	26.6	27.4	23.7	30.0	21.7	18.1	24.1	78.3	75.9	81.9	24.9	18.2	32.4	15.3	9.4	22.2
11	Region 31	13.3	11.3	15.1	12.6	11.9	14.0	24.6	22.9	28.0	28.0	25.6	29.7	21.5	19.3	23.9	78.5	76.1	80.7	24.9	17.5	33.1	15.1	3.7	22.3
5	Region 32	14.5	14.0	15.2	14.0	13.5	14.9	25.5	21.6	27.1	27.0	24.1	32.3	19.0	17.7	20.0	81.0	80.0	82.3	21.3	19.5	23.3	13.4	12.0	15.3
10	Region 33	14.3	12.8	15.9	12.2	11.4	13.0	23.0	21.3	24.3	27.4	23.7	30.9	23.1	20.4	25.1	76.9	74.9	79.6	27.5	23.9	33.0	17.5	12.3	22.6
18	Region 34	14.5	12.5	16.3	13.0	11.9	15.1	25.1	22.3	28.6	26.5	23.4	30.1	20.9	15.9	25.5	79.1	74.5	84.1	24.9	16.9	32.6	15.9	7.8	22.8
6	Region 35	14.7	13.3	17.1	12.8	11.4	14.1	23.5	22.0	26.9	27.6	23.6	33.0	21.4	18.0	22.8	78.6	77.2	82.0	26.5	22.1	30.3	15.6	9.5	19.6
17	Region 36	13.8	12.5	15.3	12.0	11.3	12.7	23.3	21.2	24.8	27.4	25.1	29.5	23.6	20.9	25.6	76.4	74.4	79.1	25.5	20.3	31.2	16.8	8.6	22.5
314	**Ave. WM1**	**14.3**			**12.9**			**24.5**			**27.5**			**20.9**			**79.1**			**26.0**			**16.3**		
	Min. WM1		**9.8**			**9.4**			**14.0**			**20.4**			**15.2**			**73.5**			**16.9**			**3.7**	
	Max. WM1			**23.8**			**22.1**			**29.3**			**34.4**			**26.5**			**84.8**			**44.5**			**39.1**

TABLE 15: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2013/2014) (continue)

Number of samples	Region	Roff Milling																		Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Bran and Germ, %			Extraction, % (Total meal)			Whiteness index unsifted			Whiteness index sifted 87:13		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM2																									
1	Region 12	16.5	-	-	12.1	-	-	22.4	-	-	26.2	-	-	22.8	-	-	77.2	-	-	34.3	-	-	23.0	-	-
2	Region 13	14.6	14.1	15.1	12.2	12.0	12.4	23.7	22.1	25.3	26.8	26.5	27.1	22.7	21.1	24.3	77.3	75.7	78.9	29.3	26.5	32.1	18.7	17.8	19.6
3	Region 14	14.1	12.4	15.5	13.1	12.7	13.5	23.5	22.9	24.0	29.0	26.7	30.4	20.3	19.3	20.8	79.7	79.2	80.7	27.7	25.4	31.1	17.3	12.5	21.2
2	Region 16	12.9	11.2	14.7	14.1	12.6	15.6	24.7	23.3	26.1	28.2	27.0	29.4	20.0	17.7	22.3	80.0	77.7	82.3	29.5	26.9	32.1	19.4	17.0	21.7
1	Region 18	14.7	-	-	11.7	-	-	23.6	-	-	26.3	-	-	23.7	-	-	76.3	-	-	24.6	-	-	16.3	-	-
2	Region 19	12.4	11.7	13.1	11.9	11.8	12.0	22.3	22.1	22.6	29.2	28.7	29.7	24.2	23.1	25.2	75.8	74.8	76.9	27.2	21.5	32.9	11.6	8.6	14.6
3	Region 20	15.6	15.2	16.3	13.2	12.5	14.5	23.7	21.9	27.0	25.4	23.7	26.7	22.1	19.5	23.4	77.9	76.6	80.5	27.9	15.5	35.2	14.9	5.7	20.7
5	Region 21	14.5	13.5	15.1	12.7	11.7	13.2	24.5	23.6	26.5	27.9	27.7	28.2	20.3	19.6	21.7	79.7	78.3	80.4	24.2	21.6	27.7	14.8	12.0	20.9
1	Region 22	14.9	-	-	14.4	-	-	27.4	-	-	25.0	-	-	18.4	-	-	81.6	-	-	22.5	-	-	11.9	-	-
2	Region 23	13.1	12.6	13.6	13.0	12.8	13.1	24.1	23.6	24.5	29.2	28.0	30.4	20.6	20.3	21.0	79.4	79.0	79.7	24.8	22.3	27.4	12.8	12.1	13.4
2	Region 24	14.5	14.3	14.7	12.9	12.8	13.0	24.7	24.2	25.1	27.9	27.5	28.3	20.1	18.9	21.2	79.9	78.8	81.1	23.3	15.8	30.7	11.9	4.8	19.1
5	Region 27	14.1	13.3	15.7	13.4	12.7	14.3	24.5	22.3	27.3	26.9	24.5	28.6	21.0	18.1	23.9	79.0	76.1	81.9	20.7	15.8	24.5	11.6	6.5	18.8
8	Region 28	14.5	13.1	16.7	13.3	12.8	13.7	22.4	20.3	23.2	28.6	27.3	30.5	21.2	19.7	23.2	78.8	76.8	80.3	26.3	19.6	31.8	17.4	9.5	22.0
9	Region 29	14.5	12.9	18.1	12.9	11.6	14.9	23.0	19.7	26.8	27.8	23.1	31.1	21.8	18.7	23.3	78.2	76.7	81.3	25.6	23.2	29.1	14.6	9.0	21.2
6	Region 30	14.7	12.0	16.9	12.5	11.9	13.1	23.6	22.1	25.6	27.3	24.8	28.8	22.0	21.7	22.7	78.0	77.3	78.3	22.9	20.1	25.7	15.6	13.2	18.7
9	Region 31	14.0	11.9	16.1	12.5	11.8	13.1	24.0	21.5	26.3	27.4	24.3	28.9	22.2	20.1	25.7	77.8	74.3	79.9	21.6	18.0	28.6	13.8	7.9	22.9
18	Region 32	15.0	12.0	19.0	13.8	11.4	15.5	26.3	22.7	28.4	25.0	22.2	31.2	19.8	15.5	23.3	80.2	76.7	84.5	21.4	16.9	28.4	12.6	9.1	17.0
7	Region 33	15.7	13.4	16.8	13.1	12.4	13.8	23.1	22.3	23.7	25.4	24.2	27.2	22.7	22.0	23.6	77.3	76.4	78.0	24.0	19.5	27.5	15.3	10.0	19.6
12	Region 34	14.9	13.1	17.4	13.9	12.2	16.9	24.8	18.9	28.6	25.9	21.4	32.2	20.5	18.1	23.0	79.5	77.0	81.9	23.6	19.1	29.8	14.2	9.8	21.9
1	Region 35	14.3	-	-	13.2	-	-	18.8	-	-	31.7	-	-	22.1	-	-	77.9	-	-	28.4	-	-	19.0	-	-
3	Region 36	13.3	12.4	14.0	12.2	12.1	12.4	23.1	20.6	25.6	28.0	25.3	31.6	23.5	21.6	25.7	76.5	74.3	78.4	27.1	23.5	29.5	18.4	16.8	21.1
102	**Ave. WM2**	**14.6**			**13.1**			**24.1**			**26.8**			**21.3**			**78.7**			**24.1**			**14.7**		
	Min. WM2		**11.7**			**11.4**			**18.8**			**21.4**			**15.5**			**74.3**			**15.5**			**4.8**	
	Max. WM2			**19.0**			**16.9**			**28.6**			**32.2**			**25.7**			**84.5**			**35.2**			**23.0**

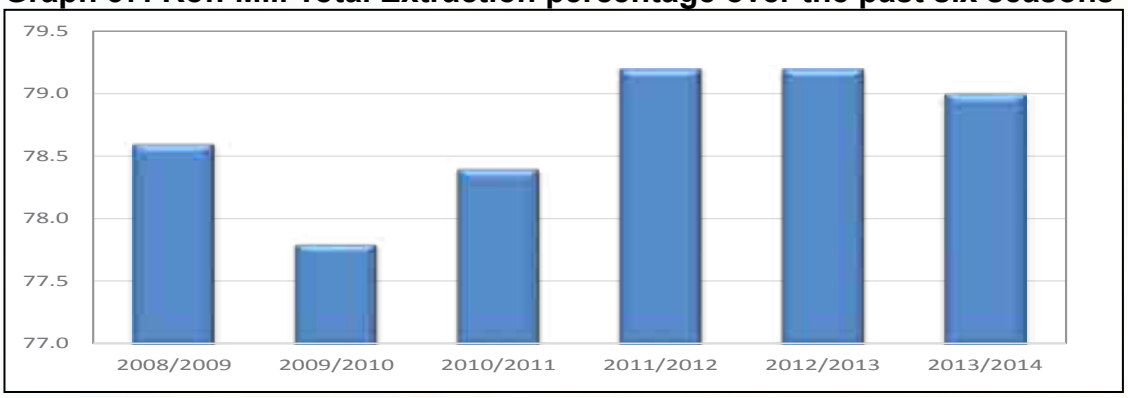
TABLE 15: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2013/2014) (continue)

Number of samples	Region	Roff Milling																	Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Bran and Germ, %			Extraction, % (Total meal)			Whiteness index unsifted			Whiteness index sifted 87:13		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM3																									
1	Region 15	12.9	-	-	12.5	-	-	24.9	-	-	30.0	-	-	19.7	-	-	80.3	-	-	25.8	-	-	17.4	-	-
1	Region 18	14.9	-	-	11.8	-	-	23.6	-	-	26.0	-	-	23.7	-	-	76.3	-	-	28.5	-	-	20.3	-	-
1	Region 23	12.5	-	-	15.0	-	-	29.4	-	-	26.6	-	-	16.5	-	-	83.5	-	-	17.7	-	-	10.6	-	-
1	Region 25	16.2	-	-	13.6	-	-	26.1	-	-	22.9	-	-	21.3	-	-	78.7	-	-	23.1	-	-	12.3	-	-
4	Region 27	15.3	14.7	16.2	14.7	13.1	15.8	24.8	23.0	26.5	24.4	21.3	27.2	20.8	19.3	23.1	79.2	76.9	80.7	26.5	17.1	32.9	15.3	10.5	18.3
1	Region 28	15.1	-	-	13.0	-	-	20.6	-	-	28.7	-	-	22.5	-	-	77.5	-	-	25.9	-	-	17.4	-	-
4	Region 29	14.5	12.7	16.3	13.2	12.0	13.9	23.9	22.4	26.2	27.8	26.9	29.9	20.7	18.3	21.9	79.3	78.1	81.7	15.4	-3.1	30.2	0.0	-18.0	15.6
1	Region 30	13.4	-	-	19.3	-	-	26.8	-	-	20.6	-	-	19.8	-	-	80.2	-	-	39.4	-	-	24.3	-	-
5	Region 32	16.2	15.5	17.1	16.9	14.3	26.2	23.8	14.7	26.9	23.3	22.8	24.5	19.7	17.8	20.3	80.3	79.7	82.2	21.0	18.3	22.3	11.9	10.1	13.3
5	Region 33	16.4	13.9	19.5	12.8	12.4	13.3	22.5	20.7	24.6	24.1	21.5	25.8	24.2	23.0	26.0	75.8	74.0	77.0	24.7	21.0	27.7	13.6	8.9	18.5
8	Region 34	14.9	13.7	16.4	13.9	13.0	14.6	24.1	18.8	26.6	26.6	22.9	30.7	20.4	18.8	21.9	79.6	78.1	81.2	22.4	15.9	26.6	11.5	4.2	15.6
32	**Ave. WM3**	**15.2**			**14.3**			**24.1**			**25.4**			**21.0**			**79.0**			**23.0**			**12.0**		
	Min. WM3		**12.5**			**11.8**			**14.7**			**20.6**			**16.5**			**74.0**			**-3.1**			**-18.0**	
	Max. WM3			**19.5**			**26.2**			**29.4**			**30.7**			**26.0**			**83.5**			**39.4**			**24.3**
CLASS: COM																									
1	Region 28	14.4	-	-	13.6	-	-	22.7	-	-	28.2	-	-	21.1	-	-	78.9	-	-	22.9	-	-	12.2	-	-
1	Region 31	12.7	-	-	12.1	-	-	21.9	-	-	29.3	-	-	24.0	-	-	76.0	-	-	18.2	-	-	6.7	-	-
1	Region 34	13.4	-	-	13.4	-	-	21.5	-	-	29.6	-	-	22.2	-	-	77.8	-	-	28.9	-	-	19.6	-	-
3	**Ave. COM**	**13.5**			**13.0**			**22.1**			**29.0**			**22.4**			**77.6**			**23.3**			**12.8**		
	Min. COM		**12.7**			**12.1**			**21.5**			**28.2**			**21.1**			**76.0**			**18.2**			**6.7**	
	Max. COM			**14.4**			**13.6**			**22.7**			**29.6**			**24.0**			**78.9**			**28.9**			**19.6**
451	**Ave. white maize**	**14.4**			**13.1**			**24.4**			**27.2**			**21.0**			**79.0**			**25.3**			**15.6**		
	Min. white maize		**9.8**			**9.4**			**14.0**			**20.4**			**15.2**			**73.5**			**-3.1**			**-18.0**	
	Max. white maize			**23.8**			**26.2**			**29.4**			**34.4**			**26.5**			**84.8**			**44.5**			**39.1**

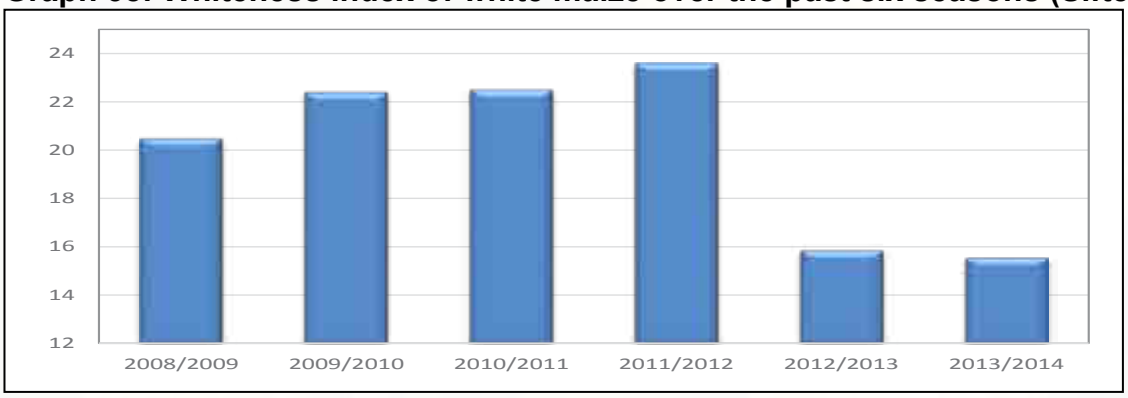
TABLE 16: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE (2013/2014)

Number of samples	Region	Roff Milling																		Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Bran and Germ, %			Extraction, % (Total meal)			Whiteness index unsifted			Whiteness index sifted 87:13		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
WHITE																									
8	Region 12	13.9	12.3	16.5	12.0	11.4	12.8	23.9	22.3	25.5	28.5	26.2	30.4	21.7	20.1	23.5	78.3	76.5	79.9	28.7	23.2	34.4	18.8	14.9	23.0
5	Region 13	14.9	14.1	15.7	12.4	12.0	12.8	24.5	22.1	26.2	26.5	25.7	27.1	21.7	20.3	24.3	78.3	75.7	79.7	30.5	23.9	44.5	22.3	17.3	39.1
29	Region 14	14.1	11.8	15.7	12.8	11.4	16.2	24.0	22.5	27.1	28.1	25.9	31.4	20.9	18.8	23.7	79.1	76.3	81.2	27.9	19.6	32.0	17.9	11.9	24.3
4	Region 15	13.3	12.7	14.2	12.5	12.2	12.8	25.2	24.8	26.1	29.1	28.0	30.0	19.9	18.5	21.0	80.1	79.0	81.5	24.8	21.1	26.4	16.4	13.4	17.5
11	Region 16	13.6	11.2	15.0	12.7	11.5	15.6	24.4	22.1	26.1	28.2	27.0	30.3	21.1	17.7	23.2	78.9	76.8	82.3	28.8	24.4	33.5	17.8	14.6	21.7
9	Region 17	15.6	14.6	16.4	13.1	12.0	13.8	25.4	23.1	27.9	25.2	22.5	28.4	20.6	18.6	22.8	79.4	77.2	81.4	26.8	22.8	33.8	16.9	12.7	20.1
8	Region 18	15.3	13.5	17.1	12.6	11.7	14.3	23.5	20.9	28.2	26.6	23.2	28.8	22.0	17.2	24.2	78.0	75.8	82.8	27.6	19.4	36.1	17.2	5.6	24.0
7	Region 19	14.2	11.7	15.5	12.6	11.8	14.2	23.4	21.6	25.6	27.8	26.0	29.7	22.1	18.6	25.2	77.9	74.8	81.4	29.7	21.5	34.1	18.1	8.6	22.5
8	Region 20	15.1	12.8	16.3	13.3	12.0	14.6	24.4	21.9	27.0	25.6	23.1	28.0	21.6	19.5	23.4	78.4	76.6	80.5	26.7	15.5	35.2	15.7	5.7	20.7
44	Region 21	14.4	11.3	18.8	13.1	9.4	15.4	25.3	23.0	28.7	27.4	22.0	33.9	19.9	15.8	22.6	80.1	77.4	84.2	25.0	18.9	31.8	14.5	6.6	22.0
29	Region 22	13.8	9.8	16.9	13.1	11.1	19.0	24.7	20.9	29.3	28.2	23.1	34.4	20.2	15.2	23.2	79.8	76.8	84.8	26.2	19.7	31.9	16.5	8.6	22.3
15	Region 23	13.4	11.4	15.2	13.5	11.5	15.1	25.5	22.6	29.4	27.9	24.4	31.8	19.8	16.5	22.9	80.2	77.1	83.5	25.0	17.7	29.4	16.1	10.6	21.7
44	Region 24	13.7	12.2	17.0	13.3	11.5	22.1	24.9	14.0	28.4	27.8	23.0	30.3	20.2	17.3	24.8	79.8	75.2	82.7	25.4	15.8	31.5	16.0	4.8	21.1
8	Region 25	17.1	15.4	18.9	13.0	11.9	14.0	23.1	21.0	27.7	23.6	21.1	26.2	23.1	20.1	26.5	76.9	73.5	79.9	28.5	18.9	34.7	18.6	12.3	21.7
4	Region 26	17.8	15.8	20.7	14.0	13.1	15.2	24.3	21.4	26.1	23.0	21.9	24.1	20.8	17.1	23.0	79.2	77.0	82.9	23.8	19.6	29.2	14.6	10.5	21.8
10	Region 27	14.7	13.3	16.2	13.9	12.7	15.8	24.4	22.3	27.3	26.2	21.3	29.5	20.8	18.1	23.9	79.2	76.1	81.9	23.6	15.8	32.9	13.7	6.5	18.8
14	Region 28	14.6	13.1	16.7	13.3	12.8	13.8	22.4	20.3	23.2	28.8	27.3	30.6	20.9	19.5	23.2	79.1	76.8	80.5	26.0	19.6	31.8	17.0	9.5	22.0
35	Region 29	14.5	11.3	23.8	12.9	11.3	14.9	23.8	19.7	27.5	27.9	20.4	31.6	20.8	16.0	23.5	79.2	76.5	84.0	23.2	-3.1	30.2	12.6	-18.0	21.2
22	Region 30	14.5	12.0	17.0	12.9	11.5	19.3	23.9	21.9	26.8	27.0	20.6	30.0	21.7	18.1	24.1	78.3	75.9	81.9	25.0	18.2	39.4	15.8	9.4	24.3
21	Region 31	13.5	11.3	16.1	12.5	11.8	14.0	24.2	21.5	28.0	27.8	24.3	29.7	21.9	19.3	25.7	78.1	74.3	80.7	23.2	17.5	33.1	14.1	3.7	22.9
28	Region 32	15.1	12.0	19.0	14.4	11.4	26.2	25.7	14.7	28.4	25.1	22.2	32.3	19.7	15.5	23.3	80.3	76.7	84.5	21.3	16.9	28.4	12.6	9.1	17.0
22	Region 33	15.2	12.8	19.5	12.6	11.4	13.8	22.9	20.7	24.6	26.0	21.5	30.9	23.2	20.4	26.0	76.8	74.0	79.6	25.7	19.5	33.0	15.9	8.9	22.6
39	Region 34	14.6	12.5	17.4	13.5	11.9	16.9	24.7	18.8	28.6	26.4	21.4	32.2	20.7	15.9	25.5	79.3	74.5	84.1	24.1	15.9	32.6	14.6	4.2	22.8
7	Region 35	14.6	13.3	17.1	12.9	11.4	14.1	22.8	18.8	26.9	28.2	23.6	33.0	21.5	18.0	22.8	78.5	77.2	82.0	26.8	22.1	30.3	16.1	9.5	19.6
20	Region 36	13.7	12.4	15.3	12.0	11.3	12.7	23.2	20.6	25.6	27.5	25.1	31.6	23.5	20.9	25.7	76.5	74.3	79.1	25.7	20.3	31.2	17.0	8.6	22.5
451	**Ave. white**	**14.4**			**13.1**			**24.4**			**27.2**			**21.0**			**79.0**			**25.3**			**15.6**		
	Min. white		**9.8**			**9.4**			**14.0**			**20.4**			**15.2**			**73.5**			**-3.1**			**-18.0**	
	Max. white			**23.8**			**26.2**			**29.4**			**34.4**			**26.5**			**84.8**			**44.5**			**39.1**

