South African Maize Crop

Quality Report
2016/2017 Season

Index

Compiled and issued by:
The Southern African Grain Laboratory NPC

Grain Building - Agri-Hub Office
477 Witherite Road
The Willows
Pretoria
SOUTH AFRICA

PostNet Suite # 391
Private Bag X 1
The Willows
0041

Tel: +27 (12) 807 4019
Fax: +27(12) 807 4160
E-mail: info@sagl.co.za
Website: www.sagl.co.za

South African

COMMERCIAL MAIZE QUALITY 2016/2017

Acknowledgments

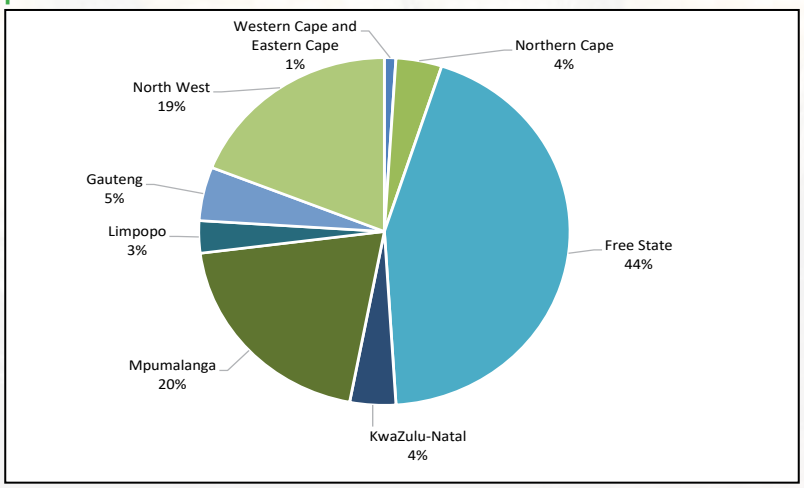
With gratitude to:

- *The Maize Trust for financial support in conducting this survey.*
- *Agbiz Grain and its members for providing the samples to make this survey possible.*
- *The Crop Estimates Committee (CEC) of the Department of Agriculture, Forestry and Fisheries for providing production related figures.*
- *South African Grain Information Service (SAGIS) for providing supply and demand figures relating to maize and maize products.*
- *The Bureau for Food and Agricultural Policy (BFAP) for providing research based market analysis.*
- *South African Weather Service for providing seasonal climate watch and rainfall information.*

Introduction

During the harvesting season (April to August 2017), a representative sample of each delivery of maize at the various silos was taken according to the prescribed grading regulation. The sampling procedure for the samples used in this survey is described on page 92. A total of 1 000 composite samples, representing white and yellow maize of each production region, were received and analysed for quality. The samples consisted of 549 white and 451 yellow maize samples.

Graph 1: Contribution of the nine provinces to the 2016/2017 maize crop production



Figures provided by the CEC.

The quality attributes which were tested for, include:

1. RSA grading: All samples were graded according to the following factors, as defined in the South African grading regulation: defective kernels above and below the 6.35 mm sieve, total defective kernels, foreign matter, other colour kernels, combined deviations and pinked kernels.
2. USA grading according to regulation on all samples to determine the following factors: Test weight per bushel (pounds), heat damaged kernels, total damaged kernels, broken corn and foreign matter (BCFM) and other colour.
3. Nutritional values (on all samples): Moisture, crude protein, crude fat and starch.
4. Physical Quality factors (on all samples): Test weight (kg/hl), 100 kernel mass, kernel size, breakage susceptibility, stress cracks, milling index and grit yield all.
5. All white maize samples were milled on the Roff laboratory mill and the whiteness index of the maize meal determined.

Mycotoxin analyses were performed on 350 samples representative of white and yellow maize produced per region.

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 pages 92 - 96 for the methodologies followed.

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 a number of proficiency testing schemes, both nationally and internationally, as part of our ongoing quality assurance procedures to demonstrate technical competency and international comparability.

The results of this, as well as previous surveys are available on the SAGL website (www.sagl.co.za). Hard copy reports are distributed to all stakeholders 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 figures over several years are provided in table and graph format, as is import and export data. Information on the manufacture, import and export of maize products is also included in this report. The national grading regulations as published in the Government Gazette of 8 May 2009, are provided (pages 124 to 134), as is seasonal climate watch data from the South African Weather Service.

The goal of this crop quality survey is to accumulate quality data on the commercial maize crop on a national level. This valuable data reveals 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. During seasons when maize is imported for domestic use, the quality of the imported maize can also be compared to that of locally produced maize.

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 and 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). Data is added annually to this data set.

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.

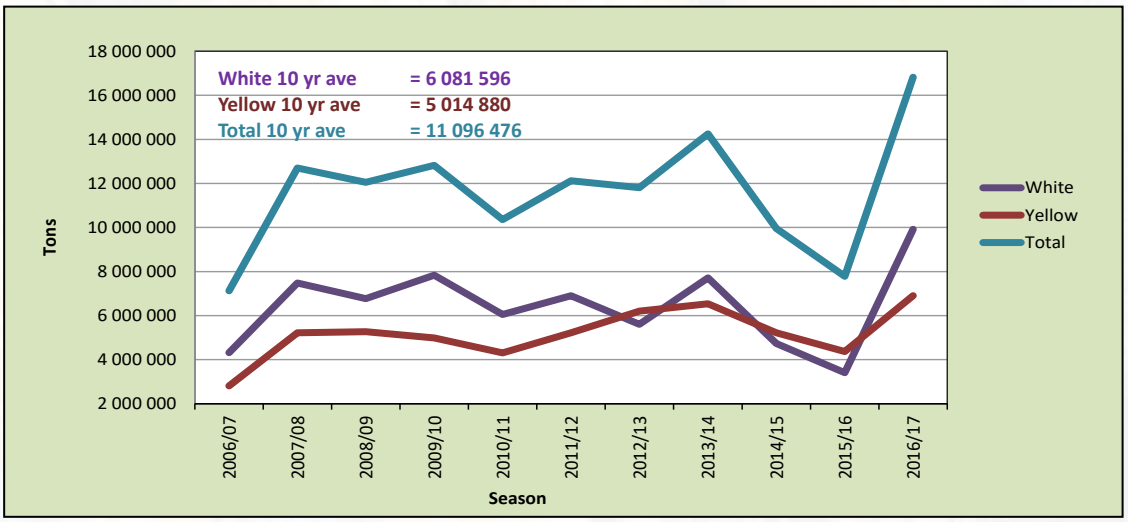
The project outcome provides a decision-making tool to the maize industry stakeholders to assist in the identification of potential problem areas in maize quality and to focus future research activities.

Production

The finalized crop figure for commercial maize for the 2016/2017 season as overseen by the National Crop Estimates Liaison Committee (CELC) is 16 820 000 tons. This all-time high record crop is more than double that of the severely drought affected 2015/2016 season and 51.6% higher than the previous 10-year crop average (11 096 476 tons). White maize's contribution to the total production was 9 916 000 tons (59%) and that of yellow maize 6 904 000 tons (41%).

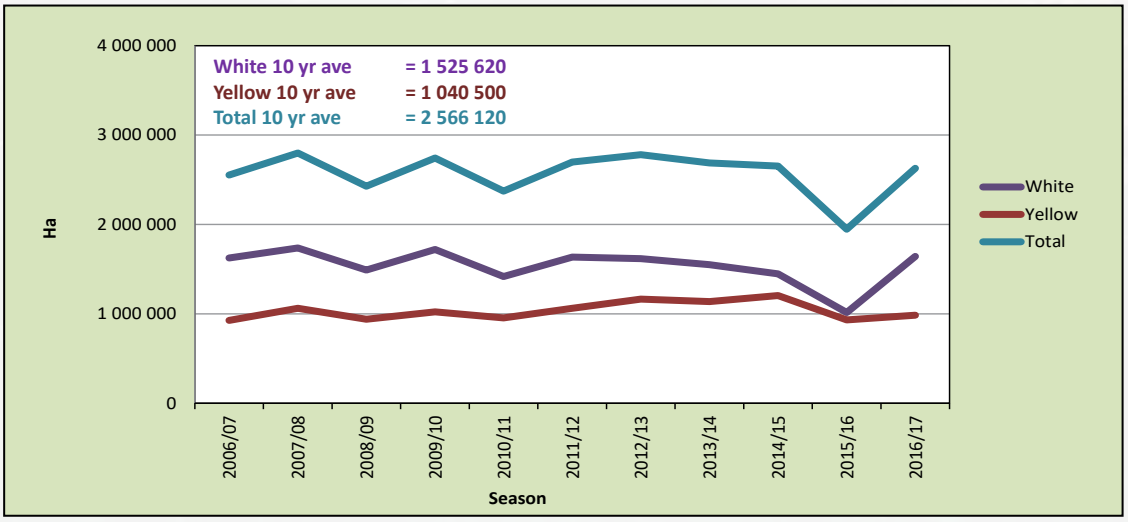
The national Crop Estimates Committee's (CEC) estimated total production figures were revised, using as basis for the calculations, the South African Grain Information Services' (SAGIS) published figures of actual deliveries. Figures to determine on-farm usage and retentions from the maize utilization 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.

Graph 2: Maize production in RSA from 2006/2007 to 2016/2017



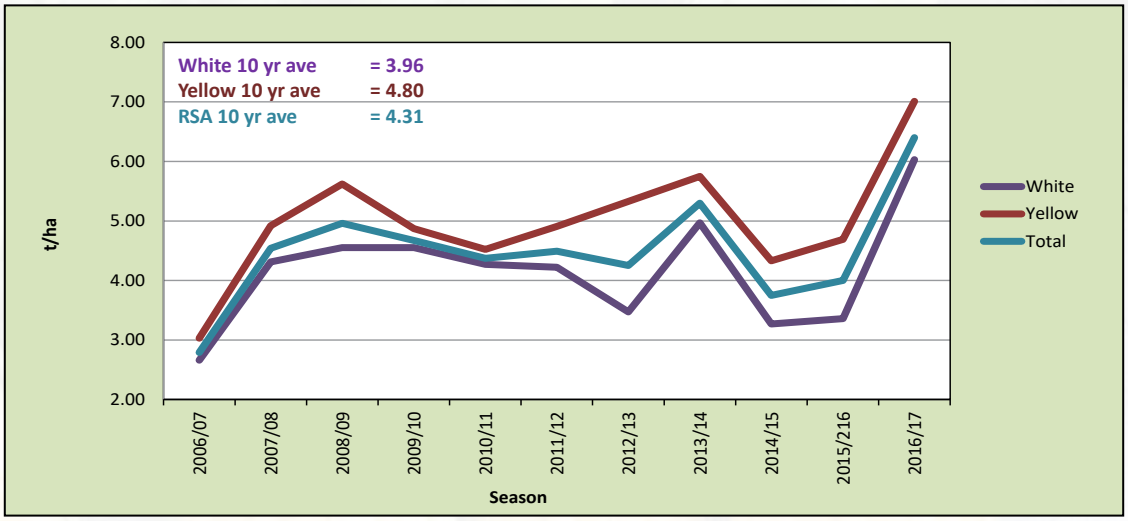
The total area utilized for maize production in the 2016/2017 season was 2 628 600 hectares, an increase of 35% compared to the previous season and 2.4% higher than the previous 10-year average. White maize was planted on 1 643 100 hectares and yellow maize on 985 500 hectares (1 014 750 and 932 000 hectares respectively in the 2015/2016 season).

Graph 3: Total RSA area utilized for maize production from 2006/2007 to 2016/2017



The maize yield also reached an all-time high of 6.40 t/ha this season compared to the 4.00 t/ha in the previous season and a 4.31 t/ha 10-year average. White maize yielded 6.03 t/ha and yellow maize 7.01 t/ha.

Graph 4: RSA Maize yield from 2006/2007 to 2016/2017



As with commercial maize production, both the area planted as well as the crop size of maize planted in the non-commercial agricultural sector increased compared to the previous season. The expected maize crop for this sector is 731 000 tons. Approximately 64% of non-commercial maize is produced in the Eastern Cape.

Table 1: Maize production overview - 2016/2017 season

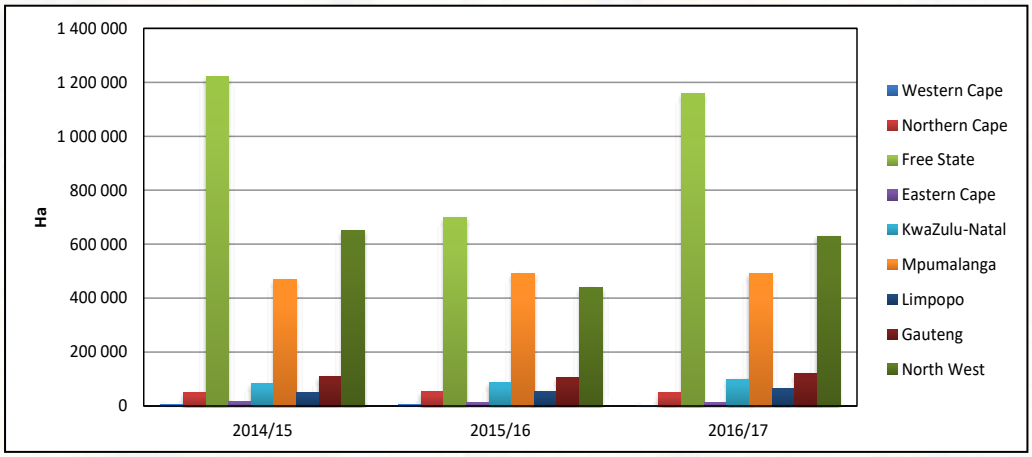
Province	Type of production	White			Yellow		
		Hectares planted, ha	Production, tons	Yield, t/ha	Hectares planted, ha	Production, tons	Yield, t/ha
Western Cape	Dryland	-	-	-	-	-	-
	Irrigation	200	2 000	10.00	2 000	20 000	10.00
	Total	200	2 000	10.00	2 000	20 000	10.00
Northern Cape	Dryland	-	-	-	-	-	-
	Irrigation	3 500	46 200	13.20	45 000	666 000	14.80
	Total	3 500	46 200	13.20	45 000	666 000	14.80
Free State	Dryland	770 000	4 723 400	6.13	335 000	2 034 000	6.07
	Irrigation	35 000	386 600	11.05	20 000	218 000	10.90
	Total	805 000	5 110 000	6.35	355 000	2 252 000	6.34
Eastern Cape	Dryland	3 050	15 860	5.20	5 900	28 500	4.83
	Irrigation	1 350	14 940	11.07	3 600	38 000	10.56
	Total	4 400	30 800	7.00	9 500	66 500	7.00
KwaZulu-Natal	Dryland	39 000	231 750	5.94	35 000	230 000	6.57
	Irrigation	11 000	118 250	10.75	15 000	160 000	10.67
	Total	50 000	350 000	7.00	50 000	390 000	7.80
Mpumalanga	Dryland	149 500	973 500	6.51	308 000	2 105 000	6.83
	Irrigation	10 500	114 500	10.90	22 000	237 500	10.80
	Total	160 000	1 088 000	6.80	330 000	2 342 500	7.10
Limpopo	Dryland	18 000	63 500	3.53	8 000	27 000	3.38
	Irrigation	22 000	236 500	10.75	16 000	165 000	10.31
	Total	40 000	300 000	7.50	24 000	192 000	8.00
Gauteng	Dryland	54 000	320 000	5.93	54 600	352 000	6.45
	Irrigation	6 000	70 000	11.67	5 400	62 000	11.48
	Total	60 000	390 000	6.50	60 000	414 000	6.90
North West	Dryland	487 000	2 244 250	4.61	100 000	456 000	4.56
	Irrigation	33 000	354 750	10.75	10 000	105 000	10.50
	Total	520 000	2 599 000	5.00	110 000	561 000	5.10
RSA	Dryland	1 520 550	8 572 260	5.64	846 500	5 232 500	6.18
	Irrigation	122 550	1 343 740	10.96	139 000	1 671 500	12.03
	Total	1 643 100	9 916 000	6.03	985 500	6 904 000	7.01

Figures provided by the CEC.

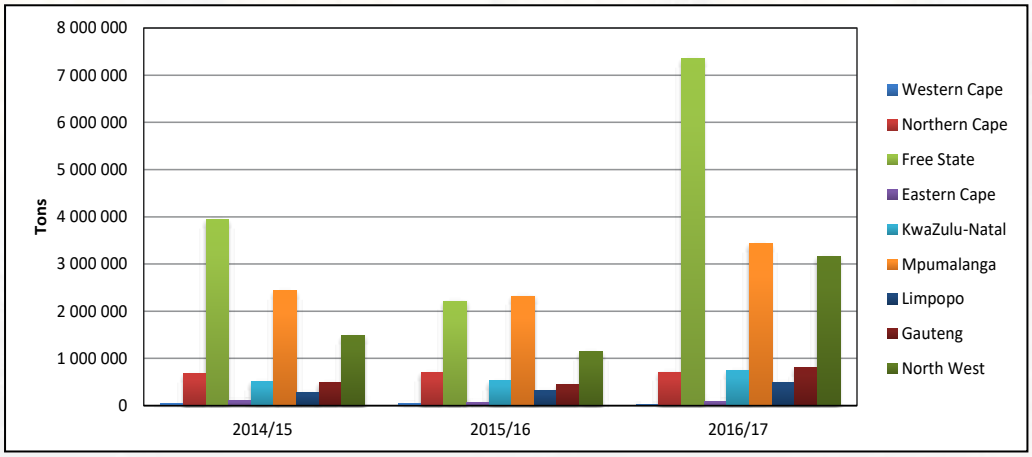
The major commercial maize-producing provinces are the Free State, Mpumalanga and North West, contributing 83% of the total maize production in the RSA. The Free State produced 7 362 000 tons of maize on 1 160 000 hectares with a yield of 6.35 t/ha. Mpumalanga produced 3 430 500 tons of maize on 490 000 hectares with a yield of 7.00 t/ha and North West harvested 3 160 000 tons of maize on 630 000 hectares yielding 5.02 t/ha. Yellow maize contributed 68% of the total maize production in Mpumalanga while the majority of maize produced in the North West (82%) and Free State (69%) was white.

Please see graphs 5 to 7 for provincial figures for area planted, production and yield over the last three seasons.

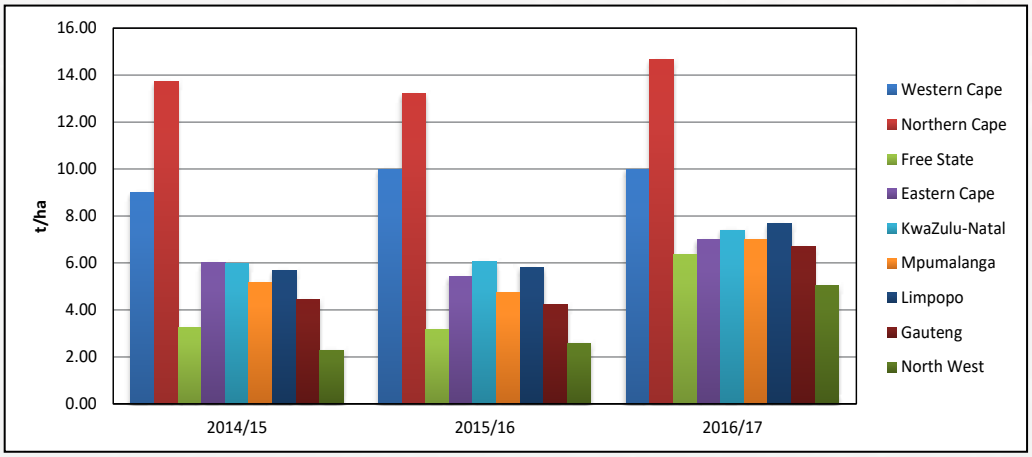
Graph 5: Area utilized for maize production per province over three seasons



Graph 6: Maize production per province over three seasons



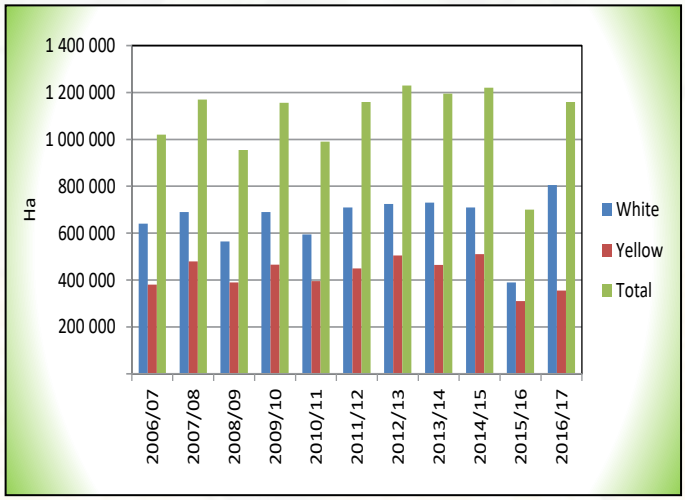
Graph 7: Maize yield per province over three seasons



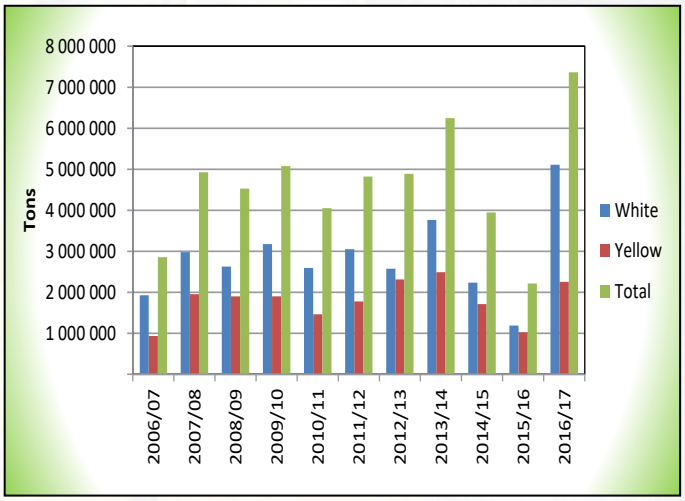
Figures provided by the CEC.

Graphs 8 to 13 provide an overview of the area planted and production figures for the Free State, Mpumalanga and North West from the 2006/2007 to 2016/2017 seasons.

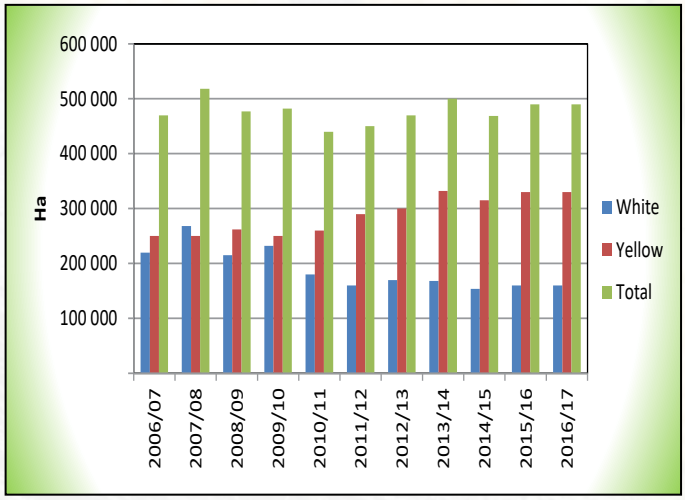
Graph 8: Area utilized for maize production in the Free State since 2006/2007



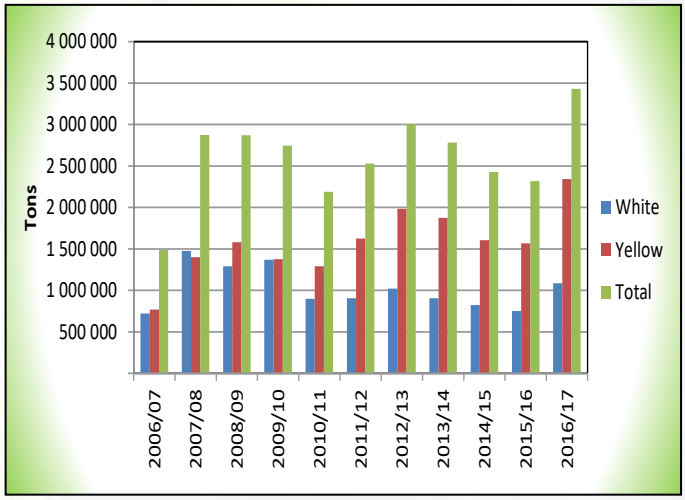
Graph 9: Maize production in the Free State since 2006/2007



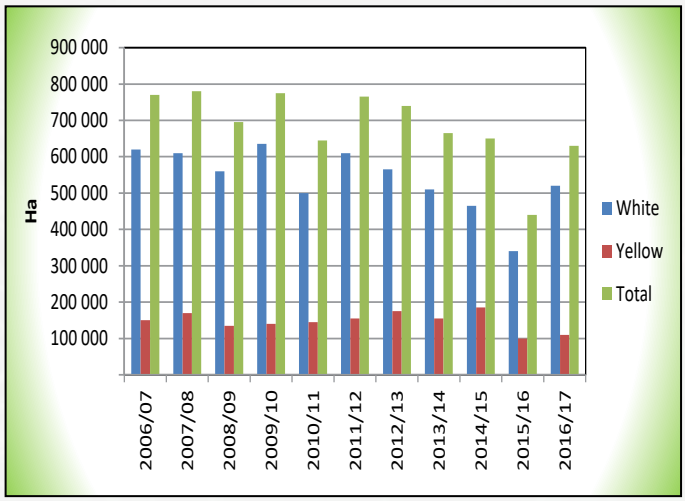
Graph 10: Area utilized for maize production in Mpumalanga since 2006/2007



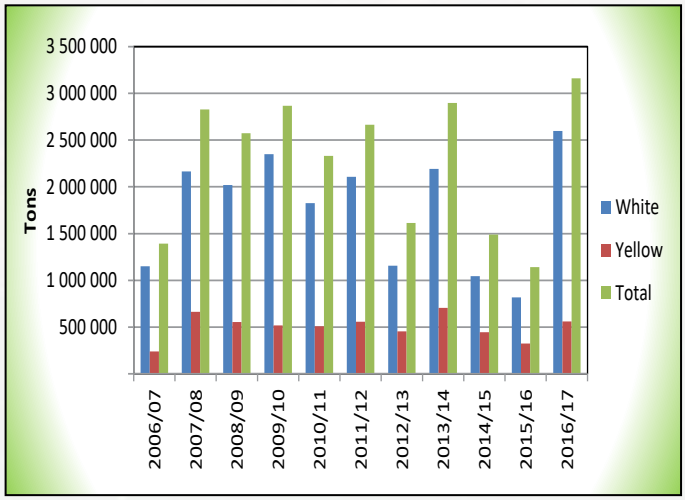
Graph 11: Maize production in Mpumalanga since 2006/2007



Graph 12: Area utilized for maize production in North West since 2006/2007



Graph 13: Maize production in North West since 2006/2007



Figures provided by the CEC.

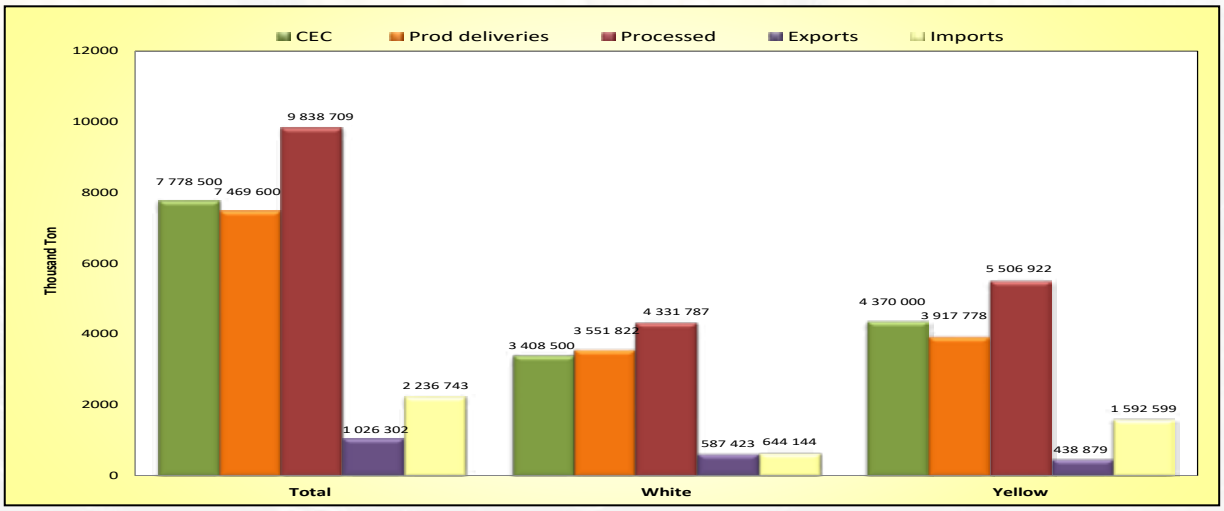
Supply and Demand

World maize production for the 2016/2017 season is estimated at 1 087.6 million tons according to the *International Grains Council Grain Market Report GMR 487 – 26 April 2018*, with the major maize producing countries being the USA, China and Brazil. The USA, Argentina, Ukraine and Brazil are the biggest exporters of maize. Maize usage figures are estimated at 119.5, 279.9 and 603.6 million tons respectively for food, industrial and feed purposes. World production for the 2017/2018 season is forecasted at 1 045.9 million tons and the 2018/2019 figure is projected to be 1 054.1 million tons.

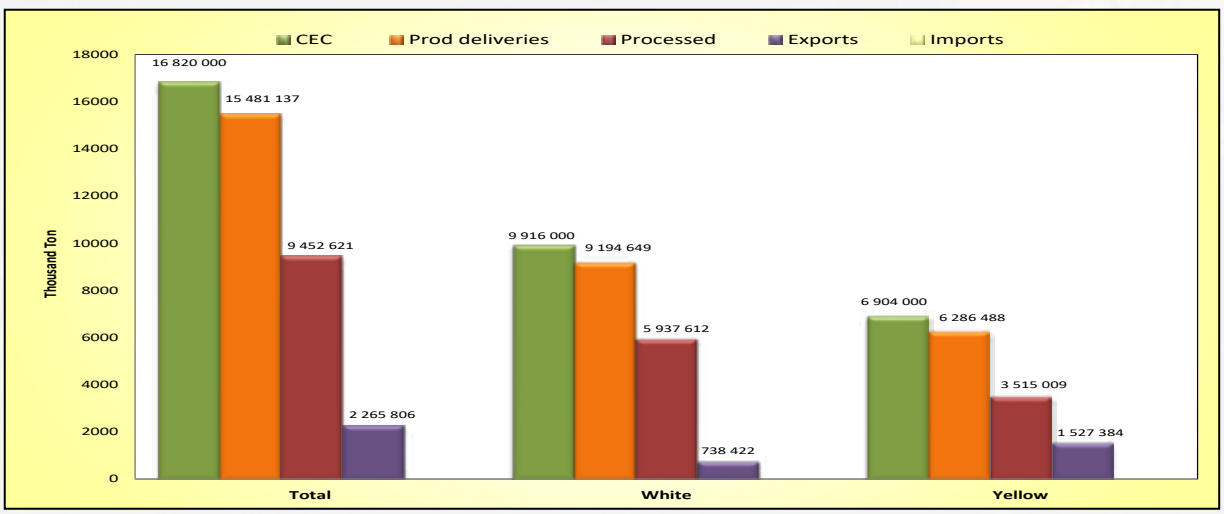
According to the *BFAP Agricultural Outlook 2017 – 2026*, total maize area is expected to be 2.7 million hectares by 2026, 2.3 million hectares of which will be cultivated by the commercial sector and the remainder by small scale producers. Yellow maize and oilseed area continues to expand at the expense of white maize, enabling commercial yellow maize area to exceed that of white maize in the later years of the outlook period. Yellow maize production is projected to increase annually by on average 3% over the next ten years and exceed 8.5 million tons by 2026. This is due to a combination of area expansion and yield growth. Both white and yellow maize are expected to produce exportable surpluses over the next ten years, stable weather permitted. The size of the yellow maize surplus is however expected to decline over this period. Demand for maize as animal feed is expected to increase by an annual average of 2.3% per annum over the next 10 years, to exceed 6.5 million tons by 2026.

Due to the record local crop no maize where imported during the period May 2017 to April 2018. Please see graphs 28 and 29 on pages 14 and 15 for the major destinations of exported white and yellow South African maize. Local Supply and Demand figures compiled by SAGIS is provided in graphs and tables below and on pages 8 to 13.

Graph 14: Maize supply and demand overview 2016/2017 marketing season



Graph 15: Maize supply and demand overview 2017/2018 marketing season



Information provided by SAGIS.

South African Grain Information Service NPC
Suid Afrikaanse Graaninligtingsdiens NWM
Reg no. 1997/019186/08

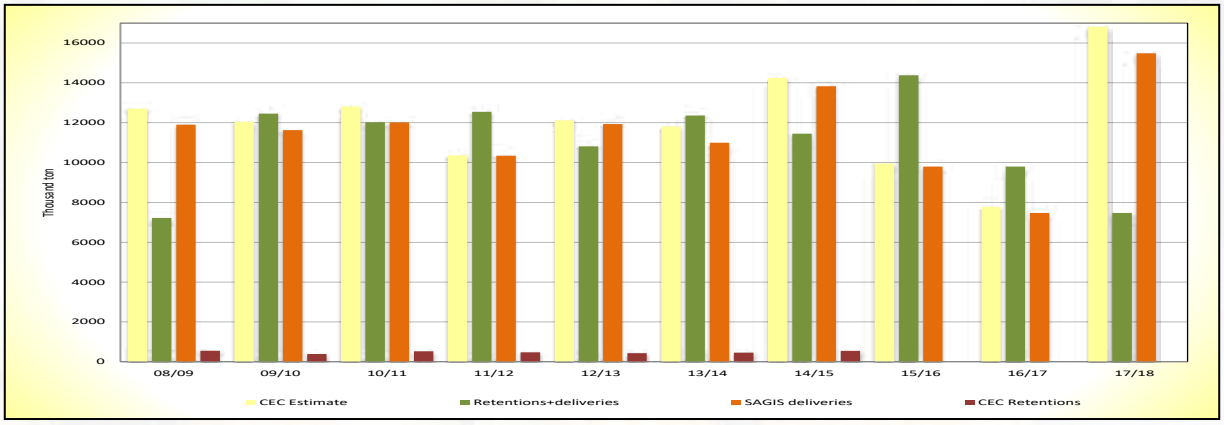
TOTAL MAIZE: SUPPLY AND DEMAND TABLE BASED ON SAGIS' INFO (TON)

Publication date: 2018-04-25

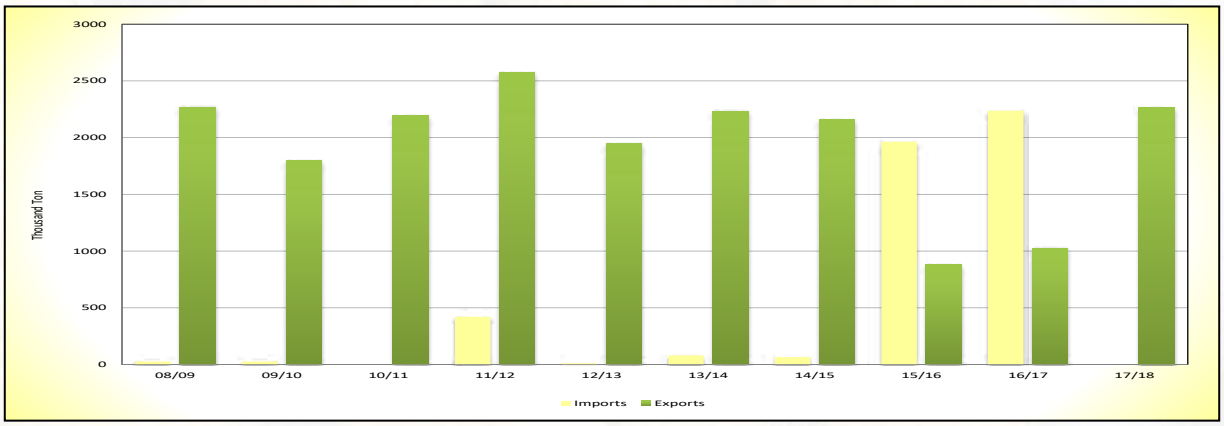
	Marketing Season (May - Apr)																		Current Season May - Feb	10 Year average
Season	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	2007/8-2016/17
																			***	
																			10	
CEC (Crop Estimate)	6 716 000	10 141 000	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	9 955 000	7 778 500	16 820 000	11 096 476
CEC (Retention)	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	0	0	0	420 181
SUPPLY																				
Opening stock (1 May)	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	2 073 635	2 471 067	1 094 638	1 671 212
Prod deliveries*	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	13 827 632	9 794 332	7 469 600	15 481 137	10 677 856
Imports	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	65 250	1 963 610	2 236 743	0	595 129
Surplus	0	0	0	0	40 000	0	0	32 000	29 000	30 000	68 000	77 000	54 000	42 000	122 608	26 153	52 930	44 417	45 507	54 611
Total Supply	**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**	**14 508 063**	**13 884 507**	**12 221 827**	**16 621 282**	**12 998 808**
DEMAND																				
Processed	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	9 926 519	10 248 994	9 838 709	9 452 621	9 139 589
-human	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	4 840 021	4 698 482	4 809 221	4 560 794	4 525 803
-animal/industrial	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	5 040 647	5 520 248	5 003 810	4 863 969	4 556 900
-gristing	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	45 851	30 264	25 678	27 858	56 886
-bio-fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Withdrawn by producers	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	124 508	76 888	94 948	93 727	177 325
Released to end-consumers	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	205 577	186 296	157 460	165 414	314 577
Net receipts(-)/disp(+)	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	22 100	21 451	9 770	6 320	32 836
Deficit	79 000	168 000	156 000	14 000	0	49 000	12 000	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Exports	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	2 155 724	879 811	1 026 302	2 265 806	1 760 843
Products	**0**	**65 000**	**54 000**	**118 000**	**89 000**	**100 000**	**94 000**	**49 000**	**62 000**	**107 000**	**126 000**	**128 000**	**129 000**	**133 000**	**176 978**	**198 319**	**186 383**	**189 112**	**175 303**	**143 579**
African Countries	**0**	**28 000**	**38 000**	**61 000**	**34 000**	**48 000**	**56 000**	**28 000**	**35 000**	**67 000**	**87 000**	**84 000**	**86 000**	**95 000**	**123 040**	**137 742**	**132 900**	**144 229**	**105 729**	**99 191**
Other Countries	**0**	**37 000**	**16 000**	**57 000**	**55 000**	**52 000**	**38 000**	**21 000**	**27 000**	**40 000**	**39 000**	**44 000**	**43 000**	**38 000**	**53 938**	**60 577**	**53 483**	**44 883**	**69 574**	**44 388**
Whole maize	**0**	**1 423 000**	**1 281 000**	**1 070 000**	**1 096 000**	**732 000**	**2 143 000**	**548 000**	**472 000**	**2 162 000**	**1 670 000**	**2 066 000**	**2 446 000**	**1 813 000**	**2 055 618**	**1 957 405**	**693 428**	**837 190**	**2 090 503**	**1 617 264**
Border Posts	**0**	**352 000**	**752 000**	**1 033 000**	**950 000**	**591 000**	**1 311 000**	**488 000**	**472 000**	**1 332 000**	**703 000**	**629 000**	**584 000**	**613 000**	**921 454**	**691 659**	**684 834**	**804 322**	**536 088**	**743 527**
Harbours	**0**	**1 071 000**	**529 000**	**37 000**	**146 000**	**141 000**	**832 000**	**60 000**	**0**	**830 000**	**967 000**	**1 437 000**	**1 862 000**	**1 200 000**	**1 134 164**	**1 264 326**	**8 594**	**32 868**	**1 554 415**	**873 595**
Total Demand	**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**	**12 434 428**	**11 413 440**	**11 127 189**	**11 983 888**	**11 425 171**
Ending Stock (30 Apr)	**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**	**2 073 635**	**2 471 067**	**1 094 638**	**4 637 394**	**1 573 637**
- processed p/month	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	827 210	854 083	819 892	859 329	761 642
- months' stock	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	2.5	2.9	1.3	5.4	2

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

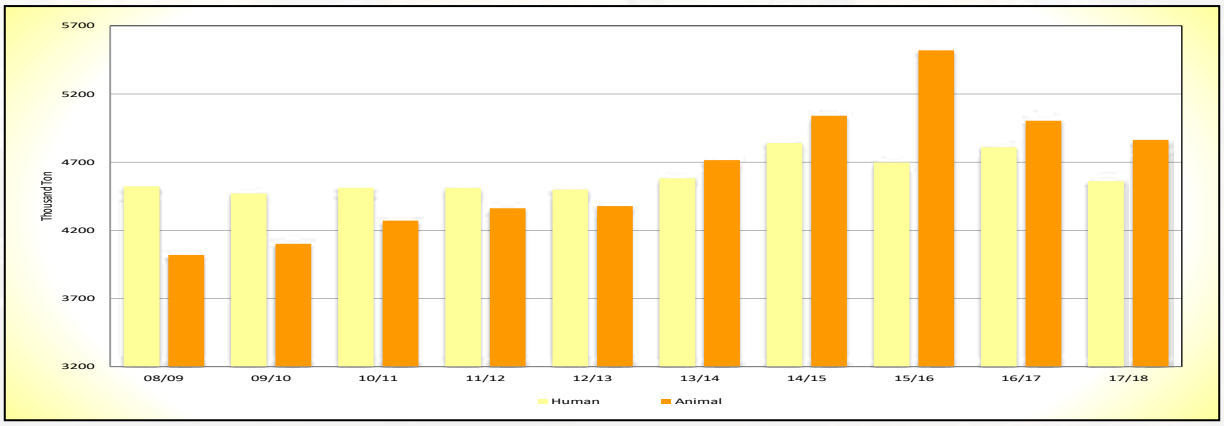
Graph 16: Maize: CEC Estimate, Retentions and SAGIS deliveries over 10 marketing seasons



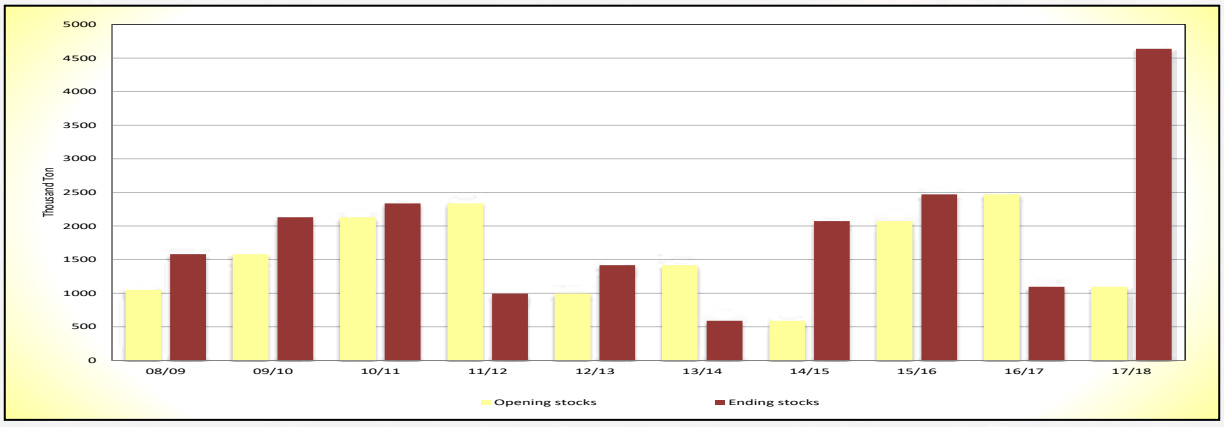
Graph 17: Maize: Imports and exports over 10 marketing seasons



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 NPC
Suid Afrikaanse Graaninligtingsdiens NWM
Reg no. 1997/019186/08

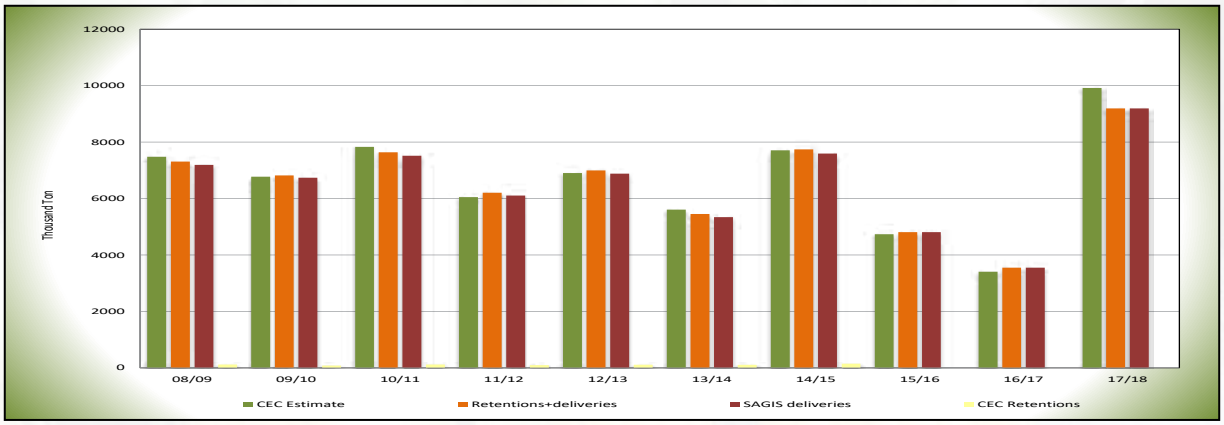
WHITE MAIZE: SUPPLY AND DEMAND TABLE BASED ON SAGIS' INFO (TON)

Publication date: 2018-04-25

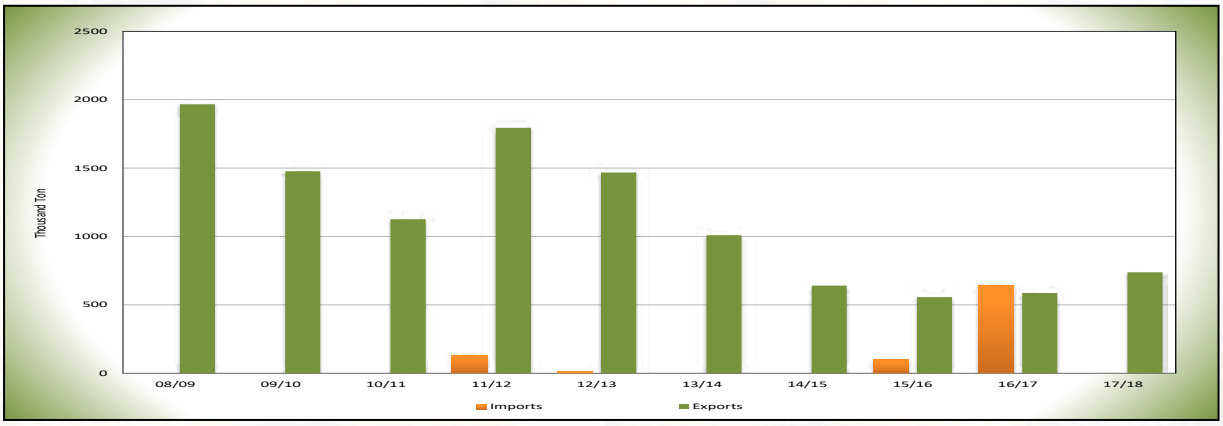
	Marketing Season (May - Apr)																		Current Season May - Feb	10 Year average
Season	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	2007/8-2016/17
																			***	
																			11	
CEC (Crop Estimate)	4 141 000	6 155 000	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	4 735 000	3 408 500	9 916 000	6 081 596
CEC (Retention)	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	0	0	0	80 791
SUPPLY																				
Opening stock (1 May)	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	1 282 581	1 307 867	597 837	1 012 098
Prod deliveries*	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	7 592 893	4 808 279	3 551 822	9 194 649	6 003 420
Imports	0	0	47 000	274 000	33 000	0	0	1 000	46 000	0	0	0	133 000	11 000	0	0	100 803	644 144	0	93 495
Surplus	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	8 808	17 474	31 994	23 054	30 514
Total Supply	**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**	**7 876 019**	**6 209 137**	**5 535 827**	**9 815 540**	**7 257 343**
DEMAND																				
Processed	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	5 862 438	4 319 697	4 331 787	5 937 612	4 984 260
-human	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	4 361 295	4 183 067	4 232 583	4 066 212	4 114 139
-animal/industrial	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	1 469 002	118 522	86 153	1 859 560	825 560
-gristing	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	32 141	18 108	13 051	11 840	44 560
-bio-fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Withdrawn by producers	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	36 940	13 385	14 083	32 854	58 582
Released to end-consumers	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	38 934	13 987	5 660	27 780	68 758
Net receipts(-)/disp(+)	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	14 319	-2 862	-963	6 008	13 445
Deficit	58 000	121 000	112 000	0	0	38 000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Exports	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	640 807	557 063	587 423	738 422	1 105 622
Products	**0**	**54 000**	**52 000**	**73 000**	**65 000**	**44 000**	**58 000**	**20 000**	**31 000**	**69 000**	**69 000**	**77 000**	**60 000**	**68 000**	**82 877**	**93 307**	**83 636**	**41 042**	**56 691**	**67 486**
African Countries		**17 000**	**37 000**	**37 000**	**22 000**	**23 000**	**51 000**	**14 000**	**24 000**	**57 000**	**58 000**	**62 000**	**47 000**	**56 000**	**72 032**	**77 930**	**73 061**	**36 573**	**48 351**	**56 360**
Other Countries		**37 000**	**15 000**	**36 000**	**43 000**	**21 000**	**7 000**	**6 000**	**7 000**	**12 000**	**11 000**	**15 000**	**13 000**	**12 000**	**10 845**	**15 377**	**10 575**	**4 469**	**8 340**	**11 127**
Whole maize	**0**	**807 000**	**760 000**	**744 000**	**1 004 000**	**668 000**	**1 786 000**	**460 000**	**400 000**	**1 897 000**	**1 408 000**	**1 049 000**	**1 734 000**	**1 400 000**	**926 046**	**547 500**	**473 427**	**546 381**	**681 731**	**1 038 135**
Border Posts		**319 000**	**671 000**	**737 000**	**881 000**	**527 000**	**1 210 000**	**400 000**	**400 000**	**1 241 000**	**566 000**	**509 000**	**439 000**	**462 000**	**727 989**	**538 128**	**473 427**	**520 200**	**376 981**	**587 674**
Harbours		**488 000**	**89 000**	**7 000**	**123 000**	**141 000**	**576 000**	**60 000**	**0**	**656 000**	**842 000**	**540 000**	**1 295 000**	**938 000**	**198 057**	**9 372**	**0**	**26 181**	**304 750**	**450 461**
Total Demand	**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**	**6 593 438**	**4 901 270**	**4 937 990**	**6 742 676**	**6 230 666**
Ending Stock (30 Apr)	**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**	**1 282 581**	**1 307 867**	**597 837**	**3 072 864**	**908 860**
- processed p/month	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	488 537	359 975	360 982	539 783	415 360
- months' stock	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	2.6	3.6	1.7	5.7	2

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

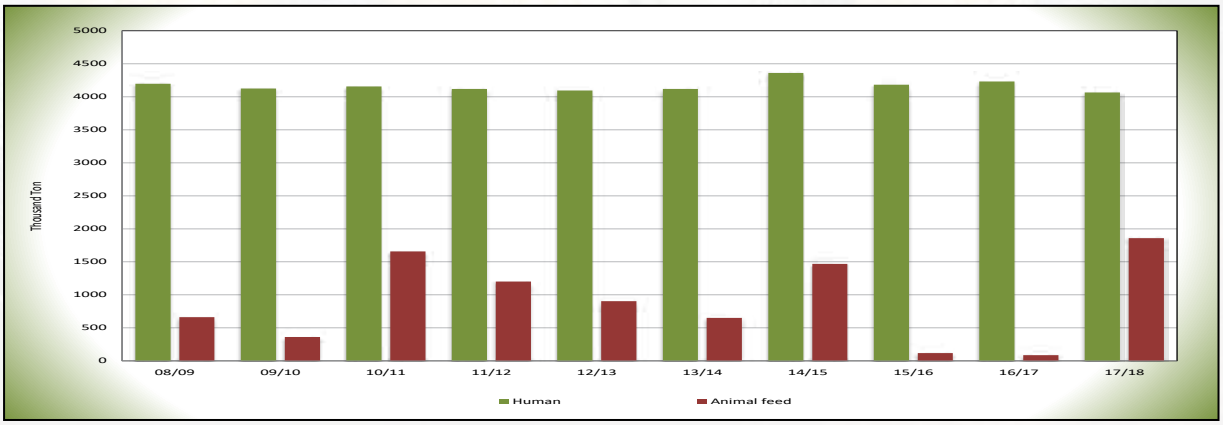
Graph 20: White Maize: CEC Estimate, Retentions and SAGIS deliveries over 10 marketing seasons



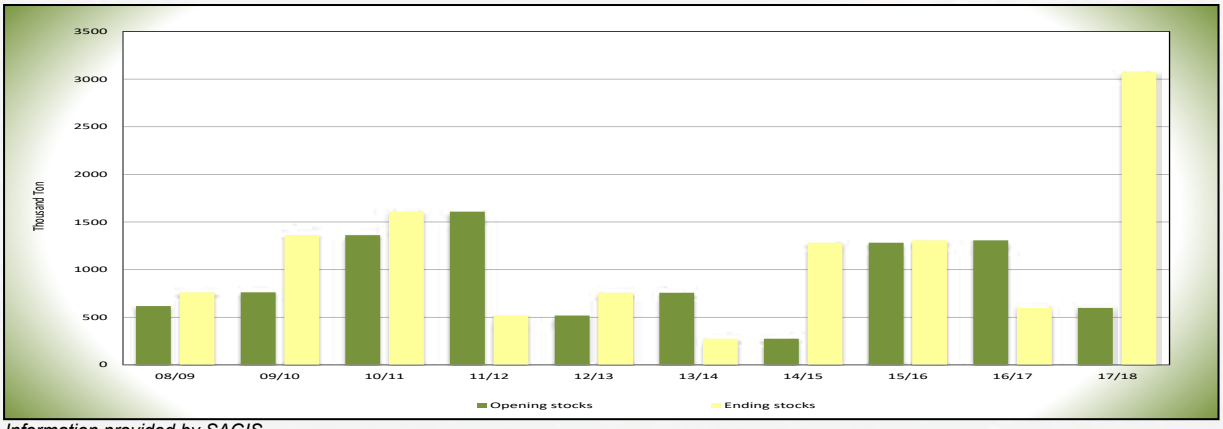
Graph 21: White Maize: Imports and exports over 10 marketing seasons



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.

