South African Maize Crop

Quality Report 2012/2013 Season

INDEX

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SOUTH AFRICAN
COMMERCIAL MAIZE QUALITY
2012/2013

Acknowledgments
With gratitude to:

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

1. Introduction

The finalized commercial crop figure for maize for the 2012/2013 season as overseen by the National Crop Estimates Liaison Committee (CELC) is 11 690 000 tons. The commercial maize crop decreased by 3.6% from the 2011/2012 to the 2012/2013 season. The major maize-producing province was the Free State, followed by Mpumalanga and North West. White maize's contribution to the total production was only 5 545 000 tons (47%), which is 1.359 million tons or almost 20% less than the previous season.

One thousand composite samples, proportionally representing white and yellow maize of each production region, were analysed for quality. The samples consisted of 508 white and 492 yellow maize samples.

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

Please refer to the methodologies followed on pages 67-71.

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

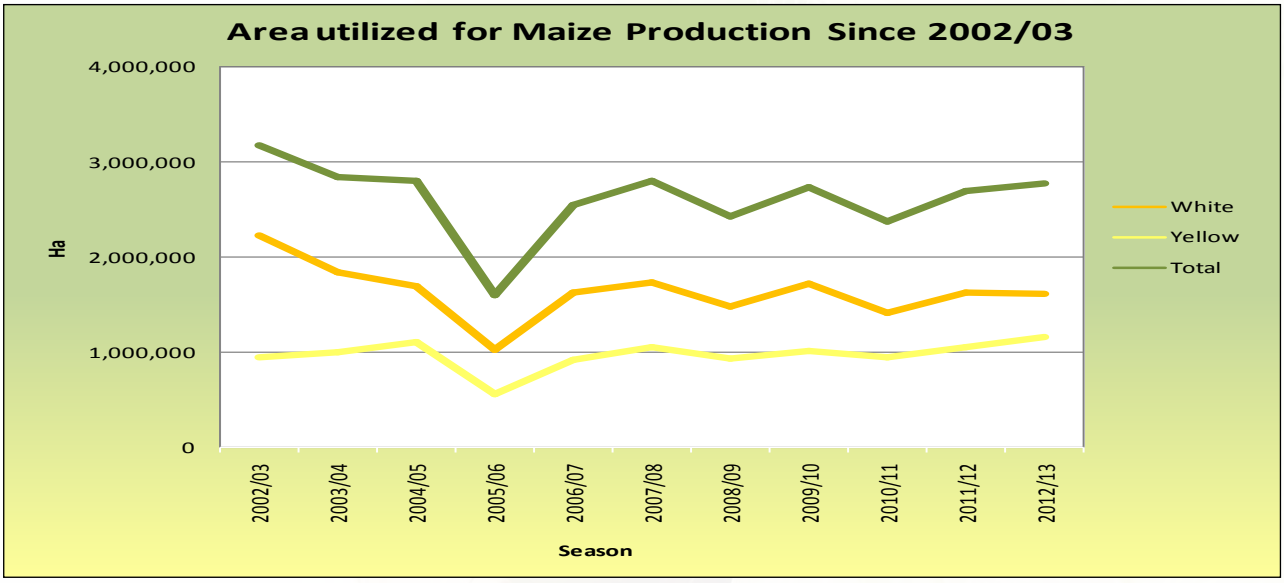
2. Production, Supply and Demand

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

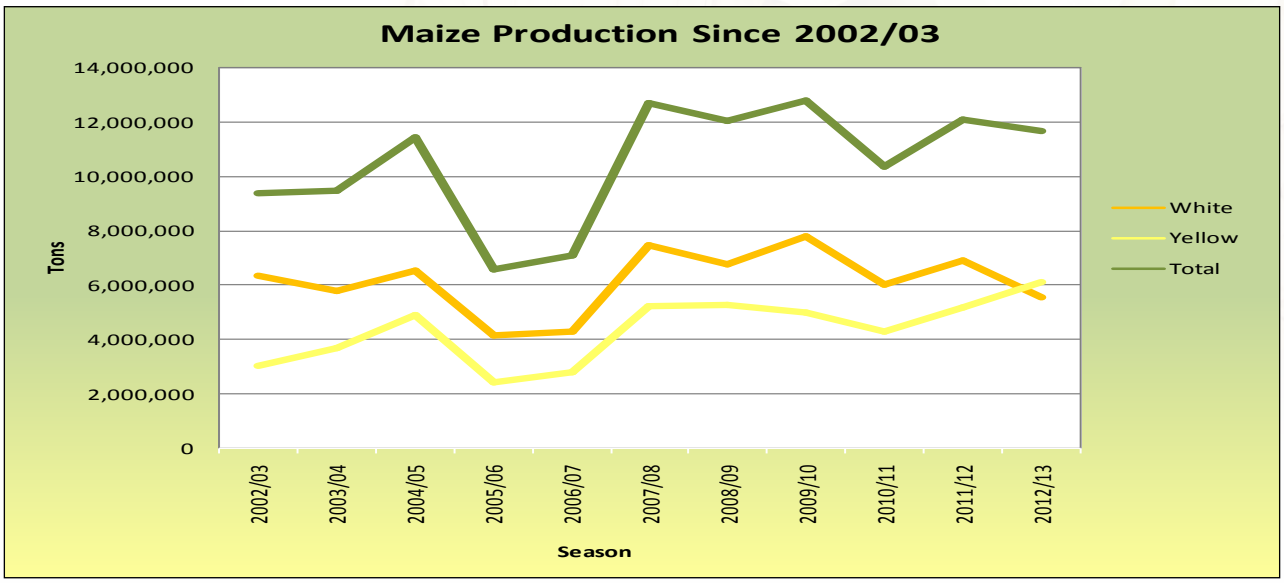
The final maize crop figure for the 2011/2012 season was also revised mainly due to the fact that the actual deliveries of maize for the period November 2012 to February 2013 was considerably more than projected. These increased actual deliveries as released by SAGIS, plus on-farm retentions, increased the final figure from 11 830 000 tons to 12 120 656 tons.

The total area utilized for maize production in the 2012/2013 season was 2 781 200 hectares, a 3% increase compared to the previous season. White maize was planted on 1 617 200 hectares and yellow maize on 1 164 000 hectares (1 636 200 and 1 063 000 hectares respectively in the 2011/2012 season).

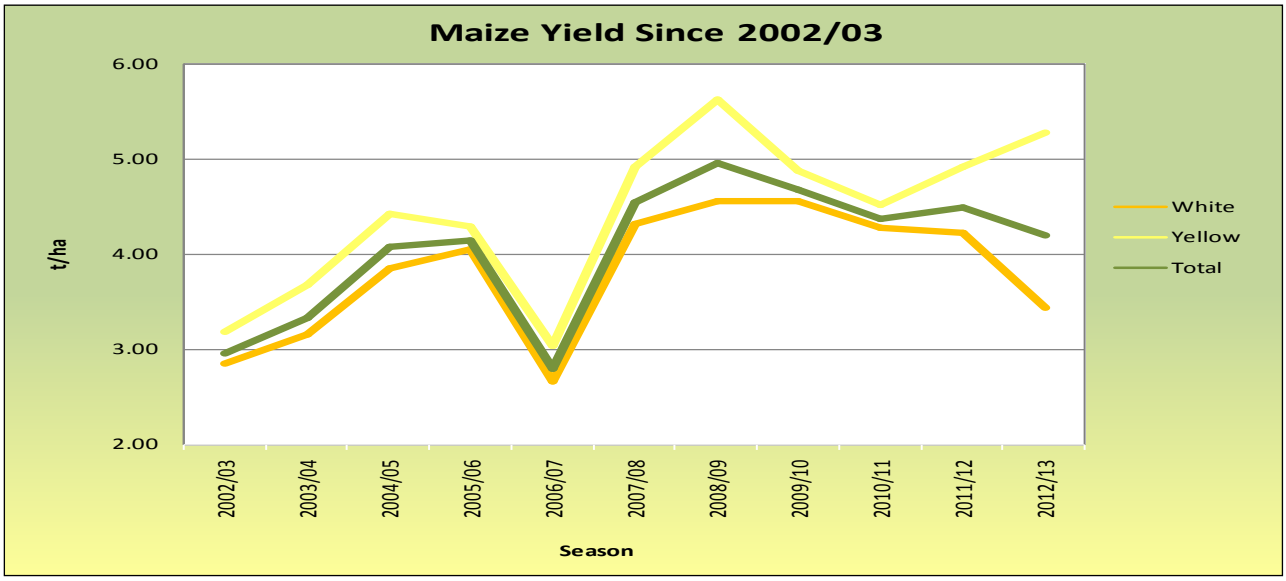
Graph 1: Total RSA area utilized for maize production from 2002/03 to 2012/13



Graph 2: Maize production in RSA from 2002/03 to 2012/13

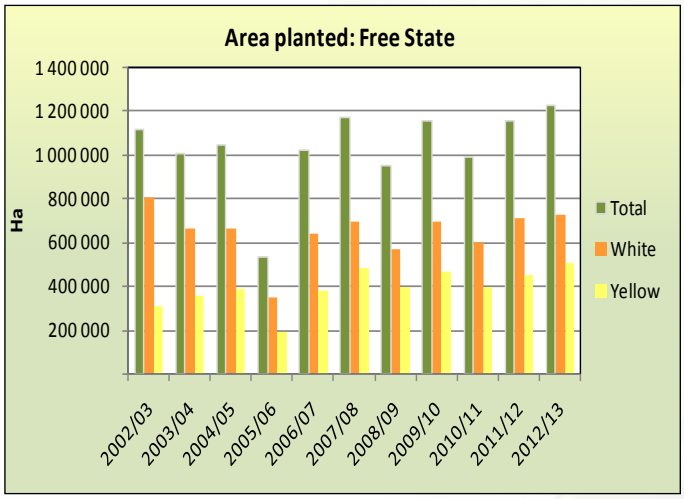


Graph 3: RSA Maize yield from 2002/03 to 2012/2013

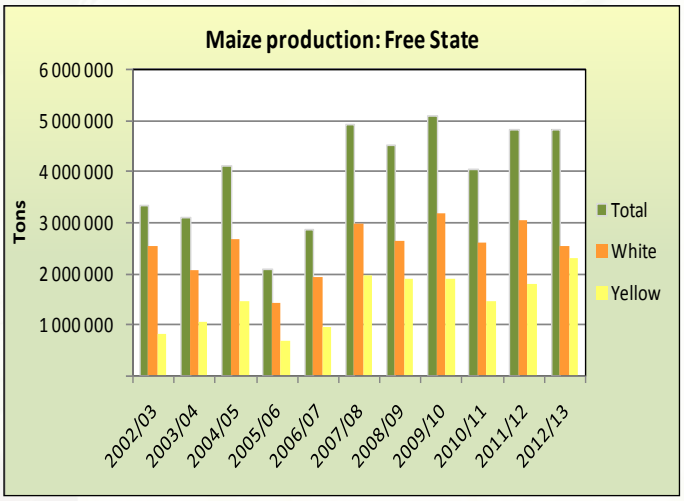


Information provided by the National Agricultural Marketing Council (NAMC) and CEC.

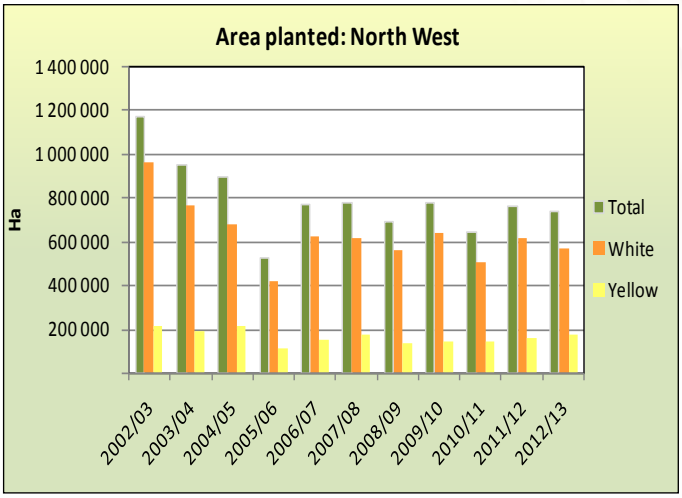
Graph 4: Area utilized for maize prodcution in the Free State since 2002/03



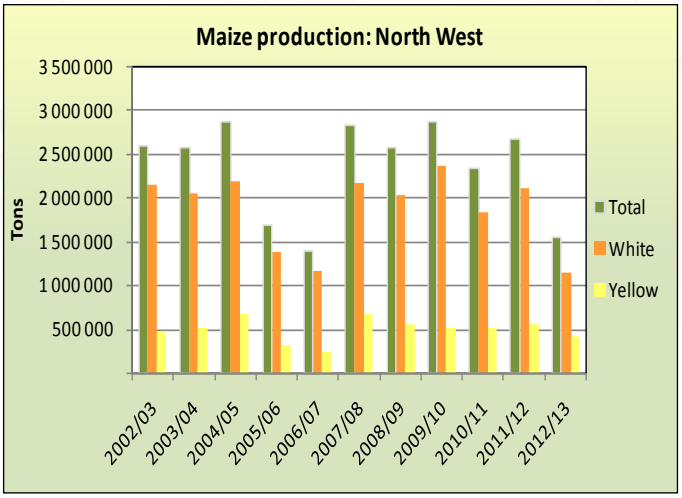
Graph 5: Maize production in the Free State since 2002/03



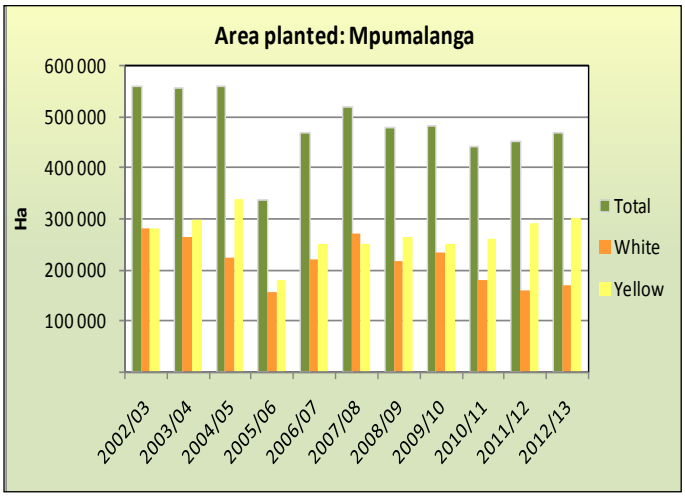
Graph 6: Area utilized for maize production in North West since 2002/03



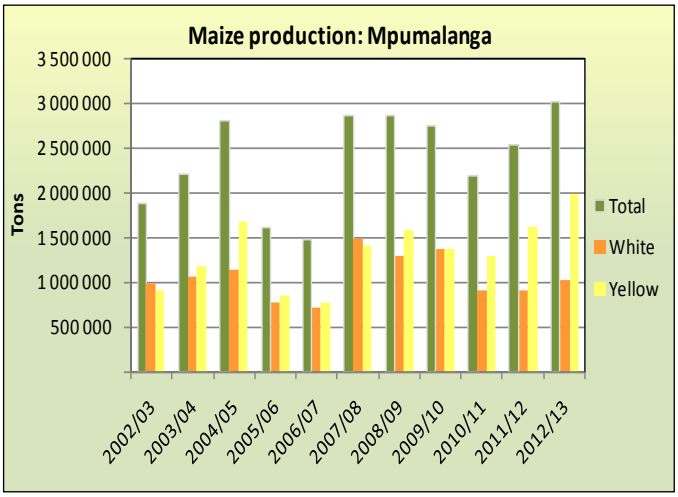
Graph 7: Maize production in North West since 2002/03



Graph 8: Area utilized for maize production in Mpumalanga since 2002/03

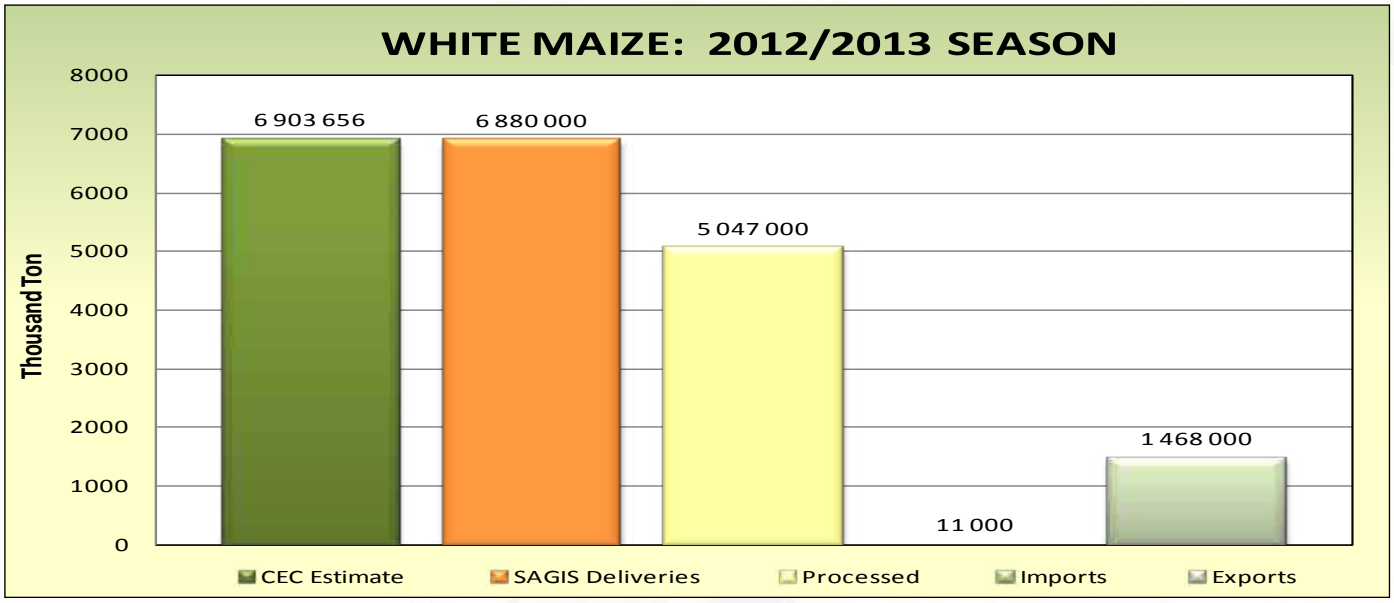


Graph 9: Maize production in Mpumalanga since 2002/03

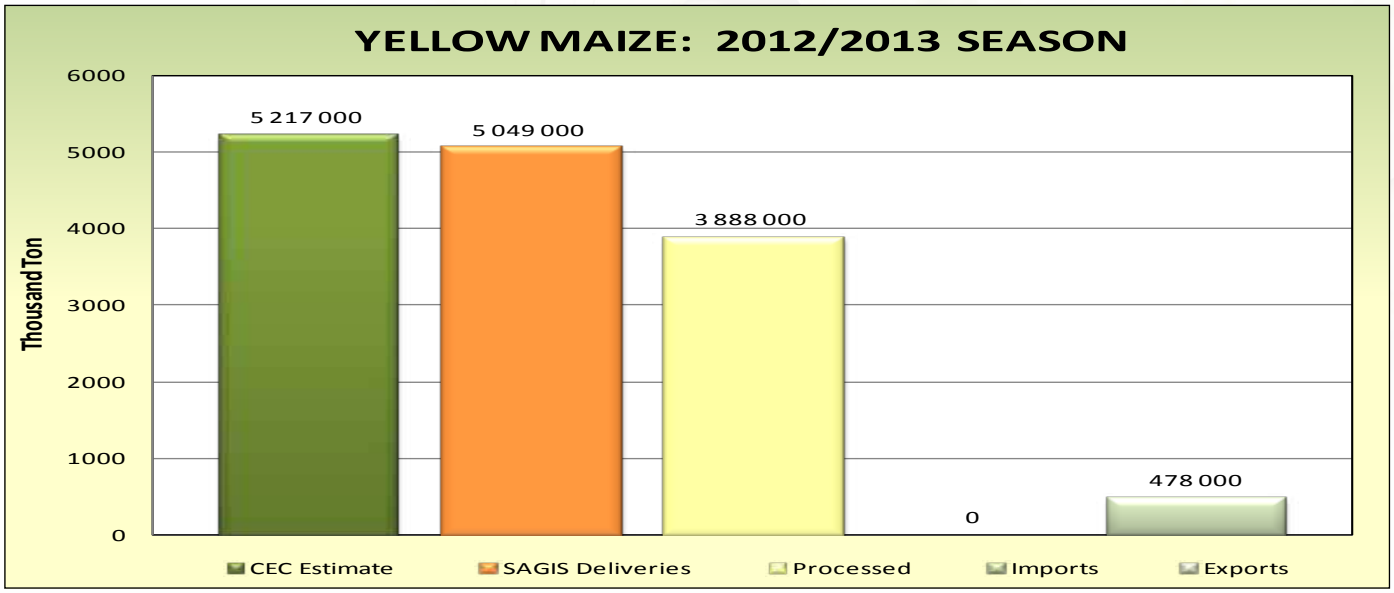


Information provided by the National Agricultural Marketing Council (NAMC) and CEC.

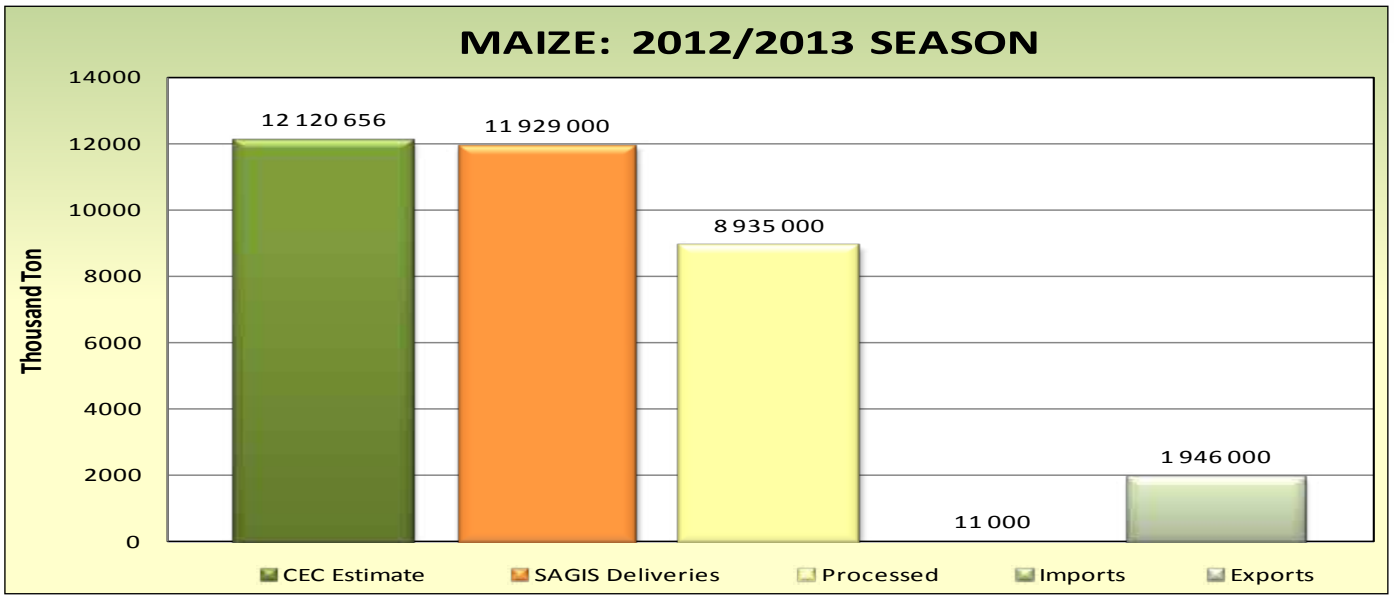
Graph 10: White maize supply and demand overview 2012/2013 season



Graph 11: Yellow maize supply and demand overview 2012/2013 season



Graph 12: Total maize supply and demand overview 2012/2013 season



Information provided by SAGIS.

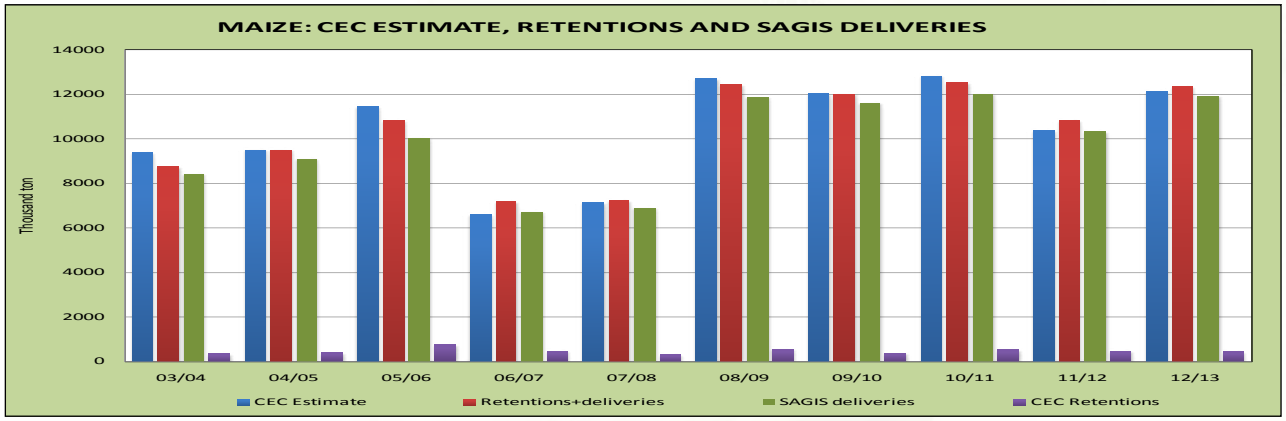
SAGIS South African Grain Information Service
Suid-Afrikaanse Graan Inligtingsdiens

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

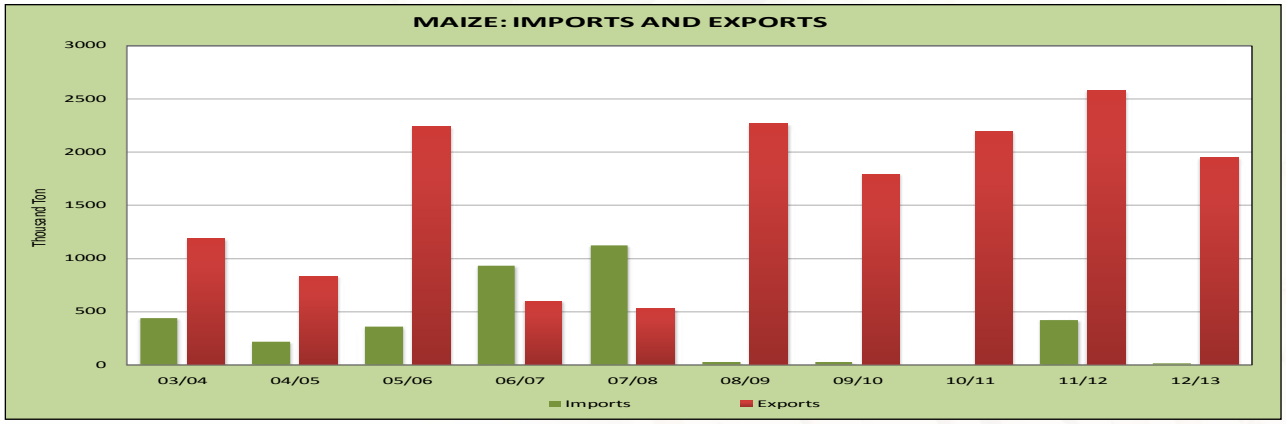
Publication date: 2014-02-24

	Marketing Season (May - Apr)																Current Season May-Jan	10 Year average
Season	**97/98**	**98/99**	**99/00**	**00/01**	**01/02**	**02/03**	**03/04**	**04/05**	**05/06**	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**	**2003/4-2012/13**
																	***	
																	9	
CEC (Crop Estimate)	8,488,000	7,082,000	6,716,000	10,141,000	7,225,000	9,732,000	9,392,000	9,482,000	11,450,000	6,618,000	7,125,000	12,700,000	12,050,000	12,815,000	10,360,000	12,120,656	11,690,000	10,411,266
CEC (Retention)		469,000	502,000	614,000	414,000	462,000	366,000	410,000	754,000	480,000	337,000	554,000	389,000	527,000	474,000	433,000	0	472,400
SUPPLY																		
Opening stock (1 May)	1,283,000	1,949,000	847,000	983,000	2,115,000	1,202,000	2,710,000	2,624,000	3,148,000	3,169,000	2,070,000	1,049,000	1,581,000	2,131,000	2,336,000	994,000	1,417,393	2,181,200
Prod deliveries	9,732,000	6,854,000	7,075,000	10,409,000	7,936,000	9,310,000	8,409,000	9,093,000	10,055,000	6,707,000	6,882,000	11,899,000	11,629,000	12,016,000	10,340,000	11,929,000	10,357,961	9,895,900
Imports	109,000	98,000	569,000	0	395,000	925,000	441,000	219,000	360,000	931,000	1,120,000	27,000	27,000	0	421,000	11,000	0	355,700
Surplus	0	17,000	0	0	0	0	40,000	0	4,000	32,000	29,000	30,000	68,000	77,000	54,000	42,000	35,207	37,600
Total Supply	**11,124,000**	**8,918,000**	**8,491,000**	**11,392,000**	**10,446,000**	**11,437,000**	**11,600,000**	**11,936,000**	**13,567,000**	**10,839,000**	**10,101,000**	**13,005,000**	**13,305,000**	**14,224,000**	**13,151,000**	**12,976,000**	**11,810,561**	**12,470,400**
DEMAND																		
Processed	6,383,000	6,341,000	6,362,000	6,852,000	7,151,000	6,983,000	7,243,000	7,283,000	7,462,000	7,660,000	8,029,000	8,613,000	8,658,000	8,857,000	8,941,000	8,935,000	7,015,581	8,168,100
-human	3,410,000	3,381,000	3,426,000	3,589,000	3,877,000	3,708,000	3,712,000	3,740,000	3,825,000	3,816,000	3,809,000	4,524,000	4,471,000	4,513,000	4,512,000	4,499,000	3,517,528	4,142,100
-animal	2,973,000	2,960,000	2,936,000	3,068,000	3,146,000	3,155,000	3,416,000	3,427,000	3,537,000	3,763,000	4,157,000	4,020,000	4,101,000	4,271,000	4,362,000	4,378,000	3,457,298	3,943,200
-gristing	n/a	n/a	n/a	195,000	128,000	120,000	115,000	116,000	100,000	81,000	63,000	69,000	86,000	73,000	67,000	58,000	40,755	82,800
-bio-fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Withdrawn by producers	211,000	0	0	500,000	325,000	301,000	299,000	255,000	315,000	241,000	217,000	273,000	291,000	267,000	142,000	138,000	126,029	243,800
Released to end-consumers	0	0	423,000	267,000	214,000	206,000	224,000	351,000	340,000	235,000	230,000	220,000	378,000	526,000	484,000	478,000	378,500	346,600
Net receipts(-)/disp(+)	0	0	0	2,000	63,000	35,000	25,000	18,000	28,000	36,000	42,000	49,000	51,000	44,000	15,000	62,000	28,193	37,000
Deficit	0	115,000	79,000	168,000	156,000	14,000	0	49,000	16,000	0	0	0	0	0	0	0	0	6,500
Exports	1,921,000	1,388,000	652,000	1,488,000	1,335,000	1,188,000	1,185,000	832,000	2,237,000	597,000	534,000	2,269,000	1,796,000	2,194,000	2,575,000	1,946,000	1,926,364	1,616,500
Total Demand	**8,515,000**	**7,844,000**	**7,516,000**	**9,277,000**	**9,244,000**	**8,727,000**	**8,976,000**	**8,788,000**	**10,398,000**	**8,769,000**	**9,052,000**	**11,424,000**	**11,174,000**	**11,888,000**	**12,157,000**	**11,559,000**	**9,474,667**	**10,418,500**
Ending Stock (30 Apr)	**2,609,000**	**1,074,000**	**975,000**	**2,115,000**	**1,202,000**	**2,710,000**	**2,624,000**	**3,148,000**	**3,169,000**	**2,070,000**	**1,049,000**	**1,581,000**	**2,131,000**	**2,336,000**	**994,000**	**1,417,000**	**2,335,894**	**2,051,900**
- processed p/month	531,900	528,400	530,200	571,000	595,900	581,900	603,600	606,900	621,800	638,300	669,100	717,800	721,500	738,100	745,100	744,583	779,509	680,678
- months' stock	4.9	2.0	1.8	3.7	2.0	4.7	4.3	5.2	5.1	3.2	1.6	2.2	3.0	3.2	1.3	1.9	3.0	3
Note: 1998/1999 and 1999/2000 Includes storage on behalf of producers																		
Note: * Figures for current season up to date**																		

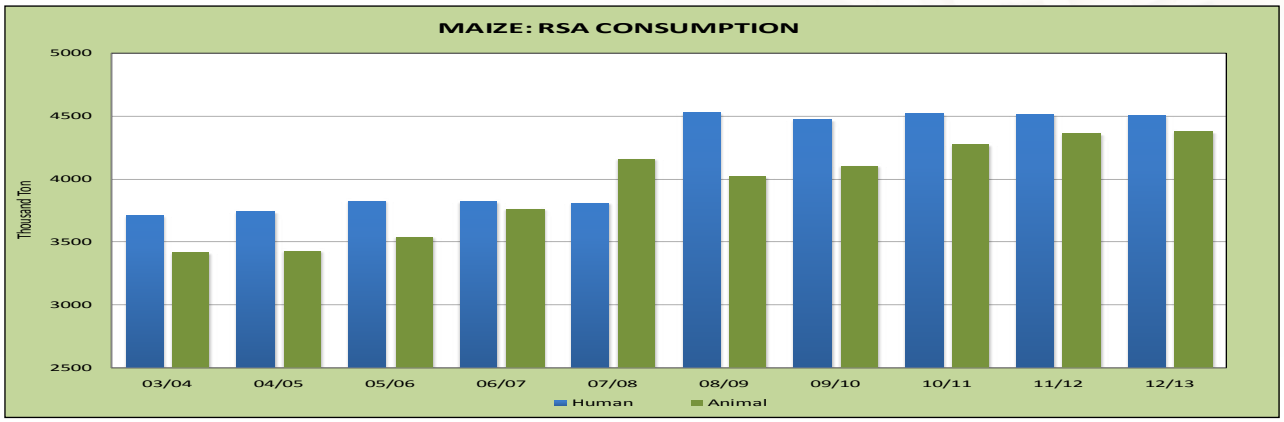
Graph 13: Maize: CEC Estimate, Retentions and SAGIS deliveries over 10 seasons



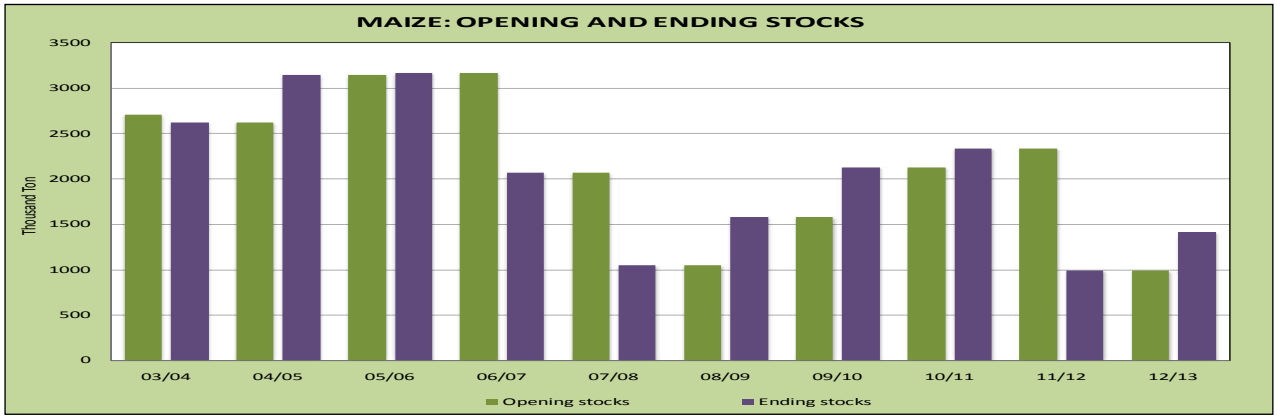
Graph 14: Maize: Imports and exports over 10 seasons



Graph 15: Maize: RSA consumption over 10 seasons



Graph 16: Maize: Opening and ending stocks over 10 seasons



Information provided by SAGIS.

SAGIS South African Grain Information Service
Suid-Afrikaanse Graan Inligtingsdiens

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

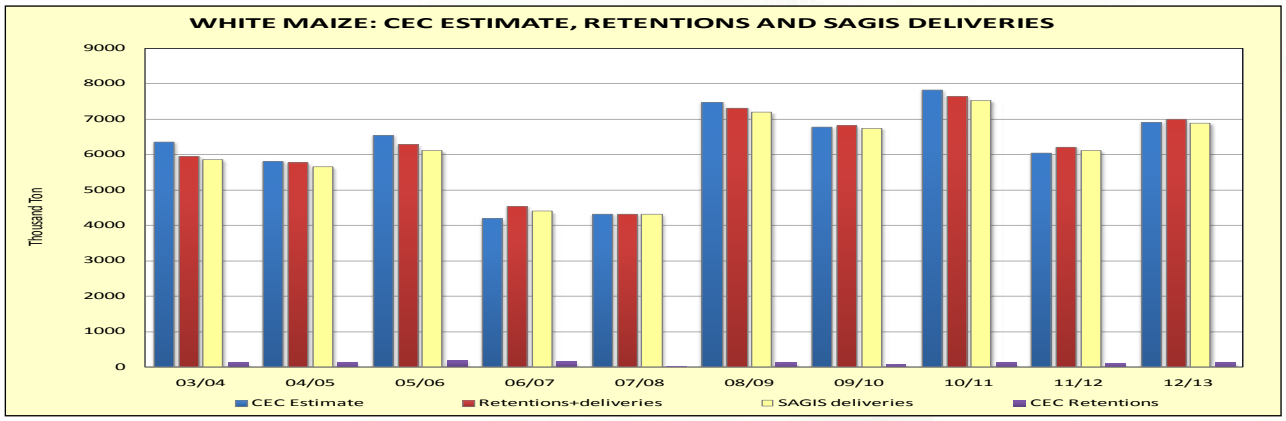
Publication date: 2014-02-24

	Season (May - Apr)																Current Season May-Jan	10 Year average
Season	**97/98**	**98/99**	**99/00**	**00/01**	**01/02**	**02/03**	**03/04**	**04/05**	**05/06**	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**	**2003/4-2012/13**
																	***	
																	9	
CEC (Crop Estimate)	4,614,000	4,383,000	4,141,000	6,155,000	4,110,000	5,538,000	6,366,000	5,805,000	6,541,000	4,187,000	4,315,000	7,480,000	6,775,000	7,830,000	6,052,000	6,903,656	5,545,000	6,225,466
CEC (Retention)		119,000	124,000	189,000	105,000	139,000	116,000	113,000	184,000	144,000	11,000	120,000	83,000	119,000	100,000	114,000	0	110,400
SUPPLY																		
Opening stock (1 May)	838,000	947,000	513,000	609,000	1,273,000	559,000	1,718,000	2,123,000	2,402,000	2,301,000	1,630,000	618,000	762,000	1,362,000	1,609,000	518,000	757,214	1,504,300
Prod deliveries	5,183,000	4,412,000	4,652,000	6,440,000	4,636,000	5,576,000	5,845,000	5,647,000	6,108,000	4,392,000	4,309,000	7,190,000	6,737,000	7,518,000	6,105,000	6,880,000	5,108,675	6,073,100
Imports	5,000	0	0	0	47,000	274,000	33,000	0	0	1,000	46,000	0	0	0	133,000	11,000	0	22,400
Surplus	0	17,000	0	0	0	0	40,000	0	4,000	20,000	19,000	25,000	48,000	45,000	18,000	22,000	12,383	24,100
Total Supply	**6,026,000**	**5,376,000**	**5,165,000**	**7,049,000**	**5,956,000**	**6,409,000**	**7,636,000**	**7,770,000**	**8,514,000**	**6,714,000**	**6,004,000**	**7,833,000**	**7,547,000**	**8,925,000**	**7,865,000**	**7,431,000**	**5,878,272**	**7,623,900**
DEMAND																		
Processed	3,584,000	3,586,000	3,687,000	4,342,000	4,202,000	3,679,000	4,212,000	4,313,000	4,186,000	4,385,000	4,751,000	4,922,000	4,555,000	5,871,000	5,374,000	5,047,000	3,631,077	4,761,600
-human	3,316,000	3,255,000	3,235,000	3,377,000	3,630,000	3,459,000	3,467,000	3,478,000	3,559,000	3,526,000	3,552,000	4,198,000	4,125,000	4,157,000	4,119,000	4,095,000	3,167,865	3,827,600
-animal	268,000	331,000	452,000	783,000	446,000	105,000	641,000	733,000	543,000	787,000	1,142,000	662,000	362,000	1,658,000	1,202,000	904,000	432,882	863,400
-gristing	n/a	n/a	n/a	182,000	126,000	115,000	104,000	102,000	84,000	72,000	57,000	62,000	68,000	56,000	53,000	48,000	30,330	70,600
-bio-fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Withdrawn by producers	87,000	0	0	349,000	164,000	144,000	144,000	107,000	101,000	112,000	107,000	111,000	81,000	108,000	46,000	36,000	26,199	95,300
Released to end-consumers	0	0	222,000	96,000	64,000	40,000	76,000	181,000	71,000	80,000	69,000	45,000	62,000	189,000	126,000	95,000	53,337	99,400
Net receipts(-)/disp(+)	0	0	0	7,000	43,000	11,000	12,000	17,000	11,000	27,000	28,000	27,000	10,000	22,000	7,000	28,000	5,027	18,900
Deficit	0	0	58,000	121,000	112,000	0	0	38,000	0	0	0	0	0	0	0	0	0	3,800
Exports	1,119,000	1,108,000	594,000	861,000	812,000	817,000	1,069,000	712,000	1,844,000	480,000	431,000	1,966,000	1,477,000	1,126,000	1,794,000	1,468,000	772,814	1,236,700
Total Demand	**4,790,000**	**4,694,000**	**4,561,000**	**5,776,000**	**5,397,000**	**4,691,000**	**5,513,000**	**5,368,000**	**6,213,000**	**5,084,000**	**5,386,000**	**7,071,000**	**6,185,000**	**7,316,000**	**7,347,000**	**6,674,000**	**4,488,454**	**6,215,700**
Ending Stock (30 Apr)	**1,236,000**	**682,000**	**604,000**	**1,273,000**	**559,000**	**1,718,000**	**2,123,000**	**2,402,000**	**2,301,000**	**1,630,000**	**618,000**	**762,000**	**1,362,000**	**1,609,000**	**518,000**	**757,000**	**1,389,818**	**1,408,200**
- processed p/month	298,700	298,800	307,300	361,800	350,200	306,600	351,000	359,400	348,800	365,400	395,900	410,200	379,600	489,300	447,800	420,583	403,453	396,798
- months' stock	4.1	2.3	2.0	3.5	1.6	5.6	6.0	6.7	6.6	4.5	1.6	1.9	3.6	3.3	1.2	1.8	3.4	4

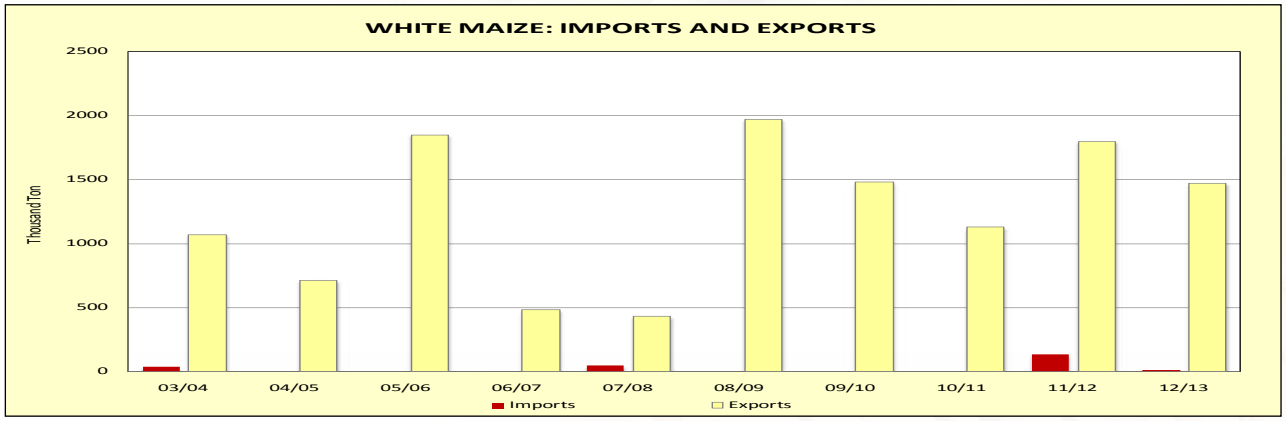
Note: Figures in red: opening stock and ending stock differs

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

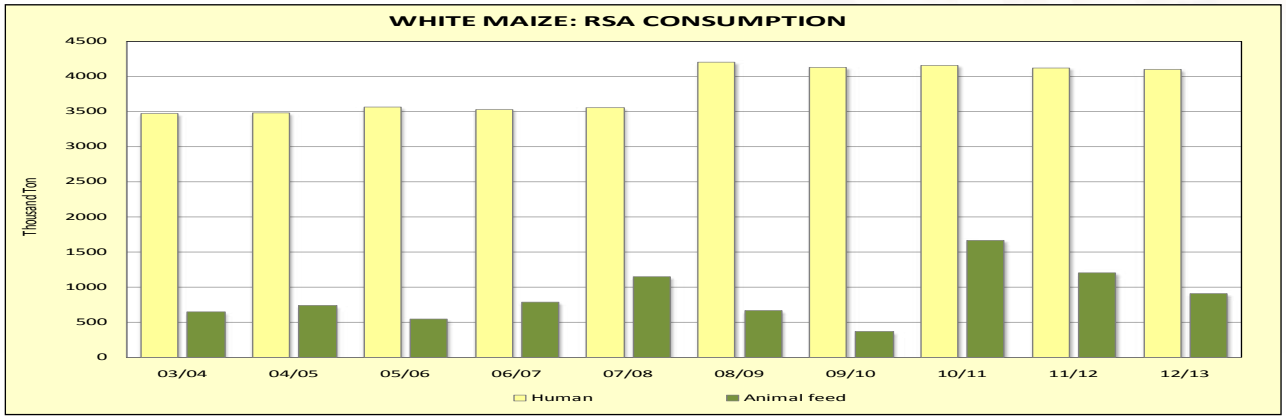
Graph 17: White Maize: CEC Estimate, Retentions and SAGIS deliveries over 10 seasons



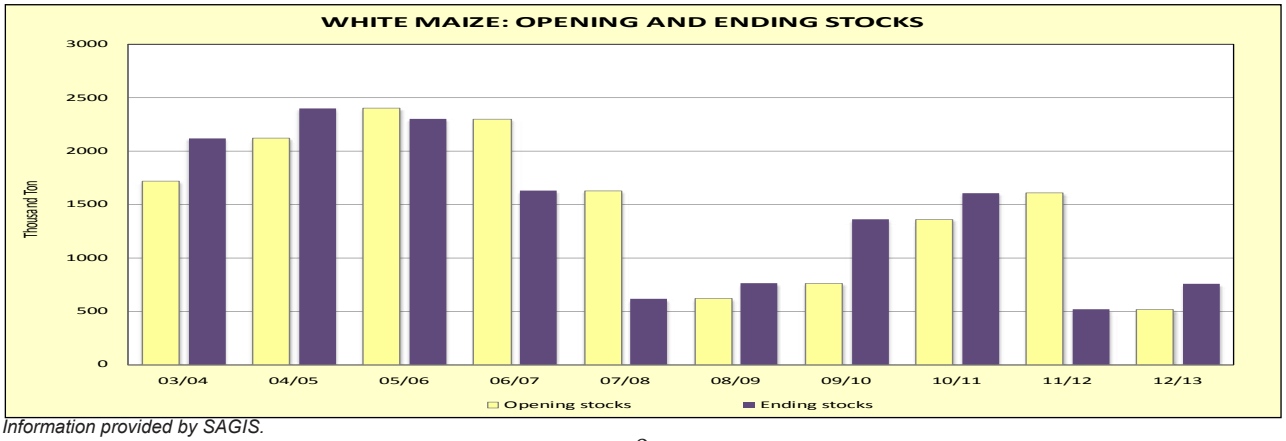
Graph 18: White Maize: Imports and exports over 10 seasons



Graph 19: White Maize: RSA consumption over 10 seasons



Graph 20: White Maize: Opening and ending stocks over 10 seasons



Information provided by SAGIS.