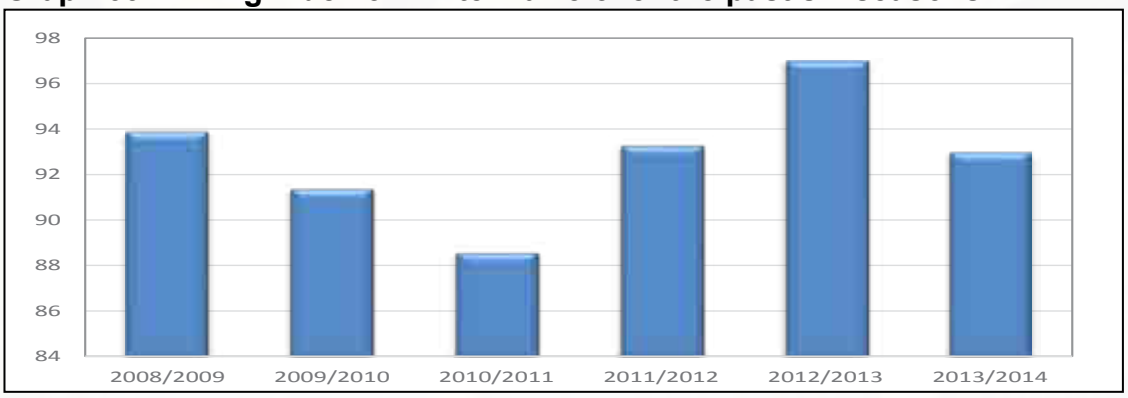
Graph 37: Roff Mill Total Extraction percentage over the past six seasons



Graph 38: Whiteness index of white maize over the past six seasons (Sifted 87:13)



Graph 39: Milling index of white maize over the past six seasons



Graph 40: Milling index of yellow maize over the past six seasons

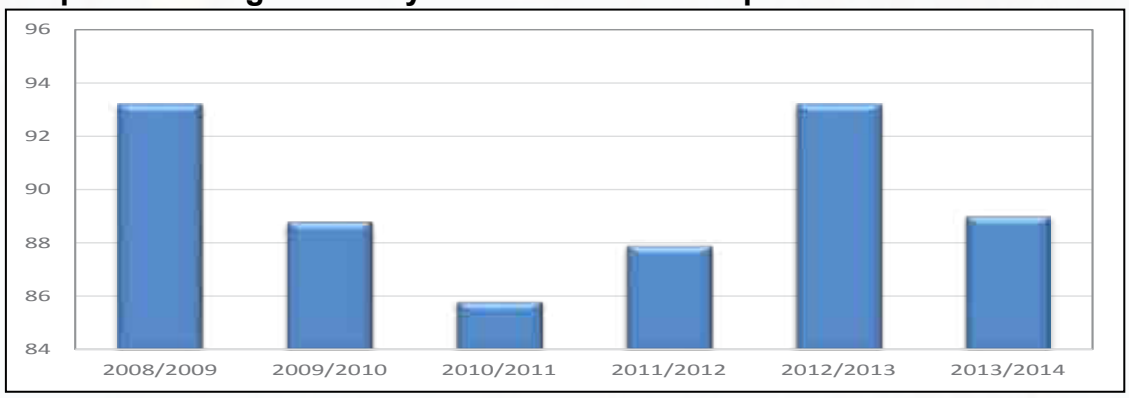


TABLE 17: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2013/2014)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM1										
-	Region 10	-	-	-	-	-	-	-	-	-
-	Region 11	-	-	-	-	-	-	-	-	-
7	Region 12	4.1	3.9	4.3	8.5	8.0	8.9	72.8	72.1	73.9
3	Region 13	4.0	3.9	4.1	8.4	8.0	8.8	73.2	72.7	73.7
26	Region 14	4.0	3.6	4.3	8.5	7.8	9.7	73.1	72.1	74.2
3	Region 15	4.0	4.0	4.0	9.0	8.9	9.1	72.9	72.7	73.1
9	Region 16	4.0	3.9	4.5	8.7	8.2	9.1	72.9	72.6	73.5
9	Region 17	3.9	3.7	4.2	8.3	8.0	8.7	73.1	72.3	73.9
6	Region 18	4.1	3.9	4.3	8.4	7.7	8.9	73.0	71.5	73.8
5	Region 19	3.8	3.7	4.0	8.4	7.9	8.8	73.4	72.2	74.4
5	Region 20	3.9	3.5	4.2	8.6	8.4	9.0	73.2	72.5	73.4
39	Region 21	4.1	3.8	4.3	8.7	8.0	9.3	72.7	71.6	73.5
28	Region 22	4.0	3.8	4.3	8.9	8.6	9.3	72.7	71.3	73.7
12	Region 23	4.1	4.0	4.3	9.0	8.5	10.1	72.2	71.7	73.2
42	Region 24	4.1	3.8	4.6	8.9	7.6	9.8	72.7	71.8	73.8
7	Region 25	4.1	3.8	4.2	7.6	6.8	8.6	73.4	72.6	74.2
4	Region 26	4.2	3.7	4.5	7.7	7.1	8.3	72.9	72.2	73.8
1	Region 27	3.9	-	-	8.6	-	-	73.0	-	-
4	Region 28	4.0	3.8	4.2	8.3	8.2	8.4	73.1	72.9	73.6
22	Region 29	4.2	3.9	5.0	8.6	7.8	9.9	72.6	71.4	73.4
15	Region 30	4.0	3.7	4.2	8.4	8.0	8.7	73.2	72.3	74.2
11	Region 31	4.0	3.6	4.3	8.9	7.8	9.6	73.0	71.5	74.7
5	Region 32	3.9	3.5	4.1	8.7	7.6	9.3	72.2	71.5	73.4
10	Region 33	4.1	4.0	4.4	8.3	7.6	9.1	73.2	72.5	73.7
18	Region 34	4.2	3.7	4.6	8.6	8.0	9.4	72.7	71.2	73.6
6	Region 35	4.2	3.9	4.5	8.6	7.7	9.2	72.6	71.1	73.9
17	Region 36	4.0	3.7	4.5	8.5	7.6	9.3	73.1	72.1	74.2
314	**Ave. WM1**	**4.1**			**8.6**			**72.8**		
	Min. WM1		**3.5**			**6.8**			**71.1**	
	Max. WM1			**5.0**			**10.1**			**74.7**

TABLE 17: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2013/2014)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM1										
11	Region 10	3.5	3.1	3.7	8.1	7.7	8.8	74.0	73.0	74.6
3	Region 11	3.3	3.3	3.4	8.0	7.8	8.4	73.2	72.5	74.2
6	Region 12	3.6	3.5	3.8	8.6	7.8	8.8	73.7	73.3	74.0
4	Region 13	3.7	3.6	3.8	8.8	8.7	8.9	73.4	73.2	73.6
15	Region 14	3.7	3.4	4.0	8.6	7.7	9.5	73.2	72.0	74.9
3	Region 15	3.4	3.1	3.6	8.2	7.0	9.1	73.9	73.1	74.4
4	Region 16	3.8	3.6	3.9	8.7	7.9	9.1	73.3	71.7	74.1
6	Region 17	3.6	3.6	3.9	8.8	8.4	9.5	73.5	72.6	74.7
9	Region 18	3.8	3.5	4.1	8.5	8.4	8.8	73.6	72.6	74.2
8	Region 19	3.7	3.6	4.0	8.6	8.1	9.1	73.5	72.9	74.3
7	Region 20	3.8	3.5	4.2	8.3	7.3	8.7	73.2	72.1	74.1
14	Region 21	3.9	3.6	4.1	8.9	8.0	9.6	72.9	72.3	73.4
7	Region 22	4.0	3.7	4.4	9.5	8.8	10.7	72.5	71.5	73.7
7	Region 23	3.9	3.6	4.0	9.0	8.4	9.7	73.0	72.4	73.5
10	Region 24	4.0	3.7	4.6	8.9	7.7	10.3	73.0	70.9	74.4
23	Region 25	3.5	3.1	4.2	7.9	6.5	8.6	74.0	73.1	75.2
10	Region 26	3.7	3.2	4.1	8.2	7.5	8.8	73.6	73.0	74.6
15	Region 27	4.0	3.4	4.6	8.8	7.7	9.3	72.6	71.5	74.2
27	Region 28	4.1	3.4	4.6	8.8	8.0	10.3	72.6	71.5	73.6
53	Region 29	4.1	3.2	4.8	8.7	6.7	9.7	72.6	71.3	74.3
27	Region 30	3.9	3.2	4.7	8.5	7.9	9.5	72.9	70.8	74.3
22	Region 31	4.0	3.6	4.8	8.6	7.6	9.4	73.2	71.6	74.5
30	Region 32	3.9	3.4	4.3	8.8	7.9	9.6	72.6	71.4	73.6
10	Region 33	3.8	3.5	4.1	8.2	7.6	9.0	73.6	72.2	75.2
19	Region 34	3.9	3.6	4.6	8.8	8.4	9.4	72.7	71.5	73.4
6	Region 35	3.8	3.5	4.1	8.3	7.1	9.6	73.7	72.1	75.0
11	Region 36	3.9	3.7	4.3	8.3	7.3	9.0	73.5	72.4	74.1
367	**Ave. YM1**	**3.9**			**8.6**			**73.1**		
	Min. YM1		**3.1**			**6.5**			**70.8**	
	Max .YM1			**4.8**			**10.7**			**75.2**

TABLE 17: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2013/2014) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM2										
-	Region 11	-	-	-	-	-	-	-	-	-
1	Region 12	3.6	-	-	8.4	-	-	74.2	-	-
2	Region 13	3.9	3.9	3.9	8.4	8.3	8.5	73.7	73.3	74.0
3	Region 14	3.8	3.8	3.9	8.5	8.0	9.6	72.9	72.4	73.2
-	Region 15	-	-	-	-	-	-	-	-	-
2	Region 16	3.9	3.8	3.9	8.3	8.2	8.4	73.3	73.2	73.4
-	Region 17	-	-	-	-	-	-	-	-	-
1	Region 18	4.0	-	-	8.9	-	-	72.9	-	-
2	Region 19	4.0	3.6	4.4	9.5	9.4	9.5	73.0	72.0	73.9
3	Region 20	4.0	4.0	4.1	8.3	7.9	8.7	73.2	72.2	73.7
5	Region 21	4.0	3.9	4.2	8.5	8.2	8.9	72.6	72.2	73.0
1	Region 22	3.9	-	-	8.8	-	-	71.8	-	-
2	Region 23	4.1	4.0	4.2	9.5	9.1	9.9	72.2	71.9	72.4
2	Region 24	4.2	4.1	4.3	8.7	8.5	8.8	73.3	73.2	73.3
-	Region 25	-	-	-	-	-	-	-	-	-
-	Region 26	-	-	-	-	-	-	-	-	-
5	Region 27	4.1	3.9	4.5	8.1	7.4	8.6	72.5	71.6	73.1
8	Region 28	3.9	3.5	4.2	8.3	7.2	9.3	73.2	72.2	74.7
9	Region 29	4.1	3.8	4.4	8.5	7.8	9.5	72.7	70.9	73.7
6	Region 30	3.8	3.6	4.3	8.3	7.6	9.0	73.6	72.8	74.4
9	Region 31	3.9	3.7	4.1	9.0	8.0	9.9	73.0	72.0	74.2
18	Region 32	3.9	3.4	4.2	8.7	7.4	9.4	72.6	71.6	73.7
7	Region 33	3.9	3.7	4.2	8.1	7.6	8.7	73.4	72.5	74.3
12	Region 34	4.0	3.8	4.7	8.6	8.1	9.0	72.4	71.6	73.1
1	Region 35	4.5	-	-	8.7	-	-	71.3	-	-
3	Region 36	4.1	4.0	4.2	8.7	8.1	9.1	72.9	72.7	73.2
102	**Ave. WM2**	**4.0**			**8.6**			**72.9**		
	Min. WM2		**3.4**			**7.2**			**70.9**	
	Max. WM2			**4.7**			**9.9**			**74.7**

TABLE 17: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2013/2014) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM2										
2	Region 11	3.4	3.3	3.5	7.5	6.7	8.2	74.1	73.2	75.0
-	Region 12	-	-	-	-	-	-	-	-	-
1	Region 13	3.7	-	-	8.6	-	-	73.7	-	-
-	Region 14	-	-	-	-	-	-	-	-	-
1	Region 15	3.6	-	-	11.0	-	-	73.2	-	-
2	Region 16	3.8	3.8	3.8	8.3	7.4	9.1	73.7	73.1	74.2
1	Region 17	3.5	-	-	8.8	-	-	73.9	-	-
2	Region 18	3.9	3.9	3.9	9.2	8.9	9.5	73.5	73.3	73.7
-	Region 19	-	-	-	-	-	-	-	-	-
2	Region 20	3.5	3.3	3.6	8.1	7.9	8.3	74.1	73.9	74.2
3	Region 21	3.9	3.6	4.3	8.8	8.1	9.3	73.3	72.6	74.3
-	Region 22	-	-	-	-	-	-	-	-	-
1	Region 23	3.4	-	-	9.6	-	-	73.7	-	-
1	Region 24	4.0	-	-	9.1	-	-	73.1	-	-
1	Region 25	3.4	-	-	7.8	-	-	72.8	-	-
-	Region 26	-	-	-	-	-	-	-	-	-
7	Region 27	3.8	3.5	4.5	8.8	7.1	11.3	72.9	70.9	74.5
5	Region 28	3.7	3.3	3.9	7.9	6.0	9.5	73.6	71.9	75.4
7	Region 29	3.7	3.3	4.1	8.2	7.5	9.0	73.6	72.4	74.8
7	Region 30	3.5	3.0	4.1	8.4	7.9	9.0	73.9	73.1	74.8
14	Region 31	3.6	3.3	4.2	8.2	6.7	9.5	74.0	72.8	75.1
18	Region 32	3.8	3.3	4.2	8.8	7.2	9.8	72.8	71.5	74.7
4	Region 33	3.7	3.2	4.2	7.7	6.4	8.3	74.2	72.5	75.7
11	Region 34	3.9	3.5	4.4	8.4	7.9	8.8	73.0	71.6	75.1
2	Region 35	3.4	3.4	3.4	8.9	8.1	9.7	73.4	73.3	73.4
3	Region 36	3.8	3.7	4.0	8.0	7.9	8.2	73.8	73.6	74.1
95	**Ave. YM2**	**3.7**			**8.5**			**73.4**		
	Min. YM2		**3.0**			**6.0**			**70.9**	
	Max. YM2			**4.5**			**11.3**			**75.7**

TABLE 17: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2013/2014) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM3										
1	Region 15	4.0	-	-	9.5	-	-	73.1	-	-
1	Region 18	3.4	-	-	8.4	-	-	74.5	-	-
1	Region 23	4.1	-	-	9.8	-	-	72.1	-	-
1	Region 25	4.4	-	-	7.4	-	-	71.7	-	-
4	Region 27	3.9	3.5	4.3	7.4	7.3	7.8	73.8	73.1	74.9
1	Region 28	4.1	-	-	7.9	-	-	73.1	-	-
4	Region 29	4.1	3.6	4.6	8.5	7.9	9.2	72.7	71.8	74.0
1	Region 30	3.9	-	-	7.4	-	-	73.5	-	-
5	Region 32	4.0	3.8	4.2	8.4	8.0	8.7	72.5	71.9	73.0
5	Region 33	3.7	3.4	3.9	7.8	6.7	8.2	74.3	74.1	75.1
8	Region 34	3.9	3.7	4.3	8.6	8.2	9.2	72.4	71.4	73.3
32	**Ave. WM3**	**3.9**			**8.3**			**73.0**		
	Min. WM3		**3.4**			**6.7**			**71.4**	
	Max. WM3			**4.6**			**9.8**			**75.1**
CLASS: COM										
-	Region 25	-	-	-	-	-	-	-	-	-
1	Region 28	4.0	-	-	8.8	-	-	73.2	-	-
-	Region 29	-	-	-	-	-	-	-	-	-
1	Region 31	5.0	-	-	9.8	-	-	71.4	-	-
-	Region 32	-	-	-	-	-	-	-	-	-
1	Region 34	4.3	-	-	8.9	-	-	71.1	-	-
3	**Ave. COM**	**4.4**			**9.2**			**71.9**		
	Min. COM		**4.0**			**8.8**			**71.1**	
	Max. COM			**5.0**			**9.8**			**73.2**
451	**Ave. White**	**4.0**			**8.6**			**72.9**		
	Min. White		**3.4**			**6.7**			**70.9**	
	Max. White			**5.0**			**10.1**			**75.1**
930	**Ave. Maize**	**3.9**			**8.6**			**73.0**		
	Min. Maize		**3.0**			**6.0**			**70.8**	
	Max. Maize			**5.0**			**11.3**			**75.7**

TABLE 17: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2013/2014) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM3										
-	Region 15	-	-	-	-	-	-	-	-	-
-	Region 18	-	-	-	-	-	-	-	-	-
-	Region 23	-	-	-	-	-	-	-	-	-
-	Region 25	-	-	-	-	-	-	-	-	-
2	Region 27	3.7	3.5	3.8	8.4	8.3	8.4	73.6	73.1	74.1
-	Region 28	-	-	-	-	-	-	-	-	-
3	Region 29	4.3	4.2	4.5	8.1	7.7	8.7	71.9	71.4	72.3
-	Region 30	-	-	-	-	-	-	-	-	-
2	Region 32	4.1	4.0	4.2	9.1	8.8	9.3	72.1	71.9	72.2
1	Region 33	3.5	-	-	9.2	-	-	74.1	-	-
-	Region 34	-	-	-	-	-	-	-	-	-
8	**Ave. YM3**	**4.0**			**8.6**			**72.6**		
	Min. YM3		**3.5**			**7.7**			**71.4**	
	Max. YM3			**4.5**			**9.3**			**74.1**
CLASS: COM										
3	Region 25	3.7	3.5	3.9	8.1	7.8	8.6	73.1	72.6	73.5
1	Region 28	4.0	-	-	8.8	-	-	72.8	-	-
2	Region 29	3.7	3.3	4.1	8.4	8.4	8.4	73.3	72.3	74.2
1	Region 31	3.7	-	-	8.2	-	-	74.0	-	-
2	Region 32	3.3	3.1	3.5	8.5	8.4	8.6	73.4	73.2	73.6
-	Region 34	-	-	-	-	-	-	-	-	-
9	**Ave. COM**	**3.6**			**8.4**			**73.3**		
	Min. COM		**3.1**			**7.8**			**72.3**	
	Max. COM			**4.1**			**8.8**			**74.2**
479	**Ave. Yellow**	**3.8**			**8.6**			**73.1**		
	Min. Yellow		**3.0**			**6.0**			**70.8**	
	Max. Yellow			**4.8**			**11.3**			**75.7**
930	**Ave. Maize**	**3.9**			**8.6**			**73.0**		
	Min .Maize		**3.0**			**6.0**			**70.8**	
	Max. Maize			**5.0**			**11.3**			**75.7**