South African Grain Information Service NPC
Suid Afrikaanse Graaninligtingsdiens NWM
Reg no. 1997/019186/08

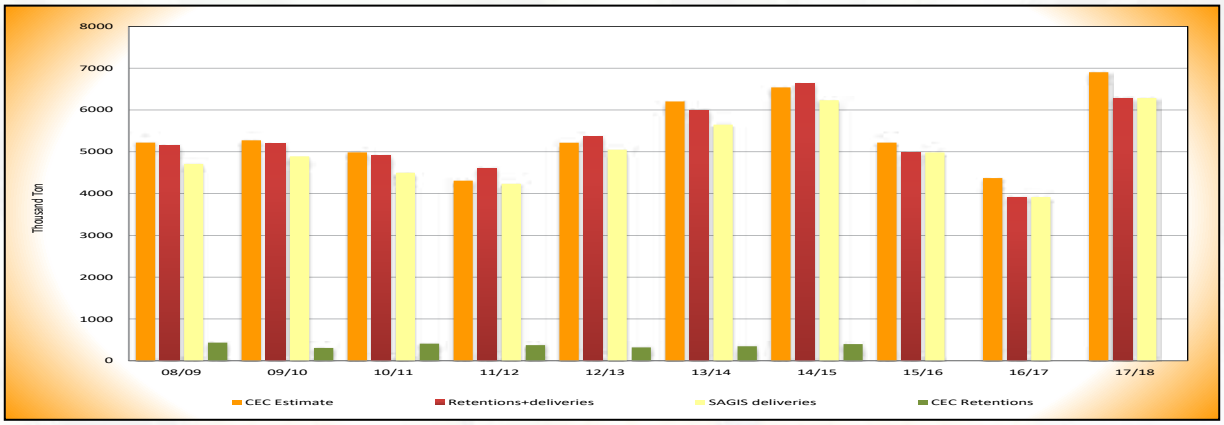
YELLOW MAIZE: SUPPLY AND DEMAND TABLE BASED ON SAGIS' INFO (TON)

Publication date: 2018-04-25

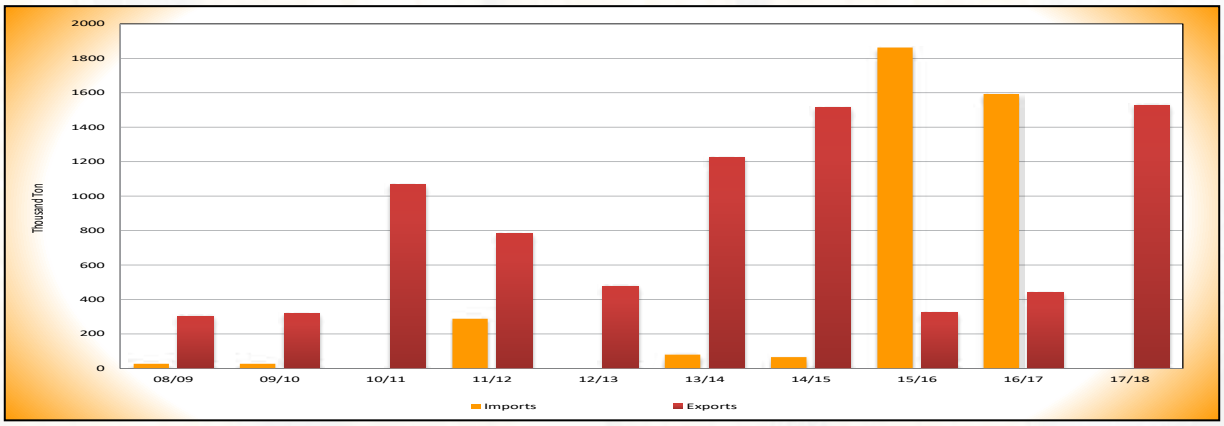
	Marketing Season (May - Apr)																		Current Season May-Feb	10 Year average
Season	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	2007/8-2016/17
																			***	
																			11	
CEC (Crop Estimate)	2 575 000	3 986 000	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	5 220 000	4 370 000	6 904 000	5 014 880
CEC (Retention)	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	0	0	0	291 390
SUPPLY																				
Opening stock (1 May)	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	791 054	1 163 200	496 801	659 114
Prod deliveries*	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	6 234 739	4 986 053	3 917 778	6 286 488	4 674 436
Imports	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	65 250	1 862 807	1 592 599	0	501 634
Surplus	0	0	0	0	0	0	0	12 000	10 000	5 000	20 000	32 000	36 000	20 000	52 749	17 345	35 456	12 423	22 453	24 097
Total Supply	**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**	**6 632 044**	**7 675 370**	**6 686 000**	**6 805 742**	**5 859 282**
DEMAND																				
Processed	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	4 064 081	5 929 297	5 506 922	3 515 009	4 155 330
-human	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	478 726	515 415	576 638	494 582	411 664
-animal/industrial	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	3 571 645	5 401 726	4 917 657	3 004 409	3 731 340
-gristing	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	13 710	12 156	12 627	16 018	12 326
-bio-fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Withdrawn by producers	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	87 568	63 503	80 865	60 873	118 744
Released to end-consumers	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	166 643	172 309	151 800	137 634	245 818
Net receipts(-)/disp(+)	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	7 781	24 313	10 733	312	19 392
Deficit	21 000	47 000	44 000	14 000	0	11 000	16 000	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Exports	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	1 514 917	322 748	438 879	1 527 384	655 222
Products	**0**	**11 000**	**2 000**	**45 000**	**24 000**	**56 000**	**36 000**	**29 000**	**31 000**	**38 000**	**57 000**	**51 000**	**69 000**	**65 000**	**94 101**	**105 012**	**102 747**	**148 070**	**118 612**	**76 093**
African Countries		**11 000**	**1 000**	**24 000**	**12 000**	**25 000**	**5 000**	**14 000**	**11 000**	**10 000**	**29 000**	**22 000**	**39 000**	**39 000**	**51 008**	**59 812**	**59 839**	**107 656**	**57 378**	**42 832**
Other Countries			**1 000**	21 000	**12 000**	**31 000**	**31 000**	**15 000**	**20 000**	**28 000**	**28 000**	**29 000**	**30 000**	**26 000**	**43 093**	**45 200**	**42 908**	**40 414**	**61 234**	**33 262**
Whole maize	**0**	**616 000**	**521 000**	**326 000**	**92 000**	**64 000**	**357 000**	**88 000**	**72 000**	**265 000**	**262 000**	**1 017 000**	**712 000**	**413 000**	**1 129 572**	**1 409 905**	**220 001**	**290 809**	**1 408 772**	**579 129**
Border Posts		**33 000**	**81 000**	**296 000**	**69 000**	**64 000**	**101 000**	**88 000**	**72 000**	**91 000**	**137 000**	**120 000**	**145 000**	**151 000**	**193 465**	**153 531**	**211 407**	**284 122**	**159 107**	**155 853**
Harbours		**583 000**	**440 000**	**30 000**	**23 000**	**0**	**256 000**	**0**	**0**	**174 000**	**125 000**	**897 000**	**567 000**	**262 000**	**936 107**	**1 254 954**	**8 594**	**6 687**	**1 249 665**	**423 134**
Total Demand	**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**	**5 840 990**	**6 512 170**	**6 189 199**	**5 241 212**	**5 194 505**
Ending Stock (30 Apr)	**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**	**791 054**	**1 163 200**	**496 801**	**1 564 530**	**664 777**
- processed p/month	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	338 673	494 108	458 910	319 546	346 283
- months' stock	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	2.3	2.4	1.1	4.9	2

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

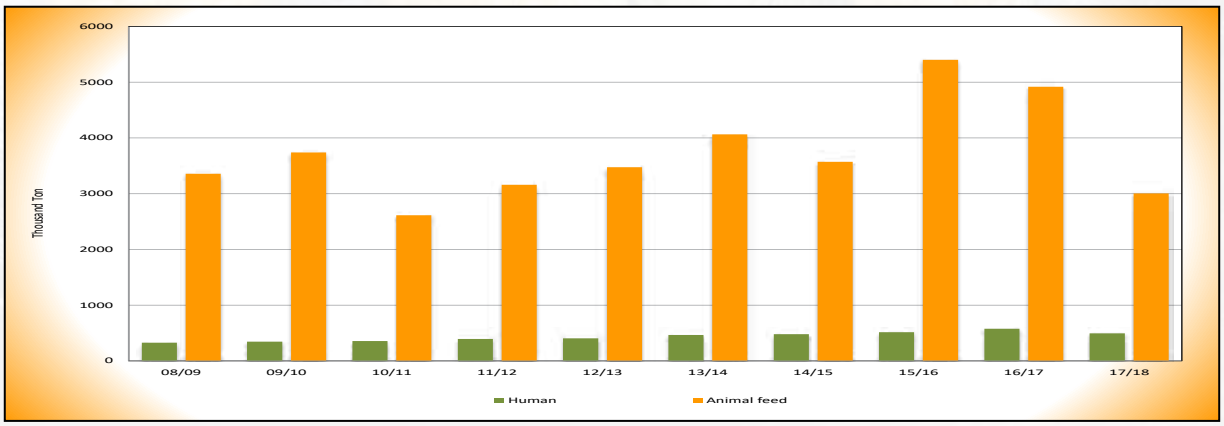
Graph 24: Yellow Maize: CEC Estimate, Retentions and SAGIS deliveries over 10 marketing seasons



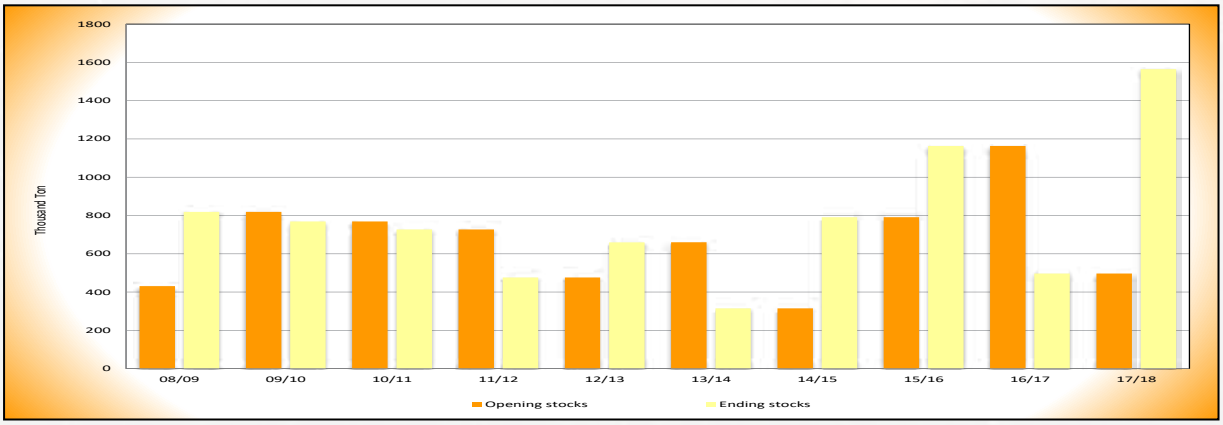
Graph 25: Yellow Maize: Imports and exports over 10 marketing seasons



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



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



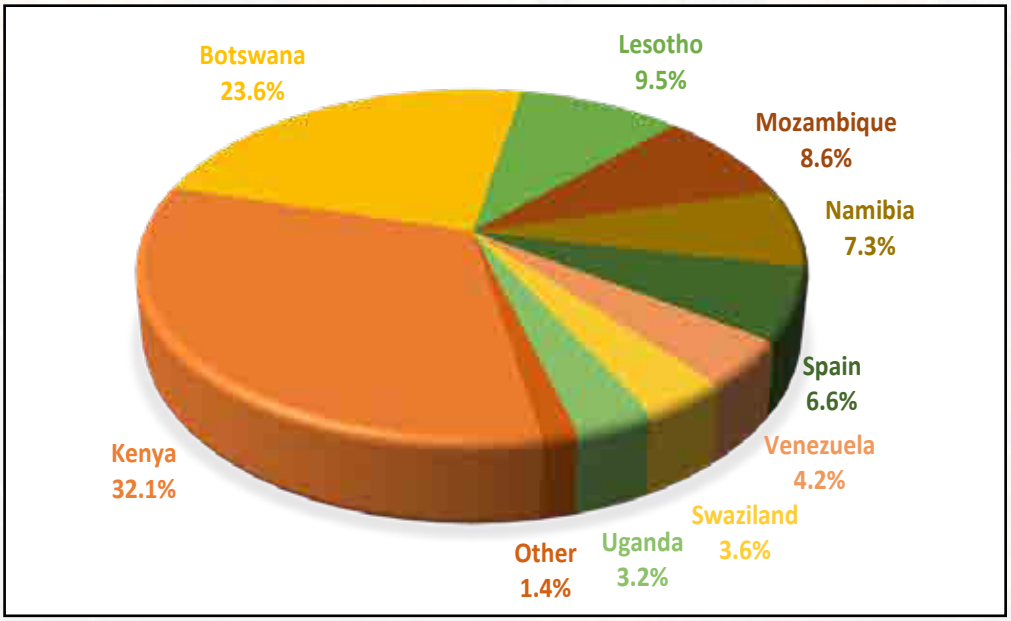
Information provided by SAGIS.

WHITE MAIZE EXPORT/IMPORTS

2017/2018 Season (29 Apr 2017 - 27 Apr 2018)

RSA EXPORTS		IMPORTS FOR RSA		IMPORTS FOR EXPORTS		EXPORTS OF IMPORTED MAIZE		IMPORTS PER HARBOUR		EXPORTS PER HARBOUR	
To Country	Tons	From Country	Tons	From Country	Tons	To Country	Tons	Harbour	Tons	Harbour	Tons
Botswana	181 367	-	-	-	-	Botswana	1 492	-	-	Durban	355 337
Kenya	247 250	-	-	-	-	Zimbabwe	23 376	-	-	Richards Bay	22
Lesotho	72 904	-	-	-	-			-	-		
Mozambique	66 290	-	-	-	-			-	-		
Namibia	56 074	-	-	-	-			-	-		
Somalia	480	-	-	-	-			-	-		
Spain	50 631	-	-	-	-			-	-		
Swaziland	27 502	-	-	-	-			-	-		
Uganda	24 998	-	-	-	-			-	-		
Venezuela	32 000	-	-	-	-			-	-		
Zimbabwe	10 477	-	-	-	-			-	-		
Total	**769 973**	**Total**	**0**	**Total**	**0**	**Total**	**24 868**	**Total**	**0**	**Total**	**355 359**

Graph 28: Major destinations for RSA white maize exported during the 2017/2018 marketing season



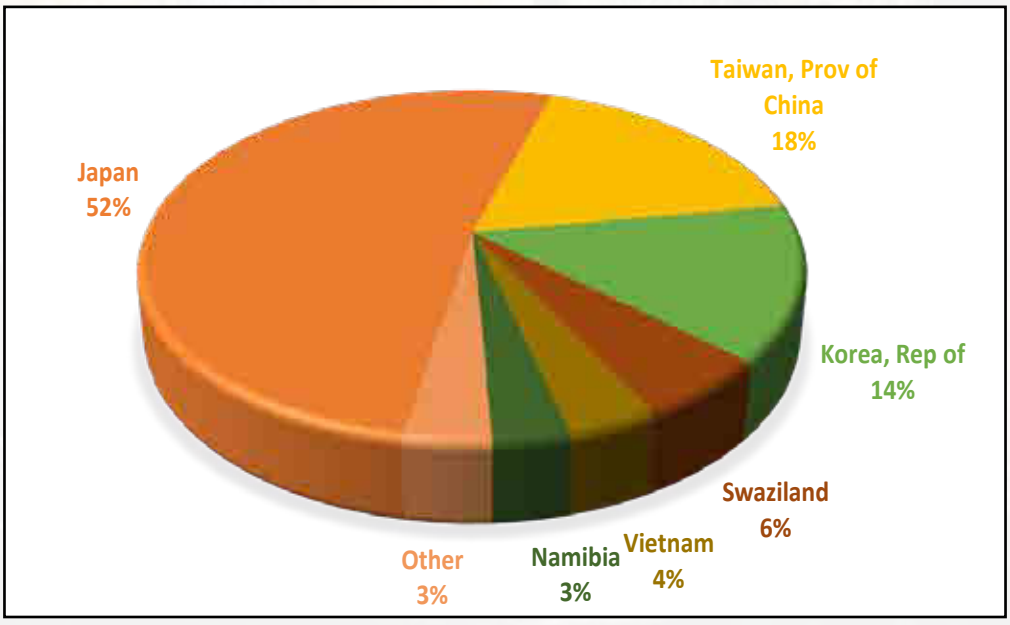
SAGIS South African Grain Information Service NPC
Suid Afrikaanse Graaninligtingsdiens NWM
Reg no. 1997/019186/08

YELLOW MAIZE EXPORT/IMPORTS

2017/2018 Season (29 Apr 2017 - 27 Apr 2018)

RSA EXPORTS		IMPORTS FOR RSA		IMPORTS FOR EXPORTS		EXPORTS OF IMPORTED MAIZE		IMPORTS PER HARBOUR		EXPORTS PER HARBOUR	
To Country	Tons	From Country	Tons	From Country	Tons	To Country	Tons	Harbour	Tons	Harbour	Tons
Angola	2 482	-	-	-	-	-	-	-	-	Durban	1 304 518
Botswana	17 993	-	-	-	-	-	-	-	-	Richards Bay	0
Ghana	301	-	-	-	-	-	-	-	-		
Japan	765 668	-	-	-	-	-	-	-	-		
Korea, Dem People's Rep	2 300	-	-	-	-	-	-	-	-		
Korea, Rep of	211 944	-	-	-	-	-	-	-	-		
Lesotho	1 580	-	-	-	-	-	-	-	-		
Mozambique	21 916	-	-	-	-	-	-	-	-		
Namibia	46 522	-	-	-	-	-	-	-	-		
Qatar	5 475	-	-	-	-	-	-	-	-		
Swaziland	83 147	-	-	-	-	-	-	-	-		
Taiwan, Prov of China	261 914	-	-	-	-	-	-	-	-		
Vietnam	54 570	-	-	-	-	-	-	-	-		
Zimbabwe	889	-	-	-	-	-	-	-	-		
Total	**1 476 701**	**Total**	**0**	**Total**	**0**	**Total**	**0**	**Total**	**0**	**Total**	**1 304 518**

Graph 29: Major destinations for RSA yellow maize exported during the 2017/2018 marketing season



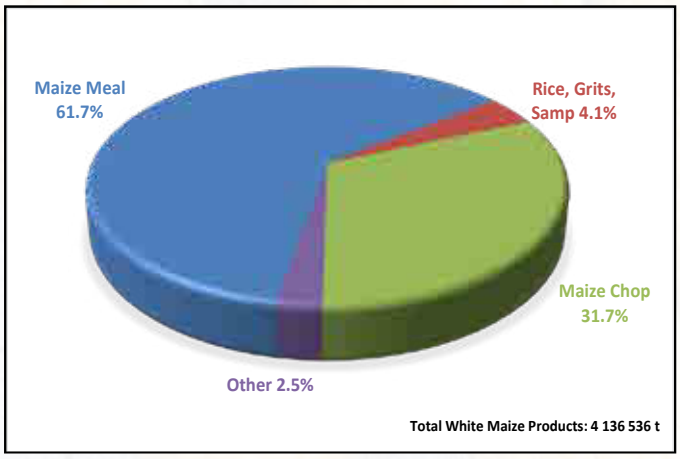
SAGIS Maize Product Information

On 14 November 2014, the Minister of Agriculture, Forestry & Fisheries announced new statutory measures for the manufacturing of maize & wheaten products.

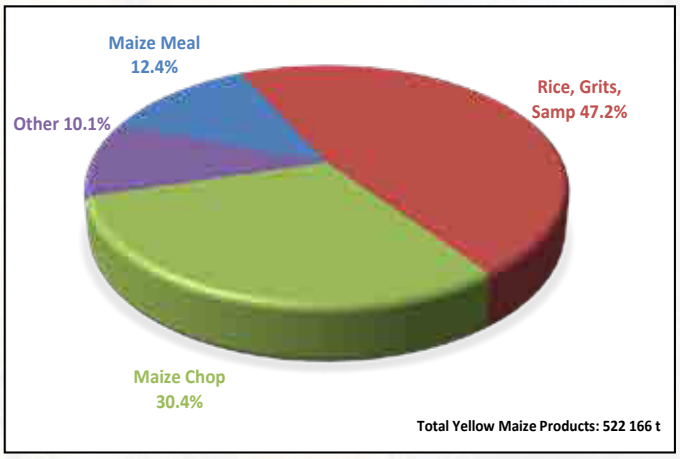
To comply with the abovementioned statutory measures, manufacturers of these products have to register with SAGIS and submit information with regards to the manufacture, import and export of maize products.

Please see graphs 30 to 33 below for an overview of the white and yellow maize products as well as white and yellow maize meal manufactured for the period May 2017 to March 2018. The tables on pages 15 to 17 provide a summary of the figures for maize products manufactured, imported and exported for the periods May 2016 to April 2017 as well as May 2017 to March 2018.

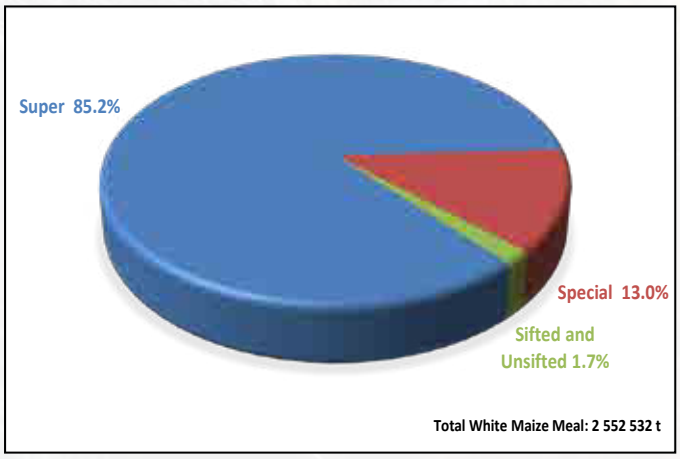
Graph 30: White maize products manufactured from May 2017 to March 2018



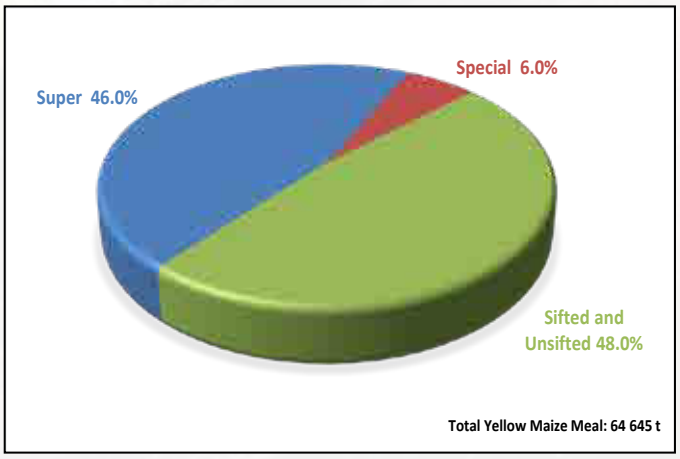
Graph 31: Yellow maize products manufactured from May 2017 to March 2018



Graph 32: White maize meal manufactured from May 2017 to March 2018



Graph 33: Yellow maize meal manufactured from May 2017 to March 2018



SAGIS South African Grain Information Service NPC
Suid Afrikaanse Graaninligtingsdiens NWM
Reg no. 1997/019186/08

MAIZE PRODUCTS MANUFACTURED PER MARKETING YEAR						Date Published: 2018/05/04
	Marketing year: May 2016 - Apr 2017 Manufactured Tons Progressive: 12 Months			Marketing year: May 2017 - Apr 2018 Manufactured Tons Progressive: 11 Months (May - Mar)		
	White Maize	Yellow Maize	Total Maize	White Maize	Yellow Maize	Total Maize
Maize Chop	1 305 565	184 130	1 489 695	1 311 094	158 740	1 469 834
Maize Rice	8 894	*	8 894	8 013	*	8 013
Maize Grits	47 392	*	47 392	55 444	*	55 444
Samp	107 965	*	107 965	104 997	*	104 997
*** Total Yellow Maize Rice / Maize Grits / Samp**		290 388	290 388		246 213	246 213
Sifted Maize Meal	28 005	43 582	71 587	34 229	31 037	65 266
Special Maize Meal	401 344	16 087	417 431	332 873	3 881	336 754
Super Maize Meal	2 275 099	38 777	2 313 876	2 175 686	29 725	2 205 411
Unsifted Maize Meal	12 290	1 202	13 492	9 744	2	9 746
Other maize products intended for Human consumption	90 475	60 437	150 912	104 456	52 568	157 024
Total	**4 277 029**	**634 603**	**4 911 632**	**4 136 536**	**522 166**	**4 658 702**

** Included total for yellow rice, grits and samp*

SAGIS South African Grain Information Service NPC
Suid Afrikaanse Graaninligtingsdiens NWM
Reg no. 1997/019186/08

MAIZE PRODUCTS IMPORTED PER MARKETING YEAR						Date Published: 2018/05/04
	Marketing year: May 2016 - Apr 2017 Imported Tons Progressive: 12 Months			Marketing year: May 2017 - Apr 2018 Imported Tons Progressive: 11 Months (May - Mar)		
	White Maize	Yellow Maize	Total Maize	White Maize	Yellow Maize	Total Maize
Maize Chop	4 985	0	4 985	1 365	0	1 365
Maize Rice	0	*	0	0	*	0
Maize Grits	0	*	0	0	*	0
Samp	0	*	0	0	*	0
*** Total Yellow Maize Rice / Maize Grits / Samp**		44	44		22	22
Sifted Maize Meal	0	0	0	5 609	0	5 609
Special Maize Meal	5 618	0	5 618	0	0	0
Super Maize Meal	0	0	0	0	0	0
Unsifted Maize Meal	0	0	0	0	0	0
Other maize products intended for Human consumption	0	0	0	0	0	0
Total	**10 603**	**44**	**10 647**	**6 974**	**22**	**6 996**

** Included total for yellow rice, grits and samp*

SAGIS South African Grain Information Service NPC
Suid Afrikaanse Graaninligtingsdiens NWM
Reg no. 1997/019186/08

MAIZE PRODUCTS EXPORTED PER MARKETING YEAR						Date Published: 2018/05/04
	Marketing year: May 2016 - Apr 2017 Exported Tons Progressive: 12 Months			Marketing year: May 2017 - Apr 2018 Exported Tons Progressive: 11 Months (May - Mar)		
	White Maize	Yellow Maize	Total Maize	White Maize	Yellow Maize	Total Maize
Maize Chop	37	30	67	0	0	0
Maize Rice	0	*	0	20	*	20
Maize Grits	0	*	0	0	*	0
Samp	1 285	*	1 285	1 099	*	1 099
*** Total Yellow Maize Rice / Maize Grits / Samp**		41 762	41 762		19 371	19 371
Sifted Maize Meal	377	3 757	4 134	76	5 220	5 296
Special Maize Meal	11 551	0	11 551	500	4	504
Super Maize Meal	17 313	6 806	24 119	19 620	1 928	21 548
Unsifted Maize Meal	0	893	893	0	0	0
Other maize products intended for Human consumption	56	0	56	8 315	5	8 320
Total	**30 619**	**53 248**	**83 867**	**29 630**	**26 528**	**56 158**

** Included total for yellow rice, grits and samp*

Maize Crop Quality 2016/2017 - summary of results

RSA Grading

The maize crop was of very good quality, with 85% of white and 92% of yellow maize, graded as maize grade one, compared to the 72% and 78% of the 2015/2016 season. The percentage total defective kernels above and below the 6.35 mm sieve, 4.7% for white and 4.4% for yellow maize, was 1.5% and 1.3% respectively lower than the previous season. The percentages Diplodia as well as Fusarium infected kernels on both white and yellow maize were between 0.2% and 0.4% lower than in the previous season.

Foreign matter did not pose significant problems, with seven white and three yellow maize samples downgraded to class other maize due to foreign matter exceeding 0.75%. Only one yellow maize sample was downgraded as a result of other colour maize that exceeded 5%. The average percentage combined deviations of white maize was 5.1% compared to the 6.7% of the 2015/2016 season, that of yellow maize was slightly lower, 4.7% compared to 6.0% previously.

Please refer to Tables 3 to 7 on pages 30 to 38.

USA Grading

Of the 1 000 maize samples graded according to USA grading regulations, 70.5% were graded US1, 20.1% US2, 4.5% US3, 1.6% US4, 1.5% US5, while sample grade and class mixed corn represented 1.0% and 0.8% respectively. The percentage samples graded as US1 varies substantially over seasons, comparing 71% to 58%, 64%, 42% and 79% over the previous four seasons. The percentage samples graded as US2 was similar to the 22% and 23% of the previous two seasons respectively. The main reason for downgrading the samples was the percentage total damaged kernels exceeding the maximum limit per grade, followed by broken corn and foreign material. Please see Tables 8 and 9 on pages 40 to 44.

Physical Quality factors

Bushel weight/Test weight is applied as a grading factor in the USA grading regulations, but is also routinely done at most intake points locally. White maize had an average test weight of 77.7 kg/hl compared to the 76.9 kg/hl of yellow maize. White maize's average test weight was 0.3 kg/hl lower than the previous season and that of yellow maize 0.2 kg/hl higher. The test weight in total varied from 67.6 kg/hl to 82.4 kg/hl. Only 25 samples reported Bushel weight values below the minimum requirement (56.0 lbs or 72.1 kg/hl) for USA grade 1 maize, 14 of these samples were from Mpumalanga, five from the Free State, three from Gauteng, two from North West and one from KwaZulu-Natal.

The 100 kernel mass ("as is" basis) of white maize (35.0 g) averaged higher than yellow maize (33.5 g) as in previous seasons. The kernel size of white maize was larger and that of yellow maize smaller than the previous season. The percentage yellow maize kernels above the 10 mm sieve were on average 10.7% lower than white kernels and the percentage kernels below the 8 mm sieve 9.3% higher than that of white maize. White maize kernels were larger than in the previous two seasons, while the yellow maize kernels were still some of the smallest the past ten seasons.

Both white and yellow maize were slightly more susceptible to breakage than during the previous season. The percentage stress cracks observed varied overall from 0 to 50%, and averaged 8% for both white and yellow maize, 3% higher than in the previous season.

Please refer to Tables 12 to 16 on pages 46 to 54.

The milling index obtained from the SAGL Milling Index 2017 model, varied from an average of 80.2 for white maize to 76.8 for yellow maize. Grit Yield All (GYA) values averaged 64.8 for white maize and 64.0 for yellow maize. Please see page 95 under the Methods Section for more information on this new parameter which is reported for the first time this season.

Roff milling and whiteness index (WI)

The average % extraction of total meal in white maize obtained with the Roff mill averaged 78.6% (0.2% higher than the previous season) and varied from 69.7% to 81.7%.

The whiteness index averaged 25.4 for unsifted and 17.4 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 26.1 and 17.5 for unsifted and sifted maize meal respectively.

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 value of -17.5 this season, also had the highest percentage other colour maize namely 7.0%. Please see Tables 17 and 18 on pages 56 to 59.

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 (except for the two latest seasons). No clear trend can be observed with regards to the protein content.

The average fat content of white maize was 0.1% higher than the 4.1% of both the previous season as well as the average fat content of yellow maize this season. The protein content of yellow maize averaged 8.9%, which was 0.2% higher than that of white maize. The protein content of yellow maize was on average 0.8% lower than in the previous season and that of white maize 1.0% lower than in the 2015/2016 season. The protein contents however compare very well with the 10-year averages.

The average starch content of white maize (74.1%) was 1.5% higher than in the previous season and yellow maize (73.7%) 1.4% higher. Both are also higher than the 10-year averages.

Please refer to Tables 19 to 22 on pages 60 to 65.

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%. 98% 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%. 84% 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%. All of the samples (100%) 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 23 on page 67 for the results obtained as well as page 96 for a summary of the Events and Trade names/Brands represented by these three traits.

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 191 µg/kg (ppb) and ranged from not detected (ND) to 6 059 µg/kg. This average is lower than the previous season's 325 µg/kg. Of the 350 samples tested, 155 samples (44%) tested positive for fumonisin levels and the average of these positive results was 431 µg/kg. The previous season, 57% of the samples tested positive, with an average of 569 µg/kg.

The highest Deoxynivalenol (DON) level detected was 7 698 µg/kg, compared to the 1 585 µg/kg of last season. The average level of all samples tested this season was 339 µg/kg, 56 µg/kg the previous season. 21% of the samples tested positive for DON last season compared to 37% this season. The average of the positive results increased from 259 µg/kg in 2015/2016 to 919 µg/kg in 2016/2017.

16% of the samples tested positive for 15-acetyl-deoxynivalenol (15-ADON) residues. The average of the positive results was 254 µg/kg compared to 163 µg/kg in the previous season.

Zearalenone residues were found in 8% of the samples and values ranged from ND to 399 µg/kg. The average of the positive samples was 89 µg/kg compared to the 49 µg/kg of the previous season when 5% 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 24 on pages 79 to 90.

TABLE 2: SOUTH AFRICAN MAIZE CROP QUALITY 2016/2017 (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, %	2.4	4.9	10.4	7.5	2.1	4.6	13.5	6.8	2.6
Defective kernels below 6.35 mm sieve, %	1.6	2.9	4.4	3.9	1.8	4.1	1.9	10.7	1.9
Total defective kernels, %	3.9	7.8	14.8	11.4	3.9	8.7	15.3	17.5	4.5
Other colour maize kernels, %	0.2	0.5	0.5	1.0	0.1	0.7	1.7	1.9	0.2
Foreign matter, %	0.1	0.2	0.3	2.3	0.1	0.2	0.4	1.2	0.1
Combined deviation, %	4.3	8.6	15.6	14.7	4.1	9.6	17.4	20.6	4.9
Pinked maize kernels, %	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Physical Factors									
Test weight, kg/hl	77.9	76.7	76.9	75.6	77.0	75.1	74.4	73.3	77.3
100 Kernel mass, g	35.1	34.4	36.7	34.7	33.8	30.7	30.7	26.4	34.3
Stress cracks, %	7	11	23	12	7	10	14	15	8
Milling Index	80.5	78.1	79.8	83.8	77.0	75.5	66.8	66.1	78.7
Kernel Size									
% on top 10 mm	22.0	23.1	21.0	25.0	11.7	6.9	16.2	6.9	17.3
% on top 8 mm	64.3	62.3	66.0	63.1	65.6	63.5	64.0	73.9	64.8
% through 8 mm	13.7	14.6	13.0	11.9	22.6	29.7	19.8	19.2	17.9
Breakage susceptibility									
% Below 6.35 mm sieve	1.1	1.6	1.3	2.1	1.0	1.9	2.3	3.8	1.2
% Below 4.75 mm sieve	0.8	1.1	1.0	1.5	0.7	1.3	1.6	2.2	0.8
Nutritional Values									
Protein, % (db)	8.7	8.6	8.7	9.3	8.9	8.8	9.1	8.6	8.8
Fat, % (db)	4.2	4.2	4.2	4.4	4.1	4.0	4.0	4.2	4.1
Starch, % (db)	74.1	74.1	73.7	73.3	73.7	73.6	73.4	73.5	73.9
Number of samples	***469***	***62***	***9***	***9***	***417***	***28***	***2***	***4***	***1 000***
Mycotoxins									
Total Aflatoxin, µg/kg (ppb) [max. value]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]
Total Fumonisin, µg/kg (ppb) [max. value]	114 [3 913]	275 [2 135]	68 [247]	111 [406]	189 [4 025]	722 [6 059]	275 [547]	375 [1 125]	191 [6 059]
Deoxynivalenol, µg/kg (ppb) [max. value]	316 [4 758]	1 620 [7 698]	1 981 [7 671]	436 [1 742]	93 [1 552]	19 [189]	114 [228]	0 [<100]	339 [7 698]
15-ADON, µg/kg (ppb) [max. value]	36 [657]	193 [964]	201 [802]	53 [210]	14 [381]	7 [113]	0 [<100]	0 [0]	41 [964]
Ochratoxin A, µg/kg (ppb) [max. value]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]
Zearalenone, µg/kg (ppb) [max. value]	5 [181]	39 [399]	73 [292]	6 [23]	1 [113]	0 [<20]	0 [0]	0 [0]	7 [399]
HT-2 Toxin, µg/kg (ppb) [max.value]	0 [0]	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]	0 [0]
Number of samples	***140***	***31***	***4***	***4***	***150***	***16***	***2***	***3***	***350***
GMO									
Cry1Ab, % Samples positive (>LOQ of 0.4%)	100	100	100	100	95	100	100	100	98
Cry2Ab, % Samples positive (>LOQ of 0.5%)	89	73	100	100	83	60	100	100	84
CP4 EPSPS, % Samples positive (>LOQ of 0.25%)	100	100	100	100	100	100	100	100	100
Number of samples	***37***	***11***	***2***	***2***	***41***	***5***	***1***	***1***	***100***

Note: Not detected mycotoxin results are reported as 0, see LOQ in Table 24 page 79.

RSA Production Regions

The Republic of South Africa 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

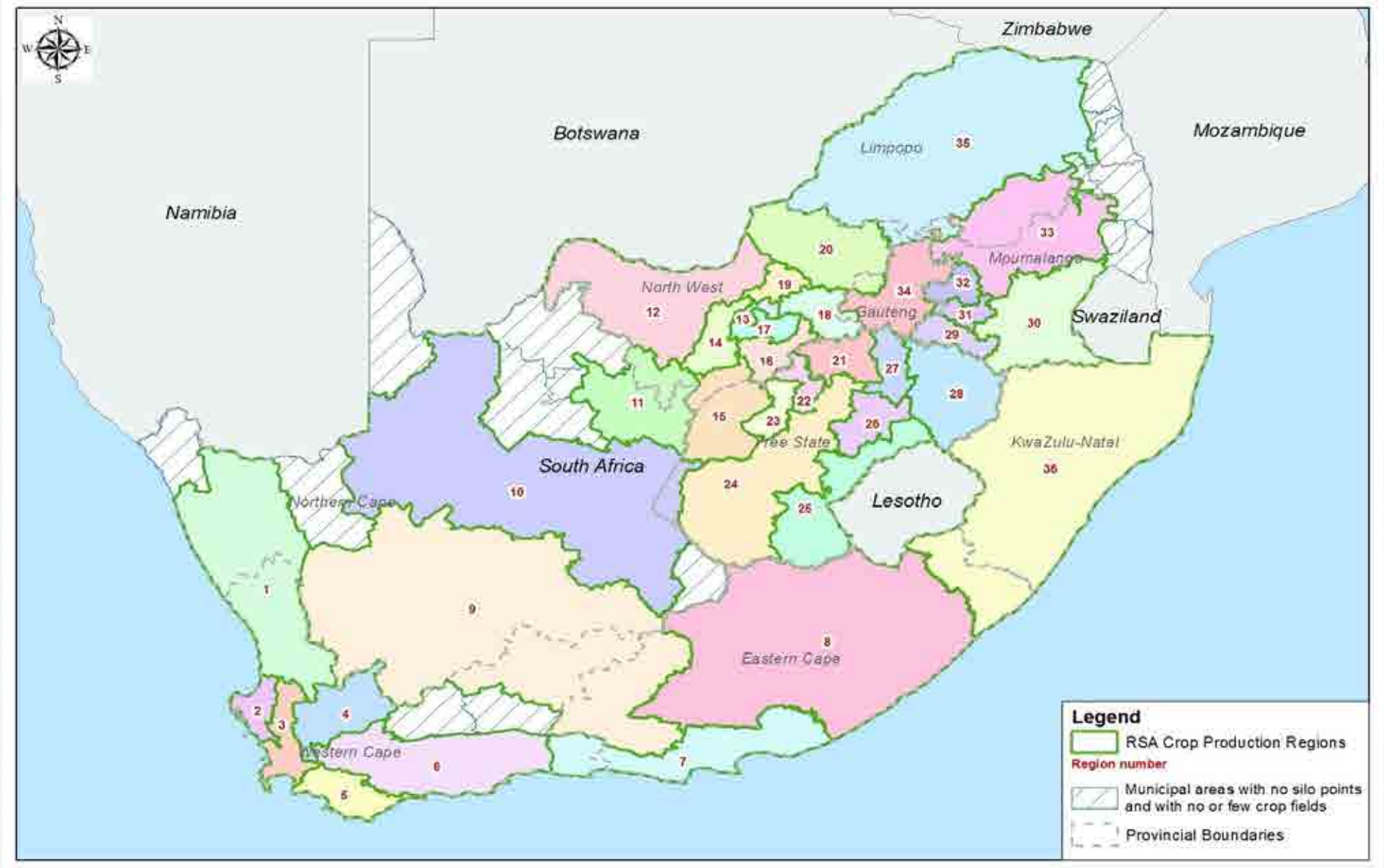
Please see the Crop Production Regions map on the next page.

The production regions from which maize samples have been received for the crop quality survey of the 2016/2017 production season, are named and described on pages 25 to 28. The silo/intake stands as well as the type of storage structure are provided.

The mostly rain-fed maize production area is divided into four major maize production regions according to climatological characteristics:

- The Warm Western Region (western parts of the Free State and most of the North West)
- The Temperate Eastern Region (Gauteng and the central parts of the Free State)
- The Cold Eastern Region (Mpumalanga Highveld and eastern Free State)
- The KwaZulu-Natal Region (the western/upland and central/midland parts of KZN)

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	Kameel (Bins)
NWK	Kameel (Bins)	Suidwes	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	Amalia (Bins)
NWK	Excelsior (Bins)	Suidwes	Hallatshope (Bins)
NWK	Geysdorp (Bins)	Suidwes	Migdol (Bins)
NWK	Migdol (Bins)	Suidwes	Schweizer-Reneke (Bins)
NWK	Nooitgedacht (Bins)		

Region 15: North West Southern-Eastern Region			
Suidwes	Bloemhof (Bins)	Suidwes	Kingswood (Bins)
Suidwes	Christiana (Bins)	Suidwes	Kruising (Bunkers)
Suidwes	Hertzogville (Bins)	Suidwes	Poppieland (Bunkers)
Suidwes	Hoopstad (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	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 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	Lothair (Bins)
Afgri	Carolina (Bins)	Afgri	Maizefield (Bins)
Afgri	Davel (Bins)	Afgri	Morgenzon (Bins)
Afgri	Eerstelingsfontein (Bunkers)	Afgri	Overvaal (Bins)
Afgri	Ermelo (Bins)	Afgri	Sandspruit (Bunkers)
Afgri	Estancia (Bins)	TWK	Mkondo (Bins)
Afgri	Hendriksvallei (Bunkers)	TWK	Panbult (Bins)

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)

Grain Production Regions (continue)

Silo/Intake stands per region indicating type of storage structure

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 (VKB)	Nylstroom (Modimolle) (Bins)
NTK (VKB)	Alma (Bins)	NTK (VKB)	Potgietersrus (Mokopane) (Bins)
NTK (VKB)	Lehau (Bins)	NTK (VKB)	Roedtan (Bins)
NTK (VKB)	Naboomspruit (Mookgophong) (Bins)	NTK (VKB)	Settlers (Bins)
NTK (VKB)	Nutfield (Bins)	NTK (VKB)	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 maize producing provinces – comparison of results

The quality of the maize produced in the three main maize production provinces, namely the Free State (regions 21 to 28), Mpumalanga (regions 29 to 33) and North West (regions 12 to 20) are compared below, the figures provided are all weighted averages.

Average test weights expressed in kilogram per hectoliter for white maize, varied from 76.8 in North West to 78.2 in the Free State. Yellow maize ranged between 76.3 kg/hl in Mpumalanga to 77.1 kg/hl in North West. The white maize 100 kernel mass values ranged from 32.8 g in North West to 35.9 g in Mpumalanga, the Free State averaged 35.4 g. The yellow maize kernels followed the same trend with 31.1 g in North West, 32.5 g in the Free State and 34.3 g in Mpumalanga.

Kernel sizes are indicated by the percentage of sample above a 10 mm sieve as well as the percentages above and below a 8 mm sieve. The largest white kernel size with regards to percentage of kernels above the 10 mm sieve, was found in the Free State (27.2%), as in the previous season. North West had the smallest kernel sizes namely 18.5%, Mpumalanga averaged 20.6%. Yellow maize kernels in Mpumalanga was found to be the largest on average 13.4%, followed by the Free State with 11.4% and North West with 10.3%.

Little variation was observed with regards to breakage susceptibility and especially stress cracks between the provinces. North West, with 1.4% had the highest percentage of white maize passing through the 6.35 mm sieve, followed by the Free State and Mpumalanga with 1.2% and 0.8% respectively. Yellow maize again followed the same trend with 1.6% in North West and the Free State and Mpumalanga following with 1.2% and 1.1%. This indicates that the maize in the North West was slightly more susceptible to breakage. The percentage stress cracks on white maize varied from 9% in North West, to 7% in the Free State and 6% in Mpumalanga. Stress cracks on yellow maize ranged from 7% in Mpumalanga to 9% in North West. These percentages again showed the same trend as on white maize. These percentages are slightly higher than in the previous season.

The percentage total defective kernels is the sum total of the defective kernels that remained above the 6.35 mm sieve and the defective kernels which passed through the 6.35 mm sieve. Defective kernels include amongst others, mouldy, discoloured, insect damaged and small kernels that can pass through the 6.35 mm round hole sieve. White maize averages ranged from a low of 3.8% in the Free State to a high of 5.4% in North West. Mpumalanga averaged 4.1%. The highest percentage total defective kernels on yellow maize was found in North West (4.9%), followed by the Free State with 4.3% and Mpumalanga with 2.9%. Please see page 92 for the definition of Defective maize kernels as quoted from the Grading Regulations.

The average milling index on white and yellow maize was as follows: Mpumalanga averaged 81.1 (76.5), the Free State 80.8 (73.8) and North West 76.2 (84.4). The values in brackets are the yellow maize averages. The highest percentage total extraction as determined on the Roff laboratory mill, was found on white maize from North West (78.7%), followed by the Free State with 78.6% and Mpumalanga with 78.3%.

The meal obtained from the white maize in North West gave an average whiteness index of 26.7 (unsifted) and 19.4 (sifted). The Free State had an average of 26.6 (unsifted) and 18.4 (sifted) and Mpumalanga 23.1 (unsifted) and 14.1 (sifted). All averages were lower than last season, indicating slightly less white meal this season. Factors that can influence meal whiteness such as the presence of defective kernels and other colour maize were however comparable to the previous season.

The nutritional component analyses namely fat, protein and starch compared well between the three provinces. North West and Mpumalanga both averaged 4.2% fat on white maize, The Free State averaged 4.1%. The average fat content of yellow maize ranged from 4.0% in North West to 4.2% in Mpumalanga. The lowest average protein content on white maize was found in North West (8.4%), Mpumalanga had the highest average of 8.9%, the Free State averaged 8.7%. North West and the Free State both averaged 8.9% protein on yellow maize, Mpumalanga averaged 9.0%. North West had the highest average starch content on white maize of 74.4%, closely followed by the Free State with 74.2% and Mpumalanga with 73.7%. The yellow maize starch content ranged from a low of 73.4% in Mpumalanga to 73.6% in the Free State and 74.2% in North West. These values are all reported on a dry basis.

TABLE 3: RSA GRADING OF WHITE MAIZE ACCORDING TO GRADE (2016/2017)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Combined 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: WM1																														
2	Region 10	1.2	1.1	1.2	1.4	1.2	1.5	2.5	2.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	Region 11	1.9	-	-	2.2	-	-	4.1	-	-	0.3	-	-	0.6	-	-	4.9	-	-	0.0	-	-	0.4	-	-	0.5	-	-	0.9	-	-
13	Region 12	2.1	0.6	4.3	1.2	0.5	2.0	3.3	1.0	6.1	0.1	0.0	0.2	0.0	0.0	0.3	3.4	1.2	6.2	2.2	0.0	7.9	0.2	0.0	0.8	0.2	0.0	0.9	0.4	0.0	1.2
20	Region 13	2.6	0.8	4.7	2.0	1.2	2.8	4.6	2.6	6.2	0.1	0.0	0.3	0.2	0.0	1.4	4.8	2.7	6.3	0.1	0.0	0.6	0.3	0.0	0.8	0.5	0.0	2.0	0.9	0.0	2.8
30	Region 14	2.1	0.6	4.1	1.5	0.2	4.3	3.5	1.1	6.5	0.0	0.0	0.1	0.1	0.0	0.4	3.6	1.1	6.5	0.4	0.0	2.5	0.1	0.0	0.5	0.4	0.0	1.4	0.4	0.0	1.6
4	Region 15	2.4	2.2	2.6	1.3	1.1	1.5	3.7	3.5	3.9	0.1	0.1	0.1	0.0	0.0	0.0	3.8	3.6	4.1	0.7	0.6	0.8	0.5	0.4	0.6	1.2	1.1	1.3	1.7	1.6	1.8
15	Region 17	2.3	0.7	3.5	2.6	1.4	4.2	4.9	2.9	7.0	0.1	0.0	0.2	0.0	0.0	0.3	5.1	2.9	7.2	0.7	0.0	2.0	0.3	0.0	1.1	0.5	0.0	1.3	0.9	0.0	1.9
6	Region 18	2.8	1.3	4.2	2.5	1.4	4.3	5.3	4.1	6.4	0.1	0.0	0.2	0.1	0.0	0.2	5.4	4.4	6.6	0.2	0.0	1.1	0.1	0.0	0.3	0.1	0.0	0.2	0.2	0.0	0.4
11	Region 19	1.9	0.6	3.7	1.4	0.9	2.6	3.3	2.1	5.1	0.1	0.0	0.3	0.0	0.0	0.4	3.4	2.1	5.1	0.3	0.0	1.7	0.2	0.0	0.8	0.6	0.0	1.9	0.7	0.0	2.7
21	Region 20	2.6	1.2	5.7	1.6	0.7	3.2	4.2	2.6	6.7	0.1	0.0	0.2	0.3	0.0	2.4	4.6	3.0	6.7	0.4	0.0	3.6	0.2	0.0	0.9	0.6	0.0	1.4	0.8	0.0	2.1
56	Region 21	2.2	0.8	4.1	1.4	0.2	3.0	3.6	2.0	5.3	0.2	0.0	0.3	0.2	0.0	1.0	3.9	2.0	5.7	0.0	0.0	0.6	0.3	0.0	1.0	0.8	0.0	2.5	1.2	0.0	3.0
31	Region 22	2.3	1.3	4.5	1.2	0.4	1.8	3.6	2.1	5.6	0.1	0.0	0.2	0.1	0.0	0.6	3.8	2.1	5.6	0.2	0.0	1.4	0.3	0.0	0.5	0.9	0.0	1.3	1.2	0.0	1.7
16	Region 23	2.4	1.4	3.2	1.9	1.0	3.0	4.3	2.4	5.7	0.1	0.0	0.3	0.1	0.0	0.5	4.6	2.6	6.4	0.1	0.0	1.0	0.3	0.0	0.6	0.7	0.0	1.5	1.1	0.0	2.0
16	Region 24	2.5	1.0	4.6	1.9	1.3	3.6	4.4	2.8	6.1	0.1	0.0	0.3	0.1	0.0	0.5	4.6	3.4	6.7	0.0	0.0	0.3	0.3	0.0	0.7	1.1	0.0	2.4	1.4	0.0	3.2
4	Region 25	2.4	0.9	4.4	1.4	1.0	2.1	3.8	1.9	6.5	0.2	0.1	0.2	0.3	0.0	0.5	4.2	2.1	7.2	0.0	0.0	0.0	0.4	0.0	0.8	1.1	0.4	2.1	1.5	0.4	2.9
19	Region 26	1.9	0.9	3.3	1.6	0.6	3.1	3.5	1.7	5.4	0.2	0.1	0.3	0.3	0.0	1.0	4.0	1.8	6.1	0.1	0.0	0.6	0.2	0.0	0.6	0.7	0.0	1.7	1.0	0.0	2.2
21	Region 28	1.9	0.6	4.0	1.0	0.1	2.6	2.9	1.4	5.7	0.1	0.0	0.3	0.2	0.0	0.8	3.2	1.7	6.3	0.2	0.0	1.0	0.3	0.0	0.7	0.7	0.0	2.0	1.0	0.0	2.7
26	Region 29	2.5	0.8	4.5	1.5	0.4	4.7	3.9	1.4	7.0	0.1	0.0	0.3	0.3	0.0	1.0	4.4	2.3	7.9	0.2	0.0	0.7	0.5	0.0	1.0	1.1	0.0	2.0	1.6	0.0	3.1
17	Region 30	3.1	1.9	5.7	1.8	0.7	2.7	4.9	3.1	7.0	0.2	0.0	0.3	0.3	0.0	0.8	5.4	3.4	7.7	0.0	0.0	0.1	0.6	0.1	1.8	1.3	0.1	2.7	1.9	0.6	3.8
15	Region 31	2.4	1.6	4.0	1.6	0.8	2.2	4.0	2.8	5.1	0.2	0.1	0.3	0.3	0.0	0.7	4.4	3.4	5.8	0.0	0.0	0.0	0.4	0.0	0.8	1.1	0.5	1.6	1.5	0.8	2.4
19	Region 32	2.7	1.6	4.3	1.6	0.8	2.8	4.3	2.6	6.0	0.2	0.1	0.3	0.2	0.0	1.0	4.6	3.1	6.8	0.2	0.0	1.2	0.4	0.0	1.0	1.1	0.5	2.1	1.5	0.5	2.8
38	Region 33	2.6	1.5	5.1	1.7	0.8	3.4	4.3	3.0	6.9	0.2	0.1	0.3	0.2	0.0	1.2	4.7	3.2	7.1	0.1	0.0	1.0	0.5	0.0	1.5	1.1	0.0	3.0	1.6	0.0	4.5
38	Region 34	2.7	1.3	4.7	1.6	0.6	3.3	4.3	2.8	6.0	0.2	0.1	0.3	0.3	0.0	1.2	4.8	3.0	6.4	0.0	0.0	0.6	0.6	0.0	1.2	1.2	0.0	2.5	1.8	0.0	3.6
5	Region 35	1.1	0.5	3.2	1.7	0.4	2.9	2.8	1.3	4.1	0.1	0.0	0.2	0.1	0.0	0.5	3.0	1.4	4.1	0.7	0.0	3.1	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.3
25	Region 36	2.2	0.7	3.8	1.6	0.3	2.8	3.8	2.4	5.5	0.1	0.0	0.2	0.2	0.0	0.6	4.1	2.6	5.7	0.2	0.0	1.7	0.4	0.0	0.9	0.8	0.2	1.8	1.1	0.2	2.3
469	**Ave. WM1**	**2.4**			**1.6**			**3.9**			**0.1**			**0.2**			**4.3**			**0.2**			**0.3**			**0.8**			**1.2**		
	Min. WM1		**0.5**			**0.1**			**1.0**			**0.0**			**0.0**			**1.1**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. WM1			**5.7**			**4.7**			**7.0**			**0.3**			**2.4**			**7.9**			**7.9**			**1.8**			**3.0**			**4.5**

TABLE 3: RSA GRADING OF WHITE MAIZE ACCORDING TO GRADE (2016/2017) (continue)

