



**SOUTH AFRICAN**

**Quality Report  
2007/2008 Season**

**MAIZE CROP**

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# SOUTH AFRICAN

## COMMERCIAL MAIZE QUALITY

2007/2008

### Acknowledgments

*With gratitude to:*

- \* **The Maize Trust for its financial support in conducting this survey.**
- \* **The Grain Silo Industry and its members in providing the samples to make this survey possible.**
- \* **The National Association of Maize Millers and its members in providing samples of maize delivered directly from the producer to the mill.**

### Introduction

The calculated final commercial crop figure for maize for the 2007/2008 season by the National Crop Estimates Committee was 12 700 000 tons. This is 78,2 % higher than the previous season's 7 125 000 tons. The average production from 1997/98 to 2006/07 was 8,5 million tons. The major maize-producing region was the Free State (4 608 000 tons), followed by Mpumalanga (2 747 200 tons) and the North West (2 613 000 tons). White maize contributed 59 % to the total production, which is 1 % less than the previous year.

900 composite samples, proportionally representing white and yellow maize of each production region, were analysed for quality. All samples were graded according to RSA and USA grading regulations. 100 kernel mass, kernel size, breakage susceptibility, stress cracks, milling index, fat, protein and starch were determined on all samples. Roff milling and whiteness index were done on white maize samples. Mycotoxin analyses as well as testing for GM maize were performed on 100 samples representative of white and yellow maize produced per region.

The 900 samples analysed consisted of 483 white maize samples and 417 yellow maize samples. Of the 483 white maize samples analysed, 92 % were WM1, 7 % WM2 and 1 % WM3. No samples were graded as Class Other Maize white. Of the 417 yellow maize samples analysed, 93 % were YM1 and 7 % YM2. Only one sample was of the Class Other Maize yellow.

The maize crop quality survey is done annually by the Southern African Grain Laboratory (SAGL).

### Crop quality

This crop was of very good quality and 92,5 % of the crop graded as maize grade 1. The markedly smaller kernel size of the previous crop, was not observed this season.

The 100 kernel mass averaged 33,5 g (higher than the previous two seasons). The average hectolitre mass equaled the 77,5 kg/hl of the 2006/2007 season.

The average percentage total defective kernels of 3,6 % was the lowest of the past ten seasons.

The average fat content was 3,8 % (db), average starch content 72,1 % (db) and average protein 8,5 % (db). The average fat content was 0,2 % lower than the ten year average of 4,0 % (db) and the average protein content was 0,3 % lower than the ten year average. The average starch content of 72,1 % is 0,5 % higher than the ten year average.

The average milling index of 96,9 is slightly lower than the previous season's 98,3.

The prevalence of pink kernels due to *Fusarium* infection, was much higher than in previous seasons, with almost all of the 900 samples graded, containing infected kernels. The percentage *Fusarium* infected kernels ranged from 0 to 4 %. The mycotoxin levels however, averaged lower than in previous seasons.

Ninety-five percent of the samples tested positive for MON810 (Bt maize event) and sixty-nine percent positive for NK603 (RUR).

## Maize quality (Summary)

### Overall

The white and yellow maize graded similarly with regards to the sample percentage per grade. White maize had an average hectolitre mass of 78,2 kg/hl compared to the 76,7 kg/hl of yellow maize. Yellow maize kernels were smaller than white kernels.

Yellow maize had a slightly lower fat content (3,6 % (db)) than white maize (4,0 % (db)), while the starch content in yellow maize (72,3 % (db)) were slightly higher than in white maize (71,9 % (db)). The average protein content in white maize was 8,6 % (db) and in yellow maize 8,4 % (db).

### Main production regions

The maize quality of the three main maize producing provinces differed in some aspects.

#### Free State

This province produced 38 % of all the commercial maize in South Africa, of which 60 % was white maize and 40 % yellow maize.

The weighted average percentage total defective kernels for the Free State was 3,4 %. North West averaged 3,1 % and Mpumalanga 4,1 %.