TABLE 18: NUTRITIONAL VALUES OF WHITE AND YELLOW MAIZE (2013/2014)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
	WHITE									
8	Region 12	4.0	3.6	4.3	8.5	8.0	8.9	73.0	72.1	74.2
5	Region 13	3.9	3.9	4.1	8.4	8.0	8.8	73.4	72.7	74.0
29	Region 14	4.0	3.6	4.3	8.5	7.8	9.7	73.0	72.1	74.2
4	Region 15	4.0	4.0	4.0	9.2	8.9	9.5	73.0	72.7	73.1
11	Region 16	4.0	3.8	4.5	8.6	8.2	9.1	73.0	72.6	73.5
9	Region 17	3.9	3.7	4.2	8.3	8.0	8.7	73.1	72.3	73.9
8	Region 18	4.0	3.4	4.3	8.5	7.7	8.9	73.2	71.5	74.5
7	Region 19	3.9	3.6	4.4	8.7	7.9	9.5	73.3	72.0	74.4
8	Region 20	3.9	3.5	4.2	8.5	7.9	9.0	73.2	72.2	73.7
44	Region 21	4.1	3.8	4.3	8.7	8.0	9.3	72.7	71.6	73.5
15	Region 23	4.1	4.0	4.3	9.1	8.5	10.1	72.2	71.7	73.2
44	Region 24	4.1	3.8	4.6	8.9	7.6	9.8	72.7	71.8	73.8
8	Region 25	4.1	3.8	4.4	7.5	6.8	8.6	73.2	71.7	74.2
4	Region 26	4.2	3.7	4.5	7.7	7.1	8.3	72.9	72.2	73.8
10	Region 27	4.0	3.5	4.5	7.9	7.3	8.6	73.1	71.6	74.9
14	Region 28	3.9	3.5	4.2	8.3	7.2	9.3	73.2	72.2	74.7
35	Region 29	4.2	3.6	5.0	8.6	7.8	9.9	72.6	70.9	74.0
22	Region 30	3.9	3.6	4.3	8.3	7.4	9.0	73.3	72.3	74.4
21	Region 31	4.0	3.6	5.0	9.0	7.8	9.9	72.9	71.4	74.7
28	Region 32	3.9	3.4	4.2	8.6	7.4	9.4	72.5	71.5	73.7
22	Region 33	3.9	3.4	4.4	8.1	6.7	9.1	73.5	72.5	75.1
39	Region 34	4.1	3.7	4.7	8.6	8.0	9.4	72.5	71.1	73.6
7	Region 35	4.3	3.9	4.5	8.6	7.7	9.2	72.4	71.1	73.9
20	Region 36	4.1	3.7	4.5	8.5	7.6	9.3	73.1	72.1	74.2
451	**Ave. white**	**4.0**			**8.6**			**72.9**		
	Min. white		**3.4**			**6.7**			**70.9**	
	Max. white			**5.0**			**10.1**			**75.1**
	YELLOW									
11	Region 10	3.5	3.1	3.7	8.1	7.7	8.8	74.0	73.0	74.6
5	Region 11	3.3	3.3	3.5	7.8	6.7	8.4	73.6	72.5	75.0
6	Region 12	3.6	3.5	3.8	8.6	7.8	8.8	73.7	73.3	74.0
5	Region 13	3.7	3.6	3.8	8.8	8.6	8.9	73.4	73.2	73.7
15	Region 14	3.7	3.4	4.0	8.6	7.7	9.5	73.2	72.0	74.9
4	Region 15	3.4	3.1	3.6	8.9	7.0	11.0	73.7	73.1	74.4
6	Region 16	3.8	3.6	3.9	8.6	7.4	9.1	73.4	71.7	74.2
7	Region 17	3.6	3.5	3.9	8.8	8.4	9.5	73.5	72.6	74.7
11	Region 18	3.8	3.5	4.1	8.6	8.4	9.5	73.5	72.6	74.2
8	Region 19	3.7	3.6	4.0	8.6	8.1	9.1	73.5	72.9	74.3
9	Region 20	3.7	3.3	4.2	8.2	7.3	8.7	73.4	72.1	74.2
17	Region 21	3.9	3.6	4.3	8.9	8.0	9.6	73.0	72.3	74.3
7	Region 22	4.0	3.7	4.4	9.5	8.8	10.7	72.5	71.5	73.7
8	Region 23	3.8	3.4	4.0	9.1	8.4	9.7	73.1	72.4	73.7
11	Region 24	4.0	3.7	4.6	8.9	7.7	10.3	73.0	70.9	74.4
27	Region 25	3.5	3.1	4.2	7.9	6.5	8.6	73.8	72.6	75.2

TABLE 18: NUTRITIONAL VALUES OF WHITE AND YELLOW MAIZE (2013/2014) (continue)

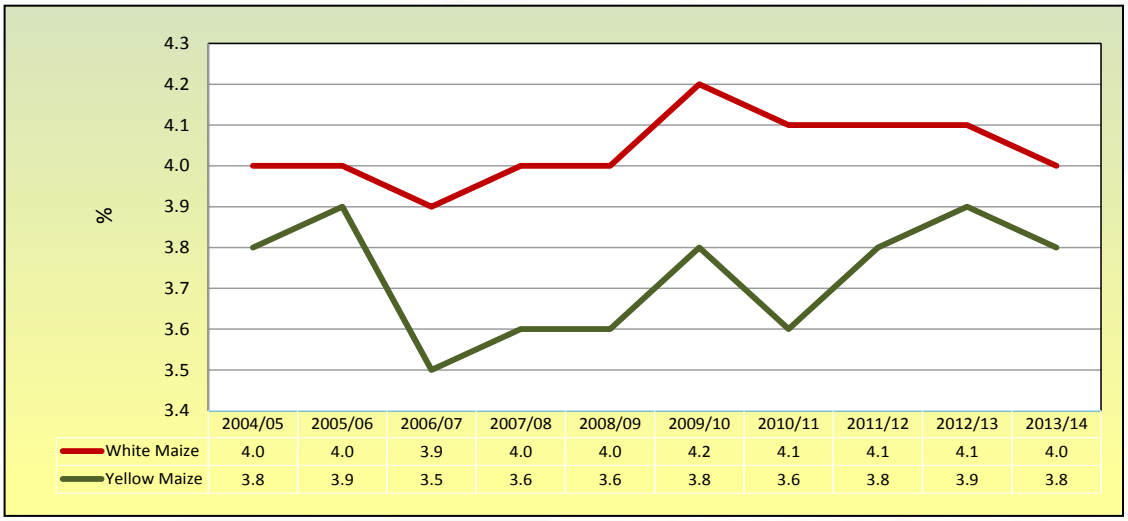
Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
YELLOW										
10	Region 26	3.7	3.2	4.1	8.2	7.5	8.8	73.6	73.0	74.6
24	Region 27	3.9	3.4	4.6	8.8	7.1	11.3	72.8	70.9	74.5
33	Region 28	4.1	3.3	4.6	8.7	6.0	10.3	72.8	71.5	75.4
65	Region 29	4.0	3.2	4.8	8.6	6.7	9.7	72.7	71.3	74.8
34	Region 30	3.8	3.0	4.7	8.5	7.9	9.5	73.1	70.8	74.8
37	Region 31	3.9	3.3	4.8	8.4	6.7	9.5	73.5	71.6	75.1
52	Region 32	3.8	3.1	4.3	8.8	7.2	9.8	72.7	71.4	74.7
15	Region 33	3.7	3.2	4.2	8.1	6.4	9.2	73.8	72.2	75.7
30	Region 34	3.9	3.5	4.6	8.7	7.9	9.4	72.8	71.5	75.1
8	Region 35	3.7	3.4	4.1	8.4	7.1	9.7	73.6	72.1	75.0
14	Region 36	3.9	3.7	4.3	8.2	7.3	9.0	73.5	72.4	74.1
479	**Ave. yellow**	**3.8**			**8.6**			**73.1**		
	Min. yellow		**3.0**			**6.0**			**70.8**	
	Max. yellow			**4.8**			**11.3**			**75.7**
WHITE AND YELLOW										
11	Region 10	3.5	3.1	3.7	8.1	7.7	8.8	74.0	73.0	74.6
5	Region 11	3.3	3.3	3.5	7.8	6.7	8.4	73.6	72.5	75.0
14	Region 12	3.8	3.5	4.3	8.5	7.8	8.9	73.3	72.1	74.2
10	Region 13	3.8	3.6	4.1	8.6	8.0	8.9	73.4	72.7	74.0
44	Region 14	3.9	3.4	4.3	8.5	7.7	9.7	73.1	72.0	74.9
8	Region 15	3.7	3.1	4.0	9.0	7.0	11.0	73.3	72.7	74.4
17	Region 16	3.9	3.6	4.5	8.6	7.4	9.1	73.1	71.7	74.2
16	Region 17	3.8	3.5	4.2	8.5	8.0	9.5	73.3	72.3	74.7
19	Region 18	3.9	3.4	4.3	8.6	7.7	9.5	73.4	71.5	74.5
15	Region 19	3.8	3.6	4.4	8.6	7.9	9.5	73.4	72.0	74.4
17	Region 20	3.8	3.3	4.2	8.4	7.3	9.0	73.3	72.1	74.2
61	Region 21	4.0	3.6	4.3	8.7	8.0	9.6	72.8	71.6	74.3
36	Region 22	4.0	3.7	4.4	9.0	8.6	10.7	72.7	71.3	73.7
23	Region 23	4.0	3.4	4.3	9.1	8.4	10.1	72.5	71.7	73.7
55	Region 24	4.1	3.7	4.6	8.9	7.6	10.3	72.8	70.9	74.4
35	Region 25	3.7	3.1	4.4	7.8	6.5	8.6	73.7	71.7	75.2
14	Region 26	3.8	3.2	4.5	8.1	7.1	8.8	73.4	72.2	74.6
34	Region 27	4.0	3.4	4.6	8.5	7.1	11.3	72.9	70.9	74.9
47	Region 28	4.0	3.3	4.6	8.6	6.0	10.3	72.9	71.5	75.4
100	Region 29	4.1	3.2	5.0	8.6	6.7	9.9	72.7	70.9	74.8
56	Region 30	3.9	3.0	4.7	8.4	7.4	9.5	73.2	70.8	74.8
58	Region 31	3.9	3.3	5.0	8.6	6.7	9.9	73.3	71.4	75.1
80	Region 32	3.9	3.1	4.3	8.7	7.2	9.8	72.6	71.4	74.7
37	Region 33	3.8	3.2	4.4	8.1	6.4	9.2	73.6	72.2	75.7
69	Region 34	4.0	3.5	4.7	8.6	7.9	9.4	72.6	71.1	75.1
15	Region 35	3.9	3.4	4.5	8.5	7.1	9.7	73.0	71.1	75.0
34	Region 36	4.0	3.7	4.5	8.4	7.3	9.3	73.3	72.1	74.2
930	**Ave. white & yellow**	**3.9**			**8.6**			**73.0**		
	Min. white & yellow		**3.0**			**6.0**			**70.8**	
	Max. white & yellow			**5.0**			**11.3**			**75.7**

TABLE 19: NUTRITIONAL VALUES OF SOUTH AFRICAN WHITE AND YELLOW MAIZE 2004/05 - 2013/14

Season	Number of samples	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
White Maize										
2004/05	601	4.0	3.1	4.5	8.9	6.5	12.0	71.1	68.9	73.7
2005/06	593	4.0	3.3	5.0	8.5	6.4	10.4	71.1	69.5	73.4
2006/07	563	3.9	2.9	4.8	9.3	7.5	12.0	72.9	70.1	74.9
2007/08	483	4.0	3.2	4.7	8.6	6.6	10.9	71.9	69.9	74.0
2008/09	483	4.0	3.5	5.1	8.3	6.4	10.4	72.4	70.7	74.2
2009/10	458	4.2	3.5	5.8	8.4	6.6	10.0	72.6	70.6	74.6
2010/11	413	4.1	2.8	4.6	7.9	6.1	9.5	73.6	71.9	77.0
2011/12	577	4.1	3.3	4.7	8.6	6.3	11.2	72.6	70.6	74.3
2012/13	508	4.1	3.3	5.3	9.2	6.4	11.5	71.4	68.5	73.6
2013/14	451	4.0	3.4	5.0	8.6	6.7	10.1	72.9	70.9	75.1
Weighted Average		**4.0**			**8.7**			**72.2**		
Minimum			**2.8**			**6.1**			**68.5**	
Maximum				**5.8**			**12.0**			**77.0**
Yellow Maize										
2004/05	399	3.8	2.9	4.7	8.6	6.9	11.1	71.7	69.1	74.3
2005/06	307	3.9	3.2	4.9	8.4	6.6	9.7	71.5	69.5	73.3
2006/07	337	3.5	2.8	4.6	9.5	6.9	12.7	73.3	70.5	75.2
2007/08	417	3.6	2.9	4.8	8.4	6.9	10.4	72.3	70.0	75.0
2008/09	327	3.6	2.9	4.7	8.2	6.2	10.6	73.2	71.1	74.8
2009/10	342	3.8	3.3	4.7	8.1	6.5	10.1	73.4	71.0	75.4
2010/11	280	3.6	2.8	4.4	7.8	6.3	9.8	74.2	72.2	76.0
2011/12	423	3.8	3.0	4.6	8.9	7.0	11.3	73.0	71.0	75.0
2012/13	492	3.9	2.9	4.7	9.2	7.1	12.8	71.9	69.4	73.9
2013/14	479	3.8	3.0	4.8	8.6	6.0	11.3	73.1	70.8	75.7
Weighted Average		**3.7**			**8.6**			**72.7**		
Minimum			**2.8**			**6.0**			**69.1**	
Maximum				**4.9**			**12.8**			**76.0**
White and Yellow Maize										
2004/05	1000	3.9	2.9	4.7	8.8	6.5	12.0	71.3	68.9	74.3
2005/06	900	4.0	3.2	5.0	8.4	6.4	10.4	71.2	69.5	73.4
2006/07	900	3.7	2.8	4.8	9.4	6.9	12.7	73.0	70.1	75.2
2007/08	900	3.8	2.9	4.8	8.5	6.6	10.9	72.1	69.9	75.0
2008/09	810	3.8	2.9	5.1	8.3	6.2	10.6	72.7	70.7	74.8
2009/10	800	4.0	3.3	5.8	8.3	6.5	10.1	72.9	70.6	75.4
2010/11	693	3.9	2.8	4.6	7.9	6.1	9.8	73.8	71.9	77.0
2011/12	1000	4.0	3.0	4.7	8.7	6.3	11.3	72.8	70.6	75.0
2012/13	1000	4.0	2.9	5.3	9.2	6.4	12.8	71.6	68.5	73.9
2013/14	930	3.9	3.0	5.0	8.6	6.0	11.3	73.0	70.8	75.7
Weighted Average		**3.9**			**8.6**			**72.4**		
Minimum			**2.8**			**6.0**			**68.5**	
Maximum				**5.8**			**12.8**			**77.0**

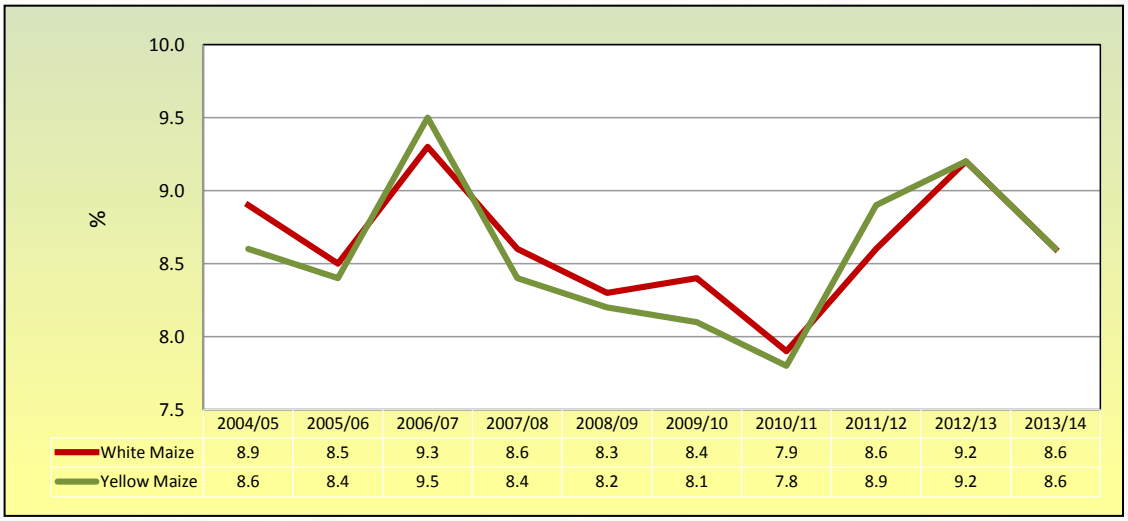
Please note:
Different starch methods have been used over years and data have been corrected accordingly.

Graph 41: Fat content of white and yellow maize over 10 seasons



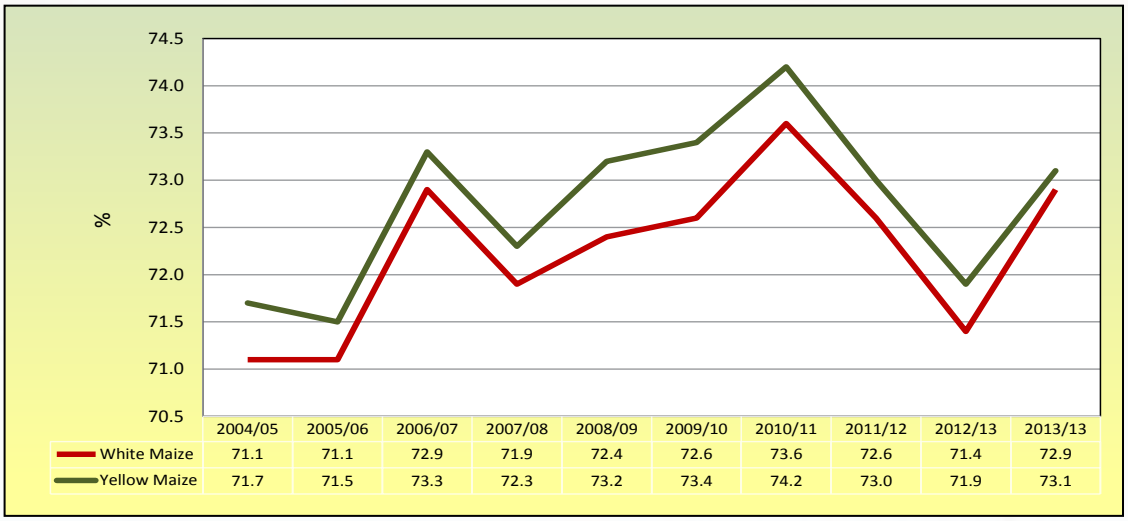
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
White Maize	4.0	4.0	3.9	4.0	4.0	4.2	4.1	4.1	4.1	4.0
Yellow Maize	3.8	3.9	3.5	3.6	3.6	3.8	3.6	3.8	3.9	3.8

Graph 42: Protein content of white and yellow maize over 10 seasons



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
White Maize	8.9	8.5	9.3	8.6	8.3	8.4	7.9	8.6	9.2	8.6
Yellow Maize	8.6	8.4	9.5	8.4	8.2	8.1	7.8	8.9	9.2	8.6

Graph 43: Starch content of white and yellow maize over 10 seasons



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/13
White Maize	71.1	71.1	72.9	71.9	72.4	72.6	73.6	72.6	71.4	72.9
Yellow Maize	71.7	71.5	73.3	72.3	73.2	73.4	74.2	73.0	71.9	73.1

Table 20: Presence of Genetically Modified Maize (2013/2014)