Number of samples	Region	% Defective Kernels						%			%			%			%			%			%			%			%		
		Above 6.35 mm sieve			Below 6.35 mm sieve			Total defective			Foreign matter			Other Colour			Combined 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: WM2																															
4	Region 12	4.6	2.4	5.8	2.0	1.5	2.7	6.6	3.8	7.8	0.2	0.0	0.4	0.1	0.0	0.2	6.9	4.2	8.2	0.6	0.0	1.8	0.4	0.0	1.2	1.0	0.6	1.5	1.4	0.9	2.1
8	Region 13	4.4	0.3	8.5	3.9	1.6	6.9	8.3	7.2	12.0	0.2	0.1	0.4	0.1	0.0	0.3	8.5	7.6	12.1	0.5	0.0	2.3	0.5	0.0	1.2	0.9	0.0	3.5	1.4	0.0	4.7
1	Region 14	6.4	-	-	1.3	-	-	7.7	-	-	0.0	-	-	0.0	-	-	7.7	-	-	0.0	-	-	0.9	-	-	1.7	-	-	2.6	-	-
5	Region 17	5.5	1.6	12.1	3.1	0.9	5.9	8.7	6.8	13.0	0.2	0.0	0.4	0.7	0.4	1.2	9.5	7.6	14.2	0.2	0.0	0.8	0.7	0.5	1.1	2.1	0.5	5.1	2.8	1.1	5.8
1	Region 18	3.6	-	-	3.8	-	-	7.4	-	-	0.1	-	-	0.2	-	-	7.7	-	-	0.5	-	-	0.5	-	-	0.5	-	-	1.0	-	-
9	Region 19	3.1	1.3	5.3	4.5	0.8	10.6	7.6	2.9	11.8	0.1	0.0	0.4	1.2	0.0	3.8	8.9	4.0	12.0	0.3	0.0	1.9	0.4	0.0	1.7	0.9	0.3	2.0	1.3	0.3	3.5
1	Region 20	8.3	-	-	0.9	-	-	9.2	-	-	0.1	-	-	2.7	-	-	12.0	-	-	0.0	-	-	2.2	-	-	3.3	-	-	5.6	-	-
1	Region 21	7.2	-	-	0.3	-	-	7.5	-	-	0.0	-	-	0.0	-	-	7.5	-	-	0.6	-	-	1.9	-	-	1.1	-	-	3.0	-	-
1	Region 23	4.4	-	-	5.7	-	-	10.2	-	-	0.3	-	-	0.0	-	-	10.4	-	-	0.0	-	-	1.0	-	-	1.5	-	-	2.5	-	-
3	Region 26	2.6	2.0	3.5	4.8	2.5	6.9	7.4	6.0	9.3	0.4	0.3	0.5	0.4	0.0	0.8	8.3	7.2	10.1	0.0	0.0	0.0	0.3	0.0	0.6	1.1	0.4	1.6	1.4	0.4	2.3
4	Region 29	5.7	2.2	9.6	1.7	1.0	2.1	7.4	3.2	11.8	0.3	0.3	0.5	0.4	0.0	0.6	8.2	4.0	12.3	0.1	0.0	0.6	1.0	0.5	1.5	2.8	0.7	6.2	3.8	1.2	7.3
3	Region 30	4.7	1.8	6.8	2.3	1.5	3.3	7.0	3.8	8.8	0.3	0.2	0.4	0.7	0.0	2.1	8.0	4.1	11.1	0.0	0.0	0.0	0.8	0.4	1.2	2.7	0.7	4.2	3.5	1.1	5.1
2	Region 31	5.9	5.3	6.6	1.3	0.7	2.0	7.2	7.2	7.3	0.2	0.2	0.3	0.8	0.7	0.9	8.3	8.1	8.4	0.0	0.0	0.0	1.1	0.9	1.3	2.8	2.8	2.8	3.9	3.6	4.1
8	Region 32	6.0	3.6	11.7	2.2	0.6	3.7	8.2	7.1	12.5	0.3	0.2	0.4	0.5	0.0	1.3	9.0	7.4	14.1	0.2	0.0	1.0	0.9	0.5	1.3	3.3	1.2	7.8	4.2	2.2	9.1
5	Region 33	5.6	2.1	11.0	1.6	0.6	4.0	7.2	3.3	11.6	0.3	0.2	0.4	0.3	0.0	0.5	7.8	3.9	12.3	0.3	0.0	0.9	0.8	0.0	1.4	2.2	0.0	4.0	3.0	0.0	5.4
1	Region 34	5.9	-	-	4.1	-	-	10.0	-	-	0.4	-	-	0.7	-	-	11.1	-	-	0.0	-	-	1.5	-	-	3.3	-	-	4.8	-	-
2	Region 35	6.0	5.2	6.8	2.5	2.3	2.7	8.5	7.5	9.6	0.2	0.2	0.3	0.3	0.0	0.6	9.0	7.7	10.4	0.0	0.0	0.0	2.7	2.1	3.4	1.4	1.0	1.7	4.1	3.1	5.1
3	Region 36	5.9	2.1	11.2	1.7	0.7	3.3	7.6	3.1	11.9	0.3	0.1	0.5	0.0	0.0	0.0	7.9	3.6	12.0	0.0	0.0	0.1	0.7	0.0	1.4	3.1	0.7	6.9	3.8	0.7	8.3
62	**Ave. WM2**	**4.9**			**2.9**			**7.8**			**0.2**			**0.5**			**8.6**			**0.3**			**0.8**			**1.9**			**2.7**		
	Min. WM2		**0.3**			**0.3**			**2.9**			**0.0**			**0.0**			**3.6**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. WM2			**12.1**			**10.6**			**13.0**			**0.5**			**3.8**			**14.2**			**2.3**			**3.4**			**7.8**			**9.1**

TABLE 3: RSA GRADING OF WHITE MAIZE ACCORDING TO GRADE (2016/2017) (continue)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Combined 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: WM3																														
1	Region 13	25.5	-	-	1.7	-	-	27.2	-	-	0.0	-	-	0.1	-	-	27.3	-	-	0.7	-	-	0.8	-	-	0.0	-	-	0.8	-	-
1	Region 17	3.6	-	-	12.6	-	-	16.2	-	-	0.3	-	-	0.0	-	-	16.4	-	-	0.0	-	-	2.0	-	-	0.5	-	-	2.5	-	-
1	Region 19	12.4	-	-	2.8	-	-	15.2	-	-	0.0	-	-	0.6	-	-	15.8	-	-	0.4	-	-	0.4	-	-	2.1	-	-	2.5	-	-
1	Region 20	16.3	-	-	3.1	-	-	19.4	-	-	0.1	-	-	2.9	-	-	22.4	-	-	0.2	-	-	1.6	-	-	5.2	-	-	6.8	-	-
1	Region 30	15.5	-	-	1.1	-	-	16.6	-	-	0.3	-	-	0.0	-	-	16.9	-	-	0.0	-	-	2.1	-	-	10.2	-	-	12.3	-	-
1	Region 32	5.0	-	-	12.7	-	-	17.7	-	-	0.4	-	-	1.2	-	-	19.3	-	-	0.0	-	-	1.0	-	-	2.4	-	-	3.4	-	-
1	Region 35	11.5	-	-	4.0	-	-	15.5	-	-	0.3	-	-	0.0	-	-	15.8	-	-	0.0	-	-	3.4	-	-	4.6	-	-	8.0	-	-
2	Region 36	1.9	1.8	2.0	0.8	0.5	1.1	2.7	2.3	3.1	0.6	0.6	0.7	0.0	0.0	0.0	3.3	3.0	3.7	0.0	0.0	0.0	0.3	0.3	0.3	0.6	0.6	0.6	0.9	0.9	0.9
9	**Ave. WM3**	**10.4**			**4.4**			**14.8**			**0.3**			**0.5**			**15.6**			**0.1**			**1.3**			**2.9**			**4.2**		
	Min. WM3		**1.8**			**0.5**			**2.3**			**0.0**			**0.0**			**3.0**			**0.0**			**0.3**			**0.0**			**0.8**	
	Max. WM3			**25.5**			**12.7**			**27.2**			**0.7**			**2.9**			**27.3**			**0.7**			**3.4**			**10.2**			**12.3**
CLASS: COM																														
1	Region 13	23.9	-	-	12.6	-	-	36.5	-	-	0.2	-	-	0.0	-	-	36.7	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
3	Region 19	3.4	2.1	4.7	2.7	2.5	3.0	6.1	5.1	7.1	3.1	0.8	6.9	0.0	0.0	0.0	9.2	5.9	13.0	0.0	0.0	0.0	0.4	0.2	0.8	0.6	0.3	1.0	1.0	0.5	1.8
1	Region 20	2.0	-	-	1.4	-	-	3.4	-	-	6.6	-	-	0.2	-	-	10.2	-	-	0.3	-	-	0.0	-	-	0.4	-	-	0.4	-	-
1	Region 31	0.9	-	-	2.7	-	-	3.5	-	-	0.9	-	-	7.0	-	-	11.5	-	-	0.0	-	-	0.3	-	-	0.3	-	-	0.7	-	-
2	Region 33	3.9	3.7	4.0	2.1	2.0	2.1	5.9	5.7	6.2	1.8	1.2	2.4	0.3	0.0	0.5	8.0	7.4	8.5	0.0	0.0	0.0	0.9	0.8	0.9	2.0	1.9	2.1	2.8	2.8	2.9
1	Region 35	22.4	-	-	6.6	-	-	29.1	-	-	0.4	-	-	1.0	-	-	30.5	-	-	0.0	-	-	5.1	-	-	7.4	-	-	12.5	-	-
9	**Ave. COM**	**7.5**			**3.9**			**11.4**			**2.3**			**1.0**			**14.7**			**0.0**			**0.9**			**1.5**			**2.5**		
	Min. COM		**0.9**			**1.4**			**3.4**			**0.2**			**0.0**			**5.9**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. COM			**23.9**			**12.6**			**36.5**			**6.9**			**7.0**			**36.7**			**0.3**			**5.1**			**7.4**			**12.5**
549	**Ave. white maize**	**2.9**			**1.8**			**4.7**			**0.2**			**0.2**			**5.1**			**0.2**			**0.4**			**1.0**			**1.4**		
	Min. white maize		**0.3**			**0.1**			**1.0**			**0.0**			**0.0**			**1.1**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. white maize			**25.5**			**12.7**			**36.5**			**6.9**			**7.0**			**36.7**			**7.9**			**5.1**			**10.2**			**12.5**
1000	**Ave. maize**	**2.6**			**1.9**			**4.5**			**0.2**			**0.2**			**4.9**			**0.1**			**0.4**			**0.9**			**1.3**		
	Min. maize		**0.3**			**0.0**			**1.0**			**0.0**			**0.0**			**1.1**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. maize			**25.5**			**27.4**			**36.5**			**6.9**			**7.0**			**36.7**			**7.9**			**5.1**			**14.2**			**17.6**

TABLE 4: RSA GRADING OF WHITE MAIZE (2016/2017)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Combined 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: WHITE																														
2	Region 10	1.2	1.1	1.2	1.4	1.2	1.5	2.5	2.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	Region 11	1.9	-	-	2.2	-	-	4.1	-	-	0.3	-	-	0.6	-	-	4.9	-	-	0.0	-	-	0.4	-	-	0.5	-	-	0.9	-	-
17	Region 12	2.7	0.6	5.8	1.4	0.5	2.7	4.1	1.0	7.8	0.1	0.0	0.4	0.1	0.0	0.3	4.2	1.2	8.2	1.8	0.0	7.9	0.2	0.0	1.2	0.4	0.0	1.5	0.6	0.0	2.1
30	Region 13	4.6	0.3	25.5	2.8	1.2	12.6	7.4	2.6	36.5	0.1	0.0	0.4	0.1	0.0	1.4	7.6	2.7	36.7	0.2	0.0	2.3	0.4	0.0	1.2	0.6	0.0	3.5	1.0	0.0	4.7
31	Region 14	2.2	0.6	6.4	1.5	0.2	4.3	3.7	1.1	7.7	0.0	0.0	0.1	0.1	0.0	0.4	3.8	1.1	7.7	0.4	0.0	2.5	0.1	0.0	0.9	0.4	0.0	1.7	0.5	0.0	2.6
4	Region 15	2.4	2.2	2.6	1.3	1.1	1.5	3.7	3.5	3.9	0.1	0.1	0.1	0.0	0.0	0.0	3.8	3.6	4.1	0.7	0.6	0.8	0.5	0.4	0.6	1.2	1.1	1.3	1.7	1.6	1.8
21	Region 17	3.1	0.7	12.1	3.2	0.9	12.6	6.4	2.9	16.2	0.1	0.0	0.4	0.2	0.0	1.2	6.7	2.9	16.4	0.5	0.0	2.0	0.5	0.0	2.0	0.9	0.0	5.1	1.4	0.0	5.8
7	Region 18	2.9	1.3	4.2	2.7	1.4	4.3	5.6	4.1	7.4	0.1	0.0	0.2	0.1	0.0	0.2	5.8	4.4	7.7	0.3	0.0	1.1	0.1	0.0	0.5	0.2	0.0	0.5	0.3	0.0	1.0
24	Region 19	3.0	0.6	12.4	2.8	0.8	10.6	5.7	2.1	15.2	0.5	0.0	6.9	0.5	0.0	3.8	6.7	2.1	15.8	0.3	0.0	1.9	0.3	0.0	1.7	0.8	0.0	2.1	1.1	0.0	3.5
24	Region 20	3.4	1.2	16.3	1.6	0.7	3.2	5.0	2.6	19.4	0.3	0.0	6.6	0.5	0.0	2.9	5.8	3.0	22.4	0.3	0.0	3.6	0.4	0.0	2.2	0.9	0.0	5.2	1.2	0.0	6.8
57	Region 21	2.3	0.8	7.2	1.4	0.2	3.0	3.6	2.0	7.5	0.2	0.0	0.3	0.2	0.0	1.0	4.0	2.0	7.5	0.0	0.0	0.6	0.4	0.0	1.9	0.8	0.0	2.5	1.2	0.0	3.0
31	Region 22	2.3	1.3	4.5	1.2	0.4	1.8	3.6	2.1	5.6	0.1	0.0	0.2	0.1	0.0	0.6	3.8	2.1	5.6	0.2	0.0	1.4	0.3	0.0	0.5	0.9	0.0	1.3	1.2	0.0	1.7
17	Region 23	2.5	1.4	4.4	2.2	1.0	5.7	4.6	2.4	10.2	0.2	0.0	0.3	0.1	0.0	0.5	4.9	2.6	10.4	0.1	0.0	1.0	0.4	0.0	1.0	0.8	0.0	1.5	1.2	0.0	2.5
16	Region 24	2.5	1.0	4.6	1.9	1.3	3.6	4.4	2.8	6.1	0.1	0.0	0.3	0.1	0.0	0.5	4.6	3.4	6.7	0.0	0.0	0.3	0.3	0.0	0.7	1.1	0.0	2.4	1.4	0.0	3.2
4	Region 25	2.4	0.9	4.4	1.4	1.0	2.1	3.8	1.9	6.5	0.2	0.1	0.2	0.3	0.0	0.5	4.2	2.1	7.2	0.0	0.0	0.0	0.4	0.0	0.8	1.1	0.4	2.1	1.5	0.4	2.9
22	Region 26	2.0	0.9	3.5	2.0	0.6	6.9	4.1	1.7	9.3	0.2	0.1	0.5	0.3	0.0	1.0	4.6	1.8	10.1	0.1	0.0	0.6	0.3	0.0	0.6	0.8	0.0	1.7	1.0	0.0	2.3
21	Region 28	1.9	0.6	4.0	1.0	0.1	2.6	2.9	1.4	5.7	0.1	0.0	0.3	0.2	0.0	0.8	3.2	1.7	6.3	0.2	0.0	1.0	0.3	0.0	0.7	0.7	0.0	2.0	1.0	0.0	2.7
30	Region 29	2.9	0.8	9.6	1.5	0.4	4.7	4.4	1.4	11.8	0.2	0.0	0.5	0.3	0.0	1.0	4.9	2.3	12.3	0.2	0.0	0.7	0.6	0.0	1.5	1.3	0.0	6.2	1.9	0.0	7.3
21	Region 30	3.9	1.8	15.5	1.8	0.7	3.3	5.7	3.1	16.6	0.2	0.0	0.4	0.3	0.0	2.1	6.3	3.4	16.9	0.0	0.0	0.1	0.7	0.1	2.1	1.9	0.1	10.2	2.6	0.6	12.3
18	Region 31	2.7	0.9	6.6	1.6	0.7	2.7	4.3	2.8	7.3	0.2	0.1	0.9	0.7	0.0	7.0	5.2	3.4	11.5	0.0	0.0	0.0	0.5	0.0	1.3	1.2	0.3	2.8	1.7	0.7	4.1
28	Region 32	3.7	1.6	11.7	2.2	0.6	12.7	5.9	2.6	17.7	0.2	0.1	0.4	0.3	0.0	1.3	6.4	3.1	19.3	0.2	0.0	1.2	0.5	0.0	1.3	1.8	0.5	7.8	2.4	0.5	9.1
45	Region 33	3.0	1.5	11.0	1.7	0.6	4.0	4.7	3.0	11.6	0.3	0.1	2.4	0.2	0.0	1.2	5.2	3.2	12.3	0.1	0.0	1.0	0.6	0.0	1.5	1.3	0.0	4.0	1.8	0.0	5.4
39	Region 34	2.8	1.3	5.9	1.6	0.6	4.1	4.5	2.8	10.0	0.2	0.1	0.4	0.3	0.0	1.2	5.0	3.0	11.1	0.0	0.0	0.6	0.6	0.0	1.5	1.2	0.0	3.3	1.8	0.0	4.8
9	Region 35	5.7	0.5	22.4	2.7	0.4	6.6	8.4	1.3	29.1	0.2	0.0	0.4	0.2	0.0	1.0	8.8	1.4	30.5	0.4	0.0	3.1	1.6	0.0	5.1	1.6	0.0	7.4	3.2	0.0	12.5
30	Region 36	2.6	0.7	11.2	1.5	0.3	3.3	4.1	2.3	11.9	0.1	0.0	0.7	0.2	0.0	0.6	4.4	2.6	12.0	0.2	0.0	1.7	0.4	0.0	1.4	1.0	0.2	6.9	1.4	0.2	8.3
549	**Ave. White**	**2.9**			**1.8**			**4.7**			**0.2**			**0.2**			**5.1**			**0.2**			**0.4**			**1.0**			**1.4**		
	Min. White		**0.3**			**0.1**			**1.0**			**0.0**			**0.0**			**1.1**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. White			**25.5**			**12.7**			**36.5**			**6.9**			**7.0**			**36.7**			**7.9**			**5.1**			**10.2**			**12.5**

TABLE 5: RSA GRADING OF YELLOW MAIZE ACCORDING TO GRADE (2016/2017)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Combined 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																														
37	Region 10	1.4	0.6	2.7	1.9	0.6	3.9	3.3	1.8	5.7	0.1	0.0	0.3	0.0	0.0	0.6	3.5	1.8	6.0	0.0	0.0	0.0	0.1	0.0	0.6	0.3	0.0	1.3	0.4	0.0	1.9
3	Region 11	2.2	1.2	3.5	2.7	1.9	3.1	4.9	3.2	6.6	0.2	0.2	0.2	0.0	0.0	0.0	5.1	3.3	6.8	0.0	0.0	0.0	0.3	0.0	1.0	0.8	0.0	1.8	1.1	0.0	2.8
3	Region 12	2.5	1.5	3.9	1.0	0.6	1.4	3.5	2.1	5.0	0.0	0.0	0.1	0.2	0.0	0.5	3.8	2.7	5.4	0.0	0.0	0.0	0.4	0.0	1.2	0.5	0.0	1.5	0.9	0.0	2.7
5	Region 13	2.2	1.6	3.5	2.6	1.3	4.0	4.8	2.9	6.7	0.2	0.0	0.3	0.1	0.0	0.3	5.1	3.1	6.9	0.0	0.0	0.0	0.3	0.0	0.7	0.4	0.0	0.8	0.7	0.4	1.0
8	Region 14	1.1	0.4	2.3	1.9	0.8	2.6	2.9	1.3	4.1	0.1	0.0	0.3	0.1	0.0	0.4	3.1	1.3	4.2	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.0	0.4	0.2	0.0	0.4
3	Region 17	2.1	1.9	2.2	2.2	1.1	3.6	4.3	3.2	5.6	0.1	0.0	0.2	0.2	0.0	0.3	4.6	3.6	5.8	0.0	0.0	0.0	0.4	0.3	0.5	0.5	0.2	0.6	0.8	0.6	1.0
3	Region 18	4.2	2.7	7.0	2.0	1.8	2.2	6.2	4.6	8.8	0.1	0.0	0.2	0.0	0.0	0.0	6.3	4.6	8.9	0.0	0.0	0.0	0.5	0.2	0.8	1.3	0.1	3.1	1.8	0.4	3.9
5	Region 19	2.9	2.2	3.2	1.8	0.8	2.7	4.7	3.6	5.8	0.1	0.0	0.3	0.3	0.0	1.2	5.1	3.7	6.0	0.0	0.0	0.0	0.2	0.0	0.5	0.9	0.4	1.3	1.1	0.4	1.6
5	Region 20	2.7	1.5	5.6	1.7	0.9	3.1	4.4	3.1	6.9	0.1	0.0	0.2	0.1	0.0	0.5	4.7	3.1	7.1	0.0	0.0	0.0	0.5	0.0	1.5	1.1	0.0	2.6	1.6	0.0	4.1
10	Region 21	2.2	1.4	2.8	1.6	0.7	3.0	3.8	2.4	5.2	0.2	0.1	0.3	0.7	0.0	1.5	4.6	2.6	6.1	0.0	0.0	0.0	0.3	0.0	0.5	0.9	0.0	1.5	1.2	0.0	1.8
3	Region 22	1.5	1.5	1.6	1.5	0.9	1.8	3.0	2.5	3.3	0.2	0.1	0.2	0.4	0.0	0.7	3.6	3.3	4.1	0.0	0.0	0.0	0.1	0.0	0.3	0.9	0.8	1.1	1.0	0.8	1.1
3	Region 23	2.3	2.1	2.4	1.7	1.4	2.0	3.9	3.6	4.2	0.2	0.1	0.2	1.1	0.6	1.5	5.1	4.3	6.0	0.0	0.0	0.0	0.4	0.3	0.4	1.2	1.2	1.2	1.6	1.6	1.6
3	Region 24	1.4	1.3	1.7	2.3	1.7	2.7	3.8	3.4	4.0	0.1	0.1	0.2	0.4	0.0	0.6	4.3	3.9	4.7	0.0	0.0	0.0	0.1	0.0	0.4	0.6	0.5	0.8	0.7	0.5	1.2
26	Region 25	1.9	1.3	2.5	1.7	1.0	2.7	3.6	2.2	4.9	0.1	0.1	0.2	0.0	0.0	0.0	3.8	2.4	5.1	0.0	0.0	0.0	0.2	0.0	1.1	0.9	0.0	1.3	1.1	0.5	1.8
28	Region 26	2.1	1.2	4.0	1.9	0.6	3.9	4.0	2.9	7.5	0.2	0.1	0.3	0.0	0.0	0.6	4.3	3.0	7.7	0.0	0.0	0.0	0.3	0.0	2.0	0.8	0.0	2.0	1.1	0.0	2.7
33	Region 28	1.9	1.2	4.0	1.5	0.3	2.5	3.4	2.2	5.6	0.1	0.0	0.3	0.1	0.0	0.5	3.6	2.2	5.6	0.0	0.0	0.0	0.3	0.0	0.7	0.7	0.0	2.0	1.0	0.0	2.6
74	Region 29	2.2	0.7	4.6	1.6	0.0	3.6	3.8	1.6	7.3	0.1	0.0	0.3	0.1	0.0	1.5	4.0	1.6	7.5	0.0	0.0	0.0	0.4	0.0	1.9	0.7	0.0	2.3	1.1	0.0	3.0
31	Region 30	2.2	1.0	4.0	1.8	0.5	3.5	4.0	1.9	5.9	0.2	0.1	0.3	0.1	0.0	0.9	4.2	2.1	6.9	0.0	0.0	0.0	0.4	0.0	1.3	0.8	0.0	1.5	1.1	0.0	2.8
14	Region 31	2.6	1.1	4.4	1.8	0.7	3.1	4.4	3.5	5.1	0.2	0.1	0.3	0.0	0.0	0.4	4.6	3.8	5.3	0.0	0.0	0.0	0.4	0.0	0.8	1.2	0.0	2.1	1.6	0.0	2.9
26	Region 32	2.2	0.6	5.7	1.9	1.0	3.3	4.1	2.0	7.8	0.2	0.1	0.3	0.0	0.0	0.7	4.3	2.2	8.8	0.0	0.0	0.0	0.4	0.0	1.3	0.8	0.0	2.2	1.2	0.0	3.1
24	Region 33	2.7	1.8	4.7	1.6	0.7	2.6	4.3	3.0	6.4	0.2	0.1	0.3	0.0	0.0	0.5	4.5	3.1	7.1	0.0	0.0	0.0	0.5	0.3	1.1	1.2	0.8	2.0	1.8	1.1	3.2
38	Region 34	2.5	1.3	4.3	1.6	0.6	3.7	4.2	2.6	5.6	0.2	0.1	0.3	0.2	0.0	1.9	4.6	2.7	7.3	0.0	0.0	0.0	0.5	0.0	1.0	1.0	0.0	2.2	1.5	0.0	3.1
9	Region 35	1.4	0.7	3.4	1.1	0.3	2.3	2.4	1.2	5.5	0.1	0.0	0.1	0.0	0.0	0.1	2.5	1.4	5.5	0.0	0.0	0.0	0.1	0.0	0.6	0.1	0.0	0.6	0.2	0.0	1.2
23	Region 36	2.2	1.1	4.2	2.4	1.3	3.7	4.7	2.8	7.9	0.1	0.0	0.2	0.1	0.0	0.8	4.9	2.9	8.1	0.0	0.0	0.3	0.4	0.0	1.5	0.7	0.0	2.2	1.1	0.0	2.9
417	**Ave. YM1**	**2.1**			**1.8**			**3.9**			**0.1**			**0.1**			**4.1**			**0.0**			**0.3**			**0.8**			**1.1**		
	Min. YM1		**0.4**			**0.0**			**1.2**			**0.0**			**0.0**			**1.3**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. YM1			**7.0**			**4.0**			**8.8**			**0.3**			**1.9**			**8.9**			**0.3**			**2.0**			**3.1**			**4.1**

TABLE 5: RSA GRADING OF YELLOW MAIZE ACCORDING TO GRADE (2016/2017) (continue)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Combined 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																														
1	Region 11	8.3	-	-	2.8	-	-	11.1	-	-	0.2	-	-	0.0	-	-	11.3	-	-	0.0	-	-	2.5	-	-	3.4	-	-	5.9	-	-
1	Region 13	12.3	-	-	3.0	-	-	15.3	-	-	0.0	-	-	0.0	-	-	15.3	-	-	0.0	-	-	0.0	-	-	0.1	-	-	0.1	-	-
1	Region 17	2.5	-	-	1.6	-	-	4.2	-	-	0.4	-	-	0.5	-	-	5.1	-	-	0.0	-	-	0.4	-	-	1.1	-	-	1.6	-	-
1	Region 19	9.5	-	-	2.0	-	-	11.4	-	-	0.0	-	-	0.3	-	-	11.7	-	-	0.0	-	-	0.6	-	-	3.2	-	-	3.8	-	-
3	Region 20	3.6	1.2	5.9	2.9	1.5	4.1	6.5	2.7	9.0	0.1	0.0	0.2	1.0	0.0	2.3	7.6	5.0	9.2	0.0	0.0	0.0	0.9	0.0	1.9	1.0	0.2	1.8	1.9	0.2	2.9
1	Region 21	0.7	-	-	4.6	-	-	5.3	-	-	0.1	-	-	0.0	-	-	5.4	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
1	Region 23	2.5	-	-	6.7	-	-	9.2	-	-	0.2	-	-	0.0	-	-	9.4	-	-	0.0	-	-	0.3	-	-	0.9	-	-	1.1	-	-
6	Region 26	4.9	1.2	8.9	4.9	4.1	5.9	9.8	6.4	14.8	0.3	0.1	0.4	0.6	0.0	1.3	10.7	6.6	15.1	0.0	0.0	0.0	0.4	0.0	0.8	1.3	0.5	2.3	1.7	0.5	3.1
1	Region 29	6.9	-	-	2.4	-	-	9.3	-	-	0.3	-	-	0.0	-	-	9.6	-	-	0.0	-	-	0.7	-	-	1.2	-	-	1.9	-	-
2	Region 30	6.4	5.2	7.6	2.7	2.6	2.7	9.0	7.8	10.3	0.3	0.3	0.3	0.6	0.0	1.1	9.9	9.2	10.6	0.0	0.0	0.0	1.6	0.7	2.5	2.3	1.7	3.0	4.0	3.7	4.2
2	Region 33	7.5	3.7	11.2	6.9	4.2	9.6	14.3	13.3	15.4	0.3	0.2	0.5	1.2	0.5	1.9	15.8	14.3	17.4	0.0	0.0	0.0	1.7	0.9	2.5	4.0	1.9	6.2	5.8	2.8	8.7
2	Region 34	3.0	2.8	3.3	3.2	2.4	4.1	6.3	5.2	7.3	0.2	0.2	0.3	3.1	2.9	3.3	9.6	8.4	10.9	0.0	0.0	0.0	0.6	0.6	0.7	1.6	1.4	1.7	2.2	2.1	2.3
1	Region 35	2.5	-	-	5.1	-	-	7.6	-	-	0.3	-	-	0.6	-	-	8.5	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
5	Region 36	2.0	0.9	4.8	4.3	3.0	5.0	6.3	3.9	9.8	0.2	0.1	0.3	0.6	0.0	3.2	7.1	5.3	10.0	0.0	0.0	0.0	0.2	0.0	0.6	0.8	0.1	2.8	0.9	0.1	3.5
28	**Ave. YM2**	**4.6**			**4.1**			**8.7**			**0.2**			**0.7**			**9.6**			**0.0**			**0.7**			**1.4**			**2.1**		
	Min. YM2		**0.7**			**1.5**			**2.7**			**0.0**			**0.0**			**5.0**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. YM2			**12.3**			**9.6**			**15.4**			**0.5**			**3.3**			**17.4**			**0.0**			**2.5**			**6.2**			**8.7**

TABLE 5: RSA GRADING OF YELLOW MAIZE ACCORDING TO GRADE (2016/2017) (continue)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Combined 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																														
1	Region 20	2.6	-	-	1.9	-	-	4.5	-	-	0.6	-	-	0.2	-	-	5.3	-	-	0.0	-	-	0.0	-	-	0.3	-	-	0.3	-	-
1	Region 30	24.3	-	-	1.8	-	-	26.1	-	-	0.2	-	-	3.1	-	-	29.4	-	-	0.0	-	-	3.4	-	-	14.2	-	-	17.6	-	-
2	**Ave. YM3**	**13.5**			**1.9**			**15.3**			**0.4**			**1.7**			**17.4**			**0.0**			**1.7**			**7.2**			**8.9**		
	Min. YM3		**2.6**			**1.8**			**4.5**			**0.2**			**0.2**			**5.3**			**0.0**			**0.0**			**0.3**			**0.3**	
	Max .YM3			**24.3**			**1.9**			**26.1**			**0.6**			**3.1**			**29.4**			**0.0**			**3.4**			**14.2**			**17.6**
CLASS: COM																														
2	Region 26	10.6	9.9	11.3	7.1	6.6	7.5	17.7	16.5	18.8	1.0	0.8	1.2	0.0	0.0	0.0	18.6	17.3	20.0	0.0	0.0	0.0	2.6	2.6	2.6	2.1	2.1	2.1	4.8	4.8	4.8
1	Region 30	3.2	-	-	1.4	-	-	4.7	-	-	0.2	-	-	6.9	-	-	11.7	-	-	0.0	-	-	0.7	-	-	1.8	-	-	2.5	-	-
1	Region 33	2.7	-	-	27.4	-	-	30.0	-	-	2.8	-	-	0.7	-	-	33.5	-	-	0.0	-	-	0.5	-	-	1.0	-	-	1.5	-	-
4	**Ave. COM**	**6.8**			**10.7**			**17.5**			**1.2**			**1.9**			**20.6**			**0.0**			**1.6**			**1.8**			**3.4**		
	Min. COM		**2.7**			**1.4**			**4.7**			**0.2**			**0.0**			**11.7**			**0.0**			**0.5**			**1.0**			**1.5**	
	Max. COM			**11.3**			**27.4**			**30.0**			**2.8**			**6.9**			**33.5**			**0.0**			**2.6**			**2.1**			**4.8**
451	**Ave. yellow maize**	**2.4**			**2.0**			**4.4**			**0.2**			**0.2**			**4.7**			**0.0**			**0.4**			**0.8**			**1.2**		
	Min. yellow maize		**0.4**			**0.0**			**1.2**			**0.0**			**0.0**			**1.3**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. yellow maize			**24.3**			**27.4**			**30.0**			**2.8**			**6.9**			**33.5**			**0.3**			**3.4**			**14.2**			**17.6**
1000	**Ave. maize**	**2.6**			**1.9**			**4.5**			**0.2**			**0.2**			**4.9**			**0.1**			**0.4**			**0.9**			**1.3**		
	Min. maize		**0.3**			**0.0**			**1.0**			**0.0**			**0.0**			**1.1**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. maize			**25.5**			**27.4**			**36.5**			**6.9**			**7.0**			**36.7**			**7.9**			**5.1**			**14.2**			**17.6**

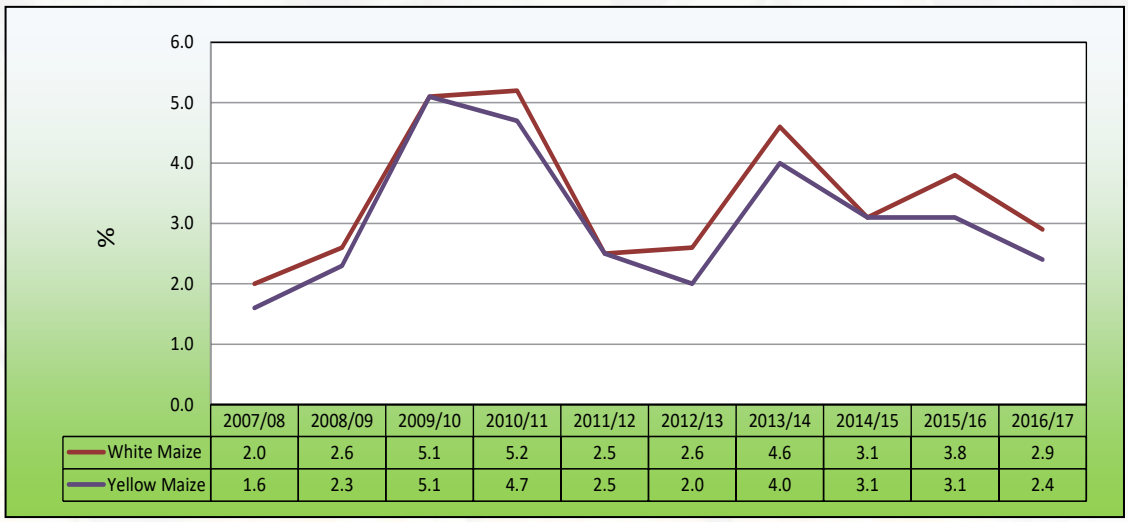
TABLE 6: RSA GRADING OF YELLOW MAIZE (2016/2017)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Combined 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: YELLOW																														
37	Region 10	1.4	0.6	2.7	1.9	0.6	3.9	3.3	1.8	5.7	0.1	0.0	0.3	0.0	0.0	0.6	3.5	1.8	6.0	0.0	0.0	0.0	0.1	0.0	0.6	0.3	0.0	1.3	0.4	0.0	1.9
4	Region 11	3.7	1.2	8.3	2.7	1.9	3.1	6.4	3.2	11.1	0.2	0.2	0.2	0.0	0.0	0.0	6.6	3.3	11.3	0.0	0.0	0.0	0.9	0.0	2.5	1.4	0.0	3.4	2.3	0.0	5.9
3	Region 12	2.5	1.5	3.9	1.0	0.6	1.4	3.5	2.1	5.0	0.0	0.0	0.1	0.2	0.0	0.5	3.8	2.7	5.4	0.0	0.0	0.0	0.4	0.0	1.2	0.5	0.0	1.5	0.9	0.0	2.7
6	Region 13	3.9	1.6	12.3	2.7	1.3	4.0	6.5	2.9	15.3	0.1	0.0	0.3	0.1	0.0	0.3	6.8	3.1	15.3	0.0	0.0	0.0	0.3	0.0	0.7	0.3	0.0	0.8	0.6	0.1	1.0
8	Region 14	1.1	0.4	2.3	1.9	0.8	2.6	2.9	1.3	4.1	0.1	0.0	0.3	0.1	0.0	0.4	3.1	1.3	4.2	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.0	0.4	0.2	0.0	0.4
4	Region 17	2.2	1.9	2.5	2.1	1.1	3.6	4.3	3.2	5.6	0.2	0.0	0.4	0.2	0.0	0.5	4.7	3.6	5.8	0.0	0.0	0.0	0.4	0.3	0.5	0.6	0.2	1.1	1.0	0.6	1.6
3	Region 18	4.2	2.7	7.0	2.0	1.8	2.2	6.2	4.6	8.8	0.1	0.0	0.2	0.0	0.0	0.0	6.3	4.6	8.9	0.0	0.0	0.0	0.5	0.2	0.8	1.3	0.1	3.1	1.8	0.4	3.9
6	Region 19	4.0	2.2	9.5	1.8	0.8	2.7	5.8	3.6	11.4	0.1	0.0	0.3	0.3	0.0	1.2	6.2	3.7	11.7	0.0	0.0	0.0	0.3	0.0	0.6	1.3	0.4	3.2	1.5	0.4	3.8
9	Region 20	3.0	1.2	5.9	2.1	0.9	4.1	5.1	2.7	9.0	0.2	0.0	0.6	0.4	0.0	2.3	5.7	3.1	9.2	0.0	0.0	0.0	0.6	0.0	1.9	1.0	0.0	2.6	1.5	0.0	4.1
11	Region 21	2.1	0.7	2.8	1.9	0.7	4.6	3.9	2.4	5.3	0.2	0.1	0.3	0.6	0.0	1.5	4.7	2.6	6.1	0.0	0.0	0.0	0.3	0.0	0.5	0.8	0.0	1.5	1.1	0.0	1.8
3	Region 22	1.5	1.5	1.6	1.5	0.9	1.8	3.0	2.5	3.3	0.2	0.1	0.2	0.4	0.0	0.7	3.6	3.3	4.1	0.0	0.0	0.0	0.1	0.0	0.3	0.9	0.8	1.1	1.0	0.8	1.1
4	Region 23	2.3	2.1	2.5	2.9	1.4	6.7	5.2	3.6	9.2	0.2	0.1	0.2	0.8	0.0	1.5	6.2	4.3	9.4	0.0	0.0	0.0	0.3	0.3	0.4	1.1	0.9	1.2	1.5	1.1	1.6
3	Region 24	1.4	1.3	1.7	2.3	1.7	2.7	3.8	3.4	4.0	0.1	0.1	0.2	0.4	0.0	0.6	4.3	3.9	4.7	0.0	0.0	0.0	0.1	0.0	0.4	0.6	0.5	0.8	0.7	0.5	1.2
26	Region 25	1.9	1.3	2.5	1.7	1.0	2.7	3.6	2.2	4.9	0.1	0.1	0.2	0.0	0.0	0.0	3.8	2.4	5.1	0.0	0.0	0.0	0.2	0.0	1.1	0.9	0.0	1.3	1.1	0.5	1.8
36	Region 26	3.1	1.2	11.3	2.7	0.6	7.5	5.8	2.9	18.8	0.3	0.1	1.2	0.1	0.0	1.3	6.1	3.0	20.0	0.0	0.0	0.0	0.5	0.0	2.6	1.0	0.0	2.3	1.4	0.0	4.8
33	Region 28	1.9	1.2	4.0	1.5	0.3	2.5	3.4	2.2	5.6	0.1	0.0	0.3	0.1	0.0	0.5	3.6	2.2	5.6	0.0	0.0	0.0	0.3	0.0	0.7	0.7	0.0	2.0	1.0	0.0	2.6
75	Region 29	2.3	0.7	6.9	1.6	0.0	3.6	3.9	1.6	9.3	0.1	0.0	0.3	0.1	0.0	1.5	4.1	1.6	9.6	0.0	0.0	0.0	0.4	0.0	1.9	0.7	0.0	2.3	1.1	0.0	3.0
35	Region 30	3.1	1.0	24.3	1.8	0.5	3.5	4.9	1.9	26.1	0.2	0.1	0.3	0.4	0.0	6.9	5.5	2.1	29.4	0.0	0.0	0.0	0.5	0.0	3.4	1.3	0.0	14.2	1.8	0.0	17.6
14	Region 31	2.6	1.1	4.4	1.8	0.7	3.1	4.4	3.5	5.1	0.2	0.1	0.3	0.0	0.0	0.4	4.6	3.8	5.3	0.0	0.0	0.0	0.4	0.0	0.8	1.2	0.0	2.1	1.6	0.0	2.9
26	Region 32	2.2	0.6	5.7	1.9	1.0	3.3	4.1	2.0	7.8	0.2	0.1	0.3	0.0	0.0	0.7	4.3	2.2	8.8	0.0	0.0	0.0	0.4	0.0	1.3	0.8	0.0	2.2	1.2	0.0	3.1
27	Region 33	3.1	1.8	11.2	2.9	0.7	27.4	6.0	3.0	30.0	0.3	0.1	2.8	0.1	0.0	1.9	6.4	3.1	33.5	0.0	0.0	0.0	0.6	0.3	2.5	1.4	0.8	6.2	2.0	1.1	8.7
40	Region 34	2.5	1.3	4.3	1.7	0.6	4.1	4.3	2.6	7.3	0.2	0.1	0.3	0.4	0.0	3.3	4.8	2.7	10.9	0.0	0.0	0.0	0.5	0.0	1.0	1.1	0.0	2.2	1.5	0.0	3.1
10	Region 35	1.5	0.7	3.4	1.5	0.3	5.1	2.9	1.2	7.6	0.1	0.0	0.3	0.1	0.0	0.6	3.1	1.4	8.5	0.0	0.0	0.0	0.1	0.0	0.6	0.1	0.0	0.6	0.2	0.0	1.2
28	Region 36	2.2	0.9	4.8	2.8	1.3	5.0	4.9	2.8	9.8	0.1	0.0	0.3	0.2	0.0	3.2	5.3	2.9	10.0	0.0	0.0	0.3	0.3	0.0	1.5	0.7	0.0	2.8	1.1	0.0	3.5
451	**Ave. Yellow**	**2.4**			**2.0**			**4.4**			**0.2**			**0.2**			**4.7**			**0.0**			**0.4**			**0.8**			**1.2**		
	Min. Yellow		**0.4**			**0.0**			**1.2**			**0.0**			**0.0**			**1.3**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. Yellow			**24.3**			**27.4**			**30.0**			**2.8**			**6.9**			**33.5**			**0.3**			**3.4**			**14.2**			**17.6**

TABLE 7: GRADING QUALITY OF SOUTH AFRICAN WHITE AND YELLOW MAIZE 2007/2008 - 2016/2017

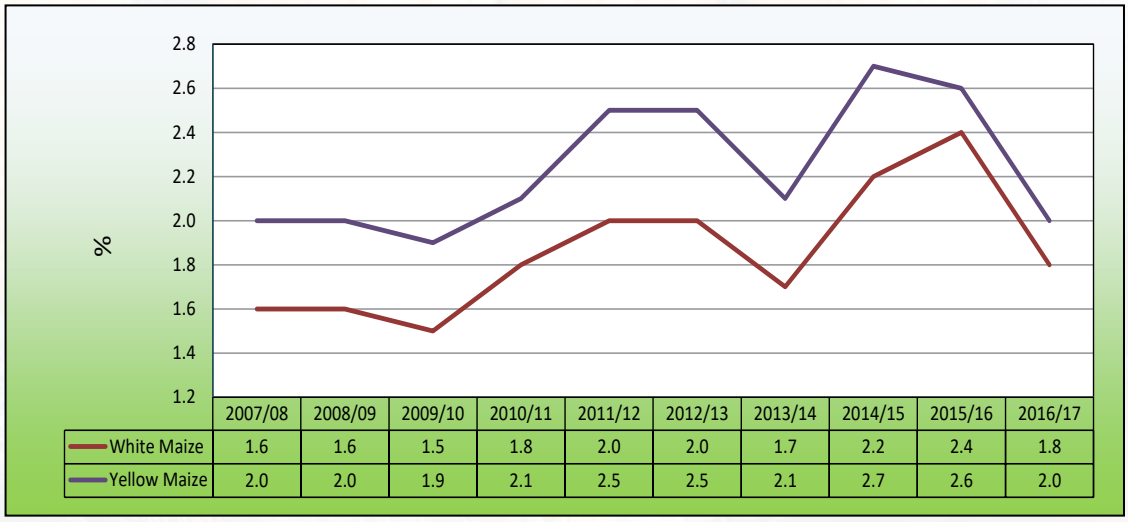
Season	Number of samples	% Defective kernels above 6.35 mm sieve			% Defective kernels below 6.35 mm sieve			% Foreign matter			% Other colour			% Combined deviations		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
White Maize																
2007/08	483	2.0	0.3	13.6	1.6	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
2014/15	485	3.1	0.0	30.0	2.2	0.0	25.5	0.1	0.0	1.2	0.4	0.0	9.6	5.8	0.0	35.3
2015/16	415	3.8	0.7	79.9	2.4	0.0	14.5	0.2	0.0	2.2	0.4	0.0	8.0	6.7	1.9	91.5
2016/17	549	2.9	0.3	25.5	1.8	0.1	12.7	0.2	0.0	6.9	0.2	0.0	7.0	5.1	1.1	36.7
Weighted Average		**3.4**			**1.9**			**0.1**			**0.3**			**5.6**		
Minimum			**0.0**			**0.0**			**0.0**			**0.0**			**0.0**	
Maximum				**79.9**			**25.5**			**6.9**			**43.7**			**95.1**
Yellow Maize																
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
2014/15	515	3.1	0.6	23.0	2.7	0.0	19.0	0.1	0.0	2.5	0.3	0.0	13.6	6.2	0.6	34.4
2015/16	505	3.1	0.5	24.4	2.6	0.0	18.1	0.2	0.0	1.7	0.2	0.0	4.5	6.0	0.6	32.4
2016/17	451	2.4	0.4	24.3	2.0	0.0	27.4	0.2	0.0	2.8	0.2	0.0	6.9	4.7	1.3	33.5
Weighted Average		**3.0**			**2.3**			**0.1**			**0.2**			**5.6**		
Minimum			**0.2**			**0.0**			**0.0**			**0.0**			**0.6**	
Maximum				**66.3**			**27.4**			**4.1**			**13.6**			**90.4**
White and Yellow Maize																
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	2.0	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
2014/15	1000	3.1	0.0	30.0	2.5	0.0	25.5	0.1	0.0	2.5	0.3	0.0	13.6	6.0	0.0	35.3
2015/16	920	3.4	0.5	79.9	2.5	0.0	18.1	0.2	0.0	2.2	0.3	0.0	8.0	6.3	0.6	91.5
2016/17	1000	2.6	0.3	25.5	1.9	0.0	27.4	0.2	0.0	6.9	0.2	0.0	7.0	4.9	1.1	36.7
Weighted Average		**3.2**			**2.1**			**0.1**			**0.3**			**5.6**		
Minimum			**0.0**			**0.0**			**0.0**			**0.0**			**0.0**	
Maximum				**79.9**			**27.4**			**6.9**			**43.7**			**95.1**

Graph 34: Percentage Defective Kernels above the 6.35 mm sieve over 10 seasons



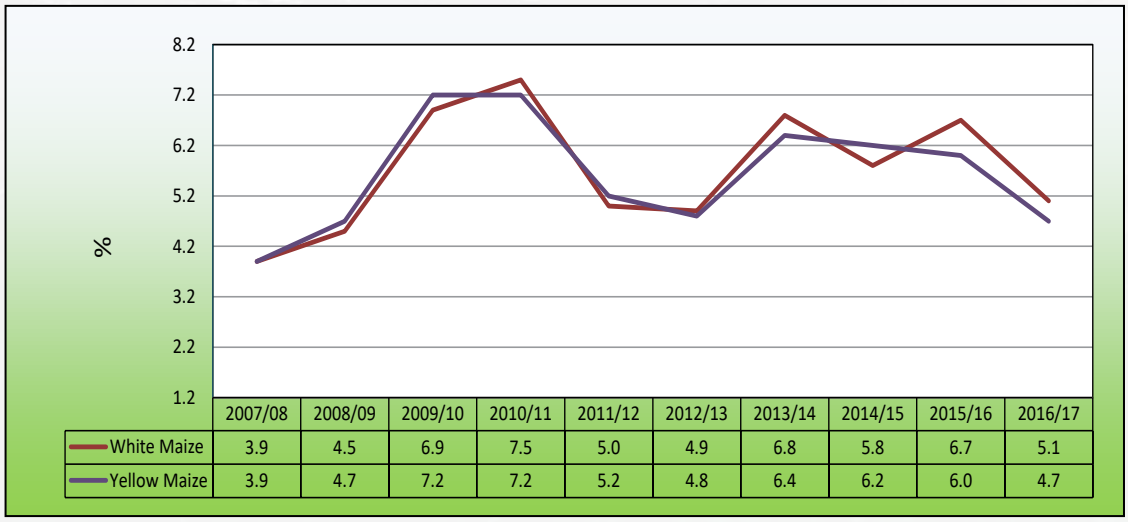
	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
White Maize	2.0	2.6	5.1	5.2	2.5	2.6	4.6	3.1	3.8	2.9
Yellow Maize	1.6	2.3	5.1	4.7	2.5	2.0	4.0	3.1	3.1	2.4

Graph 35: Percentage Defective Kernels below the 6.35 mm sieve over 10 seasons



	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
White Maize	1.6	1.6	1.5	1.8	2.0	2.0	1.7	2.2	2.4	1.8
Yellow Maize	2.0	2.0	1.9	2.1	2.5	2.5	2.1	2.7	2.6	2.0

Graph 36: Percentage Combined deviations over 10 seasons



	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
White Maize	3.9	4.5	6.9	7.5	5.0	4.9	6.8	5.8	6.7	5.1
Yellow Maize	3.9	4.7	7.2	7.2	5.2	4.8	6.4	6.2	6.0	4.7

TABLE 8: USA GRADING OF WHITE MAIZE (2016/2017)

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																
2	Region 10	0.0	0.0	0.0	1.2	1.1	1.2	0.2	0.2	0.3	61.8	61.7	61.9	0.0	0.0	0.0
1	Region 11	0.0	-	-	1.9	-	-	0.9	-	-	61.8	-	-	0.6	-	-
13	Region 12	0.0	0.0	0.0	2.1	0.6	2.9	0.4	0.0	0.7	60.2	58.6	61.9	0.0	0.0	0.3
13	Region 13	0.0	0.0	0.0	2.0	1.1	2.5	0.7	0.2	2.0	59.0	57.4	60.5	0.2	0.0	1.4
21	Region 14	0.0	0.0	0.0	1.8	0.8	2.7	0.3	0.0	1.0	60.2	59.4	61.0	0.0	0.0	0.2
4	Region 15	0.0	0.0	0.0	2.5	2.3	2.6	0.5	0.5	0.6	60.6	60.2	61.0	0.0	0.0	0.0
14	Region 17	0.0	0.0	0.0	2.4	0.9	2.9	1.1	0.2	1.9	59.6	56.5	60.6	0.1	0.0	0.5
3	Region 18	0.0	0.0	0.0	2.4	1.9	3.0	1.3	1.1	1.6	60.4	59.1	62.0	0.2	0.1	0.2
9	Region 19	0.0	0.0	0.0	1.8	0.9	3.0	0.4	0.2	0.8	59.7	58.3	60.8	0.0	0.0	0.0
11	Region 20	0.0	0.0	0.0	1.9	1.3	3.0	0.5	0.2	0.9	60.4	59.6	61.8	0.3	0.0	1.3
45	Region 21	0.0	0.0	0.0	2.0	1.2	2.9	0.5	0.1	1.2	61.1	59.4	63.5	0.1	0.0	0.6
27	Region 22	0.0	0.0	0.0	2.2	1.4	2.6	0.5	0.1	0.7	60.5	59.4	61.5	0.1	0.0	0.6
15	Region 23	0.0	0.0	0.0	2.4	1.6	2.9	0.6	0.1	1.2	60.6	60.0	61.3	0.1	0.0	0.5
9	Region 24	0.0	0.0	0.0	1.7	1.0	2.8	0.9	0.2	1.6	60.2	58.7	62.2	0.1	0.0	0.5
3	Region 25	0.0	0.0	0.0	1.7	0.9	2.6	0.4	0.3	0.5	60.3	59.8	60.8	0.2	0.0	0.5
18	Region 26	0.0	0.0	0.0	1.8	0.8	2.5	0.6	0.1	1.9	59.4	56.9	62.8	0.3	0.0	1.1
17	Region 28	0.0	0.0	0.0	1.7	0.7	2.9	0.2	0.0	0.4	61.4	59.4	63.2	0.2	0.0	0.6
18	Region 29	0.0	0.0	0.0	2.0	0.8	2.9	0.5	0.1	0.8	60.8	60.0	61.5	0.3	0.0	1.0
12	Region 30	0.0	0.0	0.0	2.6	1.8	3.0	0.7	0.3	1.3	60.3	56.3	61.5	0.3	0.0	0.8
10	Region 31	0.0	0.0	0.0	2.0	1.4	2.9	0.5	0.3	0.8	60.9	58.9	62.0	0.3	0.0	0.6
12	Region 32	0.0	0.0	0.0	2.3	1.6	2.7	0.5	0.3	0.8	60.2	58.2	62.3	0.2	0.0	1.1
27	Region 33	0.0	0.0	0.0	2.3	1.5	2.9	0.6	0.3	1.0	61.1	60.1	62.7	0.2	0.0	0.8
20	Region 34	0.0	0.0	0.0	2.3	1.3	3.0	0.6	0.1	1.3	59.8	56.7	62.2	0.3	0.0	1.2
4	Region 35	0.0	0.0	0.0	0.6	0.5	0.9	0.7	0.1	1.1	60.4	59.1	61.4	0.1	0.0	0.5
23	Region 36	0.0	0.0	0.0	2.0	0.8	2.9	0.5	0.1	1.0	61.0	57.9	63.0	0.2	0.0	0.6
351	**Ave. US No.1**	**0.0**			**2.1**			**0.5**			**60.5**			**0.2**		
	Min. US No.1		**0.0**			**0.5**			**0.0**			**56.3**			**0.0**	
	Max. US No.1			**0.0**			**3.0**			**2.0**			**63.5**			**1.4**
GRADE: US No.2																
1	Region 12	0.0	-	-	4.7	-	-	0.7	-	-	58.6	-	-	0.0	-	-
10	Region 13	0.0	0.0	0.0	3.6	0.5	5.0	0.9	0.2	2.9	58.4	56.7	61.0	0.1	0.0	0.3
5	Region 14	0.1	0.0	0.2	3.6	2.9	4.2	0.3	0.1	0.7	60.3	59.4	61.0	0.1	0.0	0.4
3	Region 17	0.0	0.0	0.0	2.9	1.7	3.7	1.3	0.3	2.6	57.7	55.0	60.1	0.2	0.0	0.5
4	Region 18	0.0	0.0	0.0	4.3	3.8	4.6	0.5	0.2	1.1	60.1	59.9	60.3	0.0	0.0	0.2
4	Region 19	0.1	0.0	0.2	3.1	2.5	3.8	0.9	0.2	2.2	57.8	55.5	60.4	0.1	0.0	0.4
7	Region 20	0.0	0.0	0.0	3.7	3.2	4.6	0.5	0.2	1.0	60.1	59.1	62.0	0.2	0.0	0.5
10	Region 21	0.0	0.0	0.0	3.5	3.1	4.1	0.4	0.2	0.8	61.0	60.3	61.6	0.3	0.0	1.0
4	Region 22	0.0	0.0	0.0	4.0	3.2	4.8	0.1	0.1	0.2	60.3	59.5	61.5	0.0	0.0	0.0
2	Region 23	0.0	0.0	0.0	4.0	3.4	4.7	1.4	0.6	2.2	60.6	60.1	61.0	0.0	0.0	0.0
7	Region 24	0.0	0.0	0.0	3.7	3.2	4.7	0.5	0.4	0.6	61.4	60.9	62.3	0.1	0.0	0.5
1	Region 25	0.0	0.0	0.0	4.6	4.6	4.6	0.7	0.7	0.7	61.0	61.0	61.0	0.5	0.5	0.5
4	Region 26	0.0	0.0	0.0	3.2	2.6	3.7	1.0	0.1	2.6	59.5	59.0	60.0	0.6	0.5	0.8
4	Region 28	0.1	0.0	0.2	2.8	1.7	4.0	0.4	0.1	1.1	61.6	60.8	62.4	0.3	0.0	0.8
9	Region 29	0.0	0.0	0.0	3.5	1.8	4.6	0.8	0.1	2.3	60.6	57.4	62.7	0.3	0.0	0.6
4	Region 30	0.0	0.0	0.0	3.6	3.3	4.2	0.4	0.3	0.6	61.5	60.3	62.5	0.2	0.0	0.5
5	Region 31	0.0	0.0	0.0	3.3	2.7	4.1	0.5	0.3	0.7	59.9	55.8	61.3	0.3	0.0	0.6
11	Region 32	0.0	0.0	0.0	3.8	3.1	4.5	1.0	0.5	1.8	59.9	57.2	61.1	0.3	0.0	0.6
15	Region 33	0.0	0.0	0.0	3.6	2.7	4.5	1.0	0.3	2.9	60.4	54.4	61.8	0.2	0.0	1.2
18	Region 34	0.0	0.0	0.0	3.5	3.1	4.8	0.6	0.3	1.0	60.5	57.5	62.2	0.3	0.0	0.7
5	Region 36	0.0	0.0	0.2	3.5	2.8	4.5	0.8	0.2	2.2	60.4	58.2	61.6	0.0	0.0	0.0