SAGIS South African Grain Information Service
Suid-Afrikaanse Graan Inligtingsdiens

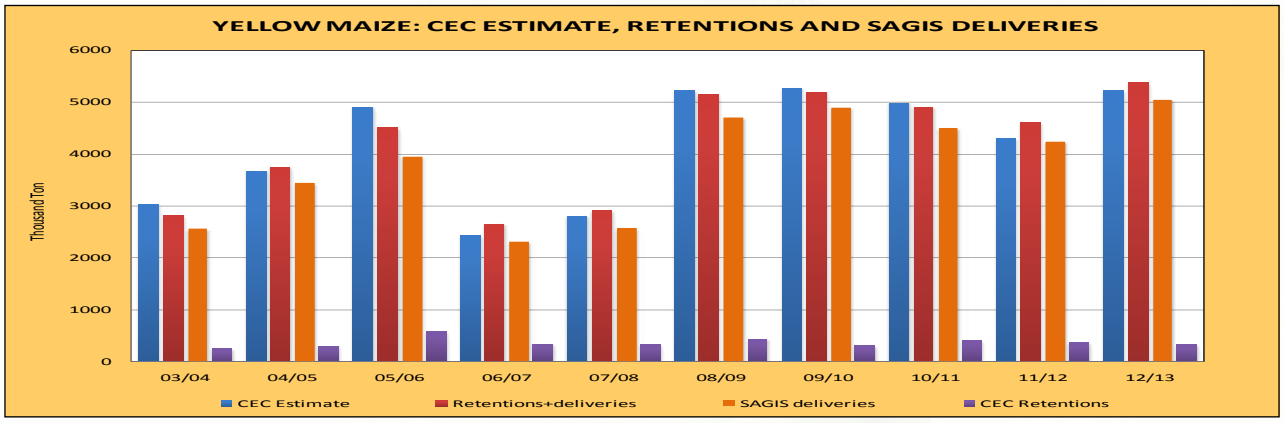
YELLOW MAIZE: SUPPLY AND DEMAND TABLE BASED ON SAGIS' INFO (TON)

Publication date: 2014-02-24

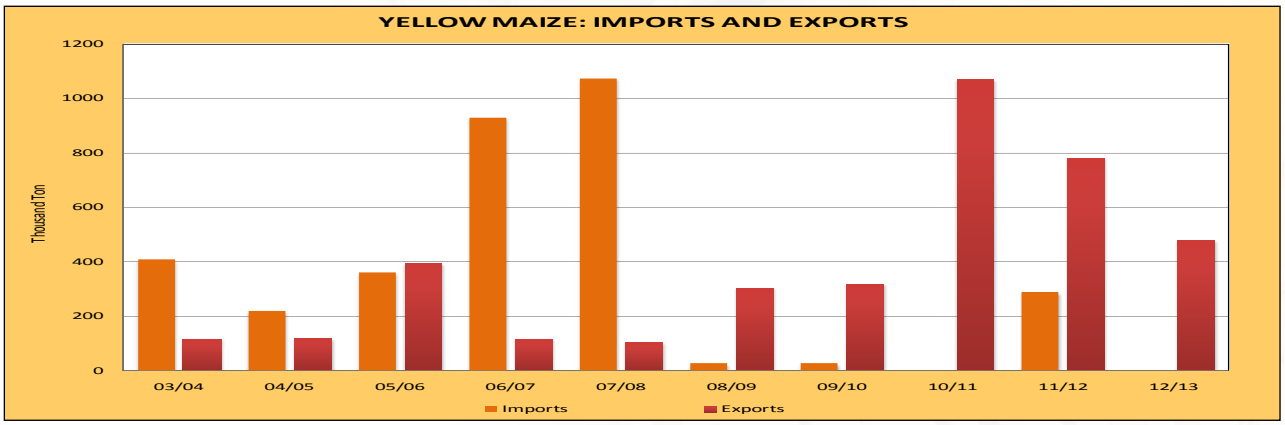
	Season (May - Apr)																Current Season May-Jan	10 Year average
Season	**97/98**	**98/99**	**99/00**	**00/01**	**01/02**	**02/03**	**03/04**	**04/05**	**05/06**	**06/07**	**07/08**	**08/09**	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**	**2002/3-2011/12**
																	***	
																	8	
CEC (Crop Estimate)	3,874,000	2,699,000	2,575,000	3,986,000	3,115,000	4,194,000	3,026,000	3,677,000	4,909,000	2,431,000	2,810,000	5,220,000	5,275,000	4,985,000	4,308,000	5,217,000	6,145,000	4,185,800
CEC (Retention)		350,000	378,000	425,000	309,000	323,000	250,000	297,000	570,000	336,000	326,000	434,000	306,000	408,000	374,000	319,000	0	362,000
SUPPLY																		
Opening stock (1 May)	445,000	1,002,000	334,000	374,000	842,000	643,000	992,000	501,000	746,000	868,000	440,000	431,000	819,000	769,000	727,000	476,000	660,179	676,900
Prod deliveries	4,549,000	2,442,000	2,423,000	3,969,000	3,300,000	3,734,000	2,564,000	3,446,000	3,947,000	2,315,000	2,573,000	4,709,000	4,892,000	4,498,000	4,235,000	5,049,000	5,249,286	3,822,800
Imports	104,000	98,000	569,000	0	348,000	651,000	408,000	219,000	360,000	930,000	1,074,000	27,000	27,000	0	288,000	0	0	333,300
Surplus	0	0	0	0	0	0	0	0	0	12,000	10,000	5,000	20,000	32,000	36,000	20,000	22,824	13,500
Total Supply	**5,098,000**	**3,542,000**	**3,326,000**	**4,343,000**	**4,490,000**	**5,028,000**	**3,964,000**	**4,166,000**	**5,053,000**	**4,125,000**	**4,097,000**	**5,172,000**	**5,758,000**	**5,299,000**	**5,286,000**	**5,545,000**	**5,932,289**	**4,846,500**
DEMAND																		
Processed	2,799,000	2,755,000	2,675,000	2,510,000	2,949,000	3,304,000	3,031,000	2,970,000	3,276,000	3,275,000	3,278,000	3,691,000	4,103,000	2,986,000	3,567,000	3,888,000	3,384,504	3,406,500
-human	94,000	126,000	191,000	212,000	247,000	249,000	245,000	262,000	266,000	290,000	257,000	326,000	346,000	356,000	393,000	404,000	349,663	314,500
-animal	2,705,000	2,629,000	2,484,000	2,285,000	2,700,000	3,050,000	2,775,000	2,694,000	2,994,000	2,976,000	3,015,000	3,358,000	3,739,000	2,613,000	3,160,000	3,474,000	3,024,416	3,079,800
-gristing	n/a	n/a	n/a	13,000	2,000	5,000	11,000	14,000	16,000	9,000	6,000	7,000	18,000	17,000	14,000	10,000	10,425	12,200
-bio-fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Withdrawn by producers	124,000	0	0	151,000	161,000	157,000	155,000	148,000	214,000	129,000	110,000	162,000	210,000	159,000	96,000	102,000	99,830	148,500
Released to end-consumers	0	0	201,000	171,000	150,000	166,000	148,000	170,000	269,000	155,000	161,000	175,000	316,000	337,000	358,000	383,000	325,163	247,200
Net receipts(-)/disp(+)	0	0	0	-5,000	20,000	24,000	13,000	1,000	17,000	9,000	14,000	22,000	41,000	22,000	8,000	34,000	23,166	18,100
Deficit	0	115,000	21,000	47,000	44,000	14,000	0	11,000	16,000	0	0	0	0	0	0	0	0	2,700
Exports	802,000	280,000	58,000	627,000	523,000	371,000	116,000	120,000	393,000	117,000	103,000	303,000	319,000	1,068,000	781,000	478,000	1,153,550	379,800
Total Demand	**3,725,000**	**3,150,000**	**2,955,000**	**3,501,000**	**3,847,000**	**4,036,000**	**3,463,000**	**3,420,000**	**4,185,000**	**3,685,000**	**3,666,000**	**4,353,000**	**4,989,000**	**4,572,000**	**4,810,000**	**4,885,000**	**4,986,213**	**4,202,800**
Ending Stock (30 Apr)	**1,373,000**	**392,000**	**371,000**	**842,000**	**643,000**	**992,000**	**501,000**	**746,000**	**868,000**	**440,000**	**431,000**	**819,000**	**769,000**	**727,000**	**476,000**	**660,000**	**946,076**	**643,700**
- processed p/month	233,300	229,600	222,900	209,200	245,800	275,300	252,600	247,500	273,000	272,900	273,200	307,600	341,900	248,800	297,300	324,000	376,056	283,880
- months' stock	5.9	1.7	1.7	4.0	2.6	3.6	2.0	3.0	3.2	1.6	1.6	2.7	2.2	2.9	1.6	2.0	2.5	2

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

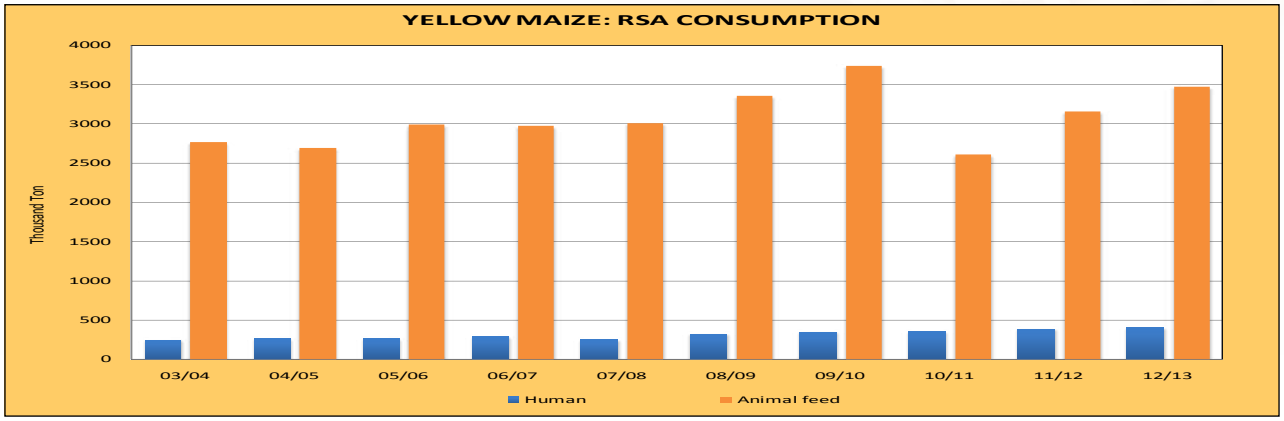
Graph 21: Yellow Maize: CEC Estimate, Retentions and SAGIS deliveries over 10 seasons



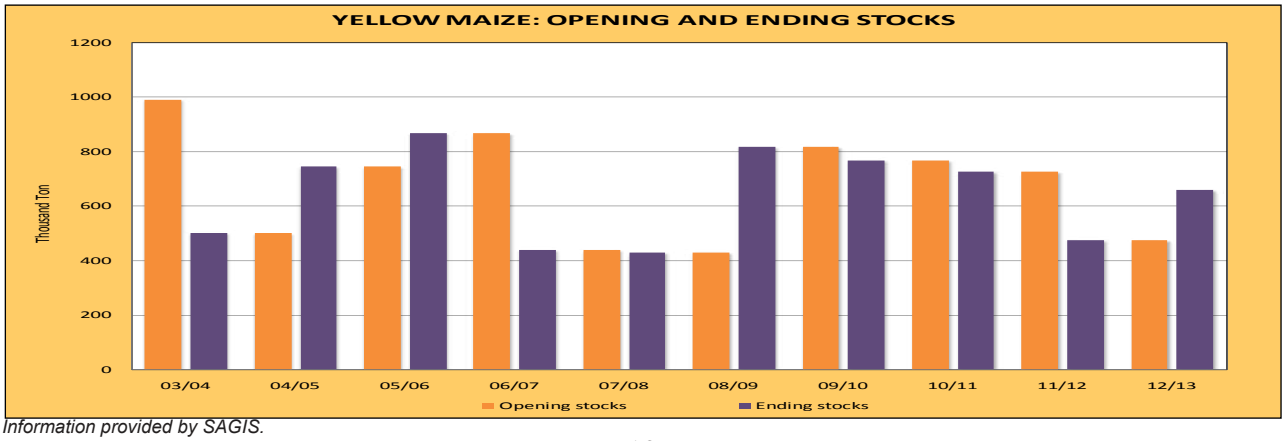
Graph 22: Yellow Maize: Imports and exports over 10 seasons



Graph 23: Yellow Maize: RSA consumption over 10 seasons



Graph 24: Yellow Maize: Opening and ending stocks over 10 seasons



Information provided by SAGIS.

MAIZE IMPORTS PER COUNTRY / MIELIE INVOERE PER LAND

2012/13 Season / Seisoen (28 Apr 2012 - 26 Apr 2013)

FROM / VANAF	WHITE MAIZE / WITMIELIES			YELLOW MAIZE / GEELMIELIES			ALL MAIZE/ALLE MIELIES		
	FOR RSA VIR RSA TON	FOR AFRICA VIR AFRIKA TON	TOTAL TOTAAL TON	FOR RSA VIR RSA TON	FOR AFRICA VIR AFRIKA TON	TOTAL TOTAAL TON	FOR RSA VIR RSA TON	FOR AFRICA VIR AFRIKA TON	TOTAL TOTAAL TON
Zambia	10 562	0	10 562	0	0	0	10 562	0	10 562
	10 562	**0**	**10 562**	**0**	**0**	**0**	**10 562**	**0**	**10 562**

MAIZE EXPORTS PER COUNTRY / MIELIE UITVOERE PER LAND

2012/13 Season / Seisoen (28 Apr 2012 - 26 Apr 2013)

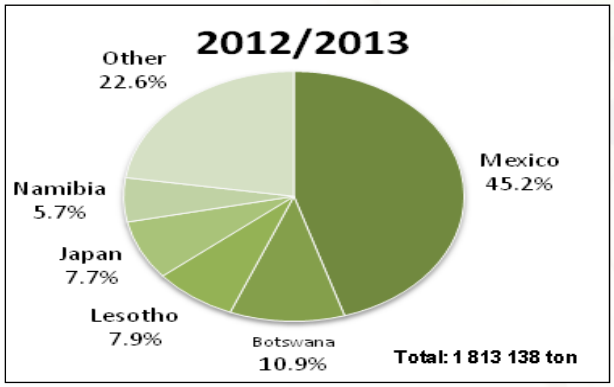
TO / NA	WHITE MAIZE / WITMIELIES			YELLOW MAIZE / GEELMIELIES			ALL MAIZE/ALLE MIELIES		
	TO AFRICA NA AFRIKA TON	TO OVERSEAS NA OORSEE TON	TOTAL TOTAAL TON	TO AFRICA NA AFRIKA TON	TO OVERSEAS NA OORSEE TON	TOTAL TOTAAL TON	TO AFRICA NA AFRIKA TON	TO OVERSEAS NA OORSEE TON	TOTAL TOTAAL TON
Angola	0	0	**0**	800	0	**800**	800	0	**800**
Botswana	159 723	0	**159 723**	36 966	0	**36 966**	196 689	0	**196 689**
Chad	1 462	0	**1 462**	0	0	**0**	1 462	0	**1 462**
Italy	0	60 876	**60 876**	0	0	**0**	0	60 876	**60 876**
Japan	0	0	**0**	0	139 317	**139 317**	0	139 317	**139 317**
Korea	0	50 247	**50 247**	0	19 664	**19 664**	0	69 911	**69 911**
Lesotho	135 682	0	**135 682**	8 392	0	**8 392**	144 074	0	**144 074**
Mali	2 859	0	**2 859**	0	0	**0**	2 859	0	**2 859**
Mexico	0	819 965	**819 965**	0	0	**0**	0	819 965	**819 965**
Madagascar	0	0	**0**	0	3 475	**3 475**	0	3 475	**3 475**
Mozambique	64 297	0	**64 297**	17 836	0	**17 836**	82 133	0	**82 133**
Namibia	72 852	0	**72 852**	30 024	0	**30 024**	102 876	0	**102 876**
Swaziland	24 330	0	**24 330**	57 174	0	**57 174**	81 504	0	**81 504**
Taiwan	0	0	**0**	0	99 504	**99 504**	0	99 504	**99 504**
Zimbabwe	7 693	0	**7 693**	0	0	**0**	7 693	0	**7 693**
	468 898	**931 088**	**1 399 986**	**151 192**	**261 960**	**413 152**	**620 090**	**1 193 048**	**1 813 138**

3. Imported and Exported Maize

A total of 10 562 tons of white maize was imported from Zambia during the 2012/2013 season. No samples were forwarded to SAGL for quality analysis purposes.

During the season under review, 413 152 tons of yellow maize and 1 399 986 tons of white maize were exported. Please see graph 25 below for the major destinations for RSA exports of maize.

Graph 25: Major destinations for RSA maize exports during the 2012/2013 season



Information provided by SAGIS.

4. Maize Crop Quality 2012/2013 - summary of results

4.1 RSA Grading

The maize crop was of good quality, with 85% of white and 79% yellow maize, graded as maize grade one. The percentage defective kernels above and below the 6.35 mm sieve, 4.6% for white and 4.5% for yellow, were comparable and slightly lower than the previous season's 4.5% and 5.0% for white and yellow maize respectively. The percentage Diplodia infected kernels was equal to the previous season's 0.6%, while Fusarium infected kernels increased with 0.7% this season. Foreign matter and other colour maize did not pose any problems.

The average percentage total deviations of white maize decreased with 0.1% and that of yellow maize with 0.4% compared to the previous season. The average percentage total deviations on South African maize this season was at 4.9% slightly lower than the 5.1% of the 2011/2012 season.

4.2 USA Grading

Of the 1000 maize samples graded according to USA grading regulations, 79% were graded US1, 13% US2, 3% US3, 2% US4, 1% US5 while mixed and sample grade represented 2%. The main reason for downgrading the samples were the percentage total damaged kernels exceeding the maximum limit per grade.

4.3 Physical Quality factors

Hectolitre mass/Bushel weight/Test weight is applied as a grading factor in the USA grading regulations. White maize had an average hectolitre mass of 78.2 kg/hl compared to the 76.6 kg/hl of yellow maize. The hectolitre mass in total varied from 67.8 kg/hl to 82.9 kg/hl and averaged 77.4 kg/hl, slightly higher than the ten year average. Only sixteen samples reported values below the minimum requirement (56.0 lbs or 72.1 kg/hl) for USA grade 1 maize.

The 100 kernel mass averaged 29.0 g which is 1.4 g lower than the previous season and also 3.6 g lower than the ten year average.

Yellow maize kernels were on average smaller than white kernels. The breakage susceptibility of both white and yellow maize compared well with the 2011/2012 season (which was the lowest of the previous ten seasons). The % stress cracks varied from 0 – 37%, averaged 5% and compared well with previous seasons.

The milling index varied from 46.9 to 119.5 and averaged 95.1, slightly higher than the previous season. The average milling index for white maize is higher (97.0) than that of yellow maize (93.2).

4.4 Roff milling and whiteness index (WI)

The average % extraction of total meal in white maize obtained with the Roff mill averaged 79.2% (equal to the previous season) and varied from 71.8% to 84.3%.

The whiteness index averaged 25.1 for unsifted and 15.9 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 28.5 for unsifted maize meal. Sifted maize meal averaged 23.6.

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

4.5 Nutritional Values

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

In general, white maize tends to have a higher fat content than yellow maize, but a lower starch content. The protein content of white maize tend to be slightly higher than that of yellow maize.

The average fat content of the 2012/2013 crop samples was 4.0%, equal to the 2011/2012 samples and slightly higher than the weighted ten year average of 3.9%. The average protein content (9.2%) was 0.5% higher than the previous season's average as well as the ten year weighted average. The starch content this season decreased on average with 1.2% compared to the 72.8% of the previous season and is also 0.6% lower than the ten year weighted average of 72.2%.

The fat content of white maize was equal to the previous season and 0.2% higher than that of yellow maize. The protein content of white maize was equal to that of yellow maize. The starch content of both white and yellow maize is lower than the previous season by 1.2% and 1.1% respectively.

Please refer to Table 19 on page 57.

4.6 Mycotoxins

The average Fumonisin level (Sum of B_1, B_2 and B_3) on all 100 samples tested was 257 µg/kg (ppb) and ranged from 0 (not detected (ND)) to 4 395 µg/kg. This average is slightly higher than the previous season. Of the 100 samples tested, 45 samples tested positive for fumonisin levels and the average of these positive results was 571 µg/kg. The previous season, 33 samples tested positive, with an average of 551 µg/kg.

The highest Deoxynivalenol (DON) level detected was 617 µg/kg compared to the 485 µg/kg of last season. The average level of all samples tested this season was 21 µg/kg. 4 samples tested positive for DON last season compared to the 9 of this season. The average of the positive results decreased from 262 µg/kg in 2011/2012 to 225 µg/kg in 2012/2013.

Only one sample tested positive for 15-acetyl-deoxynivalenol (15-ADON) residues, with a level of 82 µg/kg. The 15-ADON residues were detected on the sample that also contained the highest DON level, as would be expected.

Only two samples tested positive for Zearalenone, the lowest value being 20 µg/kg and the highest 41 µg/kg, averaging 31 µg/kg. The previous season, 2 samples tested positive as well, with the average of the positive results being 249 µg/kg.

HT-2 Toxin and T-2 Toxin residues were detected on only one sample, the levels were 72 and 232 µg/kg respectively.

No Aflatoxin or Ochratoxin A were detected in the samples.

Mycotoxin levels lower than the limit of quantitation (< LOQ) as well as the limit of detection (< LOD) were seen as having tested negative for calculation purposes. Please see mycotoxin results in Table 21 on pages 60 - 63.

4.7 Genetic Modification (GM)

The SAGL screened 100 (10%) 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%. 97% 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%. 73% 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%. 95% of the samples tested positive for CP4 EPSPS with values larger than 0.25% (LOQ).

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

Please see GM results in Table 20 on page 59 as well as page 71 for a summary of the Events and Trade names/Brands represented by these three traits.

Table 1: SOUTH AFRICAN MAIZE CROP QUALITY 2012/2013 (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, %	2.2	4.8	6.8	3.5	1.7	2.8	4.3	2.0	2.3
Defective kernels below 6.35 mm sieve, %	1.8	3.3	3.6	2.7	1.9	4.4	10.1	3.7	2.3
Total defective kernels, %	3.9	8.0	10.5	6.2	3.6	7.2	14.4	5.7	4.6
Other colour maize kernels, %	0.2	0.8	0.8	0.6	0.1	0.6	0.2	1.6	0.3
Foreign matter, %	0.0	0.1	0.4	1.0	0.0	0.1	0.1	0.9	0.1
Combined deviation, %	4.1	8.9	11.6	7.9	3.8	7.9	14.8	8.2	4.9
Pinked maize kernels, %	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Physical Factors									
Hectolitre mass, kg/hl	78.4	77.5	77.5	76.9	77.0	75.6	72.1	74.9	77.4
100 Kernel mass, g	29.8	29.0	26.7	29.3	29.5	25.0	21.5	25.5	29.0
Stress cracks, %	4	6	4	4	5	5	5	6	5
Milling Index	97.0	97.0	98.7	95.9	93.5	94.0	79.7	93.1	95.1
Kernel Size									
% on top 10 mm	15.2	14.8	13.6	15.2	10.9	5.7	3.6	8.1	12.5
% on top 8 mm	65.6	61.2	61.2	68.0	63.7	55.8	39.8	56.8	63.4
% through 8 mm	19.3	24.0	25.2	16.8	25.4	38.6	56.6	35.0	24.2
Breakage susceptibility									
% Below 6.35 mm sieve	1.0	1.6	1.3	1.1	1.6	2.1	2.7	1.6	1.4
% Below 4.75 mm sieve	0.7	1.0	0.7	0.8	1.1	1.2	1.3	1.0	0.9
Nutritional Values									
Protein, %	9.1	9.3	9.4	9.5	9.1	9.6	10.0	9.9	9.2
Fat, % (db)	4.1	4.1	3.9	4.4	3.9	3.8	3.6	3.9	4.0
Starch, % (db)	71.4	71.5	71.6	71.1	71.8	71.9	72.3	71.8	71.6
Number of samples	***431***	***60***	***13***	***4***	***387***	***80***	***12***	***13***	***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]
Total Fumonisin, µg/kg (ppb) [max. value]	241 [1600]	454	0 [0]	0 [0]	163 [3017]	848 [4395]	-	128 [256]	257 [4395]
Deoxynivalenol, µg/kg (ppb) [max. value]	18 [241]	88 [617]	241 [241]	0 [0]	10 [184]	0 [<100]	-	<100 [<100]	21 [617]
15-ADON, µg/kg (ppb) [max. value]	0 [<50]	12 [82]	<50 [<50]	0 [0]	0 [0]	0 [0]	-	0 [0]	1 [82]
Ochratoxin A, µg/kg (ppb) [max. value]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	-	0 [0]	0 [0]
Zearalenone, µg/kg (ppb) [max. value]	0 [20]	6 [41]	0 [0]	0 [0]	0 [0]	0 [<20]	-	0 [0]	1 [41]
HT-2 Toxin, µg/kg (ppb) [max.value]	0 [0]	0 [0]	0 [0]	72 [72]	0 [0]	0 [0]	-	0 [0]	1 [72]
T - 2 Toxin, µg/kg (ppb) [max. value]	0 [0]	0 [0]	0 [0]	232 [232]	0 [0]	0 [0]	-	0 [0]	2 [232]
Number of samples	***47***	***7***	***1***	***1***	***36***	***6***	***0***	***2***	***100***
GMO									
Cry1Ab, % Samples positive (>LOQ of 0.4%)	98	100	100	100	94	100	100	-	
Cry2Ab, % Samples positive (>LOQ of 0.5%)	74	43	100	0	78	83	50	-	
CP4 EPSPS, % Samples positive (>LOQ of 0.25%)	94	100	100	100	94	100	100	-	
Number of samples	***47***	***7***	***1***	***1***	***36***	***6***	***2***	***-***	***100***

Note: Non detective mycotoxin results are reported as 0, see LOQ on Table 21 page 60.

5. Production regions

The RSA is divided into 36 grain production regions. Regions 1 to 9 are winter rainfall areas (Western Cape), as well as the Eastern Cape and Karoo where very little commercial maize is being produced.

Region 10 is Griqualand West and region 11 Vaalharts. Region 34 falls within Gauteng, region 35 within the Limpopo Province and region 36 within KwaZulu-Natal.

The main production regions are:
a) Regions 21 to 28 which are all within the Free State,
b) Regions 29 to 33 in Mpumalanga,
c) Regions 12 to 20 in the North West province.

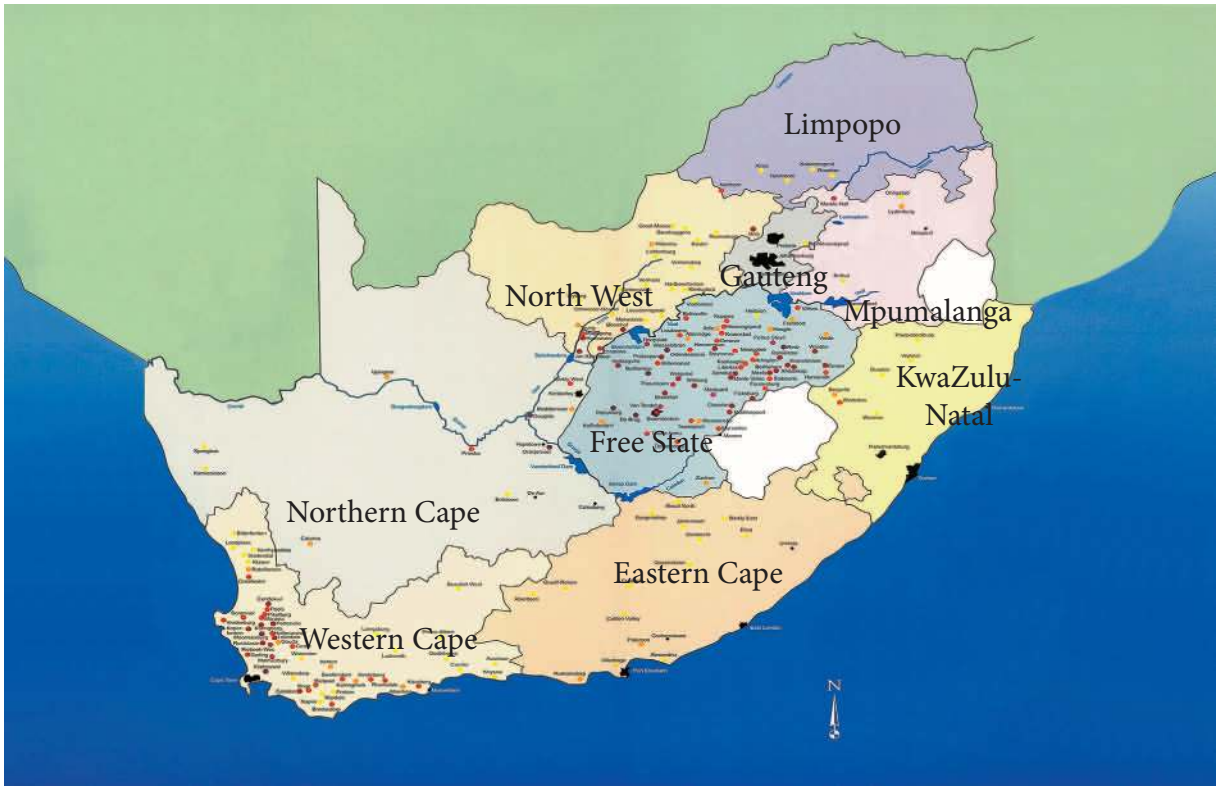
The contribution of the three main production areas was as follows:
a) The Free State contributed 41% of which 52% was white maize and 48% yellow maize.
b) Mpumalanga contributed 26%. Yellow maize contributed 66% compared to the 34% of white maize.
c) North West contributed 13% of which 74% was white maize and 26% yellow maize.

The three main production areas contributed 80% of the total maize production in the RSA.

The average yield in the Free State was 3.91 t/ha, compared to the 6.41 t/ha in Mpumalanga and 2.10 t/ha in the North West province. The average RSA yield was 4.20 t/ha.

See chart below for the different provinces and the list of Grain Production regions, Grain Handlers and silos (pages 16 - 19).

South African Provinces



Grain Production Regions

Grain Handlers with specific depots (silos/bunkers/bags) are given with each region.

Region 10: Griqualand West Region

GWK	Douglas	*GWK*	Prieska
GWK	Rietrivier	*GWK*	Marydale
GWK	Modderrivier	*OVK*	Oranjerivierstasie
OVK	Havenga Brug		

Region 11: Vaalharts Region

Senwes	Hartswater	*Senwes*	Jan Kemp
Senwes	Magogong	*GWK*	Barkly-Wes

Region 12: North West Western Region

NWK	Blaauwbank	*NWK*	Buhrmannsdrif
NWK	Kameel	*NWK*	Madibogo
NWK	Mafikeng	*NWK*	Mareetsane
Suidwes Landbou	Kameel	*Suidwes Landbou*	Vryburg

Region 13: North West Central Region (Sannieshof)

NWK	Biesiesvlei	*NWK*	Bossies
NWK	Gerdau	*NWK*	Oppaslaagte
NWK	Sannieshof		

Region 14: North West Southern Region

NWK	Barberspan	*NWK*	Delareyville
NWK	Excelsior	*NWK*	Geysdorp
NWK	Migdol	*NWK*	Nooitgedacht
NWK	Taaibospan	*Suidwes Landbou*	Amalia
Suidwes Landbou	Hallat's Hope	*Suidwes Landbou*	Migdol
Suidwes Landbou	Schweizer-Reneke		

Region 15: North West South Eastern Region

Suidwes Landbou	Bloemhof	*Suidwes Landbou*	Christiana
Suidwes Landbou	Hertzogville	*Suidwes Landbou*	Hoopstad
Suidwes Landbou	Kingswood		

Region 16: North West Central Eastern Region

Senwes	Regina	*Senwes*	Klerksdorp
Suidwes Landbou	Bamboesspruit	*Suidwes Landbou*	Leeudoringstad
Suidwes Landbou	Makwassie	*Suidwes Landbou*	Strydpoort
Suidwes Landbou	Wolmaranstad		

Region 17: North West Central Northern Region (Ottosdal)

NWK	Boschpoort	*NWK*	Rostrataville
NWK	Ottosdal	*NWK*	Kleinharts

Grain Production Regions (continue)

Grain Handlers with specific depots (silos/bunkers/bags) are given with each region.

Region 17: North West Central Northern Region (Ottosdal) (continue)

NWK	Vermaas	*Senwes*	Hartbeesfontein
Senwes	Melliodora	*Senwes*	Werda

Region 18: North West Central Region (Ventersdorp)

NWK	Bodenstein	*NWK*	Coligny
Senwes	Buckingham	*Senwes*	Makokskraal
Senwes	Ventersdorp	*Senwes*	Enselspruit
Senwes	Potchefstroom		

Region 19: North West Central Region (Lichtenburg)

NWK	Grootpan	*NWK*	Halfpad
NWK	Hibernia	*NWK*	Lichtenburg
NWK	Lottiehalte	*NWK*	Lusthof

Region 20: North West Eastern Region

Prodsure	Battery	*Prodsure*	Brits
Prodsure	Rustenburg	*Prodsure*	Pretoria-West
NWK	Boons	*NWK*	Koster
NWK	Derby	*NWK*	Syferbult
NWK	Swartruggens	*NWK*	Groot Marico

Region 21: Free State North Western Region (Viljoenskroon)

Senwes	Attie	*Senwes*	Groenebloem
Senwes	Heuningspruit	*Senwes*	Koppies
Senwes	Rooiwal	*Senwes*	Vierfontein
Senwes	Viljoenskroon	*Senwes*	Vredefort
Senwes	Weiveld		

Region 22: Free State North Western Region (Bothaville)

Senwes	Allanrigde	*Senwes*	Bothaville
Senwes	Mirage	*Senwes*	Odendaalsrus
Senwes	Schoonspruit	*Senwes*	Schuttesdraai

Region 23: Free state North Western Region (Bultfontein)

Senwes	Bultfontein	*Senwes*	Losdoorns
Senwes	Protespan	*Senwes*	Tierfontein
Senwes	Wesselsbron	*Senwes*	Willemsrust

Region 24: Free State Central Region

Senwes	Bloemfontein	*Senwes*	Brandfort
Senwes	De Brug	*Senwes*	Geneva
Senwes	Hennenman	*Senwes*	Koffiefontein

Grain Production Regions (continue)

Grain Handlers with specific depots (silos/bunkers/bags) are given with each region.

Region 24: Free State Central Region (continue)

Senwes	Kroonstad	*Senwes*	Petrusburg
Senwes	Theunissen	*Senwes*	Van Tonder
Senwes	Welgeleë	*Senwes*	Winburg
Senwes	Bainsvlei		

Region 25: Free State South Western Region

OVK	Marseilles	*OVK*	Modderpoort
OVK	Tweespruit	*OVK*	Westminster
OVK	Zastron	*OVK*	Clocolan
OVK	Ficksburg	*OVK*	Fouriesburg
OVK	Havenga Brug	*Afgri*	Bethlehem
Afgri	Slabberts	*Senwes*	De Wetsdorp

Region 26: Free State South Eastern Region

Senwes	Arlington	*Senwes*	Steynsrus
Afgri	Libertas	*Afgri*	Marquard
Afgri	Monte Video	*Afgri*	Senekal
Afgri	Kaallaagte	*Afgri*	Meets

Region 27: Free State Northern Region

Senwes	Gottenburg	*Senwes*	Heilbron
Senwes	Hoogte	*Senwes*	Mooigeleë
Senwes	Wolwehoek	*VKB*	Petrus Steyn

Region 28: Free State Eastern Region

Afgri	Afrikaskop	*Afgri*	Eeram
Afgri	Harrismith	*Afgri*	Kransfontein
VKB	Cornelia	*VKB*	Daniëlsrus
VKB	Frankfort	*VKB*	Jim Fouché
VKB	Reitz	*VKB*	Tweeling
VKB	Villiers	*VKB*	Warden
VKB	Windfield	*VKB*	Ascent
VKB	Robbertdrif	*VKB*	Vrede
VKB	Memel		

Region 29: Mpumalanga Southern Region

Afgri	Balfour	*Afgri*	Greylingstad
Afgri	Grootvlei	*Afgri*	Harvard
Afgri	Holmdene	*Afgri*	Leeuspruit
Afgri	Platrand	*Afgri*	Standerton
Afgri	Val		

Region 30: Mpumalanga Eastern Region

Afgri	Amersfoort	*Afgri*	Badplaas
Afgri	Carolina	*Afgri*	Davel

Grain Production Regions (continue)

Grain Handlers with specific depots (silos/bunkers/bags) are given with each region.