REGION	W/Y	Cry1Ab % (LOQ: 0.4%)	Cry2Ab % (LOQ: 0.5%)	CP4 EPSPS % (LOQ: 0.25%)	REGION	W/Y	Cry1Ab % (LOQ: 0.4%)	Cry2Ab % (LOQ: 0.5%)	CP4 EPSPS % (LOQ: 0.25%)	REGION	W/Y	Cry1Ab % (LOQ: 0.4%)	Cry2Ab % (LOQ: 0.5%)	CP4 EPSPS % (LOQ: 0.25%)
10	Y	>5.0	>5.0	>5.0	24	W	>5.0	>5.0	>5.0	30	Y	>5.0	3.3	>5.0
11	Y	0.94	1.4	<0.25	24	W	>5.0	<0.5	0.78	30	Y	>5.0	0.60	>5.0
12	Y	>5.0	>5.0	>5.0	24	W	>5.0	>5.0	>5.0	31	Y	>5.0	>5.0	>5.0
12	W	>5.0	>5.0	>5.0	24	Y	>5.0	>5.0	>5.0	31	W	>5.0	2.2	1.6
13	W	>5.0	>5.0	>5.0	24	W	>5.0	>5.0	>5.0	31	Y	>5.0	>5.0	0.80
14	W	>5.0	>5.0	>5.0	24	Y	>5.0	>5.0	>5.0	31	Y	1.5	<0.5	>5.0
14	Y	>5.0	>5.0	>5.0	25	W	>5.0	>5.0	<0.25	31	W	>5.0	>5.0	>5.0
14	W	>5.0	>5.0	>5.0	25	Y	<0.4	<0.5	0.74	32	Y	>5.0	>5.0	0.64
14	W	>5.0	>5.0	>5.0	25	Y	>5.0	>5.0	>5.0	32	Y	2.0	2.9	<0.25
14	Y	>5.0	>5.0	>5.0	25	Y	>5.0	>5.0	>5.0	32	W	<0.4	<0.5	0.41
15	W	>5.0	>5.0	>5.0	26	Y	>5.0	>5.0	>5.0	32	W	1.2	0.92	<0.25
16	W	>5.0	0.67	>5.0	26	Y	>5.0	0.73	>5.0	32	Y	<0.4	<0.5	<0.25
16	Y	>5.0	>5.0	>5.0	27	Y	>5.0	>5.0	>5.0	32	W	>5.0	>5.0	1.8
17	W	>5.0	>5.0	>5.0	27	W	>5.0	>5.0	>5.0	32	Y	>5.0	0.53	>5.0
17	Y	>5.0	>5.0	>5.0	27	Y	>5.0	>5.0	>5.0	33	W	>5.0	>5.0	>5.0
18	Y	2.6	0.79	>5.0	28	W	>5.0	>5.0	>5.0	33	W	>5.0	>5.0	>5.0
18	W	>5.0	>5.0	>5.0	28	Y	>5.0	0.51	>5.0	33	W	>5.0	>5.0	>5.0
19	Y	>5.0	>5.0	>5.0	28	Y	>5.0	>5.0	>5.0	33	Y	0.88	<0.5	>5.0
19	W	>5.0	>5.0	>5.0	28	Y	>5.0	<0.5	4.7	34	W	>5.0	>5.0	>5.0
20	Y	>5.0	>5.0	>5.0	28	Y	>5.0	>5.0	>5.0	34	Y	>5.0	2.9	>5.0
20	W	>5.0	>5.0	>5.0	29	Y	>5.0	>5.0	>5.0	34	W	>5.0	>5.0	>5.0
21	W	>5.0	>5.0	>5.0	29	W	>5.0	3.1	0.57	34	Y	>5.0	4.3	>5.0
21	Y	>5.0	4.7	>5.0	29	Y	0.92	2.0	<0.25	34	W	>5.0	>5.0	>5.0
21	W	>5.0	>5.0	>5.0	29	W	>5.0	4.9	>5.0	34	Y	>5.0	<0.5	>5.0
21	Y	>5.0	>5.0	4.9	29	Y	>5.0	>5.0	>5.0	34	W	>5.0	>5.0	>5.0
21	W	>5.0	>5.0	>5.0	29	Y	<0.4	<0.5	>5.0	34	Y	>5.0	>5.0	>5.0
21	W	>5.0	>5.0	>5.0	29	W	>5.0	>5.0	5.0	35	W	>5.0	>5.0	1.7
21	W	>5.0	>5.0	>5.0	29	Y	>5.0	>5.0	>5.0	35	Y	>5.0	>5.0	>5.0
22	W	>5.0	4.0	>5.0	29	W	>5.0	>5.0	>5.0	35	W	>5.0	0.78	>5.0
22	Y	>5.0	>5.0	>5.0	29	Y	>5.0	>5.0	>5.0	36	W	>5.0	0.59	>5.0
22	W	>5.0	>5.0	>5.0	29	Y	0.53	<0.5	2.8	36	Y	>5.0	>5.0	>5.0
22	W	>5.0	>5.0	>5.0	30	Y	>5.0	2.7	>5.0	36	Y	>5.0	>5.0	>5.0
23	Y	>5.0	3.5	>5.0	30	W	>5.0	4.0	0.72					
23	W	>5.0	>5.0	>5.0	30	W	>5.0	0.59	>5.0					

n	Season	% Samples positive for Cry1Ab
100	**2013/14**	**96**
100	2012/13	97
100	2011/12	97
77	2010/11	97

n	Season	% Samples positive for Cry2Ab
100	**2013/14**	**90**
100	2012/13	73
100	2011/12	27
-	-	-

n	Season	% Samples positive for CP4 EPSPS
100	**2013/14**	**94**
100	2012/13	95
100	2011/12	93
77	2010/11	88

n	Season	% Samples positive for MON810 *(Bt)* (ELISA)
90	2009/10	96
90	2008/09	91

n	Season	% Samples positive for NK603 (RUR) (ELISA)
90	2009/10	61
90	2008/09	90

LOQ: Limit of Quantification

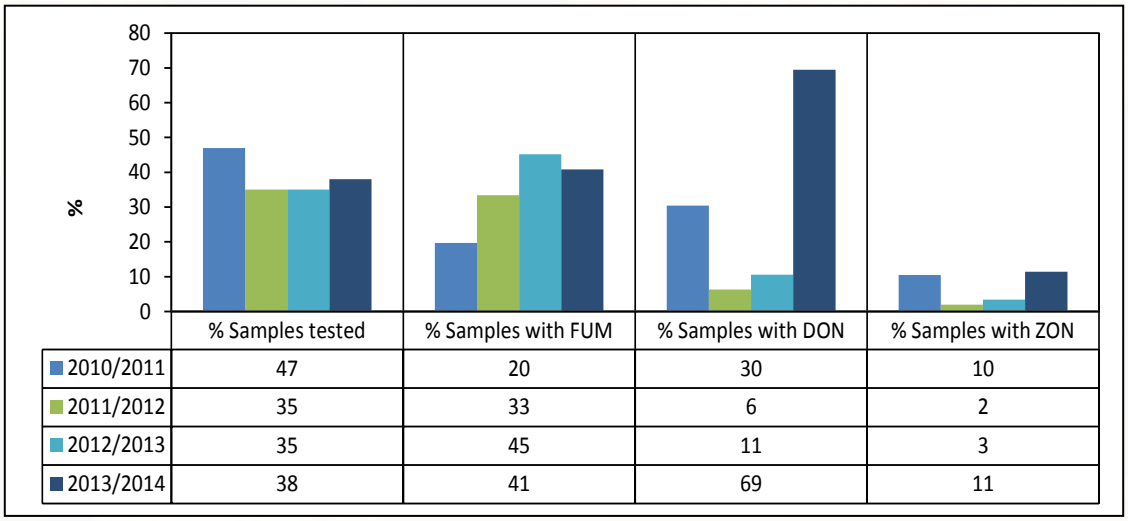
MYCOTOXINS

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 projects to effectively manage the mycotoxin levels in maize.

For the 2010/2011 season, a total number of 325 samples were analysed for mycotoxin residue levels. From the 2011/2012 to 2013/2014 seasons, 350 samples were analysed annually. The samples were selected to represent all the production regions as well as both white and yellow maize proportionally.

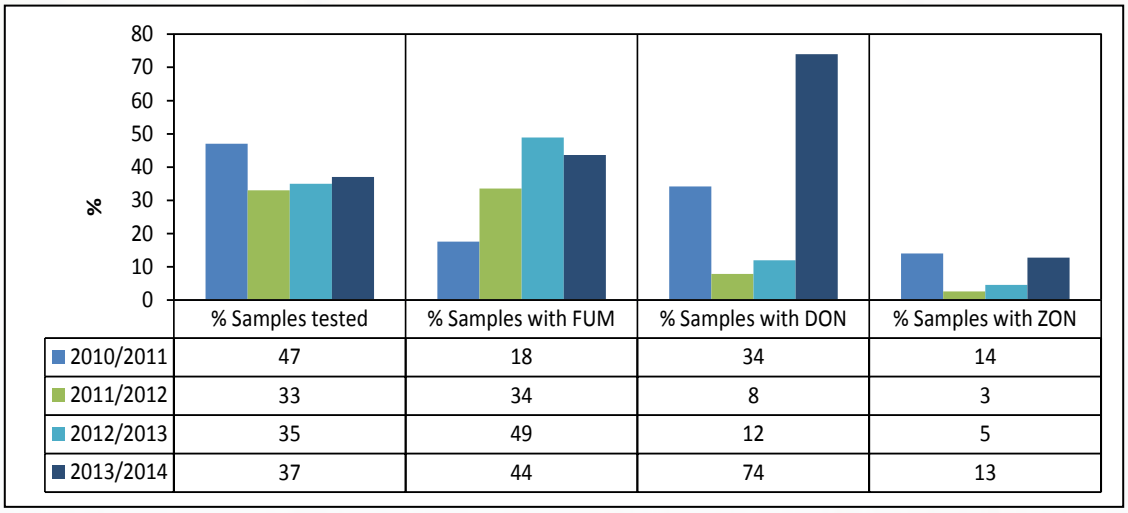
Graphs 44 to 46 provide a summary of the seasonal effect on the percentages total crop, white maize and yellow maize samples that tested positive for Fumonisins (FUM), Deoxinyvalenol (DON) and Zearalenone (ZON).

Graph 44: Percentage white and yellow maize samples that tested positive for mycotoxins over four seasons



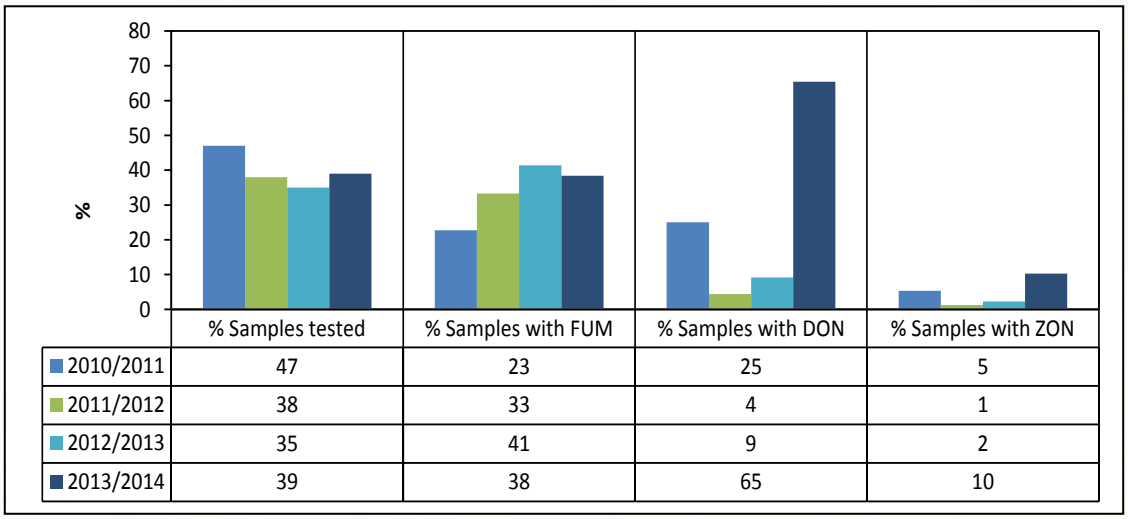
	% Samples tested	% Samples with FUM	% Samples with DON	% Samples with ZON
2010/2011	47	20	30	10
2011/2012	35	33	6	2
2012/2013	35	45	11	3
2013/2014	38	41	69	11

Graph 45: Percentage white maize samples that tested positive for mycotoxins over four seasons



	% Samples tested	% Samples with FUM	% Samples with DON	% Samples with ZON
2010/2011	47	18	34	14
2011/2012	33	34	8	3
2012/2013	35	49	12	5
2013/2014	37	44	74	13

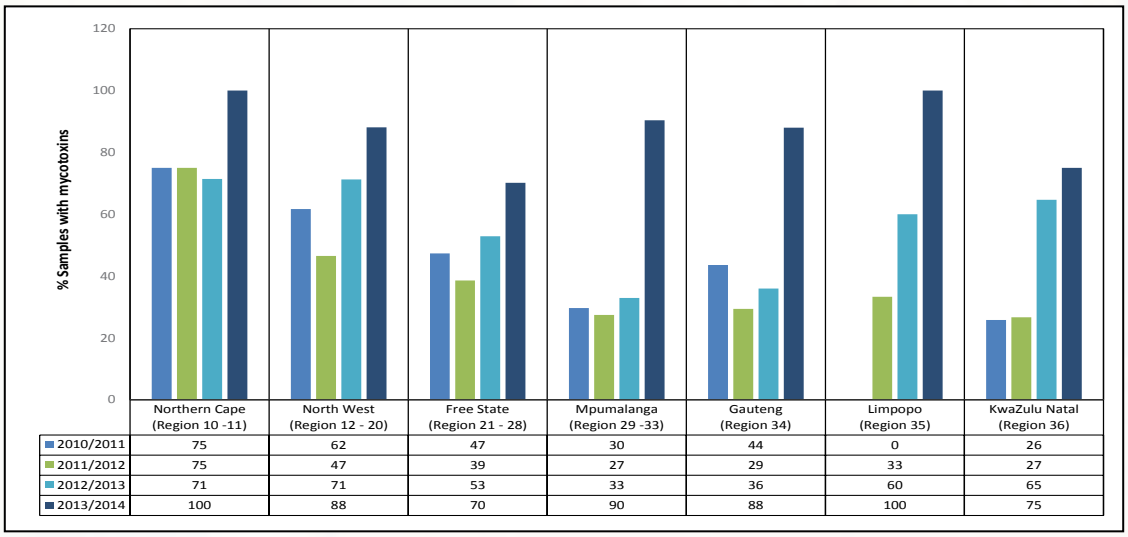
Graph 46: Percentage yellow maize samples that tested positive for mycotoxins over four seasons



	% Samples tested	% Samples with FUM	% Samples with DON	% Samples with ZON
2010/2011	47	23	25	5
2011/2012	38	33	4	1
2012/2013	35	41	9	2
2013/2014	39	38	65	10

The percentage of samples that tested positive for mycotoxins per season in the different provinces are provided in Graph 47.

Graphs 47: Percentage of samples that tested positive for mycotoxins per province over four seasons



	Northern Cape (Region 10 -11)	North West (Region 12 - 20)	Free State (Region 21 - 28)	Mpumalanga (Region 29 -33)	Gauteng (Region 34)	Limpopo (Region 35)	KwaZulu Natal (Region 36)
2010/2011	75	62	47	30	44	0	26
2011/2012	75	47	39	27	29	33	27
2012/2013	71	71	53	33	36	60	65
2013/2014	100	88	70	90	88	100	75

Please note that the percentages referred to in Graphs 44 to 47 were calculated based on the number of samples analysed for mycotoxin residue levels and not the total number of samples received for the crop survey.

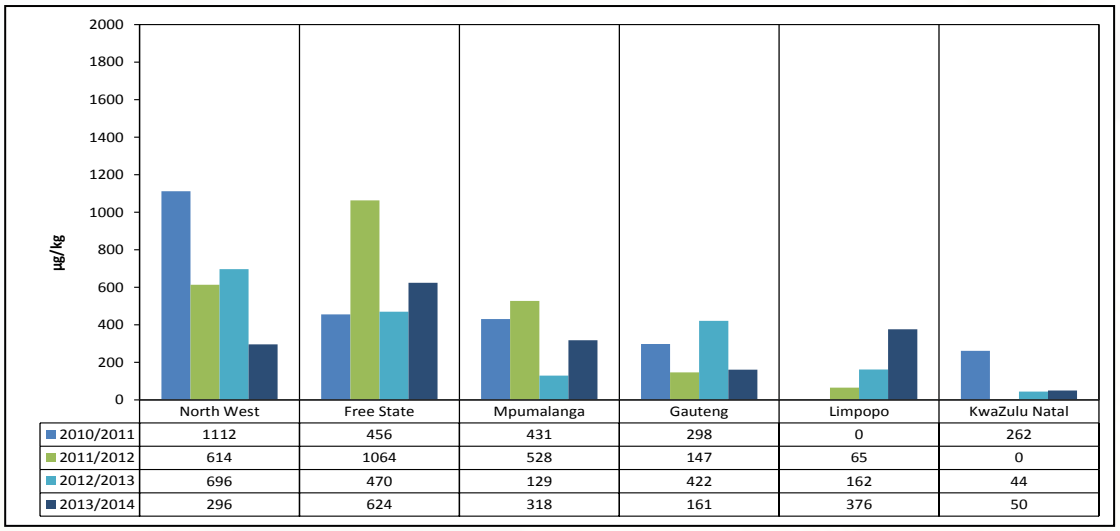
Results obtained with comprehensive mycotoxin surveys, such as the worldwide annual survey conducted by Biomin are useful to answer questions such as how severe is the mycotoxin contamination in different commodities, what is the situation worldwide and in different regions and which mycotoxins and concentration levels occurred. The Biomin survey report for 2014 (www.biomin.net) covers 6 844 agricultural commodity samples from 64 countries. The samples of primary components used for animal feed including maize, wheat, soybean meal, barley, etc. were tested for Aflatoxins (Afla), Zearalenone (ZON), Deoxynivalenol (DON), T-2 toxin, Fumonisins (FUM) and Ochratoxin A (OTA).

Of the African samples tested, 78% tested positive for ZON, 69% for DON, 67% for FUM, 15% for Afla, 8% for OTA and 2% for T-2 toxin. Globally, DON poses the most frequent threat to livestock and was found in more than half of the samples tested, with 82% of the samples containing DON levels exceeding the risk thresholds for livestock. FUM and ZON are also causes for concern with 50% of the samples exceeding risk threshold levels. The average concentrations of DON and ZON nearly doubled compared to 2013.

The Biomin report for the first time also highlighted the co-occurence of myctoxins. Of 814 samples tested, all contained multiple metabolites. Finished feed and maize were most affected by mycotoxins with finished feed, maize and silage most affected by DON, FUM and ZON.[1]

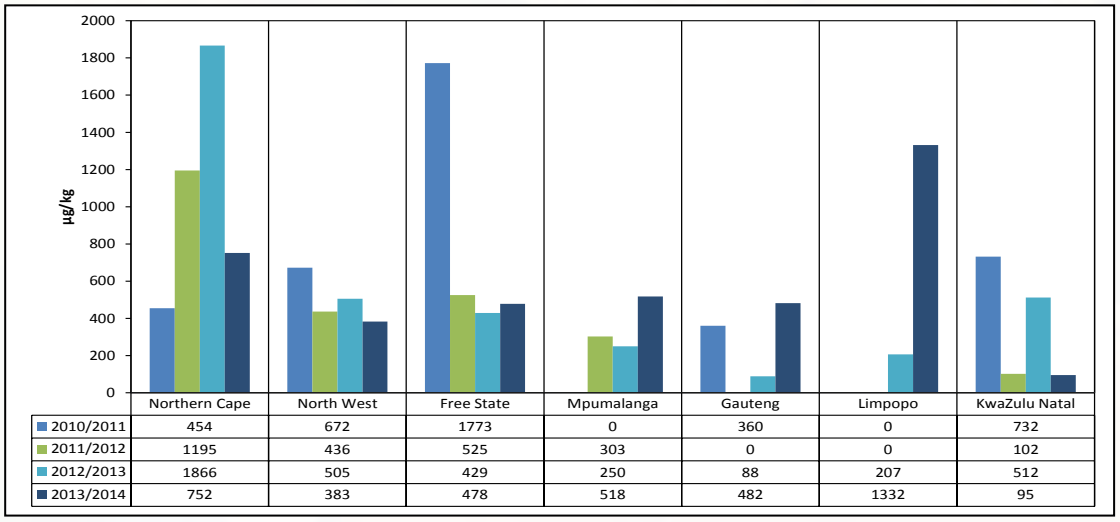
Locally, FUM and DON were found in samples from all the maize producing regions. Different patterns of occurrence are observed in different seasons. Mean concentration levels also differ over seasons. FUM tend to show higher mean concentrations on yellow maize compared to white maize from the same region. Please see Graphs 48 and 49.

Graph 48: Total Fumonisin mean concentration in white maize per province over four seasons



	North West	Free State	Mpumalanga	Gauteng	Limpopo	KwaZulu Natal
2010/2011	1112	456	431	298	0	262
2011/2012	614	1064	528	147	65	0
2012/2013	696	470	129	422	162	44
2013/2014	296	624	318	161	376	50

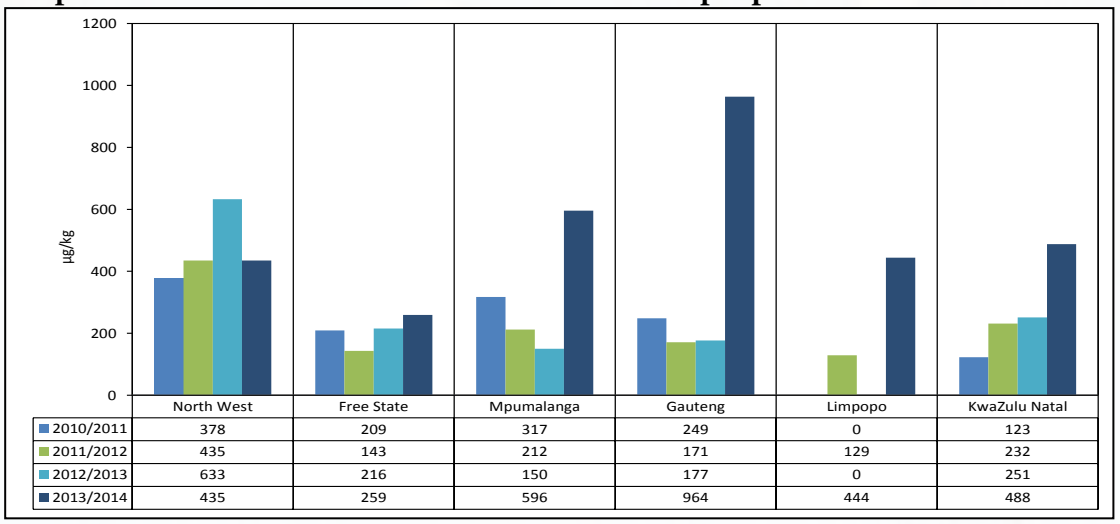
Graph 49: Total Fumonisin mean concentration in yellow maize per province over four seasons



	Northern Cape	North West	Free State	Mpumalanga	Gauteng	Limpopo	KwaZulu Natal
2010/2011	454	672	1773	0	360	0	732
2011/2012	1195	436	525	303	0	0	102
2012/2013	1866	505	429	250	88	207	512
2013/2014	752	383	478	518	482	1332	95

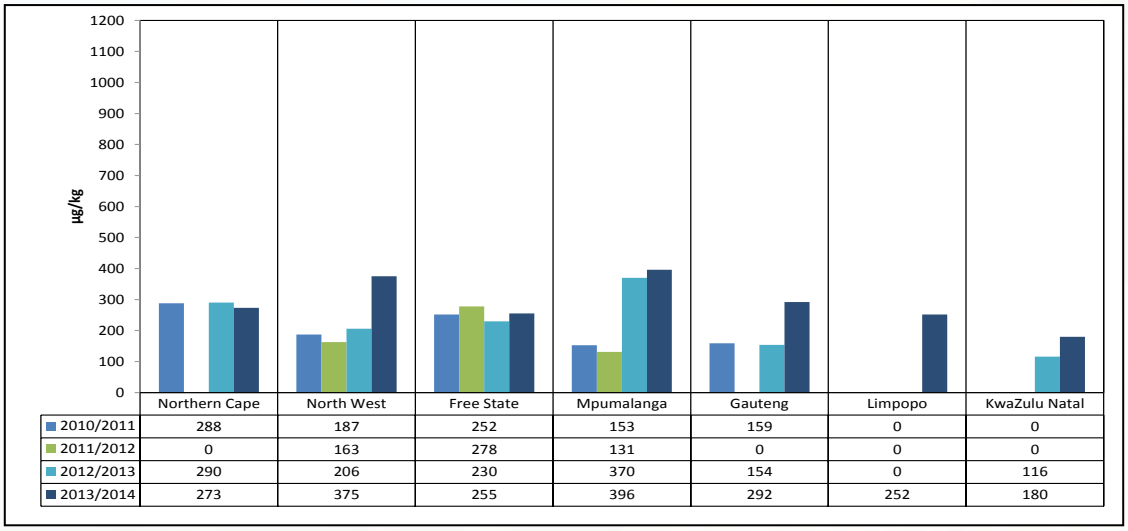
DON shows higher mean concentrations on white maize than yellow maize from the same region. Please see Graphs 50 and 51.