TABLE 8: USA GRADING OF WHITE MAIZE (2016/2017) (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.
133	**Ave. US No.2**	**0.0**			**3.6**			**0.7**			**60.2**			**0.2**		
	Min. US No.2		**0.0**			**0.5**			**0.1**			**54.4**			**0.0**	
	Max. US No.2			**0.2**			**5.0**			**2.9**			**62.7**			**1.2**
GRADE: US No.3																
3	Region 12	0.1	0.0	0.3	5.8	5.6	6.1	0.6	0.1	1.3	59.7	59.0	60.3	0.1	0.0	0.2
2	Region 13	0.2	0.0	0.4	5.0	4.2	5.7	1.7	1.3	2.0	59.7	59.3	60.0	0.0	0.0	0.0
5	Region 14	0.3	0.0	0.5	3.9	2.5	6.8	0.7	0.0	1.9	59.9	59.6	60.2	0.1	0.0	0.2
1	Region 17	0.4	0.4	0.4	4.5	4.5	4.5	1.0	1.0	1.0	58.8	58.8	58.8	0.3	0.3	0.3
4	Region 19	0.2	0.0	0.3	4.7	2.8	5.7	2.0	0.6	3.4	59.6	56.4	61.0	0.1	0.0	0.2
1	Region 20	0.4	0.4	0.4	3.1	3.1	3.1	0.2	0.2	0.2	60.2	60.2	60.2	0.0	0.0	0.0
1	Region 21	0.3	-	-	4.9	-	-	0.2	-	-	62.1	-	-	0.0	-	-
2	Region 29	0.0	0.0	0.0	5.8	5.7	5.8	0.7	0.6	0.8	60.9	60.8	61.0	0.6	0.6	0.6
3	Region 30	0.0	0.0	0.0	6.0	5.2	7.0	0.6	0.3	0.8	60.9	60.3	61.3	0.3	0.0	0.5
2	Region 31	0.0	0.0	0.0	6.1	5.6	6.6	0.5	0.2	0.8	59.4	58.8	60.0	0.8	0.7	0.8
2	Region 32	0.0	0.0	0.0	6.3	5.7	7.0	0.5	0.3	0.6	60.3	60.3	60.3	0.4	0.0	0.8
1	Region 33	0.0	-	-	5.1	-	-	0.3	-	-	60.2	-	-	0.4	-	-
1	Region 34	0.0	-	-	6.1	-	-	1.8	-	-	61.3	-	-	0.7	-	-
2	Region 35	0.5	0.5	0.5	6.2	5.4	7.0	0.9	0.9	0.9	62.2	61.9	62.5	0.3	0.0	0.6
1	Region 36	0.3	-	-	3.7	-	-	0.1	-	-	62.5	-	-	0.4	-	-
31	**Ave. US No.3**	**0.2**			**5.1**			**0.9**			**60.3**			**0.3**		
	Min. US No.3		**0.0**			**2.5**			**0.0**			**56.4**			**0.0**	
	Max. US No.3			**0.5**			**7.0**			**3.4**			**62.5**			**0.8**
GRADE: US No.4																
2	Region 13	0.5	0.3	0.7	8.1	7.2	9.0	1.2	0.7	1.7	59.0	58.6	59.4	0.0	0.0	0.0
1	Region 17	0.0	-	-	7.5	-	-	0.2	-	-	61.0	-	-	0.9	-	-
1	Region 19	0.0	-	-	1.4	-	-	4.7	-	-	57.0	-	-	0.0	-	-
1	Region 20	0.7	-	-	5.9	-	-	0.2	-	-	60.3	-	-	0.0	-	-
1	Region 21	0.0	-	-	7.3	-	-	0.1	-	-	61.3	-	-	0.0	-	-
1	Region 29	0.0	-	-	9.6	-	-	1.3	-	-	60.6	-	-	0.0	-	-
2	Region 32	0.0	0.0	0.0	6.7	5.5	7.9	2.7	0.8	4.6	58.7	56.4	61.0	0.6	0.0	1.2
1	Region 33	0.0	-	-	7.1	-	-	0.5	-	-	61.7	-	-	0.5	-	-
1	Region 35	0.8	-	-	3.3	-	-	0.0	-	-	62.3	-	-	0.0	-	-
11	**Ave. US No.4**	**0.2**			**6.5**			**1.3**			**60.0**			**0.2**		
	Min. US No.4		**0.0**			**1.4**			**0.0**			**56.4**			**0.0**	
	Max. US No.4			**0.8**			**9.6**			**4.7**			**62.3**			**1.2**
GRADE: US No.5																
1	Region 13	1.6	-	-	6.0	-	-	0.6	-	-	60.5	-	-	0.0	-	-
2	Region 17	0.0	0.0	0.0	12.5	12.3	12.7	2.5	0.2	4.9	59.6	59.5	59.6	0.6	0.0	1.2
1	Region 19	0.0	-	-	1.9	-	-	5.9	-	-	59.5	-	-	0.0	-	-
1	Region 20	0.0	-	-	2.4	-	-	6.9	-	-	59.1	-	-	0.2	-	-
1	Region 32	0.0	-	-	11.7	-	-	0.3	-	-	60.0	-	-	1.3	-	-
1	Region 33	2.4	-	-	11.0	-	-	0.2	-	-	60.1	-	-	0.5	-	-
1	Region 35	1.2	-	-	11.9	-	-	2.3	-	-	58.6	-	-	0.0	-	-
1	Region 36	0.0	-	-	11.2	-	-	0.3	-	-	60.8	-	-	0.0	-	-
9	**Ave. US No.5**	**0.6**			**9.0**			**2.4**			**59.7**			**0.4**		
	Min. US No.5		**0.0**			**1.9**			**0.2**			**58.6**			**0.0**	
	Max.US No.5			**2.4**			**12.7**			**6.9**			**60.8**			**1.3**

TABLE 8: USA GRADING OF WHITE MAIZE (2016/2017) (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: Sample Grade																
2	Region 13	16.3	10.6	22.0	25.1	24.3	25.9	4.3	0.3	8.4	58.1	57.0	59.2	0.1	0.0	0.3
2	Region 19	2.8	0.3	5.3	8.4	4.0	12.8	4.1	0.9	7.4	60.0	59.2	60.7	0.3	0.0	0.6
1	Region 20	0.7	-	-	16.6	-	-	1.7	-	-	60.3	-	-	2.9	-	-
1	Region 30	0.0	-	-	15.5	-	-	0.5	-	-	60.3	-	-	0.0	-	-
1	Region 35	0.6	-	-	24.1	-	-	3.7	-	-	58.8	-	-	1.0	-	-
7	**Ave. Sample Grade**	5.6			17.6			3.3			59.4			0.7		
	Min. Sample Grade		0.0			4.0			0.3			57.0			0.0	
	Max. Sample Grade			22.0			25.9			8.4			60.7			2.9
CLASS: Mixed corn																
3	Region 19	0.0	0.0	0.0	3.4	2.0	4.9	0.5	0.3	0.7	59.6	59.2	59.9	3.5	3.4	3.8
2	Region 20	0.0	0.0	0.0	5.8	3.0	8.6	0.3	0.2	0.4	59.5	59.0	59.9	2.5	2.4	2.7
1	Region 30	0.0	-	-	5.8	-	-	1.5	-	-	59.9	-	-	2.1	-	-
1	Region 31	0.0	-	-	1.0	-	-	1.8	-	-	56.5	-	-	7.1	-	-
7	**Ave. Mixed corn**	**0.0**			**4.1**			**0.8**			**59.2**			**3.6**		
	Min. Mixed corn		**0.0**			**1.0**			**0.2**			**56.5**			**2.1**	
	Max. Mixed corn			**0.0**			**8.6**			**1.8**			**59.9**			**7.1**
549	**Ave. white maize**	**0.1**			**3.0**			**0.7**			**60.3**			**0.2**		
	Min. white maize		**0.0**			**0.5**			**0.0**			**54.4**			**0.0**	
	Max. white maize			**22.0**			**25.9**			**8.4**			**63.5**			**7.1**
1000	**Ave. maize**	**0.1**			**2.8**			**0.7**			**60.1**			**0.2**		
	Min. maize		**0.0**			**0.5**			**0.0**			**52.5**			**0.0**	
	Max. maize			**22.0**			**25.9**			**9.6**			**66.6**			**7.1**

TABLE 9: USA GRADING OF YELLOW MAIZE (2016/2017)

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																
37	Region 10	0.0	0.0	0.0	1.5	0.7	2.7	0.6	0.0	1.6	61.8	60.2	62.8	0.0	0.0	0.6
2	Region 11	0.0	0.0	0.0	1.7	1.4	2.1	0.9	0.6	1.3	61.1	60.3	61.8	0.0	0.0	0.0
2	Region 12	0.0	0.0	0.0	1.9	1.6	2.3	0.1	0.1	0.1	61.5	61.0	62.0	0.3	0.0	0.5
4	Region 13	0.0	0.0	0.0	1.9	1.6	2.2	0.9	0.3	1.4	60.6	59.7	61.4	0.2	0.0	0.3
8	Region 14	0.0	0.0	0.0	1.2	0.6	2.5	0.5	0.1	1.0	60.4	59.4	61.7	0.1	0.0	0.4
4	Region 17	0.0	0.0	0.0	2.3	2.1	2.7	0.7	0.3	1.4	60.0	58.3	61.1	0.2	0.0	0.5
2	Region 18	0.0	0.0	0.0	2.9	2.9	2.9	0.8	0.5	1.1	59.9	59.8	59.9	0.0	0.0	0.0
1	Region 19	0.0	-	-	2.6	-	-	0.3	-	-	60.9	-	-	0.2	-	-
5	Region 20	0.0	0.0	0.0	2.2	1.3	2.7	0.6	0.2	1.1	60.3	59.2	61.5	0.6	0.0	2.3
10	Region 21	0.0	0.0	0.0	2.2	1.4	2.9	0.6	0.2	1.3	60.7	59.1	61.8	0.7	0.0	1.5
3	Region 22	0.0	0.0	0.0	1.6	1.5	1.6	0.5	0.3	0.8	59.8	58.1	60.7	0.4	0.0	0.7
3	Region 23	0.0	0.0	0.0	2.4	2.2	2.5	0.6	0.5	0.9	59.9	59.6	60.3	1.1	0.6	1.5
3	Region 24	0.0	0.0	0.0	1.5	1.4	1.9	0.9	0.6	1.1	60.2	59.3	60.8	0.4	0.0	0.6
26	Region 25	0.0	0.0	0.0	2.0	1.3	2.6	0.5	0.3	1.1	60.1	58.8	61.9	0.0	0.0	0.0
26	Region 26	0.0	0.0	0.0	2.0	1.3	2.9	0.7	0.2	1.8	59.7	57.9	61.3	0.0	0.0	0.6
31	Region 28	0.0	0.0	0.0	1.9	1.2	2.8	0.5	0.0	1.1	59.7	58.0	61.2	0.1	0.0	0.5
59	Region 29	0.0	0.0	0.0	2.0	0.7	2.9	0.6	0.0	1.5	60.1	56.1	66.6	0.1	0.0	1.5
23	Region 30	0.0	0.0	0.0	1.9	1.1	3.0	0.6	0.1	1.1	58.9	56.3	61.5	0.0	0.0	0.0
11	Region 31	0.0	0.0	0.0	2.4	1.2	3.0	0.7	0.3	1.5	59.9	58.1	61.5	0.0	0.0	0.4
23	Region 32	0.0	0.0	0.0	2.0	0.6	2.8	0.7	0.3	1.6	60.2	57.0	62.8	0.0	0.0	0.0
19	Region 33	0.0	0.0	0.0	2.5	1.9	2.9	0.5	0.1	0.8	59.1	56.0	60.6	0.0	0.0	0.0
24	Region 34	0.0	0.0	0.0	2.1	1.3	2.9	0.6	0.2	1.5	59.5	56.8	64.0	0.2	0.0	2.9
8	Region 35	0.0	0.0	0.0	1.1	0.7	2.2	0.2	0.1	0.3	59.9	58.6	61.1	0.0	0.0	0.1
20	Region 36	0.0	0.0	0.0	1.8	1.0	2.9	0.6	0.1	1.2	60.1	57.8	62.0	0.3	0.0	3.2
354	**Ave. US No.1**	**0.0**			**1.9**			**0.6**			**60.1**			**0.1**		
	Min. US No.1		**0.0**			**0.6**			**0.0**			**56.0**			**0.0**	
	Max. US No.1			**0.0**			**3.0**			**1.8**			**66.6**			**3.2**
GRADE: US No.2																
1	Region 11	0.0	-	-	3.8	-	-	1.3	-	-	60.9	-	-	0.0	-	-
1	Region 12	0.0	-	-	4.2	-	-	0.2	-	-	58.9	-	-	0.2	-	-
1	Region 13	0.0	-	-	3.7	-	-	0.8	-	-	59.6	-	-	0.0	-	-
3	Region 19	0.0	0.0	0.0	3.4	3.1	3.8	0.8	0.5	1.2	59.5	59.2	59.8	0.4	0.0	1.2
1	Region 20	0.0	-	-	3.8	-	-	1.8	-	-	58.6	-	-	0.7	-	-
1	Region 21	0.0	-	-	0.8	-	-	2.2	-	-	61.6	-	-	0.0	-	-
1	Region 23	0.0	-	-	2.6	-	-	2.6	-	-	58.9	-	-	0.0	-	-
3	Region 26	0.0	0.0	0.0	3.8	3.5	4.1	1.3	0.9	1.6	58.0	55.0	60.1	0.0	0.0	0.0
2	Region 28	0.0	0.0	0.0	4.1	4.0	4.3	0.4	0.3	0.5	59.7	59.3	60.1	0.0	0.0	0.0
14	Region 29	0.0	0.0	0.2	3.5	1.8	4.6	0.5	0.1	1.1	58.8	54.1	61.7	0.2	0.0	1.3
7	Region 30	0.0	0.0	0.0	3.3	2.2	4.1	0.5	0.1	0.9	57.7	54.1	61.1	0.3	0.0	0.8
3	Region 31	0.0	0.0	0.0	3.8	3.1	4.4	0.4	0.2	0.9	59.5	58.9	60.7	0.0	0.0	0.0
1	Region 32	0.0	-	-	3.1	-	-	0.8	-	-	58.6	-	-	0.0	-	-
5	Region 33	0.0	0.0	0.0	4.0	3.1	4.8	0.7	0.5	1.0	58.8	55.5	60.2	0.1	0.0	0.5
16	Region 34	0.0	0.0	0.0	3.4	2.8	4.4	0.6	0.2	1.9	58.9	54.3	62.0	0.6	0.0	3.3
8	Region 36	0.0	0.0	0.0	3.6	1.5	4.9	1.5	0.5	2.9	59.7	55.8	62.2	0.0	0.0	0.0
68	**Ave. US No.2**	**0.0**			**3.5**			**0.8**			**59.0**			**0.3**		
	Min. US No.2		**0.0**			**0.8**			**0.1**			**54.1**			**0.0**	
	Max. US No.2			**0.2**			**4.9**			**2.9**			**62.2**			**3.3**

TABLE 9: USA GRADING OF YELLOW MAIZE (2016/2017) (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.3																
1	Region 19	0.3	-	-	3.2	-	-	0.1	-	-	60.7	-	-	0.0	-	-
2	Region 20	0.3	0.0	0.5	3.7	1.6	5.8	0.4	0.3	0.6	59.4	59.2	59.5	0.0	0.0	0.0
4	Region 26	0.0	0.0	0.0	4.7	1.2	6.4	2.2	1.4	3.2	57.4	55.3	59.8	0.9	0.0	1.3
1	Region 29	0.0	0.0	0.0	2.0	2.0	2.0	0.3	0.3	0.3	53.7	53.7	53.7	0.0	0.0	0.0
2	Region 30	0.0	0.0	0.0	3.9	2.6	5.3	0.8	0.6	1.0	55.2	52.5	57.9	0.6	0.0	1.1
1	Region 32	0.0	-	-	5.2	-	-	0.7	-	-	53.4	-	-	0.0	-	-
1	Region 33	0.0	-	-	3.9	-	-	3.3	-	-	55.8	-	-	0.5	-	-
2	Region 35	0.1	0.0	0.3	3.3	2.8	3.8	1.8	0.2	3.4	58.4	57.0	59.8	0.3	0.0	0.6
14	**Ave. US No.3**	**0.1**			**3.9**			**1.4**			**57.1**			**0.4**		
	Min. US No.3		**0.0**			**1.2**			**0.1**			**52.5**			**0.0**	
	Max. US No.3			**0.5**			**6.4**			**3.4**			**60.7**			**1.3**
GRADE: US No.4																
1	Region 11	0.0	-	-	8.5	-	-	1.7	-	-	61.0	-	-	0.0	-	-
1	Region 18	0.0	-	-	7.3	-	-	0.2	-	-	61.3	-	-	0.0	-	-
1	Region 26	0.0	-	-	9.1	-	-	2.3	-	-	54.7	-	-	0.0	-	-
1	Region 29	0.0	-	-	7.1	-	-	0.9	-	-	55.2	-	-	0.0	-	-
1	Region 30	0.0	-	-	7.7	-	-	1.1	-	-	58.6	-	-	0.0	-	-
5	**Ave. US No.4**	**0.0**			**7.9**			**1.2**			**58.2**			**0.0**		
	Min. US No.4		**0.0**			**7.1**			**0.2**			**54.7**			**0.0**	
	Max. US No.4			**0.0**			**9.1**			**2.3**			**61.3**			**0.0**
GRADE: US No.5																
1	Region 13	1.0	-	-	12.7	-	-	1.7	-	-	56.7	-	-	0.3	-	-
1	Region 19	0.0	-	-	10.4	-	-	0.6	-	-	56.2	-	-	0.3	-	-
1	Region 20	1.4	-	-	6.1	-	-	1.3	-	-	58.2	-	-	0.0	-	-
2	Region 26	0.9	0.8	1.0	11.2	10.6	11.9	3.3	3.0	3.7	54.7	54.5	54.8	0.0	0.0	0.0
1	Region 32	1.4	-	-	5.8	-	-	1.0	-	-	56.5	-	-	0.7	-	-
6	**Ave. US No.5**	**0.9**			**9.6**			**1.9**			**56.2**			**0.2**		
	Min. US No.5		**0.0**			**5.8**			**0.6**			**54.5**			**0.0**	
	Max. US No.5			**1.4**			**12.7**			**3.7**			**58.2**			**0.7**
GRADE: Sample Grade																
1	Region 30	0.0	-	-	24.4	-	-	0.7	-	-	55.9	-	-	3.1	-	-
2	Region 33	1.8	0.5	3.1	7.5	3.3	11.8	5.5	1.3	9.6	59.7	58.1	61.3	1.3	0.7	1.8
3	**Ave. Sample Grade**	**1.2**			**13.2**			**3.9**			**58.4**			**1.9**		
	Min. Sample Grade		**0.0**			**3.3**			**0.7**			**55.9**			**0.7**	
	Max. Sample Grade			**3.1**			**24.4**			**9.6**			**61.3**			**3.1**
CLASS: Mixed corn																
1	Region 30	0.0	-	-	3.3	-	-	0.5	-	-	57.2	-	-	6.9	-	-
1	**Ave. Mixed corn**	**0.0**			**3.3**			**0.5**			**57.2**			**6.9**		
	Min. Mixed corn		**0.0**			**3.3**			**0.5**			**57.2**			**6.9**	
	Max. Mixed corn			**0.0**			**3.3**			**0.5**			**57.2**			**6.9**
451	**Ave. yellow maize**	**0.0**			**2.5**			**0.7**			**59.7**			**0.2**		
	Min. yellow maize		**0.0**			**0.6**			**0.0**			**52.5**			**0.0**	
	Max. yellow maize			**3.1**			**24.4**			**9.6**			**66.6**			**6.9**
1000	**Ave. maize**	**0.1**			**2.8**			**0.7**			**60.1**			**0.2**		
	Min. maize		**0.0**			**0.5**			**0.0**			**52.5**			**0.0**	
	Max. maize			**22.0**			**25.9**			**9.6**			**66.6**			**7.1**

TABLE 10: STANDARDS FOR GRADES OF CLASS WHITE MAIZE AND CLASS YELLOW MAIZE

Deviation		Maximum permissible deviation					
		White maize			Yellow maize		
		WM1	WM2	WM3	YM1	YM2	YM3
1	Foreign matter	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	7%	13%	30%	*	*	*
3	Defective maize kernels that can pass through the 6.35 mm round-hole sieve	*	*	*	4%	10%	30%
4	Defective maize kernels that can not pass through the 6.35 mm round-hole sieve	*	*	*	9%	20%	30%
5	Other colour maize kernels	3%	6%	10%	2%	5%	5%
6	Deviations referred to in items 1, 2, 3, 4 and 5 collectively: Provided that the deviations are individually within the specified limits	8%	16%	30%	9%	20%	30%
7	Pinked maize kernels	12%	12%	12%	*	*	*

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.
* Not spesified
Regulations relating to the Grading, Packing and Marking of Maize intended for sale in the Republic of South Africa as published in the Government Gazette No. 32190, Regulation No. R. 473 of 8 May 2009.

TABLE 11: GRADES AND GRADE REQUIREMENTS FOR CLASS WHITE AND YELLOW 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. 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.					
Mixed corn class	When % other colour in yellow maize samples >5 % and white maize samples >2 %				

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

TABLE 12: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE (2016/2017)

Number of samples	Region	Test weight (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			SAGL Milling index 2017			GYA		
								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.	ave.	min.	max.
GRADE: WM1																															
2	Region 10	79.6	79.4	79.7	41.5	41.0	41.9	7.9	7.1	8.6	77.1	75.8	78.4	15.1	14.5	15.6	0.4	0.4	0.4	0.2	0.1	0.2	6	5	7	100.2	99.2	101.1	69.7	69.5	69.9
1	Region 11	79.5	-	-	35.6	-	-	2.1	-	-	62.9	-	-	35.0	-	-	1.5	-	-	1.1	-	-	7	-	-	88.0	-	-	66.7	-	-
13	Region 12	77.5	75.5	79.7	33.2	29.4	36.1	20.9	8.7	32.1	67.4	60.3	77.5	11.7	6.0	21.3	1.0	0.7	1.5	0.8	0.2	1.1	9	1	18	77.4	68.7	82.0	64.2	62.1	65.3
20	Region 13	75.7	73.6	78.5	32.1	27.9	40.0	12.6	3.0	48.9	65.9	48.8	72.8	21.5	2.3	35.5	1.6	0.3	4.0	1.2	0.3	2.8	8	1	17	72.4	50.5	96.0	62.9	57.7	68.7
30	Region 14	77.5	76.5	78.5	32.3	28.6	36.2	20.6	6.7	34.9	64.6	58.3	74.3	14.8	6.8	27.8	1.2	0.2	4.3	0.9	0.1	2.5	6	1	14	78.5	71.4	87.0	64.4	62.7	66.5
4	Region 15	78.1	77.5	78.6	33.3	31.8	35.8	25.2	19.8	32.8	65.2	58.8	70.6	9.6	8.4	11.4	1.0	0.5	1.2	0.8	0.3	1.2	3	2	5	80.1	77.7	84.3	64.8	64.2	65.8
15	Region 17	76.9	73.4	77.9	33.4	24.3	38.3	17.7	2.9	42.6	65.1	46.9	73.9	17.2	7.3	47.2	1.5	0.2	2.3	1.1	0.0	1.9	13	1	25	75.3	62.7	83.0	63.7	60.6	65.5
6	Region 18	77.6	76.0	79.9	32.2	28.3	35.6	18.9	4.7	26.8	65.4	60.4	69.4	15.7	7.7	25.9	1.1	0.5	1.8	0.8	0.3	1.3	8	1	14	72.1	68.1	80.8	62.9	61.9	65.0
11	Region 19	76.7	75.0	78.2	31.2	28.1	34.2	14.9	6.0	22.4	66.3	61.2	72.8	18.8	6.5	28.5	0.9	0.2	2.4	0.7	0.1	1.8	8	2	18	74.0	57.7	79.9	63.3	59.4	64.7
21	Region 20	77.6	76.0	79.9	34.0	29.1	37.6	18.8	6.3	31.9	65.5	57.1	76.6	15.7	9.6	30.5	1.0	0.1	2.5	0.8	0.1	1.9	6	1	13	77.9	68.0	91.3	64.3	61.9	67.5
56	Region 21	78.7	76.5	81.8	36.4	32.0	40.5	29.7	7.8	61.9	60.5	13.6	73.7	9.8	1.7	36.9	1.1	0.1	4.7	0.8	0.0	3.1	6	0	25	82.3	66.8	94.6	65.3	61.6	68.3
31	Region 22	77.8	76.4	79.2	36.3	31.1	42.3	36.2	23.5	64.2	56.4	26.0	68.7	7.4	2.4	18.8	1.3	0.6	2.7	1.0	0.5	1.7	7	0	20	82.4	69.2	89.1	65.3	62.2	67.0
16	Region 23	78.0	77.2	78.9	34.7	28.0	38.3	29.0	18.1	40.2	62.7	54.4	74.1	8.3	3.9	13.0	1.4	0.5	2.2	1.0	0.3	1.9	4	0	9	77.6	64.8	85.3	64.2	61.1	66.0
16	Region 24	78.2	75.6	80.2	34.1	29.8	39.5	21.7	7.3	31.2	64.4	57.9	71.7	13.8	8.2	27.3	1.1	0.4	2.4	0.8	0.2	1.9	6	3	10	77.0	65.5	86.9	64.1	61.3	66.4
4	Region 25	77.9	76.9	78.6	34.9	31.2	36.8	12.5	2.7	23.2	67.0	64.8	70.1	20.5	11.4	29.5	0.7	0.3	1.3	0.6	0.3	1.0	5	2	9	75.7	64.2	93.8	63.7	61.0	68.1
19	Region 26	76.6	73.2	80.9	32.5	27.8	37.5	17.5	3.0	39.7	64.3	52.4	78.0	18.2	5.5	35.2	1.7	0.5	6.5	1.1	0.0	3.6	12	1	33	79.2	63.4	97.9	64.6	60.8	69.1
21	Region 28	79.1	76.4	81.3	35.6	31.0	41.4	20.2	3.1	42.9	65.4	53.0	76.1	14.4	3.5	37.1	0.7	0.0	2.9	0.5	0.0	1.3	7	0	23	83.1	69.3	90.4	65.5	62.2	67.3
26	Region 29	78.3	73.9	80.7	38.0	33.1	43.8	26.9	7.6	44.0	62.9	33.0	78.0	10.1	3.6	26.6	0.8	0.1	3.9	0.6	0.0	2.6	5	1	12	84.3	72.6	96.5	65.8	63.0	68.8
17	Region 30	78.1	72.5	80.4	34.9	32.2	38.0	22.8	2.5	40.7	64.3	51.0	72.0	13.0	6.6	26.2	0.8	0.2	2.2	0.6	0.1	1.4	5	1	10	82.2	77.4	88.6	65.3	64.1	66.9
15	Region 31	77.9	71.9	79.8	36.4	26.0	42.8	13.4	5.3	24.6	71.5	65.2	80.0	15.0	8.0	24.0	0.6	0.0	2.1	0.4	0.0	1.3	3	0	13	78.1	67.8	87.5	64.3	61.8	66.6
19	Region 32	77.7	74.9	80.2	36.1	30.8	40.3	19.4	7.8	36.7	66.9	54.1	79.2	13.7	4.5	22.8	1.0	0.2	3.2	0.7	0.1	2.1	9	1	42	79.1	71.2	88.6	64.6	62.7	66.9
38	Region 33	78.3	70.0	80.8	34.4	29.3	40.0	14.2	5.1	50.1	68.6	44.7	81.0	17.3	5.2	28.2	0.7	0.1	1.9	0.5	0.1	1.5	4	0	18	80.9	72.7	92.3	65.0	63.0	67.8
38	Region 34	77.5	72.9	80.1	37.4	33.8	43.6	26.2	5.6	52.5	62.3	28.5	78.9	11.6	2.7	62.6	0.9	0.1	1.9	0.6	0.0	1.5	11	1	33	82.4	66.6	93.8	65.4	61.6	68.1
5	Region 35	78.2	76.1	80.2	34.8	29.1	39.3	25.1	4.2	43.0	63.6	55.4	70.0	11.4	1.6	29.9	1.0	0.3	1.8	0.8	0.3	1.3	9	1	21	89.1	70.8	103.2	67.0	62.5	70.4
25	Region 36	78.5	74.5	81.1	36.5	31.0	42.2	15.9	2.1	50.8	67.4	48.0	81.6	16.6	1.2	34.8	1.7	0.4	9.9	1.2	0.1	9.0	13	0	40	88.0	81.1	95.5	66.7	65.1	68.6
469	**Ave. WM1**	**77.9**			**35.1**			**22.0**			**64.3**			**13.7**			**1.1**			**0.8**			**7**			**80.5**			**64.9**		
	Min. WM1		**70.0**			**24.3**			**2.1**			**13.6**			**1.2**			**0.0**			**0.0**			**0**			**50.5**			**57.7**	
	Max. WM1			**81.8**			**43.8**			**64.2**			**81.6**			**62.6**			**9.9**			**9.0**			**42**			**103.2**			**70.4**

TABLE 12: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE (2016/2017)
(continue)

Number of samples	Region	Test weight (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			SAGL Milling index 2017			GYA		
								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.	ave.	min.	max.
GRADE: WM2																															
4	Region 12	76.5	75.4	77.7	33.8	28.7	38.2	18.0	10.5	30.2	68.1	65.2	71.3	13.9	4.6	21.4	1.6	0.9	2.1	1.2	0.8	1.6	10	3	18	78.0	67.2	92.5	64.3	61.7	67.9
8	Region 13	76.0	73.0	77.9	31.6	22.8	36.3	20.0	2.3	37.9	63.2	56.4	71.0	16.9	5.7	37.6	2.6	1.4	4.6	1.8	1.1	3.0	18	3	35	80.0	72.6	91.9	64.8	63.0	67.7
1	Region 14	77.5	-	-	37.1	-	-	30.7	-	-	60.4	-	-	8.9	-	-	0.5	-	-	0.5	-	-	5	-	-	73.2	-	-	63.1	-	-
5	Region 17	74.9	70.8	78.6	32.6	29.5	36.1	17.8	3.7	26.6	66.8	62.4	74.4	15.4	9.9	23.8	1.6	1.1	2.3	0.9	0.1	1.5	15	7	27	67.2	41.9	84.3	61.7	55.6	65.8
1	Region 18	77.1	-	-	30.6	-	-	21.3	-	-	64.7	-	-	14.0	-	-	0.6	-	-	0.6	-	-	4	-	-	74.1	-	-	63.4	-	-
9	Region 19	76.4	73.2	78.6	32.9	27.8	39.5	17.8	1.8	41.7	63.0	53.9	77.5	19.2	3.4	30.6	2.2	0.7	6.7	1.6	0.5	4.5	14	1	37	75.3	52.5	90.4	63.7	58.2	67.3
1	Region 20	75.9	-	-	34.2	-	-	23.4	-	-	66.0	-	-	10.6	-	-	0.9	-	-	0.6	-	-	10	-	-	81.9	-	-	65.2	-	-
1	Region 21	78.9	-	-	43.4	-	-	63.3	-	-	36.0	-	-	0.7	-	-	0.2	-	-	0.1	-	-	7	-	-	85.4	-	-	66.0	-	-
1	Region 23	77.3	-	-	32.4	-	-	26.8	-	-	61.0	-	-	12.2	-	-	1.1	-	-	0.8	-	-	6	-	-	82.0	-	-	65.2	-	-
3	Region 26	75.5	74.0	76.7	32.0	31.2	32.4	25.3	21.4	29.7	63.5	61.2	65.8	11.2	9.1	15.1	3.6	1.4	5.3	2.4	1.0	3.8	10	2	20	74.1	69.0	83.0	63.4	62.1	65.5
4	Region 29	78.5	77.9	79.2	35.8	34.7	37.5	30.6	24.4	37.4	59.8	55.7	66.5	9.6	6.9	17.5	1.5	0.9	2.9	1.0	0.6	2.0	12	7	19	84.6	77.3	89.1	65.9	64.1	67.0
3	Region 30	77.7	77.1	78.7	36.4	35.2	38.8	23.3	10.8	38.1	63.6	57.8	73.5	13.1	4.1	29.6	1.7	1.5	1.9	1.0	0.9	1.2	5	3	8	81.3	79.4	84.4	65.1	64.7	65.8
2	Region 31	76.5	75.7	77.2	39.2	36.1	42.3	13.9	9.7	18.1	75.7	68.9	82.4	10.5	7.9	13.0	0.3	0.2	0.3	0.1	0.1	0.1	8	0	15	80.0	77.9	82.1	64.8	64.3	65.3
8	Region 32	75.8	72.6	77.6	35.4	30.8	40.5	29.3	6.5	57.8	55.1	30.6	79.5	15.6	2.2	53.1	1.4	0.7	3.0	0.9	0.4	2.1	6	0	13	73.4	67.6	85.4	63.1	61.7	66.1
5	Region 33	78.6	77.4	79.5	34.6	31.7	36.7	23.4	9.8	41.8	59.9	52.4	65.5	16.7	5.8	28.1	0.6	0.0	1.6	0.5	0.0	1.2	6	0	14	84.2	77.0	90.4	65.8	64.0	67.3
1	Region 34	71.8	-	-	35.9	-	-	33.8	-	-	59.0	-	-	7.2	-	-	0.6	-	-	0.6	-	-	22	-	-	74.9	-	-	63.5	-	-
2	Region 35	80.1	79.7	80.4	35.6	33.8	37.3	12.8	10.7	14.8	66.5	63.5	69.4	20.8	19.9	21.7	1.2	0.6	1.7	0.9	0.6	1.2	13	9	17	88.7	87.3	90.1	66.9	66.5	67.2
3	Region 36	78.2	77.9	78.4	38.9	37.7	40.5	26.8	25.4	27.7	64.4	62.6	66.4	8.7	8.2	9.7	0.8	0.4	1.7	0.7	0.3	1.5	11	7	17	86.2	81.0	90.8	66.3	65.1	67.4
62	**Ave. WM2**	**76.7**			**34.4**			**23.1**			**62.3**			**14.6**			**1.6**			**1.1**			**11**			**78.1**			**64.3**		
	Min. WM2		**70.8**			**22.8**			**1.8**			**30.6**			**0.7**			**0.0**			**0.0**			**0**			**41.9**			**55.6**	
	Max. WM2			**80.4**			**43.4**			**63.3**			**82.4**			**53.1**			**6.7**			**4.5**			**37**			**92.5**			**67.9**

TABLE 12: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE (2016/2017)
(continue)

Number of samples	Region	Test weight (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			SAGL Milling index 2017			GYA		
								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.	ave.	min.	max.
GRADE: WM3																														
1	Region 13	73.4	-	-	37.8	-	-	29.2	-	-	60.7	-	-	10.1	-	-	2.4	-	-	1.9	-	-	24	-	-	41.2	-	-	55.4	-	-
1	Region 17	76.6	-	-	36.6	-	-	29.7	-	-	62.4	-	-	7.9	-	-	1.2	-	-	0.9	-	-	30	-	-	73.6	-	-	63.2	-	-
1	Region 19	76.2	-	-	33.2	-	-	22.6	-	-	65.6	-	-	11.8	-	-	1.3	-	-	0.8	-	-	30	-	-	86.3	-	-	66.3	-	-
1	Region 20	77.6	-	-	37.0	-	-	5.7	-	-	77.5	-	-	16.8	-	-	2.2	-	-	1.8	-	-	27	-	-	81.9	-	-	65.2	-	-
1	Region 30	77.7	-	-	37.0	-	-	31.0	-	-	63.1	-	-	5.9	-	-	0.4	-	-	0.3	-	-	3	-	-	81.7	-	-	65.2	-	-
1	Region 32	78.6	-	-	35.4	-	-	13.0	-	-	66.9	-	-	20.1	-	-	0.7	-	-	0.5	-	-	14	-	-	91.3	-	-	67.5	-	-
1	Region 35	75.5	-	-	32.5	-	-	6.4	-	-	69.0	-	-	24.6	-	-	2.4	-	-	2.2	-	-	33	-	-	82.9	-	-	65.5	-	-
2	Region 36	78.1	78.0	78.2	40.3	40.3	40.3	25.7	25.5	25.8	64.6	63.9	65.3	9.8	9.2	10.3	0.4	0.1	0.8	0.1	0.0	0.3	23	21	25	89.6	89.3	89.9	67.1	67.0	67.2
9	**Ave. WM3**	**76.9**			**36.7**			**21.0**			**66.0**			**13.0**			**1.3**			**1.0**			**23**			**79.8**			**64.7**		
	Min. WM3		**73.4**			**32.5**			**5.7**			**60.7**			**5.9**			**0.1**			**0.0**			**3**			**41.2**			**55.4**	
	Max. WM3			**78.6**			**40.3**			**31.0**			**77.5**			**24.6**			**2.4**			**2.2**			**33**			**91.3**			**67.5**
CLASS: COM																														
1	Region 13	76.2	-	-	33.0	-	-	6.8	-	-	71.7	-	-	21.5	-	-	1.5	-	-	0.7	-	-	9	-	-	91.6	-	-	67.6	-	-
3	Region 19	74.0	71.4	78.1	33.5	30.6	38.2	23.1	7.7	40.1	62.7	52.8	68.7	14.2	7.1	23.6	2.1	1.7	2.3	1.6	1.5	1.8	12	8	16	80.3	70.2	89.0	64.8	62.4	66.9
1	Region 20	76.0	-	-	29.9	-	-	23.9	-	-	67.1	-	-	9	-	-	1.3	-	-	1.1	-	-	24	-	-	82.6	-	-	65.4	-	-
1	Region 31	72.7	-	-	34.6	-	-	20.9	-	-	71.8	-	-	7.3	-	-	0.3	-	-	0.1	-	-	3	-	-	90.9	-	-	67.4	-	-
2	Region 33	78.8	78.4	79.1	39.5	38.3	40.6	48.5	48.1	48.8	48.2	47.4	49.0	3.4	2.9	3.8	0.6	0.4	0.7	0.5	0.4	0.5	6	5	7	84.1	82.2	86.1	65.8	65.3	66.2
1	Region 35	75.7	-	-	35.2	-	-	6.9	-	-	72.8	-	-	20.3	-	-	8.3	-	-	6.1	-	-	22	-	-	79.5	-	-	64.7	-	-
9	**Ave. COM**	**75.6**			**34.7**			**25.0**			**63.1**			**11.9**			**2.1**			**1.5**			**12**			**83.8**			**65.7**		
	Min. COM		**71.4**			**29.9**			**6.8**			**47.4**			**2.9**			**0.3**			**0.1**			**3**			**70.2**			**62.4**	
	Max. COM			**79.1**			**40.6**			**48.8**			**72.8**			**23.6**			**8.3**			**6.1**			**24**			**91.6**			**67.6**
549	**Ave. white maize**	**77.7**			**35.0**			**22.1**			**64.1**			**13.7**			**1.2**			**0.8**			**8**			**80.2**			**64.8**		
	Min. white maize		**70.0**			**22.8**			**1.8**			**13.6**			**0.7**			**0.0**			**0.0**			**0**			**41.2**			**55.4**	
	Max. white maize			**81.8**			**43.8**			**64.2**			**82.4**			**62.6**			**9.9**			**9.0**			**42**			**103.2**			**70.4**
1000	**Ave. maize**	**77.3**			**34.3**			**17.3**			**64.8**			**17.9**			**1.2**			**0.8**			**8**			**78.7**			**64.5**		
	Min. maize		**67.6**			**18.4**			**0.0**			**13.0**			**0.7**			**0.0**			**0.0**			**0**			**36.9**			**54.2**	
	Max. maize			**82.4**			**43.8**			**71.9**			**90.9**			**69.7**			**9.9**			**9.0**			**50**			**105.4**			**70.9**

TABLE 13: PHYSICAL QUALITY FACTORS OF WHITE MAIZE (2016/2017)

Number of samples	Region	Test weight (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			SAGL Milling index 2017			GYA		
								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.	ave.	min.	max.
	WHITE																													
2	Region 10	79.6	79.4	79.7	41.5	41.0	41.9	7.9	7.1	8.6	77.1	75.8	78.4	15.1	14.5	15.6	0.4	0.4	0.4	0.2	0.1	0.2	6.0	5.0	7.0	100.2	99.2	101.1	69.7	69.5	69.9
1	Region 11	79.5	-	-	35.6	-	-	2.1	-	-	62.9	-	-	35.0	-	-	1.5	-	-	1.1	-	-	7	-	-	88.0	-	-	66.7	-	-
17	Region 12	77.2	75.4	79.7	33.3	28.7	38.2	20.2	8.7	32.1	67.6	60.3	77.5	12.2	4.6	21.4	1.2	0.7	2.1	0.9	0.2	1.6	9	1	18	77.5	67.2	92.5	64.2	61.7	67.9
30	Region 13	75.7	73.0	78.5	32.2	22.8	40.0	14.9	2.3	48.9	65.2	48.8	72.8	19.9	2.3	37.6	1.9	0.3	4.6	1.4	0.3	3.0	11	1	35	74.0	41.2	96.0	63.3	55.4	68.7
31	Region 14	77.5	76.5	78.5	32.5	28.6	37.1	20.9	6.7	34.9	64.5	58.3	74.3	14.6	6.8	27.8	1.2	0.2	4.3	0.9	0.1	2.5	5	1	14	78.3	71.4	87.0	64.4	62.7	66.5
4	Region 15	78.1	77.5	78.6	33.3	31.8	35.8	25.2	19.8	32.8	65.2	58.8	70.6	9.6	8.4	11.4	1.0	0.5	1.2	0.8	0.3	1.2	3	2	5	80.1	77.7	84.3	64.8	64.2	65.8
21	Region 17	76.4	70.8	78.6	33.3	24.3	38.3	18.3	2.9	42.6	65.4	46.9	74.4	16.4	7.3	47.2	1.5	0.2	2.3	1.0	0.0	1.9	15	1	30	73.3	41.9	84.3	63.2	55.6	65.8
7	Region 18	77.5	76.0	79.9	31.9	28.3	35.6	19.2	4.7	26.8	65.3	60.4	69.4	15.5	7.7	25.9	1.0	0.5	1.8	0.7	0.3	1.3	7	1	14	72.4	68.1	80.8	62.9	61.9	65.0
24	Region 19	76.3	71.4	78.6	32.2	27.8	39.5	17.3	1.8	41.7	64.6	52.8	77.5	18.1	3.4	30.6	1.6	0.2	6.7	1.1	0.1	4.5	12	1	37	75.8	52.5	90.4	63.8	58.2	67.3
24	Region 20	77.5	75.9	79.9	34.0	29.1	37.6	18.6	5.7	31.9	66.1	57.1	77.5	15.2	9.0	30.5	1.1	0.1	2.5	0.8	0.1	1.9	8	1	27	78.4	68.0	91.3	64.4	61.9	67.5
57	Region 21	78.7	76.5	81.8	36.6	32.0	43.4	30.3	7.8	63.3	60.1	13.6	73.7	9.6	0.7	36.9	1.1	0.1	4.7	0.7	0.0	3.1	6	0	25	82.3	66.8	94.6	65.3	61.6	68.3
31	Region 22	77.8	76.4	79.2	36.3	31.1	42.3	36.2	23.5	64.2	56.4	26.0	68.7	7.4	2.4	18.8	1.3	0.6	2.7	1.0	0.5	1.7	7	0	20	82.4	69.2	89.1	65.3	62.2	67.0
17	Region 23	78.0	77.2	78.9	34.6	28.0	38.3	28.8	18.1	40.2	62.6	54.4	74.1	8.6	3.9	13.0	1.4	0.5	2.2	1.0	0.3	1.9	4	0	9	77.9	64.8	85.3	64.2	61.1	66.0
16	Region 24	78.2	75.6	80.2	34.1	29.8	39.5	21.7	7.3	31.2	64.4	57.9	71.7	13.8	8.2	27.3	1.1	0.4	2.4	0.8	0.2	1.9	6	3	10	77.0	65.5	86.9	64.1	61.3	66.4
4	Region 25	77.9	76.9	78.6	34.9	31.2	36.8	12.5	2.7	23.2	67.0	64.8	70.1	20.5	11.4	29.5	0.7	0.3	1.3	0.6	0.3	1.0	5	2	9	75.7	64.2	93.8	63.7	61.0	68.1
22	Region 26	76.5	73.2	80.9	32.4	27.8	37.5	18.6	3.0	39.7	64.2	52.4	78.0	17.3	5.5	35.2	1.9	0.5	6.5	1.3	0.0	3.8	12	1	33	78.5	63.4	97.9	64.4	60.8	69.1
21	Region 28	79.1	76.4	81.3	35.6	31.0	41.4	20.2	3.1	42.9	65.4	53.0	76.1	14.4	3.5	37.1	0.7	0.0	2.9	0.5	0.0	1.3	7	0	23	83.1	69.3	90.4	65.5	62.2	67.3
30	Region 29	78.3	73.9	80.7	37.7	33.1	43.8	27.4	7.6	44.0	62.5	33.0	78.0	10.1	3.6	26.6	0.9	0.1	3.9	0.6	0.0	2.6	6	1	19	84.3	72.6	96.5	65.8	63.0	68.8
21	Region 30	78.0	72.5	80.4	35.2	32.2	38.8	23.2	2.5	40.7	64.1	51.0	73.5	12.6	4.1	29.6	0.9	0.2	2.2	0.6	0.1	1.4	5	1	10	82.0	77.4	88.6	65.3	64.1	66.9
18	Region 31	77.5	71.9	79.8	36.6	26.0	42.8	13.9	5.3	24.6	72.0	65.2	82.4	14.1	7.3	24.0	0.6	0.0	2.1	0.4	0.0	1.3	3	0	15	79.1	67.8	90.9	64.6	61.8	67.4
28	Region 32	77.2	72.6	80.2	35.9	30.8	40.5	22.0	6.5	57.8	63.5	30.6	79.5	14.5	2.2	53.1	1.1	0.2	3.2	0.8	0.1	2.1	8	0	42	77.9	67.6	91.3	64.3	61.7	67.5
45	Region 33	78.3	70.0	80.8	34.7	29.3	40.6	16.7	5.1	50.1	66.7	44.7	81.0	16.6	2.9	28.2	0.7	0.0	1.9	0.5	0.0	1.5	5	0	18	81.4	72.7	92.3	65.1	63.0	67.8
39	Region 34	77.3	71.8	80.1	37.4	33.8	43.6	26.4	5.6	52.5	62.2	28.5	78.9	11.4	2.7	62.6	0.9	0.1	1.9	0.6	0.0	1.5	11	1	33	82.2	66.6	93.8	65.3	61.6	68.1
9	Region 35	78.0	75.5	80.4	34.7	29.1	39.3	18.2	4.2	43.0	65.8	55.4	72.8	15.9	1.6	29.9	2.0	0.3	8.3	1.6	0.3	6.1	14	1	33	87.3	70.8	103.2	66.5	62.5	70.4
30	Region 36	78.4	74.5	81.1	37.0	31.0	42.2	17.7	2.1	50.8	66.9	48.0	81.6	15.4	1.2	34.8	1.5	0.1	9.9	1.1	0.0	9.0	13	0	40	87.9	81.0	95.5	66.7	65.1	68.6
549	**Ave. white**	**77.7**			**35.0**			**22.1**			**64.1**			**13.7**			**1.2**			**0.8**			**8**			**80.2**			**64.8**		
	Min. white		**70.0**			**22.8**			**1.8**			**13.6**			**0.7**			**0.0**			**0.0**			**0**			**41.2**			**55.4**	
	Max. white			**81.8**			**43.8**			**64.2**			**82.4**			**62.6**			**9.9**			**9.0**			**42**			**103.2**			**70.4**

TABLE 14: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE (2016/2017)

Number of samples	Region	Test weight (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			SAGL Milling index 2017			GYA		
								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.	ave.	min.	max.
GRADE: YM1																															
37	Region 10	79.6	77.5	80.9	36.5	30.2	42.2	5.2	0.0	14.2	65.3	30.8	80.8	29.5	8.9	69.2	0.8	0.2	2.4	0.6	0.0	2.2	7	0	21	77.5	63.6	90.9	64.2	60.8	67.4
3	Region 11	78.6	77.7	79.6	33.6	31.3	35.9	4.2	3.3	5.4	60.7	50.2	69.0	35.1	27.0	46.5	0.8	0.2	1.6	0.4	0.0	0.8	6	3	9	74.9	70.7	77.3	63.5	62.5	64.1
3	Region 12	78.1	75.8	79.8	30.1	28.6	33.0	10.1	4.1	15.1	70.4	67.7	74.1	19.5	14.8	28.2	1.8	1.3	2.3	1.3	1.0	1.8	5	3	8	88.9	86.6	93.0	66.9	66.4	67.9
5	Region 13	77.8	76.7	79.0	29.4	25.1	34.4	8.1	2.4	21.8	65.6	55.9	71.2	26.3	9.4	41.7	2.3	1.1	4.4	1.3	1.0	1.9	13	5	21	89.5	85.4	92.3	67.1	66.0	67.8
8	Region 14	77.6	76.4	79.4	32.1	29.3	38.6	10.0	4.2	35.9	65.9	57.7	69.4	24.1	6.4	29.3	1.0	0.2	1.9	0.7	0.1	1.3	9	2	14	84.2	80.1	93.3	65.8	64.8	68.0
3	Region 17	77.3	75.0	78.7	29.5	27.0	31.0	8.6	3.9	11.5	60.8	59.7	61.8	30.6	26.7	36.4	1.9	0.8	3.9	1.3	0.6	2.8	8	4	12	84.1	78.2	88.9	65.7	64.3	66.9
3	Region 18	77.7	77.0	78.9	29.6	29.3	29.8	5.8	4.9	6.8	69.8	67.7	72.9	24.4	22.2	25.6	1.7	1.4	1.8	1.2	1.2	1.3	9	6	11	85.2	83.5	88.5	66.0	65.6	66.8
5	Region 19	77.3	76.2	78.4	32.1	27.9	35.7	12.9	6.4	18.8	67.1	60.9	71.2	20.0	15.2	24.6	1.0	0.8	1.5	0.7	0.4	1.0	7	5	12	82.1	69.0	88.1	65.3	62.1	66.7
5	Region 20	77.2	76.2	79.1	31.8	29.3	35.7	10.7	5.3	25.9	63.8	61.8	70.8	25.5	11.4	32.9	1.3	0.9	2.5	1.1	0.7	2.2	8	1	18	78.9	69.3	86.9	64.5	62.2	66.4
10	Region 21	78.1	76.1	79.6	35.0	30.6	37.7	19.4	6.9	71.9	65.1	17.9	77.2	15.5	5.9	24.6	0.9	0.3	1.6	0.7	0.2	1.3	9	3	16	83.5	73.6	91.9	65.6	63.2	67.7
3	Region 22	77.0	74.8	78.1	32.6	27.0	39.2	11.1	3.3	25.8	61.9	56.5	64.8	27.0	9.9	40.2	1.6	1.2	1.8	1.0	0.6	1.6	16	10	22	83.6	80.0	88.3	65.6	64.8	66.8
3	Region 23	77.1	76.8	77.7	33.8	28.9	36.7	6.6	4.8	9.4	70.1	66.2	73.3	23.3	19.9	29.0	1.3	1.2	1.3	0.9	0.6	1.1	12	9	16	86.6	83.6	89.7	66.3	65.6	67.1
3	Region 24	77.5	76.3	78.3	26.2	25.3	27.6	5.0	3.6	5.9	62.2	57.0	67.6	32.8	26.8	39.4	1.1	0.5	1.4	0.8	0.1	1.2	10	8	11	88.5	79.9	95.5	66.8	64.7	68.5
26	Region 25	77.4	75.7	79.7	31.9	26.5	39.7	9.9	3.6	27.6	63.3	39.3	71.3	26.8	9.6	56.5	1.0	0.2	2.2	0.6	0.2	1.5	7	0	17	67.7	56.3	79.8	61.8	59.0	64.7
28	Region 26	76.6	70.8	78.9	32.0	27.1	37.5	11.4	2.5	54.6	63.4	40.0	72.2	25.2	5.4	46.2	1.6	0.2	5.1	1.0	0.0	3.1	8	1	25	74.0	55.8	90.2	63.3	58.9	67.3
33	Region 28	76.8	74.7	78.8	33.9	28.0	39.9	12.5	5.1	23.0	64.4	13.0	74.4	23.1	7.0	68.5	0.9	0.3	2.5	0.6	0.0	1.6	6	0	18	74.1	64.5	90.7	63.3	61.0	67.4
74	Region 29	76.8	69.1	80.7	35.2	28.1	43.3	13.8	2.5	50.9	66.7	31.0	90.9	19.5	6.2	60.8	1.0	0.1	5.3	0.7	0.0	5.3	6	0	17	77.8	60.1	97.7	64.2	59.9	69.0
31	Region 30	75.2	67.6	79.2	34.2	28.7	40.1	13.7	0.9	32.1	68.2	56.9	77.0	18.1	4.7	41.5	0.9	0.2	2.9	0.7	0.0	2.2	6	1	23	75.7	62.1	88.8	63.7	60.4	66.9
14	Region 31	77.0	74.8	79.1	33.4	31.4	38.2	15.2	10.3	28.9	67.7	61.0	77.0	17.1	10.1	25.6	0.6	0.3	1.0	0.4	0.1	0.8	5	0	19	75.0	66.9	82.4	63.5	61.6	65.3
26	Region 32	76.9	68.8	80.9	34.6	25.8	40.2	14.2	3.3	23.8	66.9	36.3	74.6	18.9	1.6	56.7	1.1	0.2	2.5	0.8	0.0	2.1	11	3	32	78.8	67.2	96.5	64.5	61.6	68.8
24	Region 33	76.1	71.4	78.0	34.0	29.4	39.4	12.4	0.6	23.7	70.2	59.1	84.4	17.3	6.9	32.6	1.1	0.2	3.2	0.8	0.0	2.1	5	0	19	75.2	56.5	89.3	63.6	59.1	66.9
38	Region 34	76.3	69.9	82.4	33.6	23.5	39.2	14.3	1.5	42.1	65.8	18.1	77.5	19.8	4.2	69.7	0.9	0.2	2.2	0.6	0.0	1.7	9	1	34	78.7	54.4	103.7	64.4	58.6	70.5
9	Region 35	76.6	73.3	78.7	31.7	26.4	35.7	9.4	1.3	17.4	64.6	52.4	74.2	26.0	15.3	46.3	0.9	0.2	4.3	0.7	0.2	3.2	7	4	12	74.9	66.9	94.8	63.5	61.6	68.4
23	Region 36	77.5	74.2	80.1	33.8	30.6	37.9	7.4	1.7	21.7	59.7	34.9	75.4	32.9	10.6	58.6	1.4	0.4	4.4	1.0	0.3	3.5	9	1	29	76.5	61.6	105.4	63.9	60.3	70.9
417	**Ave. YM1**	**77.0**			**33.8**			**11.7**			**65.6**			**22.6**			**1.0**			**0.7**			**7**			**77.0**			**64.0**		
	Min. YM1		**67.6**			**23.5**			**0.0**			**13.0**			**1.6**			**0.1**			**0.0**			**0**			**54.4**			**58.6**	
	Max. YM1			**82.4**			**43.3**			**71.9**			**90.9**			**69.7**			**5.3**			**5.3**			**34**			**105.4**			**70.9**