Region 30: Mpumalanga Eastern Region (continue)

Afgri	Ermelo	*Afgri*	Estancia
Afgri	Lothair	*Afgri*	Maizefield
Afgri	Morgenzon	*Afgri*	Overvaal
Afgri	Eerstelingsfontein	*Afgri*	Vaalkrantz
TWK	Mkondo	*TWK*	Panbult

Region 31: Mpumalanga Central Region

Afgri	Bethal	*Afgri*	Devon
Afgri	Kinross	*Afgri*	Leandra
Afgri	Trichardt	*Afgri*	Palmietfontein
Afgri	Vogelvallei		

Region 32: Mpumalanga Western Region

Afgri	Argent	*Afgri*	Dryden
Afgri	Endicott	*Afgri*	Eloff
Afgri	Hawerklip	*Afgri*	Kendal
Afgri	Ogies		

Region 33: Mpumalanga Northern Region

Afgri	Driefontein	*Afgri*	Lydenburg
Afgri	Marble Hall	*Afgri*	Middelburg
Afgri	Stoffberg	*Afgri*	Pan
Afgri	Arnot	*Afgri*	Wonderfontein

Region 34: Gauteng Region

Afgri	Bloekomspruit	*Afgri*	Glenroy
Afgri	Goeie Hoek	*Afgri*	Kaalfontein
Afgri	Nigel	*Afgri*	Bronkhorstspruit
Senwes	Middelvlei	*Senwes*	Oberholzer
Senwes	Raathsvlei		Randfontein

Region 35: Limpopo Region

Prodsure	Northam	*NTK*	Alma
NTK	Lehau	*NTK*	Mookgophong (Naboomspruit)
NTK	Modimolle (Nylstroom)	*NTK*	Pienaarsrivier
NTK	Polokwane (Pietersburg)	*NTK*	Mokopane (Potgietersrus)
NTK	Roedtan	*NTK*	Settlers
NTK	Tzaneen	*NTK*	Nutfield
NTK	Bela-Bela (Warmbad)	*NTK*	Vaalwater
NTK	Crecy	*NTK*	Immerpan

Region 36: KwaZulu-Natal Region

Afgri	Bergville	*Afgri*	Bloedrivier
Afgri	Dannhauser	*Afgri*	Dundee
Afgri	Mizpah	*Afgri*	Paulpietersburg
Afgri	Vryheid	*Afgri*	Winterton

5.1 Main production regions – summary of results

The quality of the maize produced in the three main maize production regions (North West, Mpumalanga and Free State) compared quite well overall. The figures given below are all weighted averages.

The Free State and North West had the highest hectolitre mass of 77.6 kg/hl, followed by Mpumalanga with 77.0 kg/hl. Mpumalanga had the highest 100 kernel mass of 31.1 g and North West the lowest of 25.7 g. The Free State averaged 27.8 g.

The percentage stress cracks observed in the three regions compared very well, with the Free State and North West averaging 4% and Mpumalanga 5%. North West and Mpumalanga had the same percentage of maize passing through the 6.35 mm sieve with the breakage susceptibility test namely 1.4%, which was only 0.1% higher than that of the Free State.

Mpumalanga had the highest percentage of kernels above the 10 mm sieve (16.1%), North West had the smallest kernels (8.2%). Mpumalanga had the lowest percentage total defective kernels of 3.3%, followed by the Free State with 4.4% and North West with 5.7%. This trend was also seen in the previous two seasons.

The average milling index in Mpumalanga was 90.8, 96.4 in the Free State and 101.4 in North West. Mpumalanga also had the lowest percentage total extraction on the Roff laboratory mill, namely 78.3%. The Free State and North West compared well with regards to extraction rates with 79.8% and 79.7% respectively.

The meal obtained from the white maize in North West gave an average whiteness index of 24.1 (unsifted) and 16.0 (sifted). The Free State had an average of 25.6 (unsifted) and 16.4 (sifted) and Mpumalanga 25.0 (unsifted) and 15.6 (sifted).

In general there were no significant differences in the nutritional components. The Free State had the highest fat content of 4.1%, followed by the North West with 4.0% and Mpumalanga with 3.9%. The protein content ranged from 8.8% (Mpumalanga) to 10.0% (North West), the Free State averaged 9.4%. North West and the Free State had starch contents of 71.4% and 71.5% respectively. Mpumalanga had a slightly higher starch content of 71.8%.

The high protein content and small kernels observed in North West can most probably be attributed to the drought conditions experienced in the province this season.

TABLE 2: RSA GRADING OF WHITE MAIZE (2012/2013)

Number of samples	Region	% Defective Kernels						%			%			%			%			%			%			%			%		
		Above 6.35 mm sieve			Below 6.35 mm sieve			Total defective			Foreign matter			Other Colour			Total Deviations			Pinked Kernels			Diplodia Kernels			Fusarium Kernels			Cobrot Kernels		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM1																															
3	Region 11	1.0	0.3	1.4	2.5	1.0	4.3	3.5	2.5	4.6	0.0	0.0	0.1	0.7	0.6	0.8	4.2	3.1	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.8	0.4	0.0	0.8
5	Region 12	1.8	1.2	2.5	1.3	0.6	2.4	3.1	1.8	4.4	0.1	0.0	0.2	0.0	0.0	0.2	3.3	1.9	4.6	0.1	0.0	0.2	0.6	0.4	0.8	0.9	0.5	1.5	1.5	1.1	1.9
5	Region 13	1.8	0.4	3.1	3.1	2.0	4.5	4.9	3.4	6.9	0.1	0.0	0.2	0.1	0.0	0.2	5.0	3.5	6.9	0.0	0.0	0.0	0.7	0.2	1.1	0.7	0.3	1.4	1.4	0.4	2.5
14	Region 14	2.5	0.7	4.6	2.2	0.2	4.8	4.7	2.4	7.0	0.0	0.0	0.1	0.2	0.0	0.6	4.9	2.4	7.5	0.0	0.0	0.2	0.6	0.0	3.1	1.3	0.0	3.6	1.9	0.0	4.6
8	Region 15	3.3	2.2	4.5	1.9	0.4	2.4	5.1	3.2	6.3	0.1	0.0	0.3	0.0	0.0	0.2	5.2	3.5	6.3	0.0	0.0	0.0	0.5	0.4	0.6	1.5	0.7	2.2	2.0	1.2	2.7
16	Region 16	2.6	0.9	3.8	2.5	0.7	4.6	5.1	3.4	6.9	0.1	0.0	0.2	0.1	0.0	0.5	5.3	3.5	7.2	0.0	0.0	0.7	0.6	0.0	1.3	1.7	0.2	3.2	2.3	0.2	3.8
7	Region 17	1.5	1.2	2.3	1.8	1.4	2.6	3.3	2.7	4.9	0.0	0.0	0.1	0.1	0.0	0.2	3.5	2.8	4.9	0.2	0.0	0.6	0.5	0.0	0.7	0.7	0.2	1.7	1.1	0.6	2.3
11	Region 18	2.6	1.0	6.2	1.7	0.6	3.2	4.3	2.7	6.8	0.0	0.0	0.2	0.1	0.0	0.4	4.5	2.8	6.8	0.0	0.0	0.0	0.8	0.3	1.6	1.0	0.2	3.1	1.8	0.5	4.5
10	Region 19	2.0	0.7	3.1	1.5	0.3	2.4	3.5	1.8	4.8	0.0	0.0	0.1	0.4	0.0	1.9	3.9	1.8	5.3	0.0	0.0	0.2	0.7	0.2	1.4	1.0	0.4	1.9	1.7	0.6	3.0
7	Region 20	2.5	1.3	3.9	1.6	1.2	2.2	4.1	3.5	5.2	0.0	0.0	0.0	0.2	0.0	0.6	4.3	3.5	5.2	0.2	0.0	0.5	0.8	0.2	1.8	1.1	0.5	2.0	1.9	0.9	3.9
34	Region 21	1.4	0.0	4.1	2.0	0.8	4.0	3.4	1.8	6.5	0.0	0.0	0.2	0.1	0.0	1.3	3.5	1.9	7.2	0.0	0.0	0.3	0.4	0.0	1.6	0.6	0.0	1.8	1.0	0.0	3.2
29	Region 22	1.9	0.7	5.8	2.0	0.8	4.0	4.0	1.8	7.0	0.0	0.0	0.3	0.1	0.0	0.5	4.1	1.8	7.6	0.0	0.0	0.6	0.5	0.0	1.2	0.9	0.3	3.3	1.5	0.5	4.3
49	Region 23	2.2	0.7	4.3	1.7	0.2	4.7	3.9	1.7	7.0	0.0	0.0	0.3	0.1	0.0	1.8	4.1	1.7	7.2	0.1	0.0	0.7	0.6	0.0	1.7	1.0	0.1	1.9	1.5	0.5	3.4
24	Region 24	2.1	1.1	3.0	2.2	1.2	3.6	4.3	3.3	5.6	0.0	0.0	0.2	0.0	0.0	0.5	4.4	3.3	5.6	0.0	0.0	0.2	0.5	0.0	1.1	1.0	0.2	1.6	1.4	0.2	2.2
5	Region 25	1.8	1.3	2.8	2.3	0.4	4.8	4.1	1.9	6.5	0.0	0.0	0.1	0.2	0.0	0.5	4.4	1.9	7.0	0.1	0.0	0.3	0.6	0.2	1.0	0.8	0.1	1.1	1.4	0.7	1.9
14	Region 26	1.8	0.8	3.3	2.1	1.2	3.1	3.9	2.5	5.1	0.0	0.0	0.2	0.3	0.0	1.4	4.3	2.5	5.4	0.0	0.0	0.3	0.5	0.1	1.0	0.7	0.0	1.9	1.2	0.4	2.6
4	Region 27	1.5	0.5	2.8	2.8	2.2	3.8	4.4	3.2	5.0	0.0	0.0	0.1	0.5	0.0	1.6	4.9	3.3	6.5	0.0	0.0	0.0	0.2	0.0	0.7	1.0	0.3	2.3	1.2	0.3	2.3
14	Region 28	1.9	0.7	4.4	1.1	0.2	2.8	3.0	1.0	5.9	0.0	0.0	0.0	0.2	0.0	1.0	3.2	1.2	5.9	0.2	0.0	0.7	0.3	0.0	1.5	0.9	0.0	2.9	1.2	0.0	4.3
15	Region 29	1.9	0.7	4.0	1.2	0.3	2.0	3.1	1.0	5.4	0.0	0.0	0.1	0.1	0.0	0.3	3.2	1.0	5.7	0.0	0.0	0.3	0.5	0.0	1.7	1.0	0.0	4.0	1.5	0.0	4.0
19	Region 30	2.5	1.1	4.8	1.1	0.3	1.9	3.6	1.8	5.7	0.0	0.0	0.2	0.3	0.0	2.2	3.8	1.8	5.7	0.1	0.0	0.8	0.9	0.0	2.3	0.9	0.0	2.2	1.8	0.9	3.4
26	Region 31	2.1	0.0	3.9	1.4	0.5	2.7	3.5	0.9	5.9	0.0	0.0	0.2	0.5	0.0	2.9	4.1	1.2	5.9	0.0	0.0	0.1	0.6	0.0	1.9	0.9	0.0	2.0	1.5	0.0	2.9
30	Region 32	2.3	0.7	4.3	1.7	0.5	2.9	3.9	2.1	5.6	0.0	0.0	0.3	0.2	0.0	0.9	4.2	2.1	6.5	0.0	0.0	0.2	0.6	0.0	2.7	0.9	0.0	2.3	1.6	0.0	4.2
28	Region 33	2.4	0.9	3.9	1.8	0.3	4.4	4.2	1.2	6.3	0.1	0.0	0.3	0.2	0.0	0.9	4.4	2.1	6.7	0.1	0.0	0.8	0.9	0.0	3.0	0.9	0.0	2.4	1.9	0.0	3.7
34	Region 34	2.3	0.5	5.4	1.5	0.2	3.1	3.8	1.4	7.0	0.0	0.0	0.1	0.2	0.0	1.0	4.0	1.7	7.3	0.0	0.0	0.6	0.6	0.0	2.3	1.0	0.1	3.0	1.7	0.1	4.5
6	Region 35	2.1	0.5	4.0	1.6	0.2	3.2	3.7	1.0	6.0	0.0	0.0	0.1	0.1	0.0	0.2	3.8	1.1	6.0	0.0	0.0	0.0	0.7	0.0	2.4	1.1	0.5	2.5	1.8	0.5	3.7
14	Region 36	2.9	1.4	4.7	1.3	0.2	4.3	4.2	2.7	6.3	0.0	0.0	0.1	0.1	0.0	1.0	4.3	2.7	6.4	0.0	0.0	0.3	1.1	0.0	2.7	1.3	0.4	3.8	2.4	1.3	4.4
431	**Ave. WM1**	**2.2**			**1.8**			**3.9**			**0.0**			**0.2**			**4.1**			**0.0**			**0.6**			**1.0**			**1.6**		
	Min. WM1		**0.0**			**0.2**			**0.9**			**0.0**			**0.0**			**1.0**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. WM1			**6.2**			**4.8**			**7.0**			**0.3**			**2.9**			**7.6**			**0.8**			**3.1**			**4.0**			**4.6**

TABLE 2: RSA GRADING OF WHITE MAIZE (2012/2013) (continue)

Number of samples	Region	% Defective Kernels						%			%			%			%			%			%			%			%		
		Above 6.35 mm sieve			Below 6.35 mm sieve			Total defective			Foreign matter			Other Colour			Total Deviations			Pinked Kernels			Diplodia Kernels			Fusarium Kernels			Cobrot Kernels		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM2																															
1	Region 11	0.7	-	-	3.3	-	-	4.0	-	-	0.0	-	-	4.5	-	-	8.5	-	-	0.0	-	-	0.0	-	-	0.7	-	-	0.7	-	-
3	Region 12	7.1	5.6	8.7	1.5	1.1	1.9	8.6	7.5	10.1	0.1	0.1	0.1	0.1	0.0	0.2	8.7	7.7	10.2	0.2	0.0	0.5	2.2	1.8	2.5	3.8	3.0	5.0	6.0	5.2	7.1
5	Region 13	3.9	1.9	5.4	5.2	3.3	6.4	9.0	8.3	10.0	0.1	0.0	0.2	0.5	0.0	1.2	9.6	8.3	10.6	0.1	0.0	0.2	0.9	0.5	1.7	2.5	0.8	3.8	3.4	1.3	5.4
2	Region 14	2.4	2.4	2.5	4.7	2.5	7.0	7.2	5.0	9.4	0.2	0.0	0.5	0.1	0.0	0.2	7.5	5.7	9.4	0.0	0.0	0.0	0.6	0.3	1.0	1.4	1.3	1.6	2.1	1.6	2.5
2	Region 15	7.1	7.0	7.2	3.9	2.9	4.9	11.0	10.1	12.0	0.0	0.0	0.1	0.0	0.0	0.0	11.1	10.1	12.1	0.0	0.0	0.0	0.8	0.6	0.9	3.0	2.2	3.7	3.7	3.1	4.4
2	Region 17	5.5	5.1	5.9	3.9	2.8	5.0	9.4	8.7	10.2	0.3	0.0	0.5	0.0	0.0	0.0	9.7	8.7	10.7	0.0	0.0	0.0	1.1	0.9	1.2	4.1	3.9	4.3	5.2	5.1	5.2
2	Region 18	7.4	3.7	11.0	2.6	1.5	3.7	10.0	7.5	12.5	0.1	0.0	0.2	0.2	0.0	0.4	10.3	8.1	12.5	0.0	0.0	0.0	2.1	0.8	3.4	5.2	2.9	7.5	7.3	3.7	10.9
1	Region 19	7.5	-	-	2.3	-	-	9.8	-	-	0.2	-	-	2.3	-	-	12.3	-	-	0.0	-	-	2.0	-	-	4.0	-	-	6.0	-	-
3	Region 20	6.1	5.1	6.8	2.3	2.1	2.6	8.3	7.8	8.9	0.0	0.0	0.0	0.6	0.2	1.3	9.0	8.6	9.2	0.1	0.0	0.3	2.8	1.8	4.4	2.7	2.2	3.6	5.4	4.0	6.7
1	Region 21	0.8	-	-	9.0	-	-	9.8	-	-	0.0	-	-	0.7	-	-	10.5	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
3	Region 22	3.0	0.9	7.0	1.9	1.7	2.0	4.9	2.6	9.0	0.3	0.0	0.4	0.0	0.0	0.0	5.2	3.1	9.0	0.1	0.0	0.2	0.7	0.0	2.0	1.6	0.9	2.9	2.2	0.9	4.9
4	Region 23	3.0	0.6	6.5	1.9	1.3	2.3	4.9	1.9	8.2	0.3	0.0	0.5	0.0	0.0	0.2	5.2	2.4	8.2	0.1	0.0	0.3	1.1	0.3	2.4	0.7	0.3	1.0	1.8	0.6	3.0
3	Region 25	2.0	1.5	2.8	5.4	2.7	8.4	7.4	4.2	10.1	0.2	0.0	0.4	0.4	0.0	1.2	8.0	5.7	10.2	0.0	0.0	0.0	0.5	0.4	0.6	1.0	0.7	1.4	1.4	1.1	2.0
4	Region 26	4.6	1.7	9.8	4.9	2.0	11.4	9.5	5.2	13.0	0.1	0.0	0.4	1.4	0.8	2.1	11.0	7.8	13.9	0.1	0.0	0.2	1.5	0.0	4.1	2.3	0.7	5.4	3.8	0.7	9.5
1	Region 27	3.3	-	-	9.0	-	-	12.3	-	-	0.1	-	-	1.8	-	-	14.1	-	-	0.0	-	-	0.8	-	-	0.8	-	-	1.6	-	-
1	Region 29	1.9	-	-	0.3	-	-	2.2	-	-	0.0	-	-	4.8	-	-	6.9	-	-	0.0	-	-	0.6	-	-	0.8	-	-	1.4	-	-
2	Region 31	4.0	1.8	6.3	1.2	1.1	1.2	5.2	2.9	7.5	0.3	0.2	0.3	3.2	3.1	3.3	8.6	6.3	11.0	0.0	0.0	0.0	1.9	0.0	3.7	0.9	0.8	1.0	2.8	1.0	4.5
3	Region 32	6.8	6.0	8.1	1.7	1.2	2.1	8.5	7.2	9.8	0.0	0.0	0.0	0.2	0.0	0.6	8.8	7.7	9.8	0.0	0.0	0.0	2.5	1.2	3.9	4.0	3.5	4.6	6.5	5.8	7.8
6	Region 33	3.7	0.9	9.6	3.9	1.3	7.4	7.6	3.2	11.2	0.2	0.0	0.5	1.2	0.0	3.6	8.9	5.5	11.3	0.1	0.0	0.4	1.4	0.2	5.3	1.3	0.4	3.5	2.7	0.9	8.7
5	Region 34	6.6	3.1	11.2	1.9	1.0	3.2	8.5	4.9	13.0	0.1	0.0	0.4	1.0	0.0	4.3	9.6	6.9	13.0	0.1	0.0	0.2	2.6	1.0	6.2	2.5	1.0	4.1	5.1	2.3	9.5
1	Region 35	5.8	-	-	2.5	-	-	8.4	-	-	0.1	-	-	0.2	-	-	8.7	-	-	0.0	-	-	0.7	-	-	4.0	-	-	4.7	-	-
5	Region 36	6.8	2.6	11.5	2.4	0.4	4.6	9.2	7.2	11.9	0.0	0.0	0.2	0.2	0.0	0.5	9.4	7.2	12.4	0.0	0.0	0.1	1.9	0.8	5.2	3.4	0.9	5.5	5.3	2.2	10.7
60	**Ave. WM2**	**4.8**			**3.3**			**8.0**			**0.1**			**0.8**			**8.9**			**0.1**			**1.5**			**2.3**			**3.8**		
	Min. WM2		**0.6**			**0.3**			**1.9**			**0.0**			**0.0**			**2.4**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. WM2			**11.5**			**11.4**			**13.0**			**0.5**			**4.8**			**14.1**			**0.5**			**6.2**			**7.5**			**10.9**

TABLE 2: RSA GRADING OF WHITE MAIZE (2012/2013) (continue)

Number of samples	Region	% Defective Kernels						%			%			%			%			%			%			%			%		
		Above 6.35 mm sieve			Below 6.35 mm sieve			Total defective			Foreign matter			Other Colour			Total Deviations			Pinked Kernels			Diplodia Kernels			Fusarium Kernels			Cobrot Kernels		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM3																															
2	Region 13	6.4	4.5	8.4	7.7	6.5	8.9	14.1	13.4	14.9	0.3	0.0	0.5	0.0	0.0	0.0	14.4	13.9	14.9	0.0	0.0	0.0	0.6	0.3	0.8	2.8	2.5	3.2	3.4	2.8	4.0
1	Region 16	2.7	-	-	1.2	-	-	3.9	-	-	0.6	-	-	0.2	-	-	4.7	-	-	0.0	-	-	0.9	-	-	1.1	-	-	2.1	-	-
2	Region 17	4.2	2.1	6.3	6.0	2.9	9.1	10.2	5.0	15.4	0.6	0.6	0.7	1.1	0.0	2.3	12.0	7.9	16.0	0.0	0.0	0.0	0.4	0.0	0.7	3.2	1.8	4.7	3.6	1.8	5.4
1	Region 19	8.9	-	-	4.5	-	-	13.4	-	-	0.1	-	-	0.0	-	-	13.5	-	-	0.0	-	-	2.0	-	-	6.2	-	-	8.2	-	-
1	Region 22	3.7	-	-	2.3	-	-	6.0	-	-	0.7	-	-	0.0	-	-	6.7	-	-	0.0	-	-	1.1	-	-	1.7	-	-	2.8	-	-
1	Region 24	3.1	-	-	1.6	-	-	4.7	-	-	0.6	-	-	0.0	-	-	5.3	-	-	0.0	-	-	1.0	-	-	0.9	-	-	2.0	-	-
1	Region 25	2.2	-	-	1.8	-	-	4.1	-	-	0.1	-	-	6.5	-	-	10.7	-	-	0.0	-	-	0.0	-	-	1.7	-	-	1.7	-	-
1	Region 29	12.7	-	-	1.7	-	-	14.4	-	-	0.1	-	-	0.4	-	-	14.9	-	-	0.0	-	-	1.3	-	-	11.4	-	-	12.7	-	-
1	Region 31	1.7	-	-	3.8	-		5.5	-	-	0.7	-	-	0.0	-	-	6.3	-	-	0.0	-	-	0.5	-	-	0.9	-	-	1.4	-	-
2	Region 34	16.3	11.9	20.8	1.5	1.3	1.8	17.9	13.7	22.0	0.0	0.0	0.0	0.4	0.3	0.4	18.2	14.1	22.4	0.1	0.0	0.1	7.3	4.5	10.1	6.8	4.5	9.0	14.1	9.0	19.2
13	**Ave. WM3**	**6.8**			**3.6**			**10.5**			**0.4**			**0.8**			**11.6**			**0.0**			**1.8**			**3.8**			**5.6**		
	Min. WM3		**1.7**			**1.2**			**3.9**			**0.0**			**0.0**			**4.7**			**0.0**			**0.0**			**0.9**			**1.4**	
	Max. WM3			**20.8**			**9.1**			**22.0**			**0.7**			**6.5**			**22.4**			**0.1**			**10.1**			**11.4**			**19.2**
CLASS: COM																															
2	Region 23	3.6	2.1	5.2	2.0	1.9	2.1	5.6	3.9	7.3	0.9	0.9	0.9	0.7	0.0	1.5	7.3	6.4	8.2	0.0	0.0	0.0	0.1	0.0	0.3	2.2	0.5	3.9	2.3	0.5	4.2
1	Region 25	4.9	-	-	5.1	-	-	10.1	-	-	1.5	-	-	0.5	-	-	12.1	-	-	0.0	-	-	1.4	-	-	1.9	-	-	3.2	-	-
1	Region 32	1.9	-	-	1.7	-	-	3.6	-	-	0.8	-	-	0.5	-	-	5.0	-	-	0.0	-	-	0.0	-	-	0.8	-	-	0.8	-	-
4	**Ave. COM**	**3.5**			**2.7**			**6.2**			**1.0**			**0.6**			**7.9**			**0.0**			**0.4**			**1.8**			**2.2**		
	Min. COM		**1.9**			**1.7**			**3.6**			**0.8**			**0.0**			**5.0**			**0.0**			**0.0**			**0.5**			**0.5**	
	Max. COM			**5.2**			**5.1**			**10.1**			**1.5**			**1.5**			**12.1**			**0.0**			**1.4**			**3.9**			**4.2**
508	**Ave. white maize**	**2.6**			**2.0**			**4.6**			**0.1**			**0.3**			**4.9**			**0.0**			**0.7**			**1.2**			**2.0**		
	Min. white maize		**0.0**			**0.2**			**0.9**			**0.0**			**0.0**			**1.0**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. white maize			**20.8**			**11.4**			**22.0**			**1.5**			**6.5**			**22.4**			**0.8**			**10.1**			**11.4**			**19.2**
1000	**Ave. maize**	**2.3**			**2.3**			**4.6**			**0.1**			**0.3**			**4.9**			**0.0**			**0.6**			**1.1**			**1.7**		
	Min. maize		**0.0**			**0.1**			**0.8**			**0.0**			**0.0**			**0.8**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. maize			**23.1**			**14.0**			**25.0**			**1.8**			**8.4**			**25.0**			**0.8**			**10.1**			**20.4**			**20.9**

TABLE 3: RSA GRADING OF YELLOW MAIZE (2012/2013)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Total Deviations			% Pinked Kernels			% Diplodia Kernels			% Fusarium Kernels			% Cobrot Kernels		
		Above 6.35 mm sieve			Below 6.35 mm sieve																										
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM1																														
13	Region 10	0.8	0.4	1.5	1.2	0.4	2.7	2.0	0.9	4.1	0.0	0.0	0.1	0.0	0.0	0.0	2.0	0.9	4.1	0.0	0.0	0.0	0.1	0.0	0.4	0.5	0.0	1.0	0.6	0.0	1.0
19	Region 11	2.0	0.4	4.8	2.2	1.4	3.3	4.2	2.0	7.6	0.1	0.0	0.3	0.1	0.0	1.2	4.4	2.0	7.9	0.0	0.0	0.0	0.1	0.0	0.7	1.4	0.2	4.1	1.5	0.2	4.1
6	Region 12	1.4	0.6	2.7	3.1	2.1	4.0	4.5	3.7	5.8	0.0	0.0	0.1	0.4	0.0	2.0	4.9	3.7	6.4	0.0	0.0	0.0	0.3	0.0	0.6	0.8	0.2	1.8	1.1	0.6	2.0
3	Region 13	1.8	1.2	2.8	2.5	1.5	4.0	4.3	3.1	5.4	0.0	0.0	0.1	0.0	0.0	0.0	4.3	3.2	5.4	0.0	0.0	0.0	0.1	0.0	0.3	1.0	0.6	1.5	1.1	0.8	1.5
6	Region 14	1.7	0.9	2.7	2.3	0.8	3.3	4.1	2.4	5.3	0.1	0.0	0.3	0.2	0.0	0.5	4.3	2.9	5.7	0.0	0.0	0.0	0.2	0.0	0.6	1.1	0.3	2.4	1.2	0.5	2.4
1	Region 15	2.0	-	-	1.2	-	-	3.1	-	-	0.1	-	-	0.2	-	-	3.4	-	-	0.0	-	-	0.0	-	-	1.3	-	-	1.3	-	-
1	Region 16	1.5	-	-	2.3	-	-	3.8	-	-	0.1	-	-	0.3	-	-	4.2	-	-	0.0	-	-	0.8	-	-	0.6	-	-	1.5	-	-
5	Region 17	1.3	0.6	1.9	2.9	2.0	4.0	4.2	2.6	5.4	0.0	0.0	0.1	0.3	0.0	0.6	4.5	2.8	5.9	0.0	0.0	0.0	0.1	0.0	0.5	0.8	0.6	1.2	0.9	0.6	1.7
9	Region 18	0.9	0.6	1.4	1.4	0.4	3.5	2.3	1.1	4.6	0.0	0.0	0.1	0.3	0.0	1.8	2.6	1.3	4.7	0.0	0.0	0.0	0.1	0.0	0.6	0.3	0.0	1.1	0.5	0.0	1.1
6	Region 19	2.0	0.6	4.3	2.6	1.3	3.4	4.6	2.6	6.2	0.1	0.0	0.2	0.0	0.0	0.0	4.6	2.8	6.2	0.0	0.0	0.0	0.1	0.0	0.5	1.0	0.3	2.4	1.2	0.3	2.4
4	Region 20	1.8	1.0	3.0	3.4	2.9	3.9	5.2	4.7	5.9	0.0	0.0	0.1	0.0	0.0	0.1	5.3	4.8	5.9	0.0	0.0	0.0	0.5	0.0	1.1	0.9	0.5	1.5	1.5	0.8	2.6
8	Region 21	1.8	1.0	4.1	3.1	2.0	4.0	4.9	3.6	8.0	0.0	0.0	0.2	0.3	0.0	0.9	5.2	3.7	8.0	0.0	0.0	0.0	0.2	0.0	0.9	0.9	0.0	1.6	1.1	0.0	2.6
4	Region 22	1.2	1.0	1.4	1.8	0.7	3.1	3.0	1.7	4.5	0.0	0.0	0.1	0.3	0.0	0.5	3.3	2.1	4.6	0.0	0.0	0.0	0.2	0.0	0.6	0.8	0.5	1.0	1.0	0.8	1.2
20	Region 23	1.9	0.9	4.4	1.7	0.5	3.4	3.6	1.7	7.8	0.0	0.0	0.3	0.3	0.0	1.5	3.9	1.7	7.8	0.0	0.0	0.0	0.4	0.0	1.5	1.0	0.1	2.3	1.4	0.5	3.8
6	Region 24	2.0	0.7	3.3	2.3	1.5	3.6	4.3	3.5	5.5	0.1	0.0	0.2	0.0	0.0	0.0	4.4	3.5	5.6	0.0	0.0	0.0	0.5	0.0	1.3	1.1	0.0	1.6	1.6	0.0	2.9
15	Region 25	1.6	0.8	2.8	2.0	0.1	3.2	3.5	1.4	4.9	0.0	0.0	0.2	0.0	0.0	0.1	3.6	1.4	5.0	0.0	0.0	0.0	0.5	0.0	1.7	0.6	0.2	1.4	1.1	0.2	2.7
23	Region 26	2.0	0.8	4.6	2.6	0.9	3.9	4.6	2.8	7.1	0.0	0.0	0.3	0.1	0.0	1.3	4.8	3.0	7.1	0.0	0.0	0.0	0.5	0.0	1.2	1.0	0.4	3.3	1.6	0.5	3.7
6	Region 27	1.3	0.5	1.7	2.4	1.4	3.6	3.7	1.9	5.2	0.0	0.0	0.2	0.1	0.0	0.3	3.8	2.1	5.2	0.0	0.0	0.0	0.2	0.0	0.5	0.5	0.0	0.8	0.7	0.4	1.3
17	Region 28	1.8	1.0	3.6	1.7	0.1	3.1	3.5	1.6	5.1	0.0	0.0	0.1	0.0	0.0	0.3	3.5	1.6	5.1	0.0	0.0	0.0	0.4	0.0	1.1	0.9	0.0	2.4	1.3	0.0	3.3
35	Region 29	1.7	0.4	4.1	1.7	0.2	3.0	3.4	1.3	6.0	0.0	0.0	0.3	0.1	0.0	0.9	3.5	1.5	6.2	0.0	0.0	0.0	0.3	0.0	2.0	0.7	0.0	2.1	1.0	0.1	3.4
41	Region 30	1.5	0.4	5.2	1.7	0.3	3.7	3.1	0.8	6.4	0.0	0.0	0.1	0.1	0.0	1.2	3.2	0.8	7.6	0.0	0.0	0.0	0.4	0.0	2.3	0.5	0.0	2.7	0.9	0.0	3.3
42	Region 31	2.1	0.5	5.9	1.5	0.3	3.6	3.6	1.1	7.4	0.0	0.0	0.3	0.1	0.0	1.6	3.7	1.1	7.4	0.0	0.0	0.2	0.2	0.0	1.7	1.2	0.0	4.2	1.4	0.0	5.0
33	Region 32	1.8	0.3	6.3	2.0	0.8	3.8	3.8	1.6	8.7	0.0	0.0	0.2	0.1	0.0	1.7	4.0	1.7	8.7	0.0	0.0	0.0	0.3	0.0	1.7	0.9	0.0	2.4	1.2	0.0	3.8
13	Region 33	1.7	0.8	4.4	1.4	0.5	2.3	3.2	1.6	6.6	0.0	0.0	0.1	0.1	0.0	0.8	3.2	1.6	6.7	0.0	0.0	0.0	0.0	0.0	0.3	0.8	0.0	3.6	0.8	0.0	3.6
24	Region 34	1.5	0.7	3.2	1.7	0.3	3.5	3.1	1.1	5.6	0.1	0.0	0.3	0.4	0.0	1.7	3.6	1.1	6.0	0.0	0.0	0.0	0.4	0.0	1.5	0.6	0.0	1.7	1.0	0.0	3.1
11	Region 35	2.0	0.6	4.4	1.3	0.3	2.9	3.3	1.0	5.0	0.0	0.0	0.2	0.1	0.0	0.6	3.4	1.0	5.1	0.0	0.0	0.0	0.3	0.0	1.6	0.9	0.0	2.4	1.3	0.0	4.0
16	Region 36	2.4	1.0	5.3	1.7	0.5	3.4	4.1	1.9	7.8	0.0	0.0	0.2	0.1	0.0	0.4	4.2	1.9	8.3	0.0	0.0	0.0	0.7	0.0	1.7	1.1	0.0	3.5	1.8	0.0	4.8
387	**Ave. YM1**	**1.7**			**1.9**			**3.6**			**0.0**			**0.1**			**3.8**			**0.0**			**0.3**			**0.9**			**1.2**		
	Min. YM1		**0.3**			**0.1**			**0.8**			**0.0**			**0.0**			**0.8**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. YM1			**6.3**			**4.0**			**8.7**			**0.3**			**2.0**			**8.7**			**0.2**			**2.3**			**4.2**			**5.0**

TABLE 3: RSA GRADING OF YELLOW MAIZE (2012/2013) (continue)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other Colour			% Total Deviations			% Pinked Kernels			% Diplodia Kernels			% Fusarium Kernels			% Cobrot Kernels		
		Above 6.35 mm sieve			Below 6.35 mm sieve																										
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM2																														
1	Region 10	9.0	-	-	1.1	-	-	10.1	-	-	0.0	-	-	0.0	-	-	10.1	-	-	0.0	-	-	0.0	-	-	9.0	-	-	9.0	-	-
4	Region 11	4.1	1.2	9.2	4.0	1.8	6.5	8.1	4.9	11.1	0.3	0.0	0.5	0.0	0.0	0.0	8.4	5.4	11.3	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.9	9.2	3.8	0.9	9.2
4	Region 12	3.6	1.2	10.4	5.8	4.3	7.6	9.4	5.9	15.3	0.0	0.0	0.1	0.0	0.0	0.1	9.5	5.9	15.4	0.0	0.0	0.0	1.8	0.0	6.4	1.2	0.0	3.9	3.0	0.0	10.3
3	Region 13	1.9	1.1	2.7	5.9	4.2	9.2	7.8	5.4	11.0	0.1	0.0	0.2	0.0	0.0	0.1	7.9	5.4	11.4	0.0	0.0	0.0	0.2	0.0	0.5	0.8	0.7	1.0	1.1	0.7	1.4
6	Region 14	1.1	0.3	2.0	5.5	1.5	8.0	6.6	3.1	9.1	0.1	0.0	0.3	0.6	0.0	3.4	7.3	5.3	9.2	0.0	0.0	0.0	0.1	0.0	0.8	0.6	0.0	1.3	0.7	0.0	2.0
1	Region 15	2.1	-	-	1.4	-	-	3.5	-	-	0.4	-	-	0.2	-	-	4.2	-	-	0.0	-	-	1.1	-	-	0.7	-	-	1.8	-	-
2	Region 16	2.0	1.0	2.9	3.7	2.2	5.3	5.7	5.1	6.3	0.2	0.1	0.2	2.1	0.0	4.2	8.0	6.5	9.4	0.0	0.0	0.0	0.3	0.0	0.7	1.4	1.0	1.9	1.8	1.0	2.5
6	Region 17	1.9	0.4	4.3	4.7	2.3	6.6	6.6	4.8	8.4	0.2	0.0	0.4	0.4	0.0	1.6	7.2	5.4	9.9	0.0	0.0	0.0	0.5	0.0	1.3	1.0	0.0	3.0	1.6	0.0	4.2
2	Region 18	5.8	2.4	9.1	4.4	4.0	4.9	10.2	7.4	13.1	0.3	0.2	0.4	0.2	0.0	0.4	10.8	8.0	13.5	0.0	0.0	0.0	2.1	1.3	2.9	3.7	1.2	6.3	5.8	2.4	9.1
4	Region 19	1.8	0.9	2.4	4.9	4.4	5.6	6.7	6.5	6.8	0.1	0.1	0.1	0.5	0.1	1.6	7.4	6.8	8.5	0.0	0.0	0.0	0.5	0.0	1.0	0.9	0.4	1.2	1.4	0.6	2.0
4	Region 20	1.8	1.0	2.3	4.2	1.4	6.3	6.0	3.5	7.3	0.1	0.0	0.5	0.3	0.0	1.0	6.5	4.2	8.4	0.0	0.0	0.0	0.6	0.3	0.9	1.0	0.8	1.5	1.6	1.0	2.3
3	Region 21	2.1	0.5	4.7	5.6	5.3	5.9	7.7	6.4	10.4	0.0	0.0	0.1	1.5	0.0	4.5	9.3	6.4	10.9	0.0	0.0	0.0	0.2	0.0	0.5	1.7	0.4	4.1	1.8	0.4	4.7
4	Region 23	0.8	0.6	1.1	4.9	3.2	6.4	5.7	4.0	7.6	0.1	0.0	0.3	2.3	0.2	4.5	8.2	5.5	12.3	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.8	0.4	0.2	0.8
2	Region 24	0.6	0.5	0.7	4.9	4.2	5.6	5.5	4.6	6.3	0.0	0.0	0.1	0.1	0.0	0.1	5.6	4.6	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2
5	Region 25	2.0	0.6	3.3	4.7	4.5	5.2	6.8	5.8	7.8	0.2	0.1	0.3	0.2	0.0	0.3	7.2	5.9	8.2	0.0	0.0	0.0	0.6	0.0	1.6	0.7	0.0	1.8	1.3	0.3	2.8
4	Region 26	3.3	1.2	7.4	4.3	3.6	4.8	7.6	6.1	11.0	0.0	0.0	0.0	0.0	0.0	0.1	7.6	6.1	11.0	0.0	0.0	0.0	1.3	0.4	2.8	1.8	0.6	4.4	3.1	1.0	7.2
1	Region 27	0.4	-	-	4.6	-	-	5.0	-	-	0.5	-	-	0.0	-	-	5.5	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
2	Region 29	5.1	1.2	9.1	1.7	0.8	2.6	6.9	2.0	11.8	0.2	0.0	0.4	0.0	0.0	0.0	7.1	2.4	11.8	0.0	0.0	0.0	1.5	0.2	2.9	3.1	0.5	5.6	4.6	0.8	8.5
3	Region 30	1.3	0.9	1.8	2.2	0.8	4.5	3.4	2.0	5.6	0.2	0.0	0.5	0.8	0.0	2.4	4.4	3.1	5.6	0.0	0.0	0.0	0.3	0.0	0.8	0.8	0.6	0.9	1.1	0.7	1.6
5	Region 31	2.9	0.6	7.8	3.6	0.5	5.2	6.5	3.3	12.9	0.1	0.0	0.4	0.6	0.0	3.2	7.2	5.0	13.0	0.0	0.0	0.0	0.1	0.0	0.4	1.9	0.0	5.2	2.0	0.3	5.2
5	Region 32	2.0	0.9	4.8	4.9	3.8	5.9	6.9	5.4	9.3	0.0	0.0	0.1	1.1	0.2	3.1	8.0	6.6	10.1	0.0	0.0	0.0	0.4	0.0	0.9	1.1	0.2	3.1	1.5	0.6	4.0
1	Region 33	1.3	-	-	2.8	-	-	4.0	-	-	0.4	-	-	0.0	-	-	4.4	-	-	0.0	-	-	0.0	-	-	1.1	-	-	1.1	-	-
4	Region 34	11.6	10.2	13.0	2.2	1.6	2.4	13.7	12.6	14.6	0.0	0.0	0.0	0.2	0.0	0.9	13.9	12.6	15.0	0.0	0.0	0.0	4.5	2.6	5.9	5.1	4.4	6.4	9.5	7.2	10.7
1	Region 35	0.2	-	-	6.9	-	-	7.2	-	-	0.0	-	-	0.0	-	-	7.2	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
3	Region 36	2.4	1.0	4.8	5.0	1.7	7.6	7.5	6.5	9.2	0.0	0.0	0.1	1.2	0.0	3.2	8.7	7.3	9.7	0.0	0.0	0.0	0.6	0.0	1.3	1.8	0.9	3.5	2.4	1.0	4.8
80	**Ave. YM2**	**2.8**			**4.4**			**7.2**			**0.1**			**0.6**			**7.9**			**0.0**			**0.7**			**1.6**			**2.3**		
	Min. YM2		**0.2**			**0.5**			**2.0**			**0.0**			**0.0**			**2.4**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. YM2			**13.0**			**9.2**			**15.3**			**0.5**			**4.5**			**15.4**			**0.0**			**6.4**			**9.2**			**10.7**

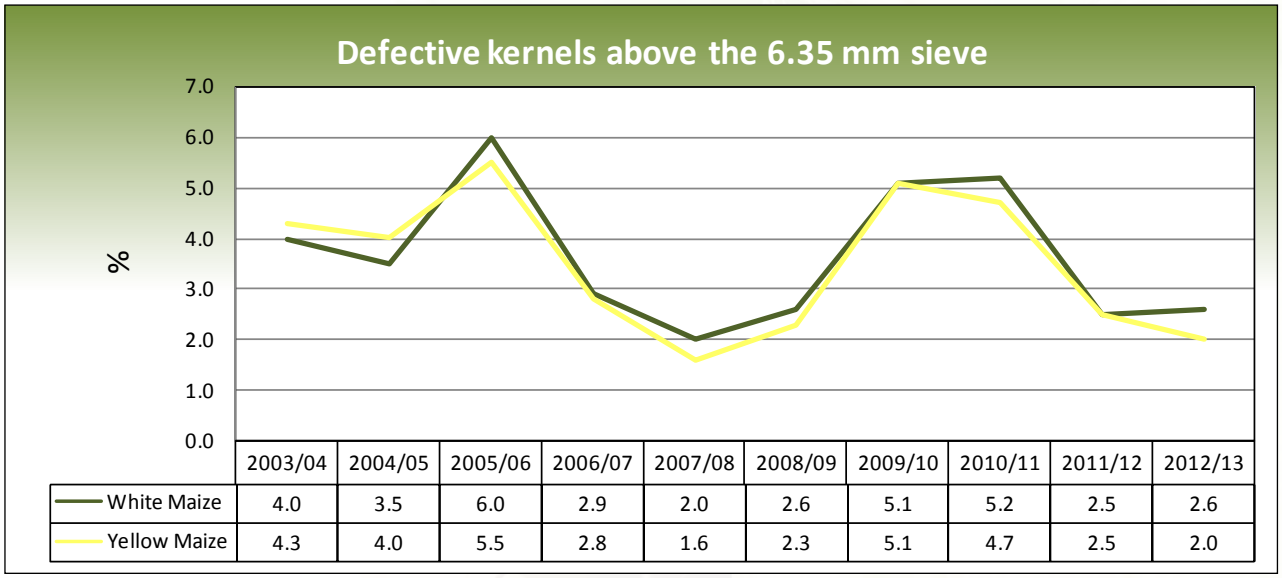
TABLE 3: RSA GRADING OF YELLOW MAIZE (2012/2013) (continue)