The maize produced in the Free State averaged a hectolitre mass of 77,6 kg/hl. (North West 77,9 kg/hl and Mpumalanga 77,1 kg/hl.) The white maize in the Free State averaged 77,9 kg/hl and the yellow maize 76,7 kg/hl.

The 100 kernel mass for the Free State averaged 33,0 g, with the white maize averaging 34,0 g and the yellow maize 31,7 g. (Mpumalanga and North West both averaged 33,7 g.)

Stress cracks were the highest in the Free State (3 %), then Mpumalanga with 4 %, and North West had 3 %.

The average milling index in the Free State was 95,3, in North West 99,9 and in Mpumalanga 98,4.

The Free State gave the highest average protein of 8,8 % (db), followed by North West (8,7 %) and Mpumalanga (8,4 %).

#### Mpumalanga

This province produced 23 % of the total commercial maize production in South Africa, of which 53 % was white maize and 47 % yellow maize.

In all three provinces white maize averaged about 1,2 g higher 100 kernel mass than yellow maize, while the hectolitre mass of white maize averaged about 1 kg/hl higher than yellow maize.

The maize kernels produced in Mpumalanga had an average breakage susceptibility of 1,8 g passing through the 6,35 mm sieve while the Free State and North West had averages of 1,9 g and 1,4 g respectively passing through the 6,35 mm sieve.

All three provinces gave an average fat content between 3,8 % and 3,9 %. The starch content in these three regions averaged between 71,8 % and 72,0 %.

#### North West

This province produced 22 % of all the commercial maize grown in South Africa, of which 78 % was white maize and 22 % yellow maize.

The average defective kernels for North West above the 6,35 mm sieve averaged the lowest with 2,2 %, the Free State averaged 2,6 % and Mpumalanga had the highest average of 3,9 %. The average defective kernels below the 6.35 mm sieve for all three regions were more or less the same.

This province had the “largest” kernel size with an average of 22,6 % of the maize having kernels > 10mm. (Mpumalanga 21,0 % and the Free State 20,2 %.)

The white maize from North West gave an average whiteness index of 20,1 (sifted 87:13). The Free State had an average of 20,4 and Mpumalanga 17,0.

## 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. Regions 12 to 20 are all within the North West province.

Regions 21 to 28 are in the Free State. The Free State contributed 38 %, Mpumalanga (regions 29 to 33) contributed 23 % and the North West contributed 22 % of the total production. These contributions make up 83 % of the total maize production in the RSA.

Region 34 falls within Gauteng, region 35 within the Limpopo Province and region 36 within KwaZulu-Natal.