TABLE 14: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE (2016/2017)
(continue)

Number of samples	Region	Test weight (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			SAGL Milling index 2017			GYA		
								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.	ave.	min.	max.
GRADE: YM2																															
1	Region 11	78.5	-	-	34.7	-	-	4.0	-	-	70.8	-	-	25.2	-	-	1.0	-	-	0.6	-	-	3	-	-	77.0	-	-	64.0	-	-
1	Region 13	72.9	-	-	30.1	-	-	11.1	-	-	69.3	-	-	19.6	-	-	3.5	-	-	2.8	-	-	6	-	-	89.9	-	-	67.2	-	-
1	Region 17	76.9	-	-	30.4	-	-	7.1	-	-	72.9	-	-	20.0	-	-	0.9	-	-	0.8	-	-	1	-	-	88.3	-	-	66.7	-	-
1	Region 19	72.3	-	-	32.5	-	-	13.6	-	-	75.3	-	-	11.1	-	-	0.8	-	-	0.7	-	-	13	-	-	86.1	-	-	66.2	-	-
3	Region 20	76.3	74.9	78.4	31.4	29.0	33.4	9.9	6.6	13.7	68.5	63.5	73.8	21.6	16.7	25.2	1.7	1.1	2.3	1.2	0.9	1.5	12	5	19	81.8	77.2	86.9	65.2	64.1	66.4
1	Region 21	79.3	-	-	29.0	-	-	4.0	-	-	63.5	-	-	32.5	-	-	1.0	-	-	1.0	-	-	8	-	-	95.0	-	-	68.4	-	-
1	Region 23	75.9	-	-	30.6	-	-	3.7	-	-	70.2	-	-	26.1	-	-	1.6	-	-	1.4	-	-	4	-	-	85.4	-	-	66.1	-	-
6	Region 26	73.7	70.4	77.0	29.8	26.4	32.4	8.0	2.4	13.7	65.9	59.7	72.3	26.2	16.8	34.8	2.6	0.8	4.0	1.8	0.4	2.8	11	6	15	63.5	36.9	81.1	60.7	54.2	65.0
1	Region 29	71.0	-	-	29.2	-	-	7.4	-	-	73.3	-	-	19.3	-	-	1.8	-	-	1.2	-	-	1	-	-	70.6	-	-	62.5	-	-
2	Region 30	75.0	74.5	75.4	33.4	32.4	34.4	8.8	0.9	16.6	61.3	60.9	61.6	30.0	21.8	38.2	0.9	0.9	0.9	0.7	0.5	0.8	4	1	6	61.3	57.5	65.1	60.3	59.3	61.2
2	Region 33	73.4	71.9	74.8	24.3	20.6	27.9	2.0	1.0	2.9	45.4	42.3	48.5	52.7	48.6	56.7	3.0	2.1	4.0	1.7	1.2	2.3	6	5	7	72.1	64.9	79.4	62.8	61.1	64.6
2	Region 34	76.1	75.5	76.7	34.1	33.5	34.7	7.1	5.7	8.4	71.1	69.4	72.8	21.9	21.5	22.2	2.4	1.4	3.4	1.0	1.0	1.0	29	25	32	95.4	89.5	101.2	68.5	67.1	69.9
1	Region 35	77.0	-	-	22.3	-	-	3.5	-	-	57.5	-	-	39.0	-	-	1.4	-	-	1.0	-	-	17	-	-	102.0	-	-	70.1	-	-
5	Region 36	75.8	71.8	78.5	32.6	30.3	33.9	4.9	1.9	9.9	53.7	48.5	57.9	41.4	32.2	49.4	1.7	0.5	3.7	1.2	0.3	2.1	10	3	28	67.2	47.4	76.9	61.7	56.9	64.1
28	**Ave. YM2**	**75.1**			**30.7**			**6.9**			**63.5**			**29.7**			**1.9**			**1.3**			**10**			**75.5**			**63.7**		
	Min. YM2		**70.4**			**20.6**			**0.9**			**42.3**			**11.1**			**0.5**			**0.3**			**1**			**36.9**			**54.2**	
	Max. YM2			**79.3**			**34.7**			**16.6**			**75.3**			**56.7**			**4.0**			**2.8**			**32**			**102.0**			**70.1**
GRADE: YM3																															
1	Region 20	76.9	-	-	33.3	-	-	26.4	-	-	61.3	-	-	12.3	-	-	2.8	-	-	1.9	-	-	27	-	-	79.7	-	-	64.7	-	-
1	Region 30	71.9	-	-	28.0	-	-	6.0	-	-	66.7	-	-	27.3	-	-	1.7	-	-	1.2	-	-	0	-	-	54.0	-	-	58.4	-	-
2	**Ave. YM3**	**74.4**			**30.7**			**16.2**			**64.0**			**19.8**			**2.3**			**1.6**			**14**			**66.8**			**61.5**		
	Min. YM3		**71.9**			**28.0**			**6.0**			**61.3**			**12.3**			**1.7**			**1.2**			**0**			**54.0**			**58.4**	
	Max. YM3			**76.9**			**33.3**			**26.4**			**66.7**			**27.3**			**2.8**			**1.9**			**27**			**79.7**			**64.7**

TABLE 14: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE (2016/2017)
(continue)

Number of samples	Region	Test weight (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			SAGL Milling index 2017			GYA		
								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.	ave.	min.	max.
CLASS: COM																															
2	Region 26	70.4	70.1	70.6	28.5	27.9	29.0	7.7	5.2	10.1	71.2	69.4	73.0	21.2	16.9	25.4	2.5	1.9	3.0	1.9	1.2	2.5	4	2	5	57.255	55.48	59.03	59.2	58.7	59.6
1	Region 30	73.6	-	-	30.1	-	-	10.8	-	-	66.4	-	-	22.8	-	-	1.6	-	-	1.3	-	-	2	-	-	62.7	-	-	60.6	-	-
1	Region 33	78.9	-	-	18.4	-	-	1.5	-	-	86.8	-	-	11.7	-	-	8.6	-	-	3.7	-	-	50	-	-	87.1	-	-	66.5	-	-
4	**Ave. COM**	**73.3**			**26.4**			**6.9**			**73.9**			**19.2**			**3.8**			**2.2**			**15**			**66.1**			**61.4**		
	Min. COM		**70.1**			**18.4**			**1.5**			**66.4**			**11.7**			**1.6**			**1.2**			**2**			**55.5**			**58.7**	
	Max. COM			**78.9**			**30.1**			**10.8**			**86.8**			**25.4**			**8.6**			**3.7**			**50**			**87.1**			**66.5**
451	**Ave. yellow maize**	**76.9**			**33.5**			**11.4**			**65.6**			**23.0**			**1.1**			**0.8**			**8**			**76.8**			**64.0**		
	Min. yellow maize		**67.6**			**18.4**			**0.0**			**13.0**			**1.6**			**0.1**			**0.0**			**0**			**36.9**			**54.2**	
	Max. yellow maize			**82.4**			**43.3**			**71.9**			**90.9**			**69.7**			**8.6**			**5.3**			**50**			**105.4**			**70.9**
1000	**Ave. maize**	**77.3**			**34.3**			**17.3**			**64.8**			**17.9**			**1.2**			**0.8**			**8**			**78.7**			**64.5**		
	Min. maize		**67.6**			**18.4**			**0.0**			**13.0**			**0.7**			**0.0**			**0.0**			**0**			**36.9**			**54.2**	
	Max. maize			**82.4**			**43.8**			**71.9**			**90.9**			**69.7**			**9.9**			**9.0**			**50**			**105.4**			**70.9**

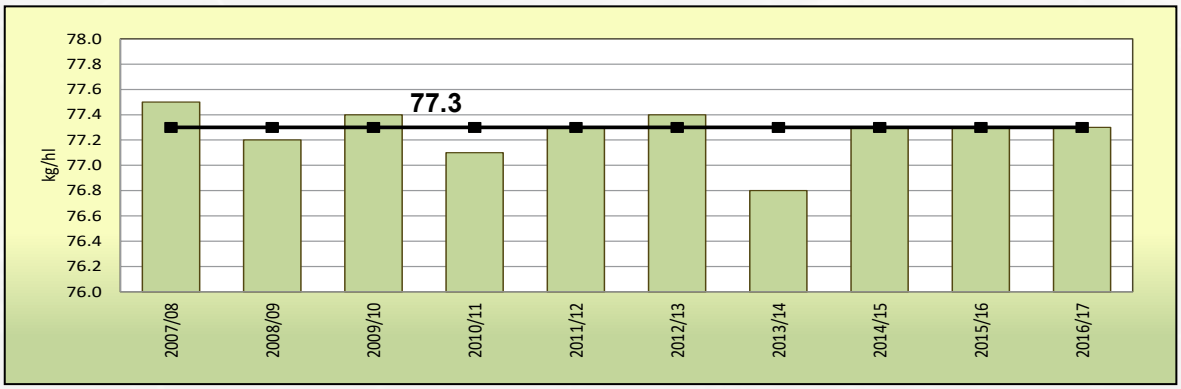
TABLE 15: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE (2016/2017)

Number of samples	Region	Test weight (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			SAGL Milling index 2017			GYA		
								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.	ave.	min.	max.
YELLOW																															
37	Region 10	79.6	77.5	80.9	36.5	30.2	42.2	5.2	0.0	14.2	65.3	30.8	80.8	29.5	8.9	69.2	0.8	0.2	2.4	0.6	0.0	2.2	7	0	21	77.5	63.6	90.9	64.2	60.8	67.4
4	Region 11	78.6	77.7	79.6	33.9	31.3	35.9	4.2	3.3	5.4	63.2	50.2	70.8	32.6	25.2	46.5	0.8	0.2	1.6	0.4	0.0	0.8	5	3	9	75.4	70.7	77.3	63.7	62.5	64.1
3	Region 12	78.1	75.8	79.8	30.1	28.6	33.0	10.1	4.1	15.1	70.4	67.7	74.1	19.5	14.8	28.2	1.8	1.3	2.3	1.3	1.0	1.8	5	3	8	88.9	86.6	93.0	66.9	66.4	67.9
6	Region 13	77.0	72.9	79.0	29.6	25.1	34.4	8.6	2.4	21.8	66.2	55.9	71.2	25.2	9.4	41.7	2.5	1.1	4.4	1.5	1.0	2.8	12	5	21	89.6	85.4	92.3	67.1	66.0	67.8
8	Region 14	77.6	76.4	79.4	32.1	29.3	38.6	10.0	4.2	35.9	65.9	57.7	69.4	24.1	6.4	29.3	1.0	0.2	1.9	0.7	0.1	1.3	9	2	14	84.2	80.1	93.3	65.8	64.8	68.0
4	Region 17	77.2	75.0	78.7	29.7	27.0	31.0	8.2	3.9	11.5	63.9	59.7	72.9	27.9	20.0	36.4	1.7	0.8	3.9	1.2	0.6	2.8	6	1	12	85.2	78.2	88.9	66.0	64.3	66.9
3	Region 18	77.7	77.0	78.9	29.6	29.3	29.8	5.8	4.9	6.8	69.8	67.7	72.9	24.4	22.2	25.6	1.7	1.4	1.8	1.2	1.2	1.3	9	6	11	85.2	83.5	88.5	66.0	65.6	66.8
6	Region 19	76.4	72.3	78.4	32.2	27.9	35.7	13.0	6.4	18.8	68.5	60.9	75.3	18.5	11.1	24.6	1.0	0.8	1.5	0.7	0.4	1.0	8	5	13	82.8	69.0	88.1	65.4	62.1	66.7
9	Region 20	76.8	74.9	79.1	31.8	29.0	35.7	12.2	5.3	26.4	65.1	61.3	73.8	22.7	11.4	32.9	1.6	0.9	2.8	1.2	0.7	2.2	12	1	27	80.0	69.3	86.9	64.8	62.2	66.4
11	Region 21	78.2	76.1	79.6	34.5	29.0	37.7	18.0	4.0	71.9	65.0	17.9	77.2	17.0	5.9	32.5	0.9	0.3	1.6	0.7	0.2	1.3	9	3	16	84.6	73.6	95.0	65.9	63.2	68.4
3	Region 22	77.0	74.8	78.1	32.6	27.0	39.2	11.1	3.3	25.8	61.9	56.5	64.8	27.0	9.9	40.2	1.6	1.2	1.8	1.0	0.6	1.6	16	10	22	83.6	80.0	88.3	65.6	64.8	66.8
4	Region 23	76.8	75.9	77.7	33.0	28.9	36.7	5.9	3.7	9.4	70.1	66.2	73.3	24.0	19.9	29.0	1.4	1.2	1.6	1.0	0.6	1.4	10	4	16	86.3	83.6	89.7	66.3	65.6	67.1
3	Region 24	77.5	76.3	78.3	26.2	25.3	27.6	5.0	3.6	5.9	62.2	57.0	67.6	32.8	26.8	39.4	1.1	0.5	1.4	0.8	0.1	1.2	10	8	11	88.5	79.9	95.5	66.8	64.7	68.5
26	Region 25	77.4	75.7	79.7	31.9	26.5	39.7	9.9	3.6	27.6	63.3	39.3	71.3	26.8	9.6	56.5	1.0	0.2	2.2	0.6	0.2	1.5	7	0	17	67.7	56.3	79.8	61.8	59.0	64.7
36	Region 26	75.8	70.1	78.9	31.4	26.4	37.5	10.6	2.4	54.6	64.2	40.0	73.0	25.2	5.4	46.2	1.8	0.2	5.1	1.2	0.0	3.1	8	1	25	71.3	36.9	90.2	62.6	54.2	67.3
33	Region 28	76.8	74.7	78.8	33.9	28.0	39.9	12.5	5.1	23.0	64.4	13.0	74.4	23.1	7.0	68.5	0.9	0.3	2.5	0.6	0.0	1.6	6	0	18	74.1	64.5	90.7	63.3	61.0	67.4
75	Region 29	76.7	69.1	80.7	35.1	28.1	43.3	13.7	2.5	50.9	66.8	31.0	90.9	19.5	6.2	60.8	1.0	0.1	5.3	0.7	0.0	5.3	6	0	17	77.7	60.1	97.7	64.2	59.9	69.0
35	Region 30	75.1	67.6	79.2	33.9	28.0	40.1	13.1	0.9	32.1	67.7	56.9	77.0	19.2	4.7	41.5	1.0	0.2	2.9	0.7	0.0	2.2	6	0	23	73.9	54.0	88.8	63.3	58.4	66.9
14	Region 31	77.0	74.8	79.1	33.4	31.4	38.2	15.2	10.3	28.9	67.7	61.0	77.0	17.1	10.1	25.6	0.6	0.3	1.0	0.4	0.1	0.8	5	0	19	75.0	66.9	82.4	63.5	61.6	65.3
26	Region 32	76.9	68.8	80.9	34.6	25.8	40.2	14.2	3.3	23.8	66.9	36.3	74.6	18.9	1.6	56.7	1.1	0.2	2.5	0.8	0.0	2.1	11	3	32	78.8	67.2	96.5	64.5	61.6	68.8
27	Region 33	76.0	71.4	78.9	32.7	18.4	39.4	11.2	0.6	23.7	69.0	42.3	86.8	19.7	6.9	56.7	1.5	0.2	8.6	1.0	0.0	3.7	7	0	50	75.4	56.5	89.3	63.6	59.1	66.9
40	Region 34	76.3	69.9	82.4	33.6	23.5	39.2	14.0	1.5	42.1	66.1	18.1	77.5	19.9	4.2	69.7	0.9	0.2	3.4	0.6	0.0	1.7	10	1	34	79.5	54.4	103.7	64.6	58.6	70.5
10	Region 35	76.7	73.3	78.7	30.8	22.3	35.7	8.8	1.3	17.4	63.9	52.4	74.2	27.3	15.3	46.3	1.0	0.2	4.3	0.7	0.2	3.2	8	4	17	77.6	66.9	102.0	64.2	61.6	70.1
28	Region 36	77.2	71.8	80.1	33.6	30.3	37.9	7.0	1.7	21.7	58.6	34.9	75.4	34.4	10.6	58.6	1.4	0.4	4.4	1.1	0.3	3.5	9	1	29	74.9	47.4	105.4	63.5	56.9	70.9
451	**Ave. yellow**	**76.9**			**33.5**			**11.4**			**65.6**			**23.0**			**1.1**			**0.8**			**8**			**76.8**			**64.0**		
	Min. yellow		**67.6**			**18.4**			**0.0**			**13.0**			**1.6**			**0.1**			**0.0**			**0**			**36.9**			**54.2**	
	Max. yellow			**82.4**			**43.3**			**71.9**			**90.9**			**69.7**			**8.6**			**5.3**			**50**			**105.4**			**70.9**

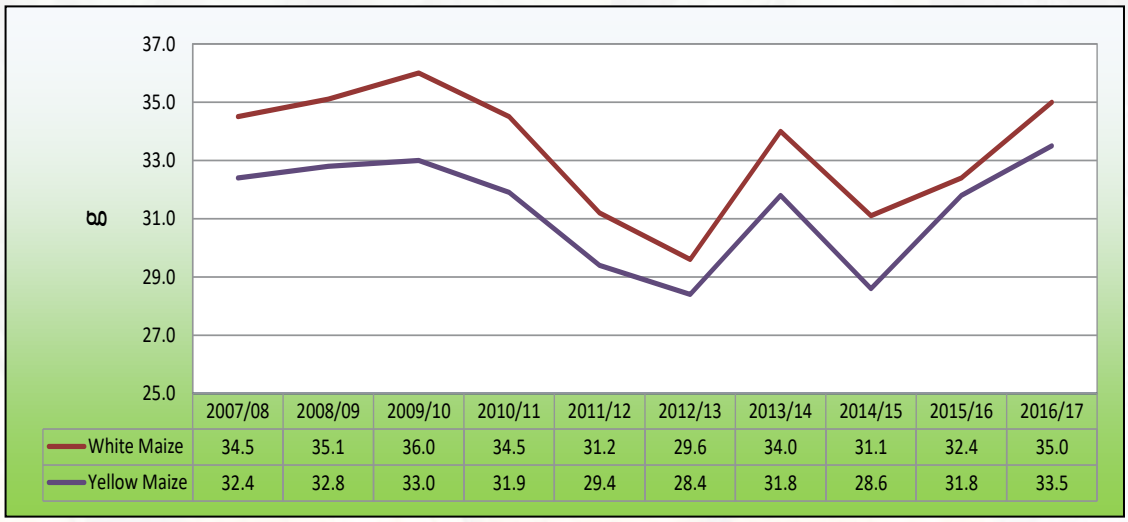
TABLE 16: PHYSICAL QUALITY FACTORS OF WHITE AND YELLOW MAIZE 2007/2008 - 2016/2017

Season	Number of samples	Test weight (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																									
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	17.4	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
2014/15	485	78.3	70.2	83.1	31.1	20.3	48.3	15.4	0.3	86.7	66.1	13.1	81.8	18.4	0.0	51.5	1.1	0.0	12.1	0.8	0.0	5.6	6	0	61
2015/16	415	78.1	68.5	83.9	32.4	20.8	40.8	15.2	0.3	99.4	66.7	0.1	89.5	18.2	0.0	63.8	0.9	0.0	7.2	0.4	0.0	4.3	5	0	30
2016/17	549	77.7	70.0	81.8	35.0	22.8	43.8	22.1	1.8	64.2	64.1	13.6	82.4	13.7	0.7	62.6	1.2	0.0	9.9	0.8	0.0	9.0	8	0	42
Weighted Average		**78.0**			**33.3**			**21.2**			**64.5**			**14.3**			**1.2**			**0.9**			**5**		
Minimum			**60.2**			**17.0**			**0.0**			**0.1**			**0.0**			**0.0**			**0.0**			**0**	
Maximum				**84.4**			**59.1**			**99.4**			**89.5**			**83.5**			**24.3**			**23.1**			**61**
Yellow Maize																									
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	32.8	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
2014/15	515	76.3	67.3	83.1	28.6	17.8	38.2	8.8	0.0	30.2	63.4	9.2	78.9	27.8	4.2	90.4	1.3	0.1	6.8	0.9	0.0	4.8	5	0	56
2015/16	505	76.7	59.8	81.7	31.8	17.1	43.1	11.8	0.3	34.1	66.6	15.6	93.6	21.6	0.2	77.9	1.0	0.0	4.5	0.5	0.0	4.1	5	0	31
2016/17	451	76.9	67.6	82.4	33.5	18.4	43.3	11.4	0.0	71.9	65.6	13.0	90.9	23.0	1.6	69.7	1.1	0.1	8.6	0.8	0.0	5.3	8	0	50
Weighted Average		**76.5**			**31.2**			**12.5**			**65.5**			**22.0**			**1.6**			**1.1**			**5.7**		
Minimum			**56.6**			**14.5**			**0.0**			**9.2**			**0.2**			**0.0**			**0.0**			**0**	
Maximum				**83.1**			**45.4**			**71.9**			**93.6**			**90.4**			**15.6**			**9.9**			**58**
White & Yellow Maize																									
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
2014/15	1000	77.3	67.3	83.1	29.8	17.8	48.3	12.0	0.0	86.7	64.7	9.2	81.8	23.2	0.0	90.4	1.2	0.0	12.1	0.8	0.0	5.6	6	0	61
2015/16	920	77.3	59.8	83.9	32.1	17.1	43.1	13.3	0.3	99.4	66.7	0.1	93.6	20.0	0.0	77.9	1.0	0.0	7.2	0.5	0.0	4.3	5	0	31
2016/17	1000	77.3	67.6	82.4	34.3	18.4	43.8	17.3	0.0	71.9	64.8	13.0	90.9	17.9	0.7	69.7	1.2	0.0	9.9	0.8	0.0	9.0	8	0	50
Weighted Average		**77.3**			**32.3**			**17.1**			**65.0**			**17.9**			**1.4**			**1.0**			**6**		
Minimum			**56.6**			**14.5**			**0.0**			**0.1**			**0.0**			**0.0**			**0.0**			**0**	
Maximum				**84.4**			**59.1**			**99.4**			**93.6**			**90.4**			**24.3**			**23.1**			**61**

Graph 37: Test weight of white and yellow maize over 10 seasons

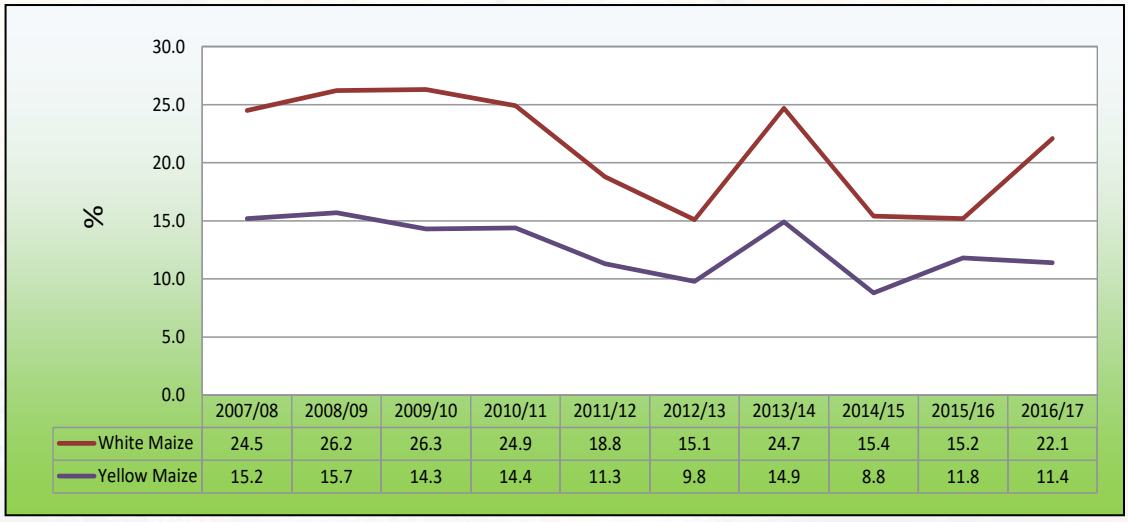


Graph 38: 100 Kernel mass over 10 seasons



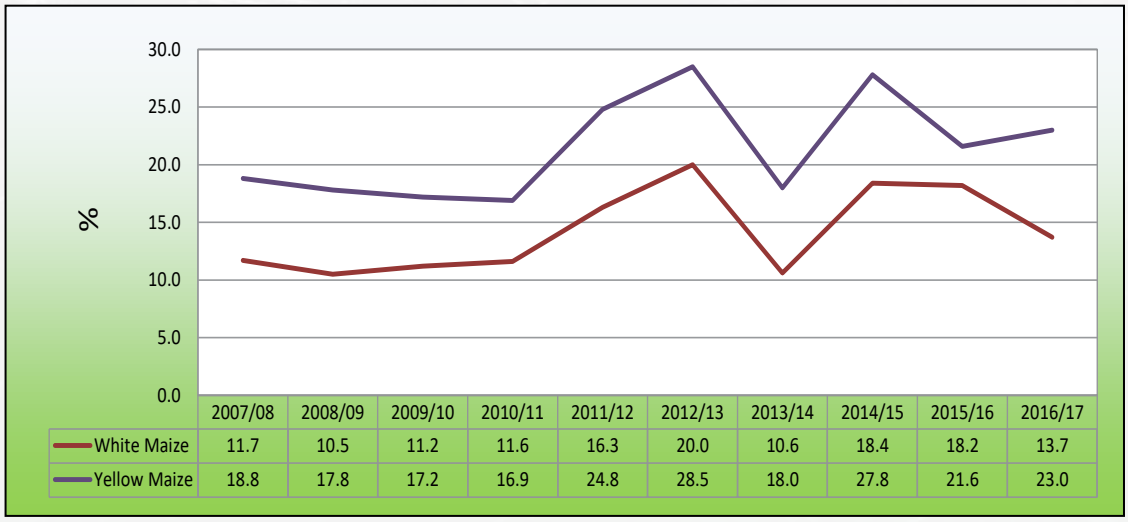
	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
White Maize	34.5	35.1	36.0	34.5	31.2	29.6	34.0	31.1	32.4	35.0
Yellow Maize	32.4	32.8	33.0	31.9	29.4	28.4	31.8	28.6	31.8	33.5

Graph 39: Kernel size above 10 mm sieve over 10 seasons



	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
White Maize	24.5	26.2	26.3	24.9	18.8	15.1	24.7	15.4	15.2	22.1
Yellow Maize	15.2	15.7	14.3	14.4	11.3	9.8	14.9	8.8	11.8	11.4

Graph 40: Kernel size below 8 mm sieve over 10 seasons



	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
White Maize	11.7	10.5	11.2	11.6	16.3	20.0	10.6	18.4	18.2	13.7
Yellow Maize	18.8	17.8	17.2	16.9	24.8	28.5	18.0	27.8	21.6	23.0

TABLE 17: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2016/2017)

Number of samples	Region	Roff Milling																		Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Chop, %			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																									
2	Region 10	12.7	12.4	13.0	10.7	10.4	11.0	23.0	22.1	23.9	33.2	32.5	33.9	20.3	20.2	20.5	79.7	79.5	79.8	28.0	26.9	29.2	24.7	20.6	28.8
1	Region 11	14.6	-	-	10.4	-	-	22.3	-	-	33.1	-	-	19.6	-	-	80.4	-	-	25.4	-	-	15.9	-	-
13	Region 12	15.2	14.3	17.6	10.3	9.6	11.8	20.8	19.1	22.1	32.2	29.0	34.1	21.5	19.5	23.4	78.5	76.6	80.5	27.7	21.7	31.8	21.9	16.8	27.1
20	Region 13	15.7	13.3	18.8	10.2	8.9	11.4	20.8	19.5	23.6	31.4	27.4	35.7	21.9	19.6	23.2	78.1	76.8	80.4	26.9	20.7	35.0	19.1	12.2	25.2
30	Region 14	15.3	14.0	16.4	10.2	8.4	11.2	21.6	19.4	24.0	32.2	30.6	33.9	20.7	19.2	22.5	79.3	77.5	80.8	27.7	22.3	38.4	20.2	15.0	26.4
4	Region 15	14.9	13.5	16.8	10.6	10.0	11.3	21.1	19.9	22.0	32.0	30.2	33.1	21.4	20.5	22.6	78.6	77.4	79.5	28.5	27.9	29.9	21.6	19.0	23.7
15	Region 17	15.7	14.3	17.9	10.5	9.8	11.1	21.2	20.1	22.9	31.1	27.9	32.7	21.5	19.4	24.0	78.5	76.0	80.6	28.3	25.6	32.8	19.9	14.4	26.6
6	Region 18	16.0	14.4	17.1	10.5	9.6	11.3	20.4	18.6	21.7	31.6	29.7	34.4	21.5	20.8	22.3	78.5	77.7	79.2	28.0	25.4	31.6	21.7	17.9	25.1
11	Region 19	15.9	14.8	18.4	10.2	9.3	11.1	20.7	19.3	22.2	31.8	29.9	33.8	21.3	19.9	22.3	78.7	77.7	80.1	26.8	22.1	31.3	21.4	15.4	28.0
21	Region 20	15.5	13.8	17.2	10.4	9.3	11.3	21.2	19.1	24.2	31.9	29.4	35.6	21.1	19.4	22.8	78.9	77.2	80.6	25.1	17.3	31.2	17.8	10.5	27.0
56	Region 21	13.9	11.3	17.1	10.6	9.2	11.9	21.7	19.0	24.1	32.2	22.8	37.1	21.6	18.8	30.3	78.4	69.7	81.2	26.2	19.9	31.1	17.6	12.5	22.1
31	Region 22	14.6	12.7	17.0	10.7	9.0	11.4	22.4	20.2	24.1	31.7	28.5	34.5	20.5	18.3	22.6	79.5	77.4	81.7	26.6	20.9	33.8	18.3	11.4	27.6
16	Region 23	15.3	13.9	16.9	10.9	10.2	11.9	21.5	19.5	24.4	31.3	29.0	33.4	21.0	19.2	23.2	79.0	76.8	80.8	29.1	25.3	33.4	22.1	16.8	32.9
16	Region 24	14.8	13.5	16.5	10.7	9.9	12.8	21.8	20.4	24.2	31.5	29.3	33.1	21.2	19.3	23.0	78.8	77.0	80.7	27.3	23.0	30.1	19.7	13.6	25.2
4	Region 25	15.2	14.7	15.8	10.4	10.3	10.6	22.3	21.3	24.8	29.8	28.6	31.0	22.3	19.3	23.6	77.7	76.4	80.7	23.6	19.5	26.1	15.7	12.7	19.7
19	Region 26	14.6	10.5	17.0	10.3	8.4	11.4	20.9	17.9	23.2	31.8	28.2	36.5	22.4	19.3	24.2	77.6	75.8	80.7	25.7	16.2	34.6	16.9	6.7	34.2
21	Region 28	13.2	9.5	15.5	10.4	9.3	12.5	21.7	20.2	23.0	32.9	29.4	36.2	21.7	19.8	23.4	78.3	76.6	80.2	25.9	21.3	30.4	18.6	14.5	28.6
26	Region 29	13.2	10.1	15.7	10.5	9.6	11.5	22.2	19.8	30.0	33.0	28.2	36.3	21.1	19.1	23.3	78.9	76.7	80.9	23.8	17.6	27.7	14.0	8.0	18.4
17	Region 30	13.7	12.0	16.4	10.7	9.2	12.0	22.9	20.7	32.9	31.5	22.3	34.2	21.3	19.4	22.9	78.7	77.1	80.6	22.9	17.5	34.5	14.7	7.4	21.8
15	Region 31	13.4	11.5	15.9	10.4	9.2	11.1	21.8	19.7	26.0	32.0	28.0	34.4	22.5	19.1	24.4	77.5	75.6	80.9	23.6	15.0	27.6	14.4	3.1	18.4
19	Region 32	13.5	10.9	15.0	10.5	9.6	11.4	21.6	20.5	23.1	32.5	29.8	35.3	21.9	19.8	23.5	78.1	76.5	80.2	24.1	11.9	31.7	14.9	-0.5	22.3
38	Region 33	13.4	11.1	15.3	10.3	9.3	11.6	21.8	19.8	23.7	32.7	29.5	35.2	21.7	20.0	23.5	78.3	76.5	80.0	22.9	-5.4	29.0	13.9	-14.3	20.7
38	Region 34	13.7	10.9	16.8	10.6	9.7	11.8	21.5	19.0	23.4	32.7	30.2	35.5	21.5	19.2	23.8	78.5	76.2	80.8	24.9	20.0	29.7	15.8	11.6	20.9
5	Region 35	13.4	10.4	15.4	10.6	8.8	11.6	21.6	21.0	22.5	32.9	30.4	37.5	21.6	19.6	22.2	78.4	77.8	80.4	28.8	25.0	35.6	21.6	17.0	26.5
25	Region 36	13.4	11.4	15.7	10.2	9.2	11.3	21.7	19.8	23.5	33.5	30.2	36.3	21.3	19.4	22.9	78.7	77.1	80.6	23.5	17.1	29.0	17.8	10.6	27.3
469	**Ave. WM1**	**14.3**			**10.5**			**21.6**			**32.2**			**21.4**			**78.6**			**25.7**			**17.6**		
	Min. WM1		**9.5**			**8.4**			**17.9**			**22.3**			**18.3**			**69.7**			**-5.4**			**-14.3**	
	Max. WM1			**18.8**			**12.8**			**32.9**			**37.5**			**30.3**			**81.7**			**38.4**			**34.2**

TABLE 17: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2016/2017) (continue)

Number of samples	Region	Roff Milling																	Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Chop, %			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																									
4	Region 12	15.6	14.1	18.4	10.4	9.4	11.3	20.7	20.2	21.3	32.5	28.7	35.9	20.8	20.2	21.9	79.2	78.1	79.8	25.9	21.7	29.2	20.5	17.8	26.1
8	Region 13	14.9	12.9	17.0	10.4	10.0	11.1	21.6	20.5	23.3	31.9	27.9	35.8	21.2	19.8	23.6	78.8	76.4	80.2	27.2	20.5	35.1	19.6	11.4	25.7
1	Region 14	16.5	-	-	11.1	-	-	22.2	-	-	27.6	-	-	22.6	-	-	77.4	-	-	28.3	-	-	20.4	-	-
5	Region 17	15.9	14.5	17.3	11.2	10.1	13.1	20.5	20.0	21.3	30.5	28.7	33.1	21.8	20.3	23.3	78.2	76.7	79.7	26.3	20.5	34.7	20.5	13.2	37.6
1	Region 18	16.5	-	-	10.9	-	-	20.2	-	-	32.4	-	-	20.0	-	-	80.0	-	-	27.3	-	-	18.5	-	-
9	Region 19	15.6	13.1	17.2	10.9	10.0	11.6	21.2	19.8	22.8	31.5	29.2	33.5	20.9	19.0	22.8	79.1	77.2	81.0	24.2	13.3	34.5	16.5	7.6	24.6
1	Region 20	14.6	-	-	9.0	-	-	20.5	-	-	33.4	-	-	22.5	-	-	77.5	-	-	16.4	-	-	9.5	-	-
1	Region 21	12.6	-	-	10.5	-	-	23.2	-	-	32.2	-	-	21.5	-	-	78.5	-	-	27.7	-	-	19.0	-	-
1	Region 23	14.5	-	-	10.5	-	-	21.7	-	-	33.6	-	-	19.7	-	-	80.3	-	-	28.2	-	-	23.6	-	-
3	Region 26	15.6	12.7	17.5	10.8	10.6	11.3	21.9	21.0	23.1	30.1	26.6	35.1	21.6	19.9	22.6	78.4	77.4	80.1	27.7	25.7	31.0	19.7	13.5	22.9
4	Region 29	13.4	11.9	14.1	10.6	10.0	11.2	21.2	20.8	21.8	33.6	30.9	36.3	21.3	19.8	23.5	78.7	76.5	80.2	22.8	15.3	27.2	14.4	7.0	18.1
3	Region 30	13.2	11.3	15.8	10.1	9.3	11.2	22.0	21.8	22.3	32.7	30.4	34.4	22.0	20.4	23.1	78.0	76.9	79.6	24.1	19.8	32.7	15.7	10.6	22.8
2	Region 31	11.7	11.5	11.8	10.2	10.1	10.2	21.5	21.1	21.8	33.5	33.4	33.7	23.1	23.1	23.2	76.9	76.8	76.9	26.1	23.8	28.5	17.3	15.7	19.0
8	Region 32	14.7	12.6	16.1	10.8	9.9	11.8	21.1	19.4	22.1	31.1	29.5	33.3	22.4	21.2	25.3	77.6	74.7	78.8	25.7	19.0	30.9	15.9	9.1	22.5
5	Region 33	13.5	13.0	14.2	10.7	9.3	11.5	22.1	21.1	23.3	33.3	32.9	34.0	20.5	19.2	22.1	79.5	77.9	80.8	21.8	18.4	25.9	16.6	10.5	23.8
1	Region 34	14.5	-	-	11.7	-	-	22.2	-	-	29.8	-	-	21.8	-	-	78.2	-	-	28.2	-	-	18.3	-	-
2	Region 35	13.9	13.7	14.2	10.8	10.7	10.9	22.3	21.6	23.1	32.5	31.1	33.9	20.4	19.4	21.4	79.6	78.6	80.6	24.1	23.6	24.5	16.6	14.9	18.3
3	Region 36	13.1	11.9	14.5	10.3	9.9	10.6	22.1	21.5	22.8	32.7	31.7	33.6	21.8	20.8	22.5	78.2	77.5	79.2	23.2	20.9	27.8	17.8	14.4	23.2
62	**Ave. WM2**	**14.6**			**10.7**			**21.4**			**31.9**			**21.4**			**78.6**			**25.1**			**17.7**		
	Min. WM2		**11.3**			**9.0**			**19.4**			**26.6**			**19.0**			**74.7**			**13.3**			**7.0**	
	Max. WM2			**18.4**			**13.1**			**23.3**			**36.3**			**25.3**			**81.0**			**35.1**			**37.6**

TABLE 17: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2016/2017) (continue)

Number of samples	Region	Roff Milling																	Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Chop, %			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 13	14.5	-	-	10.4	-	-	21.6	-	-	31.0	-	-	22.6	-	-	77.4	-	-	20.7	-	-	9.1	-	-
1	Region 17	18.0	-	-	11.4	-	-	22.4	-	-	27.1	-	-	21.1	-	-	78.9	-	-	31.5	-	-	20.8	-	-
1	Region 19	13.9	-	-	9.9	-	-	21.4	-	-	31.9	-	-	22.9	-	-	77.1	-	-	19.3	-	-	15.5	-	-
1	Region 20	16.6	-	-	10.2	-	-	22.9	-	-	29.7	-	-	20.6	-	-	79.4	-	-	20.2	-	-	7.4	-	-
1	Region 30	14.1	-	-	9.9	-	-	22.1	-	-	32.8	-	-	21.1	-	-	78.9	-	-	18.4	-	-	10.1	-	-
1	Region 32	11.4	-	-	9.8	-	-	21.0	-	-	36.2	-	-	21.5	-	-	78.5	-	-	18.1	-	-	10.6	-	-
1	Region 35	15.6	-	-	11.1	-	-	21.3	-	-	30.1	-	-	21.9	-	-	78.1	-	-	25.3	-	-	14.0	-	-
2	Region 36	12.8	12.8	12.8	10.0	9.7	10.3	23.4	23.2	23.5	33.6	33.4	33.9	20.2	20.0	20.4	79.8	79.6	80.0	25.5	25.3	25.8	19.4	17.5	21.3
9	**Ave. WM3**	**14.4**			**10.3**			**22.2**			**31.8**			**21.3**			**78.7**			**22.7**			**14.0**		
	Min. WM3		**11.4**			**9.7**			**21.0**			**27.1**			**20.0**			**77.1**			**18.1**			**7.4**	
	Max. WM3			**18.0**			**11.4**			**23.5**			**36.2**			**22.9**			**80.0**			**31.5**			**21.3**
CLASS: COM																									
1	Region 13	14.0	-	-	10.3	-	-	22.4	-	-	31.9	-	-	21.4	-	-	78.6	-	-	13.9	-	-	4.1	-	-
3	Region 19	15.4	13.0	17.1	10.4	10.0	10.9	22.2	20.9	22.9	31.3	30.0	33.5	20.7	19.7	21.7	79.3	78.3	80.3	25.6	22.4	28.3	15.5	12.8	17.4
1	Region 20	14.5	-	-	10.3	-	-	20.4	-	-	33.2	-	-	21.7	-	-	78.3	-	-	27.7	-	-	22.2	-	-
1	Region 31	13.2	-	-	10.0	-	-	20.4	-	-	33.7	-	-	22.7	-	-	77.3	-	-	-4.3	-	-	-17.5	-	-
2	Region 33	11.5	11.2	11.8	10.2	9.5	10.9	21.6	21.0	22.3	33.8	33.1	34.5	22.9	22.0	23.8	77.1	76.2	78.0	11.0	5.7	16.4	2.3	-4.0	8.5
1	Region 35	14.9	-	-	10.2	-	-	21.5	-	-	30.7	-	-	22.7	-	-	77.3	-	-	28.4	-	-	19.0	-	-
9	**Ave. COM**	**14.0**			**10.3**			**21.6**			**32.3**			**21.8**			**78.2**			**18.3**			**8.8**		
	Min. COM		**11.2**			**9.5**			**20.4**			**30.0**			**19.7**			**76.2**			**-4.3**			**-17.5**	
	Max. COM			**17.1**			**10.9**			**22.9**			**34.5**			**23.8**			**80.3**			**28.4**			**22.2**
549	**Ave. white maize**	**14.3**			**10.5**			**21.6**			**32.2**			**21.4**			**78.6**			**25.4**			**17.4**		
	Min. white maize		**9.5**			**8.4**			**17.9**			**22.3**			**18.3**			**69.7**			**-5.4**			**-17.5**	
	Max. white maize			**18.8**			**13.1**			**32.9**			**37.5**			**30.3**			**81.7**			**38.4**			**70.4**

TABLE 18: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE (2016/2017)

Number of samples	Region	Roff Milling																		Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Chop, %			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																									
2	Region 10	12.7	12.4	13.0	10.7	10.4	11.0	23.0	22.1	23.9	33.2	32.5	33.9	20.3	20.2	20.5	79.7	79.5	79.8	28.0	26.9	29.2	24.7	20.6	28.8
1	Region 11	14.6	-	-	10.4	-	-	22.3	-	-	33.1	-	-	19.6	-	-	80.4	-	-	25.4	-	-	15.9	-	-
17	Region 12	15.3	14.1	18.4	10.3	9.4	11.8	20.8	19.1	22.1	32.3	28.7	35.9	21.4	19.5	23.4	78.6	76.6	80.5	27.3	21.7	31.8	21.6	16.8	27.1
30	Region 13	15.4	12.9	18.8	10.3	8.9	11.4	21.1	19.5	23.6	31.5	27.4	35.8	21.7	19.6	23.6	78.3	76.4	80.4	26.3	13.9	35.1	18.4	4.1	25.7
31	Region 14	15.4	14.0	16.5	10.2	8.4	11.2	21.6	19.4	24.0	32.0	27.6	33.9	20.8	19.2	22.6	79.2	77.4	80.8	27.7	22.3	38.4	20.2	15.0	26.4
4	Region 15	14.9	13.5	16.8	10.6	10.0	11.3	21.1	19.9	22.0	32.0	30.2	33.1	21.4	20.5	22.6	78.6	77.4	79.5	28.5	27.9	29.9	21.6	19.0	23.7
21	Region 17	15.8	14.3	18.0	10.7	9.8	13.1	21.1	20.0	22.9	30.7	27.1	33.1	21.6	19.4	24.0	78.4	76.0	80.6	28.0	20.5	34.7	20.1	13.2	37.6
7	Region 18	16.1	14.4	17.1	10.6	9.6	11.3	20.3	18.6	21.7	31.7	29.7	34.4	21.3	20.0	22.3	78.7	77.7	80.0	27.9	25.4	31.6	21.2	17.9	25.1
24	Region 19	15.6	13.0	18.4	10.5	9.3	11.6	21.1	19.3	22.9	31.6	29.2	33.8	21.2	19.0	22.9	78.8	77.1	81.0	25.4	13.3	34.5	18.6	7.6	28.0
24	Region 20	15.5	13.8	17.2	10.3	9.0	11.3	21.2	19.1	24.2	31.9	29.4	35.6	21.1	19.4	22.8	78.9	77.2	80.6	24.7	16.4	31.2	17.2	7.4	27.0
57	Region 21	13.9	11.3	17.1	10.6	9.2	11.9	21.7	19.0	24.1	32.2	22.8	37.1	21.6	18.8	30.3	78.4	69.7	81.2	26.3	19.9	31.1	17.6	12.5	22.1
31	Region 22	14.6	12.7	17.0	10.7	9.0	11.4	22.4	20.2	24.1	31.7	28.5	34.5	20.5	18.3	22.6	79.5	77.4	81.7	26.6	20.9	33.8	18.3	11.4	27.6
17	Region 23	15.2	13.9	16.9	10.9	10.2	11.9	21.5	19.5	24.4	31.4	29.0	33.6	20.9	19.2	23.2	79.1	76.8	80.8	29.0	25.3	33.4	22.2	16.8	32.9
16	Region 24	14.8	13.5	16.5	10.7	9.9	12.8	21.8	20.4	24.2	31.5	29.3	33.1	21.2	19.3	23.0	78.8	77.0	80.7	27.3	23.0	30.1	19.7	13.6	25.2
4	Region 25	15.2	14.7	15.8	10.4	10.3	10.6	22.3	21.3	24.8	29.8	28.6	31.0	22.3	19.3	23.6	77.7	76.4	80.7	23.6	19.5	26.1	15.7	12.7	19.7
22	Region 26	14.8	10.5	17.5	10.4	8.4	11.4	21.0	17.9	23.2	31.6	26.6	36.5	22.3	19.3	24.2	77.7	75.8	80.7	26.0	16.2	34.6	17.3	6.7	34.2
21	Region 28	13.2	9.5	15.5	10.4	9.3	12.5	21.7	20.2	23.0	32.9	29.4	36.2	21.7	19.8	23.4	78.3	76.6	80.2	25.9	21.3	30.4	18.6	14.5	28.6
30	Region 29	13.2	10.1	15.7	10.5	9.6	11.5	22.0	19.8	30.0	33.1	28.2	36.3	21.1	19.1	23.5	78.9	76.5	80.9	23.6	15.3	27.7	14.1	7.0	18.4
21	Region 30	13.6	11.3	16.4	10.6	9.2	12.0	22.7	20.7	32.9	31.7	22.3	34.4	21.3	19.4	23.1	78.7	76.9	80.6	22.9	17.5	34.5	14.6	7.4	22.8
18	Region 31	13.2	11.5	15.9	10.3	9.2	11.1	21.7	19.7	26.0	32.2	28.0	34.4	22.6	19.1	24.4	77.4	75.6	80.9	22.3	-4.3	28.5	13.0	-17.5	19.0
28	Region 32	13.7	10.9	16.1	10.6	9.6	11.8	21.4	19.4	23.1	32.2	29.5	36.2	22.0	19.8	25.3	78.0	74.7	80.2	24.3	11.9	31.7	15.0	-0.5	22.5
45	Region 33	13.4	11.1	15.3	10.4	9.3	11.6	21.8	19.8	23.7	32.8	29.5	35.2	21.6	19.2	23.8	78.4	76.2	80.8	22.3	-5.4	29.0	13.7	-14.3	23.8
39	Region 34	13.7	10.9	16.8	10.6	9.7	11.8	21.5	19.0	23.4	32.6	29.8	35.5	21.5	19.2	23.8	78.5	76.2	80.8	25.0	20.0	29.7	15.8	11.6	20.9
9	Region 35	13.9	10.4	15.6	10.6	8.8	11.6	21.7	21.0	23.1	32.2	30.1	37.5	21.5	19.4	22.7	78.5	77.3	80.6	27.3	23.6	35.6	19.3	14.0	26.5
30	Region 36	13.3	11.4	15.7	10.2	9.2	11.3	21.8	19.8	23.5	33.4	30.2	36.3	21.3	19.4	22.9	78.7	77.1	80.6	23.6	17.1	29.0	17.9	10.6	27.3
549	**Ave. white**	**14.3**			**10.5**			**21.6**			**32.2**			**21.4**			**78.6**			**25.4**			**17.4**		
	Min. white		**9.5**			**8.4**			**17.9**			**22.3**			**18.3**			**69.7**			**-5.4**			**-17.5**	
	Max. white			**18.8**			**13.1**			**32.9**			**37.5**			**30.3**			**81.7**			**38.4**			**37.6**

TABLE 19: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2016/2017)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM1										
2	Region 10	3.9	3.9	3.9	9.0	9.0	9.1	74.19	74.18	74.2
1	Region 11	4.0	-	-	9.1	-	-	73.7	-	-
14	Region 12	4.2	3.9	4.9	8.5	7.6	9.2	74.5	73.5	75.4
20	Region 13	4.2	4.0	4.6	8.3	7.0	9.8	74.5	73.4	75.3
29	Region 14	4.1	3.8	4.4	8.5	7.3	9.0	74.5	73.5	75.0
4	Region 15	3.8	3.7	4.0	8.6	8.3	8.9	74.2	73.6	74.9
15	Region 17	4.2	3.8	4.6	8.5	7.5	8.8	74.6	73.8	75.8
6	Region 18	4.2	4.0	4.4	8.1	7.8	8.7	74.6	73.9	75.2
11	Region 19	4.1	3.9	4.4	8.4	7.8	8.8	74.4	73.7	74.9
21	Region 20	4.1	3.9	4.5	8.4	7.8	9.1	74.6	73.8	75.9
56	Region 21	4.2	3.8	4.8	8.7	8.0	9.5	74.1	72.7	75.4
31	Region 22	4.0	3.6	4.4	8.8	8.1	9.7	74.0	72.3	75.3
16	Region 23	4.0	3.7	4.2	8.5	7.9	9.0	74.3	73.2	75.7
16	Region 24	4.1	3.9	4.5	8.4	7.5	9.0	74.4	73.4	75.5
4	Region 25	4.2	3.9	4.3	8.8	7.8	9.7	74.0	73.6	74.9
19	Region 26	4.3	3.7	4.9	8.5	7.9	10.2	74.4	72.2	75.6
21	Region 28	4.3	3.8	4.6	8.8	7.5	9.6	74.0	73.1	75.6
26	Region 29	4.2	3.8	5.0	9.1	8.0	11.5	73.6	70.8	74.8
17	Region 30	4.2	3.9	4.4	8.9	7.9	9.8	73.8	72.1	75.2
15	Region 31	4.1	3.8	4.6	9.0	8.4	10.2	73.9	72.9	74.4
19	Region 32	4.1	3.9	4.7	8.7	8.0	9.7	73.9	72.2	74.7
38	Region 33	4.3	4.0	4.9	8.9	7.9	10.4	73.8	71.5	74.7
38	Region 34	4.2	3.8	5.3	8.7	7.8	9.9	74.1	72.6	75.6
5	Region 35	4.1	3.7	4.5	8.8	8.2	9.7	73.9	72.5	74.9
25	Region 36	4.2	3.9	4.8	8.9	7.8	10.2	73.8	72.3	75.0
469	**Ave. WM1**	**4.2**			**8.7**			**74.1**		
	Min. WM1		**3.6**			**7.0**			**70.8**	
	Max. WM1			**5.3**			**11.5**			**75.9**

TABLE 20: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2016/2017)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM1										
37	Region 10	3.5	3.3	4.2	8.5	8.0	10.1	74.5	73.4	75.3
3	Region 11	3.5	3.4	3.5	8.4	8.3	8.5	74.7	74.5	75.0
3	Region 12	4.0	3.9	4.2	8.4	7.9	8.9	75.3	74.7	76.2
5	Region 13	4.0	3.8	4.4	9.2	8.8	9.7	74.4	72.8	75.5
8	Region 14	4.1	3.9	4.5	8.8	8.5	9.9	74.1	72.2	75.1
-	Region 15	-	-	-	-	-	-	-	-	-
3	Region 17	4.0	3.7	4.2	8.6	8.1	9.0	75.0	73.9	76.0
3	Region 18	4.1	4.1	4.2	8.7	8.2	9.1	74.4	74.2	74.8
5	Region 19	4.1	3.9	4.5	8.8	8.2	9.9	73.8	72.6	74.9
5	Region 20	4.0	3.6	4.2	8.9	8.5	9.8	73.9	72.5	75.2
10	Region 21	4.3	4.0	4.7	9.2	8.7	10.2	73.3	72.0	74.4
3	Region 22	4.4	4.1	4.8	9.2	8.1	10.1	73.5	71.7	75.7
3	Region 23	4.5	4.1	4.9	9.7	9.1	10.0	72.7	71.5	74.2
3	Region 24	4.2	4.1	4.2	9.3	8.6	9.8	73.9	73.5	74.8
26	Region 25	4.0	3.8	4.4	8.6	8.1	9.5	73.9	72.9	74.7
28	Region 26	4.3	3.9	4.8	8.7	7.1	10.2	73.6	72.2	74.6
33	Region 28	4.1	3.7	4.6	9.1	8.1	10.3	73.4	71.5	74.6
74	Region 29	4.2	3.7	4.9	9.1	7.7	10.2	73.3	71.6	74.4
31	Region 30	4.2	3.5	4.8	8.8	7.5	9.8	73.6	71.5	75.2
14	Region 31	4.0	3.7	4.4	8.7	8.2	9.4	73.9	73.3	74.6
26	Region 32	4.1	3.7	4.6	8.9	7.9	10.1	73.7	72.2	74.8
24	Region 33	4.1	3.3	4.6	9.4	7.8	10.4	73.0	71.7	74.7
38	Region 34	4.2	3.5	4.8	8.8	7.5	10.8	73.6	71.3	74.9
9	Region 35	4.3	4.0	5.1	8.5	8.0	9.2	73.9	73.2	74.4
23	Region 36	4.0	3.6	4.7	8.7	7.6	10.0	73.8	72.2	74.9
417	**Ave. YM1**	**4.1**			**8.9**			**73.7**		
	Min. YM1		**3.3**			**7.1**			**71.3**	
	Max .YM1			**5.1**			**10.8**			**76.2**