Number of samples	Region	% Defective Kernels						%			%			%			%			%			%			%		
		Above 6.35 mm sieve			Below 6.35 mm sieve			Total defective			Foreign matter			Other Colour			Total Deviations			Pinked Kernels			Diplodia Kernels			Fusarium Kernels			Cobrot Kernels		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM3																														
1	Region 13	0.4	-	-	10.8	-	-	11.2	-	-	0.2	-	-	0.5	-	-	11.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
1	Region 17	0.5	-	-	13.1	-	-	13.6	-	-	0.0	-	-	0.3	-	-	13.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
2	Region 19	8.5	0.6	16.3	6.7	6.6	6.9	15.2	7.5	22.9	0.4	0.3	0.6	0.1	0.0	0.2	15.7	8.1	23.4	0.0	0.0	0.0	1.4	0.3	2.6	7.0	0.4	13.7	8.5	0.6	16.3
3	Region 26	0.9	0.6	1.1	11.9	10.7	14.0	12.8	11.3	15.1	0.2	0.0	0.4	0.2	0.0	0.7	13.2	12.1	15.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.1	0.0	0.4
1	Region 27	0.9	-	-	10.8	-	-	11.7	-	-	0.0	-	-	0.0	-	-	11.7	-	-	0.0	-	-	0.1	-	-	0.3	-	-	0.4	-	-
1	Region 29	23.1	-	-	1.9	-	-	25.0	-	-	0.0	-	-	0.0	-	-	25.0	-	-	0.0	-	-	0.5	-	-	20.4	-	-	20.9	-	-
2	Region 33	2.4	2.0	2.8	12.2	11.3	13.1	14.6	14.1	15.1	0.1	0.0	0.2	0.2	0.1	0.4	14.9	14.3	15.5	0.0	0.0	0.0	0.2	0.0	0.3	0.4	0.0	0.9	0.6	0.0	1.2
1	Region 36	2.3	-	-	11.2	-	-	13.5	-	-	0.0	-	-	0.7	-	-	14.3	-	-	0.0	-	-	1.7	-	-	0.6	-	-	2.3	-	-
12	**Ave. YM3**	**4.3**			**10.1**			**14.4**			**0.1**			**0.2**			**14.8**			**0.0**			**0.5**			**3.1**			**3.5**		
	Min. YM3		**0.4**			**1.9**			**7.5**			**0.0**			**0.0**			**8.1**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max .YM3			**23.1**			**14.0**			**25.0**			**0.6**			**0.7**			**25.0**			**0.0**			**2.6**			**20.4**			**20.9**
CLASS: COM																														
1	Region 11	2.8	-	-	1.8	-	-	4.6	-	-	0.8	-	-	0.0	-	-	5.3	-	-	0.0	-	-	0.0	-	-	2.3	-	-	2.3	-	-
1	Region 16	2.5	-	-	1.3	-	-	3.8	-	-	0.1	-	-	6.0	-	-	9.9	-	-	0.0	-	-	0.5	-	-	1.5	-	-	2.0	-	-
1	Region 17	3.1	-	-	8.1	-	-	11.2	-	-	0.2	-	-	8.4	-	-	19.8	-	-	0.0	-	-	0.0	-	-	2.0	-	-	2.0	-	-
1	Region 21	0.4	-	-	5.8	-	-	6.2	-	-	0.8	-	-	0.0	-	-	7.0	-	-	0.0	-	-	0.0	-	-	0.4	-	-	0.4	-	-
1	Region 23	1.2	-	-	5.3	-	-	6.5	-	-	0.0	-	-	6.0	-	-	12.5	-	-	0.0	-	-	0.3	-	-	0.4	-	-	0.6	-	-
1	Region 24	2.6	-	-	3.0	-	-	5.6	-	-	1.3	-	-	0.2	-	-	7.1	-	-	0.0	-	-	0.0	-	-	0.7	-	-	0.7	-	-
3	Region 25	1.6	1.3	2.0	2.4	1.8	2.7	4.0	3.8	4.2	1.3	0.9	1.8	0.1	0.0	0.2	5.4	4.7	6.0	0.0	0.0	0.0	0.3	0.0	0.8	0.5	0.5	0.5	0.8	0.5	1.3
1	Region 26	0.9	-	-	6.3	-	-	7.2	-	-	1.7	-	-	0.0	-	-	8.9	-	-	0.0	-	-	0.0	-	-	0.6	-	-	0.6	-	-
1	Region 30	1.5	-	-	1.5	-	-	3.0	-	-	0.9	-	-	0.0	-	-	3.9	-	-	0.0	-	-	0.0	-	-	1.3	-	-	1.3	-	-
1	Region 31	4.2	-	-	6.7	-	-	10.9	-	-	1.2	-	-	0.0	-	-	12.1	-	-	0.0	-	-	0.0	-	-	0.7	-	-	0.7	-	-
1	Region 32	1.5	-	-	1.6	-	-	3.1	-	-	1.3	-	-	0.0	-	-	4.4	-	-	0.0	-	-	0.2	-	-	1.1	-	-	1.3	-	-
13	**Ave. COM**	**2.0**			**3.7**			**5.7**			**0.9**			**1.6**			**8.2**			**0.0**			**0.1**			**1.0**			**1.1**		
	Min. COM		**0.4**			**1.3**			**3.0**			**0.0**			**0.0**			**3.9**			**0.0**			**0.0**			**0.4**			**0.4**	
	Max. COM			**4.2**			**8.1**			**11.2**			**1.8**			**8.4**			**19.8**			**0.0**			**0.8**			**2.3**			**2.3**
492	**Ave. yellow maize**	**2.0**			**2.5**			**4.5**			**0.1**			**0.2**			**4.8**			**0.0**			**0.4**			**1.0**			**1.4**		
	Min. yellow maize		**0.2**			**0.1**			**0.8**			**0.0**			**0.0**			**0.8**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. yellow maize			**23.1**			**14.0**			**25.0**			**1.8**			**8.4**			**25.0**			**0.2**			**6.4**			**20.4**			**20.9**
1000	**Ave. maize**	**2.3**			**2.3**			**4.6**			**0.1**			**0.3**			**4.9**			**0.0**			**0.6**			**1.1**			**1.7**		
	Min. maize		**0.0**			**0.1**			**0.8**			**0.0**			**0.0**			**0.8**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max. maize			**23.1**			**14.0**			**25.0**			**1.8**			**8.4**			**25.0**			**0.8**			**10.1**			**20.4**			**20.9**

TABLE 4: GRADING QUALITY OF SOUTH AFRICAN WHITE AND YELLOW MAIZE 2003/04 - 2012/13

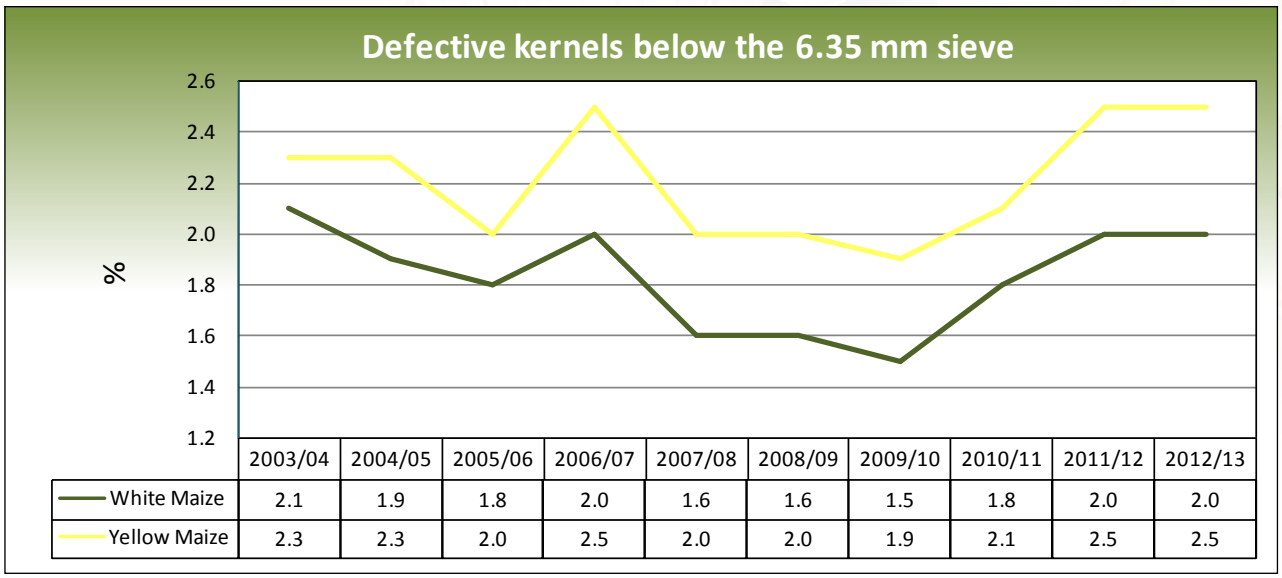
Season	Number of samples	% Defective kernels above 6.35 mm sieve			% Defective kernels below 6.35 mm sieve			% Foreign matter			% Other colour			% Total deviations		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
White Maize																
2003/04	599	4.0	0.6	27.2	2.1	0.4	20.4	0.3	0.0	1.2	0.3	0.0	5.7	6.7	1.3	47.9
2004/05	601	3.5	0.5	28.5	1.9	0.1	16.4	0.2	0.0	0.5	0.3	0.0	12.3	5.9	1.3	31.1
2005/06	593	6.0	0.5	27.9	1.8	0.0	8.8	0.2	0.0	0.7	0.3	0.0	5.0	8.3	1.0	31.2
2006/07	563	2.9	0.1	34.9	2.0	0.1	11.6	0.1	0.0	0.7	0.2	0.0	13.5	5.3	0.4	38.8
2007/08	483	2.0	0.3	13.6	1.6	0.0	10.3	0.2	0.0	0.7	0.2	0.0	5.2	3.9	0.5	18.5
2008/09	483	2.6	0.4	16.9	1.6	0.0	5.5	0.2	0.0	4.0	0.2	0.0	5.0	4.5	1.0	20.2
2009/10	458	5.1	1.0	40.1	1.5	0.2	14.0	0.1	0.0	0.4	0.2	0.0	6.5	6.9	1.4	41.4
2010/11	413	5.2	0.5	67.1	1.8	0.1	13.3	0.2	0.0	0.8	0.4	0.0	23.2	7.5	0.9	95.1
2011/12	577	2.5	0.3	21.6	2.0	0.0	8.1	0.1	0.0	1.1	0.3	0.0	43.7	5.0	0.7	51.2
2012/13	508	2.6	0.0	20.8	2.0	0.2	11.4	0.1	0.0	1.5	0.3	0.0	6.5	4.9	1.0	22.4
Weighted Average		**3.6**			**1.8**			**0.2**			**0.3**			**5.9**		
Minimum			**0.0**			**0.0**			**0.0**			**0.0**			**0.4**	
Maximum				**67.1**			**20.4**			**4.0**			**43.7**			**95.1**
Yellow Maize																
2003/04	301	4.3	0.5	22.5	2.3	0.5	8.7	0.3	0.0	0.9	0.2	0.0	5.3	7.0	1.2	28.0
2004/05	399	4.0	0.6	27.2	2.3	0.3	9.4	0.2	0.0	0.6	0.1	0.0	2.8	6.6	1.0	31.5
2005/06	307	5.5	0.8	23.7	2.0	0.0	9.8	0.2	0.0	0.4	0.4	0.0	16.7	8.1	1.3	32.7
2006/07	337	2.8	0.0	67.7	2.5	0.2	17.3	0.2	0.0	1.9	0.2	0.0	4.6	5.7	0.9	70.0
2007/08	417	1.6	0.3	8.4	2.0	0.2	7.3	0.1	0.0	0.4	0.1	0.0	4.3	3.9	0.6	11.0
2008/09	327	2.3	0.5	15.1	2.0	0.0	10.6	0.2	0.0	3.1	0.2	0.0	13.3	4.7	0.9	29.6
2009/10	342	5.1	0.3	23.8	1.9	0.1	12.9	0.2	0.0	4.1	0.1	0.0	4.2	7.2	0.6	25.0
2010/11	280	4.7	0.8	30.9	2.1	0.1	9.6	0.2	0.0	0.4	0.2	0.0	6.2	7.2	1.3	36.9
2011/12	423	2.5	0.4	66.3	2.5	0.2	22.9	0.1	0.0	3.6	0.2	0.0	5.6	5.2	1.0	90.4
2012/13	492	2.0	0.2	23.1	2.5	0.1	14.0	0.1	0.0	1.8	0.2	0.0	8.4	4.8	0.8	25.0
Weighted Average		**3.3**			**2.2**			**0.2**			**0.2**			**5.9**		
Minimum			**0.0**			**0.0**			**0.0**			**0.0**			**0.6**	
Maximum				**67.7**			**22.9**			**4.1**			**16.7**			**90.4**
White and Yellow Maize																
2003/04	900	4.1	0.5	27.2	2.2	0.4	20.4	0.3	0.0	1.2	0.3	0.0	5.7	6.8	1.2	47.9
2004/05	1000	3.7	0.5	28.5	2.1	0.1	16.4	0.2	0.0	0.6	0.2	0.0	12.3	6.2	1.0	31.5
2005/06	900	5.9	0.5	27.9	1.9	0.0	9.8	0.2	0.0	0.7	0.3	0.0	16.7	8.2	1.0	32.7
2006/07	900	2.9	0.0	67.7	2.2	0.1	17.3	0.2	0.0	1.9	0.2	0.0	13.5	5.4	0.4	70.0
2007/08	900	1.8	0.3	13.6	1.8	0.0	10.3	0.1	0.0	0.7	0.1	0.0	5.2	3.9	0.5	18.5
2008/09	810	2.5	0.4	16.9	1.8	0.0	10.6	0.2	0.0	4.0	0.2	0.0	13.3	4.6	0.9	29.6
2009/10	800	5.1	0.3	40.1	1.7	0.1	14.0	0.1	0.0	4.1	0.2	0.0	6.5	7.1	0.6	41.4
2010/11	693	5.0	0.5	67.1	1.9	0.1	13.3	0.2	0.0	0.8	0.3	0.0	23.2	7.4	0.9	95.1
2011/12	1000	2.5	0.3	66.3	2.2	0.0	22.9	0.1	0.0	3.6	0.3	0.0	43.7	5.1	0.7	90.4
2012/13	1000	2.3	0.0	23.1	2.3	0.1	14.0	0.1	0.0	1.8	0.3	0.0	8.4	4.9	0.8	25.0
Weighted Average		**3.5**			**2.0**			**0.2**			**0.2**			**5.9**		
Minimum			**0.0**			**0.0**			**0.0**			**0.0**			**0.4**	
Maximum				**67.7**			**22.9**			**4.1**			**43.7**			**95.1**

Graph 26: Percentage Defective Kernels above the 6.35 mm sieve over 10 seasons



	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
White Maize	4.0	3.5	6.0	2.9	2.0	2.6	5.1	5.2	2.5	2.6
Yellow Maize	4.3	4.0	5.5	2.8	1.6	2.3	5.1	4.7	2.5	2.0

Graph 27: Percentage Defective Kernels below the 6.35 mm sieve over 10 seasons



	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
White Maize	2.1	1.9	1.8	2.0	1.6	1.6	1.5	1.8	2.0	2.0
Yellow Maize	2.3	2.3	2.0	2.5	2.0	2.0	1.9	2.1	2.5	2.5

Graph 28: Percentage Total deviations over 10 seasons

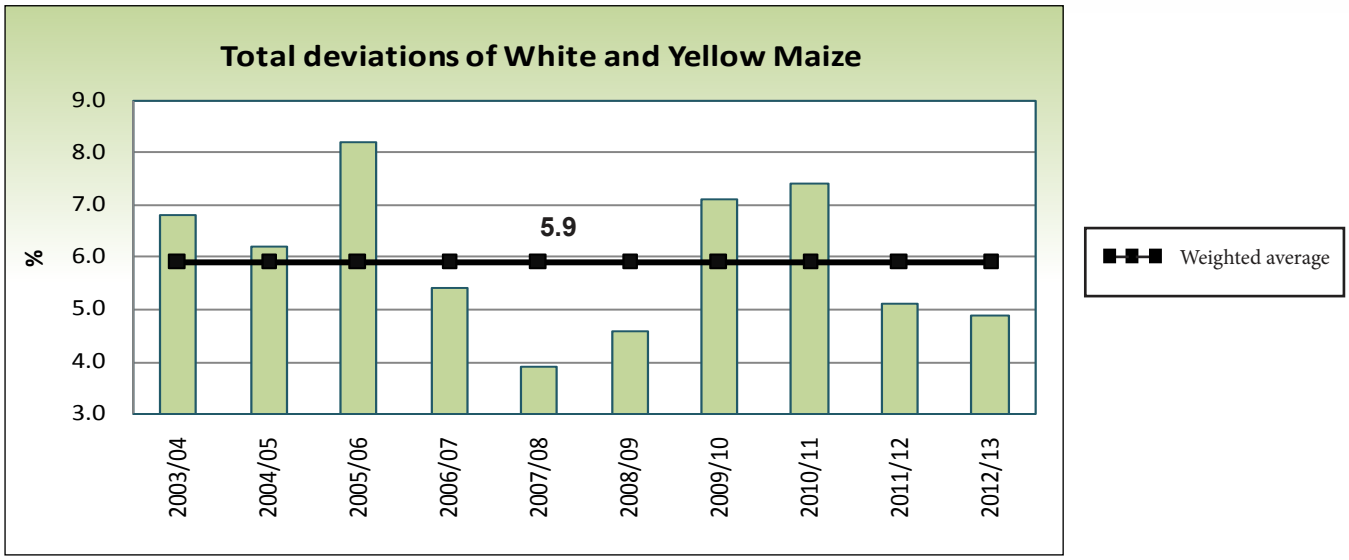


TABLE 5: USA GRADING OF WHITE MAIZE (2012/2013)

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																
3	Region 11	0.0	0.0	0.0	1.0	0.3	1.4	0.6	0.2	0.9	63.3	62.7	63.9	0.7	0.6	0.8
5	Region 12	0.0	0.0	0.0	1.7	1.2	2.5	0.3	0.1	0.6	61.6	59.9	62.5	0.0	0.0	0.2
5	Region 13	0.0	0.0	0.0	1.4	0.4	2.3	0.5	0.3	0.8	60.8	60.1	61.5	0.1	0.0	0.2
12	Region 14	0.0	0.0	0.0	1.9	0.7	2.8	0.6	0.1	1.1	60.7	56.4	62.0	0.1	0.0	0.5
3	Region 15	0.0	0.0	0.0	2.5	2.2	2.7	0.5	0.2	0.9	62.7	62.3	63.2	0.1	0.0	0.2
10	Region 16	0.0	0.0	0.0	1.9	0.9	2.7	0.9	0.3	1.7	61.8	60.3	62.5	0.1	0.0	0.5
7	Region 17	0.0	0.0	0.0	1.5	1.2	2.3	0.3	0.1	0.4	60.7	59.2	62.2	0.1	0.0	0.2
9	Region 18	0.0	0.0	0.0	1.9	1.0	2.5	0.5	0.2	0.9	61.3	59.7	64.4	0.1	0.0	0.4
10	Region 19	0.0	0.0	0.0	1.9	0.7	3.0	0.3	0.1	0.4	61.2	58.2	63.4	0.4	0.0	1.9
6	Region 20	0.0	0.0	0.0	2.0	1.3	2.6	0.4	0.2	0.8	60.8	58.7	62.5	0.2	0.0	0.6
34	Region 21	0.0	0.0	0.0	1.2	0.0	2.3	0.5	0.1	1.3	61.0	56.6	62.5	0.1	0.0	1.3
30	Region 22	0.0	0.0	0.0	1.7	0.7	2.9	0.6	0.1	1.8	61.5	60.0	62.5	0.0	0.0	0.3
48	Region 23	0.0	0.0	0.0	2.0	0.6	3.0	0.5	0.1	2.0	61.9	60.0	62.8	0.1	0.0	1.8
25	Region 24	0.0	0.0	0.0	2.1	1.1	3.0	0.5	0.2	1.0	61.7	59.6	77.3	0.0	0.0	0.5
5	Region 25	0.0	0.0	0.0	1.8	1.3	2.8	0.6	0.1	1.2	59.7	57.0	61.2	0.4	0.0	1.2
16	Region 26	0.0	0.0	0.0	1.8	0.8	2.9	0.7	0.1	1.6	60.4	58.4	61.8	0.4	0.0	1.4
4	Region 27	0.0	0.0	0.0	1.4	0.5	2.8	0.6	0.4	0.9	58.7	58.2	59.7	0.5	0.0	1.6
12	Region 28	0.0	0.0	0.0	1.5	0.7	2.5	0.2	0.0	0.4	60.5	58.2	62.5	0.2	0.0	1.0
13	Region 29	0.0	0.0	0.0	1.6	0.7	2.6	0.3	0.1	0.8	61.6	59.5	63.9	0.1	0.0	0.3
14	Region 30	0.0	0.0	0.0	2.0	1.1	2.8	0.2	0.0	0.4	60.4	59.2	61.9	0.2	0.0	0.6
24	Region 31	0.0	0.0	0.0	1.8	0.0	3.0	0.4	0.0	1.4	60.3	56.2	62.0	0.4	0.0	1.2
23	Region 32	0.0	0.0	0.0	1.8	0.7	2.5	0.6	0.1	1.4	60.4	59.3	61.7	0.2	0.0	0.9
21	Region 33	0.0	0.0	0.0	2.0	0.9	2.8	0.5	0.0	1.8	59.7	57.2	62.3	0.2	0.0	0.8
29	Region 34	0.0	0.0	0.0	1.8	0.5	2.9	0.4	0.0	1.3	60.8	58.7	62.5	0.1	0.0	1.0
4	Region 35	0.0	0.0	0.0	1.2	0.5	1.8	0.4	0.1	0.9	60.3	59.5	61.8	0.1	0.0	0.2
8	Region 36	0.0	0.0	0.0	2.2	1.4	2.8	0.2	0.1	0.5	59.8	56.9	61.4	0.1	0.0	1.0
380	**Ave. US No.1**	**0.0**			**1.8**			**0.5**			**61.0**			**0.2**		
	Min. US No.1		**0.0**			**0.0**			**0.0**			**56.2**			**0.0**	
	Max. US No.1			**0.0**			**3.0**			**2.0**			**77.3**			**1.9**
GRADE: US No.2																
5	Region 13	0.0	0.0	0.0	3.8	3.1	4.5	1.3	0.6	2.6	60.6	60.3	61.3	0.3	0.0	0.6
4	Region 14	0.0	0.0	0.0	4.2	3.9	4.6	0.1	0.1	0.2	59.9	57.6	61.0	0.3	0.0	0.6
5	Region 15	0.0	0.0	0.0	3.7	3.3	4.5	1.0	0.7	1.3	62.4	61.9	62.7	0.0	0.0	0.0
7	Region 16	0.0	0.0	0.0	3.5	3.1	3.8	0.9	0.6	1.1	62.1	61.6	63.4	0.0	0.0	0.3
2	Region 18	0.0	0.0	0.0	4.3	3.7	4.8	0.6	0.3	1.0	59.7	59.6	59.8	0.2	0.0	0.4
2	Region 20	0.0	0.0	0.0	4.2	3.9	4.6	0.4	0.2	0.6	60.0	59.6	60.3	0.0	0.0	0.0
1	Region 21	0.0	-	-	3.8	-	-	0.4	-	-	62.3	-	-	0.0	-	-
2	Region 22	0.0	0.0	0.0	4.0	3.4	4.6	0.7	0.4	1.0	60.5	59.6	61.4	0.3	0.0	0.5
6	Region 23	0.0	0.0	0.0	3.4	1.6	4.9	0.9	0.3	2.3	61.1	57.8	63.3	0.0	0.0	0.2
2	Region 25	0.0	0.0	0.0	2.3	1.8	2.8	1.7	1.4	2.1	57.4	55.1	59.6	0.2	0.0	0.4
2	Region 28	0.0	0.0	0.0	3.8	3.1	4.4	0.8	0.2	1.4	59.8	58.4	61.1	0.0	0.0	0.0
2	Region 29	0.0	0.0	0.0	4.0	3.9	4.0	0.6	0.4	0.8	61.0	60.7	61.3	0.2	0.2	0.2
4	Region 30	0.0	0.0	0.0	3.9	3.4	4.8	0.2	0.1	0.3	61.1	60.4	62.2	0.1	0.0	0.4
2	Region 31	0.0	0.0	0.0	3.5	3.1	3.9	0.7	0.3	1.2	59.4	59.1	59.6	0.0	0.0	0.0
8	Region 32	0.0	0.0	0.0	3.4	2.0	4.3	0.4	0.0	1.0	59.8	55.2	63.0	0.1	0.0	0.9
9	Region 33	0.0	0.0	0.0	3.1	1.7	3.7	0.6	0.2	2.3	59.0	55.9	61.3	0.3	0.0	0.9
4	Region 34	0.0	0.0	0.0	3.8	3.2	4.9	0.8	0.2	1.9	60.8	60.1	61.4	0.2	0.0	0.5
2	Region 35	0.0	0.0	0.0	3.6	3.6	3.7	0.3	0.1	0.4	60.7	59.9	61.5	0.0	0.0	0.0
8	Region 36	0.0	0.0	0.0	3.7	1.6	5.0	0.9	0.1	2.7	60.1	58.5	61.2	0.1	0.0	0.4
77	**Ave. US No.2**	**0.0**			**3.6**			**0.7**			**60.4**			**0.1**		
	Min. US No.2		**0.0**			**1.6**			**0.0**			**55.1**			**0.0**	
	Max. US No.2			**0.0**			**5.0**			**2.7**			**63.4**			**0.9**

TABLE 5: USA GRADING OF WHITE MAIZE (2012/2013) (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																
2	Region 12	0.0	0.0	0.0	6.1	5.5	6.7	0.4	0.2	0.6	61.5	60.3	62.7	0.2	0.1	0.2
1	Region 13	0.0	-	-	5.4	-	-	0.3	-	-	58.8	-	-	1.2	-	-
1	Region 15	0.0	-	-	7.0	-	-	1.7	-	-	62.7	-	-	0.0	-	-
3	Region 17	0.0	0.0	0.0	5.6	5.1	6.3	0.9	0.4	1.5	58.2	57.4	59.4	0.2	0.0	0.5
1	Region 18	0.0	-	-	6.2	-	-	0.2	-	-	59.2	-	-	0.0	-	-
2	Region 20	0.0	0.0	0.0	6.3	5.8	6.8	0.7	0.7	0.8	60.9	60.1	61.7	0.2	0.0	0.3
1	Region 22	0.0	-	-	6.7	-	-	0.7	-	-	63.7	-	-	0.0	-	-
1	Region 23	0.0	-	-	6.5	-	-	0.3	-	-	61.0	-	-	0.0	-	-
1	Region 25	0.0	-	-	4.1	-	-	3.2	-	-	54.1	-	-	0.5	-	-
2	Region 32	0.0	0.0	0.0	6.1	5.9	6.4	0.7	0.4	1.0	59.6	59.4	59.8	0.1	0.0	0.2
1	Region 33	0.0	-	-	3.5	-	-	3.2	-	-	57.1	-	-	0.1	-	-
2	Region 34	0.0	0.0	0.0	5.3	5.2	5.4	0.5	0.4	0.5	60.7	60.6	60.8	0.3	0.2	0.3
1	Region 35	0.0	-	-	5.5	-	-	0.3	-	-	61.3	-	-	0.2	-	-
19	**Ave. US No.3**	**0.0**			**5.8**			**0.9**			**59.9**			**0.2**		
	Min. US No.3		**0.0**			**3.5**			**0.2**			**54.1**			**0.0**	
	Max. US No.3			**0.0**			**7.0**			**3.2**			**63.7**			**1.2**
GRADE: US No.4																
1	Region 12	0.0	-	-	8.5	-	-	0.2	-	-	62.2	-	-	0.0	-	-
1	Region 13	0.0	-	-	8.4	-	-	0.6	-	-	61.6	-	-	0.0	-	-
1	Region 15	0.0	-	-	7.2	-	-	0.4	-	-	62.3	-	-	0.0	-	-
1	Region 19	0.0	-	-	8.9	-	-	0.9	-	-	60.3	-	-	0.0	-	-
1	Region 26	0.0	-	-	9.5	-	-	0.3	-	-	59.9	-	-	1.7	-	-
1	Region 32	0.0	-	-	8.1	-	-	0.3	-	-	58.0	-	-	0.0	-	-
1	Region 33	0.0	-	-	9.6	-	-	0.8	-	-	60.4	-	-	0.0	-	-
2	Region 34	0.0	0.0	0.0	7.9	7.2	8.6	0.5	0.2	0.8	60.1	59.4	60.7	0.2	0.0	0.5
2	Region 36	0.0	0.0	0.0	7.4	7.1	7.6	0.4	0.1	0.7	59.3	59.0	59.6	0.2	0.1	0.2
11	**Ave. US No.4**	**0.0**			**8.3**			**0.5**			**60.3**			**0.2**		
	Min. US No.4		**0.0**			**7.1**			**0.1**			**58.0**			**0.0**	
	Max. US No.4			**0.0**			**9.6**			**0.9**			**62.3**			**1.7**
GRADE: US No.5																
1	Region 18	0.0	-	-	10.9	-	-	0.1	-	-	61.9	-	-	0.0	-	-
1	Region 25	0.0	-	-	1.7	-	-	5.2	-	-	56.7	-	-	0.1	-	-
1	Region 27	0.0	-	-	2.5	-	-	5.7	-	-	59.6	-	-	1.8	-	-
1	Region 29	0.0	-	-	12.7	-	-	0.7	-	-	62.4	-	-	0.4	-	-
2	Region 34	0.0	0.0	0.0	11.5	11.2	11.9	0.5	0.4	0.6	62.1	61.9	62.2	0.2	0.0	0.4
1	Region 36	0.0	-	-	11.5	-	-	0.1	-	-	61.5	-	-	0.0	-	-
7	**Ave. US No.5**	**0.0**			**8.9**			**1.8**			**60.9**			**0.4**		
	Min. US No.5		**0.0**			**1.7**			**0.1**			**56.7**			**0.0**	
	Max.US No.5			**0.0**			**12.7**			**5.7**			**62.4**			**1.8**
GRADE: Mixed Grade																
1	Region 11	0.0	-	-	0.7	-	-	0.4	-	-	63.2	-	-	4.5	-	-
1	Region 17	0.0	-	-	2.1	-	-	1.0	-	-	61.2	-	-	2.3	-	-
1	Region 19	0.0	-	-	7.4	-	-	0.5	-	-	57.1	-	-	2.3	-	-
1	Region 25	0.0	-	-	2.2	-	-	0.7	-	-	59.0	-	-	6.5	-	-
1	Region 26	0.0	-	-	3.3	-	-	1.0	-	-	60.3	-	-	2.1	-	-
1	Region 29	0.0	-	-	1.9	-	-	0.2	-	-	61.8	-	-	4.8	-	-
1	Region 30	0.0	-	-	1.6	-	-	0.4	-	-	58.9	-	-	2.2	-	-
3	Region 31	0.0	-	-	3.4	1.8	6.3	0.4	0.1	0.7	59.1	58.3	60.3	3.1	2.9	3.3
2	Region 33	0.0	-	-	1.4	0.9	1.9	1.0	0.2	1.7	59.5	59.3	59.6	3.4	3.2	3.6
1	Region 34	0.0	-	-	3.2	-	-	0.4	-	-	60.5	-	-	4.3	-	-

TABLE 5: USA GRADING OF WHITE MAIZE (2012/2013) (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: Mixed Grade																
13	**Ave. Mixed Grade**	**0.0**			**2.7**			**0.6**			**59.9**			**3.5**		
	Min. Mixed Grade		**0.0**			**0.7**			**0.1**			**57.1**			**2.1**	
	Max. Mixed Grade			**0.0**			**7.4**			**1.7**			**63.2**			**6.5**
GRADE: Sample																
1	Region 34	0.0	-	-	19.2	-	-	0.3	-	-	58.8	-	-	0.0	-	-
1	**Ave. Sample**	**0.0**			**19.2**			**0.3**			**58.8**			**0.0**		
	Min. Sample		**-**			**-**			**-**			**-**			**-**	
	Max. Sample			**-**			**-**			**-**			**-**			**-**
508	**Ave. white maize**	**0.0**			**2.5**			**0.6**			**60.8**			**0.3**		
	Min. white maize		**0.0**			**0.0**			**0.0**			**54.1**			**0.0**	
	Max. white maize			**0.0**			**19.2**			**5.7**			**77.3**			**6.5**
1000	**Ave. maize**	**0.0**			**2.2**			**0.6**			**60.2**			**0.2**		
	Min. maize		**0.0**			**0.0**			**0.0**			**52.6**			**0.0**	
	Max. maize			**0.0**			**20.9**			**7.6**			**77.3**			**8.4**

TABLE 6: USA GRADING OF YELLOW MAIZE (2012/2013)

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																
13	Region 10	0.0	0.0	0.0	0.8	0.4	1.4	0.2	0.0	0.9	61.8	59.6	62.9	0.0	0.0	0.0
20	Region 11	0.0	0.0	0.0	1.9	0.4	3.0	0.5	0.2	0.9	60.8	59.1	62.2	0.1	0.0	1.2
9	Region 12	0.0	0.0	0.0	1.4	0.6	2.7	0.6	0.3	1.0	59.2	57.0	61.3	0.3	0.0	2.0
6	Region 13	0.0	0.0	0.0	1.8	1.1	2.8	0.8	0.3	1.5	59.4	56.4	62.0	0.0	0.0	0.1
11	Region 14	0.0	0.0	0.0	1.5	0.3	2.7	0.6	0.1	1.6	59.4	56.5	62.0	0.4	0.0	3.4
2	Region 15	0.0	0.0	0.0	2.0	2.0	2.1	0.4	0.1	0.7	60.7	59.8	61.5	0.2	0.2	0.2
2	Region 16	0.0	0.0	0.0	2.2	1.5	2.9	0.4	0.4	0.4	61.0	60.4	61.6	2.2	0.3	4.2
11	Region 17	0.0	0.0	0.0	1.3	0.4	2.6	0.6	0.1	1.3	58.7	56.5	61.5	0.4	0.0	1.6
9	Region 18	0.0	0.0	0.0	1.0	0.6	2.4	0.4	0.1	1.4	62.5	59.4	75.9	0.4	0.0	1.8
10	Region 19	0.0	0.0	0.0	1.5	0.6	2.1	0.8	0.3	1.3	59.2	58.5	60.4	0.2	0.0	1.6
7	Region 20	0.0	0.0	0.0	1.8	1.0	2.6	1.1	0.5	1.5	59.3	56.1	60.3	0.0	0.0	0.2
10	Region 21	0.0	0.0	0.0	1.2	0.4	2.2	0.8	0.4	1.7	58.8	56.7	61.1	0.7	0.0	4.5
4	Region 22	0.0	0.0	0.0	1.2	1.0	1.4	0.3	0.0	0.6	59.6	57.9	60.5	0.3	0.0	0.5
23	Region 23	0.0	0.0	0.0	1.6	0.6	2.3	0.4	0.0	1.8	59.9	57.2	62.6	0.6	0.0	4.5
8	Region 24	0.0	0.0	0.0	1.5	0.5	2.9	0.7	0.2	1.5	60.7	58.3	62.0	0.0	0.0	0.1
21	Region 25	0.0	0.0	0.0	1.6	0.6	2.8	0.7	0.1	2.0	59.0	56.5	61.5	0.0	0.0	0.3
26	Region 26	0.0	0.0	0.0	1.9	0.6	3.0	0.7	0.1	1.9	59.0	56.0	60.4	0.1	0.0	1.3
6	Region 27	0.0	0.0	0.0	1.1	0.4	1.7	0.8	0.5	1.5	60.2	57.6	61.5	0.1	0.0	0.3
16	Region 28	0.0	0.0	0.0	1.7	1.0	2.9	0.5	0.0	1.8	59.2	57.7	60.6	0.0	0.0	0.2
33	Region 29	0.0	0.0	0.0	1.5	0.4	2.9	0.5	0.1	1.6	60.1	58.0	63.4	0.0	0.0	0.9
42	Region 30	0.0	0.0	0.0	1.3	0.4	2.9	0.5	0.0	1.5	60.0	57.0	62.2	0.1	0.0	1.2
35	Region 31	0.0	0.0	0.0	1.5	0.5	3.0	0.4	0.1	1.4	59.7	56.7	62.0	0.1	0.0	1.6
33	Region 32	0.0	0.0	0.0	1.4	0.3	3.0	0.7	0.0	2.0	59.7	57.0	62.0	0.2	0.0	3.1
13	Region 33	0.0	0.0	0.0	1.5	0.8	2.3	0.3	0.0	0.8	58.9	56.5	59.9	0.1	0.0	0.8
22	Region 34	0.0	0.0	0.0	1.3	0.7	2.2	0.5	0.0	1.5	60.3	58.4	62.2	0.4	0.0	2.1
8	Region 35	0.0	0.0	0.0	1.3	0.6	2.5	0.3	0.1	0.5	59.6	57.6	61.9	0.1	0.0	0.6
13	Region 36	0.0	0.0	0.0	1.9	1.0	3.0	0.6	0.1	1.7	59.3	57.5	60.9	0.1	0.0	0.4
413	**Ave. US No.1**	**0.0**			**1.5**			**0.5**			**59.8**			**0.2**		
	Min. US No.1		**0.0**			**0.3**			**0.0**			**56.0**			**0.0**	
	Max. US No.1			**0.0**			**3.0**			**2.0**			**75.9**			**4.5**
GRADE: US No.2																
2	Region 11	0.0	0.0	0.0	4.3	3.8	4.8	1.0	0.8	1.2	60.0	58.9	61.0	0.0	0.0	0.0
1	Region 14	0.0	-	-	0.7	-	-	2.5	-	-	60.6	-	-	0.0	-	-
1	Region 16	0.0	-	-	1.0	-	-	2.1	-	-	59.3	-	-	0.0	-	-
1	Region 17	0.0	-	-	4.2	-	-	1.2	-	-	57.3	-	-	0.2	-	-
1	Region 18	0.0	-	-	1.1	-	-	0.4	-	-	54.1	-	-	0.0	-	-
1	Region 19	0.0	-	-	4.3	-	-	0.3	-	-	58.8	-	-	0.0	-	-
1	Region 20	0.0	-	-	1.0	-	-	2.6	-	-	59.1	-	-	1.0	-	-
2	Region 21	0.0	0.0	0.0	4.4	4.1	4.7	0.7	0.3	1.2	59.0	59.0	59.0	0.0	0.0	0.0
1	Region 23	0.0	-	-	3.9	-	-	0.5	-	-	56.0	-	-	0.0	-	-
1	Region 24	0.0	-	-	2.6	-	-	2.8	-	-	57.5	-	-	0.2	-	-
2	Region 25	0.0	0.0	0.0	2.3	1.5	3.1	2.1	1.6	2.5	58.6	57.0	60.1	0.1	0.0	0.2
2	Region 26	0.0	0.0	0.0	2.8	1.0	4.6	1.1	0.2	2.1	57.8	56.0	59.5	0.0	0.0	0.0
1	Region 27	0.0	-	-	1.3	-	-	0.4	-	-	55.7	-	-	0.0	-	-
1	Region 28	0.0	-	-	3.6	-	-	0.3	-	-	59.3	-	-	0.5	-	-
3	Region 29	0.0	0.0	0.0	3.6	3.4	4.1	0.4	0.2	0.7	59.5	59.4	59.6	0.2	0.0	0.5
3	Region 30	0.0	0.0	0.0	2.5	0.9	3.4	1.1	0.2	2.5	60.3	59.9	60.5	0.3	0.0	0.8
7	Region 31	0.0	0.0	0.0	2.6	0.6	4.2	0.8	0.1	2.5	59.1	55.8	60.7	0.0	0.0	0.0
5	Region 32	0.0	0.0	0.0	2.7	0.9	4.1	1.7	0.6	2.6	60.1	58.0	60.8	0.4	0.0	0.8
2	Region 33	0.0	0.0	0.0	3.3	2.5	4.1	1.0	0.8	1.2	56.9	54.9	58.9	0.0	0.0	0.1
2	Region 34	0.0	0.0	0.0	3.2	3.1	3.2	0.4	0.3	0.4	60.3	60.3	60.3	0.2	0.0	0.5
4	Region 35	0.0	0.0	0.0	2.8	0.2	4.0	0.4	0.1	0.9	57.3	54.3	58.6	0.0	0.0	0.2
6	Region 36	0.0	0.0	0.0	3.3	1.6	4.8	0.6	0.1	2.2	58.7	55.8	59.6	0.6	0.0	3.2

TABLE 6: USA GRADING OF YELLOW MAIZE (2012/2013) (continue)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight (lbs)			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: US No.2																
50	**Ave. US No.2**	**0.0**			**2.9**			**1.0**			**58.7**			**0.2**		
	Min. US No.2		**0.0**			**0.2**			**0.1**			**54.1**			**0.0**	
	Max. US No.2			**0.0**			**4.8**			**2.8**			**61.0**			**3.2**
GRADE: US No.3																
1	Region 11	0.0	-	-	1.2	-	-	2.9	-	-	53.7	-	-	0.0	-	-
1	Region 13	0.0	-	-	0.4	-	-	1.3	-	-	53.6	-	-	0.5	-	-
2	Region 26	0.0	0.0	0.0	0.9	0.7	1.1	3.0	3.0	3.0	52.8	52.6	52.9	0.0	0.0	0.0
1	Region 27	0.0	-	-	0.9	-	-	4.0	-	-	56.7	-	-	0.0	-	-
6	Region 31	0.0	0.0	0.0	4.8	1.9	5.9	1.1	0.1	3.9	56.9	53.5	59.1	0.0	0.0	0.0
1	Region 32	0.0	-	-	6.3	-	-	0.9	-	-	60.1	-	-	0.0	-	-
12	**Ave. US No.3**	**0.0**			**3.3**			**1.8**			**55.9**			**0.0**		
	Min. US No.3		**0.0**			**0.4**			**0.1**			**52.6**			**0.0**	
	Max. US No.3			**0.0**			**6.3**			**4.0**			**60.1**			**0.5**
GRADE: US No.4																
1	Region 10	0.0	-	-	9.0	-	-	0.1	-	-	59.5	-	-	0.0	-	-
1	Region 11	0.0	-	-	9.2	-	-	0.5	-	-	58.6	-	-	0.0	-	-
1	Region 18	0.0	-	-	9.1	-	-	1.4	-	-	59.9	-	-	0.0	-	-
1	Region 26	0.0	-	-	7.4	-	-	0.4	-	-	59.4	-	-	0.0	-	-
1	Region 29	0.0	-	-	9.1	-	-	0.5	-	-	62.0	-	-	0.0	-	-
1	Region 33	0.0	-	-	2.0	-	-	4.9	-	-	54.7	-	-	0.4	-	-
6	**Ave. US No.4**	**0.0**			**7.6**			**1.3**			**59.0**			**0.1**		
	Min. US No.4		**0.0**			**2.0**			**0.1**			**54.7**			**0.0**	
	Max. US No.4			**0.0**			**9.2**			**4.9**			**62.0**			**0.4**
GRADE: US No.5																
1	Region 12	0.0	-	-	10.3	-	-	0.8	-	-	59.9	-	-	0.0	-	-
4	Region 34	0.0	0.0	0.0	11.4	10.2	13.0	0.6	0.3	0.9	57.6	57.0	58.1	0.2	0.0	0.9
5	**Ave. US No.5**	**0.0**			**11.2**			**0.6**			**58.1**			**0.2**		
	Min. US No.5		**0.0**			**10.2**			**0.3**			**57.0**			**0.0**	
	Max. US No.5			**0.0**			**13.0**			**0.9**			**59.9**			**0.9**
GRADE: Mixed Grade																
1	Region 16	0.0	-	-	2.5	-	-	0.2	-	-	61.5	-	-	6.0	-	-
1	Region 17	0.0	-	-	3.1	-	-	1.0	-	-	56.2	-	-	8.4	-	-
1	Region 23	0.0	-	-	1.2	-	-	1.5	-	-	57.2	-	-	6.0	-	-
3	**Ave. Mixed Grade**	**0.0**			**2.3**			**0.9**			**58.3**			**6.8**		
	Min. Mixed Grade		**0.0**			**1.2**			**0.2**			**56.2**			**6.0**	
	Max. Mixed Grade			**0.0**			**3.1**			**1.5**			**61.5**			**8.4**
GRADE: Sample Grade																
1	Region 19	0.0	-	-	16.3	-	-	1.3	-	-	56.2	-	-	0.2	-	-
1	Region 29	0.0	-	-	20.9	-	-	0.9	-	-	56.5	-	-	0.0	-	-
1	Region 36	0.0	-	-	2.3	-	-	7.6	-	-	59.8	-	-	0.7	-	-
3	**Ave. Sample Grade**	**0.0**			**13.2**			**3.2**			**57.5**			**0.3**		
	Min. Sample Grade		**0.0**			**2.3**			**0.9**			**56.2**			**0.0**	
	Max. Sample Grade			**0.0**			**20.9**			**7.6**			**59.8**			**0.7**
492	**Ave. yellow maize**	**0.0**			**1.9**			**0.7**			**59.5**			**0.2**		
	Min. yellow maize		**0.0**			**0.2**			**0.0**			**52.6**			**0.0**	
	Max. yellow maize			**0.0**			**20.9**			**7.6**			**75.9**			**8.4**
1000	**Ave. maize**	**0.0**			**2.2**			**0.6**			**60.2**			**0.2**		
	Min. maize		**0.0**			**0.0**			**0.0**			**52.6**			**0.0**	
	Max. maize			**0.0**			**20.9**			**7.6**			**77.3**			**8.4**

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

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

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

* Not specified

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

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

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

U.S. Sample grade is corn that:

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

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

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

d) Is heating or otherwise of distinctly low quality.