## Sampling

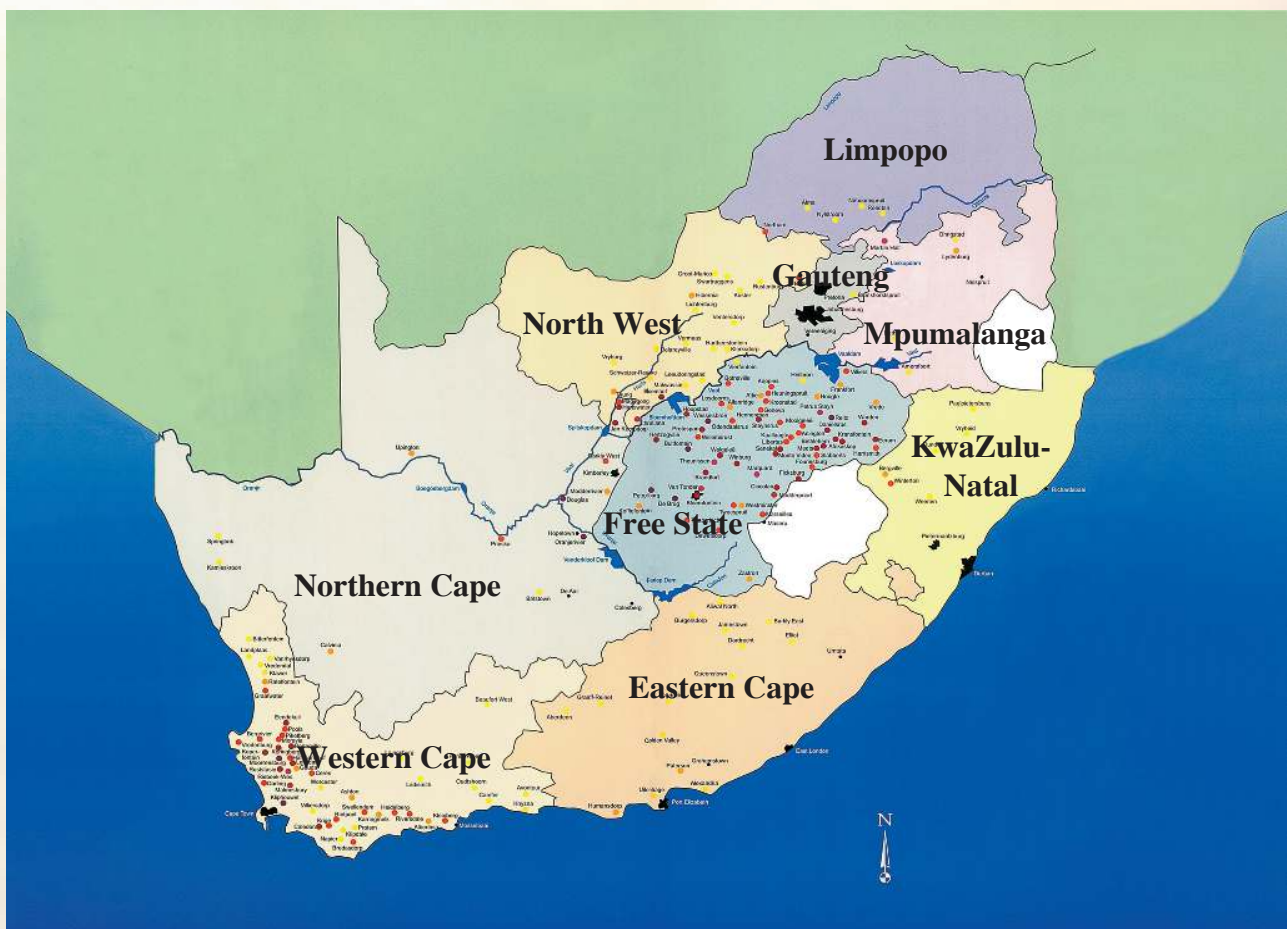
All the samples tested and received from the grain storers are drawn in the following way:

With each consignment at the silos a 10 kg grading sample is drawn for grading purposes according to the Grading Regulations.

After the grading sample has been divided, 500 g of the 10 kg sample are thrown into a 50 kg bag representing a certain class and grade. When this bag is full, it is divided and a 5 kg sample according to class and grade per silo bin is sent to the SAGL.

Thirteen samples were received from the millers who receive about 15 % of the maize crop directly from the producers.

## South African Provinces



## Genetic Modification

The SAGL screened 100 of the crop samples to test for MON810 (Bt maize event) and NK603 (RUR).

The methodology the SAGL uses is a quantitative enzyme-linked immuno sorbent assay. The SAGL does however not report quantities recorded below the limit of detection and above the value of the reference standards used, the reason being that the methodology can not accurately measure beyond those values. MON810 were positively identified in 95 % of the samples tested and NK603 in 69 % of the samples tested. Please note that the crop quality samples received by the SAGL are actually composite samples made up by the silos per class and grade of individual deliveries.

## Mycotoxins

Aflatoxin was detected on only one randomly selected crop sample. Twenty-five samples tested positive for Ochratoxin A.

The Fumonisin average was 0,47 ppm. Eight samples tested higher than 2,0 ppm for Fumonisin with a maximum of 5,5 ppm.

Deoxynivalenol (DON) was detected in 38 % of the samples tested, giving an average of 0,24 ppm, with a maximum of 1,7 ppm.

Three samples showed traces of Zearalenone, with a maximum value of 0,1 ppm reported.

## Imported Maize

South Africa has imported 27 432 tons of yellow maize from Brazil as on 30/01/2009 for the 2007/2008 production season. (Season ends on 30/04/2009.) (SAGIS website.)