TABLE 19: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2016/2017) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM2										
-	Region 11	-	-	-	-	-	-	-	-	-
3	Region 12	4.5	4.1	5.1	8.9	8.4	9.8	73.8	72.6	74.5
8	Region 13	4.0	3.4	4.4	8.8	8.1	10.0	74.0	72.7	74.8
2	Region 14	4.1	4.0	4.1	8.3	8.2	8.4	74.6	74.2	75.0
5	Region 17	4.2	3.9	4.6	8.0	6.8	8.6	74.5	73.5	75.0
1	Region 18	3.9	-	-	8.2	-	-	75.1	-	-
9	Region 19	4.2	4.0	4.6	8.2	7.2	9.0	74.4	73.4	75.3
1	Region 20	4.2	-	-	8.6	-	-	74.5	-	-
1	Region 21	4.0	-	-	8.8	-	-	74.3	-	-
-	Region 22	-	-	-	-	-	-	-	-	-
1	Region 23	4.0	-	-	8.9	-	-	74.6	-	-
3	Region 26	4.2	4.1	4.5	8.4	7.8	9.5	74.7	73.8	75.5
4	Region 29	4.3	4.2	4.4	8.8	8.6	9.0	73.7	73.2	74.0
3	Region 30	4.1	4.1	4.2	8.6	7.5	9.7	74.3	73.5	75.5
2	Region 31	3.9	3.8	4.0	9.2	8.9	9.4	74.0	73.8	74.2
8	Region 32	4.0	3.9	4.2	8.6	8.2	9.1	73.8	72.1	75.2
5	Region 33	4.3	4.1	4.4	9.0	8.8	9.5	73.6	73.2	74.0
1	Region 34	3.9	-	-	8.0	-	-	74.3	-	-
2	Region 35	4.2	4.1	4.3	8.9	8.5	9.2	73.7	73.3	74.0
3	Region 36	4.2	3.8	4.5	9.0	8.7	9.4	74.0	72.8	74.9
62	**Ave. WM2**	**4.2**			**8.6**			**74.1**		
	Min. WM2		**3.4**			**6.8**			**72.1**	
	Max. WM2			**5.1**			**10.0**			**75.5**

TABLE 20: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2016/2017) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM2										
1	Region 11	3.3	-	-	8.9	-	-	74.5	-	-
-	Region 12	-	-	-	-	-	-	-	-	-
1	Region 13	4.0	-	-	10.3	-	-	73.1	-	-
	Region 14									
1	Region 17	3.8	-	-	8.9	-	-	73.5	-	-
-	Region 18	-	-	-	-	-	-	-	-	-
1	Region 19	3.9	-	-	8.2	-	-	74.6	-	-
3	Region 20	4.1	4.0	4.2	9.0	8.2	9.8	73.7	73.0	74.5
1	Region 21	4.1	-	-	9.3	-	-	74.0	-	-
-	Region 22	-	-	-	-	-	-	-	-	-
1	Region 23	4.2	-	-	9.9	-	-	72.9	-	-
6	Region 26	4.1	3.9	4.3	8.3	7.3	9.3	73.4	72.3	74.7
1	Region 29	4.3	-	-	9.4	-	-	73.2	-	-
2	Region 30	4.2	3.6	4.7	8.3	8.0	8.5	73.7	73.1	74.3
-	Region 31	-	-	-	-	-	-	-	-	-
-	Region 32	-	-	-	-	-	-	-	-	-
2	Region 33	3.7	3.7	3.8	9.9	9.3	10.5	72.2	71.8	72.6
2	Region 34	4.3	4.1	4.5	8.6	8.2	8.9	74.5	74.1	75.0
1	Region 35	4.1	-	-	10.8	-	-	72.2	-	-
5	Region 36	3.9	3.7	4.1	8.3	7.4	8.7	74.2	73.8	74.6
28	**Ave. YM2**	**4.0**			**8.8**			**73.6**		
	Min. YM2		**3.3**			**7.3**			**71.8**	
	Max .YM2			**4.7**			**10.8**			**75.0**

TABLE 19: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2016/2017) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM3										
1	Region 13	5.1	-	-	9.5	-	-	71.5	-	-
1	Region 17	4.2	-	-	7.5	-	-	75.3	-	-
1	Region 19	4.2	-	-	9.0	-	-	73.6	-	-
1	Region 20	3.8	-	-	8.3	-	-	74.6	-	-
1	Region 30	4.2	-	-	8.8	-	-	73.8	-	-
1	Region 32	4.3	-	-	9.5	-	-	73.4	-	-
1	Region 35	4.0	-	-	8.5	-	-	72.7	-	-
2	Region 36	3.9	3.8	4.0	8.7	8.5	8.8	74.1	73.7	74.5
9	**Ave. WM3**	**4.2**			**8.7**			**73.7**		
	Min. WM3		**3.8**			**7.5**			**71.5**	
	Max. WM3			**5.1**			**9.5**			**75.3**
CLASS: COM										
1	Region 13	4.2	-	-	9.3	-	-	74.3	-	-
3	Region 19	4.3	4.2	4.3	8.6	8.4	8.8	73.7	73.6	73.9
1	Region 20	4.1	-	-	9.1	-	-	75.7	-	-
-	Region 26	-	-	-	-	-	-	-	-	-
-	Region 30	-	-	-	-	-	-	-	-	-
1	Region 31	4.8	-	-	9.6	-	-	72.5	-	-
2	Region 33	4.9	4.6	5.2	10.6	10.3	11.0	71.0	69.8	72.3
1	Region 35	3.9	-	-	8.5	-	-	73.8	-	-
9	**Ave. COM**	**4.4**			**9.3**			**73.3**		
	Min. COM		**3.9**			**8.4**			**69.8**	
	Max. COM			**5.2**			**11.0**			**75.7**
549	**Ave. White**	**4.2**			**8.7**			**74.1**		
	Min. White		**3.4**			**6.8**			**69.8**	
	Max. White			**5.3**			**11.5**			**75.9**
1000	**Ave. Maize**	**4.1**			**8.8**			**73.9**		
	Min. Maize		**3.3**			**6.8**			**69.8**	
	Max. Maize			**5.3**			**11.5**			**76.2**

TABLE 20: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2016/2017) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM3										
-	Region 13	-	-	-	-	-	-	-	-	-
-	Region 17	-	-	-	-	-	-	-	-	-
-	Region 19	-	-	-	-	-	-	-	-	-
1	Region 20	4.1	-	-	8.9	-	-	74.8	-	-
1	Region 30	4.0	-	-	9.2	-	-	71.9	-	-
	Region 32	-	-	-	-	-	-	-	-	-
-	Region 35	-	-	-	-	-	-	-	-	-
-	Region 36	-	-	-	-	-	-	-	-	-
2	**Ave. YM3**	**4.0**			**9.1**			**73.4**		
	Min. YM3		**4.0**			**8.9**			**71.9**	
	Max .YM3			**4.1**			**9.2**			**74.8**
CLASS: COM										
-	Region 13	-	-	-	-	-	-	-	-	-
-	Region 19	-	-	-	-	-	-	-	-	-
-	Region 20	-	-	-	-	-	-	-	-	-
2	Region 26	4.1	4.1	4.1	8.2	7.6	8.9	74.1	73.4	74.9
1	Region 30	4.1	-	-	8.4	-	-	74.6	-	-
-	Region 31	-	-	-	-	-	-	-	-	-
1	Region 33	4.5	-	-	9.5	-	-	71.3	-	-
-	Region 35	-	-	-	-	-	-	-	-	-
4	**Ave. COM**	**4.2**			**8.6**			**73.5**		
	Min. COM		**4.1**			**7.6**			**71.3**	
	Max. COM			**4.5**			**9.5**			**74.9**
451	**Min. Yellow**	**4.1**			**8.9**			**73.7**		
	Min. Yellow		**3.3**			**7.1**			**71.3**	
	Max. Yellow			**5.1**			**10.8**			**76.2**
1000	**Ave. Maize**	**4.1**			**8.8**			**73.9**		
	Min .Maize		**3.3**			**6.8**			**69.8**	
	Max. Maize			**5.3**			**11.5**			**76.2**

TABLE 21: NUTRITIONAL VALUES OF WHITE AND YELLOW MAIZE (2016/2017)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
	WHITE									
2	Region 10	3.9	3.9	3.9	9.0	9.0	9.1	74.2	74.2	74.2
1	Region 11	4.0	-	-	9.1	-	-	73.7	-	-
17	Region 12	4.3	3.9	5.1	8.5	7.6	9.8	74.4	72.6	75.4
30	Region 13	4.2	3.4	5.1	8.5	7.0	10.0	74.2	71.5	75.3
31	Region 14	4.1	3.8	4.4	8.5	7.3	9.0	74.5	73.5	75.0
4	Region 15	3.8	3.7	4.0	8.6	8.3	8.9	74.2	73.6	74.9
21	Region 17	4.2	3.8	4.6	8.3	6.8	8.8	74.6	73.5	75.8
7	Region 18	4.1	3.9	4.4	8.1	7.8	8.7	74.6	73.9	75.2
24	Region 19	4.2	3.9	4.6	8.4	7.2	9.0	74.3	73.4	75.3
24	Region 20	4.1	3.8	4.5	8.4	7.8	9.1	74.6	73.8	75.9
57	Region 21	4.2	3.8	4.8	8.7	8.0	9.5	74.1	72.7	75.4
31	Region 22	4.0	3.6	4.4	8.8	8.1	9.7	74.0	72.3	75.3
17	Region 23	4.0	3.7	4.2	8.6	7.9	9.0	74.3	73.2	75.7
16	Region 24	4.1	3.9	4.5	8.4	7.5	9.0	74.4	73.4	75.5
4	Region 25	4.2	3.9	4.3	8.8	7.8	9.7	74.0	73.6	74.9
22	Region 26	4.2	3.7	4.9	8.5	7.8	10.2	74.4	72.2	75.6
21	Region 28	4.3	3.8	4.6	8.8	7.5	9.6	74.0	73.1	75.6
30	Region 29	4.2	3.8	5.0	9.1	8.0	11.5	73.6	70.8	74.8
21	Region 30	4.2	3.9	4.4	8.8	7.5	9.8	73.9	72.1	75.5
18	Region 31	4.2	3.8	4.8	9.0	8.4	10.2	73.8	72.5	74.4
28	Region 32	4.1	3.9	4.7	8.7	8.0	9.7	73.9	72.1	75.2
45	Region 33	4.3	4.0	5.2	9.0	7.9	11.0	73.6	69.8	74.7
39	Region 34	4.2	3.8	5.3	8.7	7.8	9.9	74.1	72.6	75.6
9	Region 35	4.1	3.7	4.5	8.8	8.2	9.7	73.7	72.5	74.9
30	Region 36	4.2	3.8	4.8	8.9	7.8	10.2	73.8	72.3	75.0
549	**Ave. white**	**4.2**			**8.7**			**74.1**		
	Min. white		**3.4**			**6.8**			**69.8**	
	Max. white			**5.3**			**11.5**			**75.9**
	YELLOW									
3	Region 12	4.0	3.9	4.2	8.4	7.9	8.9	75.3	74.7	76.2
6	Region 13	4.0	3.8	4.4	9.4	8.8	10.3	74.2	72.8	75.5
8	Region 14	4.1	3.9	4.5	8.8	8.5	9.9	74.1	72.2	75.1
	Region 15	-	-	-	-	-	-	-	-	-
4	Region 17	4.0	3.7	4.2	8.7	8.1	9.0	74.6	73.5	76.0
3	Region 18	4.1	4.1	4.2	8.7	8.2	9.1	74.4	74.2	74.8
6	Region 19	4.1	3.9	4.5	8.7	8.2	9.9	73.9	72.6	74.9
9	Region 20	4.0	3.6	4.2	9.0	8.2	9.8	73.9	72.5	75.2
11	Region 21	4.3	4.0	4.7	9.2	8.7	10.2	73.4	72.0	74.4
3	Region 22	4.4	4.1	4.8	9.2	8.1	10.1	73.5	71.7	75.7
4	Region 23	4.4	4.1	4.9	9.7	9.1	10.0	72.7	71.5	74.2
3	Region 24	4.2	4.1	4.2	9.3	8.6	9.8	73.9	73.5	74.8
26	Region 25	4.0	3.8	4.4	8.6	8.1	9.5	73.9	72.9	74.7
36	Region 26	4.2	3.9	4.8	8.6	7.1	10.2	73.6	72.2	74.9
33	Region 28	4.1	3.7	4.6	9.1	8.1	10.3	73.4	71.5	74.6
35	Region 30	4.2	3.5	4.8	8.7	7.5	9.8	73.6	71.5	75.2

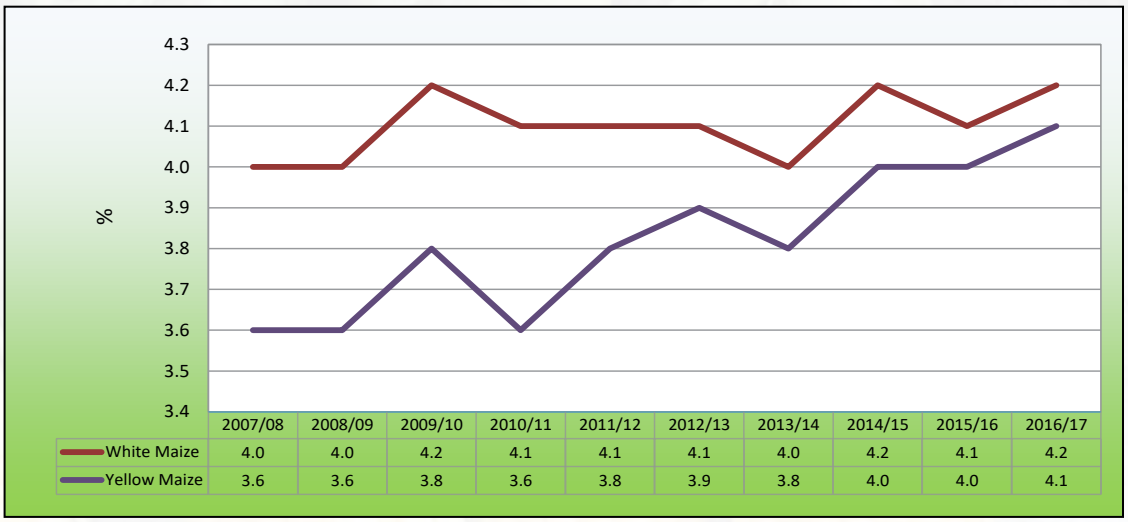
TABLE 21: NUTRITIONAL VALUES OF WHITE AND YELLOW MAIZE (2016/2017) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
YELLOW										
14	Region 31	4.0	3.7	4.4	8.7	8.2	9.4	73.9	73.3	74.6
26	Region 32	4.1	3.7	4.6	8.9	7.9	10.1	73.7	72.2	74.8
27	Region 33	4.1	3.3	4.6	9.4	7.8	10.5	72.9	71.3	74.7
40	Region 34	4.2	3.5	4.8	8.8	7.5	10.8	73.7	71.3	75.0
10	Region 35	4.3	4.0	5.1	8.8	8.0	10.8	73.7	72.2	74.4
28	Region 36	4.0	3.6	4.7	8.6	7.4	10.0	73.9	72.2	74.9
451	**Ave. yellow**	**4.1**			**8.9**			**73.7**		
	Min. yellow		**3.3**			**7.1**			**71.3**	
	Max. yellow			**5.1**			**10.8**			**76.2**
WHITE AND YELLOW										
39	Region 10	3.6	3.3	4.2	8.5	8.0	10.1	74.5	73.4	75.3
5	Region 11	3.5	3.3	4.0	8.7	8.3	9.1	74.5	73.7	75.0
20	Region 12	4.2	3.9	5.1	8.5	7.6	9.8	74.5	72.6	76.2
36	Region 13	4.2	3.4	5.1	8.7	7.0	10.3	74.2	71.5	75.5
39	Region 14	4.1	3.8	4.5	8.6	7.3	9.9	74.4	72.2	75.1
4	Region 15	3.8	3.7	4.0	8.6	8.3	8.9	74.2	73.6	74.9
25	Region 17	4.2	3.7	4.6	8.4	6.8	9.0	74.6	73.5	76.0
10	Region 18	4.1	3.9	4.4	8.3	7.8	9.1	74.6	73.9	75.2
30	Region 19	4.2	3.9	4.6	8.5	7.2	9.9	74.2	72.6	75.3
33	Region 20	4.1	3.6	4.5	8.6	7.8	9.8	74.4	72.5	75.9
68	Region 21	4.2	3.8	4.8	8.8	8.0	10.2	74.0	72.0	75.4
34	Region 22	4.1	3.6	4.8	8.8	8.1	10.1	73.9	71.7	75.7
21	Region 23	4.1	3.7	4.9	8.8	7.9	10.0	74.0	71.5	75.7
19	Region 24	4.1	3.9	4.5	8.5	7.5	9.8	74.3	73.4	75.5
30	Region 25	4.0	3.8	4.4	8.6	7.8	9.7	73.9	72.9	74.9
58	Region 26	4.2	3.7	4.9	8.6	7.1	10.2	73.9	72.2	75.6
54	Region 28	4.2	3.7	4.6	9.0	7.5	10.3	73.6	71.5	75.6
105	Region 29	4.2	3.7	5.0	9.1	7.7	11.5	73.4	70.8	74.8
56	Region 30	4.2	3.5	4.8	8.8	7.5	9.8	73.7	71.5	75.5
32	Region 31	4.1	3.7	4.8	8.9	8.2	10.2	73.9	72.5	74.6
54	Region 32	4.1	3.7	4.7	8.8	7.9	10.1	73.8	72.1	75.2
72	Region 33	4.2	3.3	5.2	9.2	7.8	11.0	73.4	69.8	74.7
79	Region 34	4.2	3.5	5.3	8.7	7.5	10.8	73.9	71.3	75.6
19	Region 35	4.2	3.7	5.1	8.8	8.0	10.8	73.7	72.2	74.9
58	Region 36	4.1	3.6	4.8	8.8	7.4	10.2	73.8	72.2	75.0
1000	**Ave. white & yellow**	**4.1**			**8.8**			**73.9**		
	Min. white & yellow		**3.3**			**6.8**			**69.8**	
	Max. white & yellow			**5.3**			**11.5**			**76.2**

TABLE 22: NUTRITIONAL VALUES OF SOUTH AFRICAN WHITE AND YELLOW MAIZE 2007/2008 - 2016/2017

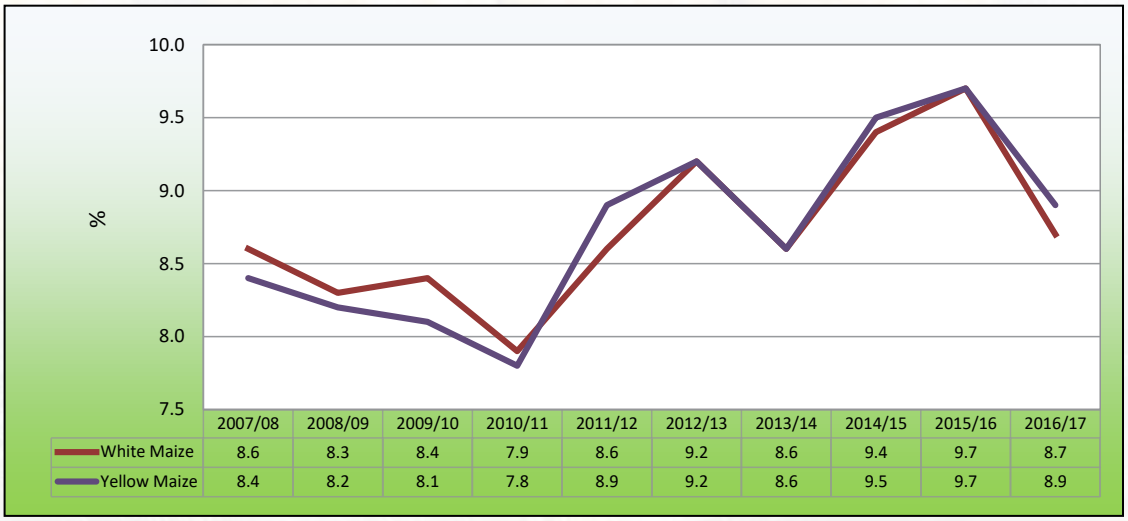
Season	Number of samples	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
White Maize										
2007/08	483	4.0	3.2	4.7	8.6	6.6	10.9	71.9	69.9	74.0
2008/09	483	4.0	3.5	5.1	8.3	6.4	10.4	72.4	70.7	74.2
2009/10	458	4.2	3.5	5.8	8.4	6.6	10.0	72.6	70.6	74.6
2010/11	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
2014/15	485	4.2	3.3	5.8	9.4	6.3	11.2	72.6	69.8	74.9
2015/16	415	4.1	3.5	5.2	9.7	7.5	12.2	72.6	69.8	76.3
2016/17	549	4.2	3.4	5.3	8.7	6.8	11.5	74.1	69.8	75.9
Weighted Average		**4.1**			**8.7**			**72.7**		
Minimum			**2.8**			**6.1**			**68.5**	
Maximum				**5.8**			**12.2**			**77.0**
Yellow Maize										
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
2014/15	515	4.0	3.1	5.1	9.5	7.1	11.9	72.9	70.8	75.2
2015/16	505	4.0	3.3	5.1	9.7	7.7	12.6	72.3	70.0	75.3
2016/17	451	4.1	3.3	5.1	8.9	7.1	10.8	73.7	71.3	76.2
Weighted Average		**3.8**			**8.8**			**72.9**		
Minimum			**2.8**			**6.0**			**69.4**	
Maximum				**5.1**			**12.8**			**76.2**
White and Yellow Maize										
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
2014/15	1000	4.1	3.1	5.8	9.4	6.3	11.9	72.8	69.8	75.2
2015/16	920	4.1	3.3	5.2	9.7	7.5	12.6	72.4	69.8	76.3
2016/17	1000	4.1	3.3	5.3	8.8	6.8	11.5	73.9	69.8	76.2
Weighted Average		**4.0**			**8.8**			**72.8**		
Minimum			**2.8**			**6.0**			**68.5**	
Maximum				**5.8**			**12.8**			**77.0**

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



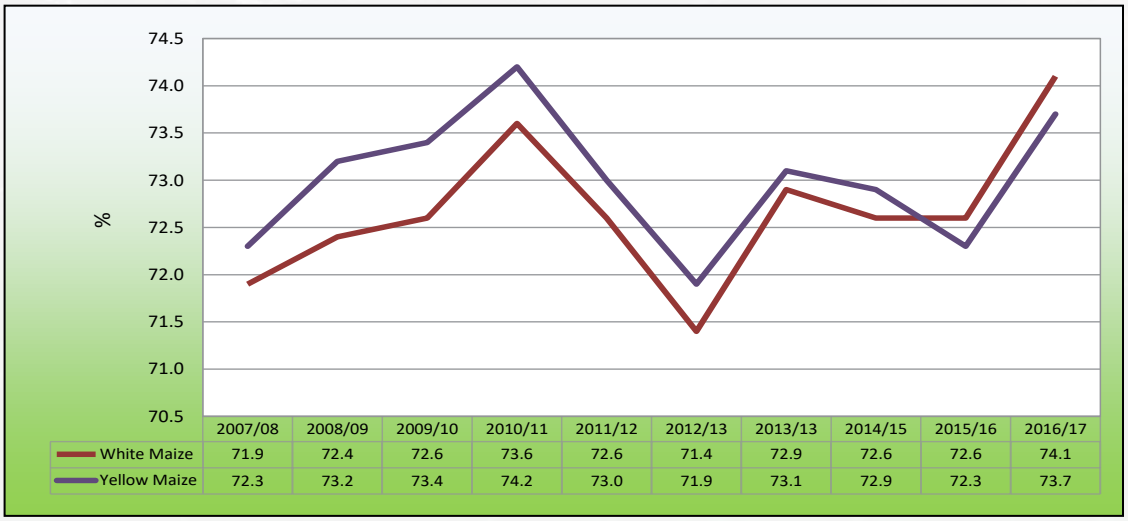
	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
White Maize	4.0	4.0	4.2	4.1	4.1	4.1	4.0	4.2	4.1	4.2
Yellow Maize	3.6	3.6	3.8	3.6	3.8	3.9	3.8	4.0	4.0	4.1

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



	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
White Maize	8.6	8.3	8.4	7.9	8.6	9.2	8.6	9.4	9.7	8.7
Yellow Maize	8.4	8.2	8.1	7.8	8.9	9.2	8.6	9.5	9.7	8.9

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



	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/13	2014/15	2015/16	2016/17
White Maize	71.9	72.4	72.6	73.6	72.6	71.4	72.9	72.6	72.6	74.1
Yellow Maize	72.3	73.2	73.4	74.2	73.0	71.9	73.1	72.9	72.3	73.7

TABLE 23: PRESENCE OF GENETICALLY MODIFIED MAIZE (2016/2017)

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	23	W	>5.0	>5.0	>5.0	30	W	>5.0	0.61	>5.0
10	W	>5.0	1.1	>5.0	23	Y	>5.0	>5.0	>5.0	31	Y	>5.0	>5.0	>5.0
10	Y	<0.4	<0.5	1.1	24	Y	>5.0	>5.0	>5.0	31	W	>5.0	>5.0	>5.0
11	W	>5.0	<0.5	>5.0	24	W	>5.0	>5.0	>5.0	31	W	>5.0	>5.0	>5.0
12	Y	>5.0	>5.0	>5.0	25	Y	>5.0	<0.5	>5.0	32	Y	>5.0	>5.0	>5.0
12	W	>5.0	>5.0	>5.0	25	Y	>5.0	>5.0	>5.0	32	W	>5.0	>5.0	>5.0
13	Y	>5.0	2.7	>5.0	25	W	>5.0	>5.0	>5.0	32	W	2.0	<0.5	1.2
13	W	>5.0	>5.0	>5.0	26	Y	>5.0	>5.0	>5.0	32	Y	0.78	<0.5	1.7
13	W	>5.0	>5.0	>5.0	26	W	2.8	1.3	>5.0	32	W	>5.0	>5.0	>5.0
13	W	>5.0	>5.0	>5.0	26	Y	>5.0	>5.0	>5.0	33	W	>5.0	>5.0	>5.0
14	W	>5.0	>5.0	>5.0	26	W	>5.0	>5.0	>5.0	33	Y	0.93	<0.5	1.5
14	Y	<0.4	<0.5	>5.0	26	Y	>5.0	>5.0	>5.0	33	Y	>5.0	<0.5	>5.0
14	Y	>5.0	>5.0	>5.0	26	W	>5.0	<0.5	>5.0	33	W	>5.0	<0.5	>5.0
14	W	>5.0	>5.0	>5.0	28	Y	>5.0	>5.0	>5.0	33	Y	>5.0	>5.0	>5.0
17	W	>5.0	3.5	>5.0	28	Y	>5.0	>5.0	>5.0	33	W	>5.0	>5.0	>5.0
17	Y	>5.0	>5.0	>5.0	28	Y	>5.0	>5.0	>5.0	33	W	>5.0	>5.0	>5.0
18	W	>5.0	>5.0	>5.0	28	W	>5.0	>5.0	>5.0	34	W	2.3	<0.5	1.7
19	W	>5.0	>5.0	>5.0	28	W	>5.0	>5.0	>5.0	34	Y	>5.0	>5.0	>5.0
19	Y	>5.0	>5.0	>5.0	29	Y	>5.0	>5.0	>5.0	34	Y	>5.0	>5.0	>5.0
19	W	>5.0	>5.0	>5.0	29	Y	>5.0	0.59	>5.0	34	W	>5.0	>5.0	>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
20	Y	>5.0	>5.0	>5.0	29	Y	>5.0	>5.0	>5.0	34	Y	0.74	<0.5	1.9
20	W	>5.0	>5.0	>5.0	29	Y	0.89	<0.5	0.95	34	Y	>5.0	>5.0	1.1
21	W	>5.0	>5.0	>5.0	29	Y	>5.0	>5.0	>5.0	34	W	>5.0	>5.0	>5.0
21	Y	>5.0	1.2	>5.0	29	W	>5.0	>5.0	>5.0	35	W	>5.0	>5.0	>5.0
21	W	>5.0	>5.0	>5.0	29	W	>5.0	1.1	>5.0	35	Y	>5.0	>5.0	>5.0
21	W	>5.0	>5.0	>5.0	29	Y	>5.0	>5.0	>5.0	36	Y	3.2	3.9	>5.0
21	Y	>5.0	>5.0	>5.0	29	W	>5.0	>5.0	>5.0	36	Y	>5.0	1.2	>5.0
21	W	>5.0	>5.0	>5.0	29	W	>5.0	>5.0	>5.0	36	W	>5.0	<0.5	1.6
21	Y	>5.0	<0.5	>5.0	30	W	>5.0	0.66	>5.0	36	W	>5.0	>5.0	>5.0
22	W	>5.0	>5.0	>5.0	30	Y	>5.0	>5.0	>5.0	36	W	>5.0	>5.0	>5.0
22	Y	>5.0	>5.0	>5.0	30	Y	1.4	2.3	3.8	36	Y	>5.0	>5.0	>5.0
22	Y	>5.0	>5.0	>5.0	30	W	2.6	<0.5	>5.0					
22	W	>5.0	>5.0	>5.0	30	Y	>5.0	>5.0	>5.0					

n	Season	% Samples positive for Cry1Ab	n	Season	% Samples positive for Cry2Ab	n	Season	% Samples positive for CP4 EPSPS
100	**2016/17**	**98**	**100**	**2016/17**	**84**	**100**	**2016/17**	**100**
100	2015/16	94	100	2015/16	78	100	2015/16	99
100	2014/15	94	100	2014/15	81	100	2014/15	98
100	2013/14	96	100	2013/14	90	100	2013/14	94
100	2012/13	97	100	2012/13	73	100	2012/13	95

LOQ: Limit of Quantification

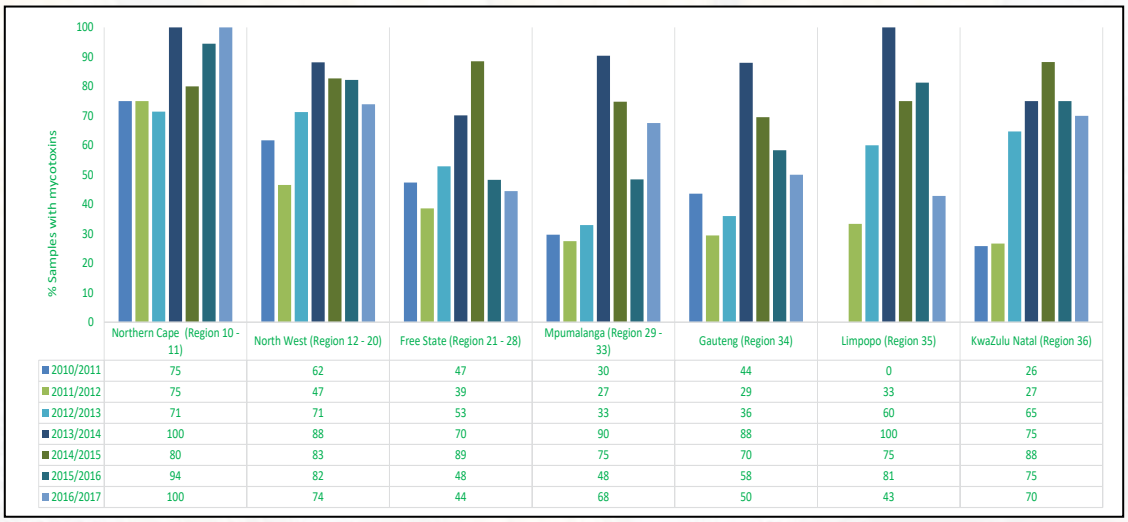
MYCOTOXINS

The multi-mycotoxin assessments included in the annual maize crop quality survey for the past seven seasons provide the most comprehensive overview of the multi-mycotoxin risk in commercial maize produced in South Africa. Approximately 35% of the maize crop samples were selected every season for multi-mycotoxin analyses to proportionally represent all the production regions, as well as both white and yellow maize.

The mycotoxins with maximum allowable levels on maize regulated in SA are Aflatoxin B_1 and Aflatoxin total, Fumonisin (FUM) B_1 + B_2 and Deoxynivalenol (DON). These mycotoxins as well as nine other mycotoxins of most concern globally are included in the LCMSMS analysis, as listed in the Methods Section on page 96.

In total 62% of the 2016/2017 season's tested maize samples contained one or more mycotoxin, similar to the previous season when 63% of the samples tested positive for one or more mycotoxin. However, the trends in occurrence confirmed that mycotoxin risk varies significantly between production regions and years. The percentage of samples that tested positive for mycotoxins from the samples selected per season, differ in the different production regions of South Africa and a summary of percentage occurrence per region is provided in graph 44.

Graph 44: Mycotoxin occurrence per province of selected samples over seven 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
2014/2015	80	83	89	75	70	75	88
2015/2016	94	82	48	48	58	81	75
2016/2017	100	74	44	68	50	43	70

The absence of Aflatoxin B_1, B_2, G_1, G_2, Ochratoxin A, T2-toxin and HT-2 toxin in the commercial maize samples over the past six seasons were confirmed in the 2016/2017 season. The fact that Aflatoxin B_1 a mycotoxin classified as cancer-causing hazard, does not occur in commercial maize produced in South Africa (except for three white maize samples in the 2014/2015 production season), is a huge food and feed safety advantage for the maize producers in South Africa.

Zearalenone (ZON) was detected in only 13% of the white maize samples and in 1% of the yellow maize samples, with a maximum of 399 ug/kg found in one white maize sample.

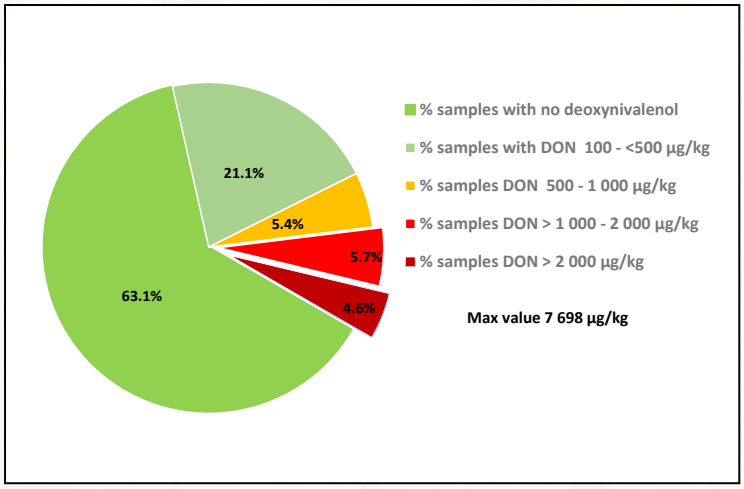
The most predominant mycotoxins observed in all the seasons in most regions on both white and yellow maize are FUM B_1, B_2, B_3 and DON.

The number of samples that contained DON increased with 14% this season; from 23% in 2015/2016 to 37% in the 2016/2017 season. The highest increase in % samples containing DON was observed in the white maize samples; from 26% in the previous season to 54% of the samples this season.

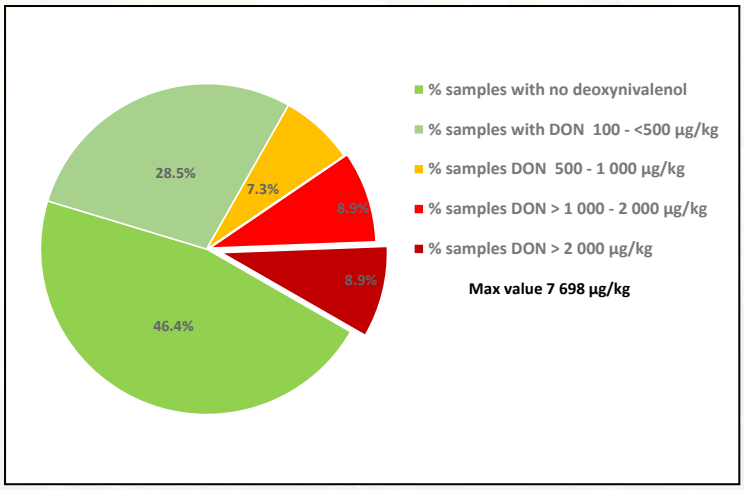
With the amendment of South African Regulations in 2016 with maximum allowable levels for human consumption, it is important to focus on the % samples with FUM and DON concentrations just below and above the maximum allowable levels; 4 000 µg/kg FUM B_1 + B_2 and 2 000 µg/kg DON in unprocessed maize.

The % samples with DON at different concentration levels in the 2016/2017 season, are summarised for all maize (white and yellow maize), white maize only and yellow maize only in graphs 45 to 47. Although DON was not detected in 63% of the maize samples, only 46.4% white maize samples contained no DON. It should also be noted that in 8.9% of white maize samples and 2.3% of yellow maize samples, DON concentrations above the regulated maximum allowable level of 2 000 µg/kg were measured, with 7 698 µg/kg the highest concentration observed on one white maize sample.

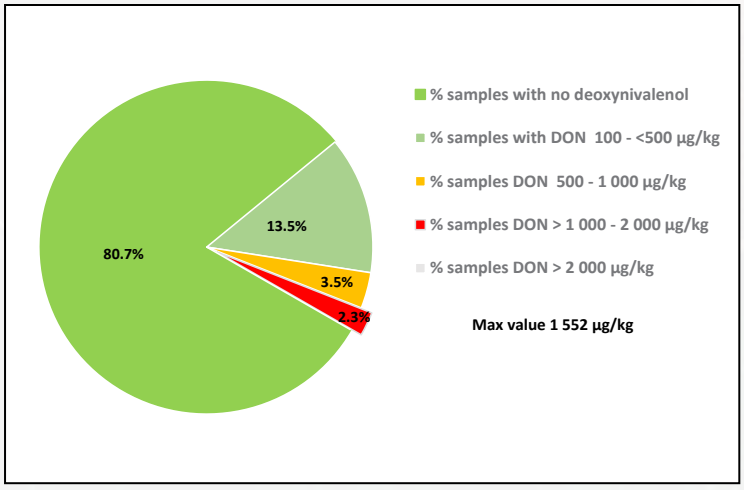
Graph 45: 2016/2017 SA Maize crop - DON occurance



Graph 46: 2016/2017 White Maize crop - DON occurance

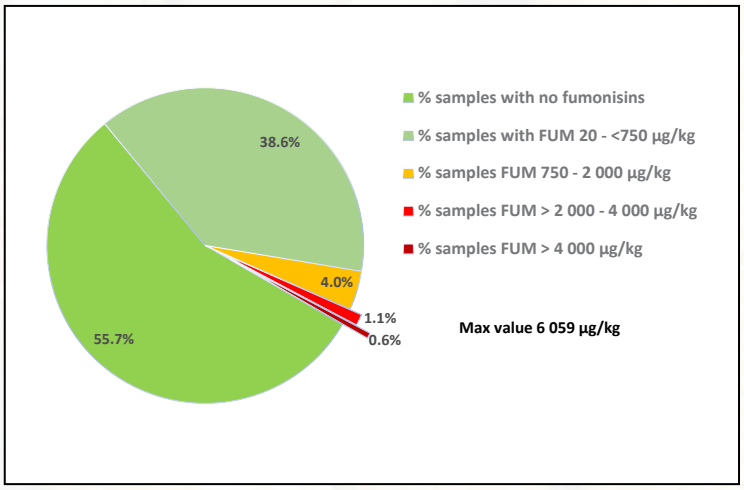


Graphs 47: 2016/2017 Yellow Maize crop - DON occurance

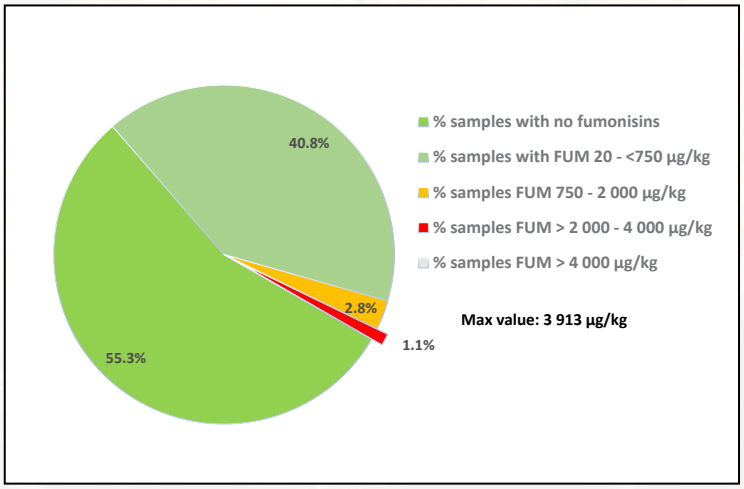


Less samples contained FUM this past season, with occurrences decreasing from 57% to 44% of the samples. Graphs 48 to 50 are summaries of the % samples with different FUM concentration levels in the 2016/2017 season for all maize, white maize and yellow maize. None of the white maize samples contained FUM above 4 000 µg/kg, however more than 4 000 µg/kg were measured in 1.2% of the yellow maize samples; one yellow maize sample had 6 059 µg/kg FUM.

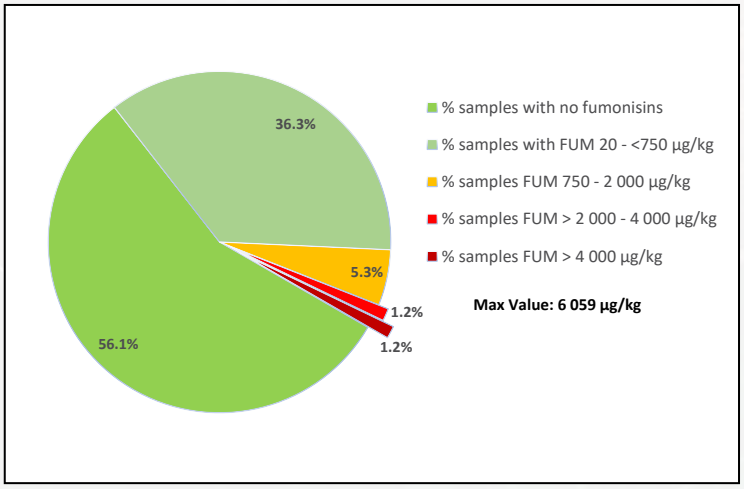
Graph 48: 2016/2017 SA Maize crop - Fumonisin occurance



Graph 49: 2016/2017 SA White maize crop - Fumonisin occurance



Graph 50: 2016/2017 SA Yellow maize crop - Fumonisin occurance



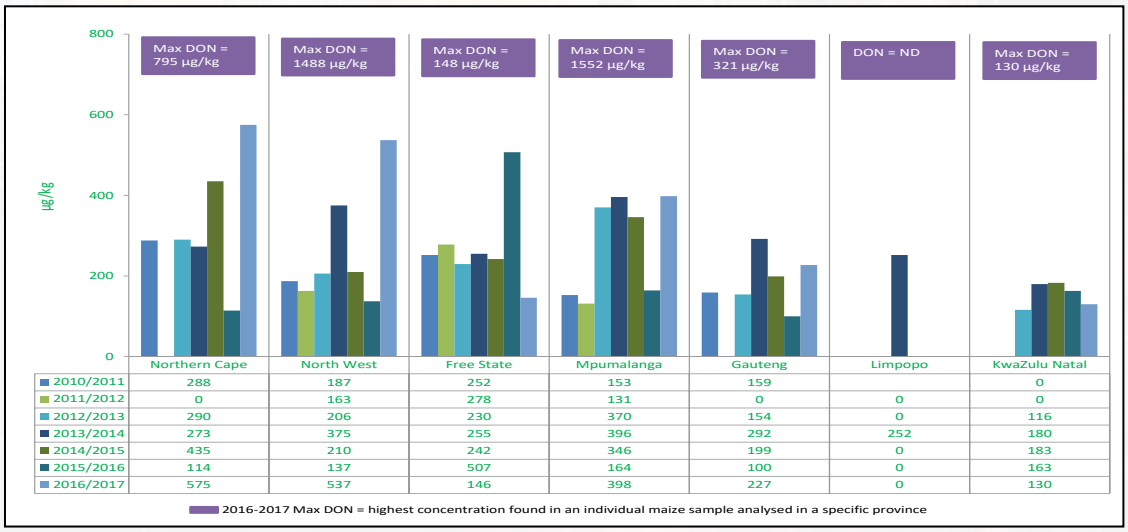
The different patterns of the mean concentrations FUM, DON and ZON over the seven seasons in the different regions, confirmed again the well-known fact that the mycotoxin risk in maize produced, differ from season to season in the same region, and differ from region to region because the occurrence and concentration levels are related to certain climatic factors during the pre-harvest production period. These concentration patterns are summarised in graph 51 for white maize and graph 52 for yellow maize for DON mean concentrations per province over seven seasons, as well as graphs 53 and 54 for FUM and graphs 55 and 6 for ZON.

In five of the provinces, the mean DON values of the white maize were higher than the yellow maize mean values.

Graph 51: White maize DON mean concentration (µg/kg) per province over seven seasons

	Northern Cape	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	0	633	216	150	177	0	251
2013/2014		435	259	596	964	444	488
2014/2015	358	415	1383	504	404	0	722
2015/2016	110	315	505	290	169	0	197
2016/2017	0	849	445	1595	1355	0	929

Graph 52: Yellow maize DON mean concentration (µg/kg) per province over seven seasons



	Northern Cape	North West	Free State	Mpumalanga	Gauteng	Limpopo	KwaZulu Natal
2010/2011	288	187	252	153	159		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
2014/2015	435	210	242	346	199	0	183
2015/2016	114	137	507	164	100	0	163
2016/2017	575	537	146	398	227	0	130

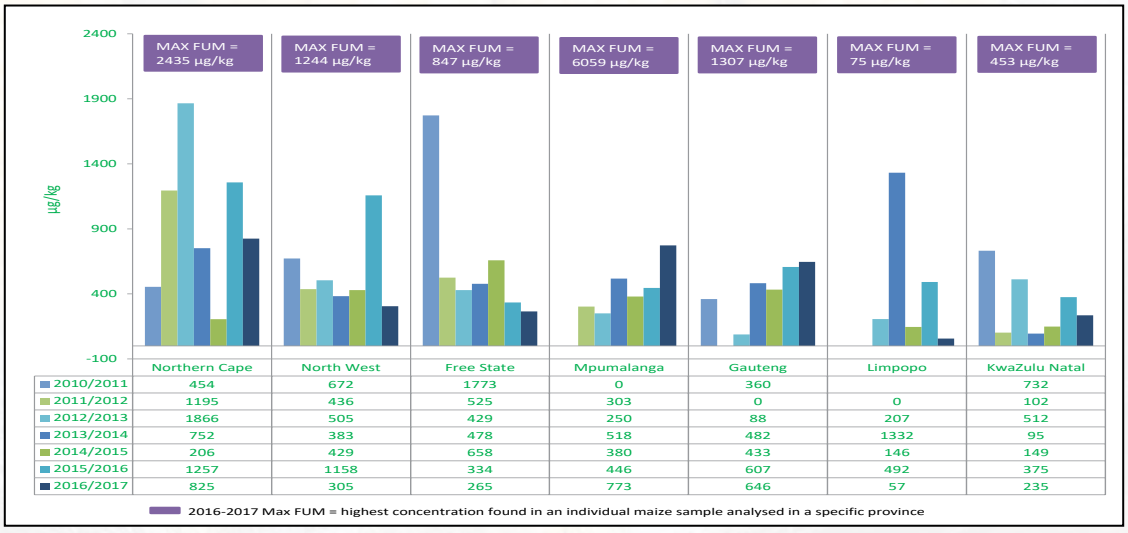
The white maize and yellow maize FUM mean concentrations are similar in most provinces, as illustrated in graphs 53 and 54.

Graph 53: White maize FUM (total) mean concentration (µg/kg) per province over seven seasons

	Northern Cape	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	310	696	470	129	422	162	44
2013/2014		296	624	318	161	376	50
2014/2015	399	333	478	316	353	84	634
2015/2016	790	606	684	219	144	293	192
2016/2017	2015	250	230	292	264	24	413

2016-2017 Max FUM = highest concentration found in an individual maize sample analysed in a specific province

Graph 54: Yellow maize FUM (total) mean concentration (µg/kg) per province over seven seasons

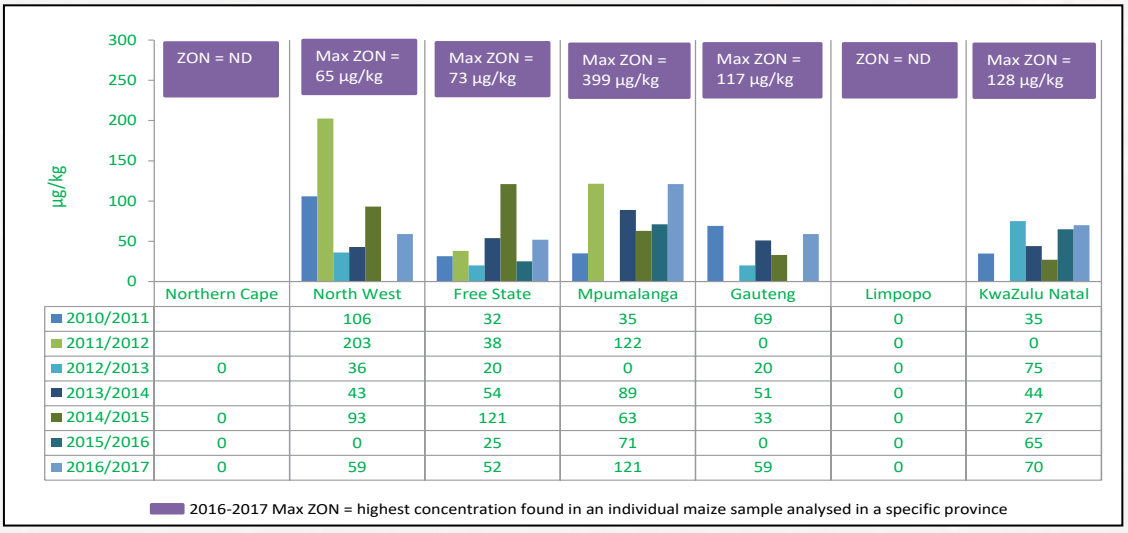


	Northern Cape	North West	Free State	Mpumalanga	Gauteng	Limpopo	KwaZulu Natal
2010/2011	454	672	1773	0	360		732
2011/2012	1195	436	525	303	0	0	102
2012/2013	1866	505	429	250	88	207	512
2013/2014	752	383	478	518	482	1332	95
2014/2015	206	429	658	380	433	146	149
2015/2016	1257	1158	334	446	607	492	375
2016/2017	825	305	265	773	646	57	235

2016-2017 Max FUM = highest concentration found in an individual maize sample analysed in a specific province

ZON in white maize was found in five of the seven provinces, but in yellow maize only in two provinces, namely North West and Mpumalanga. It must be noted that ZON was not found in any of the maize samples from the Limpopo regions the past seven seasons.

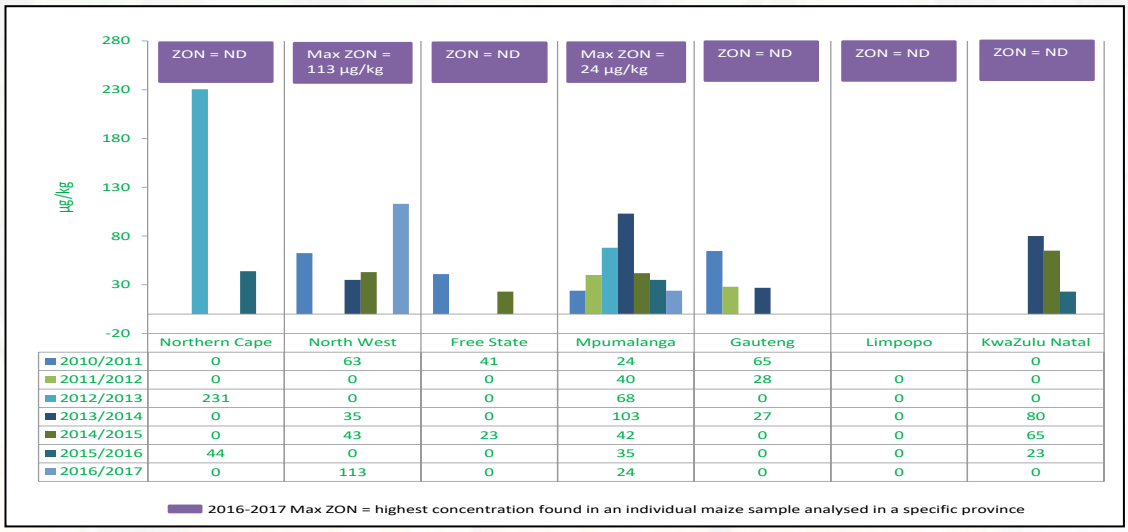
Graph 55: White maize ZON mean concentration (µg/kg) per province over seasons



	Northern Cape	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	0	36	20	0	20	0	75
2013/2014		43	54	89	51	0	44
2014/2015	0	93	121	63	33	0	27
2015/2016	0	0	25	71	0	0	65
2016/2017	0	59	52	121	59	0	70

2016-2017 Max ZON = highest concentration found in an individual maize sample analysed in a specific province

Graph 56: Yellow maize FUM (total) mean concentration (µg/kg) per province over seven seasons



	Northern Cape	North West	Free State	Mpumalanga	Gauteng	Limpopo	KwaZulu Natal
2010/2011	0	63	41	24	65		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
2014/2015	0	43	23	42	0	0	65
2015/2016	44	0	0	35	0	0	23
2016/2017	0	113	0	24	0	0	0

When comparing these trends with the mycotoxin overview of the USA Corn 2017 published by Olmix, the % maize samples containing DON with levels less than 500 µg/kg, was similar, but the maximum DON value in South African maize was higher in the 2016/2017 season than reported in USA corn. 95% of the South African maize samples contained FUM < 750 ug/kg, in comparison with 78% of the USA maize, while the maximum FUM concentrations reported in the two countries were similar. The South African maize contained far less ZON than that of the USA 2017 harvest. (Reference: www.olmix.com/myco-news).

National Mycotoxin Regulations

According to the Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972) and regulations published in Government Notice No. R. 1145, dated 8 October 2004, all foodstuffs, ready for human consumption, may not contain more than 10 µg/kg of aflatoxin, of which aflatoxin B_1 may not exceed 5 µg/kg.