Graph 50: DON mean concentration in white maize per province over four seasons



	North West	Free State	Mpumalanga	Gauteng	Limpopo	KwaZulu Natal
2010/2011	378	209	317	249	0	123
2011/2012	435	143	212	171	129	232
2012/2013	633	216	150	177	0	251
2013/2014	435	259	596	964	444	488

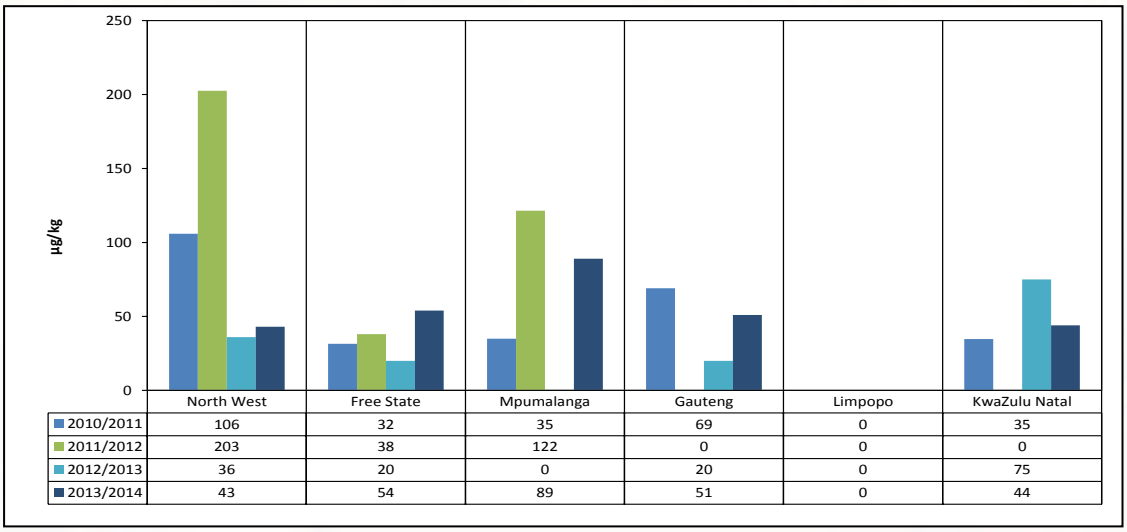
Graph 51: DON mean concentration in yellow maize per province over four seasons



	Northern Cape	North West	Free State	Mpumalanga	Gauteng	Limpopo	KwaZulu Natal
2010/2011	288	187	252	153	159	0	0
2011/2012	0	163	278	131	0	0	0
2012/2013	290	206	230	370	154	0	116
2013/2014	273	375	255	396	292	252	180

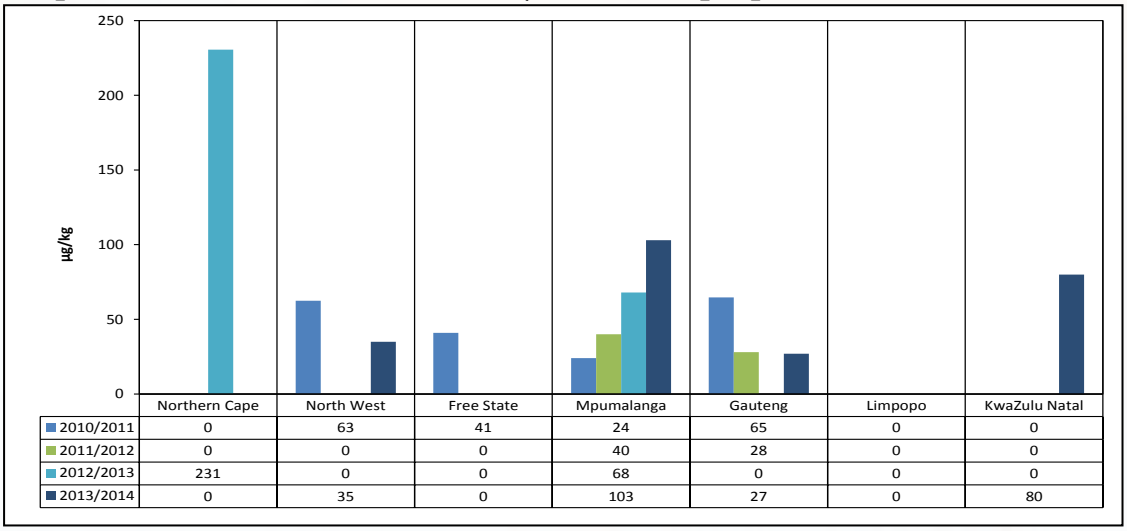
ZON mean concentrations tend to show better correlation between white and yellow maize from the same region, than FUM and DON. Please see Graphs 52 and 53.

Graph 52: ZON mean concentration in white maize per province over four seasons



	North West	Free State	Mpumalanga	Gauteng	Limpopo	KwaZulu Natal
2010/2011	106	32	35	69	0	35
2011/2012	203	38	122	0	0	0
2012/2013	36	20	0	20	0	75
2013/2014	43	54	89	51	0	44

Graph 53: ZON mean concentration in yellow maize per province over four seasons



	Northern Cape	North West	Free State	Mpumalanga	Gauteng	Limpopo	KwaZulu Natal
2010/2011	0	63	41	24	65	0	0
2011/2012	0	0	0	40	28	0	0
2012/2013	231	0	0	68	0	0	0
2013/2014	0	35	0	103	27	0	80

Table 21 on pages 71 to 82 provides the mycotoxin results of all 350 samples analysed for the 2013/2014 season. Table 22 on page 83 provides an overview of the mycotoxin results obtained from the 2001/2002 to 2013/2014 seasons.

International Mycotoxin Regulations

The Maximum, advisory and guidance levels for mycotoxins on maize, maize products and cereals from the European Union, USA and China are provided below for comparison purposes.

The **European Union** specifies the following maximum levels for mycotoxins on maize in foodstuffs:

Aflatoxin
- Maize and rice to be subjected to sorting or other physical treatment before human consumption or used as an ingredient in foodstuffs, 5.0 µg/kg (B_1) and 10.0 µg/kg (Sum of B_1, B_2, G_1 and G_2).

Fumonisin
- Unprocessed maize with the exception of unprocessed maize intended to be processed by wet milling, 4 000 µg/kg.
- Maize intended for direct human consumption, maize-based foods for direct consumption, with certain exceptions, 1 000 µg/kg.
- Maize-based breakfast cereals and maize-based snacks, 800 µg/kg.
- Processed maize-based foods and baby foods for infants and young children, 200 µg/kg.
- Milling fractions and other milling products with particle size > 500 µm not used for direct human consumption, 1 400 µg/kg.
- Milling fractions and other milling products with particle size < 500 µm not used for direct human consumption, 2 000 µg/kg.

Deoxynivalenol (DON)
- Unprocessed maize, with the exception of unprocessed maize intended to be processed by wet milling, 1 750 µg/kg.
- Milling fractions of maize and other milling products with particle size > 500 µm not used for direct human consumption, 750 µg/kg.
- Milling fractions of maize and other milling products with particle size < 500 µm not used for direct human consumption, 1 250 µg/kg.

Zearalenone
- Unprocessed maize with the exception of unprocessed maize intended to be processed by wet milling, 350 µg/kg.
- Maize intended for direct human consumption, maize-based snacks and maize-based breakfast cereals, 100 µg/kg.
- Processed maize-based foods for infants and young children, 20 µg/kg.
- Milling fractions and other milling products with particle size > 500 µm not used for direct human consumption, 200 µg/kg.
- Milling fractions and other milling products with particle size < 500 µm not used for direct human consumption, 300 µg/kg.

Ochratoxin A
- Unprocessed cereals, 5 µg/kg.
- All products derived from unprocessed cereals, including processed cereal products and cereals intended for direct human consumption with the exception of food for infants and young children, 3 µg/kg. [(2)]

The European Union recommends the following guidance levels for mycotoxins on maize in animal feeds with a moisture content of 12%:

Fumonisin $B_1 + B_2$
- Maize and maize products, 60 000 µg/kg.

- Complementary and complete feedingstuffs depending on the class and age of animal, 5 000 – 50 000 µg/kg.

Deoxynivalenol (DON)
- Cereals and cereal products with the exception of maize by-products, 8 000 µg/kg .
- Maize by-products, 12 000 µg/kg.
- Complementary and complete feedingstuffs depending on the class and age of animal, 900 – 5 000 µg/kg.

Zearalenone
- Cereals and cereal products with the exception of maize by-products, 2 000 µg/kg .
- Maize by-products, 3 000 µg/kg.
- Complementary and complete feedingstuffs depending on the class of animal, 100 – 500 µg/kg.

Ochratoxin A
- Cereals and cereal products, 250 µg/kg.
- Complementary and complete feedingstuffs depending on the class of animal, 50 – 5 000 µg/kg.[3]

In the **USA**, the Food and Drug Administration (FDA) actions levels for Aflatoxin in animal feeds vary between 20 µg/kg and 300 µg/kg, depending on the intended use (species of animal). The action level for all commodities intended for human consumption is 20 µg/kg (excluding Aflatoxin M_1 (milk) where the maximum level is 0.5 µg/kg).

Advisory maximum levels for DON in animal feed varies between 5 000 and 10 000 µg/kg in grains and grain by-products and 1 000 to 10 000 µg/kg in the complete diet, depending on the species of animal as well as the percentage portion of the diet represented by the grain. Distillers grains, brewers grains, gluten feeds and gluten meals should not exceed 30 000 µg/kg.

Guidance levels for Fumonisin in maize and maize by-products used in animal feeds varies between 5 000 µg/kg and 100 000 µg/kg based on the class of animal and proportion of the diet and 1 000 µg/kg to 50 000 µg/kg for the complete diet.

Guidance levels for Fumonisins (FB_1 + FB_2 + FB_3) in foodstuffs are as follows: Degermed dry milled maize products (e.g. flaking grits, maize grits, maize meal, maize flour with fat content of < 2.25%, dry weight basis), 2 000 µg/kg. Cleaned corn intended for popcorn, 3 000 µg/kg. Whole or partially degermed dry milled maize products (e.g. flaking grits, maize grits, maize meal, maize flour with fat content of ≥ 2.25%, dry weight basis), 4 000 µg/kg. [4]

In **China**, the maximum level for Aflatoxin B_1 in maize, maize flour and maize products, is 20 µg/kg. The maximum levels for DON and Zearalenone in maize and maize flour is 1000 µg/kg and 60 µg/kg respectively. In cereals and cereal products, the maximum level of Ochratoxin A allowed is 5 µg/kg. [5]

References:

1. BIOMIN Mycotoxin Annual Report 2014 www.biomin.net.
2. COMMISSION REGULATION (EC) No 1881/226 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs.
3. COMMISSION RECOMMENDATION of 17 August 2006 on the presence of deoxynivalenol, zearalenone, ochratoxin A, T-2 and HT-2 and fumonisins in products intended for animal feeding.
4. FDA Mycotoxin Regulatory Guidance, A Guide for Grain Elevators, Feed Manufacturers, Grain Processors and Exporters, August 2011.
5. National Food Safety Standard, Maximum Levels of Mycotoxins in Foods, GB 2761-2011.

TABLE 21: Mycotoxin results - Maize Crop Quality 2013/2014

Region	Grade	Aflatoxin µg/kg					Fumonisin µg/kg				DON µg/kg	15-ADON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	HT-2 µg/kg	T-2 µg/kg
		G_1	B_1	G_2	B_2	Total	B_1	B_2	B_3	Total						
		LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg		LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg		LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOD: 20 µg/kg	LOQ: 20 µg/kg
10	YM1	ND	ND	ND	ND	ND	608	111	26	745	ND	ND	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	1 200	531	70	1 801	391	<100	ND	<20	ND	ND
10	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	154	ND	ND	ND	ND	ND
11	YM1	ND	ND	ND	ND	ND	290	72	<20	362	ND	ND	ND	ND	ND	ND
11	YM2	ND	ND	ND	ND	ND	99	<20	ND	99	ND	ND	ND	ND	ND	ND
12	YM1	ND	ND	ND	ND	ND	163	82	ND	245	136	ND	ND	ND	ND	ND
12	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12	WM1	ND	ND	ND	ND	ND	197	56	<20	253	<100	ND	ND	ND	ND	ND
12	WM2	ND	ND	ND	ND	ND	44	<20	ND	44	1 384	161	ND	<20	ND	ND
12	YM1	ND	ND	ND	ND	ND	565	399	39	1 003	131	ND	ND	ND	ND	ND
12	WM1	ND	ND	ND	ND	ND	379	360	<20	739	<100	ND	ND	ND	ND	ND
13	YM1	ND	ND	ND	ND	ND	357	137	28	522	607	157	ND	ND	ND	ND
13	WM2	ND	ND	ND	ND	ND	23	ND	ND	23	857	145	ND	ND	ND	ND
13	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	136	<100	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	211	123	<20	334	561	100	ND	ND	ND	ND
14	WM2	ND	ND	ND	ND	ND	560	166	32	758	ND	ND	ND	ND	ND	ND
14	YM1	ND	ND	ND	ND	ND	75	23	<20	98	ND	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	21	ND	ND	21	137	ND	ND	ND	ND	ND
14	YM1	ND	ND	ND	ND	ND	497	145	26	668	285	<100	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	149	57	<20	206	207	<100	ND	ND	ND	ND
14	YM1	ND	ND	ND	ND	ND	354	147	30	531	ND	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	621	<100	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	109	48	<20	157	<100	ND	ND	ND	ND	ND
14	YM1	ND	ND	ND	ND	ND	373	108	25	506	111	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	45	28	ND	73	156	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	126	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	308	374	27	709	105	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	154	134	ND	288	209	ND	ND	ND	ND	ND
14	YM1	ND	ND	ND	ND	ND	<20	<20	ND	ND	183	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2013/2014 (continue)

Region	Grade	Aflatoxin µg/kg					Fumonisin µg/kg				DON µg/kg	15-ADON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	HT-2 µg/kg	T-2 µg/kg
		G_1	B_1	G_2	B_2	Total	B_1	B_2	B_3	Total						
		LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg		LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg		LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
14	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
15	WM1	ND	ND	ND	ND	ND	25	ND	ND	25	ND	ND	ND	ND	ND	ND
15	YM2	ND	ND	ND	ND	ND	<20	<20	ND	ND	ND	ND	ND	ND	ND	ND
15	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
16	WM1	ND	ND	ND	ND	ND	149	46	<20	195	ND	ND	ND	ND	ND	ND
16	YM2	ND	ND	ND	ND	ND	126	27	<20	153	343	<100	ND	ND	ND	ND
16	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	177	ND	ND	ND	ND	ND
16	WM1	ND	ND	ND	ND	ND	599	20	63	682	212	ND	ND	ND	ND	ND
16	YM1	ND	ND	ND	ND	ND	215	130	<20	345	228	<100	ND	ND	ND	ND
16	WM1	ND	ND	ND	ND	ND	213	101	<20	314	333	<100	ND	ND	ND	ND
17	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	144	ND	ND	ND	ND	ND
17	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
17	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	365	100	ND	ND	ND	ND
17	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	461	<100	ND	ND	ND	ND
17	WM1	ND	ND	ND	ND	ND	253	101	<20	354	178	<100	ND	ND	ND	ND
17	YM2	ND	ND	ND	ND	ND	181	147	<20	328	538	<100	ND	ND	ND	ND
18	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 353	270	ND	44	ND	ND
18	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	313	<100	ND	ND	ND	ND
18	WM1	ND	ND	ND	ND	ND	33	21	ND	54	199	ND	ND	ND	ND	ND
18	WM1	ND	ND	ND	ND	ND	293	175	<20	468	416	<100	ND	21	ND	ND
18	WM3	ND	ND	ND	ND	ND	50	<20	ND	50	1 837	248	ND	64	ND	ND
19	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	388	<100	ND	28	ND	ND
19	YM1	ND	ND	ND	ND	ND	33	24	ND	57	360	<100	ND	ND	ND	ND
19	YM1	ND	ND	ND	ND	ND	349	94	35	478	<100	ND	ND	ND	ND	ND
19	WM1	ND	ND	ND	ND	ND	291	160	25	476	ND	ND	ND	ND	ND	ND
19	WM1	ND	ND	ND	ND	ND	73	67	ND	140	569	ND	ND	<20	ND	ND
19	YM1	ND	ND	ND	ND	ND	368	250	27	645	384	107	ND	ND	ND	ND
20	YM1	ND	ND	ND	ND	ND	181	68	<20	249	ND	ND	ND	ND	ND	ND
20	YM1	ND	ND	ND	ND	ND	125	63	ND	188	203	<100	ND	ND	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2013/2014 (continue)

Region	Grade	Aflatoxin µg/kg					Fumonisin µg/kg				DON µg/kg	15-ADON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	HT-2 µg/kg	T-2 µg/kg
		G_1	B_1	G_2	B_2	Total	B_1	B_2	B_3	Total						
		LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg		LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg		LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
20	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	284	<100	ND	ND	ND	ND
20	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	410	104	ND	34	ND	ND
20	WM1	ND	ND	ND	ND	ND	242	199	<20	441	770	139	ND	ND	ND	ND
20	YM1	ND	ND	ND	ND	ND	66	50	ND	116	394	118	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	<100	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	264	<100	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	174	<100	ND	ND	ND	ND
21	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	150	<100	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	181	<100	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	108	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	80	<20	ND	80	394	127	ND	ND	ND	ND
21	YM1	ND	ND	ND	ND	ND	<20	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	WM2	ND	ND	ND	ND	ND	221	90	<20	311	710	157	ND	ND	ND	ND
21	YM1	ND	ND	ND	ND	ND	91	54	ND	145	211	<100	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	45	<20	ND	45	166	ND	ND	ND	ND	ND
21	WM2	ND	ND	ND	ND	ND	80	30	ND	110	ND	ND	ND	ND	ND	ND
21	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	230	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	106	ND	ND	ND	ND	ND
21	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	45	<20	ND	45	236	ND	ND	ND	ND	ND
21	YM2	ND	ND	ND	ND	ND	134	88	93	315	270	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	67	34	ND	101	<100	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	15	12	ND	27	442	<100	ND	25	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	129	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	38	27	ND	65	101	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	105	ND	ND	ND	ND	ND
22	WM2	ND	ND	ND	ND	ND	687	151	88	926	<100	<100	ND	ND	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2013/2014 (continue)

Region	Grade	Aflatoxin µg/kg					Fumonisin µg/kg				DON µg/kg	15-ADON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	HT-2 µg/kg	T-2 µg/kg
		G_1	B_1	G_2	B_2	Total	B_1	B_2	B_3	Total						
		LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg		LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg		LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
22	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	1 260	651	86	1 997	128	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	<20	<20	ND	ND	204	ND	ND	ND	ND	ND
22	YM1	ND	ND	ND	ND	ND	500	167	25	692	495	<100	ND	<20	ND	ND
22	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	292	ND	ND	ND	ND	ND
22	YM1	ND	ND	ND	ND	ND	666	339	45	1 050	ND	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	<20	ND	ND	ND	313	ND	ND	ND	ND	ND
22	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	119	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	24	<20	ND	24	ND	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	316	100	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	237	ND	ND	ND	ND	ND
23	YM1	ND	ND	ND	ND	ND	391	108	30	529	ND	<100	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	1 959	816	152	2 927	175	ND	ND	ND	ND	ND
23	YM1	ND	ND	ND	ND	ND	189	85	ND	274	<100	ND	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	109	<100	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	428	200	43	671	<100	ND	ND	ND	ND	ND
23	YM1	ND	ND	ND	ND	ND	68	<20	ND	68	ND	ND	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	1 272	280	93	1 645	ND	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	1 156	500	49	1705	170	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	125	115	ND	240	ND	ND	ND	ND	ND	ND
24	YM1	ND	ND	ND	ND	ND	302	149	<20	451	138	ND	ND	ND	ND	ND
24	WM2	ND	ND	ND	ND	ND	100	32	<20	132	ND	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	246	58	<20	304	ND	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	299	110	39	448	<100	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	433	148	41	622	380	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	322	120	25	467	ND	ND	ND	ND	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2013/2014 (continue)