SAGL are awaiting samples for quality analyses from the above mentioned shipment. No import quality data is available yet for the 2007/2008 season.

The quality of the imported maize for the 2006/2007 season, compared to the average quality of the RSA maize of the same class and grade and season, are given on pages 43 and 44.

## 2006/2007 Imported maize (01/05/2007 - 30/04/2008)

Ninety-four samples from imported maize were analysed. The maize was imported from Argentina and Switzerland. Of these maize, four samples were graded as YM2 and ninety samples graded as Class Other Maize.

The major downgrading factor of imported maize to YM2 was the high percentage of defective kernels below the 6,35 mm sieve.

Imported maize downgraded to Class Other Maize were mainly due to the high percentage of pinked maize kernels.

The imported YM2 had average hectolitre masses of 77,1 kg/hl and 76,2 kg/hl from Argentina and Switzerland respectively. RSA YM2 had an average hectolitre mass of 74,4 kg/hl.

The imported maize had even smaller kernels than the 2006/2007 local crop which was characterized by small kernels.

The average weighted fat content of the imported maize (4,8 % (db)) were higher than the average of the RSA maize (3,5 % (db)), while the RSA maize gave a slightly higher protein content and a markedly better starch content.

The imported maize had a weighted average total Aflatoxin of 0,50 ppb ( $\mu\text{g}/\text{kg}$ ) with a maximum of 9,0 ppb in one of the samples.

The weighted average Fumonisin content of imported maize were 1,72 ppm (mg/kg) with a maximum of 5,30 ppm. RSA maize in that same class and grade averaged 1,05 ppm Fumonisin and a maximum of 4,50 ppm.

RSA maize of the same class and grade of the 2006/2007 season had an average Deoxynivalenol (DON) content of 0,96 ppm with a maximum of 2,10 ppm, while the imported maize had a weighted average of 0,91 ppm and a maximum of 2,80 ppm DON. The averages values of Ochratoxin A and Zearalenone of imported maize were low while none of these mycotoxins were detected in the 2006/2007 RSA YM2 and RSA COM maize.

## Grain Production Regions

*With each region is given the different Grain Handlers with specific silos.*

### 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	Kleinwarts

## Grain Production Regions (continue)

*With each region is given the different Grain Handlers with specific silos.*

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

NWK Senwes	Vermaas Melliodora	Senwes Senwes	Hartbeesfontein Werda
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### Region 18: North West Central Region (Ventersdorp)

NWK Senwes Senwes Senwes	Bodenstein Buckingham Ventersdorp Potchefstroom	NWK Senwes Senwes	Coligny Makokskraal Enselspruit
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### Region 19: North West Central Region (Lichtenburg)

NWK NWK NWK	Grootpan Hibernia Lottiehalte	NWK NWK NWK	Halfpad Lichtenburg Lusthof
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### Region 20: North West Eastern Region

MGK (Prodsure) MGK (Prodsure) NWK NWK NWK	Battery Rustenburg Boons Derby Swartruggens	MGK (Prodsure) MGK (Prodsure) NWK NWK NWK	Brits Pretoria-West Koster Syferbult Groot Marico
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### Region 21: Free State North Western Region (Viljoenskroon)

Senwes Senwes Senwes Senwes Senwes	Attie Heuningspruit Rooiwal Viljoenskroon Weiveld	Senwes Senwes Senwes Senwes	Groenebloem Koppies Vierfontein Vredefort
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### Region 22: Free State North Western Region (Bothaville)

Senwes Senwes Senwes	Allanrigde Mirage Schoonspruit	Senwes Senwes Senwes	Bothaville Odendaalsrus Schuttendraai
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### Region 23: Free state North Western Region (Bultfontein)

Senwes Senwes Senwes	Bultfontein Protespan Wesselsbron	Senwes Senwes Senwes	Losdoorns Tierfontein Willemsrust
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### Region 24: Free State Central Region

Senwes Senwes Senwes	Bloemfontein De Brug Hennenman	Senwes Senwes Senwes	Brandfort Geneva Koffiefontein
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## Grain Production Regions (continue)

With each region is given the different Grain Handlers with specific silos.