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

TABLE 9: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE (2012/2013)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM1																												
3	Region 11	81.6	80.8	82.2	32.2	29.6	34.3	2.7	1.8	3.4	57.5	52.2	60.6	39.8	36.0	44.8	1.5	1.2	2.0	1.0	0.7	1.2	7	1	11	109.9	108.4	112.8
5	Region 12	79.3	77.1	80.5	27.3	22.9	30.9	11.0	7.3	15.8	64.7	53.7	69.9	24.3	14.3	34.3	1.0	0.7	1.3	0.6	0.4	0.9	3	1	8	109.5	103.6	114.8
5	Region 13	78.4	77.7	79.2	23.6	20.9	25.9	6.7	3.8	11.5	62.0	49.9	68.8	31.2	19.7	46.3	0.8	0.4	1.5	0.3	0.2	0.6	3	1	7	104.5	97.8	111.1
14	Region 14	77.9	72.6	79.7	26.2	18.3	35.0	8.7	0.7	18.1	61.7	41.5	78.3	29.6	9.1	57.8	1.1	0.7	2.1	0.6	0.1	1.5	6	1	20	105.7	87.5	117.2
8	Region 15	80.5	79.7	81.3	29.7	26.0	32.0	20.4	11.7	24.1	66.4	62.8	70.4	13.2	10.2	17.9	0.9	0.6	1.6	0.5	0.2	1.2	3	1	6	103.3	97.8	111.0
16	Region 16	79.7	77.7	81.6	27.8	21.5	31.4	13.8	3.6	23.4	63.5	48.1	72.4	22.7	8.5	48.3	0.6	0.3	1.1	0.4	0.2	0.7	5	0	9	105.6	95.5	110.3
7	Region 17	78.1	76.2	80.1	26.1	24.4	28.0	9.4	4.4	18.9	62.6	60.2	64.7	27.9	18.1	34.9	0.8	0.2	1.1	0.4	0.0	0.7	4	1	8	102.2	97.2	112.0
11	Region 18	78.5	76.2	82.9	28.1	23.3	33.9	10.0	2.1	28.5	65.9	58.0	75.8	24.0	7.5	39.9	1.1	0.3	1.7	0.7	0.0	1.2	6	1	17	98.1	91.0	110.8
10	Region 19	78.7	74.9	81.6	27.3	22.3	33.2	7.6	1.0	14.5	61.9	44.3	71.0	30.5	15.7	54.7	1.1	0.6	1.6	0.7	0.3	1.3	4	1	7	106.1	102.2	112.1
7	Region 20	78.1	75.6	80.4	30.7	25.4	38.3	11.0	6.9	16.1	68.3	63.5	75.9	20.7	15.3	27.6	1.6	0.8	2.2	1.1	0.4	1.9	4	2	8	99.7	90.3	111.0
34	Region 21	78.5	72.9	80.4	28.0	21.6	41.2	11.2	3.3	23.1	67.1	56.2	77.5	21.7	10.9	37.3	1.1	0.1	2.3	0.7	0.1	1.6	4	0	11	101.1	88.6	115.3
29	Region 22	79.2	77.6	80.5	29.1	25.4	31.3	15.8	1.2	24.3	66.8	61.4	72.7	17.5	11.1	33.7	0.7	0.2	1.2	0.5	0.2	0.9	2	0	9	98.0	88.6	104.8
49	Region 23	79.6	74.4	81.5	30.3	21.4	37.6	18.4	2.1	27.6	67.5	50.1	75.6	14.1	6.6	46.1	1.0	0.1	2.6	0.8	0.1	2.3	3	0	16	103.0	81.2	119.5
24	Region 24	78.5	76.7	80.9	26.3	22.6	31.9	14.3	1.0	30.1	63.9	59.0	71.9	21.9	6.8	34.8	0.8	0.1	2.3	0.4	0.1	1.0	2	0	8	94.0	80.4	113.6
5	Region 25	75.6	70.9	78.8	28.1	22.4	31.7	10.9	1.9	17.0	67.8	63.1	74.3	21.3	10.9	33.8	1.3	0.3	2.1	1.1	0.7	1.5	7	4	10	79.0	47.3	92.2
14	Region 26	78.1	75.5	79.6	27.1	23.7	31.0	10.8	3.2	25.3	63.2	52.5	72.4	26.0	12.7	42.1	0.8	0.2	1.4	0.5	0.2	1.0	3	1	7	97.2	88.7	105.8
4	Region 27	75.5	74.9	76.9	29.0	27.8	31.1	12.9	1.2	25.7	58.2	46.2	68.6	28.9	14.5	52.6	2.4	1.1	3.6	1.6	0.9	2.4	4	0	7	98.6	94.5	103.7
14	Region 28	77.7	74.9	80.4	32.3	23.6	46.0	16.3	5.3	30.1	68.2	59.7	78.7	15.5	5.8	25.7	0.8	0.3	1.3	0.6	0.2	0.9	4	0	13	92.0	74.5	100.9
15	Region 29	79.2	76.6	82.2	33.2	27.7	40.3	15.8	2.2	34.2	66.8	59.9	74.8	17.4	4.4	37.9	0.8	0.1	1.4	0.6	0.0	1.1	5	0	14	103.6	94.3	114.3
19	Region 30	77.8	75.8	80.0	33.2	28.2	40.3	20.9	5.0	39.3	64.1	54.5	71.3	15.0	5.6	33.1	0.6	0.2	1.3	0.5	0.1	1.3	3	0	11	91.4	84.7	98.9
26	Region 31	77.7	75.7	79.9	33.4	26.3	41.0	20.3	5.0	59.9	62.9	38.0	80.5	17.1	3.1	38.8	1.3	0.2	5.1	0.9	0.1	2.8	4	0	14	92.9	67.4	106.9
30	Region 32	77.5	71.0	81.1	31.9	25.0	37.0	20.6	2.0	49.2	63.8	47.1	75.8	15.6	3.7	37.5	0.8	0.0	2.0	0.5	0.0	1.5	5	0	20	86.8	74.1	105.3
28	Region 33	76.8	71.9	80.2	28.5	23.2	35.8	16.2	3.1	32.6	66.3	55.3	79.6	17.5	6.0	27.6	0.8	0.1	2.8	0.6	0.0	1.8	4	0	18	84.3	65.1	104.0
34	Region 34	78.3	75.6	80.4	31.1	26.1	36.7	14.6	4.1	32.8	68.6	57.7	76.1	16.8	7.4	35.2	1.0	0.4	2.3	0.8	0.2	1.8	5	0	12	95.4	82.8	108.7
6	Region 35	77.8	76.6	79.6	30.2	25.3	35.0	20.0	6.0	26.1	62.6	50.3	68.7	17.4	8.0	35.6	1.4	0.6	2.5	0.8	0.3	1.1	9	4	21	94.9	82.0	106.5
14	Region 36	77.1	73.2	79.0	33.7	28.4	41.2	14.2	6.5	35.8	69.8	59.8	80.5	15.9	4.4	21.8	1.4	0.4	3.3	1.1	0.4	2.4	10	2	24	95.4	86.2	104.5
431	**Ave. WM1**	**78.4**			**29.8**			**15.2**			**65.6**			**19.3**			**1.0**			**0.7**			**4**			**97.0**		
	Min. WM1		**70.9**			**18.3**			**0.7**			**38.0**			**3.1**			**0.0**			**0.0**			**0**			**47.3**	
	Max. WM1			**82.9**			**46.0**			**59.9**			**80.5**			**57.8**			**5.1**			**2.8**			**24**			**119.5**

TABLE 9: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE (2012/2013)
(continue)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM2																												
1	Region 11	81.4	-	-	27.9	-	-	0.0	-	-	44.2	-	-	55.8	-	-	1.5	-	-	1.0	-	-	8	-	-	108.5	-	-
3	Region 12	79.5	77.7	80.7	28.5	26.2	30.4	8.1	3.5	15.3	61.0	51.3	67.4	30.9	20.3	45.2	1.2	1.0	1.5	0.8	0.4	1.0	4	1	8	108.3	102.7	111.3
5	Region 13	77.5	75.7	78.9	21.2	17.7	25.2	5.4	2.4	9.3	51.6	36.2	61.4	43.0	29.3	61.4	1.4	0.9	1.7	0.6	0.5	1.0	4	2	9	103.3	92.2	115.3
2	Region 14	78.1	76.3	79.8	25.2	21.0	29.3	7.0	3.8	10.2	56.3	44.5	68.0	36.8	21.8	51.7	1.3	1.0	1.5	0.5	0.5	0.5	3	2	3	104.5	100.5	108.4
2	Region 15	80.5	80.2	80.8	29.1	28.7	29.5	14.6	14.3	14.8	69.1	68.1	70.1	16.4	15.1	17.6	0.9	0.5	1.2	0.7	0.4	0.9	6	5	7	103.5	102.4	104.5
2	Region 17	75.2	73.9	76.4	21.9	19.0	24.8	6.1	3.5	8.7	50.5	39.1	61.8	43.5	29.5	57.4	2.0	0.8	3.1	0.9	0.4	1.5	14	3	24	96.3	89.7	102.8
2	Region 18	78.3	76.8	79.7	29.4	24.8	33.9	16.7	8.0	25.4	63.4	58.7	68.0	20.0	6.6	33.3	1.6	1.3	1.8	0.8	0.6	1.0	8	7	9	102.9	99.2	106.6
1	Region 19	73.5	-	-	27.9	-	-	11.6	-	-	73.5	-	-	14.9	-	-	1.1	-	-	0.8	-	-	3	-	-	106.9	-	-
3	Region 20	77.9	76.8	79.4	29.2	26.4	32.2	13.2	8.0	17.1	67.4	65.1	71.0	19.4	14.5	26.9	1.3	0.8	1.7	0.9	0.7	1.0	5	4	7	101.9	92.0	108.2
1	Region 21	79.1	-	-	28.8	-	-	14.9	-	-	66.5	-	-	18.6	-	-	0.9	-	-	0.8	-	-	6	-	-	103.7	-	-
3	Region 22	79.6	77.2	81.9	29.8	29.2	30.2	8.5	2.3	20.8	66.9	65.7	68.0	24.5	12.1	32.0	0.6	0.2	0.8	0.4	0.1	0.6	1	0	3	100.1	96.0	104.4
4	Region 23	79.7	78.5	80.3	30.0	26.9	32.8	18.1	10.7	22.3	68.7	66.7	71.4	13.2	11.0	17.9	0.9	0.7	1.6	0.8	0.6	1.2	2	1	3	99.5	85.5	106.7
3	Region 25	75.5	73.0	76.9	24.6	21.8	26.3	8.2	4.2	11.7	64.0	63.4	64.5	27.8	24.2	32.4	0.9	0.6	1.4	0.6	0.5	0.6	6	2	8	83.3	71.6	90.6
4	Region 26	76.4	75.2	77.7	25.4	19.0	29.6	7.1	0.3	19.8	48.9	16.2	66.8	44.1	18.5	83.5	1.9	0.8	2.8	1.2	0.4	1.9	4	0	10	93.7	87.9	103.8
1	Region 27	76.7	-	-	31.6	-	-	14.2	-	-	67.7	-	-	18.1	-	-	6.6	-	-	4.6	-	-	15	-	-	101.3	-	-
1	Region 29	79.5	-	-	44.1	-	-	3.5	-	-	63.4	-	-	33.1	-	-	0.3	-	-	0.2	-	-	8	-	-	107.2	-	-
2	Region 31	75.3	75.0	75.6	34.5	33.8	35.2	18.0	15.7	20.3	69.0	64.2	73.7	13.1	10.6	15.5	4.2	3.6	4.8	3.1	2.6	3.5	7	3	10	95.0	87.1	102.8
3	Region 32	76.0	74.7	76.9	34.2	33.3	35.2	35.3	15.4	54.9	55.2	39.3	75.6	9.5	5.8	13.6	1.4	0.5	2.3	1.1	0.4	1.9	7	2	11	80.5	66.8	94.8
6	Region 33	75.4	72.3	77.8	30.2	23.2	39.0	24.8	12.6	38.6	59.7	50.4	67.8	15.5	5.7	37.0	2.0	0.4	5.4	1.4	0.3	4.1	9	0	37	87.2	78.7	93.0
5	Region 34	78.0	76.5	80.0	32.9	29.3	40.1	24.6	14.6	50.0	63.4	46.3	72.0	12.1	3.7	16.8	1.4	0.5	2.0	1.0	0.4	1.3	5	1	8	93.7	87.5	98.7
1	Region 35	78.9	-	-	29.4	-	-	23.2	-	-	55.5	-	-	21.3	-	-	1.5	-	-	0.5	-	-	8	-	-	112.6	-	-
5	Region 36	77.4	75.9	79.2	31.2	25.1	34.5	15.1	8.7	25.7	67.4	60.3	70.1	17.5	9.7	23.2	2.1	1.2	2.4	1.4	0.7	2.1	10	5	14	94.6	85.6	105.4
60	**Ave. WM2**	**77.5**			**29.0**			**14.8**			**61.2**			**24.0**			**1.6**			**1.0**			**6**			**97.0**		
	Min. WM2		**72.3**			**17.7**			**0.0**			**16.2**			**3.7**			**0.2**			**0.1**			**0**			**66.8**	
	Max. WM2			**81.9**			**44.1**			**54.9**			**75.6**			**83.5**			**6.6**			**4.6**			**37**			**115.3**

TABLE 9: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE (2012/2013)
(continue)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM3																												
2	Region 13	78.6	77.8	79.3	18.9	18.2	19.6	3.1	0.6	5.5	40.6	36.1	45.0	56.4	49.5	63.3	1.8	1.4	2.1	0.4	0.3	0.4	2	1	3	108.6	103.4	113.8
1	Region 16	80.1	-	-	30.5	-	-	22.7	-	-	68.2	-	-	9.1	-	-	0.4	-	-	0.1	-	-	5	-	-	108.5	-	-
2	Region 17	76.7	74.5	78.8	21.0	17.7	24.3	4.0	1.2	6.7	53.0	35.6	70.4	43.1	22.9	63.2	1.3	1.2	1.3	0.5	0.4	0.5	2	1	3	100.4	94.0	106.7
1	Region 19	77.6	-	-	22.2	-	-	4.6	-	-	62.0	-	-	33.4	-	-	1.1	-	-	0.7	-	-	1	-	-	105.4	-	-
1	Region 22	76.8	-	-	27.6	-	-	15.0	-	-	71.3	-	-	13.7	-	-	0.4	-	-	0.3	-	-	5	-	-	90.4	-	-
1	Region 24	78.3	-	-	32.1	-	-	20.2	-	-	69.4	-	-	10.4	-	-	0.6	-	-	0.5	-	-	2	-	-	102.1	-	-
1	Region 25	75.9	-	-	32.3	-	-	28.2	-	-	65.2	-	-	6.6	-	-	0.9	-	-	0.6	-	-	2	-	-	91.2	-	-
1	Region 29	80.3	-	-	36.8	-	-	28.6	-	-	61.9	-	-	9.5	-	-	2.0	-	-	1.5	-	-	15	-	-	107.2	-	-
1	Region 31	72.3	-	-	22.5	-	-	10.6	-	-	67.5	-	-	21.9	-	-	1.0	-	-	0.6	-	-	7	-	-	79.1	-	-
2	Region 34	77.7	75.7	79.7	31.9	30.9	32.8	16.2	11.3	21.1	71.7	65.5	77.8	12.2	10.9	13.4	2.2	1.2	3.2	1.8	0.9	2.6	7	3	10	90.4	85.9	94.8
13	**Ave. WM3**	**77.5**			**26.7**			**13.6**			**61.2**			**25.2**			**1.3**			**0.7**			**4**			**98.7**		
	Min. WM3		**72.3**			**17.7**			**0.6**			**35.6**			**6.6**			**0.4**			**0.1**			**1**			**79.1**	
	Max. WM3			**80.3**			**36.8**			**28.6**			**77.8**			**63.2**			**3.2**			**2.6**			**15**			**113.8**
CLASS: COM																												
2	Region 23	79.3	78.8	79.8	29.9	28.0	31.8	13.7	10.1	17.2	70.3	69.9	70.6	16.1	12.9	19.3	1.2	1.2	1.2	0.8	0.8	0.8	3	1	5	109.6	105.3	113.9
1	Region 25	69.7	-	-	22.3	-	-	7.0	-	-	70.7	-	-	22.3	-	-	1.4	-	-	1.2	-	-	2	-	-	77.2	-	-
1	Region 32	79.4	-	-	34.9	-	-	26.5	-	-	60.8	-	-	12.7	-	-	0.4	-	-	0.4	-	-	6	-	-	87.2	-	-
4	**Ave. COM**	**76.9**			**29.3**			**15.2**			**68.0**			**16.8**			**1.1**			**0.8**			**4**			**95.9**		
	Min. COM		**69.7**			**22.3**			**7.0**			**60.8**			**12.7**			**0.4**			**0.4**			**1**			**77.2**	
	Max. COM			**79.8**			**34.9**			**26.5**			**70.7**			**22.3**			**1.4**			**1.2**			**6**			**113.9**
508	**Ave. white maize**	**78.2**			**29.6**			**15.1**			**65.0**			**20.0**			**1.0**			**0.7**			**4**			**97.0**		
	Min. white maize		**69.7**			**17.7**			**0.0**			**16.2**			**3.1**			**0.0**			**0.0**			**0**			**47.3**	
	Max. white maize			**82.9**			**46.0**			**59.9**			**80.5**			**83.5**			**6.6**			**4.6**			**37**			**119.5**
1000	**Ave. maize**	**77.4**			**29.0**			**12.5**			**63.4**			**24.2**			**1.4**			**0.9**			**5**			**95.1**		
	Min. maize		**67.8**			**15.2**			**0.0**			**10.1**			**3.1**			**0.0**			**0.0**			**0**			**46.9**	
	Max. maize			**82.9**			**46.0**			**59.9**			**80.9**			**89.9**			**8.2**			**5.4**			**37**			**119.5**

TABLE 10: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE (2012/2013)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM1																												
13	Region 10	79.6	76.8	80.9	31.8	28.7	37.3	2.4	0.8	4.9	65.6	57.8	71.5	32.0	24.9	41.0	1.1	0.2	2.6	0.9	0.1	2.2	5	1	13	92.3	78.0	103.4
19	Region 11	78.1	75.9	79.9	31.6	28.5	34.9	3.8	1.0	8.1	62.6	45.9	71.2	33.6	24.2	53.1	1.5	0.6	2.2	1.2	0.6	1.7	5	0	10	91.6	70.9	104.4
6	Region 12	76.8	74.2	78.9	25.1	21.4	27.4	5.0	0.8	8.3	52.6	37.4	61.1	42.4	30.6	61.7	1.5	1.0	2.0	0.9	0.6	1.2	4	1	6	97.6	86.6	105.2
3	Region 13	78.4	77.1	79.9	23.9	22.1	26.5	6.7	1.7	11.2	59.3	52.3	66.4	34.0	26.5	46.0	1.3	0.8	2.2	0.9	0.5	1.7	3	1	4	103.8	96.9	113.5
6	Region 14	77.3	73.7	79.9	24.3	19.3	29.4	5.4	1.4	12.0	54.9	46.1	65.9	39.8	22.1	52.5	1.2	0.6	1.5	0.8	0.5	1.1	3	1	5	105.0	91.6	117.4
1	Region 15	79.2	-	-	34.7	-	-	8.7	-	-	66.3	-	-	25.0	-	-	0.7	-	-	0.6	-	-	0	-	-	101.0	-	-
1	Region 16	77.8	-	-	25.4	-	-	4.4	-	-	61.3	-	-	34.3	-	-	1.6	-	-	1.0	-	-	3	-	-	102.7	-	-
5	Region 17	76.2	74.7	79.2	23.2	20.4	27.5	5.6	0.5	9.8	56.4	43.4	66.2	38.0	24.0	56.1	2.0	1.5	3.6	1.1	0.8	1.4	3	1	8	97.9	86.5	113.2
9	Region 18	77.3	69.6	79.9	27.3	17.0	34.6	8.0	0.6	14.3	63.7	33.4	80.9	28.3	9.0	66.0	2.0	1.2	3.3	1.3	0.8	2.9	8	1	16	96.5	64.2	113.6
6	Region 19	76.0	75.5	76.5	25.3	18.3	32.0	5.3	0.4	14.5	56.7	30.0	74.9	38.0	18.4	69.6	1.2	0.2	1.9	0.8	0.1	1.3	4	1	7	93.8	88.8	97.2
4	Region 20	77.3	76.9	77.7	26.2	22.4	30.4	6.5	2.8	12.2	63.6	58.2	66.1	29.9	23.5	36.8	2.5	1.7	4.3	1.7	0.8	3.1	7	1	20	99.1	94.3	107.0
8	Region 21	76.3	73.0	78.7	26.6	23.4	32.3	6.4	1.5	17.5	63.2	58.6	77.9	30.5	14.9	36.9	2.0	1.2	2.7	1.3	0.8	1.6	4	2	9	101.1	96.9	105.7
4	Region 22	76.7	74.5	77.9	24.6	22.7	27.9	3.7	2.4	5.7	59.0	53.9	62.9	37.4	31.4	43.3	1.5	1.0	2.1	1.1	0.3	1.7	5	2	8	94.9	88.0	100.9
20	Region 23	77.5	72.0	80.6	27.2	17.4	33.1	10.9	0.7	18.9	59.7	27.4	73.3	29.5	12.7	71.9	2.0	0.7	3.9	1.4	0.7	2.8	4	0	13	98.5	79.0	114.7
6	Region 24	78.5	75.0	79.9	29.9	26.4	38.4	6.5	3.3	9.2	61.9	51.2	72.4	31.6	20.8	40.3	2.6	1.6	4.4	1.9	1.3	3.0	8	2	12	105.7	96.5	116.4
15	Region 25	76.3	72.8	79.1	27.2	23.0	34.3	9.0	1.3	24.1	65.5	56.3	75.1	25.5	9.3	42.4	1.2	0.6	2.6	0.8	0.4	2.0	5	2	11	89.0	81.5	100.0
23	Region 26	76.1	73.7	77.8	24.8	18.9	31.3	7.9	0.7	21.1	58.3	38.0	68.7	33.8	16.0	61.3	1.4	0.3	2.6	0.8	0.1	1.4	5	0	24	93.6	85.1	105.1
6	Region 27	76.7	71.7	79.1	28.7	23.4	36.4	7.4	1.8	12.4	65.6	57.0	75.9	27.0	12.8	41.2	2.7	1.0	4.5	1.9	0.8	3.7	7	1	15	103.0	84.6	115.2
17	Region 28	76.2	74.3	78.0	30.7	24.9	36.3	15.5	6.1	25.1	65.2	60.7	71.5	19.2	7.4	31.4	1.4	0.6	2.2	0.9	0.3	1.4	6	0	14	91.0	75.7	100.3
35	Region 29	77.3	74.7	81.6	30.7	23.7	37.6	12.9	0.0	33.3	67.0	33.0	76.1	20.1	3.4	67.0	1.6	0.6	2.8	1.2	0.5	2.0	7	0	13	99.0	89.9	116.0
41	Region 30	77.3	73.3	80.1	31.9	23.5	40.2	15.3	0.8	42.6	66.1	45.9	76.2	18.6	3.7	48.8	1.3	0.1	3.6	0.9	0.1	2.6	4	0	16	91.3	77.5	103.8
42	Region 31	76.5	71.8	79.8	32.0	22.6	41.3	14.7	0.0	35.0	65.2	28.7	76.7	20.2	5.6	71.3	2.3	0.3	8.2	1.5	0.3	5.4	6	0	15	92.2	75.1	107.2
33	Region 32	77.0	73.4	79.9	29.4	21.4	35.9	13.9	0.0	31.1	63.9	41.3	76.7	22.2	6.0	58.7	1.1	0.2	3.3	0.8	0.2	2.0	5	0	16	86.6	72.4	114.5
13	Region 33	75.8	72.7	77.1	28.3	23.0	33.0	11.7	1.7	34.5	61.3	48.6	69.8	27.0	13.6	46.8	1.4	0.3	3.6	1.0	0.3	2.8	5	1	10	82.2	62.4	91.4
24	Region 34	77.6	75.2	80.0	29.9	24.8	36.1	11.5	1.9	30.9	66.9	58.6	72.7	21.6	8.1	37.2	1.8	0.1	3.2	1.4	0.4	2.1	6	0	20	100.9	85.1	113.5
11	Region 35	76.2	74.1	79.7	32.4	27.0	37.9	9.6	1.4	21.0	65.6	47.4	73.9	24.8	9.6	51.2	2.2	0.6	5.0	1.8	0.5	4.1	7	2	16	84.9	61.8	98.3
16	Region 36	76.1	71.8	78.4	31.2	25.6	35.6	14.0	2.4	22.1	66.9	53.5	75.0	19.1	7.3	36.0	1.4	0.4	3.5	1.0	0.3	2.9	9	1	19	87.2	70.1	100.9
387	**Ave. YM1**	**77.0**			**29.5**			**10.9**			**63.7**			**25.4**			**1.6**			**1.1**			**5**			**93.5**		
	Min. YM1		**69.6**			**17.0**			**0.0**			**27.4**			**3.4**			**0.1**			**0.1**			**0**			**61.8**	
	Max. YM1			**81.6**			**41.3**			**42.6**			**80.9**			**71.9**			**8.2**			**5.4**			**24**			**117.4**

TABLE 10: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE (2012/2013) (continue)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM2																												
1	Region 10	76.6	-	-	30.2	-	-	2.3	-	-	47.3	-	-	50.4	-	-	1.3	-	-	1.0	-	-	3	-	-	86.1	-	-
4	Region 11	75.3	69.1	78.6	31.6	27.0	36.9	3.6	0.0	7.4	57.2	27.4	75.9	39.2	16.7	72.6	2.7	1.6	5.2	1.8	0.9	4.0	12	4	22	104.6	95.2	113.0
4	Region 12	75.5	73.3	77.1	20.3	16.7	24.4	3.2	0.9	6.5	44.4	28.3	54.5	52.4	39.0	70.8	3.0	1.9	4.0	1.2	0.7	1.8	5	1	7	96.9	83.9	108.4
3	Region 13	74.6	72.6	76.3	20.9	18.8	22.6	2.3	1.5	3.7	44.3	32.3	53.4	53.4	42.9	66.0	2.1	1.2	3.0	0.9	0.8	0.9	2	1	4	96.8	92.6	99.9
6	Region 14	76.0	72.8	78.6	23.0	17.2	27.4	3.0	1.0	7.6	53.2	31.8	63.6	43.9	28.8	67.2	2.1	1.4	3.3	1.0	0.5	1.5	6	1	14	101.1	83.8	107.8
1	Region 15	76.9	-	-	27.7	-	-	16.6	-	-	63.9	-	-	19.5	-	-	1.0	-	-	0.7	-	-	1	-	-	99.9	-	-
2	Region 16	77.8	76.3	79.3	26.9	26.5	27.3	4.1	3.9	4.3	68.9	68.8	68.9	27.1	26.9	27.2	1.5	1.1	1.9	1.0	0.5	1.5	6	5	7	105.0	100.8	109.1
6	Region 17	75.1	73.8	76.6	21.4	17.3	26.5	3.4	0.7	7.5	51.2	40.1	64.0	45.4	28.5	58.6	2.4	1.3	2.9	1.4	0.9	1.8	3	0	5	96.6	90.3	103.3
2	Region 18	76.8	76.4	77.1	24.7	24.6	24.7	4.7	3.5	5.8	62.2	59.6	64.7	33.2	31.8	34.6	2.0	1.4	2.6	1.3	0.8	1.8	5	5	5	95.5	94.4	96.6
4	Region 19	76.5	75.3	77.8	22.3	20.2	24.9	2.2	1.2	2.9	49.8	42.0	57.3	48.0	40.1	56.8	1.7	0.9	2.4	1.1	0.6	1.6	3	2	4	100.5	86.7	114.6
4	Region 20	75.3	72.2	76.9	23.7	21.8	26.0	4.2	2.6	7.1	58.4	50.8	70.3	37.4	25.9	46.6	2.0	1.3	3.0	1.0	0.6	1.4	4	2	7	95.7	90.1	104.1
3	Region 21	75.0	74.2	75.9	21.9	18.2	23.9	4.0	0.3	5.9	52.6	33.7	65.9	43.4	28.2	66.0	2.1	1.2	2.7	1.3	0.9	1.8	7	5	10	96.0	93.8	99.7
4	Region 23	74.0	73.6	74.2	22.0	18.4	25.9	2.4	1.2	4.2	47.6	38.8	55.2	50.0	40.6	60.0	2.2	2.0	2.5	1.2	0.9	1.9	4	1	9	94.1	91.0	98.4
2	Region 24	77.4	76.6	78.1	24.0	20.5	27.4	2.7	0.3	5.1	45.8	26.9	64.7	51.5	30.2	72.8	3.3	1.6	5.1	1.4	1.0	1.8	4	4	4	99.9	99.0	100.8
5	Region 25	74.5	72.9	76.3	23.4	21.1	25.7	4.9	2.0	6.9	60.0	47.1	66.6	35.0	28.6	50.9	1.6	1.0	2.5	1.0	0.5	1.4	7	4	11	84.2	79.8	91.5
4	Region 26	75.7	73.9	76.5	23.3	21.6	25.9	5.8	1.6	15.5	54.1	44.1	64.6	40.1	19.9	53.2	1.7	1.3	2.3	1.0	0.6	1.7	11	1	31	90.9	88.3	92.5
1	Region 27	76.3	-	-	22.1	-	-	1.7	-	-	57.1	-	-	41.2	-	-	4.3	-	-	1.9	-	-	0	-	-	92.6	-	-
2	Region 29	79.3	78.6	79.9	30.0	29.1	30.9	4.9	2.7	7.0	69.2	66.2	72.1	26.0	20.9	31.1	2.0	1.4	2.5	1.4	1.2	1.6	4	1	6	104.6	100.8	108.4
3	Region 30	77.1	76.6	77.7	32.7	30.2	35.6	18.3	5.0	41.3	60.7	53.3	64.6	20.9	5.4	30.7	1.8	0.2	3.1	1.0	0.0	1.6	2	2	3	94.4	93..3	95.4
5	Region 31	76.0	73.8	78.0	28.4	26.9	32.2	10.6	4.5	18.9	64.5	46.5	74.3	25.0	11.1	35.8	1.6	0.4	5.3	1.2	0.4	3.8	2	0	4	83.9	68.4	94.4
5	Region 32	76.1	74.0	78.3	26.4	22.0	30.1	7.2	4.5	14.3	58.3	46.3	64.2	34.5	22.8	49.2	2.0	0.9	2.8	1.1	0.4	1.5	5	0	11	92.6	72.7	100.5
1	Region 33	76.1	-	-	29.1	-	-	9.0	-	-	57.8	-	-	33.2	-	-	0.7	-	-	0.4	-	-	3	-	-	89.0	-	-
4	Region 34	74.2	73.4	74.8	29.6	27.5	31.5	9.6	6.9	12.0	70.3	65.8	73.9	20.2	16.3	24.7	2.5	1.5	3.9	1.8	1.2	2.9	7	4	9	83.7	80.8	85.1
1	Region 35	69.9	-	-	19.3	-	-	0.4	-	-	37.1	-	-	62.5	-	-	5.0	-	-	2.6	-	-	2	-	-	46.9	-	-
3	Region 36	75.5	74.0	76.4	28.4	23.4	34.7	13.6	1.5	23.7	55.9	42.6	65.8	30.4	10.5	55.9	2.5	2.3	2.6	1.7	1.6	1.8	13	9	19	92.0	84.7	99.4
80	**Ave. YM2**	**75.6**			**25.0**			**5.7**			**55.8**			**38.6**			**2.1**			**1.2**			**5**			**94.0**		
	Min. YM2		**69.1**			**16.7**			**0.0**			**26.9**			**5.4**			**0.2**			**0.0**			**0**			**46.9**	
	Max. YM2			**79.9**			**36.9**			**41.3**			**75.9**			**72.8**			**5.3**			**4.0**			**31**			**114.6**

TABLE 10: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE (2012/2013) (continue)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM3																												
1	Region 13	69.0	-	-	15.2	-	-	0.0	-	-	18.5	-	-	81.5	-	-	4.1	-	-	0.9	-	-	2	-	-	70.4	-	-
1	Region 17	72.8	-	-	17.1	-	-	0.2	-	-	26.8	-	-	73.0	-	-	4.4	-	-	1.3	-	-	3	-	-	94.9	-	-
2	Region 19	74.1	72.3	75.9	21.2	19.3	23.1	4.8	0.2	9.3	48.1	36.4	59.8	47.2	30.9	63.4	2.1	1.9	2.2	1.1	0.9	1.2	2	1	3	92.4	85.5	99.2
3	Region 26	70.6	67.8	72.1	16.6	15.3	17.5	0.5	0.0	0.8	24.3	18.9	31.7	75.2	67.5	80.4	1.8	1.4	2.5	0.7	0.4	1.0	1	0	1	72.3	70.7	73.3
1	Region 27	73.0	-	-	25.5	-	-	1.5	-	-	55.8	-	-	42.7	-	-	4.0	-	-	2.3	-	-	8	-	-	86.4	-	-
1	Region 29	72.6	-	-	27.2	-	-	3.2	-	-	64.6	-	-	32.2	-	-	2.5	-	-	2.0	-	-	14	-	-	63.8	-	-
2	Region 33	70.6	70.4	70.7	25.1	20.9	29.3	7.7	0.0	15.3	39.2	10.1	68.3	53.2	16.4	89.9	2.9	2.1	3.7	1.6	1.2	2.0	9	3	14	72.1	70.3	73.8
1	Region 36	76.9	-	-	31.0	-	-	11.8	-	-	64.8	-	-	23.4	-	-	1.7	-	-	1.3	-	-	10	-	-	95.1	-	-
12	**Ave. YM3**	**72.1**			**21.5**			**3.6**			**39.8**			**56.6**			**2.7**			**1.3**			**5**			**79.7**		
	Min. YM3		**67.8**			**15.2**			**0.0**			**10.1**			**16.4**			**1.4**			**0.4**			**0**			**63.8**	
	Max. YM3			**76.9**			**31.0**			**15.3**			**68.3**			**89.9**			**4.4**			**2.3**			**14**			**99.2**
CLASS: COM																												
1	Region 11	80.0	-	-	32.2	-	-	4.4	-	-	64.5	-	-	31.1	-	-	1.3	-	-	0.9	-	-	6	-	-	102.7	-	-
1	Region 16	79.1	-	-	27.4	-	-	7.6	-	-	58.7	-	-	33.7	-	-	1.9	-	-	1.3	-	-	8	-	-	106.5	-	-
1	Region 17	72.4	-	-	17.4	-	-	0.6	-	-	28.7	-	-	70.7	-	-	2.0	-	-	0.8	-	-	1	-	-	86.0	-	-
1	Region 21	73.3	-	-	20.5	-	-	1.4	-	-	41.0	-	-	57.6	-	-	1.5	-	-	0.9	-	-	7	-	-	91.6	-	-
1	Region 23	73.6	-	-	19.8	-	-	1.8	-	-	46.3	-	-	51.9	-	-	1.9	-	-	0.9	-	-	3	-	-	90.4	-	-
1	Region 24	74.0	-	-	23.9	-	-	8.0	-	-	61.1	-	-	30.9	-	-	1.7	-	-	0.9	-	-	6	-	-	105.0	-	-
3	Region 25	76.5	74.2	77.8	28.6	26.8	29.8	8.3	7.4	8.9	69.1	65.5	71.1	22.6	20.7	25.6	1.2	0.9	1.4	0.8	0.7	0.8	7	7	8	90.1	89.1	91.4
1	Region 26	68.0	-	-	18.0	-	-	1.0	-	-	42.8	-	-	56.2	-	-	1.6	-	-	0.9	-	-	2	-	-	72.8	-	-
1	Region 30	78.5	-	-	34.2	-	-	24.3	-	-	63.5	-	-	12.2	-	-	1.3	-	-	1.2	-	-	6	-	-	103.5	-	-
1	Region 31	68.9	-	-	22.9	-	-	13.6	-	-	56.0	-	-	30.4	-	-	2.1	-	-	1.5	-	-	10	-	-	90.9	-	-
1	Region 32	76.8	-	-	29.8	-	-	18.2	-	-	68.9	-	-	12.9	-	-	1.3	-	-	0.8	-	-	1	-	-	90.9	-	-
13	**Ave. COM**	**74.9**			**25.5**			**8.1**			**56.8**			**35.0**			**1.6**			**1.0**			**6**			**93.1**		
	Min. COM		**68.0**			**17.4**			**0.6**			**28.7**			**12.2**			**0.9**			**0.7**			**1**			**72.8**	
	Max. COM			**80.0**			**34.2**			**24.3**			**71.1**			**70.7**			**2.1**			**1.5**			**10**			**106.5**
492	**Ave. yellow maize**	**76.6**			**28.4**			**9.8**			**61.7**			**28.5**			**1.7**			**1.1**			**5**			**93.2**		
	Min. yellow maize		**67.8**			**15.2**			**0.0**			**10.1**			**3.4**			**0.1**			**0.0**			**0**			**46.9**	
	Max. yellow maize			**81.6**			**41.3**			**42.6**			**80.9**			**89.9**			**8.2**			**5.4**			**31**			**117.4**
1000	**Ave. maize**	**77.4**			**29.0**			**12.5**			**63.4**			**24.2**			**1.4**			**0.9**			**5**			**95.1**		
	Min. maize		**67.8**			**15.2**			**0.0**			**10.1**			**3.1**			**0.0**			**0.0**			**0**			**46.9**	
	Max. maize			**82.9**			**46.0**			**59.9**			**80.9**			**89.9**			**8.2**			**5.4**			**37**			**119.5**