Region	Grade	Aflatoxin µg/kg					Fumonisin µg/kg				DON µg/kg	15-ADON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	HT-2 µg/kg	T-2 µg/kg
		G_1	B_1	G_2	B_2	Total	B_1	B_2	B_3	Total						
		LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg		LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg		LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
24	WM1	ND	ND	ND	ND	ND	759	274	53	1 086	180	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	788	265	71	1 124	236	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	351	94	20	465	253	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	393	158	36	587	ND	ND	ND	ND	ND	ND
24	YM1	ND	ND	ND	ND	ND	212	72	<20	284	<100	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	210	60	<20	270	ND	ND	ND	ND	ND	ND
24	YM2	ND	ND	ND	ND	ND	153	43	ND	196	ND	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	144	ND	ND	ND	ND	ND
24	YM1	ND	ND	ND	ND	ND	643	391	42	1 076	ND	ND	ND	<20	ND	ND
24	YM1	ND	ND	ND	ND	ND	454	325	34	813	ND	ND	ND	ND	ND	ND
25	COM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
25	WM3	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	<100	ND	ND	ND	ND
25	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	868	196	ND	ND	ND	ND
25	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	<100	ND	ND	ND	ND
25	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
25	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
25	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	410	<100	ND	ND	ND	ND
25	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
25	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	123	<100	ND	ND	ND	ND
25	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
25	YM1	ND	ND	ND	ND	ND	57	38	ND	95	115	<100	ND	ND	ND	ND
25	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	403	117	ND	ND	ND	ND
25	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	137	ND	ND	ND	ND	ND
26	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
26	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	119	ND	ND	ND	ND	ND
26	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	723	269	ND	<20	ND	ND
26	YM1	ND	ND	ND	ND	ND	59	44	ND	103	ND	ND	ND	ND	ND	ND
26	YM1	ND	ND	ND	ND	ND	348	313	<20	661	245	<100	ND	ND	ND	ND
26	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
27	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	307	<100	ND	ND	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2013/2014 (continue)

Region	Grade	Aflatoxin µg/kg					Fumonisin µg/kg				DON µg/kg	15-ADON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	HT-2 µg/kg	T-2 µg/kg
		G_1	B_1	G_2	B_2	Total	B_1	B_2	B_3	Total						
		LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg		LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg		LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
27	YM3	ND	ND	ND	ND	ND	ND	ND	ND	ND	255	<100	ND	ND	ND	ND
27	WM3	ND	ND	ND	ND	ND	<20	ND	ND	ND	<100	<100	ND	ND	ND	ND
27	YM2	ND	ND	ND	ND	ND	70	30	ND	100	199	145	ND	ND	ND	ND
27	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
27	YM1	ND	ND	ND	ND	ND	35	<20	ND	35	235	<100	ND	ND	ND	ND
27	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	240	<100	ND	ND	ND	ND
27	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
27	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	238	<100	ND	ND	ND	ND
27	WM3	ND	ND	ND	ND	ND	ND	ND	ND	ND	381	<100	ND	82	ND	ND
27	YM2	ND	ND	ND	ND	ND	1 223	422	75	1 720	126	ND	ND	ND	ND	ND
27	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	123	ND	ND	ND	ND	ND
28	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	122	ND	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	345	ND	ND	ND	ND	ND
28	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	WM1	ND	ND	ND	ND	ND	243	146	29	418	218	ND	ND	ND	ND	ND
28	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	114	ND	ND	ND	ND	ND
28	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	221	ND	ND	ND	ND	ND
28	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	791	108	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	COM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	274	<100	ND	ND	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2013/2014 (continue)

Region	Grade	Aflatoxin µg/kg					Fumonisin µg/kg				DON µg/kg	15-ADON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	HT-2 µg/kg	T-2 µg/kg
		G_1	B_1	G_2	B_2	Total	B_1	B_2	B_3	Total						
		LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg		LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg		LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	183	ND	ND	ND	ND	ND
29	WM3	ND	ND	ND	ND	ND	ND	ND	ND	ND	189	<100	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	130	<100	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	240	102	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	347	<100	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	421	232	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	440	194	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	54	<20	ND	54	ND	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	122	55	ND	177	<100	ND	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	56	ND	ND	56	389	<100	ND	ND	ND	ND
29	WM2	ND	ND	ND	ND	ND	147	75	ND	222	1 131	163	ND	77	ND	ND
29	WM2	ND	ND	ND	ND	ND	33	<20	ND	33	249	<100	ND	ND	ND	ND
29	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	185	78	<20	263	116	ND	ND	<20	ND	ND
29	WM2	ND	ND	ND	ND	ND	54	30	ND	84	<100	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	183	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	149	51	ND	200	241	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	81	37	ND	118	375	ND	ND	<20	ND	ND
29	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
29	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 238	114	ND	46	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	344	<100	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	145	ND	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	323	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	119	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	433	<100	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
29	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	354	ND	ND	<20	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2013/2014 (continue)

Region	Grade	Aflatoxin µg/kg					Fumonisin µg/kg				DON µg/kg	15-ADON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	HT-2 µg/kg	T-2 µg/kg
		G_1	B_1	G_2	B_2	Total	B_1	B_2	B_3	Total						
		LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg		LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg		LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
29	WM1	ND	ND	ND	ND	ND	64	37	ND	101	460	<100	ND	25	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	304	<100	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	205	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	528	123	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	256	<100	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	467	<100	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	261	<100	ND	<20	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	ND	ND	ND	ND	ND
29	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	592	107	ND	<20	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	122	<100	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	<20	ND	ND	ND	<100	<100	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	177	<100	ND	<20	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	127	ND	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	72	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	142	ND	ND	<20	ND	ND
30	WM3	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	<100	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND
30	WM2	ND	ND	ND	ND	ND	152	39	<20	191	473	175	ND	63	ND	ND
30	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	137	ND	ND	ND	ND	ND
30	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	619	<100	ND	144	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	347	<100	ND	<20	ND	ND
30	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	806	124	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	850	300	ND	30	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	302	<100	ND	<20	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	471	<100	ND	<20	ND	ND
30	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	380	<100	ND	<20	ND	ND
30	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	149	<100	ND	ND	ND	ND
30	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	143	ND	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	237	ND	ND	ND	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2013/2014 (continue)

Region	Grade	Aflatoxin µg/kg					Fumonisin µg/kg				DON µg/kg	15-ADON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	HT-2 µg/kg	T-2 µg/kg
		G_1	B_1	G_2	B_2	Total	B_1	B_2	B_3	Total						
		LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg		LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg		LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
31	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	477	<100	ND	ND	ND	ND
31	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	343	ND	ND	ND	ND	ND
31	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 178	143	ND	<20	ND	ND
31	YM2	ND	ND	ND	ND	ND	76	32	<20	108	186	<100	ND	ND	ND	ND
31	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	228	<100	ND	ND	ND	ND
31	YM1	ND	ND	ND	ND	ND	29	<20	ND	29	934	127	ND	52	ND	ND
31	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	633	<100	ND	<20	ND	ND
31	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	351	<100	ND	ND	ND	ND
31	YM2	ND	ND	ND	ND	ND	132	78	ND	210	117	ND	ND	ND	ND	ND
31	YM1	ND	ND	ND	ND	ND	<20	ND	ND	ND	157	<100	ND	ND	ND	ND
31	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	146	ND	ND	ND	ND	ND
31	WM2	ND	ND	ND	ND	ND	837	293	65	1 195	240	<100	ND	21	ND	ND
31	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
31	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 675	284	ND	26	ND	ND
31	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	226	<100	ND	<20	ND	ND
31	YM1	ND	ND	ND	ND	ND	168	121	<20	289	1 504	181	ND	58	ND	ND
31	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	118	ND	ND	ND	ND	ND
31	COM	ND	ND	ND	ND	ND	25	<20	ND	25	112	ND	ND	13	ND	ND
31	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	427	<100	ND	<20	ND	ND
31	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	315	<100	ND	ND	ND	ND
31	YM2	ND	ND	ND	ND	ND	106	76	ND	182	2 601	292	ND	178	ND	ND
31	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	108	ND	ND	ND	ND	ND
32	WM2	ND	ND	ND	ND	ND	678	313	34	1 025	286	ND	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	124	ND	ND	ND	ND	ND
32	WM3	ND	ND	ND	ND	ND	47	23	ND	70	779	139	ND	192	ND	ND
32	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	237	ND	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	115	39	<20	154	257	ND	ND	ND	ND	ND
32	WM2	ND	ND	ND	ND	ND	429	243	36	708	1 319	162	ND	24	ND	ND
32	YM1	ND	ND	ND	ND	ND	244	105	<20	349	225	101	ND	65	ND	ND
32	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	585	<100	ND	<20	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2013/2014 (continue)

Region	Grade	Aflatoxin µg/kg					Fumonisin µg/kg				DON µg/kg	15-ADON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	HT-2 µg/kg	T-2 µg/kg
		G_1	B_1	G_2	B_2	Total	B_1	B_2	B_3	Total						
		LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg		LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg		LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
32	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	302	<100	ND	ND	ND	ND
32	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	314	ND	ND	ND	ND	ND
32	YM2	ND	ND	ND	ND	ND	314	118	24	456	383	<100	ND	<20	ND	ND
32	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	580	184	ND	ND	ND	ND
32	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	121	ND	ND	ND	ND	ND
32	WM2	ND	ND	ND	ND	ND	246	145	0	391	1 552	220	ND	<20	ND	ND
32	YM2	ND	ND	ND	ND	ND	232	86	<20	318	970	202	ND	354	ND	ND
32	YM2	ND	ND	ND	ND	ND	116	52	<20	168	850	172	ND	81	ND	ND
32	YM2	ND	ND	ND	ND	ND	117	48	<20	165	881	165	ND	227	ND	ND
32	YM2	ND	ND	ND	ND	ND	919	519	41	1 479	436	131	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	609	<100	ND	<20	ND	ND
32	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	798	287	ND	41	ND	ND
32	YM2	ND	ND	ND	ND	ND	553	242	40	835	1 069	219	ND	75	ND	ND
32	YM2	ND	ND	ND	ND	ND	641	272	68	981	918	158	ND	81	ND	ND
32	YM2	ND	ND	ND	ND	ND	265	114	20	399	<100	ND	ND	ND	ND	ND
32	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	154	<100	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	765	153	ND	23	ND	ND
32	YM3	ND	ND	ND	ND	ND	ND	ND	ND	ND	305	199	ND	49	ND	ND
33	YM1	ND	ND	ND	ND	ND	3 893	1 163	301	5 357	172	ND	ND	ND	ND	ND
33	WM1	ND	ND	ND	ND	ND	21	ND	ND	21	ND	ND	ND	ND	ND	ND
33	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	423	<100	ND	<20	ND	ND
33	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	233	ND	ND	29	ND	ND
33	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	190	ND	ND	ND	ND	ND
33	WM2	ND	ND	ND	ND	ND	221	113	<20	334	388	<100	ND	<20	ND	ND
33	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	320	<100	ND	ND	ND	ND
33	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	303	ND	ND	ND	ND	ND
33	YM1	ND	ND	ND	ND	ND	23	29	ND	52	<100	<100	ND	<20	ND	ND
33	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	308	ND	ND	ND	ND	ND
33	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	144	ND	ND	ND	ND	ND
33	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	264	<100	ND	<20	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2013/2014 (continue)

Region	Grade	Aflatoxin µg/kg					Fumonisin µg/kg				DON µg/kg	15-ADON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	HT-2 µg/kg	T-2 µg/kg
		G_1	B_1	G_2	B_2	Total	B_1	B_2	B_3	Total						
		LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg		LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg		LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
33	WM3	ND	ND	ND	ND	ND	25	25	ND	50	2 730	305	ND	445	ND	ND
33	YM2	ND	ND	ND	ND	ND	35	22	ND	57	103	ND	ND	<20	ND	ND
33	WM3	ND	ND	ND	ND	ND	180	103	ND	283	1 174	250	ND	27	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	324	<100	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	114	<100	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	27	<20	ND	27	225	<100	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	238	<100	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	1 040	331	58	1 429	825	246	ND	<20	ND	ND
34	WM3	ND	ND	ND	ND	ND	ND	ND	ND	ND	6 134	861	ND	56	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	218	<100	ND	27	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	455	<100	ND	ND	ND	ND
34	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	221	ND	ND	ND	ND	ND
34	WM2	ND	ND	ND	ND	ND	39	<20	ND	39	587	101	ND	46	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	129	ND	ND	ND	ND	ND
34	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	174	ND	ND	ND	ND	ND
34	YM2	ND	ND	ND	ND	ND	150	82	ND	232	192	<100	ND	ND	ND	ND
34	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	350	96	<20	446	794	134	ND	ND	ND	ND
34	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
34	WM2	ND	ND	ND	ND	ND	298	97	23	418	1 567	223	ND	<20	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	385	<100	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	<20	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	173	ND	ND	ND	ND	ND
34	YM2	ND	ND	ND	ND	ND	86	36	ND	122	143	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	<20	<20	ND	ND	214	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	305	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	108	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	109	72	<20	181	<100	ND	ND	ND	ND	ND
35	WM1	ND	ND	ND	ND	ND	243	129	22	394	ND	ND	ND	ND	ND	ND
35	WM1	ND	ND	ND	ND	ND	252	77	29	358	ND	ND	ND	ND	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2013/2014 (continue)

Region	Grade	Aflatoxin µg/kg					Fumonisin µg/kg				DON µg/kg	15-ADON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	HT-2 µg/kg	T-2 µg/kg
		G_1	B_1	G_2	B_2	Total	B_1	B_2	B_3	Total						
		LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg	LOQ: 5 µg/kg		LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg		LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
35	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	153	<100	ND	ND	ND	ND
35	YM2	ND	ND	ND	ND	ND	121	60	ND	181	350	105	ND	ND	ND	ND
35	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	444	124	ND	ND	ND	ND
35	YM1	ND	ND	ND	ND	ND	1 485	915	82	2 482	<100	ND	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	<20	ND	ND
36	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	109	ND	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	46	32	ND	78	239	<100	ND	ND	ND	ND
36	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 351	245	ND	47	ND	ND
36	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	160	ND	ND	<20	ND	ND
36	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	133	ND	ND	ND	ND	ND
36	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	210	ND	ND	127	ND	ND
36	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	286	111	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	405	<100	ND	<20	ND	ND
36	YM2	ND	ND	ND	ND	ND	26	<20	ND	26	183	ND	ND	ND	ND	ND
36	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	582	<100	ND	40	ND	ND
36	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
36	YM1	ND	ND	ND	ND	ND	108	55	<20	163	236	ND	ND	33	ND	ND
36	WM1	ND	ND	ND	ND	ND	22	<20	ND	22	417	<100	ND	<20	ND	ND
36	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
Total number of samples		**350**	**350**	**350**	**350**	**350**	**350**	**350**	**350**	**350**	**350**	**350**	**350**	**350**	**350**	**350**
Average of total number of samples		**0**	**0**	**0**	**0**	**0**	**126**	**53**	**7**	**186**	**289**	**31**	**0**	**9**	**0**	**0**
Number of positive results		**0**	**0**	**0**	**0**	**0**	**143**	**121**	**48**	**143**	**243**	**59**	**0**	**41**	**0**	**0**
Average of positive results		**-**	**-**	**-**	**-**	**-**	**308**	**154**	**51**	**456**	**417**	**182**	**-**	**78**	**-**	**-**
Maximum of positive results		**-**	**-**	**-**	**-**	**-**	**3 893**	**1 163**	**301**	**5 357**	**6 134**	**861**	**-**	**445**	**-**	**-**

Note:

Limit of quantitation (LOQ) means the lowest concentration level that can be quantified with acceptable presicion and accuracy by the mass spectrometer.

A concentration measured below the LOQ is reported as <LOQ.

Limit of detection (LOD) is the lowest concentration level that can be detected but not quantified and is 50% of the LOQ of each mycotoxin.

A concentration measured below the LOD is reported as not detected (ND).

µg/kg = ppb (parts per billion)

TABLE 22: MYCOTOXIN RESULTS - SUMMARY OF SEASONS 2000/2001 TO 2013/2014

Season	Total Number of samples received	Number of samples tested for mycotoxins	Aflatoxin µg/kg			Fumonisin µg/kg			Deoxynivalenol µg/kg			Zearalenone µg/kg			Ochratoxin A µg/kg			T-2 Toxin µg/kg		
			ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
2000/2001	900	57	<1	0	22	1 670	0	8 100	680	0	5 400	<100	0	120	<2.0	0	0	0	0	0
2001/2002	900	90	0	0	0	760	0	5 100	630	0	2 200	<100	0	30	<2.0	0	0	0	0	0
2002/2003	900	90	0	0	0	730	0	3 900	<500	0	4 300	<100	0	140	<2.0	0	2.0	<150	0	290
2003/2004	900	90	0	0	0	1 140	160	5 600	200	0	13 000	<100	0	120	<2.0	0	5.7	Not tested		
2004/2005	1 000	100	0	0	0	1 080	0	5 300	600	0	3 900	<100	0	440	<2.0	0	2.4	Not tested		
2005/2006	900	90	0	0	0	970	0	13 000	2 740	0	6 200	30	0	390	<2.0	0	2.9	Not tested		
2006/2007	900	90	<1	0	9	640	0	4 500	530	0	3 100	0	0	0	<2.0	0	6.5	Not tested		
2007/2008	900	100	0	0	2	470	0	5 500	240	0	1 700	0	0	100	<1.0	0	2.0	Not tested		
2008/2009	810	90	0	0	0	490	0	3 300	430	0	2 900	<25	0	160	<1.0	0	1.0	Not tested		
*2009/2010	800	90	0	0	0	251	0	4 035	206	0	1 845	0	0	0	0	0	0	0	0	0
*2010/2011	693	325	0	0	0	468	0	7048	165	0	1 835	33	0	270	0	0	0	0	0	0
**2011/2012	1000	350	0	0	0	383	0	11 297	146	0	911	33	0	297	0	0	0	0	0	0
**2012/2013	1000	350	0	0	0	530	0	11 243	186	0	1 175	30	0	426	0	0	0	2	0	232
**2013/2014	930	350	0	0	0	473	0	5 357	243	0	6 134	38	0	445	0	0	0	0	0	0
Total	12 533	514																		
Min.				0			0			0			0			0			0	
Max.					22			13 000			13 000			445			6.5			290

*** Sum of Aflatoxin (G_1; B_1; G_2; B_2) and sum of Fumonisin (B_1; B_2)**

**** Sum of Aflatoxin (G_1; B_1; G_2; B_2) and sum of Fumonisin (B_1; B_2; B_3)**

Mycotoxin methodology

Technique used for season 1999/2000 - 2006/2007

The mycotoxin analyses were carried out in accordance with the Vicam Immunoaffinity Column Chromatography method using the different Vicam Instruction Manuals for the different mycotoxins. Detection of the toxins was done on a Fluorometer. The following range and limit of detection apply for each toxin:

Mycotoxin	Assay range µg/kg	LOD for maize µg/kg
Aflatoxin	0 - 300	1
2umonisin	0 - 10 000	250
Deoxynivalenol	500 - 50 000	500
Zearalenone	0 - 5 000	100
Ochratoxin A	0 - 50	2
T - 2 Toxin	150 - 2 000	150

Technique used for season 2007/2008 - 2008/2009

The SAGL used the ROSA (Rapid One Step Assay) Quantitative test, which is a lateral flow immuno assay test, together with the ROSA-M Reader for measuring the mycotoxin content. The following range and limit of detection apply for each toxin:

Mycotoxin	Assay range µg/kg	LOD for maize µg/kg
Aflatoxin	0 - 100	2
Fumonisin	0 - 60 000	100
Deoxynivalenol	0 - 5 000	250
Zearalenone	0 - 1 000	25
Ochratoxin A	0 - 150	1

Technique used for season 2009/2010 - 2013/2014

During 2010 SAGL implemented a multi-mycotoxin screening method using UPLC-MS/MS. The following limit of detection applies for each toxin:

Mycotoxin	LOQ for maize µg/kg	LOD for maize µg/kg
Aflatoxin G_1	5	2.5
Aflatoxin B_1	5	2.5
Aflatoxin G_2	5	2.5
Aflatoxin B_2	5	2.5
Fumonisin B_1	20	10
Fumonisin B_2	20	10
Fumonisin B_3	20	10
Zearalenone	20	10
Ochratoxin A	5	2.5
T - 2 Toxin	20	10

Notes:

Limit of detection (LOD) means the lowest level that can be detected accurately by the technique.

Limit of quantitation (LOQ) means the lowest level that can be quantified accurately by the technique.

A result above zero but lower than the limit of detection/quantitation, is reported as <LOD/<LOQ.