### 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)

*With each region is given the different Grain Handlers with specific silos.*

### Region 30: Mpumalanga Eastern Region (continue)

<i>Afgri</i>	Ermelo	<i>Afgri</i>	Estancia
<i>Afgri</i>	Lothair	<i>Afgri</i>	Maizefield
<i>Afgri</i>	Morgenzon	<i>Afgri</i>	Overvaal
TWK	Mkondo	TWK	Panbult

### Region 31: Mpumalanga Central Region

<i>Afgri</i>	Bethal	<i>Afgri</i>	Devon
<i>Afgri</i>	Kinross	<i>Afgri</i>	Leandra
<i>Afgri</i>	Trichardt		

### Region 32: Mpumalanga Western Region

<i>Afgri</i>	Argent	<i>Afgri</i>	Dryden
<i>Afgri</i>	Endicott	<i>Afgri</i>	Eloff
<i>Afgri</i>	Hawerklip	<i>Afgri</i>	Kendal
<i>Afgri</i>	Ogies		

### Region 33: Mpumalanga Northern Region

<i>Afgri</i>	Driefontein	<i>Afgri</i>	Lydenburg
<i>Afgri</i>	Marble Hall	<i>Afgri</i>	Middelburg
<i>Afgri</i>	Stoffberg	<i>Afgri</i>	Pan
<i>Afgri</i>	Arnot	<i>Afgri</i>	Wonderfontein

### Region 34: Gauteng Region

<i>Afgri</i>	Bloekomspruit	<i>Afgri</i>	Glenroy
<i>Afgri</i>	Goeie Hoek	<i>Afgri</i>	Kaalfontein
<i>Afgri</i>	Nigel	<i>Afgri</i>	Bronkhorstspuit
Senwes	Middelvlei	Senwes	Oberholzer
Senwes	Raathsvlei		Randfontein

### Region 35: Limpopo Region

MGK ( <i>Prodsure</i> )	Northam	<i>NTK</i>	Alma
<i>NTK</i>	Lehau	<i>NTK</i>	Naboomspruit
<i>NTK</i>	Nylstroom	<i>NTK</i>	Pienaarsrivier
<i>NTK</i>	Pietersburg	<i>NTK</i>	Potgietersrus
<i>NTK</i>	Roedtan	<i>NTK</i>	Settlers
<i>NTK</i>	Tzaneen	<i>NTK</i>	Nutfield
<i>NTK</i>	Warmbad	<i>NTK</i>	Vaalwater
<i>NTK</i>	Crecy	<i>NTK</i>	Immerpan