TABLE 11: PHYSICAL QUALITY FACTORS OF WHITE MAIZE (2012/2013)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
WHITE																												
4	Region 11	81.5	80.8	82.2	31.1	27.9	34.3	2.1	0.0	3.4	54.2	44.2	60.6	43.8	36.0	55.8	1.5	1.2	2.0	1.0	0.7	1.2	7	1	11	109.6	108.4	112.8
8	Region 12	79.4	77.1	80.7	27.8	22.9	30.9	9.9	3.5	15.8	63.3	51.3	69.9	26.8	14.3	45.2	1.1	0.7	1.5	0.7	0.4	1.0	4	1	8	109.0	102.7	114.8
12	Region 13	78.1	75.7	79.3	21.8	17.7	25.9	5.6	0.6	11.5	54.1	36.1	68.8	40.3	19.7	63.3	1.2	0.4	2.1	0.5	0.2	1.0	3	1	9	104.7	92.2	115.3
16	Region 14	77.9	72.6	79.8	26.0	18.3	35.0	8.5	0.7	18.1	61.1	41.5	78.3	30.5	9.1	57.8	1.2	0.7	2.1	0.6	0.1	1.5	6	1	20	105.6	87.5	117.2
10	Region 15	80.5	79.7	81.3	29.6	26.0	32.0	19.2	11.7	24.1	66.9	62.8	70.4	13.8	10.2	17.9	0.9	0.5	1.6	0.6	0.2	1.2	4	1	7	103.3	97.8	111.0
17	Region 16	79.7	77.7	81.6	27.9	21.5	31.4	14.3	3.6	23.4	63.8	48.1	72.4	21.9	8.5	48.3	0.6	0.3	1.1	0.4	0.1	0.7	5	0	9	105.8	95.5	110.3
11	Region 17	77.3	73.9	80.1	24.4	17.7	28.0	7.8	1.2	18.9	58.7	35.6	70.4	33.5	18.1	63.2	1.1	0.2	3.1	0.5	0.0	1.5	5	1	24	100.8	89.7	112.0
13	Region 18	78.4	76.2	82.9	28.3	23.3	33.9	11.1	2.1	28.5	65.5	58.0	75.8	23.4	6.6	39.9	1.1	0.3	1.8	0.7	0.0	1.2	6	1	17	98.8	91.0	110.8
12	Region 19	78.2	73.5	81.6	26.9	22.2	33.2	7.7	1.0	14.5	62.9	44.3	73.5	29.4	14.9	54.7	1.1	0.6	1.6	0.7	0.3	1.3	3	1	7	106.1	102.2	112.1
10	Region 20	78.1	75.6	80.4	30.2	25.4	38.3	11.7	6.9	17.1	68.0	63.5	75.9	20.3	14.5	27.6	1.5	0.8	2.2	1.0	0.4	1.9	5	2	8	100.4	90.3	111.0
35	Region 21	78.6	72.9	80.4	28.0	21.6	41.2	11.3	3.3	23.1	67.1	56.2	77.5	21.6	10.9	37.3	1.1	0.1	2.3	0.7	0.1	1.6	4	0	11	101.2	88.6	115.3
33	Region 22	79.1	76.8	81.9	29.2	25.4	31.3	15.1	1.2	24.3	66.9	61.4	72.7	18.0	11.1	33.7	0.7	0.2	1.2	0.5	0.1	0.9	2	0	9	97.9	88.6	104.8
55	Region 23	79.6	74.4	81.5	30.3	21.4	37.6	18.2	2.1	27.6	67.7	50.1	75.6	14.1	6.6	46.1	1.0	0.1	2.6	0.8	0.1	2.3	3	0	16	103.0	81.2	119.5
25	Region 24	78.5	76.7	80.9	26.5	22.6	32.1	14.5	1.0	30.1	64.1	59.0	71.9	21.4	6.8	34.8	0.8	0.1	2.3	0.4	0.1	1.0	2	0	8	94.3	80.4	113.6
10	Region 25	75.0	69.7	78.8	26.9	21.8	32.3	11.4	1.9	28.2	66.7	63.1	74.3	21.9	6.6	33.8	1.2	0.3	2.1	0.9	0.5	1.5	6	2	10	81.3	47.3	92.2
18	Region 26	77.7	75.2	79.6	26.7	19.0	31.0	10.0	0.3	25.3	60.0	16.2	72.4	30.0	12.7	83.5	1.1	0.2	2.8	0.6	0.2	1.9	3	0	10	96.4	87.9	105.8
5	Region 27	75.8	74.9	76.9	29.5	27.8	31.6	13.2	1.2	25.7	60.1	46.2	68.6	26.7	14.5	52.6	3.2	1.1	6.6	2.2	0.9	4.6	6	0	15	99.2	94.5	103.7
14	Region 28	77.7	74.9	80.4	32.3	23.6	46.0	16.3	5.3	30.1	68.2	59.7	78.7	15.5	5.8	25.7	0.8	0.3	1.3	0.6	0.2	0.9	4	0	13	92.0	74.5	100.9
17	Region 29	79.3	76.6	82.2	34.1	27.7	44.1	15.9	2.2	34.2	66.3	59.9	74.8	17.8	4.4	37.9	0.9	0.1	2.0	0.6	0.0	1.5	6	0	15	104.1	94.3	114.3
19	Region 30	77.8	75.8	80.0	33.2	28.2	40.3	20.9	5.0	39.3	64.1	54.5	71.3	15.0	5.6	33.1	0.6	0.2	1.3	0.5	0.1	1.3	3	0	11	91.4	84.7	98.9
29	Region 31	77.4	72.3	79.9	33.1	22.5	41.0	19.8	5.0	59.9	63.5	38.0	80.5	17.0	3.1	38.8	1.5	0.2	5.1	1.0	0.1	3.5	5	0	14	92.6	67.4	106.9
34	Region 32	77.4	71.0	81.1	32.2	25.0	37.0	22.1	2.0	54.9	63.0	39.3	75.8	15.0	3.7	37.5	0.9	0.0	2.3	0.6	0.0	1.9	5	0	20	86.2	66.8	105.3
34	Region 33	76.5	71.9	80.2	28.8	23.2	39.0	17.7	3.1	38.6	65.1	50.4	79.6	17.2	5.7	37.0	1.0	0.1	5.4	0.7	0.0	4.1	5	0	37	84.8	65.1	104.0
41	Region 34	78.2	75.6	80.4	31.4	26.1	40.1	15.9	4.1	50.0	68.1	46.3	77.8	16.0	3.7	35.2	1.1	0.4	3.2	0.9	0.2	2.6	5	0	12	95.0	82.8	108.7
7	Region 35	77.9	76.6	79.6	30.1	25.3	35.0	20.4	6.0	26.1	61.6	50.3	68.7	18.0	8.0	35.6	1.4	0.6	2.5	0.8	0.3	1.1	9	4	21	97.4	82.0	112.6
19	Region 36	77.2	73.2	79.2	33.0	25.1	41.2	14.5	6.5	35.8	69.2	59.8	80.5	16.4	4.4	23.2	1.6	0.4	3.3	1.2	0.4	2.4	10	2	24	95.2	85.6	105.4
508	**Ave. white**	**78.2**			**29.6**			**15.1**			**65.0**			**20.0**			**1.0**			**0.7**			**4**			**97.0**		
	Min. white		**69.7**			**17.7**			**0.0**			**16.2**			**3.1**			**0.0**			**0.0**			**0**			**47.3**	
	Max. white			**82.9**			**46.0**			**59.9**			**80.5**			**83.5**			**6.6**			**4.6**			**37**			**119.5**

TABLE 12: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE (2012/2013)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
YELLOW																												
14	Region 10	79.4	76.6	80.9	31.7	28.7	37.3	2.4	0.8	4.9	64.3	47.3	71.5	33.3	24.9	50.4	1.1	0.2	2.6	0.9	0.1	2.2	4	1	13	91.8	78.0	103.4
24	Region 11	77.7	69.1	80.0	31.6	27.0	36.9	3.8	0.0	8.1	61.8	27.4	75.9	34.4	16.7	72.6	1.7	0.6	5.2	1.3	0.6	4.0	6	0	22	94.2	70.9	113.0
10	Region 12	76.3	73.3	78.9	23.2	16.7	27.4	4.3	0.8	8.3	49.3	28.3	61.1	46.4	30.6	70.8	2.1	1.0	4.0	1.0	0.6	1.8	4	1	7	97.3	83.9	108.4
7	Region 13	75.4	69.0	79.9	21.4	15.2	26.5	3.8	0.0	11.2	47.1	18.5	66.4	49.1	26.5	81.5	2.0	0.8	4.1	0.9	0.5	1.7	3	1	4	96.1	70.4	113.5
12	Region 14	76.7	72.8	79.9	23.6	17.2	29.4	4.2	1.0	12.0	54.0	31.8	65.9	41.8	22.1	67.2	1.6	0.6	3.3	0.9	0.5	1.5	5	1	14	103.0	83.8	117.4
2	Region 15	78.1	76.9	79.2	31.2	27.7	34.7	12.7	8.7	16.6	65.1	63.9	66.3	22.3	19.5	25.0	0.9	0.7	1.0	0.7	0.6	0.7	1	0	1	100.5	99.9	101.0
4	Region 16	78.1	76.3	79.3	26.7	25.4	27.4	5.1	3.9	7.6	64.4	58.7	68.9	30.5	26.9	34.3	1.6	1.1	1.9	1.1	0.5	1.5	6	3	8	104.8	100.8	109.1
13	Region 17	75.1	72.4	79.2	21.4	17.1	27.5	3.8	0.2	9.8	49.6	26.8	66.2	46.6	24.0	73.0	2.4	1.3	4.4	1.2	0.8	1.8	3	0	8	96.2	86.0	113.2
11	Region 18	77.2	69.6	79.9	26.8	17.0	34.6	7.4	0.6	14.3	63.4	33.4	80.9	29.2	9.0	66.0	2.0	1.2	3.3	1.3	0.8	2.9	7	1	16	96.3	64.2	113.6
12	Region 19	75.9	72.3	77.8	23.6	18.3	32.0	4.2	0.2	14.5	53.0	30.0	74.9	42.9	18.4	69.6	1.5	0.2	2.4	0.9	0.1	1.6	3	1	7	95.8	85.5	114.6
8	Region 20	76.3	72.2	77.7	24.9	21.8	30.4	5.4	2.6	12.2	61.0	50.8	70.3	33.6	23.5	46.6	2.2	1.3	4.3	1.4	0.6	3.1	6	1	20	97.4	90.1	107.0
12	Region 21	75.7	73.0	78.7	24.9	18.2	32.3	5.4	0.3	17.5	58.7	33.7	77.9	36.0	14.9	66.0	2.0	1.2	2.7	1.2	0.8	1.8	5	2	10	99.1	91.6	105.7
4	Region 22	76.7	74.5	77.9	24.6	22.7	27.9	3.7	2.4	5.7	59.0	53.9	62.9	37.4	31.4	43.3	1.5	1.0	2.1	1.1	0.3	1.7	5	2	8	94.9	88.0	100.9
25	Region 23	76.8	72.0	80.6	26.1	17.4	33.1	9.2	0.7	18.9	57.2	27.4	73.3	33.6	12.7	71.9	2.0	0.7	3.9	1.4	0.7	2.8	4	0	13	97.5	79.0	114.7
9	Region 24	77.7	74.0	79.9	27.9	20.5	38.4	5.8	0.3	9.2	58.2	26.9	72.4	36.0	20.8	72.8	2.7	1.6	5.1	1.7	0.9	3.0	7	2	12	104.3	96.5	116.4
23	Region 25	75.9	72.8	79.1	26.5	21.1	34.3	8.1	1.3	24.1	64.8	47.1	75.1	27.2	9.3	50.9	1.3	0.6	2.6	0.8	0.4	2.0	6	2	11	88.1	79.8	100.0
31	Region 26	75.3	67.8	77.8	23.6	15.3	31.3	6.7	0.0	21.1	54.0	18.9	68.7	39.3	16.0	80.4	1.5	0.3	2.6	0.8	0.1	1.7	5	0	31	90.5	70.7	105.1
8	Region 27	76.2	71.7	79.1	27.4	22.1	36.4	6.0	1.5	12.4	63.3	55.8	75.9	30.7	12.8	42.7	3.0	1.0	4.5	2.0	0.8	3.7	6	0	15	99.6	84.6	115.2
17	Region 28	76.2	74.3	78.0	30.7	24.9	36.3	15.5	6.1	25.1	65.2	60.7	71.5	19.2	7.4	31.4	1.4	0.6	2.2	0.9	0.3	1.4	6	0	14	91.0	75.7	100.3
38	Region 29	77.3	72.6	81.6	30.5	23.7	37.6	12.3	0.0	33.3	67.1	33.0	76.1	20.7	3.4	67.0	1.7	0.6	2.8	1.3	0.5	2.0	7	0	14	98.3	63.8	116.0
45	Region 30	77.3	73.3	80.1	32.0	23.5	40.2	15.7	0.8	42.6	65.7	45.9	76.2	18.6	3.7	48.8	1.3	0.1	3.6	0.9	0.0	2.6	4	0	16	91.7	77.5	103.8
48	Region 31	76.3	68.9	79.8	31.4	22.6	41.3	14.2	0.0	35.0	64.9	28.7	76.7	20.9	5.6	71.3	2.2	0.3	8.2	1.5	0.3	5.4	5	0	15	91.3	68.4	107.2
39	Region 32	76.9	73.4	79.9	29.0	21.4	35.9	13.1	0.0	31.1	63.3	41.3	76.7	23.5	6.0	58.7	1.2	0.2	3.3	0.8	0.2	2.0	5	0	16	87.5	72.4	114.5
16	Region 33	75.2	70.4	77.1	27.9	20.9	33.0	11.0	0.0	34.5	58.3	10.1	69.8	30.6	13.6	89.9	1.6	0.3	3.7	1.1	0.3	2.8	5	1	14	81.3	62.4	91.4
28	Region 34	77.2	73.4	80.0	29.8	24.8	36.1	11.2	1.9	30.9	67.4	58.6	73.9	21.4	8.1	37.2	1.9	0.1	3.9	1.4	0.4	2.9	6	0	20	98.4	80.8	113.5
12	Region 35	75.7	69.9	79.7	31.3	19.3	37.9	8.8	0.4	21.0	63.3	37.1	73.9	27.9	9.6	62.5	2.4	0.6	5.0	1.9	0.5	4.1	7	2	16	81.8	46.9	98.3
20	Region 36	76.1	71.8	78.4	30.8	23.4	35.6	13.9	1.5	23.7	65.1	42.6	75.0	21.0	7.3	55.9	1.6	0.4	3.5	1.1	0.3	2.9	9	1	19	88.4	70.1	100.9
492	**Ave. yellow**	**76.6**			**28.4**			**9.8**			**61.7**			**28.5**			**1.7**			**1.1**			**5**			**93.2**		
	Min. yellow		**67.8**			**15.2**			**0.0**			**10.1**			**3.4**			**0.1**			**0.0**			**0**			**46.9**	
	Max. yellow			**81.6**			**41.3**			**42.6**			**80.9**			**89.9**			**8.2**			**5.4**			**31**			**117.4**

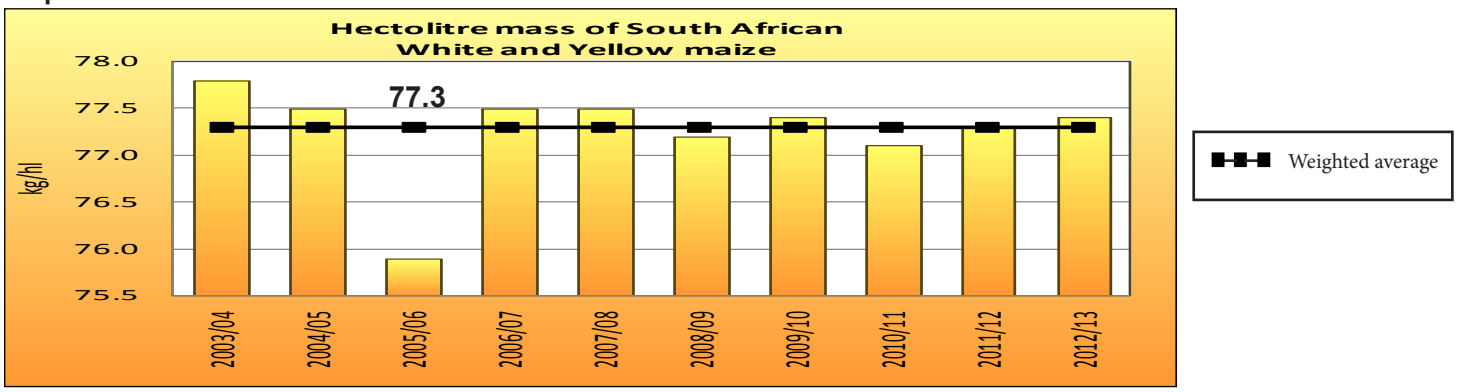
TABLE 13: PHYSICAL QUALITY FACTORS OF WHITE AND YELLOW MAIZE (2012/2013)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
WHITE AND YELLOW																												
14	Region 10	79.4	76.6	80.9	31.7	28.7	37.3	2.4	0.8	4.9	64.3	47.3	71.5	33.3	24.9	50.4	1.1	0.2	2.6	0.9	0.1	2.2	4	1	13	91.8	78.0	103.4
28	Region 11	78.3	69.1	82.2	31.5	27.0	36.9	3.6	0.0	8.1	60.7	27.4	75.9	35.8	16.7	72.6	1.6	0.6	5.2	1.2	0.6	4.0	7	0	22	96.4	70.9	113.0
18	Region 12	77.7	73.3	80.7	25.2	16.7	30.9	6.8	0.8	15.8	55.5	28.3	69.9	37.7	14.3	70.8	1.7	0.7	4.0	0.9	0.4	1.8	4	1	8	102.5	83.9	114.8
19	Region 13	77.1	69.0	79.9	21.6	15.2	26.5	4.9	0.0	11.5	51.5	18.5	68.8	43.6	19.7	81.5	1.5	0.4	4.1	0.6	0.2	1.7	3	1	9	101.5	70.4	115.3
28	Region 14	77.4	72.6	79.9	25.0	17.2	35.0	6.6	0.7	18.1	58.0	31.8	78.3	35.3	9.1	67.2	1.4	0.6	3.3	0.7	0.1	1.5	5	1	20	104.5	83.8	117.4
12	Region 15	80.1	76.9	81.3	29.9	26.0	34.7	18.1	8.7	24.1	66.6	62.8	70.4	15.2	10.2	25.0	0.9	0.5	1.6	0.6	0.2	1.2	3	0	7	102.8	97.8	111.0
21	Region 16	79.4	76.3	81.6	27.7	21.5	31.4	12.5	3.6	23.4	63.9	48.1	72.4	23.5	8.5	48.3	0.8	0.3	1.9	0.5	0.1	1.5	5	0	9	105.6	95.5	110.3
24	Region 17	76.1	72.4	80.1	22.8	17.1	28.0	5.7	0.2	18.9	53.7	26.8	70.4	40.6	18.1	73.0	1.8	0.2	4.4	0.9	0.0	1.8	4	0	24	98.3	86.0	113.2
24	Region 18	77.9	69.6	82.9	27.6	17.0	34.6	9.4	0.6	28.5	64.5	33.4	80.9	26.1	6.6	66.0	1.5	0.3	3.3	1.0	0.0	2.9	7	1	17	97.7	64.2	113.6
24	Region 19	77.0	72.3	81.6	25.3	18.3	33.2	5.9	0.2	14.5	57.9	30.0	74.9	36.1	14.9	69.6	1.3	0.2	2.4	0.8	0.1	1.6	3	1	7	100.9	85.5	114.6
18	Region 20	77.3	72.2	80.4	27.9	21.8	38.3	8.9	2.6	17.1	64.9	50.8	75.9	26.2	14.5	46.6	1.8	0.8	4.3	1.2	0.4	3.1	5	1	20	99.0	90.1	111.0
47	Region 21	77.8	72.9	80.4	27.2	18.2	41.2	9.8	0.3	23.1	64.9	33.7	77.9	25.3	10.9	66.0	1.3	0.1	2.7	0.8	0.1	1.8	4	0	11	100.6	88.6	115.3
37	Region 22	78.9	74.5	81.9	28.7	22.7	31.3	13.8	1.2	24.3	66.1	53.9	72.7	20.1	11.1	43.3	0.8	0.2	2.1	0.5	0.1	1.7	3	0	9	97.6	88.0	104.8
80	Region 23	78.7	72.0	81.5	29.0	17.4	37.6	15.4	0.7	27.6	64.4	27.4	75.6	20.2	6.6	71.9	1.3	0.1	3.9	0.9	0.1	2.8	3	0	16	101.2	79.0	119.5
34	Region 24	78.3	74.0	80.9	26.9	20.5	38.4	12.2	0.3	30.1	62.5	26.9	72.4	25.3	6.8	72.8	1.3	0.1	5.1	0.8	0.1	3.0	3	0	12	97.0	80.4	116.4
33	Region 25	75.6	69.7	79.1	26.6	21.1	34.3	9.1	1.3	28.2	65.3	47.1	75.1	25.6	6.6	50.9	1.3	0.3	2.6	0.8	0.4	2.0	6	2	11	86.1	47.3	100.0
49	Region 26	76.2	67.8	79.6	24.8	15.3	31.3	7.9	0.0	25.3	56.2	16.2	72.4	35.9	12.7	83.5	1.3	0.2	2.8	0.7	0.1	1.9	5	0	31	92.7	70.7	105.8
13	Region 27	76.0	71.7	79.1	28.2	22.1	36.4	8.7	1.2	25.7	62.1	46.2	75.9	29.2	12.8	52.6	3.1	1.0	6.6	2.0	0.8	4.6	6	0	15	99.4	84.6	115.2
31	Region 28	76.9	74.3	80.4	31.5	23.6	46.0	15.9	5.3	30.1	66.6	59.7	78.7	17.6	5.8	31.4	1.1	0.3	2.2	0.8	0.2	1.4	5	0	14	91.5	74.5	100.9
55	Region 29	77.9	72.6	82.2	31.6	23.7	44.1	13.4	0.0	34.2	66.8	33.0	76.1	19.8	3.4	67.0	1.4	0.1	2.8	1.1	0.0	2.0	7	0	15	100.1	63.8	116.0
64	Region 30	77.4	73.3	80.1	32.4	23.5	40.3	17.2	0.8	42.6	65.2	45.9	76.2	17.5	3.7	48.8	1.1	0.1	3.6	0.8	0.0	2.6	4	0	16	91.6	77.5	103.8
77	Region 31	76.7	68.9	79.9	32.1	22.5	41.3	16.3	0.0	59.9	64.4	28.7	80.5	19.4	3.1	71.3	1.9	0.2	8.2	1.3	0.1	5.4	5	0	15	91.8	67.4	107.2
73	Region 32	77.1	71.0	81.1	30.5	21.4	37.0	17.3	0.0	54.9	63.2	39.3	76.7	19.5	3.7	58.7	1.1	0.0	3.3	0.7	0.0	2.0	5	0	20	86.9	66.8	114.5
50	Region 33	76.1	70.4	80.2	28.5	20.9	39.0	15.6	0.0	38.6	63.0	10.1	79.6	21.5	5.7	89.9	1.2	0.1	5.4	0.8	0.0	4.1	5	0	37	83.7	62.4	104.0
69	Region 34	77.8	73.4	80.4	30.8	24.8	40.1	14.0	1.9	50.0	67.8	46.3	77.8	18.2	3.7	37.2	1.4	0.1	3.9	1.1	0.2	2.9	5	0	20	96.4	80.8	113.5
19	Region 35	76.5	69.9	79.7	30.9	19.3	37.9	13.1	0.4	26.1	62.6	37.1	73.9	24.3	8.0	62.5	2.0	0.6	5.0	1.5	0.3	4.1	7	2	21	87.5	46.9	112.6
39	Region 36	76.6	71.8	79.2	31.9	23.4	41.2	14.2	1.5	35.8	67.1	42.6	80.5	18.7	4.4	55.9	1.6	0.4	3.5	1.2	0.3	2.9	10	1	24	91.7	70.1	105.4
1000	**Ave. w & y**	**77.4**			**29.0**			**12.5**			**63.4**			**24.2**			**1.4**			**0.9**			**5**			**95.1**		
	Min. w & y		**67.8**			**15.2**			**0.0**			**10.1**			**3.1**			**0.0**			**0.0**			**0**			**46.9**	
	Max. w & y			**82.9**			**46.0**			**59.9**			**80.9**			**89.9**			**8.2**			**5.4**			**37**			**119.5**

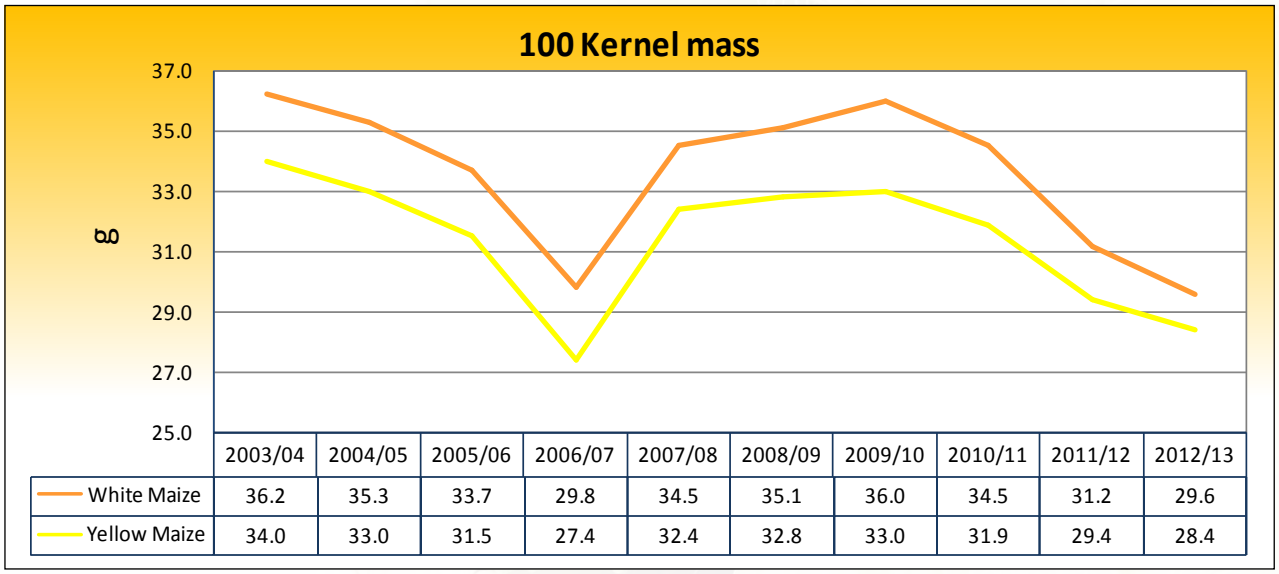
TABLE 14: PHYSICAL QUALITY FACTORS OF WHITE AND YELLOW MAIZE 2003/04 - 2012/13

Season	Number of samples	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve					
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
White Maize																									
2003/04	599	78.1	63.8	83.2	36.2	23.7	58.8	29.9	0.4	65.5	59.2	31.0	78.0	11.0	1.0	64.9	1.4	0.0	15.0	1.0	0.0	9.5	6	0	58
2004/05	601	77.9	68.9	83.2	35.3	26.3	44.3	29.7	0.8	59.7	60.1	31.3	80.3	10.2	0.1	54.5	1.4	0.1	8.0	1.1	0.0	6.2	5	0	23
2005/06	593	76.2	58.3	81.6	33.7	18.0	44.7	30.1	0.0	73.9	59.4	24.2	75.0	10.5	1.2	75.8	2.1	0.2	12.6	1.6	0.1	10.4	4	0	36
2006/07	563	78.1	68.1	82.8	29.8	19.4	40.1	17.1	0.2	51.7	63.3	16.7	78.2	19.6	0.8	81.6	1.5	0.0	12.1	1.0	0.0	11.5	3	0	27
2007/08	483	78.2	65.3	81.6	34.5	17.0	45.6	24.5	0.4	69.7	63.8	23.3	84.2	11.7	1.0	76.2	1.2	0.1	9.7	0.9	0.0	7.3	4	0	44
2008/09	483	77.6	61.6	82.8	35.1	27.1	44.0	26.2	0.5	46.4	63.3	43.1	84.0	10.5	2.1	51.0	1.5	0.2	11.7	1.1	0.1	8.7	5	0	50
2009/10	458	77.9	60.2	84.4	36.0	24.1	59.1	26.3	1.2	90.7	62.6	9.2	82.0	11.2	0.1	53.5	1.5	0.2	24.3	1.2	0.1	23.1	4	0	36
2010/11	413	77.7	71.3	81.8	34.5	25.0	44.0	24.9	1.4	55.8	63.5	33.5	83.9	11.6	1.7	65.1	1.6	0.0	8.4	1.2	0.0	5.9	5	0	31
2011/12	577	78.2	71.8	82.0	31.2	71.4	44.4	18.8	0.8	63.3	64.9	26.2	79.7	16.3	2.8	72.4	0.8	0.0	8.6	0.6	0.0	4.9	5	0	25
2012/13	508	78.2	69.7	82.9	29.6	17.7	46.0	15.1	0.0	59.9	65.0	16.2	80.5	20.0	3.1	83.5	1.0	0.0	6.6	0.7	0.0	4.6	4	0	37
Weighted Average		**77.8**			**33.5**			**24.4**			**62.4**			**13.3**			**1.4**			**1.0**			**4**		
Minimum			**58.3**			**17.0**			**0.0**			**9.2**			**0.1**			**0.0**			**0.0**			**0**	
Maximum				**84.4**			**59.1**			**90.7**			**84.2**			**83.5**			**24.3**			**23.1**			**58**
Yellow Maize																									
2003/04	301	77.0	68.0	80.1	34.0	25.5	62.9	20.2	0.9	59.8	65.4	35.8	79.4	14.4	0.8	53.9	1.7	0.2	22.0	1.2	0.1	21.5	8	0	60
2004/05	399	76.8	68.4	81.0	33.0	21.5	44.4	19.8	1.0	46.9	64.3	32.9	82.3	15.9	1.4	66.1	1.7	0.2	24.4	1.2	0.0	12.9	5	0	21
2005/06	307	75.4	53.4	81.9	31.5	22.0	40.1	19.0	1.1	53.1	65.4	43.3	80.1	15.7	3.2	50.8	2.5	0.1	17.6	1.7	0.0	11.7	5	0	24
2006/07	337	76.4	70.2	81.2	27.4	16.6	38.6	8.5	0.0	34.2	61.7	17.1	79.5	29.8	6.4	82.9	2.1	0.2	10.9	1.3	0.0	6.0	4	0	24
2007/08	417	76.7	69.3	79.9	32.4	24.4	42.9	15.2	0.3	50.9	66.0	39.6	78.6	18.8	2.8	60.1	1.9	0.3	15.2	1.3	0.1	8.3	5	0	58
2008/09	327	76.6	69.9	81.2	32.9	24.2	45.4	15.7	1.3	52.8	66.5	44.3	79.9	17.8	1.6	44.6	1.8	0.1	10.3	1.3	0.0	9.9	6	0	32
2009/10	342	76.6	69.0	81.6	33.0	23.3	42.5	14.3	0.0	41.7	68.5	50.9	79.9	17.2	4.0	47.7	2.1	0.4	10.3	1.6	0.3	8.4	5	0	27
2010/11	280	76.2	69.0	81.5	31.9	22.0	40.4	14.4	1.1	43.7	68.6	39.5	79.6	16.9	1.9	58.7	2.1	0.5	8.1	1.6	0.0	5.0	5	0	24
2011/12	423	76.1	68.1	81.0	29.4	14.5	40.9	11.3	0.0	38.3	63.9	13.7	79.4	24.8	6.5	86.3	1.3	0.2	15.6	1.0	0.0	8.3	6	0	27
2012/13	492	76.6	67.8	81.6	28.4	15.2	41.3	9.8	0.0	42.6	61.7	10.1	80.9	28.5	3.4	89.9	1.7	0.1	8.2	1.1	0.0	5.4	5	0	31
Weighted Average		**76.5**			**31.2**			**14.5**			**65.0**			**20.5**			**1.9**			**1.3**			**5**		
Minimum			**53.4**			**14.5**			**0.0**			**10.1**			**0.8**			**0.1**			**0.0**			**0**	
Maximum				**81.9**			**62.9**			**59.8**			**82.3**			**89.9**			**24.4**			**21.5**			**58**
White & Yellow Maize																									
2003/04	900	77.8	63.8	83.2	35.5	23.7	62.9	26.6	0.4	65.5	61.3	31.0	79.4	12.1	0.8	64.9	1.5	0.0	22.0	1.1	0.0	21.5	7	0	60
2004/05	1000	77.5	68.4	83.2	34.4	21.5	44.4	25.7	0.8	59.7	61.8	31.8	82.3	12.5	0.1	66.1	1.5	0.1	24.4	1.1	0.0	12.9	5	0	23
2005/06	900	75.9	53.4	81.9	32.9	18.0	44.7	26.3	0.0	73.9	61.4	24.2	80.1	12.3	1.2	75.8	2.3	0.1	17.6	1.6	0.0	11.7	4	0	36
2006/07	900	77.5	68.1	82.8	28.9	16.6	40.1	13.9	0.0	51.7	62.7	16.7	79.5	23.4	0.8	82.9	1.7	0.0	12.1	1.1	0.0	11.5	3	0	27
2007/08	900	77.5	65.3	81.6	33.5	17.0	45.6	20.2	0.3	69.7	64.8	23.3	84.2	15.0	1.0	76.2	1.5	0.1	15.2	1.1	0.0	8.3	4	0	58
2008/09	810	77.2	61.6	82.8	34.2	24.2	45.4	21.9	0.5	52.8	64.6	43.1	84.0	13.4	1.6	51.0	1.6	0.1	11.7	1.2	0.0	9.9	5	0	50
2009/10	800	77.4	60.2	84.4	34.7	23.3	59.1	21.1	0.0	90.7	65.1	9.2	82.0	13.7	0.1	53.5	1.8	0.2	24.3	1.4	0.1	23.1	4	0	36
2010/11	693	77.1	69.0	81.8	33.5	22.0	44.0	20.7	1.1	55.8	65.6	33.5	83.9	13.8	1.7	65.1	1.8	0.0	8.4	1.3	0.0	5.9	5	0	31
2011/12	1000	77.3	68.1	82.0	30.4	14.5	44.4	15.6	0.0	63.3	64.5	13.7	79.7	19.9	2.8	86.3	1.0	0.0	15.6	0.7	0.0	8.3	6	0	27
2012/13	1000	77.4	67.8	82.9	29.0	15.2	46.0	12.5	0.0	59.9	63.4	10.1	80.9	24.2	3.1	89.9	1.4	0.0	8.2	0.9	0.0	5.4	5	0	37
Weighted Average		**77.3**			**32.6**			**20.3**			**63.4**			**16.2**			**1.6**			**1.1**			**5**		
Minimum			**53.4**			**14.5**			**0.0**			**9.2**			**0.1**			**0.0**			**0.0**			**0**	
Maximum				**84.4**			**62.9**			**90.7**			**84.2**			**89.9**			**24.4**			**23.1**			**60**

Graph 29: Hectolitre mass of South African maize over 10 seasons

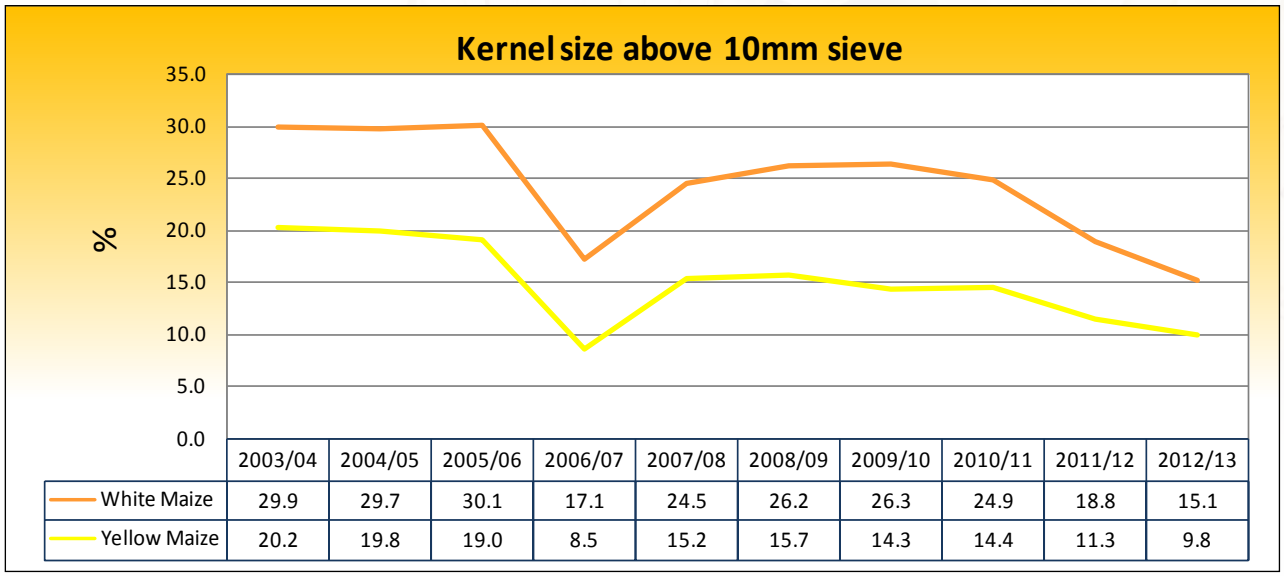


Graph 30: 100 Kernel mass over 10 seasons



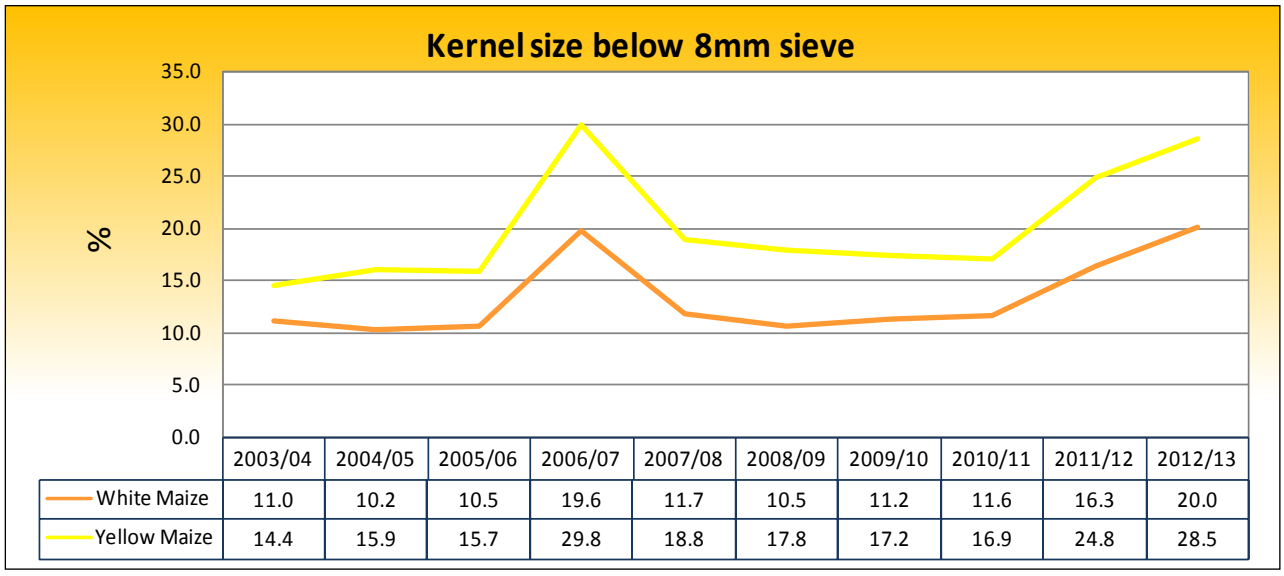
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
White Maize	36.2	35.3	33.7	29.8	34.5	35.1	36.0	34.5	31.2	29.6
Yellow Maize	34.0	33.0	31.5	27.4	32.4	32.8	33.0	31.9	29.4	28.4

Graph 31: Kernel size above 10 mm sieve over 10 seasons



	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
White Maize	29.9	29.7	30.1	17.1	24.5	26.2	26.3	24.9	18.8	15.1
Yellow Maize	20.2	19.8	19.0	8.5	15.2	15.7	14.3	14.4	11.3	9.8

Graph 32: Kernel size below 8 mm sieve over 10 seasons



	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
White Maize	11.0	10.2	10.5	19.6	11.7	10.5	11.2	11.6	16.3	20.0
Yellow Maize	14.4	15.9	15.7	29.8	18.8	17.8	17.2	16.9	24.8	28.5

TABLE 15: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2012/2013)