µg/kg = ppb (parts per billion)

METHODS

SAMPLING PROCEDURE:

A working group determined the process which needs to be followed to ensure that the crop quality samples which are sent to the SAGL by the various grain silo owners/agricultural businesses, are representative of the total crop.

Each delivery is sampled as per the grading regulations for grading purposes.

After grading, the grading samples are placed in separate containers according to class and grade.

After 80% of the expected harvest has been received, the silo divides the content of each container with a multi slot divider in order to obtain a 3 kg sample (this should be done for each class and grade separately).

If there is more than one container per class and grade, the combined contents of the containers is mixed thoroughly before dividing it with a multi slot divider to obtain the required 3 kg sample.

The samples are marked clearly with the name of the depot, the bin/bag/bunker/dam number(s) represented by each individual sample as well as the class and grade and are then forwarded to the SAGL.

RSA GRADING

RSA grading was done in accordance with the Grading Regulations for maize, as published in the Government Gazette No. 32190 of 8 May 2009, Regulation No. R.473 and amended by Industry-Wide Dispensation REF No: 20/4/14/1, dated 15 April 2010.

Description of deviations relating to RSA grading

Defective maize kernels

The following definition of Defective maize kernels is quoted from the Grading Regulations:
"Defective maize kernels" means maize kernels and pieces of maize kernels –

(a) that are shrivelled, obviously immature, frost-damaged, heat damaged, water damaged, mouldy or chalky;
(b) that are discoloured by external factors such as water and sun: Provided that discoloration on both sides of the maize kernel limited to less than a quarter from the bottom tip of the maize kernel shall not be considered as defective, oxidation stained maize kernels, coffee stained maize kernels and pinked maize kernels shall not be considered as defective;
(c) that have sprouted, including kernels which the shoot (plumule) in the germ is visibly discoloured;
(d) that have cavities in the germ or endosperm caused by insects or rodents;
(e) that are visibly soiled (smeared) or contaminated by smut, fire, soil, smoke or coal-dust;
(f) all matter that can pass through the 6.35 mm round-hole sieve; and
(g) that are of subspecies other than *Zea mays indentata* or *Zea mays indurata*.
Provided that –

(i) irregularity of shape and size of maize kernels shall not affect the grading thereof;
(ii) chipped or cracked maize kernels or pieces of maize kernels which are in a sound condition and which appear in a sample of maize, but which do not pass through a 6.35 mm round-hole sieve, shall not be regarded as defective maize kernels under these regulations."

Foreign matter

The term "foreign matter" means all matter above the sieve other than maize, glass, stones above the sieve, coal, dung or metal.

Other colour

"Other colour maize kernels" in relation to -

(a) white maize, means maize kernels or pieces of maize kernels of which the endosperm as a result of genetic (characteristics) composition have another colour than white, excluding pinked maize kernels;
(b) yellow maize, means maize kernels or pieces of maize kernels of which the endopserm as a result of genetic (characteristics) composition have another colour than yellow.

Total deviation

The term "total deviation" means the sum of defective kernels (above and below the 6.35 mm sieve), foreign matter and other colour kernels.

Pinked kernels

The term "pinked maize kernels" means kernels and pieces of kernels of white maize of which the pericarp or part thereof is shaded red or pink in colour.

The specification, according to the Grading Regulations for classes 1 to 3 of white maize is a maximum of 12%. No specification for yellow maize according to the Grading Regulations.

Fungal infection

Kernels which are mouldy (fungi infected) are reported as defective kernels according to the grading regulations.

"Mouldy" means kernels and pieces of kernels that –
(a) are visibly infected by fungi and are characterised by black, blue, green, yellow or white fungi growthanywhere on the kernel, or are characterised by fungi growth underneath the bran layerof the kernel;
(b) are infected by ear-rot and are characterised by red, pink or brown discolorations. The kernel arepartially to completely infected.

For this survey all samples were also inspected for the visual symptoms of Diplodia and Fusarium infection and reported separately.

Fusarium spp infections are localized on the cob with discoloured maize kernels, which become reddish (light pink to lilac).

Diplodia maydis normally rots the entire maize cob and infected maize kernels are recognized by a light ash colour to black colour that appears at the germ and can infest the whole kernel.

% Cobrot reported are the percentage maize kernels that are both Fusarium and Diplodia infected.

USA GRADING

USA grading was determined in accordance with the method of the American Grading Regulations (United States Department of Agriculture).

There are seven grades or standards in US grading, Grades nos. 1 to 5, sample grade and mixed grade. No.1 is the most desirable followed by no. 2 down to sample grade and mixed grade.

Description of deviations relating to USA grading

Damaged kernels

Kernels and pieces of corn kernels that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mould-damaged, sprout-damaged or otherwise materially damaged.

Heat damaged kernels

Kernels and pieces of kernels which are materially discolored by excessive respiration, with the dark discoloration extending out of the germ through the sides and into the back of the kernel as well as kernels and pieces of kernels which are puffed or swollen and materially discolored by external heat caused by artificial drying methods.

Broken corn and foreign material

Broken corn is all matter that passes readily through a 12/64-inch (4.76 mm) round-hole sieve and over a 6/64-inch (2.38 mm) round-hole sieve.

Foreign material is all matter that passes readily through a 2.38 mm round-hole sieve and all matter other than corn that remains on top of the 4.76 mm round-hole sieve after sieving.

Broken corn and foreign material is all matter that passes readily through a 4.76 mm round-hole sieve and all matter other than corn that remains in the sieved sample after sieving.

Bushel weight

The specific mass (or grain density) of maize (expressed as hectolitre mass or bushel weight) is a quality characteristic which is important to some maize consumers and is applied as a grading factor in the USA grading regulations.

The Test weight per bushel apparatus is used to determine the approximate weight of a bushel of a particular lot of grain.

Bushel weight was determined on the maize crop samples and the results converted to hectoliter mass by multiplication with a factor of 1.2872.

Other colour

Maize samples are deemed to be mixed grade when maize kernels of another colour for white maize exceeds 2% and for yellow maize exceeds 5%.

NUTRITIONAL VALUE

The fat, protein and starch contents are measured with an Infratec 1241 - Generation 3 Standard Version

Whole Grain Analyser. The measurements are based on the fact that the constituents to be measured in the grain, absorb electromagnetic radiation in the near-infrared region of the spectrum. Since the Infratec 1241 Grain Analyser uses transmission absorption, the test is done on intact maize kernels.

The calibration on the Infratec 1241 Grain Analyser (NIT) was checked against international chemical methods for the determination of nutritional values.

The chemical methods used to check the calibration were:
a) Crude fat: Petroleum ether extraction (Soxhlet) method (In house method 024)
b) Crude protein: Dumas (Leco) method (AACCI 46-30.01)
c) Starch: Hydrochloric Acid dissolution method (Polarimeter) (In house method 019)

The results obtained by the Infratec 1241 Grain Analyser (NIT) were checked by analysing every tenth sample by means of the primary methods.

PHYSICAL CHARACTERISTICS

Hectolitre mass

Hectolitre mass means the mass in kilogram per hectolitre. The specific mass (or grain density) of maize expressed as hectolitre mass is influenced by amongst other, factors like cultivar, moisture content, foreign matter, other grain and damaged kernels like insect damaged and immature kernels (See USA grading- Bushel weight).

Hundred (100) kernel mass - Industry accepted method 001

100 kernel mass is the weight in grams of one hundred whole maize kernels and provides a measure of grain size and density.

Kernel size - Industry accepted method 017

Kernel size is important to the sophisticated starch manufacturing industry. Kernels that are too small hamper the separation of kernel fractions in the wet milling process. The result is a lower starch yield. A mixture of small and large kernels causes additional problems, as homogeneous steeping cannot be achieved. On the other hand, very large kernels can also cause problems since the ratio between volume and mass is unfavourable to proper steeping.

The dry milling industry also prefers fairly larger maize kernels. However, uniform kernel size is of particular importance to this industry, since too large kernels create problems especially when mixed with smaller kernels.

Kernel size is less important to the animal feed manufacturing industry. Larger kernels are nevertheless preferred, as small kernels are easily lost during the screening stage of processing. The determination of kernel size comprises the sieving of a 100 g representative whole maize sample through both 8 mm and 10 mm round-hole grading sieves, normally used in the seed industry.

Breakage susceptibility - Industry accepted method 007

Maize is normally cleaned before processing. In the cleaning process, broken kernels are removed together with other impurities, causing losses. Broken kernels are further broken during handling, resulting in excesive grain dust being generated. This creates the potential for dust explosions, health hazards, hygiene problems, etc. Maize containing a high percentage of broken kernels is more prone to insect infestation and is subject to general deterioration.

In the modern dry milling industry, maize is cleaned first and then conditioned by dampening before the germ is removed. Broken kernels cause many problems during these stages of processing. Broken kernels can also lead to a lower extraction of the so-called high-quality products, like samp and maize grits. The presence of many broken kernels cause problems with the fibre and fat content of maize products, for example the various grades of maize meal, because the quantity of germ required to be returned to the milled endosperm cannot be determined accurately.

In the wet milling process broken kernels steep more rapidly than whole kernels and by the time the whole kernels have been sufficiently steeped, the broken kernels have been over-steeped, causing an ineffective separation of protein and starch.

In the livestock feed industry breakability is not an important quality characteristic, except for dust and hygiene reasons.

All samples were subjected to a breakage susceptibility test. After the sample of whole maize

kernels was propelled in a Stein Breakage tester for 4 minutes, the fraction below the 6.35 mm and 4.75 mm sieves was collected and the percentage broken kernels < 6.35 mm and < 4.75 mm was determined.

Stress cracks - Industry accepted method 006

Stress cracks are determined by visual inspection of a certain amount of whole maize kernels examined on top of a light box for small internal cracks in the endosperm. Some kernels may even have two or more internal cracks. Any form of stress may cause internal cracks, for example rapid moisture loss in the field, during harvest or during drying.

MILLING INDEX - Industry accepted method 015

Milling index is an indication of the milling abilities and milling quality of maize kernels where a higher milling index means a higher extraction of the high-grade and most profitable products like samp, maize rice and maize grits (degermed products) that are manufactured from the corneous part of the endosperm. The milling index is an indication of the relative differences between samples tested. The milling index is measured with the Infratec 1241 - Generation 3 Standard Version Grain Analyser.

In previous seasons the samples were analysed by means of the calibration model developed by die Grain Crops Institute of the ARC. This season's samples were analysed by means of the new version of the milling index model developed by the SAGL. The NMI (New Milling Index) model was developed on data acquired from analyses performed on maize cultivar trials over three seasons. These trials included a range of hardness levels. Samples were supplied by the ARC-GCI and by commercial seed breeders for inclusion in the statistical modelling.

Calibrations were done between NIT spectra and various Roff Milling parameters including the ARC Roff milling formula. From these, the best solution was selected based on multivariate regression (Partial Least Square Regression). The samples used for the model were all pure cultivar samples.

MILLING OF MAIZE ON ROFF MAIZE MILL - Industry accepted method 013

The Roff 150 Series maize mill is used to mill representative samples of 500 g. The mill are pre-set to the following specifications: Break 1 roll nip - 0.3 mm, Break 2 roll nip - 0.18 mm and Break 3 roll nip - 0.08 mm. These settings are according to the specifications in the method developed by the ARC Grain Crops Institute. Every mill has three separations, namely germ, grits and maize meal. The grits from Break 1 are transferred to the Break 2 rolls and the grits from Break 2 are transferred to Break 3 rolls.

The following fractions are weighed and determined as percentage: Break 1 meal, Break 2 meal, Break 3 meal and Break 3 grits. Break 1, 2 and 3 germ and bran are combined and then weighed for determination of Bran/Germ %. Break 3 grits are weighed for determination of % Grits. Break 1, 2 and 3 meal are weighed for determination of % extraction total meal.

WHITENESS INDEX - Industry accepted method 004

Whiteness index of white maize meal was determined with the HunterLab ColorFlex 45°/0°. Whiteness is associated with a region or volume in colour space in which objects are recognized as white. The degree of whiteness is measured by the degree of departure of the object from a perfect white. The higher the whiteness index value, the whiter the sample.

Whiteness index was done on unsifted and sifted maize meal obtained from Break 2 and 3 of the Roff mill. The sifted samples were sifted with a 300 µm sieve and then mixed to contain 87% of maize meal > 300 µm and 13% of maize meal < 300 µm.

MYCOTOXIN ANALYSES

Mycotoxins are fungal metabolites, toxic to animals and humans, that are produced by moulds commonly found in almost all types of grain.

350 of the 1000 maize crop samples were tested for Aflatoxin G_1; B_1; G_2; B_2, Fumonisin B_1, B_2 and B_3, Deoxynivalenol, 15-ADON, HT-2 Toxin, T-2 Toxin, Zearalenone and Ochratoxin A by means of a multi-mycotoxin screening method using UPLC - MS/MS.

Limit of quantitation (LOQ) means the lowest concentration level that can be quantified with acceptable presicion and accuracy by the mass spectrometer. A concentration measured below the LOQ is reported as <LOQ.

Limit of detection (LOD) is the lowest concentration level that can be detected but not quantified and is 50% of the LOQ of each mycotoxin. A concentration measured below the LOD is reported as not detected (ND).

GMO (Genetically Modified Organisms)

The EnviroLogix QuickComb kit for bulk grain was used to quantitatively determine the presence of genetically modified maize. The kit is designed to extract and detect the presence of certain proteins at the levels typically expressed in genetically modified bulk maize grain. The procedure prescribed in the EnviroLogix - QuickScan Instruction Manual, Rev 10-04-10 was followed. Results were scanned and interpreted quantitatively with the EnviroLogix QuickScan system.

100 crop samples were tested for Cry1Ab, Cry2Ab and CP4 EPSPS modified maize. Cry1Ab protein in maize is produced from a gene derived from *Bacillus thuringiensis (Bt)*.

GMO Protein/Trait	Event	Trade name / Brand
Cry1Ab	MON810 MON89034 Bt11	YieldGard®
Cry2Ab	MON89034	*in* Genuity™ VT Triple PRO™ SmartStax™
CP4 EPSPS	NK603	Roundup Ready®

sanas
South African National Accreditation System

CERTIFICATE OF ACCREDITATION

In terms of section 22(2) (b) of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act 19 of 2006), read with sections 23(1), (2) and (3) of the said Act, I hereby certify that:-

SOUTHERN AFRICAN GRAIN LABORATORY NPC
Co. Reg. No.: 1997/018518/08

Facility Accreditation Number: **T0116**

is a South African National Accreditation System accredited Testing laboratory provided that all SANAS conditions and requirements are complied with

This certificate is valid as per the scope as stated in the accompanying schedule of accreditation Annexure "A", bearing the above accreditation number for

CHEMICAL AND PHYSICAL ANALYSIS

The facility is accredited in accordance with the recognised International Standard

ISO/IEC 17025:2005

The accreditation demonstrates technical competency for a defined scope and the operation of a laboratory quality management system

While this certificate remains valid, the Accredited Facility named above is authorised to use the relevant SANAS accreditation symbol to issue facility reports and/or certificates

Mr R Josias
Chief Executive Officer
Effective Date: 01 November 2014
Certificate Expires: 31 October 2019

ANNEXURE A

SCHEDULE OF ACCREDITATION

Facility Number: T0116

Permanent Address of Laboratory: Southern African Grain Laboratory (NPC) Grain Building 477 Witherite Road The Willows 0040	**Technical Signatories:**	Ms J Nortjé (All) Ms M Fourie (In-house method 012) Ms M Hammes (Chemical) Ms A de Jager (Nutrients & Contaminants) Ms W Louw (In-House Methods 001, 002, 003, 010, and 026) Ms D Moleke (Rheological) Ms I Terblanche (Rheological) Ms H Meyer (Chemical, Nutrients, Contaminants & Grading) Ms J Kruger (Chemical, excluding In-house method 012) Mr L Badenhorst (Grading) Ms P Modiba (Chemical) Ms M Motlanthe (In-house method 001, 003)
Postal Address: Postnet Suite # 391 Private Bag X 1 The Willows 0041	**Nominated Representative:** **Management Representative:**	Ms S du Preez Ms W Louw
Tel: (012) 807-4019 Fax: (086) 216-7672 E-mail: info@sagl.co.za	Issue No.: Date of Issue: Expiry Date:	24 04 March 2015 31 October 2019

Materials / Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Equipment / Technique Used
CHEMICAL		
Ground Barley	Moisture (Oven Method)	Analytical EBC Method 3.2, Latest Edition (2hour; 130˚C)
Cereal and cereal products specifically- wheat, rice, (hulled paddy), barley, millet, rye and oats as grains, semolina and flour	Moisture (Oven Method)	ICC Std No.110/1, Latest Edition (90 min; 130˚C) (2 hour, 130°C)
Flour, semolina, bread, all kind of grains and cereal products, and food products (except those that are sugar coated)	Moisture (Oven method)	AACCI 44-15.02, Latest Edition (1hour; 130˚C) (72 hour, 103°C)

Field Manager

ANNEXURE A

Facility No.: T0116
Date of Issue: 04 March 2015
Expiry Date: 31 October 2019

Materials / Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Equipment / Technique Used
All flours, cereal grains, oilseeds and animal feeds	Nitrogen and protein (Combustion method - Dumas)	AACCI 46-30.01, Latest Edition
Food stuff	Dietary fibre (total)	In-house method 012
Food stuff and feeds	Carbohydrates (by difference) (calculation) Energy value (calculation) Total digestible nutrition value (calculation)	SOP MC 23
Food stuff and feeds	Determination of ash	In-house method 011
Wheat kernels	Moisture (Oven method)	Government Gazette Wheat Grading Regulation, Latest Edition (72 hour, 103ºC)
Flours of grains, e.g. barley, oats, triticale, maize, rye, sorghum and wheat; oilseeds like soybeans and sunflower, feeds and mixed feeds and foodstuffs	Crude Fat (Ether extraction by Soxhlet)	In-house method 024
Meal and flour of wheat, rye, barley, other grains, starch containing and malted products	Falling number	ICC No 107/1, Latest Edition
NUTRIENTS & CONTAMINANTS		
Vitamin fortified food and feed products and fortification mixes grain based	Vitamin A as all trans Retinol (Saponification) (HPLC)	In-house method 001
Vitamin fortified food and feed products and fortification mixes grain based	Thiamine Mononitrate (HPLC) Riboflavin (HPLC) Nicotinamide (HPLC) Pyridoxine Hydrochloride (HPLC)	In-house method 002
Vitamin fortified food and feed products and fortification mixes grain based	Folic Acid (HPLC)	In-house method 003

Field Manager

ANNEXURE A

Facility No.: T0116
Date of Issue: 04 March 2015
Expiry Date: 31 October 2019

Materials / Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Equipment / Technique Used
Grain based food and feed products (fortified and unfortified) and fortification mixes	Total sodium (Na) Total Iron (Fe) Total zinc (Zn)	In-house method 010
Food and feed	Multi-Mycotoxin: - Aflatoxin G_1, B_1, G_2, B_2 and total - Deoxynivalenol (DON), 15-ADON - Fumonisin B_1, B_2, B_3 - Ochratoxin A - T2, HT-2 - Zearalenone	In-house method 026
GRADING		
Maize	Defective kernels (white maize/yellow maize)	Government Gazette Maize Regulation, Latest Edition
Cereal as grains (wheat, barley, rye and oats)	Hectolitre mass (Kern222)	ISO 7971-3, Latest Edition
Wheat	Screenings	Government Gazette Wheat Grading Regulation, Latest Edition
RHEOLOGICAL		
Wheat flour	Alveograph (Rheological properties)	ICC No 121, Latest Edition
Flours	Farinograph (Rheological properties)	AACCI 54.02, Latest Edition (Rheological behaviour of Flour Farinograph: Constant Flour Weight procedure)
Hard, soft and durum wheat, (flour and whole wheat flour)	Mixograph (Rheological properties)	Industry Accepted Method 020 (based on AACCI 54-40.02, Latest Edition Mixograph Method)

ISSUED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM

Field Manager

AACC INTERNATIONAL

ACCURACY AWARD

FEED ANALYSIS

Southern African Grain Laboratory

Is awarded this certificate for achieving the most accurate and precise results among Series D Check Sample subscribers for 2013

Moisture, Protein, Ash, Crude Fat, Crude Fiber
Calcium, Phosphorus

Executive Vice President

April 22, 2014

President

CERTIFICATE
SERTIFIKAAT

IT IS HEREBY CERTIFIED THAT
HIERMEE WORD GESERTIFISEER DAT

Southern African Grain Laboratory

Die Wilgers, Pretoria

Feeds / Voere

FOR THE PERIOD OF
VIR DIE TYDPERK VAN

9 June 2014

TO
TOT

9 February 2015

PARTICIPATED IN THE PROFICIENCY TEST SCHEME AND THE FOLLOWING ANALYTES HAVE CONFORMED TO 83% PARTICIPATION WITH A Z VALUE <=2, AS SET BY AgriLASA:

DEELGENEEM HET AAN DIE INTERLAB-KONTROLESKEMA EN DIE VOLGENDE ONTLEDINGS HET AAN DIE AgriLASA VOORGESKREWE 83% DEELNAME MET N Z WAARDE VAN <=2 VOLDOEN:

Ash	***Crude Fibre***	***Fat***
Moisture	***Nx6.25-Protein***	***Starch***

FOR AGRILASA

AGRILASA
AGRI LABORATORY ASSOCIATION OF SOUTHERN AFRICA
AGRI LABORATORIUM ASSOSIASIE VAN SUIDELIKE AFRIKA

Prepared and published by Thistle QA on behalf of, and under direction of, AGRILASA. Printed: 06/03/2015

GOVERNMENT NOTICES
GOEWERMENTSKENNISGEWINGS

DEPARTMENT OF AGRICULTURE
DEPARTEMENT VAN LANDBOU

No. R. 473 **8 May 2009**

AGRICULTURAL PRODUCT STANDARDS ACT, 1990
(ACT No. 119 OF 1990)

REGULATIONS RELATING TO THE GRADING, PACKING AND MARKING OF MAIZE INTENDED FOR SALE IN THE REPUBLIC OF SOUTH AFRICA

The Minister of Agriculture, acting under section 15 of the Agricultural Product Standards Act, 1990 (Act No. 119 of 1990),

(a) made the regulations in the Schedule; and

(b) determined that the said regulations shall come into operation on date of publication.