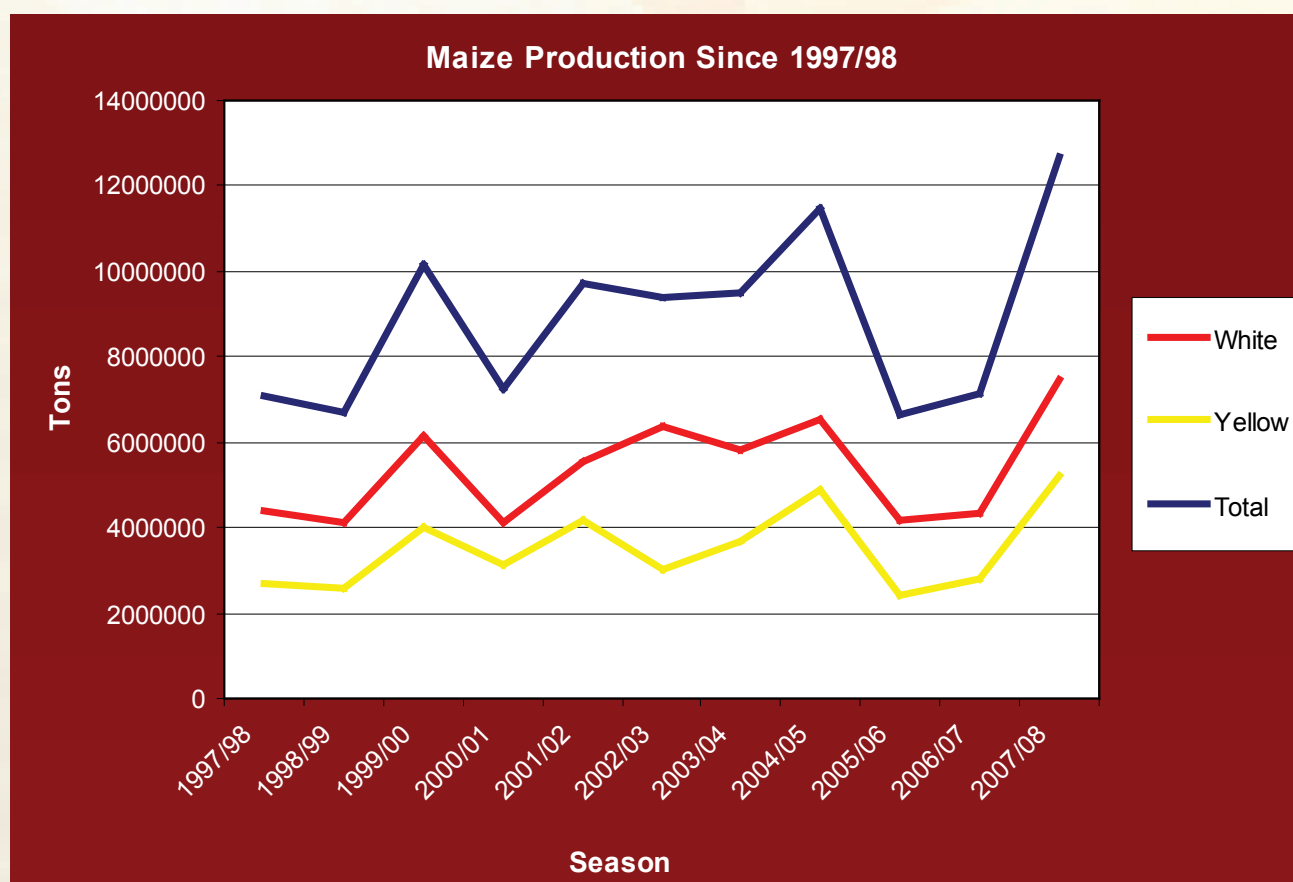
### Region 36: KwaZulu-Natal Region

<i>Afgri</i>	Bergville	<i>Afgri</i>	Bloedrivier
<i>Afgri</i>	Dannhauser	<i>Afgri</i>	Dundee
<i>Afgri</i>	Mizpah	<i>Afgri</i>	Paulpietersburg
<i>Afgri</i>	Vryheid	<i>Afgri</i>	Winterton
	Dalton		

**TABLE 1: COMMERCIAL WHITE AND YELLOW MAIZE -  
FINAL PRODUCTION ESTIMATES FOR THE 2007/08 SEASON  
COMPARED TO THE 2006/07 SEASON**

PROVINCES	FINAL ESTIMATE 2007/08			% difference to 2006/07	FINAL ESTIMATE 2006/07		
	White Tons	Yellow Tons	Total Tons		White Tons	Yellow Tons	Total Tons
Western Cape	10 000	30 000	40 000	100	0	20 000	20 000
Northern Cape	36 750	637 000	673 750	26	39 900	495 000	534 900
Free State	2 760 000	1 848 000	4 608 000	65	1 856 000	931 000	2 787 000
Eastern Cape	15 000	70 200	85 200	5	13 500	67 6000	81 100
KwaZulu-Natal	237 800	252 000	489 800	36	190 000	169 200	359 200
Mpumalanga	1 447 200	1 300 000	2 747 200	91	704 000	737 500	1 441 500
Limpopo	164 000	56 000	220 000	68	96 000	35 200	131 200
Gauteng	384 000	160 200	544 200	98	174 000	101 500	275 500
North West	2 043 500	569 500	2 613 000	106	1 054 000	217 500	1 271 500
<b>Total RSA</b>	<b>7 098 250</b>	<b>4 922 900</b>	<b>12 021 150</b>	<b>74</b>	<b>4 127 400</b>	<b>2 774 500</b>	<b>6 901 900</b>
<b>% of crop</b>	<b>59</b>	<b>41</b>			<b>60</b>	<b>40</b>	