Number of samples	Region	Roff Milling																		Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Bran/Germ, %			Extraction, % (Total meal)			Whiteness index unsifted			Whiteness index sifted 87:13		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM1																									
3	Region 11	13.6	13.3	14.0	13.7	13.2	14.2	28.9	28.4	29.2	24.6	23.6	25.1	19.2	18.9	19.5	80.8	80.5	81.1	25.2	22.3	28.0	14.4	11.4	15.9
5	Region 12	11.5	10.1	12.1	12.1	10.8	13.0	29.5	28.6	30.3	27.7	26.4	29.2	19.2	18.2	20.4	80.8	79.6	81.8	24.0	18.7	28.1	16.5	14.0	19.7
5	Region 13	11.9	11.2	12.6	12.0	10.2	12.8	30.4	29.9	31.0	26.1	25.0	26.7	19.7	18.6	21.5	80.3	78.5	81.4	27.0	23.9	29.9	17.9	15.5	22.3
14	Region 14	11.9	8.6	13.3	12.3	11.5	12.9	29.0	26.7	31.2	26.5	24.5	30.0	20.3	17.4	23.5	79.7	76.5	82.6	24.7	16.7	30.4	17.1	7.0	22.6
8	Region 15	12.6	11.5	13.2	12.4	11.7	14.3	29.6	28.8	31.5	26.7	26.2	27.7	18.7	17.1	19.5	81.3	80.5	82.9	22.4	19.8	25.0	14.3	10.6	16.0
16	Region 16	11.2	9.8	12.9	11.6	11.0	12.4	29.4	28.5	30.2	27.4	25.3	29.2	20.5	19.0	21.2	79.5	78.8	81.0	21.7	18.1	26.6	14.1	11.5	16.9
7	Region 17	12.4	10.6	13.3	12.8	12.1	14.7	28.5	27.3	30.3	25.7	23.8	27.3	20.6	19.5	21.6	79.4	78.4	80.5	29.9	25.2	40.0	19.4	15.6	27.2
11	Region 18	12.6	9.2	14.8	12.9	11.7	15.4	28.1	26.6	29.2	25.5	21.9	30.0	21.0	19.2	22.1	79.0	77.9	80.8	25.8	17.0	30.7	16.9	10.1	20.8
10	Region 19	11.9	10.1	13.1	11.9	10.5	12.8	29.2	28.4	30.4	26.0	24.2	28.4	21.0	18.3	23.0	79.0	77.0	81.7	22.4	16.1	27.2	14.6	5.8	19.8
7	Region 20	13.5	12.1	16.9	12.8	12.5	13.1	27.8	25.9	29.4	24.6	21.3	26.8	21.3	19.7	22.9	78.7	77.1	80.3	26.3	23.2	30.4	17.8	14.5	23.0
34	Region 21	13.0	9.8	15.2	13.0	11.6	14.7	28.4	26.1	29.5	25.3	23.0	29.5	20.3	18.7	25.4	79.7	74.6	81.3	26.3	20.4	32.9	16.4	13.0	21.4
29	Region 22	13.3	12.0	14.3	12.7	11.7	13.7	28.5	27.3	30.3	25.5	24.1	27.7	20.0	18.5	21.9	80.0	78.1	81.5	25.9	20.9	29.9	16.0	10.9	21.4
49	Region 23	12.7	9.5	14.4	13.2	10.9	15.8	29.1	27.3	31.8	25.8	23.5	28.4	19.3	16.9	22.1	80.7	77.9	83.1	24.4	17.2	30.7	16.1	10.7	21.5
24	Region 24	12.7	11.7	13.4	12.7	11.8	14.6	28.0	26.5	29.5	26.0	24.5	27.8	20.6	18.2	22.8	79.4	77.2	81.8	27.8	20.5	32.1	19.1	13.9	22.4
5	Region 25	14.5	12.7	15.8	13.5	12.6	14.7	27.1	26.1	28.7	22.8	21.5	24.6	22.1	20.4	23.9	77.9	76.1	79.6	28.9	26.2	32.5	18.7	17.6	21.9
14	Region 26	12.4	9.1	15.3	12.8	11.7	15.0	27.9	26.9	29.0	26.1	23.2	28.4	20.9	19.1	22.0	79.1	78.0	80.9	26.9	22.3	39.4	18.4	13.9	37.2
4	Region 27	13.2	12.0	14.3	13.3	12.9	13.8	28.2	27.1	29.2	23.9	22.9	25.5	21.5	19.9	23.0	78.5	77.0	80.1	22.7	15.8	26.8	12.2	7.0	15.4
14	Region 28	14.4	12.1	17.0	13.7	12.0	14.7	27.9	25.7	29.4	23.4	20.5	25.9	20.6	17.8	23.9	79.4	76.1	82.2	25.7	15.0	33.7	15.5	9.9	20.0
15	Region 29	12.8	10.6	14.4	15.1	12.8	23.5	27.6	24.1	29.6	25.4	22.5	28.5	19.2	16.8	21.6	80.8	78.4	83.2	22.8	18.5	26.8	14.0	9.7	17.6
19	Region 30	13.5	11.4	14.9	12.9	11.9	14.9	27.3	26.0	29.0	24.4	21.9	27.0	21.8	19.1	23.6	78.2	76.4	80.9	24.1	20.8	27.4	15.1	12.6	18.8
26	Region 31	13.4	11.0	16.0	13.9	11.6	24.8	27.1	23.2	29.5	23.6	20.9	26.6	22.0	17.6	28.2	78.0	71.8	82.4	25.2	16.4	30.9	15.8	2.9	22.9
30	Region 32	13.7	11.8	15.8	12.9	11.6	15.7	27.1	24.5	29.4	24.5	21.2	26.7	21.9	17.2	25.4	78.1	74.6	82.8	25.2	19.6	28.8	16.5	11.1	25.7
28	Region 33	14.5	12.9	16.2	12.7	11.9	15.3	26.4	24.6	28.2	23.6	22.1	25.6	22.7	20.0	26.3	77.3	73.8	80.0	27.3	22.9	33.0	17.1	11.1	22.3
34	Region 34	14.4	9.9	17.6	14.2	12.2	15.9	27.2	25.0	29.3	23.5	20.3	27.5	20.7	17.4	23.4	79.3	76.6	82.6	25.5	19.1	31.4	15.5	11.1	25.7
6	Region 35	13.5	11.6	14.9	13.5	12.9	14.1	27.4	24.6	30.0	24.3	22.9	26.2	21.3	17.5	23.8	78.7	76.2	82.5	27.9	23.7	33.1	18.9	16.9	21.8
14	Region 36	13.1	10.8	16.2	12.8	12.4	13.3	26.8	24.6	28.9	24.9	20.5	27.7	22.5	17.5	25.8	77.5	74.2	82.5	25.7	20.3	30.2	15.0	12.2	18.8
431	**Ave. WM1**	**13.1**			**13.1**			**28.0**			**25.0**			**20.8**			**79.2**			**25.4**			**16.3**		
	Min. WM1		**8.6**			**10.2**			**23.2**			**20.3**			**16.8**			**71.8**			**15.0**			**2.9**	
	Max. WM1			**17.6**			**24.8**			**31.8**			**30.0**			**28.2**			**83.2**			**40.0**			**37.2**

TABLE 15: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2012/2013) (continue)

Number of samples	Region	Roff Milling																	Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Bran/Germ, %			Extraction, % (Total meal)			Whiteness index unsifted			Whiteness index sifted 87:13		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM2																									
1	Region 11	14.1	-	-	13.2	-	-	28.8	-	-	24.9	-	-	18.9	-	-	81.1	-	-	16.2	-	-	3.9	-	-
3	Region 12	11.1	9.9	13.3	12.3	10.8	13.5	29.5	28.0	30.6	28.2	26.6	29.2	18.9	16.7	20.8	81.1	79.2	83.3	18.5	11.7	23.4	12.0	5.9	16.8
5	Region 13	11.7	10.2	13.1	11.3	9.4	12.2	29.3	28.6	30.8	26.8	25.0	28.1	20.9	19.8	21.4	79.1	78.6	80.2	27.9	21.8	38.5	21.0	14.5	38.9
2	Region 14	11.9	11.8	11.9	11.9	11.8	12.1	29.2	29.0	29.4	26.7	26.5	27.0	20.3	19.8	20.7	79.7	79.3	80.2	22.2	20.4	24.1	15.5	12.5	18.6
2	Region 15	12.2	11.9	12.6	11.9	11.6	12.2	29.7	29.4	29.9	26.0	25.8	26.2	20.2	19.5	21.0	79.8	79.0	80.5	21.6	20.9	22.3	14.0	13.3	14.7
2	Region 17	12.7	11.6	13.8	12.0	10.5	13.6	28.1	27.4	28.8	25.0	23.9	26.1	22.2	21.3	23.0	77.8	77.0	78.7	23.8	23.4	24.3	15.9	15.5	16.4
2	Region 18	11.9	11.5	12.3	17.5	13.3	21.8	26.4	23.7	29.0	24.4	23.2	25.6	19.8	19.0	20.7	80.2	79.3	81.0	19.4	16.7	22.1	13.0	13.0	13.0
1	Region 19	12.7	-	-	12.9	-	-	28.5	-	-	26.2	-	-	19.6	-		80.4	-	-	19.7	-	-	10.6	-	-
3	Region 20	13.2	11.7	14.4	13.1	12.7	13.6	27.4	26.0	28.9	25.1	23.6	26.4	21.3	20.1	22.6	78.7	77.4	79.9	22.9	20.2	25.2	14.0	11.4	16.5
1	Region 21	13.3	-	-	13.3	-	-	28.3	-	-	25.6	-	-	19.4	-	-	80.6	-	-	22.5	-	-	15.1	-	-
3	Region 22	12.2	11.2	12.7	12.5	12.0	12.9	28.1	27.8	28.5	27.2	26.3	28.6	20.0	19.5	20.4	80.0	79.6	80.5	23.2	22.3	24.3	14.4	13.8	15.4
4	Region 23	13.1	12.7	13.8	13.2	12.6	13.7	29.4	29.1	30.3	25.0	23.8	26.2	19.3	18.5	20.3	80.7	79.7	81.5	24.0	22.0	25.9	15.9	13.6	19.0
3	Region 25	14.6	12.7	16.4	12.5	12.0	13.6	27.1	25.6	28.8	23.2	21.0	25.7	22.6	20.9	25.0	77.4	75.0	79.1	25.7	22.7	29.4	15.9	12.4	19.5
4	Region 26	12.3	10.8	13.1	12.3	11.4	13.0	27.8	26.6	29.2	25.5	23.2	27.6	22.1	20.9	23.4	77.9	76.6	79.1	25.2	22.4	28.0	12.1	8.0	17.9
1	Region 27	12.6	-	-	14.0	-	-	26.3	-	-	23.9	-	-	23.2	-	-	76.8	-	-	34.2	-	-	23.0	-	-
1	Region 29	12.0	-	-	11.9	-	-	27.6	-	-	26.3	-	-	22.2	-	-	77.8	-	-	9.6	-	-	-1.7	-	-
2	Region 31	14.9	14.5	15.2	15.2	14.1	16.2	26.0	25.6	26.3	21.9	21.9	22.0	22.1	20.4	23.8	77.9	76.2	79.6	19.1	19.0	19.1	9.8	8.9	10.7
3	Region 32	13.9	12.7	14.6	13.4	12.6	13.9	26.6	25.9	27.1	22.9	22.2	24.0	23.3	22.8	23.9	76.7	76.1	77.2	26.0	25.1	26.9	15.6	13.2	18.1
6	Region 33	13.9	10.1	16.6	12.5	12.1	12.9	27.2	25.4	29.4	24.2	21.6	27.4	22.2	20.4	23.7	77.8	76.3	79.6	23.8	19.6	28.1	14.1	9.3	17.7
5	Region 34	15.8	15.3	16.5	15.2	14.2	15.9	27.1	25.2	29.1	22.5	21.0	24.3	19.4	15.7	21.6	80.6	78.4	84.3	21.7	16.8	24.8	12.2	8.4	15.2
1	Region 35	11.4	-	-	22.6	-	-	25.2	-	-	23.6	-	-	17.2	-	-	82.8	-	-	20.2	-	-	12.3	-	-
5	Region 36	13.1	11.9	13.9	12.9	12.4	13.2	27.2	26.0	28.8	24.6	23.3	26.9	22.2	19.3	24.6	77.8	75.4	80.7	25.9	19.9	34.8	16.3	10.1	23.0
60	**Ave. WM2**	**13.1**			**13.2**			**27.8**			**24.9**			**21.0**			**79.0**			**23.3**			**14.3**		
	Min. WM2		**9.9**			**9.4**			**23.7**			**21.0**			**15.7**			**75.0**			**9.6**			**-1.7**	
	Max. WM2			**16.6**			**22.6**			**30.8**			**29.2**			**25.0**			**84.3**			**38.5**			**38.9**

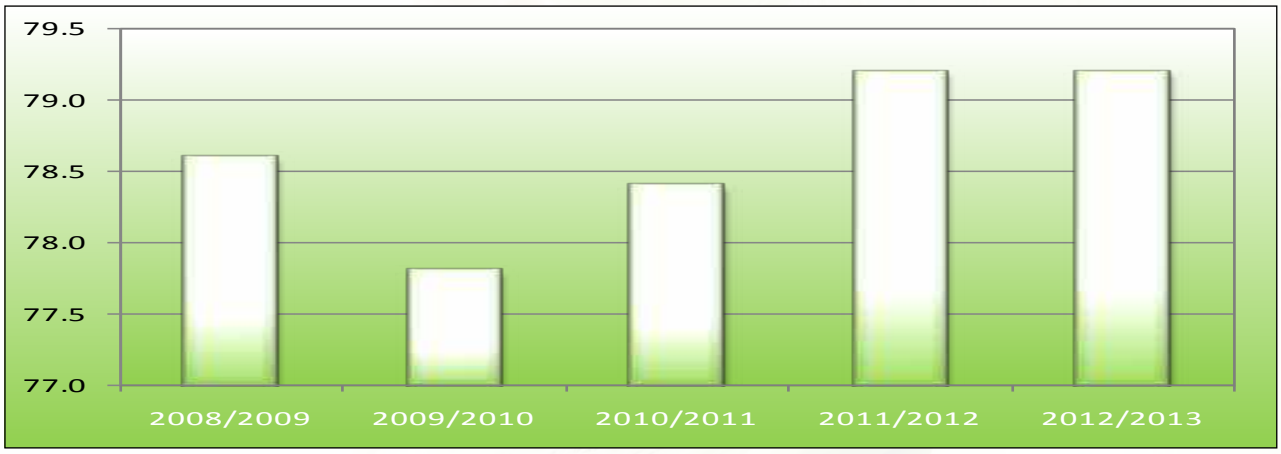
TABLE 15: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2012/2013) (continue)

Number of samples	Region	Roff Milling																	Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Bran/Germ, %			Extraction, % (Total meal)			Whiteness index unsifted			Whiteness index sifted 87:13		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM3																									
2	Region 13	10.4	9.8	10.9	12.1	11.8	12.4	30.4	29.7	31.1	29.2	28.6	29.8	17.9	16.4	19.5	82.1	80.5	83.6	27.2	26.5	27.9	17.4	17.3	17.5
1	Region 16	12.0	-	-	12.4	-	-	30.2	-	-	26.6	-	-	18.8	-	-	81.2	-	-	21.0	-	-	15.3	-	-
2	Region 17	11.9	11.9	12.0	11.5	10.7	12.2	29.9	29.9	29.9	26.4	25.7	27.0	20.3	18.8	21.8	79.7	78.2	81.2	23.4	20.0	26.7	12.0	7.8	16.3
1	Region 19	10.8	-	-	10.1	-	-	28.9	-	-	28.0	-	-	22.2	-	-	77.8	-	-	18.7	-	-	13.5	-	-
1	Region 22	14.4	-	-	13.1	-	-	27.9	-	-	23.9	-	-	20.7	-	-	79.3	-	-	26.0	-	-	18.6	-	-
1	Region 24	12.4	-	-	12.6	-	-	28.9	-	-	26.1	-	-	20.0	-	-	80.0	-	-	22.5	-	-	18.3	-	-
1	Region 25	14.6	-	-	15.1	-	-	28.2	-	-	25.7	-	-	16.5	-	-	83.5	-	-	5.9	-	-	-9.7	-	-
1	Region 29	13.0	-	-	15.0	-	-	28.4	-	-	26.5	-	-	17.1	-	-	82.9	-	-	18.4	-	-	8.8	-	-
1	Region 31	16.4	-	-	11.6	-	-	27.0	-	-	23.4	-	-	21.6	-	-	78.4	-	-	30.6	-	-	21.5	-	-
2	Region 34	16.8	15.9	17.7	15.3	14.6	16.0	26.3	24.0	28.6	20.9	19.0	22.8	20.8	16.8	24.7	79.2	75.3	83.2	22.5	22.1	22.9	12.1	9.0	15.3
13	**Ave. WM3**	**13.2**			**12.9**			**28.7**			**25.6**			**19.6**			**80.4**			**22.2**			**13.0**		
	Min. WM3		**9.8**			**10.1**			**24.0**			**19.0**			**16.4**			**75.3**			**5.9**			**-9.7**	
	Max. WM3			**17.7**			**16.0**			**31.1**			**29.8**			**24.7**			**83.6**			**30.6**			**21.5**
CLASS: COM																									
2	Region 23	11.0	10.4	11.6	12.9	12.6	13.1	29.6	29.1	30.1	28.2	27.6	28.7	18.4	18.2	18.6	81.6	81.4	81.8	19.5	17.4	21.6	10.2	9.4	11.0
1	Region 25	15.7	-	-	13.5	-	-	26.4	-	-	23.1	-	-	21.4	-	-	78.6	-	-	27.4	-	-	18.4	-	-
1	Region 32	13.8	-	-	12.4	-	-	26.5	-	-	25.2	-	-	22.1	-	-	77.9	-	-	27.6	-	-	16.1	-	-
4	**Ave. COM**	**12.9**			**12.9**			**28.0**			**26.1**			**20.1**			**79.9**			**23.5**			**13.7**		
	Min. COM		**10.4**			**12.4**			**26.4**			**23.1**			**18.2**			**77.9**			**17.4**			**9.4**	
	Max. COM			**15.7**			**13.5**			**30.1**			**28.7**			**22.1**			**81.8**			**27.6**			**18.4**
508	**Ave. white maize**	**13.1**			**13.1**			**28.0**			**25.0**			**20.8**			**79.2**			**25.1**			**15.9**		
	Min. white maize		**8.6**			**9.4**			**23.2**			**19.0**			**15.7**			**71.8**			**5.9**			**-9.7**	
	Max. white maize			**17.7**			**24.8**			**31.8**			**30.0**			**28.2**			**84.3**			**40.0**			**38.9**

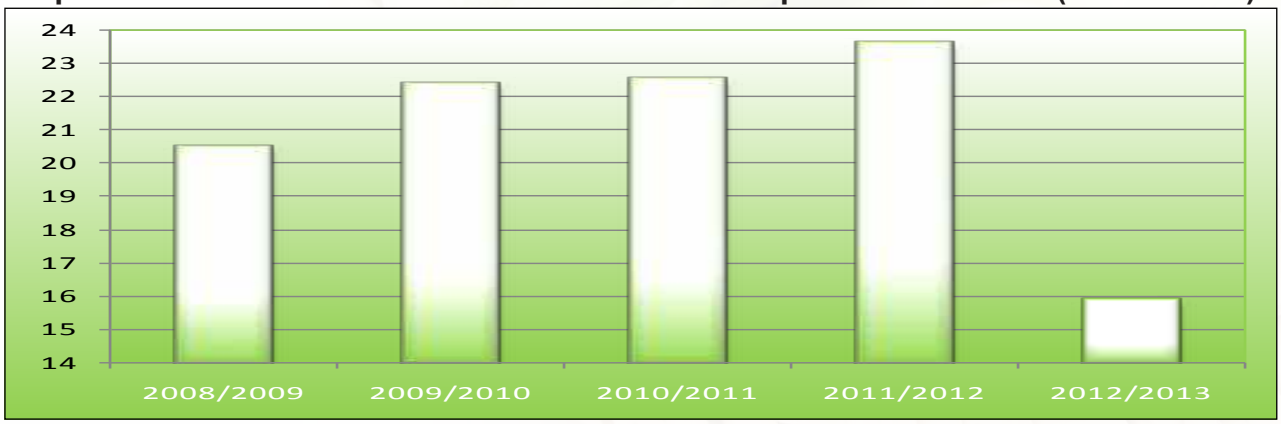
TABLE 16: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE (2012/2013)

Number of samples	Region	Roff Milling																	Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Bran/Germ, %			Extraction, % (Total meal)			Whiteness index unsifted			Whiteness index sifted 87:13		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
WHITE																									
4	Region 11	13.7	13.3	14.1	13.6	13.2	14.2	28.9	28.4	29.2	24.7	23.6	25.1	19.1	18.9	19.5	80.9	80.5	81.1	22.9	16.2	28.0	11.7	3.9	15.9
8	Region 12	11.3	9.9	13.3	12.2	10.8	13.5	29.5	28.0	30.6	27.9	26.4	29.2	19.1	16.7	20.8	80.9	79.2	83.3	21.9	11.7	28.1	14.8	5.9	19.7
12	Region 13	11.6	9.8	13.1	11.7	9.4	12.8	29.9	28.6	31.1	26.9	25.0	29.8	19.9	16.4	21.5	80.1	78.5	83.6	27.4	21.8	38.5	19.1	14.5	38.9
16	Region 14	11.9	8.6	13.3	12.3	11.5	12.9	29.0	26.7	31.2	26.5	24.5	30.0	20.3	17.4	23.5	79.7	76.5	82.6	24.4	16.7	30.4	16.9	7.0	22.6
10	Region 15	12.5	11.5	13.2	12.3	11.6	14.3	29.6	28.8	31.5	26.5	25.8	27.7	19.0	17.1	21.0	81.0	79.0	82.9	22.2	19.8	25.0	14.2	10.6	16.0
17	Region 16	11.3	9.8	12.9	11.6	11.0	12.4	29.4	28.5	30.2	27.3	25.3	29.2	20.4	18.8	21.2	79.6	78.8	81.2	21.6	18.1	26.6	14.2	11.5	16.9
11	Region 17	12.4	10.6	13.8	12.4	10.5	14.7	28.7	27.3	30.3	25.7	23.8	27.3	20.8	18.8	23.0	79.2	77.0	81.2	27.6	20.0	40.0	17.4	7.8	27.2
13	Region 18	12.5	9.2	14.8	13.6	11.7	21.8	27.8	23.7	29.2	25.3	21.9	30.0	20.8	19.0	22.1	79.2	77.9	81.0	24.8	16.7	30.7	16.3	10.1	20.8
12	Region 19	11.8	10.1	13.1	11.9	10.1	12.9	29.1	28.4	30.4	26.2	24.2	28.4	21.0	18.3	23.0	79.0	77.0	81.7	21.9	16.1	27.2	14.2	5.8	19.8
10	Region 20	13.4	11.7	16.9	12.9	12.5	13.6	27.7	25.9	29.4	24.7	21.3	26.8	21.3	19.7	22.9	78.7	77.1	80.3	25.3	20.2	30.4	16.7	11.4	23.0
35	Region 21	13.0	9.8	15.2	13.0	11.6	14.7	28.4	26.1	29.5	25.3	23.0	29.5	20.3	18.7	25.4	79.7	74.6	81.3	26.1	20.4	32.9	16.3	13.0	21.4
33	Region 22	13.2	11.2	14.4	12.7	11.7	13.7	28.5	27.3	30.3	25.6	23.9	28.6	20.0	18.5	21.9	80.0	78.1	81.5	25.7	20.9	29.9	16.0	10.9	21.4
55	Region 23	12.7	9.5	14.4	13.2	10.9	15.8	29.1	27.3	31.8	25.8	23.5	28.7	19.2	16.9	22.1	80.8	77.9	83.1	24.2	17.2	30.7	15.9	9.4	21.5
25	Region 24	12.7	11.7	13.4	12.7	11.8	14.6	28.0	26.5	29.5	26.0	24.5	27.8	20.6	18.2	22.8	79.4	77.2	81.8	27.6	20.5	32.1	19.0	13.9	22.4
10	Region 25	14.6	12.7	16.4	13.4	12.0	15.1	27.1	25.6	28.8	23.3	21.0	25.7	21.6	16.5	25.0	78.4	75.0	83.5	25.5	5.9	32.5	15.0	-9.7	21.9
18	Region 26	12.4	9.1	15.3	12.7	11.4	15.0	27.8	26.6	29.2	25.9	23.2	28.4	21.2	19.1	23.4	78.8	76.6	80.9	26.5	22.3	39.4	17.0	8.0	37.2
5	Region 27	13.0	12.0	14.3	13.4	12.9	14.0	27.8	26.3	29.2	23.9	22.9	25.5	21.8	19.9	23.2	78.2	76.8	80.1	25.0	15.8	34.2	14.4	7.0	23.0
14	Region 28	14.4	12.1	17.0	13.7	12.0	14.7	27.9	25.7	29.4	23.4	20.5	25.9	20.6	17.8	23.9	79.4	76.1	82.2	25.7	15.0	33.7	15.5	9.9	20.0
17	Region 29	12.7	10.6	14.4	14.9	11.9	23.5	27.7	24.1	29.6	25.5	22.5	28.5	19.2	16.8	22.2	80.8	77.8	83.2	21.8	9.6	26.8	12.8	-1.7	17.6
19	Region 30	13.5	11.4	14.9	12.9	11.9	14.9	27.3	26.0	29.0	24.4	21.9	27.0	21.8	19.1	23.6	78.2	76.4	80.9	24.1	20.8	27.4	15.1	12.6	18.8
29	Region 31	13.6	11.0	16.4	14.0	11.6	24.8	27.0	23.2	29.5	23.4	20.9	26.6	21.9	17.6	28.2	78.1	71.8	82.4	25.0	16.4	30.9	15.6	2.9	22.9
34	Region 32	13.7	11.8	15.8	12.9	11.6	15.7	27.0	24.5	29.4	24.3	21.2	26.7	22.0	17.2	25.4	78.0	74.6	82.8	25.3	19.6	28.8	16.4	11.1	25.7
34	Region 33	14.4	10.1	16.6	12.7	11.9	15.3	26.6	24.6	29.4	23.7	21.6	27.4	22.6	20.0	26.3	77.4	73.8	80.0	26.7	19.6	33.0	16.6	9.3	22.3
41	Region 34	14.7	9.9	17.7	14.4	12.2	16.0	27.1	24.0	29.3	23.2	19.0	27.5	20.5	15.7	24.7	79.5	75.3	84.3	24.9	16.8	31.4	14.9	8.4	25.7
7	Region 35	13.2	11.4	14.9	14.8	12.9	22.6	27.1	24.6	30.0	24.2	22.9	26.2	20.7	17.2	23.8	79.3	76.2	82.8	26.8	20.2	33.1	17.9	12.3	21.8
19	Region 36	13.1	10.8	16.2	12.8	12.4	13.3	26.9	24.6	28.9	24.8	20.5	27.7	22.4	17.5	25.8	77.6	74.2	82.5	25.7	19.9	34.8	15.3	10.1	23.0
508	**Ave. white**	**13.1**			**13.1**			**28.0**			**25.0**			**20.8**			**79.2**			**25.1**			**15.9**		
	Min. white		**8.6**			**9.4**			**23.2**			**19.0**			**15.7**			**71.8**			**5.9**			**-9.7**	
	Max. white			**17.7**			**24.8**			**31.8**			**30.0**			**28.2**			**84.3**			**40.0**			**38.9**

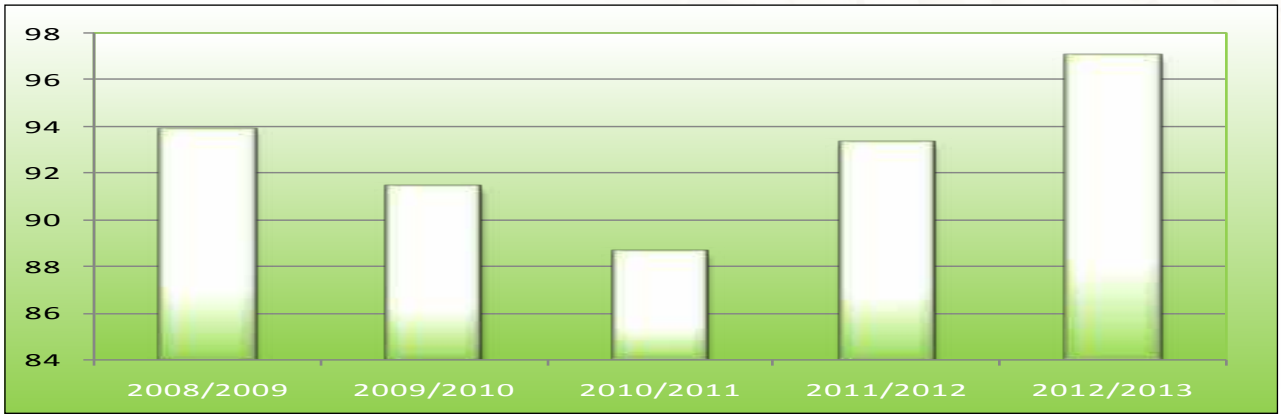
Graph 33: Roff Mill Total Extraction percentage over the past five seasons



Graph 34: Whiteness index of white maize over the past five seasons (Sifted 87:13)



Graph 35: Milling index of white maize over the past five seasons



Graph 36: Milling index of yellow maize over the past five seasons

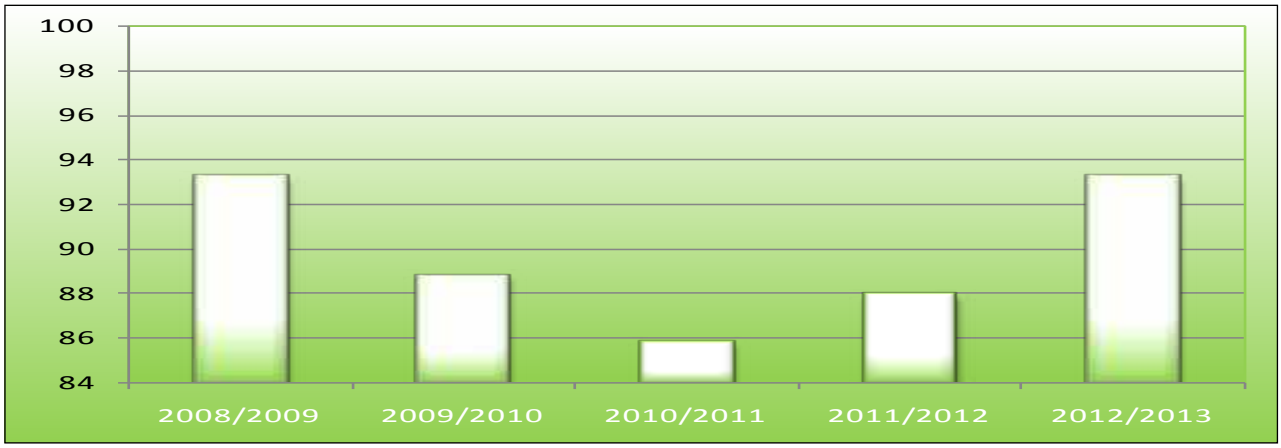


TABLE 17: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2012/2013)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM1										
-	Region 10	-	-	-	-	-	-	-	-	-
3	Region 11	3.7	3.6	3.7	8.7	8.6	8.9	71.8	71.6	72.0
5	Region 12	4.4	4.1	4.6	10.2	9.6	10.6	70.5	70.0	70.8
5	Region 13	4.1	4.0	4.2	10.3	9.8	10.7	71.5	70.6	72.0
14	Region 14	4.1	3.6	4.6	10.2	8.9	11.4	71.0	69.9	72.1
8	Region 15	4.3	4.2	4.5	9.4	9.0	10.0	71.3	70.8	71.6
16	Region 16	4.3	4.0	4.6	10.0	9.2	10.6	71.1	70.3	72.1
7	Region 17	4.1	3.9	4.6	9.7	9.1	10.4	71.4	70.3	72.7
11	Region 18	4.2	3.8	4.5	9.4	8.3	10.0	71.4	70.5	72.2
10	Region 19	4.2	4.1	4.5	10.1	8.8	11.0	71.0	70.3	71.9
7	Region 20	4.1	4.0	4.3	9.0	7.5	10.0	71.3	70.2	72.7
34	Region 21	4.2	3.5	4.5	9.6	8.6	11.4	71.0	70.1	72.2
29	Region 22	4.2	4.0	4.3	9.1	8.8	9.9	71.6	70.6	72.3
49	Region 23	4.2	3.9	4.6	9.3	8.5	11.2	71.0	69.6	72.2
24	Region 24	4.2	3.9	4.5	9.7	8.7	10.3	71.4	70.2	72.3
5	Region 25	4.4	3.9	4.6	7.8	6.4	8.9	72.3	71.6	72.9
14	Region 26	4.3	4.0	4.6	9.2	8.0	10.0	71.6	70.9	72.9
4	Region 27	4.1	3.9	4.4	9.1	8.5	9.4	70.9	70.0	71.9
14	Region 28	4.1	3.8	4.6	8.6	7.5	10.1	71.8	70.7	73.0
15	Region 29	4.1	3.9	4.2	9.4	8.4	10.8	70.8	69.8	71.9
19	Region 30	4.0	3.8	4.3	8.6	8.0	9.4	71.8	70.6	72.6
26	Region 31	3.9	3.5	4.6	8.8	7.9	9.7	71.5	70.1	72.5
30	Region 32	4.1	3.8	4.7	8.7	7.8	9.5	71.8	70.8	72.5
28	Region 33	4.0	3.3	4.5	8.4	8.0	9.7	72.4	70.8	73.6
34	Region 34	4.1	3.7	5.3	8.6	7.3	11.5	71.1	68.5	73.2
6	Region 35	4.3	3.9	4.6	8.6	7.5	10.1	71.5	70.6	72.1
14	Region 36	4.2	4.0	5.2	8.4	6.9	9.3	71.6	70.3	72.7
431	**Ave. WM1**	**4.1**			**9.1**			**71.4**		
	Min. WM1		**3.3**			**6.4**			**68.5**	
	Max. WM1			**5.3**			**11.5**			**73.6**

TABLE 17: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2012/2013)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM1										
13	Region 10	3.5	3.3	3.8	8.3	7.8	9.2	72.9	71.8	73.9
19	Region 11	3.5	3.3	4.1	8.5	7.6	9.0	72.3	71.2	73.7
6	Region 12	3.9	3.6	4.1	10.8	9.1	12.8	71.4	69.9	72.6
3	Region 13	3.9	3.8	4.0	9.9	9.3	10.3	71.8	71.3	72.3
6	Region 14	4.0	3.7	4.2	10.8	10.2	11.3	71.4	70.8	71.9
1	Region 15	3.5	-	-	8.8	-	-	71.0	-	-
1	Region 16	4.0	-	-	10.0	-	-	71.4	-	-
5	Region 17	4.0	3.8	4.1	10.5	10.2	10.7	71.6	70.8	72.1
9	Region 18	3.8	3.4	4.0	9.2	8.3	10.8	72.1	71.3	72.7
6	Region 19	3.7	3.3	4.2	10.0	9.0	12.5	72.2	71.4	73.4
4	Region 20	3.9	3.6	4.2	9.0	8.1	9.6	71.7	70.9	72.9
8	Region 21	4.1	3.7	4.5	9.9	9.4	10.7	71.2	70.7	72.0
4	Region 22	3.8	3.6	4.0	10.0	9.3	10.5	72.3	71.8	72.7
20	Region 23	3.9	3.4	4.2	9.9	8.7	10.8	71.4	70.6	72.5
6	Region 24	3.8	3.3	4.2	9.9	9.0	10.6	71.2	70.5	71.9
15	Region 25	3.8	3.3	4.6	8.8	7.5	10.3	72.6	69.7	73.6
23	Region 26	4.1	3.5	4.5	9.8	8.4	10.7	71.7	70.5	73.9
6	Region 27	4.0	3.4	4.5	9.2	7.9	10.9	71.1	69.4	72.4
17	Region 28	4.0	3.5	4.6	9.1	8.4	9.8	71.6	70.6	72.6
35	Region 29	3.9	3.5	4.3	9.2	8.4	10.5	71.2	69.9	72.2
41	Region 30	3.8	3.3	4.5	8.7	7.5	10.9	71.9	69.7	73.1
42	Region 31	3.8	3.4	4.7	8.8	7.2	10.2	71.8	70.1	73.4
33	Region 32	3.8	3.2	4.4	8.9	8.0	10.4	72.3	69.9	73.4
13	Region 33	3.9	3.6	4.2	8.4	7.4	9.4	72.6	71.8	73.3
24	Region 34	4.0	3.7	4.4	9.1	8.0	10.2	71.2	69.9	72.4
11	Region 35	3.9	3.3	4.6	8.2	7.2	9.3	72.0	70.2	72.9
16	Region 36	4.0	3.6	4.4	8.0	7.3	8.7	72.3	71.5	73.3
387	**Ave. YM1**	**3.9**			**9.1**			**71.8**		
	Min. YM1		**3.2**			**7.2**			**69.4**	
	Max .YM1			**4.7**			**12.8**			**73.9**

TABLE 17: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2012/2013) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM2										
-	Region 10	-	-	-	-	-	-	-	-	-
1	Region 11	3.5	-	-	8.5	-	-	72.6	-	-
3	Region 12	4.4	3.8	4.7	10.7	9.9	11.2	70.3	69.4	71.6
5	Region 13	4.0	3.7	4.4	10.7	10.0	11.1	71.4	69.5	72.2
2	Region 14	4.1	3.8	4.3	10.3	10.0	10.6	71.4	71.4	71.4
2	Region 15	4.4	4.3	4.4	9.7	9.6	9.8	71.0	70.8	71.2
-	Region 16	-	-	-	-	-	-	-	-	-
2	Region 17	3.9	3.8	4.0	10.2	9.5	10.9	71.7	71.4	71.9
2	Region 18	4.0	3.9	4.0	10.0	9.6	10.3	71.3	70.5	72.1
1	Region 19	4.1	-	-	10.1	-	-	70.7	-	-
3	Region 20	4.2	4.1	4.3	9.1	8.6	9.6	71.3	70.8	71.7
1	Region 21	4.3	-	-	9.1	-	-	70.5	-	-
3	Region 22	4.2	4.1	4.4	9.8	9.7	9.8	71.1	70.3	71.8
4	Region 23	4.3	4.1	4.5	9.2	9.0	9.5	70.9	70.4	71.4
-	Region 24	-	-	-	-	-	-	-	-	-
3	Region 25	4.1	3.8	4.5	8.7	7.6	10.0	72.3	70.8	73.3
4	Region 26	4.1	4.0	4.3	9.9	8.8	10.9	71.9	70.0	72.7
1	Region 27	4.1	-	-	7.8	-	-	70.9	-	-
-	Region 28	-	-	-	-	-	-	-	-	-
1	Region 29	4.0	-	-	9.8	-	-	71.0	-	-
-	Region 30	-	-	-	-	-	-	-	-	-
2	Region 31	4.3	4.1	4.4	8.1	7.8	8.3	71.7	71.7	71.7
3	Region 32	3.6	3.6	3.7	8.5	8.2	8.8	72.1	71.6	72.6
6	Region 33	4.0	3.9	4.0	8.6	7.7	10.0	72.1	71.9	72.4
5	Region 34	4.1	3.7	4.3	8.0	7.6	8.2	71.1	70.9	71.4
1	Region 35	4.6	-	-	10.1	-	-	70.2	-	-
5	Region 36	4.1	3.8	4.4	8.5	8.0	9.4	71.9	71.4	72.4
60	**Ave. WM2**	**4.1**			**9.3**			**71.5**		
	Min. WM2		**3.5**			**7.6**			**69.4**	
	Max. WM2			**4.7**			**11.2**			**73.3**

TABLE 17: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2012/2013) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM2										
1	Region 10	3.7	-	-	8.9	-	-	72.8	-	-
4	Region 11	3.4	3.1	3.6	8.9	8.0	9.9	72.2	71.4	72.8
4	Region 12	3.9	3.8	4.1	11.0	9.9	11.9	71.7	71.2	72.3
3	Region 13	3.9	3.8	4.0	11.2	10.8	11.6	71.4	71.3	71.7
6	Region 14	4.0	3.6	4.3	10.9	9.0	11.9	71.4	70.0	72.7
1	Region 15	4.0	-	-	9.5	-	-	71.0	-	-
2	Region 16	4.1	3.9	4.2	10.2	10.0	10.4	71.7	71.6	71.8
6	Region 17	3.8	3.6	4.1	10.3	9.9	11.0	72.1	71.2	72.5
2	Region 18	3.7	3.5	3.9	9.8	9.7	9.9	71.7	71.7	71.7
4	Region 19	3.8	3.6	4.0	10.1	8.9	10.8	71.7	70.9	72.8
4	Region 20	3.9	3.7	4.3	9.2	8.4	9.6	72.4	71.2	73.0
3	Region 21	3.8	3.6	4.0	10.1	9.8	10.6	71.7	70.8	72.7
-	Region 22	-	-	-	-	-	-	-	-	-
4	Region 23	3.9	3.8	4.0	10.7	10.0	11.4	71.3	70.3	71.9
2	Region 24	3.6	3.3	3.8	10.7	9.6	11.8	71.9	71.2	72.5
5	Region 25	3.7	3.4	4.0	9.6	8.8	10.6	72.4	71.8	72.9
4	Region 26	3.9	3.6	4.2	9.6	9.1	10.3	72.4	71.8	72.9
1	Region 27	3.6	-	-	9.8	-	-	71.3	-	-
-	Region 28	-	-	-	-	-	-	-	-	-
2	Region 29	4.1	4.1	4.1	9.2	8.8	9.5	71.0	71.0	71.0
3	Region 30	3.8	3.8	3.8	8.8	8.6	8.9	71.1	70.7	71.5
5	Region 31	3.8	3.5	3.9	8.4	8.2	8.7	72.1	71.5	72.7
5	Region 32	3.9	3.5	4.1	8.7	8.4	9.6	72.6	71.8	73.3
1	Region 33	4.0	-	-	9.0	-	-	72.4	-	-
4	Region 34	3.8	3.6	3.9	8.2	8.1	8.4	72.0	71.9	72.1
1	Region 35	3.5	-	-	7.3	-	-	73.3	-	-
3	Region 36	3.9	3.6	4.4	8.3	7.8	9.0	72.7	72.0	73.3
80	**Ave. YM2**	**3.8**			**9.6**			**71.9**		
	Min. YM2		**3.1**			**7.3**			**70.0**	
	Max. YM2			**4.4**			**11.9**			**73.3**

TABLE 17: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2012/2013) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM3										
2	Region 13	3.8	3.7	3.9	11.0	10.9	11.1	71.5	71.1	71.8
1	Region 16	4.3	-	-	9.3	-	-	71.3	-	-
2	Region 17	3.8	3.6	4.0	10.6	10.3	10.8	72.1	71.4	72.7
1	Region 19	4.0	-	-	10.7	-	-	71.2	-	-
1	Region 22	4.1	-	-	8.8	-	-	71.7	-	-
1	Region 24	4.3	-	-	9.3	-	-	70.9	-	-
1	Region 25	3.8	-	-	9.5	-	-	71.0	-	-
-	Region 26	-	-	-	-	-	-	-	-	-
-	Region 27	-	-	-	-	-	-	-	-	-
1	Region 29	4.1	-	-	8.4	-	-	71.7	-	-
1	Region 31	3.9	-	-	8.5	-	-	72.5	-	-
-	Region 33	-	-	-	-	-	-	-	-	-
2	Region 34	3.8	3.7	3.9	7.5	7.1	7.9	71.7	71.6	71.8
-	Region 36	-	-	-	-	-	-	-	-	-
13	**Ave. WM3**	**3.9**			**9.4**			**71.6**		
	Min. WM3		**3.6**			**7.1**			**70.9**	
	Max. WM3			**4.3**			**11.1**			**72.7**
CLASS: COM										
-	Region 11	-	-	-	-	-	-	-	-	-
-	Region 16	-	-	-	-	-	-	-	-	-
-	Region 17	-	-	-	-	-	-	-	-	-
-	Region 21	-	-	-	-	-	-	-	-	-
2	Region 23	4.5	4.3	4.6	10.5	9.8	11.1	70.1	69.6	70.5
-	Region 24	-	-	-	-	-	-	-	-	-
1	Region 25	4.3	-	-	9.0	-	-	72.0	-	-
-	Region 26	-	-	-	-	-	-	-	-	-
-	Region 30	-	-	-	-	-	-	-	-	-
-	Region 31	-	-	-	-	-	-	-	-	-
1	Region 32	4.2	-	-	8.1	-	-	72.1	-	-

TABLE 17: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2012/2013) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM3										
1	Region 13	3.4	-	-	12.3	-	-	71.0	-	-
-	Region 16	-	-	-	-	-	-	-	-	-
1	Region 17	3.5	-	-	10.4	-	-	72.9	-	-
2	Region 19	3.8	3.7	3.9	11.3	10.8	11.8	71.7	71.6	71.7
-	Region 22	-	-	-	-	-	-	-	-	-
-	Region 24	-	-	-	-	-	-	-	-	-
-	Region 25	-	-	-	-	-	-	-	-	-
3	Region 26	3.5	3.5	3.6	10.9	9.8	11.4	72.7	72.5	73.0
1	Region 27	3.6	-	-	8.4	-	-	71.9	-	-
1	Region 29	2.9	-	-	7.1	-	-	72.5	-	-
-	Region 31	-	-	-	-	-	-	-	-	-
2	Region 33	3.8	3.4	4.2	9.1	8.5	9.7	72.9	72.0	73.8
-	Region 34	-	-	-	-	-	-	-	-	-
1	Region 36	4.0	-	-	8.2	-	-	72.2	-	-
12	**Ave. YM3**	**3.6**			**10.0**			**72.3**		
	Min. YM3		**2.9**			**7.1**			**71.0**	
	Max. YM3			**4.2**			**12.3**			**73.8**
CLASS: COM										
1	Region 11	3.5	-	-	8.7	-	-	72.5	-	-
1	Region 16	4.2	-	-	10.4	-	-	71.6	-	-
1	Region 17	3.6	-	-	11.4	-	-	72.4	-	-
1	Region 21	3.6	-	-	11.1	-	-	72.0	-	-
1	Region 23	3.8	-	-	10.3	-	-	72.3	-	-
1	Region 24	4.3	-	-	11.8	-	-	70.1	-	-
3	Region 25	4.1	3.8	4.2	8.6	8.3	8.8	71.9	71.3	72.7
1	Region 26	3.4	-	-	11.7	-	-	71.4	-	-
1	Region 30	4.1	-	-	8.9	-	-	70.8	-	-
1	Region 31	3.8	-	-	9.5	-	-	72.9	-	-
1	Region 32	3.8	-	-	8.7	-	-	72.0	-	-