Amendments to Government Notice No. R. 1145, dated 8 October 2004, published in Government Notice No. 987 of 05 September 2016, specify that

- Cereal grains (wheat, maize and barley) intended for further processing, may not contain more than 2000 µg/kg of Deoxinyvalenol.
- Flour, meal, semolina and flakes derived from wheat, maize or barley, ready for human consumption, may not contain more than 1000 µg/kg of Deoxinyvalenol.
- Raw maize grain, intended for further processing, may not contain more than 4000 µg/kg of Fumonisins ($B_1 + B_2$), the whole commodity.
- Maize flour and maize meal, ready for human consumption, may not contain more than 2000 µg/kg of Fumonisins ($B_1 + B_2$), the whole commodity.
- Further processing means any other treatment or processing method that has been proven to reduce levels of fungus produced toxins in foodstuffs intended for human consumption.

According to the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947) as well as amendments published in Government Notices No. R. 70 of 12 February 2010 and R. 789 of 10 September 2010, the maximum allowable levels of mycotoxins in animal feeds, are as follows:

Substance, Products	Farm Feeds	MAXIMUM CONTENT IN mg/kg (ppm) relative to a farm feed with a moisture content of 120 g/kg	MAXIMUM CONTENT IN µg/kg (ppb) relative to a farm feed with a moisture content of 120 g/kg
Aflatoxin B_1	Feed ingredients with the exception of:	0.05	50
	groundnut, copra, palm-kernel cotton seed, maize and products derived from the processing thereof	0.02	20
	Complete farm feeds for cattle, sheep and goats with the exeption of:	0.05	50
	dairy cattle	0.005	5
	calves and lambs	0.01	10
	complete feeds for pigs and poultry (except young animals)	0.02	20
	other complete farm feeds (including pets)	0.01	10
	maize products intended for feedlot	0.3	300
	supplement/cncentrates for cattle, sheep and goats (except for dairy animals, calves and lambs)	0.05	50
Deoxynivalenol (DON)	Feeding stuffs on a full ration basis for:		
	Pigs	1	1 000
	cattle	5	5 000
	calves up tp 4 months	2	2 000
	dairy cattle	3	3 000
	poultry	4	4 000
	pets	1	1 000
Fumonisin B_1	Horses and pets	5	5 000
	Pigs	10	10 000
	Beef and poultry	50	50 000
	Fish	10	10 000
Ochratoxin A	Feeding stuffs on full ration basis for:		
	Pigs	0.05	50
	poultry	0.2	200
Zearalenone	Feeding stuffs on full ration basis for:		
	sows and pigs	5	5 000
	piglets	3	3 000
	calves and dairy cattle	0.5	500

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.
- Cereals intended for direct human consumption, cereal flour, bran and germ as end product marketed for direct human consumption, 750 µg/kg.
- Processed cereal based baby and baby foods for infants and young children, 200 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.
- Cereals intended for direct human consumption, cereal flour, bran and germ as end product marketed for direct human consumption, 75 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. [1]

The European Union recommends the following maximum levels for Aflatoxin B_1 on products intended for animal feeds with a moisture content of 12%:

Complementary and complete feedingstuffs depending on the class and age of the animal, 5 – 20 µg/kg.

The European Union recommends the following guidance levels for mycotoxins on products intended for 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 – 5000 µg/kg.[2]

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. [3]

Recommended maximum levels for Total Fumonisins ($FB_1 + FB_2 + FB_3$) 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 (dry weight basis).

Recommended maximum levels for Total Fumonisins ($FB_1 + FB_2 + FB_3$) in human foods 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. 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. Dry milled maize bran, 4 000 µg/kg. Cleaned maize intended for popcorn and masa production, 3 000 and 4 000 µg/kg respectively. [4]

In China, the maximum level for Aflatoxin in maize is 20 µg/kg, maize flour and maize products, is 20 µg/kg. The maximum levels for DON and Zearalenone in maize and maize flour is 1 000 µg/kg and 60 µg/kg respectively. In grains and milled grain products, the maximum level of Ochratoxin A allowed is 5 µg/kg. [5]

The following information was obtained from the Mycotoxins.info webpage supported by Biomin: [6]

Country	Commodity	Sum of mycotoxins	Limit (µg/kg)
China	Corn, peanut meal, cottonseed meal, rapeseed meal	Aflatoxin	<50
	Soybean meal		<30
	Complementary, complete and concentrated feeding stuffs for piglets		<10
	Complementary, complete and concentrated feeding stuffs for fattening pigs		<20
	Complementary, complete and concentrated feeding stuffs for young broilers, chicks		<10
	Complementary, complete and concentrated feeding stuffs for broilers, layers		<20
	Complementary, complete and concentrated feeding stuffs for young ducks, ducklings		<10
	Complementary, complete and concentrated feeding stuffs for ducks, layers		<15
	Complementary, complete and concentrated feeding stuffs for quails		<20
	Supplementary feeding stuffs for dairy cattle		<10
	Supplementary feeding stuffs for beef cattle		<50
	Complementary and complete feeding stuffs, corn	Ochratoxin A	<100
	Complementary and complete feeding stuffs, corn	Zearalenone	<500
	Complementary and complete feeding stuffs for swine	T-2 Toxin	<1 000
	Complementary and complete feeding stuffs for poultry		<1 000
	Complementary and complete feeding stuffs for swine	Deoxynivalenol	<1 000
	Complementary and complete feeding stuffs for calves		<1 000
	Complementary and complete feeding stuffs for lactating animals		<1 000
	Complementary and complete feeding stuffs for cattle		<5 000
	Complementary and complete feeding stuffs for poultry		<5 000
Republic of Korea	Feeds for young calves, dairy, piglet, grower, layer/broiler breeders, milk replacer, fiber source for ruminants and all other diets for young animals.	Aflatoxin B_1, B_2, G_1, G_2	10
	All other compound feeds except premix products		20
	All plant originated materials		50
	All compound feeds	Ochratoxin A	200
	All plant originated materials		250
	All swine diets	Deoxynivalenol	900
	All young ruminant diets		2 000
	All other compound feeds except premix products		5 000
	All plant originated		10 000
	Swine diets for piglet, grower, gilt, gestation, lactation	Zearalenone	100
	All other swine diets		250
	Ruminant diets		500
	All other feeds		1 000
	All plant originated materials		3 000
	Diets for swine, horse and rabbit, milk replacer, pet	Fumonisins	5 000
	Aquaculture		10 000
	Ruminant diets except young calves, fiber diets		50 000
	All other compound feeds except premix products		30 000
	All compound diets	T-2/HT-2	250
	Oat, oat processed materials		2 000
	All other plant originated materials except oat		500

Japan	Corn	Aflatoxin	20
	Formula feed for cattle (except dairy cattle and calves), pig (except piglet), domestic fowl (except chicken and broiler), quails		20
	Formula feed for suckling period		20
	Formula feed for dairy cattle		10
	Formula feed	Zearalenone	1 000
	Formula feed (cows over 3 months after birth)	Deoxynivalenol	4 000
	Formula feed (except for cows over 3 months after birth)		1 000
Taiwan, Republic of China	peanut, corn, maize	Aflatoxin B_1, B_2, G_1, G_2	15
	rice, sorghum, legumes, nuts, wheat and barley, oats		10
	other foods		10
	maize (raw material)		50
	all feedstuffs	Aflatoxin B_1	25 - 100

References:

1. COMMISSION REGULATION (EC) No 1881/226 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs.
2. COMMISSION RECOMMENDATION 2006/576/EC 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.
3. FDA Mycotoxin Regulatory Guidance, A Guide for Grain Elevators, Feed Manufacturers, Grain Processors and Exporters, August 2011.
4. http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/ChemicalContaminantsMetalsNaturalToxinsPesticides/ucm109231.htm.
5. National Food Safety Standard, Maximum Levels of Mycotoxins in Foods, GB 2761-2012.
6. http://www.mycotoxins.info/en/regulations/.

TABLE 24: MYCOTOXIN RESULTS - MAIZE CROP QUALITY 2016/2017

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	179	62	ND	241	ND	ND	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	1 148	202	135	1 485	122	ND	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	177	32	ND	209	596	116	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	830	162	87	1 079	ND	ND	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	389	76	35	500	728	104	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	1 394	207	107	1 708	ND	ND	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	351	76	24	451	ND	ND	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	280	52	32	364	ND	ND	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	931	278	50	1 259	462	ND	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	297	42	ND	339	746	153	ND	ND	ND	ND
10	WM1	ND	ND	ND	ND	ND	116	ND	ND	116	ND	ND	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	1 950	332	153	2 435	ND	ND	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	521	101	35	657	ND	ND	ND	ND	ND	ND
10	YM1	ND	ND	ND	ND	ND	48	ND	ND	48	795	112	ND	ND	ND	ND
11	YM1	ND	ND	ND	ND	ND	574	147	55	776	ND	ND	ND	ND	ND	ND
11	WM1	ND	ND	ND	ND	ND	2 900	600	413	3 913	ND	ND	ND	ND	ND	ND
12	WM2	ND	ND	ND	ND	ND	153	27	ND	180	ND	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	ND	ND	ND	ND	ND	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	31	ND	ND	31	ND	ND	ND	ND	ND	ND
12	WM1	ND	ND	ND	ND	ND	93	21	ND	114	ND	ND	ND	ND	ND	ND
12	YM1	ND	ND	ND	ND	ND	550	126	38	714	387	103	ND	ND	ND	ND
13	WM1	ND	ND	ND	ND	ND	337	75	37	449	ND	ND	ND	ND	ND	ND
13	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13	COM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13	WM2	ND	ND	ND	ND	ND	29	ND	ND	29	672	ND	ND	ND	ND	ND
13	WM1	ND	ND	ND	ND	ND	96	24	ND	120	ND	ND	ND	ND	ND	ND
13	YM1	ND	ND	ND	ND	ND	157	37	ND	194	1 182	381	ND	ND	ND	ND
13	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	375	ND	ND	ND	ND	ND

TABLE 24: MYCOTOXIN RESULTS - MAIZE CROP QUALITY 2016/2017 (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	LOD: 20 µg/kg	LOQ: 20 µg/kg
13	YM2	ND	ND	ND	ND	ND	938	205	101	1 244	ND	ND	ND	ND	ND	ND
13	WM2	ND	ND	ND	ND	ND	320	168	27	515	ND	ND	ND	ND	ND	ND
13	YM1	ND	ND	ND	ND	ND	400	95	23	518	ND	ND	ND	ND	ND	ND
13	WM1	ND	ND	ND	ND	ND	128	39	ND	167	638	136	ND	ND	ND	ND
13	WM1	ND	ND	ND	ND	ND	168	33	21	222	526	115	ND	ND	ND	ND
13	WM1	ND	ND	ND	ND	ND	208	46	ND	254	333	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	137	32	ND	169	612	137	ND	ND	ND	ND
14	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	155	32	23	210	ND	ND	ND	ND	ND	ND
14	YM1	ND	ND	ND	ND	ND	166	42	ND	208	ND	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14	YM1	ND	ND	ND	ND	ND	309	121	26	456	ND	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	51	ND	ND	51	309	ND	ND	ND	ND	ND
14	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	278	51	23	352	149	ND	ND	ND	ND	ND
14	WM2	ND	ND	ND	ND	ND	431	99	38	568	872	156	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	87	20	ND	107	372	ND	ND	ND	ND	ND
14	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	348	ND	ND	ND	ND	ND
15	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
17	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
17	WM1	ND	ND	ND	ND	ND	82	ND	ND	82	ND	ND	ND	ND	ND	ND
17	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
17	WM1	ND	ND	ND	ND	ND	65	ND	ND	65	ND	ND	ND	ND	ND	ND
17	YM1	ND	ND	ND	ND	ND	34	ND	ND	34	ND	ND	ND	ND	ND	ND
17	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	7 698	964	ND	52	ND	ND
17	YM1	ND	ND	ND	ND	ND	38	ND	ND	38	583	147	ND	ND	ND	ND
17	WM2	ND	ND	ND	ND	ND	101	22	ND	123	ND	ND	ND	ND	ND	ND
17	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	118	113	ND	ND	ND	ND

TABLE 24: MYCOTOXIN RESULTS - MAIZE CROP QUALITY 2016/2017 (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	LOD: 20 µg/kg	LOQ: 20 µg/kg
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	156	ND	ND	ND	ND	ND
18	WM1	ND	ND	ND	ND	ND	32	ND	ND	32	145	ND	ND	ND	ND	ND
18	YM1	ND	ND	ND	ND	ND	318	74	21	413	103	ND	ND	ND	ND	ND
19	WM2	ND	ND	ND	ND	ND	332	92	32	456	ND	ND	ND	ND	ND	ND
19	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19	YM1	ND	ND	ND	ND	ND	29	ND	ND	29	ND	ND	ND	ND	ND	ND
19	YM1	ND	ND	ND	ND	ND	37	ND	ND	37	ND	ND	ND	ND	ND	ND
19	COM	ND	ND	ND	ND	ND	301	82	23	406	ND	ND	ND	ND	ND	ND
19	WM1	ND	ND	ND	ND	ND	248	101	24	373	ND	ND	ND	ND	ND	ND
19	YM2	ND	ND	ND	ND	ND	20	ND	ND	20	ND	ND	ND	ND	ND	ND
19	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19	WM2	ND	ND	ND	ND	ND	1 038	278	125	1 441	1 372	215	ND	65	ND	ND
19	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	701	134	ND	113	ND	ND
20	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
20	YM2	ND	ND	ND	ND	ND	56	ND	ND	56	ND	ND	ND	ND	ND	ND
20	WM1	ND	ND	ND	ND	ND	103	20	ND	123	ND	ND	ND	ND	ND	ND
20	YM2	ND	ND	ND	ND	ND	237	33	23	293	ND	ND	ND	ND	ND	ND
20	WM1	ND	ND	ND	ND	ND	78	21	ND	99	102	ND	ND	ND	ND	ND
20	YM1	ND	ND	ND	ND	ND	74	ND	ND	74	1 488	341	ND	ND	ND	ND
20	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	137	ND	ND	ND	ND	ND
20	WM1	ND	ND	ND	ND	ND	21	ND	ND	21	213	ND	ND	ND	ND	ND
20	YM3	ND	ND	ND	ND	ND	419	107	21	547	228	ND	ND	ND	ND	ND
20	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	401	ND	ND	ND	ND	ND
20	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	426	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	51	ND	ND	51	671	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	YM1	ND	ND	ND	ND	ND	423	141	42	606	ND	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	302	50	ND	352	522	111	ND	ND	ND	ND

TABLE 24: MYCOTOXIN RESULTS - MAIZE CROP QUALITY 2016/2017 (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	LOD: 20 µg/kg	LOQ: 20 µg/kg
21	YM1	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	ND	ND	ND	ND	ND	ND
21	YM1	ND	ND	ND	ND	ND	63	ND	ND	63	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	ND	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	46	ND	ND	46	147	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	199	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	814	130	ND	ND	ND	ND
21	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	143	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	194	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	65	ND	ND	65	ND	ND	ND	ND	ND	ND
21	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	357	83	40	480	172	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 868	365	ND	73	ND	ND
21	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	148	58	ND	206	146	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	141	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	22	ND	ND	22	ND	ND	ND	ND	ND	ND
22	YM1	ND	ND	ND	ND	ND	270	65	23	358	ND	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	53	ND	ND	53	133	ND	ND	ND	ND	ND
22	YM1	ND	ND	ND	ND	ND	153	33	ND	186	ND	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	199	30	21	250	ND	ND	ND	ND	ND	ND
22	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	172	ND	ND	ND	ND	ND

TABLE 24: MYCOTOXIN RESULTS - MAIZE CROP QUALITY 2016/2017 (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	LOD: 20 µg/kg	LOQ: 20 µg/kg
22	WM1	ND	ND	ND	ND	ND	166	27	ND	193	552	109	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	117	ND	ND	ND	ND	ND
23	YM2	ND	ND	ND	ND	ND	180	51	ND	231	ND	ND	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	185	90	23	298	ND	ND	ND	ND	ND	ND
23	YM1	ND	ND	ND	ND	ND	208	48	21	277	ND	ND	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
23	YM1	ND	ND	ND	ND	ND	37	ND	ND	37	ND	ND	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24	YM1	ND	ND	ND	ND	ND	105	ND	ND	105	ND	ND	ND	ND	ND	ND
24	YM1	ND	ND	ND	ND	ND	72	ND	ND	72	ND	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	165	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24	YM1	ND	ND	ND	ND	ND	20	ND	ND	20	ND	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	114	ND	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	ND	ND	ND	ND	ND	ND
25	WM1	ND	ND	ND	ND	ND	111	26	ND	137	ND	ND	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	ND	ND	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	ND	ND	ND	ND	ND	ND
25	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	145	ND	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	ND	ND	ND	ND	ND	ND
25	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
26	WM1	ND	ND	ND	ND	ND	645	115	76	836	ND	ND	ND	ND	ND	ND
26	COM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
26	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
26	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 24: MYCOTOXIN RESULTS - MAIZE CROP QUALITY 2016/2017 (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	LOD: 20 µg/kg	LOQ: 20 µg/kg
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	ND	ND	ND	ND	ND	ND
26	YM1	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	ND	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	659	149	39	847	148	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	ND	ND	ND	ND	ND	ND
26	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
26	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	133	ND	ND	ND	ND	ND
26	YM1	ND	ND	ND	ND	ND	299	54	25	378	ND	ND	ND	ND	ND	ND
26	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1300	227	ND	ND	ND	ND
26	YM1	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	ND	ND	ND	ND	ND	ND
26	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
26	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	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	ND	ND	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	ND	ND	ND	ND	ND
28	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 381	252	ND	ND	ND	ND
28	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	243	ND	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	125	ND	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 476	316	ND	30	ND	ND

TABLE 24: MYCOTOXIN RESULTS - MAIZE CROP QUALITY 2016/2017 (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 LOQ: 5 µg/kg	B_1 LOQ: 5 µg/kg	G_2 LOQ: 5 µg/kg	B_2 LOQ: 5 µg/kg	Total	B_1 LOQ: 20 µg/kg	B_2 LOQ: 20 µg/kg	B_3 LOQ: 20 µg/kg	Total	LOQ: 100 µg/kg	LOQ: 100 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOD: 20 µg/kg	LOQ: 20 µg/kg
28	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	105	ND	ND	ND	ND	ND
28	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	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	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	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	490	179	ND	ND	ND	ND
29	YM2	ND	ND	ND	ND	ND	186	50	27	263	ND	ND	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	901	153	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	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	200	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	214	54	ND	268	ND	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	37	ND	ND	37	ND	ND	ND	ND	ND	ND
29	WM2	ND	ND	ND	ND	ND	53	ND	ND	53	293	ND	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	104	ND	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	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	122	ND	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	223	88	24	335	ND	ND	ND	ND	ND	ND
29	WM2	ND	ND	ND	ND	ND	207	25	38	270	2 886	350	ND	399	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	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
29	WM2	ND	ND	ND	ND	ND	931	150	78	1 159	3 318	418	ND	106	ND	ND

TABLE 24: MYCOTOXIN RESULTS - MAIZE CROP QUALITY 2016/2017 (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	LOD: 20 µg/kg	LOQ: 20 µg/kg
29	WM1	ND	ND	ND	ND	ND	27	ND	ND	27	ND	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	80	21	ND	101	ND	ND	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	YM1	ND	ND	ND	ND	ND	22	ND	ND	22	ND	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	162	47	ND	209	124	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	154	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	69	ND	ND	69	ND	ND	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	46	ND	ND	46	ND	ND	ND	ND	ND	ND
30	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 059	169	ND	ND	ND	ND
30	WM2	ND	ND	ND	ND	ND	96	22	ND	118	2 366	212	ND	34	ND	ND
30	WM1	ND	ND	ND	ND	ND	131	24	ND	155	1717	240	ND	ND	ND	ND
30	YM3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
30	COM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
30	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 085	124	ND	24	ND	ND
30	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	236	ND	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	179	ND	ND	ND	ND	ND
30	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 838	134	ND	26	ND	ND
30	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
30	YM2	ND	ND	ND	ND	ND	2 396	745	173	3 314	189	ND	ND	ND	ND	ND
30	WM3	ND	ND	ND	ND	ND	ND	ND	ND	ND	7 671	802	ND	292	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 552	212	ND	ND	ND	ND
30	WM1	ND	ND	ND	ND	ND	71	ND	ND	71	281	ND	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	278	ND	ND	ND	ND	ND
30	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	435	ND	ND	ND	ND	ND

TABLE 24: MYCOTOXIN RESULTS - MAIZE CROP QUALITY 2016/2017 (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	LOD: 20 µg/kg	LOQ: 20 µg/kg
31	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	WM2	ND	ND	ND	ND	ND	209	45	ND	254	3 254	400	ND	21	ND	ND
31	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	115	ND	ND	ND	ND	ND
31	COM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	2 456	332	ND	49	ND	ND
31	YM1	ND	ND	ND	ND	ND	201	33	ND	234	ND	ND	ND	ND	ND	ND
31	YM1	ND	ND	ND	ND	ND	68	ND	ND	68	ND	ND	ND	ND	ND	ND
31	WM2	ND	ND	ND	ND	ND	1 527	431	177	2 135	3 273	332	ND	32	ND	ND
31	YM1	ND	ND	ND	ND	ND	141	27	ND	168	151	ND	ND	ND	ND	ND
31	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	998	156	ND	ND	ND	ND
31	WM1	ND	ND	ND	ND	ND	46	ND	ND	46	ND	ND	ND	ND	ND	ND
32	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	626	ND	ND	ND	ND	ND
32	WM1	ND	ND	ND	ND	ND	47	ND	ND	47	681	108	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	2 943	753	329	4 025	272	ND	ND	ND	ND	ND
32	WM3	ND	ND	ND	ND	ND	205	42	ND	247	138	ND	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	25	ND	ND	25	188	ND	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	93	ND	ND	93	ND	ND	ND	ND	ND	ND
32	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	195	106	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	287	55	37	379	ND	ND	ND	ND	ND	ND
32	WM2	ND	ND	ND	ND	ND	171	42	ND	213	1 777	171	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	211	ND	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	126	ND	ND	126	ND	ND	ND	ND	ND	ND
32	WM2	ND	ND	ND	ND	ND	42	ND	ND	42	5 265	655	ND	142	ND	ND
32	YM1	ND	ND	ND	ND	ND	171	56	ND	227	ND	ND	ND	ND	ND	ND
32	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 150	114	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	100	ND	ND	100	ND	ND	ND	ND	ND	ND
32	WM1	ND	ND	ND	ND	ND	448	132	31	611	ND	ND	ND	ND	ND	ND
32	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	2 318	266	ND	46	ND	ND
32	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 24: MYCOTOXIN RESULTS - MAIZE CROP QUALITY 2016/2017 (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	LOD: 20 µg/kg	LOQ: 20 µg/kg
33	WM1	ND	ND	ND	ND	ND	44	ND	ND	44	ND	ND	ND	ND	ND	ND
33	WM2	ND	ND	ND	ND	ND	203	51	ND	254	ND	ND	ND	ND	ND	ND
33	YM1	ND	ND	ND	ND	ND	585	108	45	738	ND	ND	ND	ND	ND	ND
33	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	2 908	494	ND	112	ND	ND
33	WM1	ND	ND	ND	ND	ND	102	26	ND	128	4 758	657	ND	181	ND	ND
33	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	YM1	ND	ND	ND	ND	ND	121	38	ND	159	ND	ND	ND	ND	ND	ND
33	COM	ND	ND	ND	ND	ND	33	ND	ND	33	1 742	210	ND	23	ND	ND
33	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	233	ND	ND	ND	ND	ND
33	YM1	ND	ND	ND	ND	ND	63	22	ND	85	ND	ND	ND	ND	ND	ND
33	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	WM1	ND	ND	ND	ND	ND	23	ND	ND	23	ND	ND	ND	ND	ND	ND
33	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	220	ND	ND	ND	ND	ND
33	YM1	ND	ND	ND	ND	ND	109	27	38	174	ND	ND	ND	ND	ND	ND
33	YM1	ND	ND	ND	ND	ND	512	161	53	726	ND	ND	ND	ND	ND	ND
33	WM2	ND	ND	ND	ND	ND	45	ND	ND	45	ND	ND	ND	ND	ND	ND
33	WM1	ND	ND	ND	ND	ND	43	ND	ND	43	ND	ND	ND	ND	ND	ND
33	YM2	ND	ND	ND	ND	ND	4 463	1 088	508	6 059	ND	ND	ND	ND	ND	ND
33	COM	ND	ND	ND	ND	ND	875	172	78	1 125	ND	ND	ND	ND	ND	ND
33	WM1	ND	ND	ND	ND	ND	681	114	90	885	107	ND	ND	ND	ND	ND
33	WM1	ND	ND	ND	ND	ND	42	ND	ND	42	ND	ND	ND	ND	ND	ND
33	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 228	210	ND	ND	ND	ND
33	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 792	171	ND	125	ND	ND
33	WM2	ND	ND	ND	ND	ND	467	102	36	605	266	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	41	ND	ND	41	ND	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 744	328	ND	47	ND	ND
34	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	2 910	364	ND	51	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 24: MYCOTOXIN RESULTS - MAIZE CROP QUALITY 2016/2017 (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	LOD: 20 µg/kg	LOQ: 20 µg/kg
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	120	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	508	122	33	663	321	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	20	ND	ND	20	133	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	533	140	35	708	187	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	43	ND	ND	43	245	ND	ND	ND	ND	ND
34	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	2 283	355	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	256	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	1 296	133	ND	22	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	3 157	258	ND	117	ND	ND
34	YM1	ND	ND	ND	ND	ND	411	135	49	595	ND	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
34	YM1	ND	ND	ND	ND	ND	981	231	95	1 307	ND	ND	ND	ND	ND	ND
35	WM3	ND	ND	ND	ND	ND	24	ND	ND	24	ND	ND	ND	ND	ND	ND
35	YM2	ND	ND	ND	ND	ND	75	ND	ND	75	ND	ND	ND	ND	ND	ND
35	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	YM1	ND	ND	ND	ND	ND	38	ND	ND	38	ND	ND	ND	ND	ND	ND

TABLE 24: MYCOTOXIN RESULTS - MAIZE CROP QUALITY 2016/2017 (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	LOD: 20 µg/kg	LOQ: 20 µg/kg
36	YM1	ND	ND	ND	ND	ND	335	83	35	453	ND	ND	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	448	ND	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	374	104	29	507	ND	ND	ND	ND	ND	ND
36	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
36	WM3	ND	ND	ND	ND	ND	ND	ND	ND	ND	116	ND	ND	ND	ND	ND
36	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	255	105	ND	ND	ND	ND
36	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
36	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	3 836	387	ND	61	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	182	48	ND	230	ND	ND	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	278	71	ND	349	ND	ND	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	521	130	41	692	286	ND	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	97	22	ND	119	278	ND	ND	21	ND	ND
36	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	30	ND	ND	30	1 286	ND	ND	128	ND	ND
36	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	562	152	69	783	ND	ND	ND	ND	ND	ND
36	YM1	ND	ND	ND	ND	ND	22	ND	ND	22	ND	ND	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
36	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	130	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**	**146**	**33**	**12**	**191**	**339**	**41**	**0**	**7**	**0**	**0**
Number of positive results		**0**	**0**	**0**	**0**	**0**	**155**	**100**	**61**	**155**	**129**	**56**	**0**	**27**	**0**	**0**
Average of positive results		**-**	**-**	**-**	**-**	**-**	**330**	**115**	**69**	**431**	**919**	**254**	**-**	**89**	**-**	**-**
Maximum of positive results		**-**	**-**	**-**	**-**	**-**	**4 463**	**1 088**	**508**	**6 059**	**7 698**	**964**	**-**	**399**	**-**	**-**

Note:

Limit of quantitation (LOQ) means the lowest concentration level that can be quantified with acceptable precision and accuracy by the LC-MS/MS.

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 25: MYCOTOXIN RESULTS - SUMMARY OF SEASONS 2005/2006 TO 2016/2017

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.
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	Not tested		
2008/2009	810	90	0	0	0	490	0	3 300	430	0	2 900	<25	0	160	<1.0	0	1	Not tested		
*2009/2010	800	90	0	0	0	251	0	4 035	206	0	1 845	0	0	0	0	0	0	0		
*2010/2011	693	325	0	0	0	468	0	7 048	165	0	1835	33	0	270	0	0	0	0		
**2011/2012	1 000	350	0	0	0	383	0	11 297	146	0	911	33	0	297	0	0	0	0	0	0
**2012/2013	1 000	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	451	0	5 357	243	0	6 134	38	0	445	0	0	0	0	0	0
**2014/2015	1 000	350	2	0	48	357	0	3 382	397	0	9 736	36	0	337	0	0	0	0	0	0
**2015/2016	920	350	0	0	0	444	0	11 347	175	0	1 585	16	0	127	0	0	0	0	0	0
**2016/2017	1 000	350	0	0	0	471	0	6 059	513	0	7 698	36	0	399	0	0	0	0	0	0
Total	**10 853**	**2 885**																		
Min.				**0**			**0**			**0**			**0**			**0**			**0**	
Max.					**48**			**13 000**			**9 736**			**445**			**7**			**232**

*** 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)**

RSA averages calculated from averages per province.

Mycotoxin methodology

Technique used for season 2005/2006 - 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
Fumonisin	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 - 2016/2017

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
Deoxynivalenol	100	50
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 to be followed to ensure that the crop quality samples 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, a sub-sample of each of these grading samples are placed in separate containers according to class and grade, per silo bin at each silo.

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, Government Notice No. R.476 of 8 May 2009 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, 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.

Combined deviation

The term "combined 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 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 kernel are partially 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 is the percentage maize kernels that are both Fusarium and Diplodia infected.

USA GRADING

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

The US grading system makes provision for three classes of maize/corn based on colour, namely Class White corn, Class Yellow corn and Class Mixed corn. Each class is divided into five U.S. numerical grades (Nos. 1 to 5) and U.S. Sample Grade. US No.1 is the most desirable grade followed by No. 2 down to sample 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 test weight 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 in pounds (lbs), was determined on the maize crop samples and the results converted to test weight, reported in kilogram/hectoliter (kg/hl), by multiplication with a factor of 1.2872.

Other colour

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

NUTRITIONAL VALUES

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 loaded on the Infratec 1241 Grain Analyser (NIT) at the SAGL, is updated annually by Foss using NIT spectra and international primary chemical method results of maize crop quality samples from the specific season under discussion, provided by SAGL.

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) on the 2016/2017 season's samples, were checked by analysing every tenth sample by means of the primary methods.

PHYSICAL CHARACTERISTICS

Test weight

Test weight is reported in kilogram per hectolitre. The specific mass (or grain density) of maize expressed as test weight is influenced by amongst other, factors like cultivar, moisture content, foreign matter, other grain and damaged kernels like insect damaged and immature kernels.

Bushel weight in pounds (lbs) was determined on the maize crop samples and the results converted to test weight, reported in kilogram/hectoliter (kg/hl), by multiplication with a factor of 1.2872.

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. The results are reported on an "as is" basis.

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 excessive 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 causes 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 a model developed on the Foss NIT Infratec 1241- Generation 3 Standard Version Grain Analyser where the NIT spectra were modelled against the Roff milling fractions. In the previous seasons (until 2015/2016) the Milling index of the samples were determined with the calibration model developed by the Grain Crops Institute of the ARC. With this model, the average milling index of a sample with good milling characteristics is about 95 with a variation of about 55 (low milling quality) to about 115 (very good milling quality).

The SAGL was tasked by the Maize Trust to develop a new model for Milling Index using samples from maize cultivar trials supplied by the ARC-GCI and by commercial seed breeders over four seasons (from 2012/2013 onward). The trials included a range of hardness levels. The New Milling Index (NMI) that was developed is similar to the original ARC formula but on a 14% moisture basis, and with the constants removed. The NMI model has improved precision compared to the older version, due to the almost tenfold increase in the number of samples used to build the calibration model.

During the fifth year, samples of commercial hybrids, selected imported maize samples and outlier samples from the 2014/2015 and 2015/2016 seasons were included to develop a robust model with the assistance of FOSS to produce accurate results. The improved new model, SAGL Milling Index 2017, now includes two parameters, SAGL Milling Index (SAGL MI) as well as a new parameter namely Grit Yield All (GYA).

SAGL MI indicates the relative ratio of total hard endosperm products (B2 grits, B3 fine grits and B3 coarse grits) to offal products (B1 fine flour and total chop/bran) as determined on a Roff mill and used for calibration of the NIT. It is expressed as a dimensionless index value according to the following scale:

SAGL MI	<40	40-60	60-80	80-100	>100
Description	Soft	Medium	Moderately hard	Hard	Very hard

GYA is defined as the sum of the mass fractions of the Roff B2 grits, B3 fine grits and B3 coarse grits fractions expressed as a mass percentage of the total mass of the whole maize before milling. GYA is linearly correlated with the SAGL MI and indicates the true amount of total hard endosperm that can be extracted from the maize during Roff milling. The NIT calibration value for GYA provides this estimate directly from the whole maize without need for further milling tests. GYA is also reported on a 14% moisture base.

The 2016/2017 season maize samples were measured with the NIT on the SAGL Milling Index 2017 model.

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 is 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 chop, 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 percentages: Break 1 meal, Break 2 meal, Break 3 meal and Break 3 grits. Break 1, 2 and 3 chop are combined and then weighed for determination of % Chop. Break 3 grits are weighed for determination of % Grits. The percentage extraction total meal is determined as the sum of the percentages Break 1, 2 and 3 meal as well as the % Grits.

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 obtained by sieving the unsifted samples through a 300 µm sieve. The fractions on top and below the sieve were then combined to result in sifted samples that 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 1 000 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 precision 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. 01-07-16 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)
Agri-Hub Office Park - Grain Building
477 Witherite Road
The Willows
Pretoria
0040

Technical Signatories:

Ms J Nortje (All Methods)
Ms M Bothma (All Chemical Methods)
Ms M Hammes (All Chemical Methods)
Ms A de Jager (Nutrients & Contaminants)
Ms W Louw (In-house Methods 001, 002, 003, 010 & 026)
Ms D Moleke (Rheological Methods)
Ms I Terblanche (Rheological Methods)
Ms H Meyer (All Chemical, Nutrients and Contaminants & Grading Methods)
Ms J Kruger (All Chemical Methods)
Ms P Modiba (All Chemical Methods)
Ms M Motlanthe (In-house Methods 001, 003 & 026)
Mr B van Der Linde (Grading)
Ms M Ramare (All Chemical Methods Excl. In-House Method 012 and SOP MC23)
Ms Z Skhosana (In-house Method 026)
Ms T de Beer (Rheological Methods)

Postal Address:

Postnet Suite # 391
Private Bag X1
The Willows
0041

Tel: (012) 807-4019
Fax: N/A
E-mail: Paulina.Modiba@sagl.co.za

Nominated Representative:

Ms PM Modiba

Issue No.: 27
Date of Issue: 22 February 2018
Expiry Date: 31 October 2019

Material or Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Techniques / Equipment Used
CHEMICAL		
Ground Barley	Moisture (Oven Method)	Analytical EBC Method 3.2, latest Edition (2 hour; 130^{0}C)
Cereal and cereal products specifically-wheat, rice, (hulled paddy), barley, millet, rye, and oats as grain, 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 (1 hour; 130˚C) (72 hour; 103˚C)

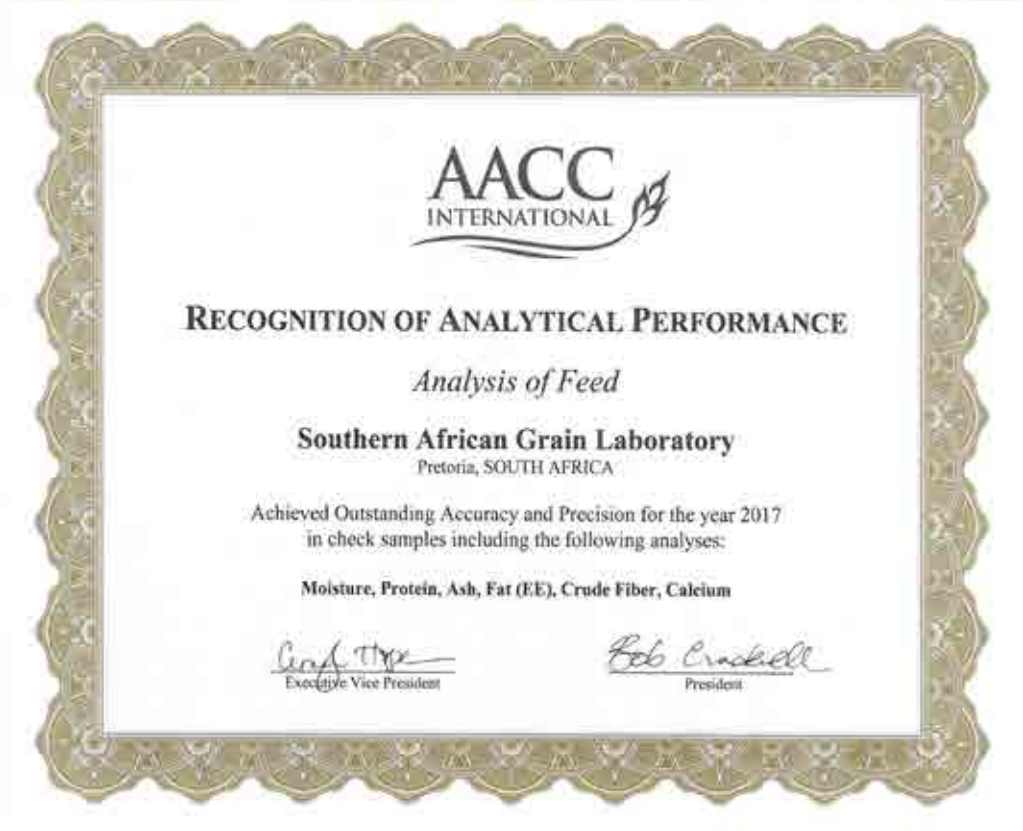
Maize Grits	Moisture (Oven Method)	Analytical EBC Method 6.2.2, latest edition (4 hours, 130^{0}C)
Animal feed, Plant tissue and Sunflower (Milled)	Moisture (Oven Method)	AgriLASA 2.1, Latest Edition (5 hours, 105^{0}C)
All flours, cereal grains, oilseeds and animal feeds	Nitrogen and protein (Combustion method - Dumas)	AACCI 46-30.01, Latest Edition
Cereal based food stuff	Dietary fibres (Total)	In-house method 012
Food stuff and feeds	Carbohydrates (by difference) (calculation) Energy value (calculation) Total digestible nutritional value (calculation)	SOP MC 23
Food Stuff and feeds	Determination of Ash	In-house method 011
Wheat Kernels	Moisture (Oven Method)	Government Gazette Wheat Regulation, Latest Edition (72 hour, 103˚C)
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 Std 107/1, Latest Edition
NUTRIENTS AND CONTAMINANTS		
Vitamin fortified food and feed products and fortification mixes grain based	Vitamin A as all trans Retinol (Saponification) (HPLC)	In-house method 001
	Thiamine Mononitrate (HPLC) Riboflavin (HPLC) Nicotinamide (HPLC) Pyridoxine Hydrochloride (HPLC)	In-house method 002
	Folic Acid (HPLC)	In-house method 003
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 Std.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)

Original Date of Accreditation: 01 November 1999

ISSUED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM

Accreditation Manager



AACC INTERNATIONAL

RECOGNITION OF ANALYTICAL PERFORMANCE

Analysis of Feed

Southern African Grain Laboratory
Pretoria, SOUTH AFRICA

Achieved Outstanding Accuracy and Precision for the year 2017
in check samples including the following analyses:

Moisture, Protein, Ash, Fat (EE), Crude Fiber, Calcium

Executive Vice President

Bob Cracknell
President

CERTIFICATE
SERTIFIKAAT

IT IS HEREBY CERTIFIED THAT
HIERMEE WORD GESERTIFISEER DAT

Southern African Grain Lab

FEEDS / VOERE

FOR THE PERIOD OF / VIR DIE TYDPERK VAN **01/07/2017** TO / TOT **31/01/2018**

PARTICIPATED IN THE QUALITY ASSURANCE SCHEME AND CONFORMED TO THE REQUIREMENTS
IN RESPECT OF THE FOLLOWING DETERMINATIONS
AAN DIE KWALITEITS MONITERINGS SKEMA EN AAN DIE VEREIESTES MET BETREKKING TOT DIE
VOLGENDE BEPALINGS VOLDOEN HET

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

EVALUASION CRITERIA
Z – VALUE BETWEEN -2 AND 2 PARTICIPATION ≥ 83%

EVALUASIE KRITERIA
Z-WAARDE TUSSEN -2 EN 2 DEELNAME ≥ 83%

PRESIDENT

THISTLE QA

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

Seasonal Climate Watch

May to September 2018

Date issued: May 04, 2018

1. Overview

The El Niño-Southern Oscillation (ENSO) is expected to weaken from a moderate La Niña phase to a neutral phase through to early spring (Aug-Sep-Oct). Forecasts currently suggest that there is a high likelihood of an El Niño developing for early summer (Nov-Dec-Jan), however these forecasts tend to be less accurate during periods leading up to summer and it is advised that no drastic planning be made for the summer rainfall areas until such a time as there is more certainty in the forecast (usually during Sep/Oct).

There are still indications for above-normal rainfall during early winter (May-Jun-Jul) through to late winter (Jul-Aug-Sep), however late winter does not indicate sufficient confidence in the forecasting system and thus remains very uncertain.

Number of rainfall days are expected to be higher than normal for the winter rainfall areas. This increase in rainfall days are only expected to be more frequent rather than extremely high rainfall amounts. It should be noted however that there is not sufficient confidence in the forecasting system for these forecasts, thus there is very high uncertainty in the rainfall intensity for the winter rainfall areas.

Temperatures generally still indicate lower temperatures during early-, mid- and late-winter for the north-eastern parts of the country, and higher temperatures for the south-western parts of the country during the same period.

The South African Weather Service will continue to monitor and provide updates of any future assessments that may provide more clarity on the current expectations for the coming seasons.

2. South African Weather Service Prediction Systems

2.1. Ocean-Atmosphere Global Climate Model

The South African Weather Service (SAWS) is currently recognised by the World Meteorological Organization (WMO) as the Global Producing Centre (GPC) for Long-Range Forecasts (LRF). This is owing to its local numerical modelling efforts which involve coupling of both the atmosphere and ocean components to form a fully-interactive coupled modelling system, named the SAWS Coupled Model (SCM), the first of its kind in both South Africa and the region. Below are the first season (Mar-Apr-May) predictions for rainfall (Figure 1) and average temperature (Figure 2).

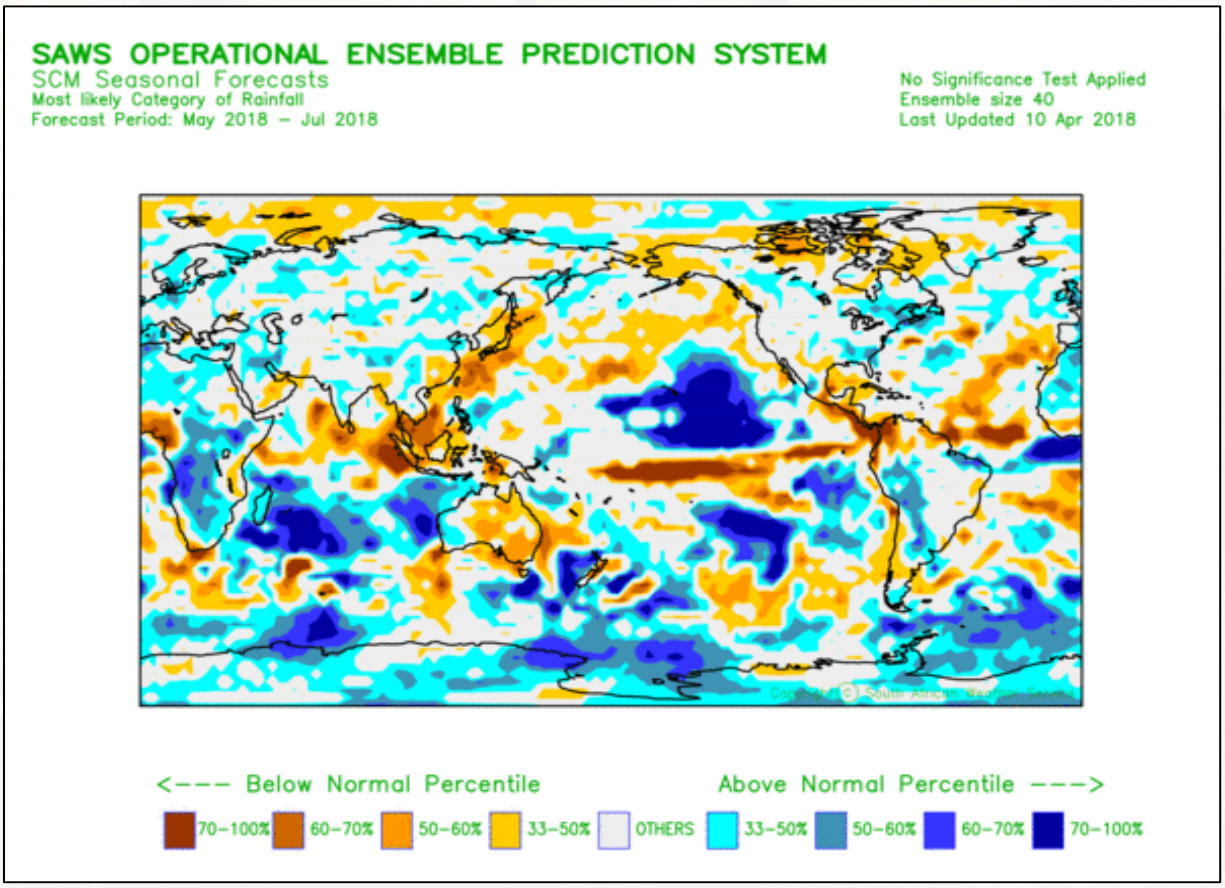


Figure 1: May-June-July global prediction for total rainfall probabilities.

2

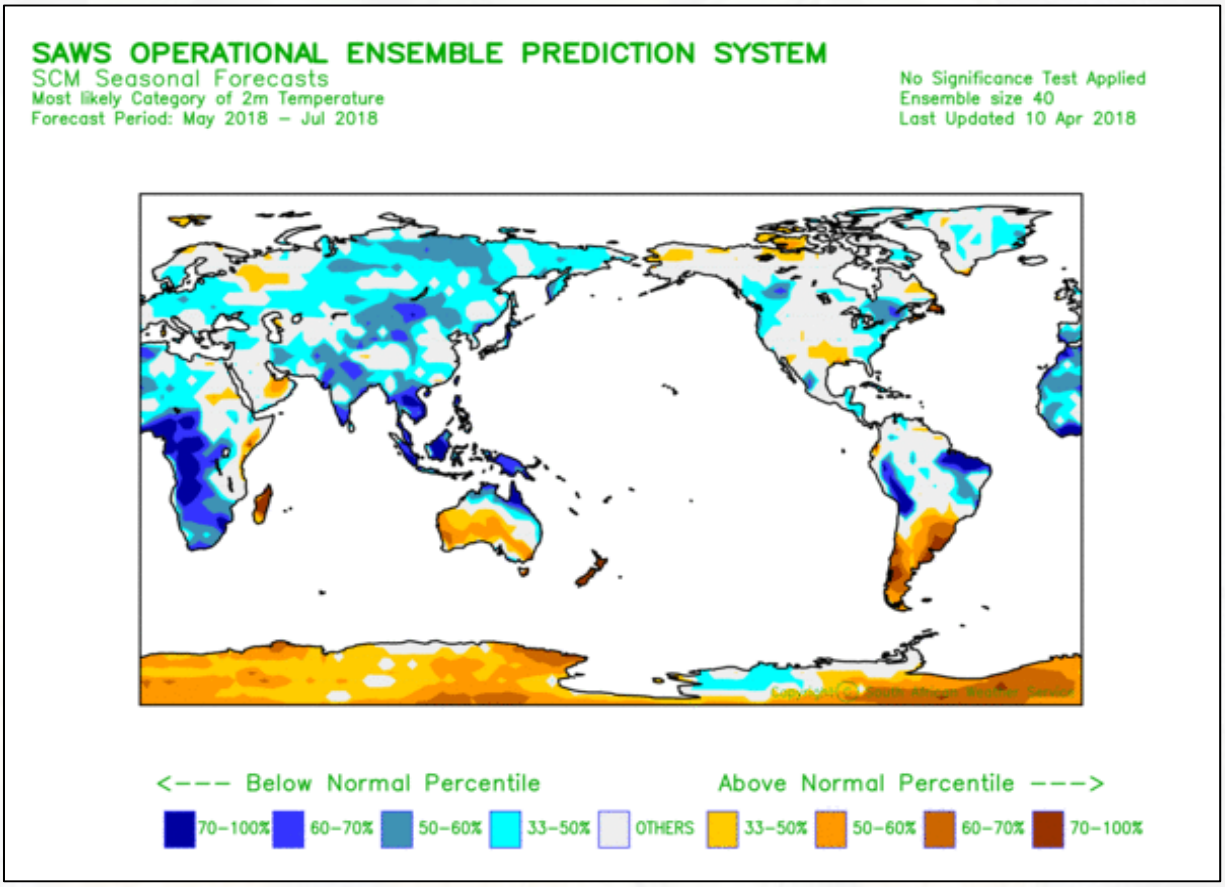


Figure 2: May-June-July global prediction for average temperature probabilities.

It is worth mentioning that the SCM levels of skill for the Nino 3.4 region (where ENSO information is sourced) are very much comparable to other state-of-the-art coupled models which are administered by other international centres. Therefore the following Sea-Surface Temperature (SST) forecast (Figure 3) emanates from the SST Prediction System which is purely based on the SCM.

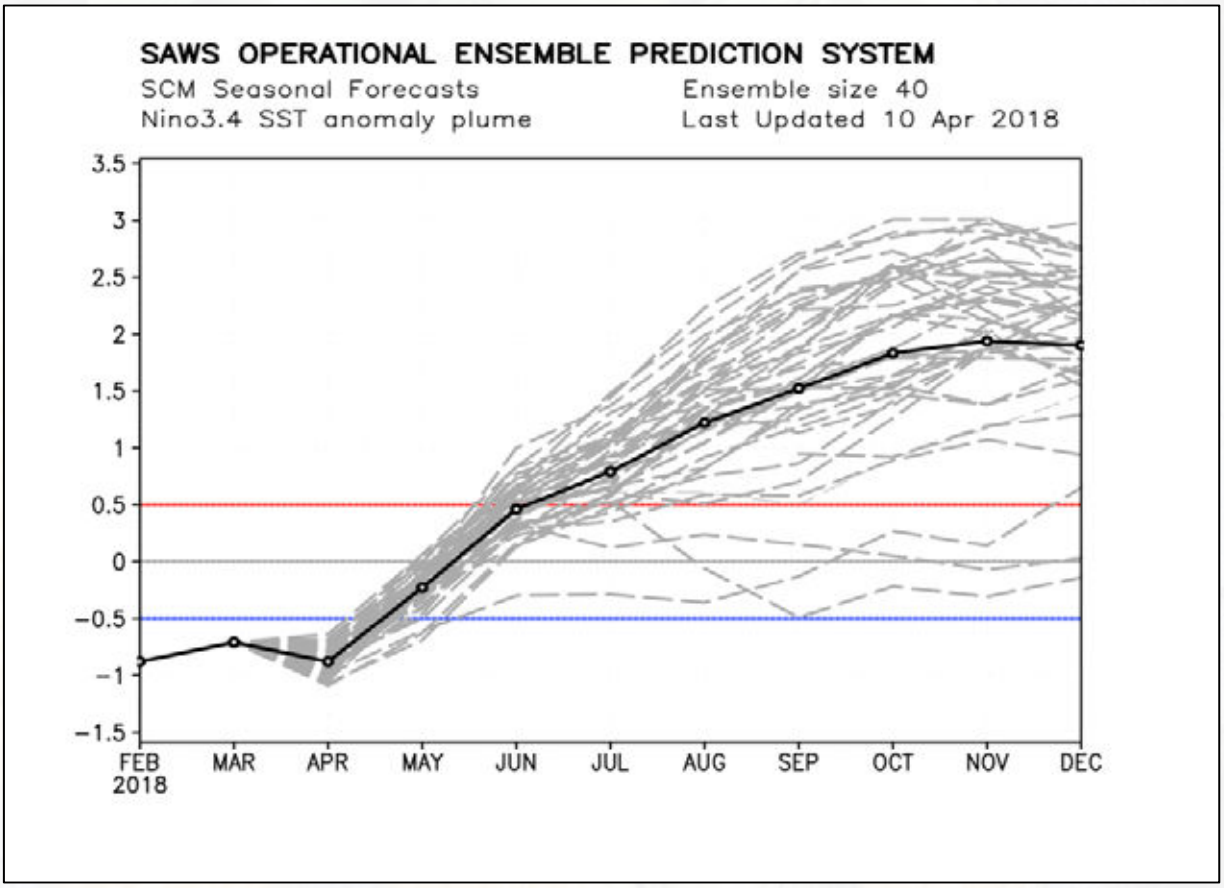


Figure 3: Niño3.4 SST anomaly forecasts produced by the SST forecast system administered by the SAWS. It comprises 40 ensemble members (marked in grey colour). The mean of the ensemble is marked in black.

2.2. Multi-Model Statistical Downscaling System

2.2.1. Seasonal Totals and Averages

In an effort to improve the predictions made by the SCM, which struggles to produce reliable rainfall and temperatures forecasts at a local scale, the Multi-Model System (MMS) has been implemented to statistically downscale various global forecasts, including the SCM and the Climate Forecasting System version 2 (CFSv2) administered by the National Oceanographic and Atmospheric Administration (NOAA).