SCHEDULE

Definitions

1. In these regulations any word or expression to which a meaning has been assigned in the Act shall have that meaning and, unless the context otherwise indicates -

"**bag**" means a bag manufactured from -

(a) jute or phormium or a mixture of jute and phormium; or

(b) polypropylene that complies with SABS specification CKS632;

"**bulk container**" means any vehicle or container in which bulk maize is stored or transported-

"**consignment**" means -

(a) a quantity of maize of the same class, which belongs to the same owner, delivered at any one time under cover of the same consignment note, delivery note or receipt note, or delivered by the same vehicle or bulk container, or loaded from the same bin of a grain elevator or from a ship's hold; or

(b) in the case where a quantity referred to in paragraph (a), is subdivided into different grades, each such quantity of each of the different grades;

"**coffee stained maize kernels**" means maize kernels with a shiny brown colour that occurs anywhere on the pericarp of the maize kernel;

"**container**" means a bag or a bulk container;

"**defective maize kernels**" means maize kernels and pieces of maize kernels-

(a) that are shrivelled, obviously immature, frost-damaged, heat damaged, water damaged, mouldy or chalky;

(b) that are discoloured by external factors such as water and sun: Provided that discoloration on both sides of the maize kernel limited to less than a quarter from the bottom tip of the maize kernel shall not be considered as defective; oxidation stained maize kernels; coffee stained maize kernels; and pinked maize kernels shall not be considered as defective;

(c) that have sprouted, including kernels of which the shoot (plumule) in the germ is visibly discoloured;

(d) that have cavities in the germ or endosperm caused by insects or rodents;

(e) that are visibly soiled (smeared) or contaminated by smut, fire, soil, smoke or coal-dust;

(f) all matter that can pass through the 6,35 mm round-hole sieve; and

(g) that are of subspecies other than *Zea mays indentata* or *Zea mays indurata*.

Provided that:

(i) irregularity of shape and size of maize kernels shall not affect the grading thereof;

(ii) chipped or cracked maize kernels or pieces of maize kernels which are in a sound condition and which appear in a sample of maize, but which do not pass through a 6,35 mm round-hole sieve, shall not be regarded as defective maize kernels under these regulations;

"**discoloured maize kernels**" means maize kernels that are as a result of environmental conditions more than 25% discoloured on both sides of the kernel, excluding coffee stained maize kernels, oxidation stained maize kernels and pinked maize kernels;

"**foreign matter**" means all matter above the sieve other than maize, glass, stone, coal, dung or metal;

"**frost damaged**" means maize kernels that are covered with wrinkles on both sides of the kernel to the crown and have a pearl-like appearance. Maize kernels of which the bran is flaking is considered frost damaged if signs of frost damage are present;

"**heat damaged**" means kernels that are as a result of external heat or internal fermentation affected with excess moisture and have at least one of the following characteristics:

(a) Kernels or pieces of kernels that are amber, brown, dark-brown or black discoloured;

(b) Kernels of which the germ has dark-brown to black discoloration;

"**insect**" in relation to maize, means any live insect which is injurious to stored grain, irrespective of the stage of development of the insect;

"**maize**" means the threshed kernels or pieces of kernels of the plants of *Zea mays indurata* and *Zea mays indentata* or one or more crossings of the two types;

"**mouldy**" means kernels or pieces of kernels that-

(a) are visibly infected by fungi and are characterised by black, blue, green, yellow or white fungi growth anywhere on the kernel, or are characterised by fungi growth underneath the bran layer of the kernel;

(b) are infected by ear-rot and are characterised by red, pink or brown discolorations. The kernels are partially to completely infected;

"**other colour maize kernels**" in relation to -

(a) white maize, means maize kernels or pieces of maize kernels of which the endosperm as a result of genetic (characteristics) composition have another colour than white, excluding pinked maize kernels;

(b) yellow maize, means maize kernels or pieces of maize kernels of which the endosperm as a result of genetic (characteristics) composition have another colour than yellow;

"**oxidation stained maize kernels**" means maize kernels with a shiny light brown colour that are discoloured from the crown and not from the tip cap;

"**pinked maize kernels** "means kernels and pieces of kernels of white maize of which the pericarp or part thereof is shaded red or pink in colour;

"**poisonous seeds**" means seeds or part of seeds of plant species that may in terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972) represent a hazard to human or animal health when consumed, including seeds of *Argemone mexicana, Convolvulus* spp., *Crotalaria* spp., *Datura* spp., *Ipomoea* spp. *Lolium temulentum, Ricinus communis* or *Xanthium* spp;

"**shrivelled or obviously immature maize kernels**" means maize kernels with a thin and shrunken appearance;

"**sprouted maize kernels**" means maize kernels which have sprouted so far that developing roots and/or sprouts are clearly visible, or the shoot (plumule) in the germ is visibly discoloured;

"**the Act**" means the Agricultural Product Standards Act, 1990 (Act No. 119 of 1990);

"**the 6,35 mm round-hole sieve**"means a sieve-

(a) with a flat metal sheet bottom of 1,0 mm thickness perforated with round holes of 6,35 mm (± 0,05 mm) in diameter that are arranged with the centres of the holes at the points of intersection of an equilateral triangular grid with a pitch of 8 mm;

(b) of which the upper surface of the bottom is smooth;

(c) the frame of which is at least 40 mm high;

(d) with the inner width of at least 200 mm and the inner length of at least 300 mm, or, in the case of a circular sieve, the inner diameter of at least 278 mm;

(e) with a minimum area of 600cm^2 and a maximum of 750cm^2; and

(f) that fits onto a tray with a solid bottom and must be at least 20mm above the bottom of the tray; and

"**water damaged maize kernels**" means maize kernels with a light yellow shine from the tip cap in a band around the maize kernel.

Scope of regulations

2. These regulations are the minimum standards applicable to maize that are destined for sale in the Republic of South Africa but does not include –

(a) maize in retail quantities; and

(b) maize for seed production purposes.

Restrictions on sale of maize

3. (1) No person shall sell maize in the Republic of South Africa -

(a) unless the maize is sold according to the classes set out in regulation 4;

(b) unless the maize complies with the standards for the class concerned set out in regulation 5;

(c) unless the maize complies with the grades of maize and the standards for grades, where applicable, set out in regulations 6 and 7 respectively;

(d) unless the maize is packed in accordance with the packing requirements set out in regulation 8;

(e) unless the containers or sale documents, as the case may be, are marked in accordance with the marking requirements set out in regulation 9; and

(f) if such maize contains a substance that renders it unfit for human consumption or for processing into or utilisation thereof as food or feed.

(2) The Executive Officer may grant written exemption, entirely or partially to any person on such conditions as he or she may deem necessary, from the provisions of subregulation 1: Provided that such exemption is done in terms of section 3 (1) (c) of the Act.

PART I
QUALITY STANDARDS

Classes of maize

4. The classes of Maize shall be -

(a) Class White Maize;

(b) Class Yellow Maize; and

(c) Class Other Maize.

Standards for classes of maize

5. (1) A consignment of maize shall be classified as Class White Maize if -

(a) subject to the allowable deviation in respect of other colour maize kernels that apply to the different grades of white maize, it consists of maize the endosperm of which is by nature white in colour; and

(b) it complies with the standards for one of the grades of white maize set out in regulation 7.

(2) A consignment of maize shall be classified as Class Yellow Maize if -

(a) subject to the allowable deviation in respect of other colour maize kernels that apply to the different grades of yellow maize, it consists of maize the endosperm of which is by nature yellow in colour; and

(b) it complies with the standards for one of the grades of yellow maize set out in regulation 7.

(3) A consignment of maize shall be classified as Class Other Maize if the consignment does not comply with the standards for Class White Maize or Class Yellow Maize.

Grades of maize

6. (1) Maize of the Class White Maize shall be graded as WM1, WM2 or WM3.

(2) Maize of the Class Yellow Maize shall be graded as YM1, YM2 or YM3.

(3) No grades are determined for Class Other Maize.

Standards for grades of Class White Maize and Class Yellow Maize

7. All grades of maize -

(a) shall be free from a musty, sour or other undesired odour;

(b) shall be free from glass, metal, coal or dung;

(c) shall be free from a substance which renders it unfit for human consumption or for processing into or utilisation thereof as food or feed;

(d) shall be free from insects;

(e) shall be free from stones which cannot pass through the 6,35 mm round-hole sieve;

(f) shall contain not more than one gram of stones, which can pass through the 6,35 mm round-hole sieve, per 10 kg;

(g) shall contain not more poisonous seeds than permitted in terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972);

(h) shall have a moisture content of not more than 14 per cent; and

(i) shall not exceed the maximum percentage of permissible deviation as determined in the table in the Annexure for each grade.

PART II
PACKING AND MARKING REQUIREMENTS

Packing requirements

8. Maize of different classes and grades shall be packed in different containers.

Marking requirements

9. Each container or the accompanying sales document of a consignment of maize shall be marked or endorsed with -

(a) the class of the maize;

(b) the grade, in the case of Class White Maize or Class Yellow Maize; and

PART III
SAMPLING

Obtaining sample

10. (1) A sample of a consignment of maize shall -

(a) in the case of maize delivered in bags and subject to regulation 11, be obtained by sampling at least ten per cent of the bags, chosen from that consignment at random, with a bag probe: Provided that at least 25 bags in a consignment shall be sampled and where a consignment consists of less than 25 bags, all the bags in that consignment shall be sampled; and

(b) in the case of maize delivered in bulk and subject to regulation 10, be obtained by sampling that consignment throughout the whole depth of the layer, in at least six different places, chosen at random in that bulk quantity, with a bulk sampling apparatus.

(2) The collective sample obtained in subregulation (1) (a) or (b) shall -

(a) have a total mass of at least 10 kg; and

(b) be thoroughly mixed by means of dividing before further examination.

(3) If it is suspected that the sample referred to in subregulation (1)(a) is not representative of that consignment, an additional five per cent of the remaining bags, chosen from that consignment
at random, shall be emptied into a suitable bulk container and sampled in the manner contemplated in subregulation (1)(b).

(4) A sample taken in terms of these regulations shall be deemed representative of the consignment from which it was taken.

Sampling if contents differ

11. (1) If, after an examination of the maize taken from different bags in a consignment in terms of regulation 10(1), it appears that the contents of those bags differ substantially -

(a) the bags concerned shall be placed separately;

(b) all the bags in the consignment concerned shall be sampled in order to do such separation; and

(c) each group of bags with similar contents in that consignment shall for the purposes of these regulations be deemed to be a separate consignment.

(2) If, after the discharge of a consignment of maize in bulk has commenced, it is suspected that the consignment could be of a class or grade other than that determined by means of the initial sampling, the discharge shall immediately be stopped and the part of the consignment remaining in the bulk container, as well as the grain that is already in the collecting tray, shall be sampled anew with a bulk sampling apparatus or by catching at least 20 samples at regular intervals throughout the whole offloading period with a suitable container from the stream of grain that is flowing in bulk.

Working sample

12. A working sample shall be obtained by dividing the representative sample of the consignment according to the ICC 101/1 method.

PART IV
DETERMINATION OF OTHER SUBSTANCES

Determination of undesirable odours and harmful substances

13. A sample of a consignment of maize shall be sensorial assessed or chemically analysed in order to determine -

(a) whether it has a musty, sour or other undesirable odour: Provided that a working sample of unscreened maize that is ground in a grain mill to a fine meal may be used for the determination concerned; and

(b) whether it contains a substance that renders the maize unfit for human consumption or for processing into or for utilisation as food or feed.

Determination of glass, metal, coal, dung, stone, poisonous seed and insect content

14. A consignment of maize shall be sensorial assessed and a sample of that consignment shall be sensorial assessed and sorted by hand in order to determine whether the sample contains glass, metal, coal, dung, insects, stones and poisonous seeds.

Determination of percentage of foreign matter

15. The percentage of foreign matter in a consignment of maize shall be determined as follows:

(a) Obtain a working sample with a mass of at least 150g from the sample of the consignment.

(b) Remove all foreign matter from the working sample and determine the mass thereof.

(c) Express the mass thus determined as a percentage of the total mass of the working sample.

(d) Such percentage shall represent the percentage of foreign matter in the consignment concerned.

PART V
MAIZE KERNELS

Determination of percentage of defective maize kernels

16. The percentage of defective maize kernels in a consignment of maize shall be determined as follows:

(a) Obtain a working sample with a mass of at least 150g from the sample of the consignment.

(b) Place the working sample on the 6, 35 mm round-hole sieve and screen the sample by moving the sieve 20 strokes to and fro, alternately away from and towards the operator of the sieve. Move the sieve, which rests on a table or other suitable smooth surface, 250 mm to 460 mm away from and towards the operator with each stroke. The prescribed 20 strokes must be completed within 20 to 30 seconds.

(c) Determine the mass of the matter that has passed through the sieve and express it as a percentage of the mass of the working sample.

(d) Remove all defective maize kernels from that part of the working sample remaining on the sieve and determine the mass thereof.

(e) Express the mass as a percentage of the mass of the working sample.

(f) Calculate the sum of the masses determined in terms of paragraphs (c) and (d).

(g) Express the combined mass calculated in terms of paragraph (f) as a percentage of the mass of the working sample.

(h) In the case of yellow maize the percentage obtained -

(i) in terms of paragraph (c), represents the percentage of defective maize kernels in the consignment concerned, which can pass through the 6,35 mm round-hole sieve; and

(ii) in terms of paragraph (e), represents the percentage of defective maize kernels in the consignment concerned, which can not pass through the 6,35 mm round-hole sieve.

(i) In the case of white maize, the percentage obtained in terms of paragraph (g) represents the percentage of defective maize kernels in the consignment concerned.

Determination of percentage of other colour maize kernels

17. The percentage of other colour maize kernels in a consignment of maize shall be determined as follows:

(a) Obtain a working sample with a mass of at least 150g from the sample of the consignment.

(b) Remove all other colour maize kernels from the working sample and determine the mass thereof.

(c) Express the mass thus determined as a percentage of the mass of the working sample.

(d) Such percentage shall represent the percentage of other colour maize kernels in the consignment concerned.

Determination of percentage of pinked maize kernels

18. The percentage of pinked maize kernels in a consignment of maize shall be determined as follows:

(a) Obtain a working sample with a mass of at least 150g from the sample of the consignment.

(b) Remove all pinked maize kernels from the working sample and determines the mass thereof.

(c) Express the mass thus determined as a percentage of the mass of the working sample.

(d) Such percentage shall represent the percentage of pinked maize kernels in the consignment concerned.

PART VI
MOISTURE CONTENT

Determination of moisture content

19. The moisture content of a consignment of maize may be determined according to any suitable method: Provided that the results thus obtained are in accordance with the maximum permissible deviation for a class 1 moisture meter as detailed in ISO 7700/1based on the results of the 72 hour, 103°C oven dried method (AACC Method 44-15A).

OFFENCE AND PENALTIES

20. Any person who contravenes or fails to comply with any provision of these regulations shall be guilty of an offence and upon conviction be liable to a fine or imprisonment in terms of section 11 of the Act.

ANNEXURE/AANHANGSEL
TABLE/TABEL

STANDARDS FOR GRADES OF CLASS WHITE MAIZE AND CLASS YELLOW MAIZE/
STANDAARDE VIR GRADE VAN KLAS WITMIELIES EN KLAS GEELMIELIES

	Maximum permissible deviation/ Maksimum toelaatbare afwyking					
Deviation/Afwyking	White maize/ Witmielies			Yellow maize/ Geelmielies		
	WM1	WM 2	WM 3	YM1	YM2	YM3
1	2	3	4	5	6	7
1. Foreign matter [regulation 15]/ Vreemde voorwerpe [regulasie 15]	0,3%	0,5%	0,75 %	0,3%	0,5%	0,75%
2. Defective maize kernels, above and below the 6,35 mm round-hole sieve [regulations 16]/ *Gebrekkige mieliepitte, bo en onder die 6,35 mm-rondegatsif [regulasies 16]*	7%	13%	30%	*	*	*
3. Defective maize kernels that can pass through the 6,35 mm round-hole sieve [regulation 16(c)]/ *Gebrekkige mieliepitte wat deur die 6,35 mm rondegastsif kan gaan [regulasie 16(c)]*	*	*	*	4%	10%	30%
4. Defective maize kernels that can not pass through the 6,35 mm round-hole sieve [regulation 16(e)]/ *Gebrekkige mieliepitte wat nie deur die 6,35 mm-rondegatsif kan gaan nie [regulasie 16(e)]*	*	*	*	9%	20%	30%
5. Other colour maize kernels [regulation 17]/ *Mieliepitte van 'n ander kleur [regulasie 17]*	3%	6%	10%	2%	5%	5%
6. Deviations referred to in items 1, 3, 4 and 5 individually within the specified limits/ *Afwykings in items 1, 3, 4 en 5 bedoel,gesamentlik: met dien verstande dat die afwykings individueel binne die gespesifisserde perke is*	8%	16%	30%	9%	20%	30%
7. Pinked maize kernels [regulation 18]/ *Verrooide mieliepitte [regulasie 18]*	12%	12%	12%	*	*	*

* Not specified/Nie gespesifiseer nie.

agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Directorate Food Safety and Quality Assurance Private Bag X258, PRETORIA, 0001 • Tel: +27 12 319 6291

FAX COVER SHEET

TO:	Grain Silo Industry		
ATTENTION:	Mr. Dirk Kok		
FAX:	012 348 2980		
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TEL:	(012) 319 6291	REF NO:	20/4/14/1 / Dispensation
FAX:	(012) 319 6055	SERIAL NO:	
NO. PAGES:	1	DATE:	15 April 2010

Subject

INDUSTRY-WIDE DISPENSATION: AMENDMENT OF THE REGULATION RELATING TO THE GRADING, PACKING AND MARKING OF MAIZE INTENDED FOR SALE IN THE REPUBLIC OF SOUTH AFRICA.

Please refer to the e-mail dated 29th March 2010 from Grain Silo Industry

Permission is hereby granted by the Executive Officer: Agricultural Product Standards, in terms of Section (3) of the Agricultural Products Standards Act, 1990 (Act No. 119 of 1990), to all producers, wholesalers, traders, retailers and importers of Maize to sell and import maize whereby the definition of "Foreign matter" is amended in the English version in order to align it to the Afrikaans one of the above mentioned Regulation to read as follows : ***"Foreign matter" means all matter other than maize, glass, stones above the sieve, coal, dung or metal.***

This dispensation is extended further to apply to item 6 of the Annexure in the Table relating to Standards for grades of Class White and Yellow maize which is amended and replaced with the following item: Provided that all provisions of the regulations shall be complied with:

ANNEXURE/AANHANGSEL

TABLE/TABEL

STANDARDS FOR GRADES OF CLASS WHITE MAIZE AND CLASS YELLOW MAIZE/
STANDAARDE VIR GRADE VAN KLAS WITMIELIES EN KLAS GEELMIELIES

	Maximum permissible deviation/ Maksimum toelaatbare afwyking					
Deviation/Afwyking	White maize/ Witmielies			Yellow maize/ Geelmielies		
	WM 1	WM2	WM3	YM1	YM2	YM3
1	2	3	4	5	6	7
6. Deviations referred to in items 1, 2, 3, 4 and 5 collectively: Provided that the deviations are individually within the specified limits/Afwykings in items 1, 2, 3,4 en 5 bedoel, gesamentlik: Met dien verstande dat die afwykings individueel binne die gespesifiseerde perke is	8%	16%	30%	9%	20%	30%

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This permission is subject to the following conditions:

(a) All other conditions of the regulations shall be complied with.

(b) It may be withdrawn at any time should a valid complaint be received

(c) All producers, wholesalers, traders, retailers and importers of Maize, Indemnifies this Directorate and the Department from any detrimental effect, financially or otherwise, which may emanate as a result of this permission.

(d) Termination date: until the regulation is reviewed and gazetted.

EXECUTIVE OFFICER:
AGRICULTURAL PRODUCT STANDARDS ACT, NO. 119 OF 1990
Copies: APIS : NPPIS North – Attention: Jimmy Mogodi