TABLE 17: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2012/2013) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
CLASS: COM										
4	Ave. COM	4.4			9.5			71.1		
	Min. COM		4.2			8.1			69.6	
	Max. COM			4.6			11.1			72.1
508	Ave. White	4.1			9.2			71.4		
	Min. White		3.3			6.4			68.5	
	Max. White			5.3			11.5			73.6
1000	Ave. Maize	4.0			9.2			71.6		
	Min. Maize		2.9			6.4			68.5	
	Max. Maize			5.3			12.8			73.9

TABLE 17: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2012/2013) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
CLASS: COM										
13	Ave. COM	3.9			9.9			71.8		
	Min. COM		3.4			8.3			70.1	
	Max. COM			4.3			11.8			72.9
492	Ave. Yellow	3.9			9.2			71.9		
	Min. Yellow		2.9			7.1			69.4	
	Max. Yellow			4.7			12.8			73.9
1000	Ave. Maize	4.0			9.2			71.6		
	Min .Maize		2.9			6.4			68.5	
	Max. Maize			5.3			12.8			73.9

TABLE 18: NUTRITIONAL VALUES OF WHITE AND YELLOW MAIZE (2012/2013)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
	WHITE									
4	Region 11	3.6	3.5	3.7	8.7	8.5	8.9	72.0	71.6	72.6
8	Region 12	4.4	3.8	4.7	10.4	9.6	11.2	70.4	69.4	71.6
12	Region 13	4.0	3.7	4.4	10.6	9.8	11.1	71.5	69.5	72.2
16	Region 14	4.1	3.6	4.6	10.2	8.9	11.4	71.1	69.9	72.1
10	Region 15	4.3	4.2	4.5	9.4	9.0	10.0	71.2	70.8	71.6
17	Region 16	4.3	4.0	4.6	10.0	9.2	10.6	71.1	70.3	72.1
11	Region 17	4.0	3.6	4.6	9.9	9.1	10.9	71.6	70.3	72.7
13	Region 18	4.2	3.8	4.5	9.5	8.3	10.3	71.4	70.5	72.2
12	Region 19	4.2	4.0	4.5	10.1	8.8	11.0	71.0	70.3	71.9
10	Region 20	4.2	4.0	4.3	9.0	7.5	10.0	71.3	70.2	72.7
35	Region 21	4.2	3.5	4.5	9.5	8.6	11.4	71.0	70.1	72.2
33	Region 22	4.2	4.0	4.4	9.2	8.8	9.9	71.6	70.3	72.3
55	Region 23	4.3	3.9	4.6	9.3	8.5	11.2	71.0	69.6	72.2
25	Region 24	4.2	3.9	4.5	9.6	8.7	10.3	71.4	70.2	72.3
10	Region 25	4.2	3.8	4.6	8.4	6.4	10.0	72.1	70.8	73.3
18	Region 26	4.3	4.0	4.6	9.4	8.0	10.9	71.7	70.0	72.9
5	Region 27	4.1	3.9	4.4	8.8	7.8	9.4	70.9	70.0	71.9
14	Region 28	4.1	3.8	4.6	8.6	7.5	10.1	71.8	70.7	73.0
17	Region 29	4.1	3.9	4.2	9.4	8.4	10.8	70.8	69.8	71.9
19	Region 30	4.0	3.8	4.3	8.6	8.0	9.4	71.8	70.6	72.6
29	Region 31	4.0	3.5	4.6	8.7	7.8	9.7	71.6	70.1	72.5
34	Region 32	4.1	3.6	4.7	8.7	7.8	9.5	71.8	70.8	72.6
34	Region 33	4.0	3.3	4.5	8.4	7.7	10.0	72.4	70.8	73.6
41	Region 34	4.1	3.7	5.3	8.5	7.1	11.5	71.1	68.5	73.2
7	Region 35	4.3	3.9	4.6	8.8	7.5	10.1	71.3	70.2	72.1
19	Region 36	4.2	3.8	5.2	8.5	6.9	9.4	71.7	70.3	72.7
508	**Ave. white**	**4.1**			**9.2**			**71.4**		
	Min. white		**3.3**			**6.4**			**68.5**	
	Max. white			**5.3**			**11.5**			**73.6**
	YELLOW									
14	Region 10	3.5	3.3	3.8	8.3	7.8	9.2	72.9	71.8	73.9
24	Region 11	3.5	3.1	4.1	8.6	7.6	9.9	72.3	71.2	73.7
10	Region 12	3.9	3.6	4.1	10.9	9.1	12.8	71.6	69.9	72.6
7	Region 13	3.8	3.4	4.0	10.8	9.3	12.3	71.5	71.0	72.3
12	Region 14	4.0	3.6	4.3	10.9	9.0	11.9	71.4	70.0	72.7
2	Region 15	3.8	3.5	4.0	9.2	8.8	9.5	71.0	71.0	71.0
4	Region 16	4.1	3.9	4.2	10.2	10.0	10.4	71.6	71.4	71.8
13	Region 17	3.8	3.5	4.1	10.5	9.9	11.4	72.0	70.8	72.9
11	Region 18	3.8	3.4	4.0	9.3	8.3	10.8	72.0	71.3	72.7
12	Region 19	3.8	3.3	4.2	10.3	8.9	12.5	71.9	70.9	73.4
8	Region 20	3.9	3.6	4.3	9.1	8.1	9.6	72.1	70.9	73.0
12	Region 21	4.0	3.6	4.5	10.0	9.4	11.1	71.4	70.7	72.7
4	Region 22	3.8	3.6	4.0	10.0	9.3	10.5	72.3	71.8	72.7
25	Region 23	3.9	3.4	4.2	10.0	8.7	11.4	71.4	70.3	72.5
9	Region 24	3.8	3.3	4.3	10.3	9.0	11.8	71.2	70.1	72.5
23	Region 25	3.8	3.3	4.6	9.0	7.5	10.6	72.4	69.7	73.6

TABLE 18: NUTRITIONAL VALUES OF WHITE AND YELLOW MAIZE (2012/2013) (continue)

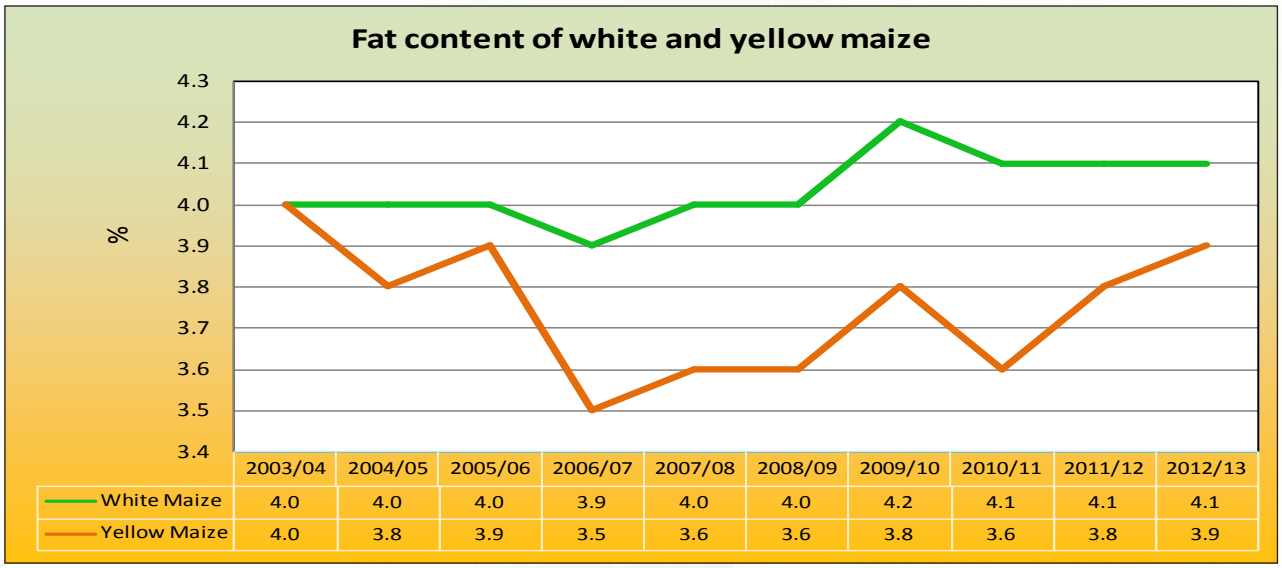
Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
YELLOW										
31	Region 26	4.0	3.4	4.5	10.0	8.4	11.7	71.9	70.5	73.9
8	Region 27	3.9	3.4	4.5	9.2	7.9	10.9	71.2	69.4	72.4
17	Region 28	4.0	3.5	4.6	9.1	8.4	9.8	71.6	70.6	72.6
38	Region 29	3.9	2.9	4.3	9.1	7.1	10.5	71.2	69.9	72.5
45	Region 30	3.8	3.3	4.5	8.7	7.5	10.9	71.8	69.7	73.1
48	Region 31	3.8	3.4	4.7	8.8	7.2	10.2	71.8	70.1	73.4
39	Region 32	3.8	3.2	4.4	8.8	8.0	10.4	72.3	69.9	73.4
16	Region 33	3.9	3.4	4.2	8.5	7.4	9.7	72.6	71.8	73.8
28	Region 34	4.0	3.6	4.4	9.0	8.0	10.2	71.3	69.9	72.4
12	Region 35	3.9	3.3	4.6	8.1	7.2	9.3	72.1	70.2	73.3
20	Region 36	4.0	3.6	4.4	8.1	7.3	9.0	72.4	71.5	73.3
492	**Ave. yellow**	**3.9**			**9.2**			**71.9**		
	Min. yellow		**2.9**			**7.1**			**69.4**	
	Max. yellow			**4.7**			**12.8**			**73.9**
WHITE AND YELLOW										
14	Region 10	3.5	3.3	3.8	8.3	7.8	9.2	72.9	71.8	73.9
28	Region 11	3.5	3.1	4.1	8.6	7.6	9.9	72.2	71.2	73.7
18	Region 12	4.1	3.6	4.7	10.6	9.1	12.8	71.1	69.4	72.6
19	Region 13	3.9	3.4	4.4	10.6	9.3	12.3	71.5	69.5	72.3
28	Region 14	4.0	3.6	4.6	10.5	8.9	11.9	71.2	69.9	72.7
12	Region 15	4.2	3.5	4.5	9.4	8.8	10.0	71.2	70.8	71.6
21	Region 16	4.3	3.9	4.6	10.0	9.2	10.6	71.2	70.3	72.1
24	Region 17	3.9	3.5	4.6	10.2	9.1	11.4	71.8	70.3	72.9
24	Region 18	4.0	3.4	4.5	9.4	8.3	10.8	71.7	70.5	72.7
24	Region 19	4.0	3.3	4.5	10.2	8.8	12.5	71.5	70.3	73.4
18	Region 20	4.0	3.6	4.3	9.0	7.5	10.0	71.6	70.2	73.0
47	Region 21	4.1	3.5	4.5	9.7	8.6	11.4	71.1	70.1	72.7
37	Region 22	4.1	3.6	4.4	9.3	8.8	10.5	71.6	70.3	72.7
80	Region 23	4.1	3.4	4.6	9.5	8.5	11.4	71.1	69.6	72.5
34	Region 24	4.1	3.3	4.5	9.8	8.7	11.8	71.4	70.1	72.5
33	Region 25	3.9	3.3	4.6	8.8	6.4	10.6	72.3	69.7	73.6
49	Region 26	4.1	3.4	4.6	9.7	8.0	11.7	71.8	70.0	73.9
13	Region 27	4.0	3.4	4.5	9.0	7.8	10.9	71.1	69.4	72.4
31	Region 28	4.1	3.5	4.6	8.8	7.5	10.1	71.7	70.6	73.0
55	Region 29	4.0	2.9	4.3	9.2	7.1	10.8	71.1	69.8	72.5
64	Region 30	3.8	3.3	4.5	8.7	7.5	10.9	71.8	69.7	73.1
77	Region 31	3.9	3.4	4.7	8.7	7.2	10.2	71.7	70.1	73.4
73	Region 32	3.9	3.2	4.7	8.8	7.8	10.4	72.1	69.9	73.4
50	Region 33	3.9	3.3	4.5	8.5	7.4	10.0	72.5	70.8	73.8
69	Region 34	4.1	3.6	5.3	8.7	7.1	11.5	71.2	68.5	73.2
19	Region 35	4.1	3.3	4.6	8.4	7.2	10.1	71.8	70.2	73.3
39	Region 36	4.1	3.6	5.2	8.3	6.9	9.4	72.0	70.3	73.3
1000	**Ave. white & yellow**	**4.0**			**9.2**			**71.6**		
	Min. white & yellow		**2.9**			**6.4**			**68.5**	
	Max. white & yellow			**5.3**			**12.8**			**73.9**

TABLE 19: NUTRITIONAL VALUES OF SOUTH AFRICAN WHITE AND YELLOW MAIZE 2003/04 - 2012/13

Season	Number of samples	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
White Maize										
2003/04	599	4.0	3.7	4.6	9.1	7.9	10.2	71.2	70.2	72.3
2004/05	601	4.0	3.1	4.5	8.9	6.5	12.0	71.1	68.9	73.7
2005/06	593	4.0	3.3	5.0	8.5	6.4	10.4	71.1	69.5	73.4
2006/07	563	3.9	2.9	4.8	9.3	7.5	12.0	72.9	70.1	74.9
2007/08	483	4.0	3.2	4.7	8.6	6.6	10.9	71.9	69.9	74.0
2008/09	483	4.0	3.5	5.1	8.3	6.4	10.4	72.4	70.7	74.2
2009/10	458	4.2	3.5	5.8	8.4	6.6	10.0	72.6	70.6	74.6
2010/11	413	4.1	2.8	4.6	7.9	6.1	9.5	73.6	71.9	77.0
2011/12	577	4.1	3.3	4.7	8.6	6.3	11.2	72.6	70.6	74.3
2012/13	508	4.1	3.3	5.3	9.2	6.4	11.5	71.4	68.5	73.6
Weighted Average		**4.0**			**8.7**			**72.0**		
Minimum			**2.8**			**6.1**			**68.5**	
Maximum				**5.8**			**12.0**			**77.0**
Yellow Maize										
2003/04	301	4.0	3.5	4.4	9.0	8.2	9.9	71.1	70.2	72.6
2004/05	399	3.8	2.9	4.7	8.6	6.9	11.1	71.7	69.1	74.3
2005/06	307	3.9	3.2	4.9	8.4	6.6	9.7	71.5	69.5	73.3
2006/07	337	3.5	2.8	4.6	9.5	6.9	12.7	73.3	70.5	75.2
2007/08	417	3.6	2.9	4.8	8.4	6.9	10.4	72.3	70.0	75.0
2008/09	327	3.6	2.9	4.7	8.2	6.2	10.6	73.2	71.1	74.8
2009/10	342	3.8	3.3	4.7	8.1	6.5	10.1	73.4	71.0	75.4
2010/11	280	3.6	2.8	4.4	7.8	6.3	9.8	74.2	72.2	76.0
2011/12	423	3.8	3.0	4.6	8.9	7.0	11.3	73.0	71.0	75.0
2012/13	492	3.9	2.9	4.7	9.2	7.1	12.8	71.9	69.4	73.9
Weighted Average		**3.8**			**8.6**			**72.5**		
Minimum			**2.8**			**6.2**			**69.1**	
Maximum				**4.9**			**12.8**			**76.0**
White and Yellow Maize										
2003/04	900	4.0	3.5	4.6	9.1	7.9	10.2	71.1	70.2	72.6
2004/05	1000	3.9	2.9	4.7	8.8	6.5	12.0	71.3	68.9	74.3
2005/06	900	4.0	3.2	5.0	8.4	6.4	10.4	71.2	69.5	73.4
2006/07	900	3.7	2.8	4.8	9.4	6.9	12.7	73.0	70.1	75.2
2007/08	900	3.8	2.9	4.8	8.5	6.6	10.9	72.1	69.9	75.0
2008/09	810	3.8	2.9	5.1	8.3	6.2	10.6	72.7	70.7	74.8
2009/10	800	4.0	3.3	5.8	8.3	6.5	10.1	72.9	70.6	75.4
2010/11	693	3.9	2.8	4.6	7.9	6.1	9.8	73.8	71.9	77.0
2011/12	1000	4.0	3.0	4.7	8.7	6.3	11.3	72.8	70.6	75.0
2012/13	1000	4.0	2.9	5.3	9.2	6.4	12.8	71.6	68.5	73.9
Weighted Average		**3.9**			**8.7**			**72.2**		
Minimum			**2.8**			**6.1**			**68.5**	
Maximum				**5.8**			**12.8**			**77.0**

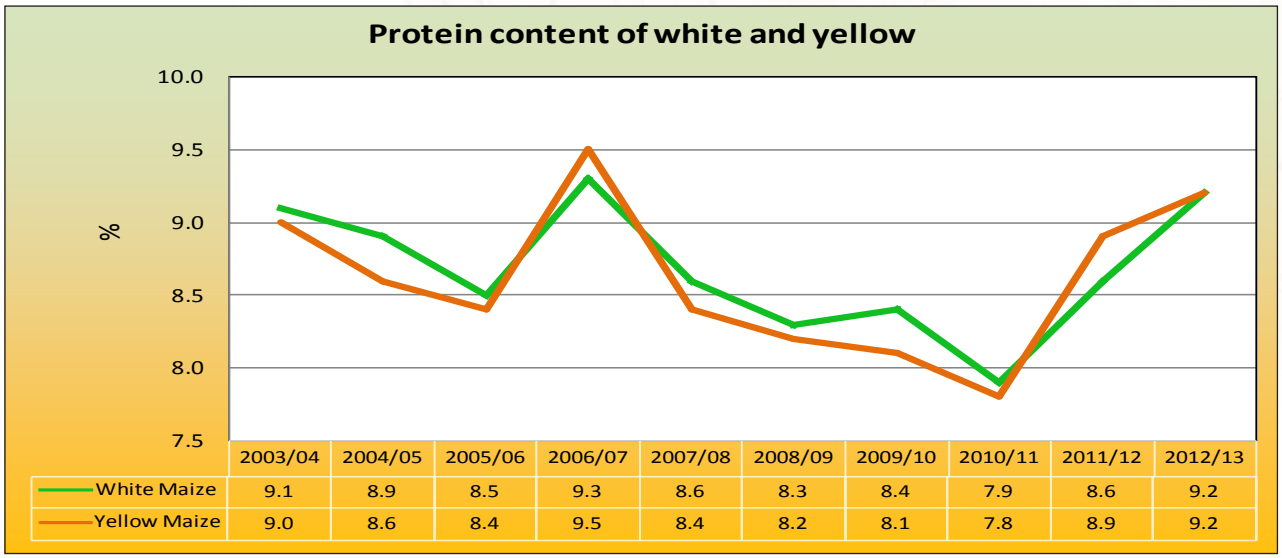
Please note:
Different starch methods have been used over years and data have been corrected accordingly.

Graph 37: Fat content of white and yellow maize over 10 seasons



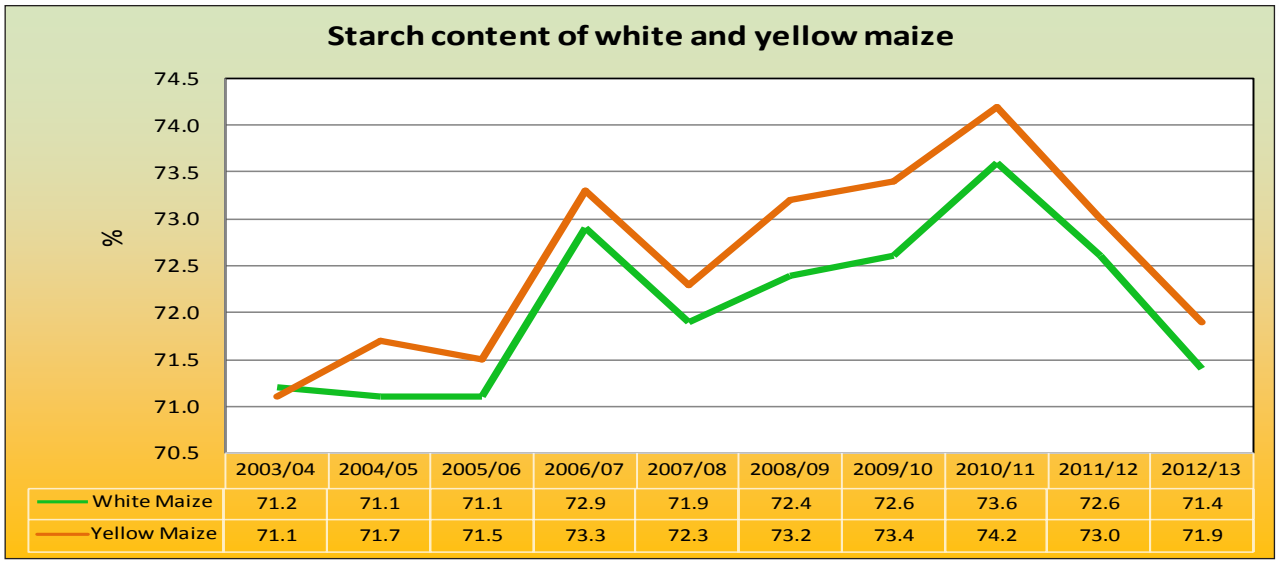
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
White Maize	4.0	4.0	4.0	3.9	4.0	4.0	4.2	4.1	4.1	4.1
Yellow Maize	4.0	3.8	3.9	3.5	3.6	3.6	3.8	3.6	3.8	3.9

Graph 38: Protein content of white and yellow maize over 10 seasons



	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
White Maize	9.1	8.9	8.5	9.3	8.6	8.3	8.4	7.9	8.6	9.2
Yellow Maize	9.0	8.6	8.4	9.5	8.4	8.2	8.1	7.8	8.9	9.2

Graph 39: Starch content of white and yellow maize over 10 seasons



	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
White Maize	71.2	71.1	71.1	72.9	71.9	72.4	72.6	73.6	72.6	71.4
Yellow Maize	71.1	71.7	71.5	73.3	72.3	73.2	73.4	74.2	73.0	71.9

Table 20: Presence of Genetically Modified Maize (2012/2013)

REGION	RSA Grade	Cry1Ab % (LOQ: 0.4%)	Cry2Ab % (LOQ: 0.5%)	CP4 EPSPS % (LOQ: 0.25%)	REGION	RSA Grade	Cry1Ab % (LOQ: 0.4%)	Cry2Ab % (LOQ: 0.5%)	CP4 EPSPS % (LOQ: 0.25%)	REGION	RSA Grade	Cry1Ab % (LOQ: 0.4%)	Cry2Ab % (LOQ: 0.5%)	CP4 EPSPS % (LOQ: 0.25%)
10	YM1	>5.0	3.4	>5.0	23	WM1	>5.0	>5.0	>5.0	31	WM1	>5.0	0.54	2.1
11	WM1	>5.0	<0.5	<0.25	23	WM1	>5.0	>5.0	>5.0	31	YM1	0.97	<0.5	4.6
11	YM2	0.71	<0.5	4.5	23	WM1	>5.0	>5.0	>5.0	31	WM1	>5.0	<0.5	4.6
11	YM1	>5.0	>5.0	>5.0	23	YM1	>5.0	>5.0	>5.0	31	WM1	>5.0	<0.5	>5.0
12	YM2	>5.0	>5.0	>5.0	23	WM1	>5.0	>5.0	>5.0	31	YM1	>5.0	<0.5	0.27
13	YM1	>5.0	4.4	3.4	23	WM1	>5.0	>5.0	>5.0	31	YM1	>5.0	>5.0	>5.0
13	WM2	>5.0	>5.0	>5.0	24	YM1	>5.0	0.53	>5.0	32	YM1	>5.0	0.86	<0.25
14	YM1	>5.0	>5.0	>5.0	24	WM1	>5.0	>5.0	1.1	32	WM1	>5.0	<0.5	<0.25
14	WM2	>5.0	>5.0	>5.0	24	WM1	>5.0	>5.0	>5.0	32	YM1	1.5	<0.5	<0.25
14	YM2	>5.0	>5.0	>5.0	25	WM1	>5.0	<0.5	0.70	32	WM1	>5.0	>5.0	>5.0
15	WM2	>5.0	>5.0	>5.0	25	YM1	>5.0	<0.5	>5.0	32	YM1	<0.4	<0.5	0.50
15	WM1	>5.0	>5.0	>5.0	25	COM	>5.0	<0.5	>5.0	32	WM1	>5.0	1.4	0.83
16	WM1	>5.0	>5.0	>5.0	25	WM3	>5.0	>5.0	4.5	32	COM	>5.0	<0.5	0.34
17	WM1	>5.0	>5.0	>5.0	26	WM1	>5.0	>5.0	>5.0	33	WM1	0.77	<0.5	>5.0
17	COM	>5.0	>5.0	>5.0	26	YM1	>5.0	2.9	3.0	33	WM1	>5.0	<0.5	1.2
18	YM1	>5.0	<0.5	4.7	26	YM1	>5.0	>5.0	>5.0	33	WM2	>5.0	<0.5	1.0
18	WM2	0.73	<0.5	0.56	26	YM1	>5.0	>5.0	>5.0	33	WM1	>5.0	>5.0	>5.0
18	WM1	>5.0	>5.0	>5.0	26	WM1	>5.0	>5.0	>5.0	33	YM1	>5.0	>5.0	>5.0
19	YM2	>5.0	>5.0	>5.0	27	WM1	>5.0	2.4	>5.0	34	WM1	>5.0	<0.5	>5.0
19	WM1	>5.0	>5.0	>5.0	28	YM1	>5.0	>5.0	>5.0	34	WM1	>5.0	1.0	>5.0
19	YM1	>5.0	>5.0	>5.0	28	WM1	>5.0	>5.0	>5.0	34	YM2	>5.0	>5.0	>5.0
20	WM1	>5.0	>5.0	>5.0	28	YM1	>5.0	>5.0	>5.0	34	WM1	>5.0	>5.0	>5.0
20	YM1	>5.0	>5.0	>5.0	29	WM1	>5.0	>5.0	>5.0	34	WM1	<0.4	<0.5	<0.25
21	YM1	>5.0	>5.0	3.1	29	YM1	>5.0	>5.0	>5.0	34	YM1	<0.4	<0.5	2.0
21	WM1	>5.0	>5.0	>5.0	29	YM2	>5.0	>5.0	>5.0	34	YM1	>5.0	>5.0	>5.0
21	WM1	>5.0	>5.0	>5.0	29	WM1	>5.0	<0.5	>5.0	34	WM1	>5.0	>5.0	0.5
21	WM1	>5.0	<0.5	>5.0	29	YM1	>5.0	2.2	>5.0	35	YM1	>5.0	>5.0	>5.0
21	WM1	>5.0	>5.0	>5.0	30	YM1	>5.0	>5.0	0.55	35	WM2	>5.0	<0.5	>5.0
22	WM1	>5.0	>5.0	>5.0	30	YM1	>5.0	>5.0	>5.0	36	WM1	>5.0	<0.5	>5.0
22	WM1	>5.0	0.52	>5.0	30	YM1	2.2	<0.5	>5.0	36	YM1	>5.0	0.86	>5.0
22	WM2	>5.0	<0.5	>5.0	30	YM1	>5.0	>5.0	>5.0	36	WM1	>5.0	>5.0	4.6
22	WM1	>5.0	>5.0	>5.0	30	WM1	>5.0	1.1	>5.0	36	YM1	>5.0	>5.0	3.6
23	WM1	>5.0	>5.0	>5.0	30	WM1	>5.0	0.61	>5.0					
23	YM1	>5.0	>5.0	>5.0	30	YM1	0.91	0.79	>5.0					

n	Season	% Samples positive for Cry1Ab	n	Season	% Samples positive for Cry2Ab	n	Season	% Samples positive for CP4 EPSPS
100	**2012/13**	**97**	**100**	**2012/13**	**73**	**100**	**2012/13**	**95**
100	2011/12	97	100	2011/12	27	100	2011/12	93
77	2010/11	97	-	-	-	77	2010/11	88

n	Season	% Samples positive for MON810 *(Bt)* (ELISA)	n	Season	% Samples positive for NK603 (RUR) (ELISA)
90	2009/10	96	90	2009/10	61
90	2008/09	91	90	2008/09	90

LOQ: Limit of Quantification

TABLE 21: Mycotoxin results - Maize Crop Quality 2012/2013

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: 50 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	254	76	21	351	184	ND	ND	ND	ND	ND
11	WM1	ND	ND	ND	ND	ND	376	98	38	512	ND	ND	ND	ND	ND	ND
11	YM2	ND	ND	ND	ND	ND	2908	1147	340	4395	<100	ND	ND	<20	ND	ND
11	YM1	ND	ND	ND	ND	ND	2044	761	212	3017	ND	ND	ND	ND	ND	ND
12	YM2	ND	ND	ND	ND	ND	91	57	<20	148	ND	ND	ND	ND	ND	ND
13	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13	WM2	ND	ND	ND	ND	ND	603	284	56	943	ND	ND	ND	ND	ND	ND
14	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14	WM2	ND	ND	ND	ND	ND	139	47	<20	186	ND	ND	ND	ND	ND	ND
14	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
15	WM2	ND	ND	ND	ND	ND	102	36	<20	138	<100	ND	ND	ND	ND	ND
15	WM1	ND	ND	ND	ND	ND	939	394	111	1444	ND	ND	ND	ND	ND	ND
16	WM1	ND	ND	ND	ND	ND	321	139	28	488	ND	ND	ND	ND	ND	ND
17	WM1	ND	ND	ND	ND	ND	785	245	108	1138	ND	ND	ND	ND	ND	ND
17	COM	ND	ND	ND	ND	ND	174	82	ND	256	<100	ND	ND	ND	ND	ND
18	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
18	WM2	ND	ND	ND	ND	ND	1076	431	85	1592	617	82	ND	41	ND	ND
18	WM1	ND	ND	ND	ND	ND	56	ND	ND	56	ND	ND	ND	ND	ND	ND
19	YM2	ND	ND	ND	ND	ND	345	149	47	541	ND	ND	ND	ND	ND	ND
19	WM1	ND	ND	ND	ND	ND	<20	ND	ND	ND	ND	ND	ND	ND	ND	ND
19	YM1	ND	ND	ND	ND	ND	149	52	<20	201	ND	ND	ND	ND	ND	ND
20	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
20	YM1	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	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	WM1	ND	ND	ND	ND	ND	54	25	ND	79	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
22	WM1	ND	ND	ND	ND	ND	222	64	<20	286	ND	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2012/2013 (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: 50 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
22	WM2	ND	ND	ND	ND	ND	105	49	ND	154	ND	ND	ND	ND	ND	ND
22	WM1	ND	ND	ND	ND	ND	89	27	ND	116	ND	ND	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	985	470	145	1600	ND	ND	ND	ND	ND	ND
23	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	79	25	ND	104	ND	ND	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	498	210	63	771	ND	ND	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	432	219	39	690	ND	ND	ND	<20	ND	ND
23	YM1	ND	ND	ND	ND	ND	658	232	53	943	ND	ND	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	<20	ND	ND	0	ND	ND	ND	ND	ND	ND
23	WM1	ND	ND	ND	ND	ND	143	242	<20	385	ND	ND	ND	ND	ND	ND
24	YM1	ND	ND	ND	ND	ND	137	34	<20	171	ND	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	596	248	66	910	ND	ND	ND	ND	ND	ND
24	WM1	ND	ND	ND	ND	ND	453	157	45	655	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	COM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	72	232
25	WM3	ND	ND	ND	ND	ND	ND	ND	ND	ND	241	<50	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	<100	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	195	<50	ND	ND	ND	ND
27	WM1	ND	ND	ND	ND	ND	<20	ND	ND	0	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	ND	ND	ND	ND	ND	ND
28	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	<20	ND	ND	0	ND	ND	ND	ND	ND	ND
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
29	YM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
29	WM1	ND	ND	ND	ND	ND	49	<20	ND	49	<100	ND	ND	ND	ND	ND

TABLE 21: Mycotoxin results - Maize Crop Quality 2012/2013 (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: 50 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
29	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	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	<100	ND	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	165	47	<20	212	<100	ND	ND	ND	ND	ND
30	YM1	ND	ND	ND	ND	ND	<20	ND	ND	0	<100	ND	ND	ND	ND	ND
30	WM1	ND	ND	ND	ND	ND	<20	ND	ND	0	139	<50	ND	ND	ND	ND
30	WM1	ND	ND	ND	ND	ND	37	20	ND	57	<100	ND	ND	ND	ND	ND
30	YM1	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	ND	ND	ND	ND	ND	ND
31	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	WM1	ND	ND	ND	ND	ND	<20	ND	ND	0	ND	ND	ND	ND	ND	ND
31	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	ND	ND	ND	ND	ND
31	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	62	34	ND	96	ND	ND	ND	ND	ND	ND
32	WM1	ND	ND	ND	ND	ND	114	29	<20	143	ND	ND	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	WM1	ND	ND	ND	ND	ND	68	22	ND	90	ND	ND	ND	ND	ND	ND
32	YM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	COM	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
33	WM1	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	ND	ND	ND	ND	ND	ND
33	WM2	ND	ND	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
33	WM1	ND	ND	ND	ND	ND	32	<20	ND	32	<100	ND	ND	ND	ND	ND
33	YM1	ND	ND	ND	ND	ND	22	ND	ND	22	162	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	84	37	ND	121	ND	ND	ND	ND	ND	ND
34	WM1	ND	ND	ND	ND	ND	196	99	27	322	ND	ND	ND	ND	ND	ND
34	YM2	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 21: Mycotoxin results - Maize Crop Quality 2012/2013 (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		LOD: 100 µg/kg	LOQ: 50 µg/kg	LOQ: 5 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg	LOQ: 20 µg/kg
34	WM1	ND	ND	ND	ND	ND	752	340	69	1161	241	ND	ND	20	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	59	23	ND	82	ND	ND	ND	ND	ND	ND
35	YM1	ND	ND	ND	ND	ND	206	90	<20	296	ND	ND	ND	ND	ND	ND
35	WM2	ND	ND	ND	ND	ND	108	54	<20	162	ND	ND	ND	ND	ND	ND
36	WM1	ND	ND	ND	ND	ND	ND	ND	ND	ND	149	ND	ND	ND	ND	ND
36	YM1	ND	ND	ND	ND	ND	184	43	<20	227	<100	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	273	88	<20	361	ND	ND	ND	ND	ND	ND
Total number of samples		**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Average of total number of samples		**0**	**0**	**0**	**0**	**0**	**172**	**69**	**16**	**257**	**21**	**1**	**0**	**1**	**1**	**2**
Number of positive results		**0**	**0**	**0**	**0**	**0**	**45**	**41**	**18**	**45**	**9**	**1**	**0**	**2**	**1**	**1**
Average of positive results		**-**	**-**	**-**	**-**	**-**	**383**	**169**	**86**	**571**	**225**	**82**	**-**	**31**	**72**	**232**
Maximum of positive results		**-**	**-**	**-**	**-**	**-**	**2908**	**1147**	**340**	**4395**	**617**	**82**	**-**	**41**	**72**	**232**

Note:

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

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

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

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

µg/kg = ppb (parts per billion)

TABLE 22: MYCOTOXIN RESULTS - SUMMARY OF SEASONS 2001/2002 TO 2012/2013

Season	Total Number of samples received	Number of samples tested for mycotoxins	Aflatoxin µg/kg			Fumonisin µg/kg			Deoxynivalenol µg/kg			Zearalenone µg/kg			Ochratoxin A µg/kg			T-2 Toxin µg/kg		
			ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
2000/2001	900	57	<1	0	22	1 670	0	8 100	680	0	5 400	<100	0	120	<2.0	0	0	0	0	0
2001/2002	900	90	0	0	0	760	0	5 100	630	0	2 200	<100	0	30	<2.0	0	0	0	0	0
2002/2003	900	90	0	0	0	730	0	3 900	<500	0	4 300	<100	0	140	<2.0	0	2.0	<150	0	290
2003/2004	900	90	0	0	0	1 140	160	5 600	200	0	13 000	<100	0	120	<2.0	0	5.7	Not tested		
2004/2005	1 000	100	0	0	0	1 080	0	5 300	600	0	3 900	<100	0	440	<2.0	0	2.4	Not tested		
2005/2006	900	90	0	0	0	970	0	13 000	2 740	0	6 200	30	0	390	<2.0	0	2.9	Not tested		
2006/2007	900	90	<1	0	9	640	0	4 500	530	0	3 100	0	0	0	<2.0	0	6.5	Not tested		
2007/2008	900	100	0	0	2	470	0	5 500	240	0	1 700	0	0	100	<1.0	0	2.0	Not tested		
2008/2009	810	90	0	0	0	490	0	3 300	430	0	2 900	<25	0	160	<1.0	0	1.0	Not tested		
*2009/2010	800	90	0	0	0	251	0	4 035	206	0	1 845	0	0	0	0	0	0	0	0	0
*2010/2011	693	77	0	0	0	139	0	1 401	49	0	883	5	0	187	0	0	0	0	0	0
**2011/2012	1 000	100	0	0	0	182	0	4 419	10	0	485	5	0	297	0	0	0	0	0	0
**2012/2013	1 000	100	0	0	0	257	0	4395	21	0	617	1	0	41	0	0	0	2	0	232
Total	11 603	1 164																		
Min.				0			0			0			0			0			0	
Max.					22			13 000			13 000			440			65			290

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

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

Mycotoxin methodology

Technique used for season 1999/2000 - 2006/2007

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

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

Technique used for season 2007/2008 - 2008/2009

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

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

Technique used for season 2009/2010 - 2012/2013

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)

MYCOTOXINS

The annual multi-mycotoxin results on 100 out of the 1 000 samples analysed in this survey, are a good indication of the mycotoxin contamination in maize in South Africa. Results obtained with comprehensive mycotoxin surveys, such as the worldwide annual survey conducted by Biomin are useful to answer questions such as how severe is the mycotoxin contamination in different commodities, what is the situation worldwide and in different regions and which mycotoxins and concentration levels occurred. As an example, from January to December 2012, Biomin collected a total of 4 023 samples worldwide to be analysed for the presence of mycotoxins. In Africa, 80% of all analysed grain and feed samples tested positive for Aflatoxin and Fumonisin was present in all samples tested. (1)

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

Aflatoxin

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

Fumonisin

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

Deoxynivalenol (DON)

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

Zearalenone

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

Ochratoxin A

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

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

Fumonisin $B_1 + B_2$

- Maize and maize products, 60 000 µg/kg
- Complementary and complete feedingstuffs depending on the class and age of animal, 5 000 – 50 000 µg/kg

Deoxynivalenol (DON)

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

Zearalenone

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

Ochratoxin A

- Cereals and cereal products, 250 µg/kg
- Complementary and complete feedingstuffs depending on the class of animal, 50 – 100 µg/kg [3]

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

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

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

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

References:

1. BIOMIN Mycotoxin Annual Report 2012 www.biomin.net.
2. COMMISSION REGULATION (EC) No 1881/226 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs.
3. COMMISSION RECOMMENDATION of 17 August 2006 on the presence of deoxynivalenol, zearalenone, ochratoxin A, T-2 and HT-2 and fumonisins in products intended for animal feeding.
4. FDA Mycotoxin Regulatory Guidance, A Guide for Grain Elevators, Feed Manufacturers, Grain Processors and Exporters, August 2011.

Methods

1. RSA grading

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

Description of deviations relating to RSA grading

1.1 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."

1.2 Foreign matter

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

1.3 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.

1.4 Total deviation

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

1.5 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.

1.6. 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 are the percentage maize kernels that are both Fusarium and Diplodia infected.

2. USA Grading

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

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

Description of deviations relating to USA grading

2.1. 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.

2.2. 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.

2.3. 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.

2.4. Bushel weight

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

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

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

2.5. Other colour

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

3. Nutritional value

The fat, protein and starch contents are measured with an Infratec 1241 - Generation 3 Standard Version Whole Grain Analyser. The measurements are based on the fact that the constituents to be measured in the grain, absorb electromagnetic radiation in the near-infrared region of the spectrum. Since the Infratec 1241 Grain Analyser uses transmission absorption, the test is done on intact maize kernels.

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

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

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

4. Physical characteristics

4.1 Hectolitre mass

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

4.2 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.

4.3 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.

4.4 Breakage susceptibility - Industry accepted method 007

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

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

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

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

All samples were subjected to a breakage susceptibility test. After the sample of whole maize kernels was propelled in a Stein Breakage tester for 4 minutes, the fraction below the 6.35 mm and 4.75 mm sieves was collected and the percentage broken kernels < 6.35 mm and < 4.75 mm was determined.

4.5 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.

4.6 Milling index - Industry accepted method 015

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

4.7 Milling of maize on Roff maize mill - Industry accepted method 013

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

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

Germ %. Break 3 grits are weighed for determination of % Grits. Break 1, 2 and 3 meal are weighed for determination of % extraction total meal.

4.8 Whiteness index - Industry accepted method 004

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

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

5. Mycotoxin analyses

The pathogenic nature of certain species of fungi to plants has been observed virtually since the beginning of agriculture. These plant pathogens can produce metabolites (mycotoxins) that show toxic effects when they are ingested.

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

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

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

6. GMO (Genetically Modified Organisms)

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

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

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

7. Sampling Procedure

All the samples tested and received from the grain storers are drawn in the following way:
- Each delivery is sampled as per the grading regulations for grading purposes.
- After grading, the grading samples are placed in separate containers according to grade.
- After 80% of the expected harvest has been received, the content of each container is divided with a multi slot divider (or equivalent) in order to obtain a 3kg sample. (This should be done for each grade separately.)
- If there's more than one container per grade, the combined contents of the containers is mixed thoroughly before dividing it with a multi slot divider (or equivalent) to obtain the required 3kg sample.

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
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 & PHYSICAL ANALYSIS

The facility is accredited in accordance with the recognised International Standard

ISO/I EC 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 2009
Certificate Expires: 31 October 2014

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

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FAX COVER SHEET

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TEL:	(012) 319 6291	REF NO:	20/4/14/1 / Dispensation
FAX:	(012) 319 6055	SERIAL NO:	
NO. PAGES:	1	DATE:	15 April 2010

Subject

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

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

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

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

ANNEXURE/AANHANGSEL

TABLE/TABEL

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

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

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.

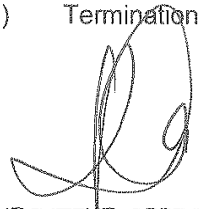
This permission is subject to the following conditions:

(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