Below are the current three season forecasts issued in Feb 2018. Three maps are shown for each season which includes the raw probabilistic prediction from the MMS (left), the probabilistic prediction with skill masked out (middle) and the climatological average (right) for the specific season. *The user is advised to consider the skill masked map (middle) as the official SAWS forecast, however the two additional maps may be used as tools in such a case where skill for a specific area is deemed insufficient.*

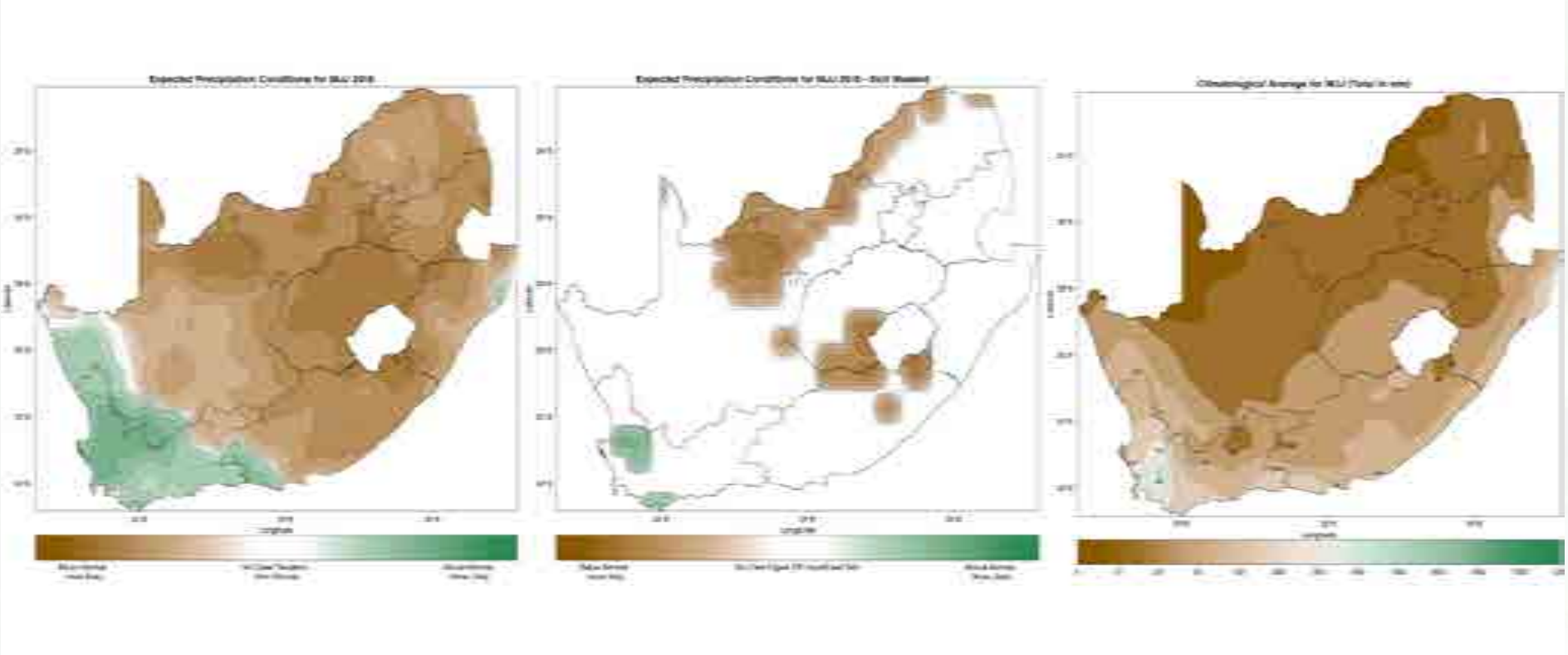


Figure 4: *May-June-July (MJJ) 2018 seasonal precipitation prediction without skill taken into account (left), as well as skill masked out (middle). Also included is the climatological average for MJJ (right, in mm) calculated over the period 1979-2009.*

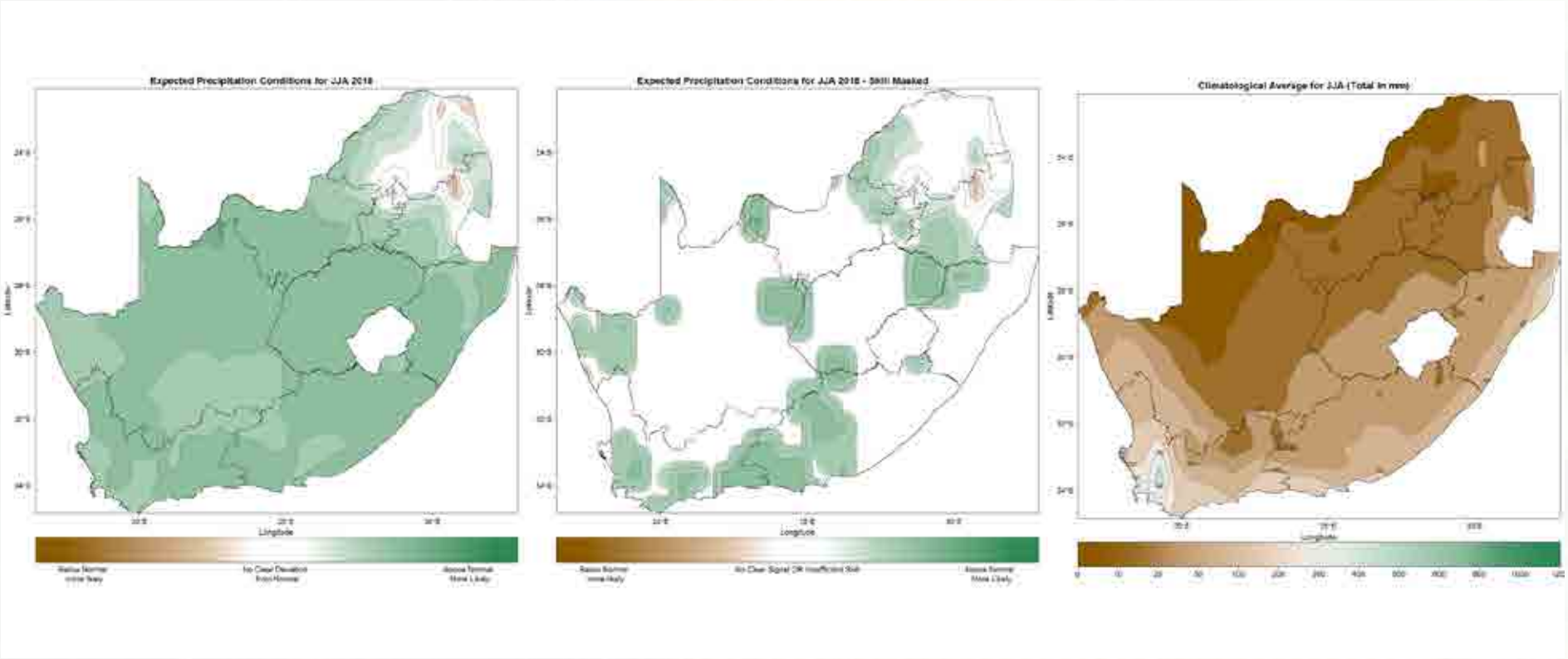


Figure 5: *June-July-August (JJA) 2018 seasonal precipitation prediction without skill taken into account (left), as well as skill masked out (middle). Also included is the climatological average for JJA (right, in mm) calculated over the period 1979-2009.*

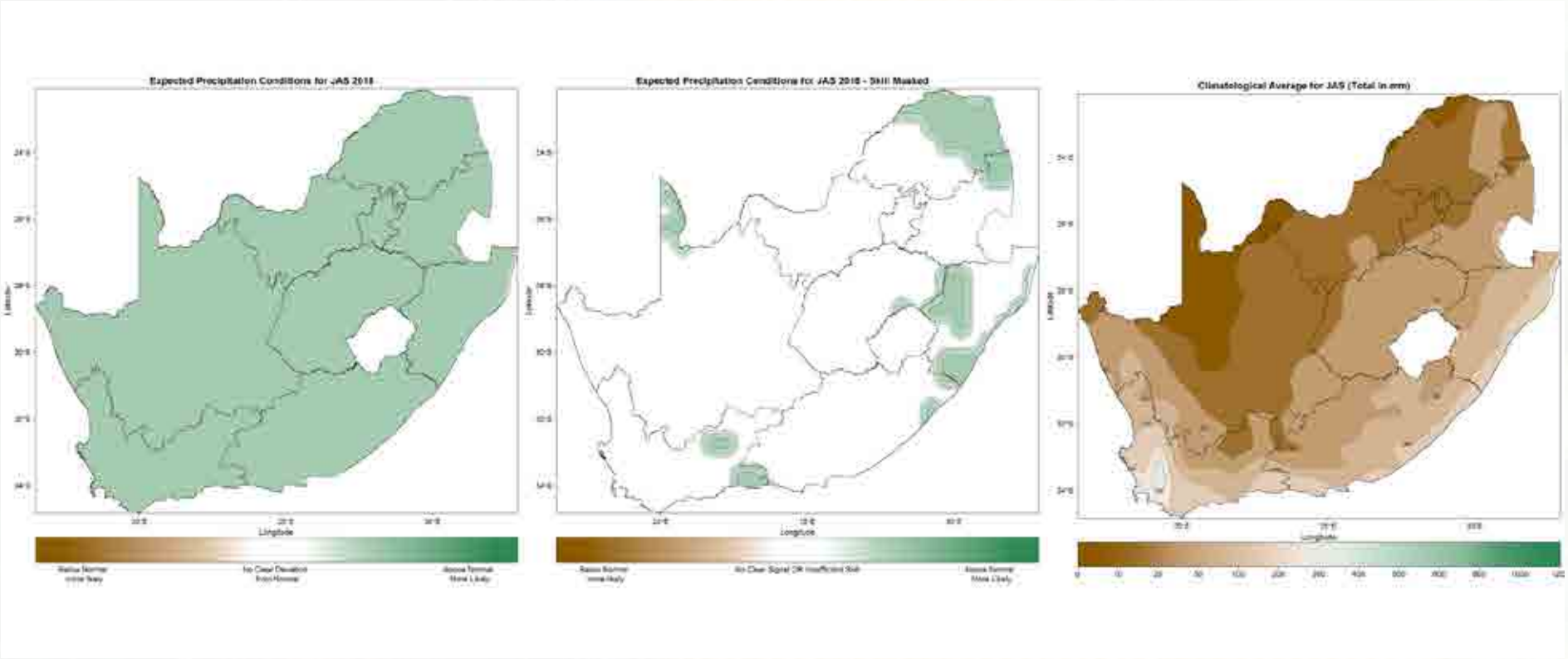


Figure 6: *July-August-September (JAS) 2018 seasonal precipitation prediction without skill taken into account (left), as well as skill masked out (middle). Also included is the climatological average for JAS (right, in mm) calculated over the period 1979-2009.*

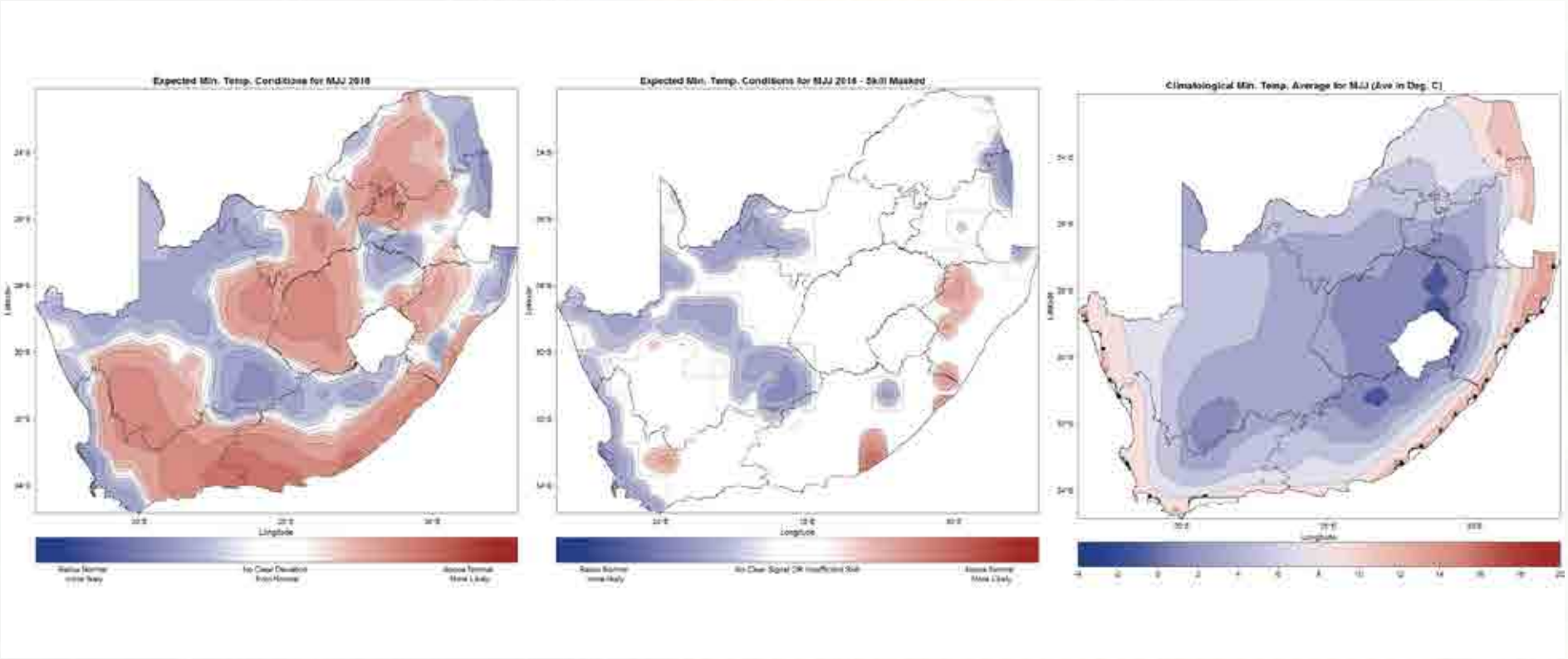


Figure 7: *May-June-June (MJJ) 2018 seasonal minimum temperature prediction without skill taken into account (left), as well as skill masked out (middle). Also included is the climatological average for MJJ (right) calculated over the period 1979-2009.*

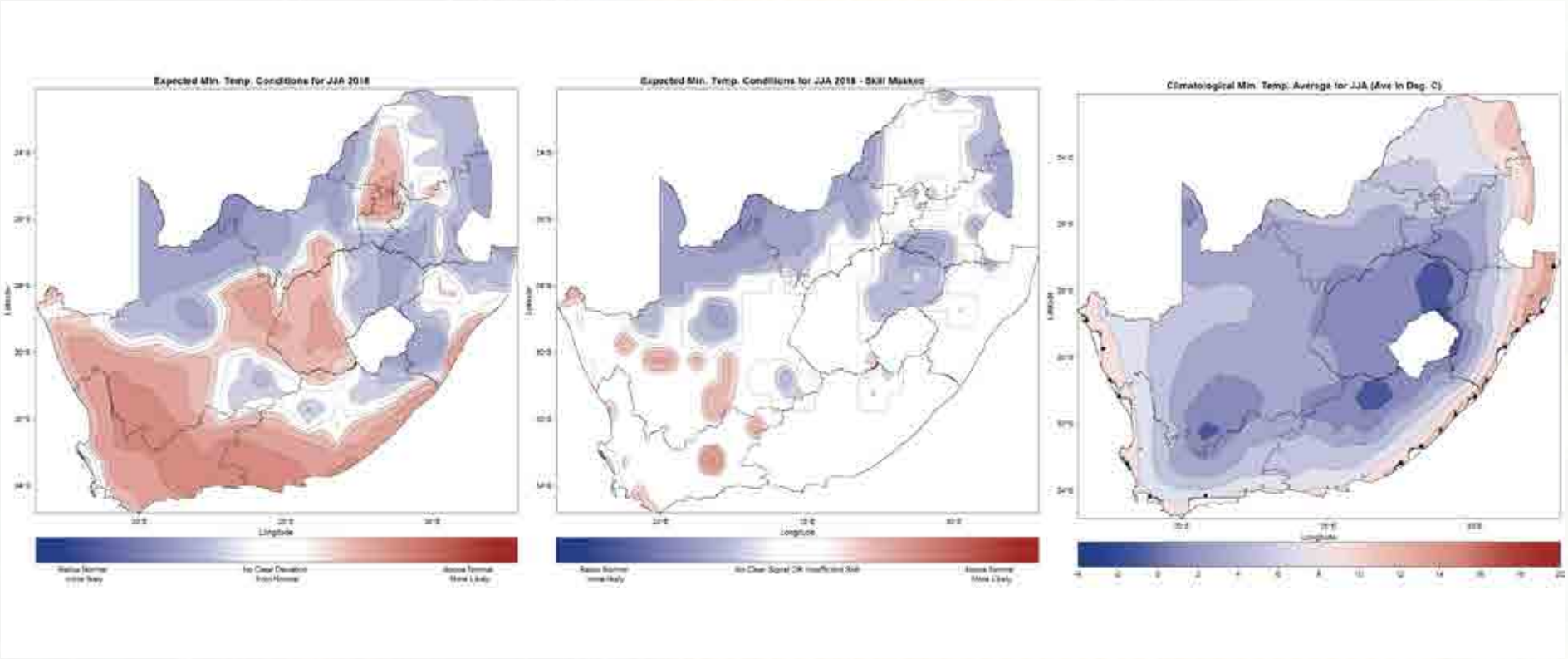


Figure 8: *June-July-August (JJA) 2018 seasonal minimum temperature prediction without skill taken into account (left), as well as skill masked out (middle). Also included is the climatological average for JJA (right) calculated over the period 1979-2009.*

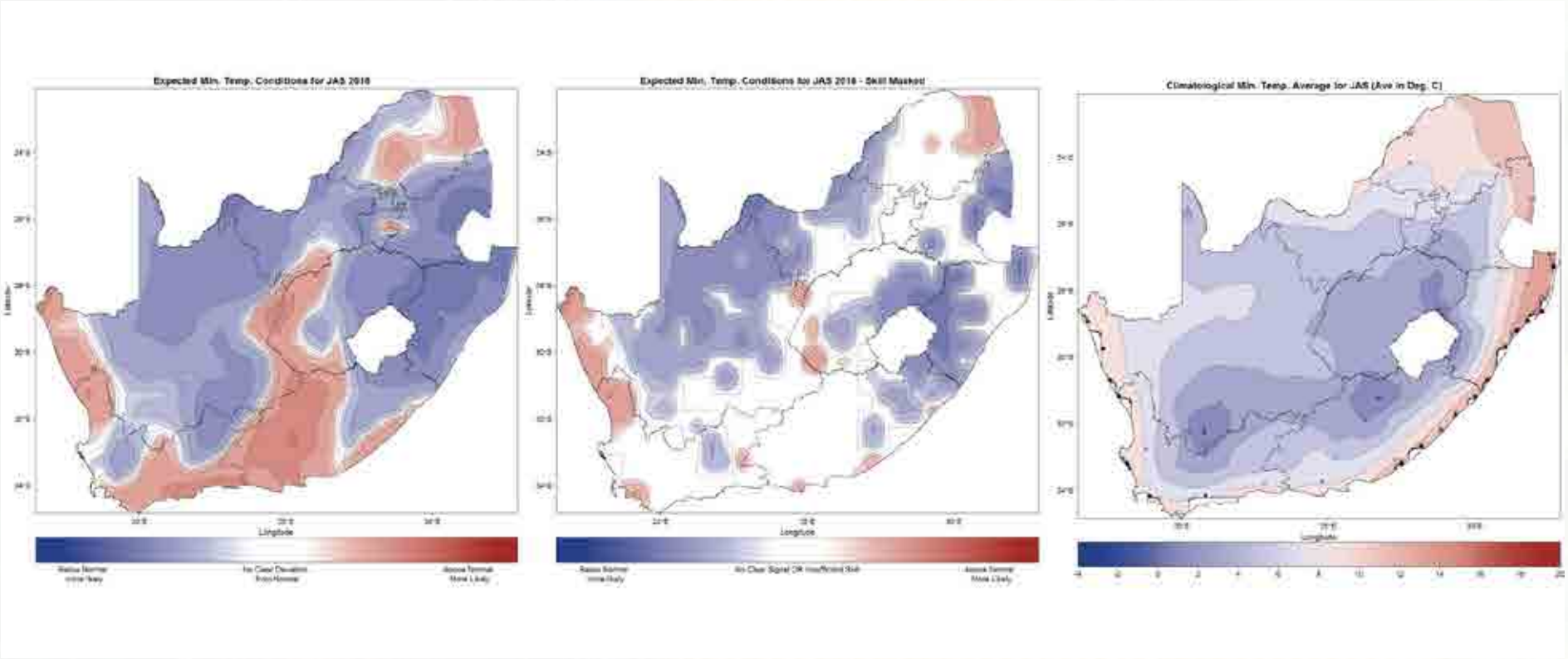


Figure 9: *July-August-September (JAS) 2018 seasonal minimum temperature prediction without skill taken into account (left), as well as skill masked out (middle). Also included is the climatological average for JAS (right) calculated over the period 1979-2009.*

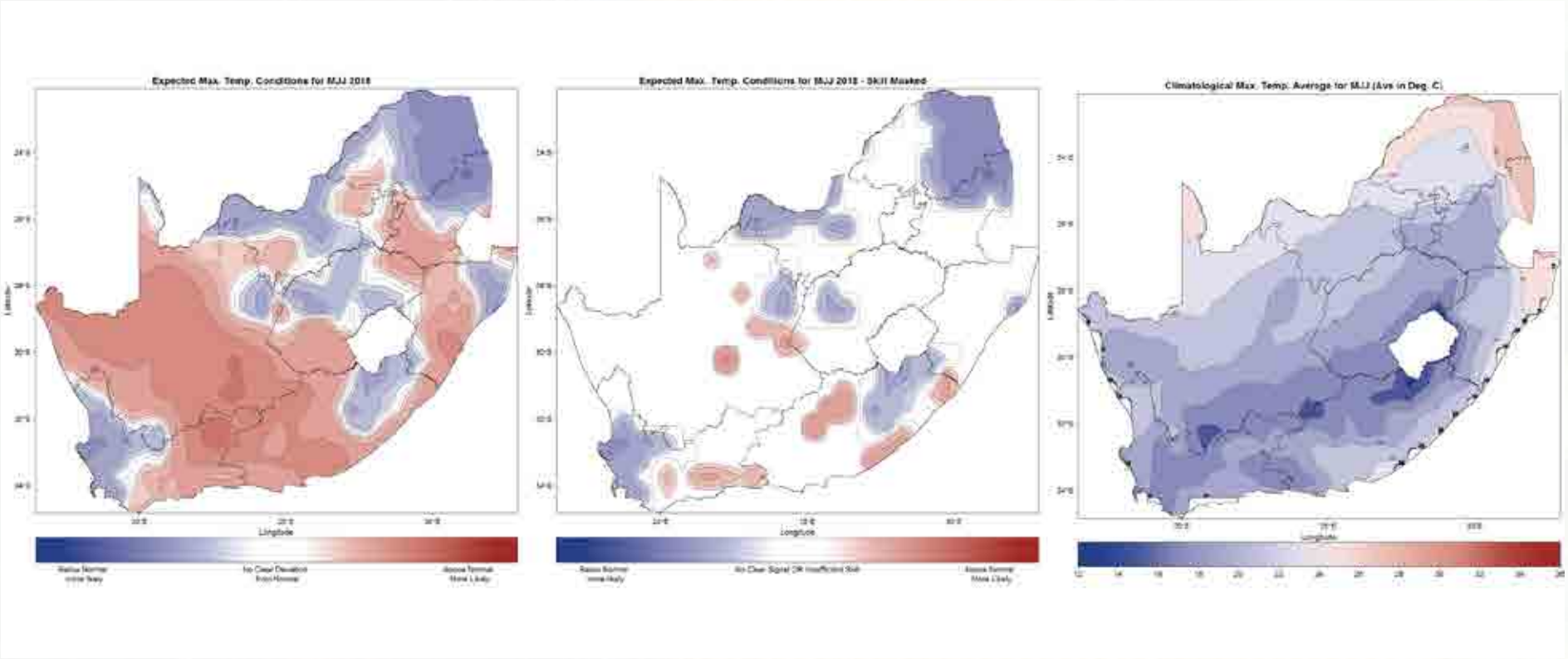


Figure 10: *May-June-July (MJJ) 2018 seasonal maximum temperature prediction without skill taken into account (left), as well as skill masked out (middle). Also included is the climatological average for MJJ (right) calculated over the period 1979-2009.*

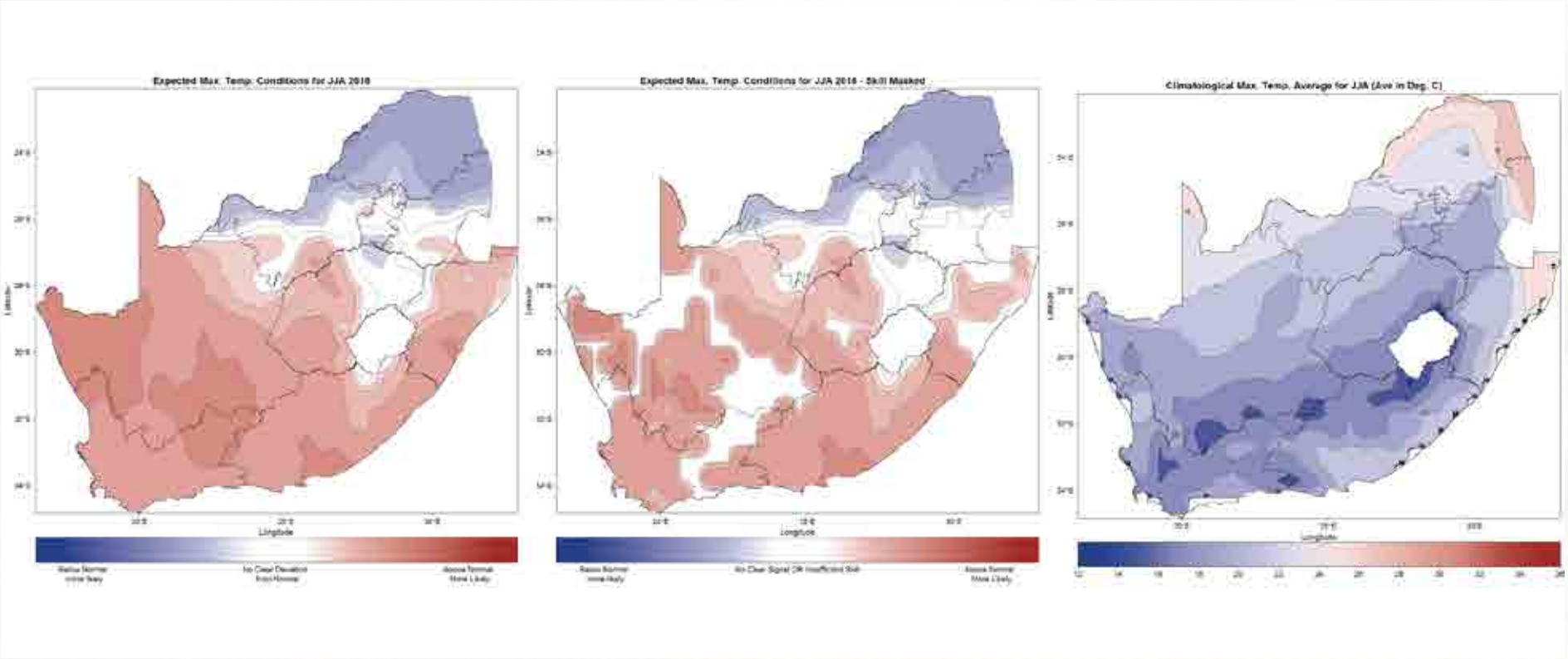


Figure 11: *June-July-August (JJA) 2018 seasonal maximum temperature prediction without skill taken into account (left), as well as skill masked out (middle). Also included is the climatological average for JJA (right) calculated over the period 1979-2009.*

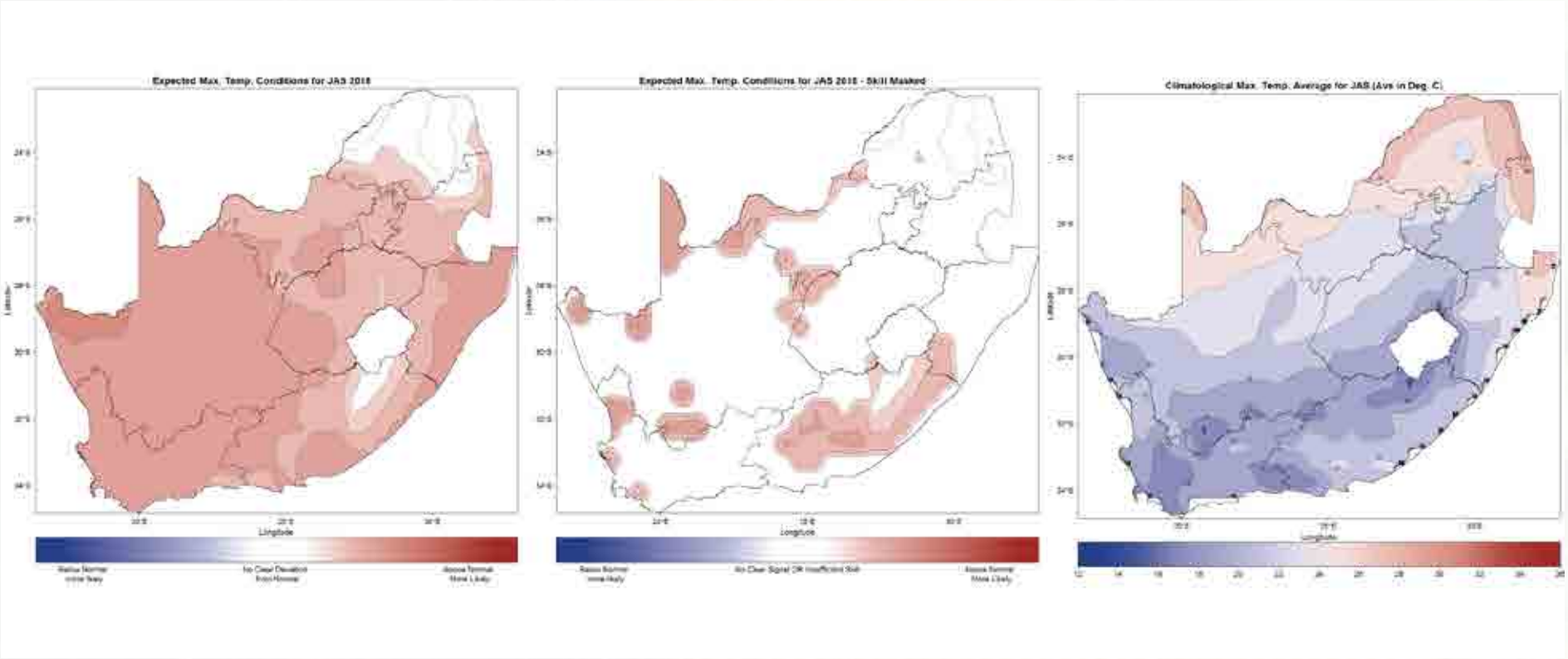


Figure 12: *July-August-September (JAS) 2018 seasonal maximum temperature prediction without skill taken into account (left), as well as skill masked out (middle). Also included is the climatological average for JAS (right) calculated over the period 1979-2009.*

2.2.2. Rainfall Frequency Predictions

This product is a result of the SAWS operational multi-model system (MMS) where the 850hPa geopotential heights hindcast outputs are first statistically recalibrated and downscaled to observed number of rainfall days exceeding desired thresholds (derived from high resolution 0.1 X 0.1 degree (ARCv2) African Rainfall Climatology version 2 rainfall dataset) within seasons of interest over southern Africa by using model output statistics. The 850hPa geopotential heights are used here because they are found to be the best predictor of rainfall over southern Africa.

These forecasts can be used together with the traditional seasonal rainfall total forecasts in that it can indicate the frequency of rainfall days where seasonal rainfall forecast areas expects below- or above-normal conditions.

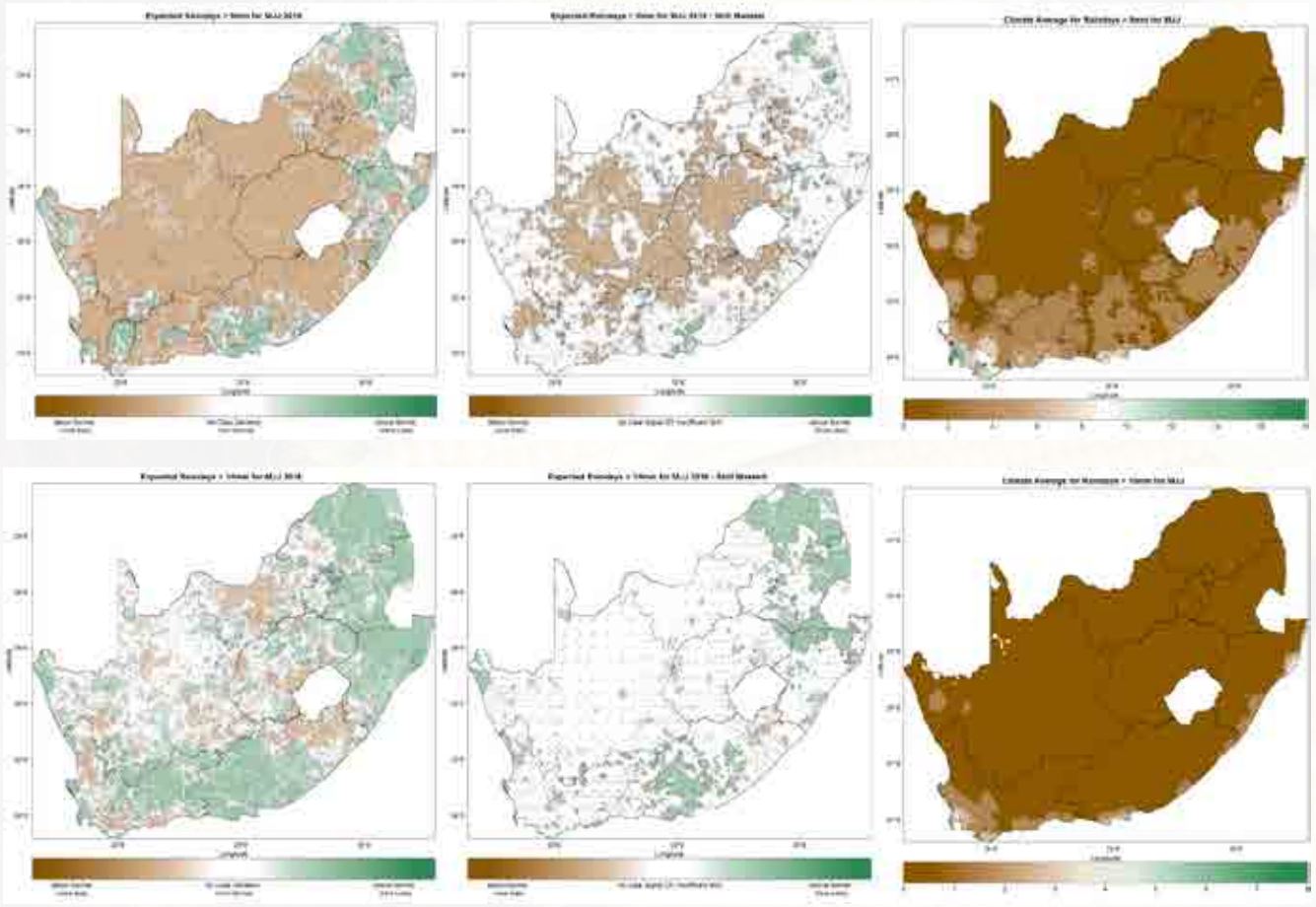


Figure 13: *May-June-July 2018 rainfall days forecast. Forecast for high and low number of rainfall days exceeding 5 and 15mm without skill taken into account (left) and with skill taken into account (middle). Also included is the climatology for high and low number of rainfall days exceeding 5 and 15mm calculated over the period 1983-2009.*

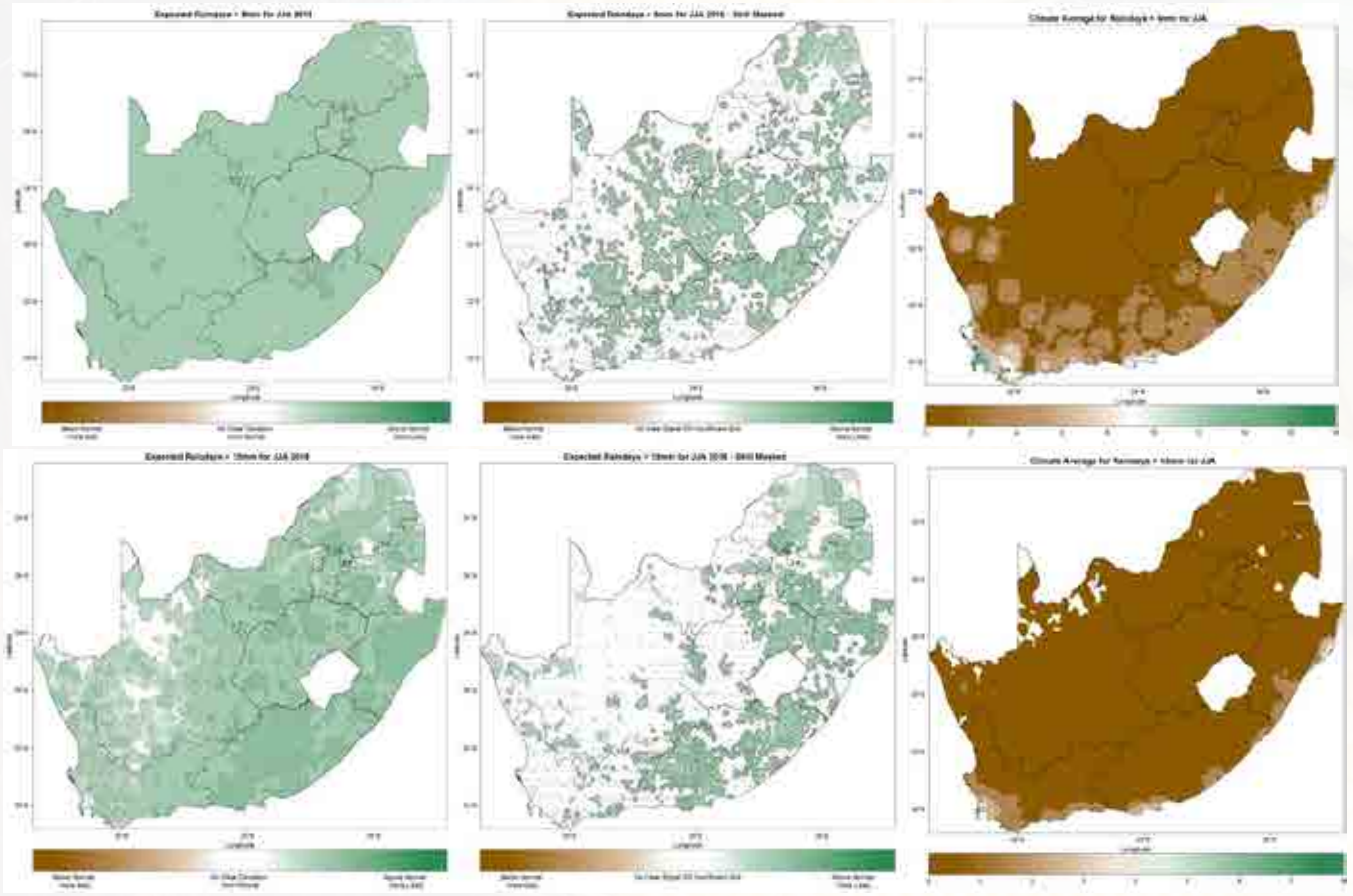


Figure 14: *June-July-August 2018 rainfall days forecast. Forecast for high and low number of rainfall days exceeding 5 and 15mm without skill taken into account (left) and with skill taken into account (middle). Also included is the climatology for high and low number of rainfall days exceeding 5 and 15mm calculated over the period 1983-2009.*

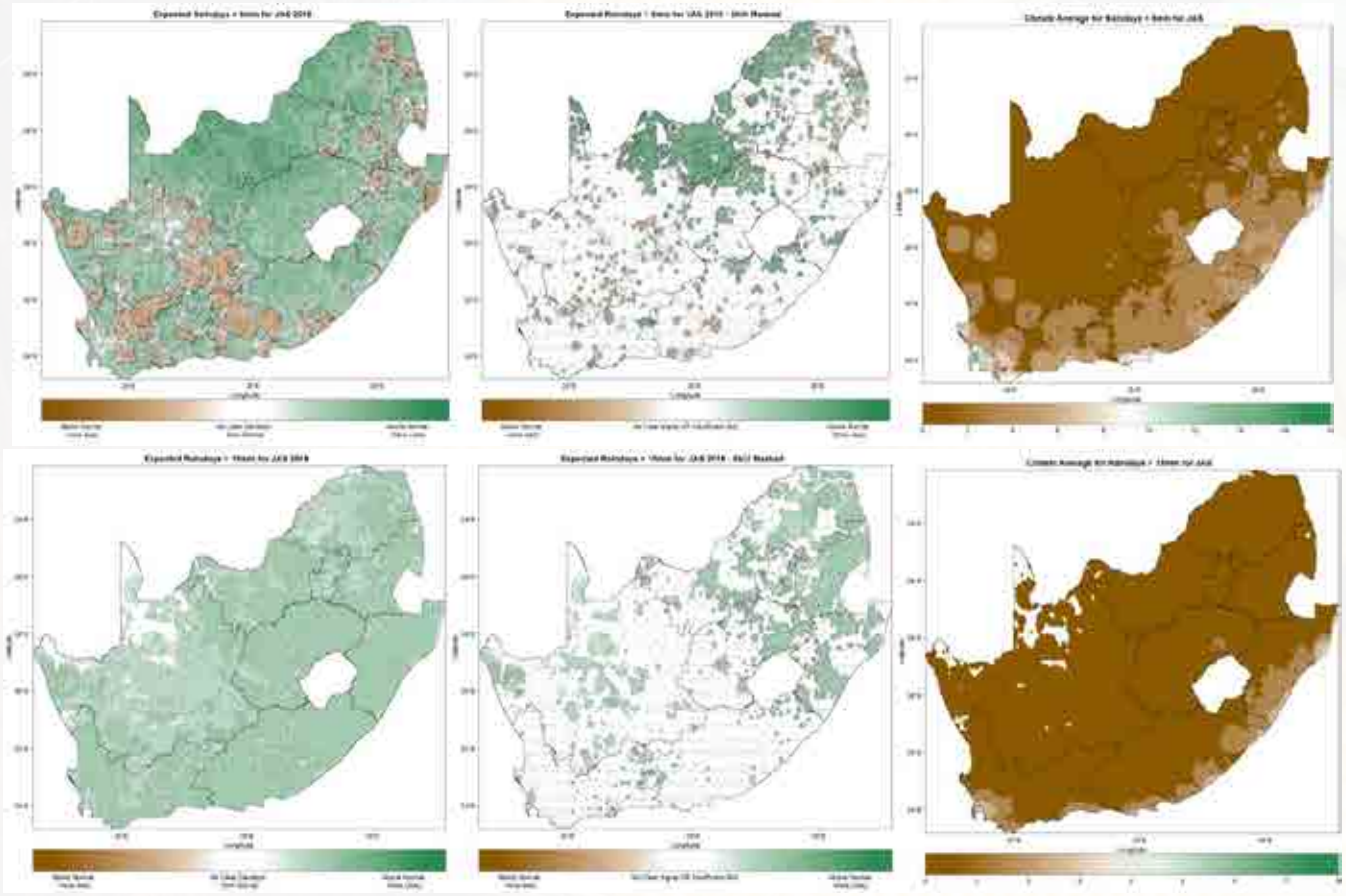


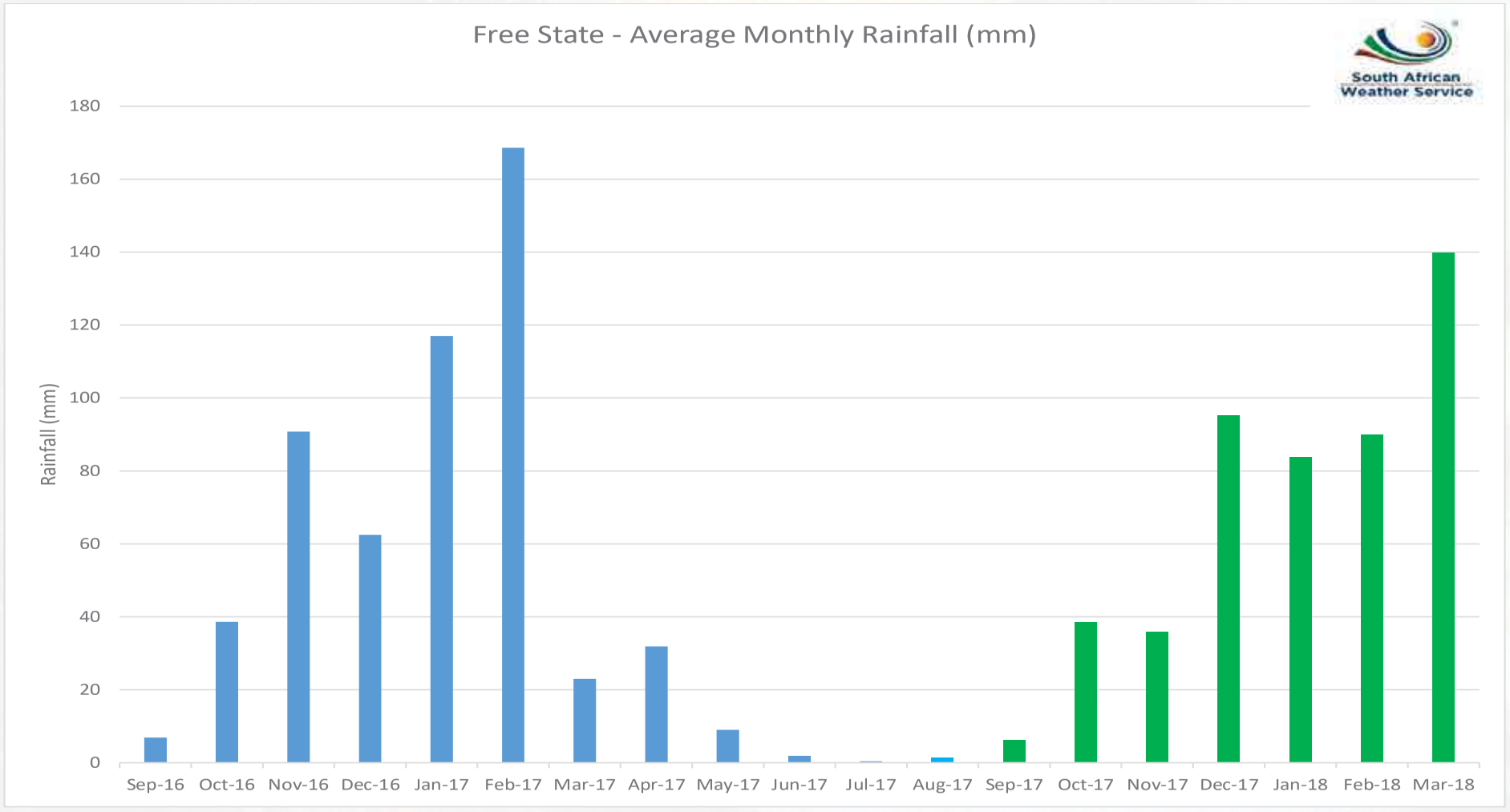
Figure 15: *July-August-September 2018 rainfall days forecast. Forecast for high and low number of rainfall days exceeding 5 and 15mm without skill taken into account (left) and with skill taken into account (middle). Also included is the climatology for high and low number of rainfall days exceeding 5 and 15mm calculated over the period 1983-2009.*

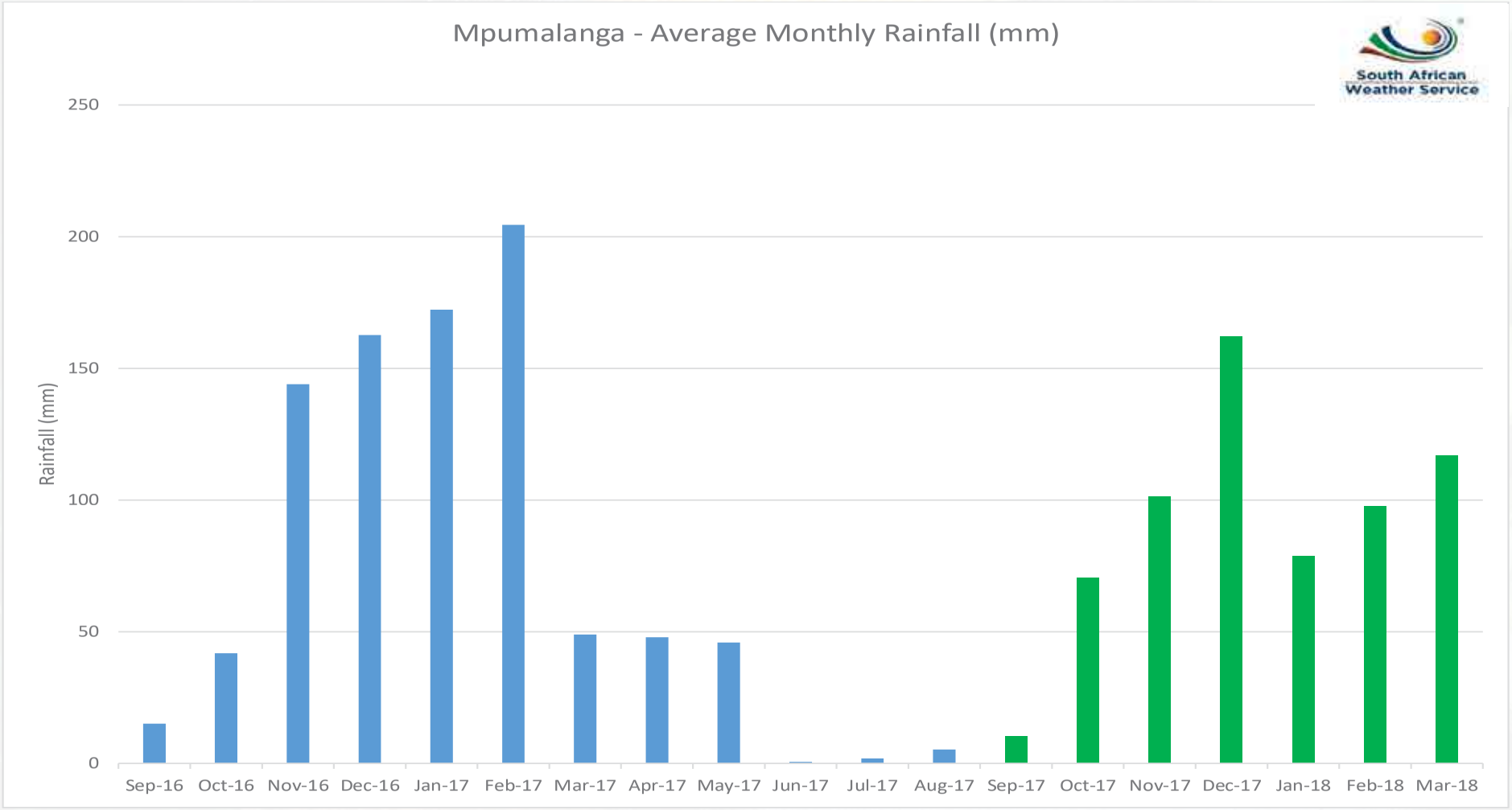
3. Contributing Institutions and Useful links

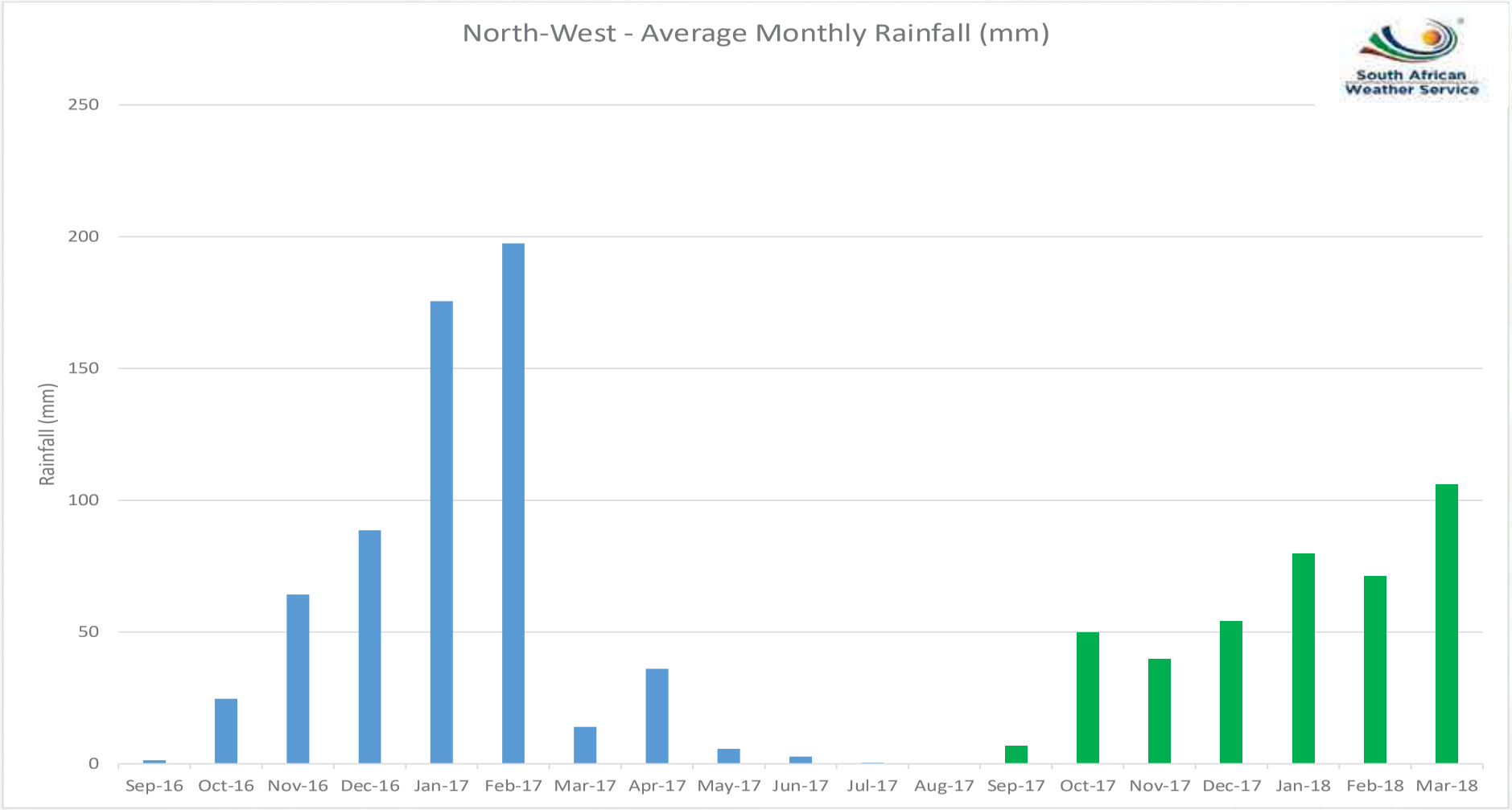
All the forecasts are a result of an objective multi-model prediction system developed at the South African Weather Service. This system consists of long-range forecasts produced by the following institutions:

http://www.weathersa.co.za/home/seasonal (Latest predictions including maps for the whole of SADC)

https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/ (ENSO predictions from various centres)


Free State - Average Monthly Rainfall (mm)
South African Weather Service
Rainfall (mm)
180
160
140
120
100
80
60
40
20
0
Sep-16
Oct-16
Nov-16
Dec-16
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18


Mpumalanga - Average Monthly Rainfall (mm)
South African Weather Service
Rainfall (mm)
250
200
150
100
50
0
Sep-16
Oct-16
Nov-16
Dec-16
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18


North-West - Average Monthly Rainfall (mm)
South African Weather Service
Rainfall (mm)
250
200
150
100
50
0
Sep-16
Oct-16
Nov-16
Dec-16
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18

Compiled by:
Elsa de Jager
Manager: National Climate Center
Date: 18 May 2018

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

FROM:	Mrs. Caroline Makobe	E-MAIL:	CarolineL@nda.agric.za
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

Deviation/Afwyking	Maximum permissible deviation/ Maksimum toelaatbare 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%

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.

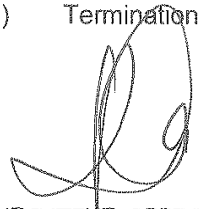
This permission is subject to the following conditions:

(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