Figures obtained from the National Crop Estimates Committee



**TABLE 2: RSA GRADING OF WHITE MAIZE (2007/2008)**

Number of samples	Region	% Defective Kernels						% Total defective	% Foreign matter	% Another Colour		% Total Deviation		% 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.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.				
	<b>GRADE: WM 1</b>																											
5	Region 12	1.8	1.4	2.5	1.0	0.4	1.3	2.8	1.8	3.7	0.1	0.1	0.2	0.2	0.0	0.4	3.1	2.0	4.2	0.0	0.0	0.0	0.4	0.0	0.9	0.0	0.0	0.0
6	Region 13	1.4	0.8	1.6	1.8	0.5	5.4	3.2	2.0	6.2	0.2	0.1	0.2	0.2	0.0	0.7	3.6	2.2	6.6	0.0	0.0	0.0	0.2	0.0	0.5	0.0	0.0	0.0
17	Region 14	1.3	0.5	2.0	1.3	0.1	2.5	2.6	1.2	3.4	0.1	0.0	0.3	0.1	0.0	0.6	2.8	1.3	4.0	0.0	0.0	0.0	0.1	0.0	0.5	0.0	0.0	0.0
2	Region 15	0.7	0.7	0.8	0.9	0.6	1.2	1.6	1.3	2.0	0.1	0.1	0.2	0.3	0.2	0.5	2.1	1.6	2.6	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0
19	Region 16	1.5	0.5	2.6	1.1	0.4	2.0	2.6	0.9	4.0	0.1	0.0	0.2	0.1	0.0	0.7	2.9	1.6	4.1	0.0	0.0	0.0	0.1	0.0	0.4	0.0	0.0	0.0
16	Region 17	1.5	0.7	3.4	1.2	0.1	2.5	2.7	1.4	4.4	0.2	0.0	0.3	0.1	0.0	0.5	2.9	1.6	4.8	0.0	0.0	0.0	0.2	0.0	0.7	0.0	0.0	0.2
19	Region 18	1.6	0.8	2.5	1.5	0.8	2.3	3.1	2.5	3.9	0.1	0.1	0.2	0.1	0.0	0.4	3.4	2.6	4.3	0.0	0.0	0.0	0.3	0.0	0.9	0.0	0.0	0.0
9	Region 19	1.2	0.6	1.6	1.5	0.6	2.7	2.7	1.8	3.8	0.1	0.1	0.2	0.1	0.0	0.5	2.9	1.9	3.9	0.0	0.0	0.0	0.2	0.0	0.4	0.0	0.0	0.2
11	Region 20	1.5	0.7	2.9	1.2	0.7	1.9	2.6	1.3	4.4	0.1	0.0	0.2	0.1	0.0	0.7	2.8	1.8	4.7	0.0	0.0	0.0	0.2	0.0	0.7	0.0	0.0	0.0
18	Region 21	1.4	0.4	2.9	2.4	1.2	5.2	3.8	2.3	5.8	0.2	0.1	0.3	0.1	0.0	0.5	4.0	2.4	6.2	0.0	0.0	0.0	0.3	0.0	0.8	0.0	0.0	0.3
15	Region 22	1.3	0.7	1.9	1.6	1.0	2.7	3.0	2.4	3.6	0.2	0.1	0.3	0.0	0.0	0.4	3.2	2.6	4.1	0.0	0.0	0.0	0.4	0.0	0.7	0.0	0.0	0.2
46	Region 23	1.3	0.3	2.6	1.6	0.8	3.5	2.9	1.5	5.7	0.2	0.1	0.3	0.1	0.0	0.7	3.1	1.8	6.0	0.0	0.0	0.0	0.4	0.0	0.9	0.0	0.0	0.3
45	Region 24	1.2	0.6	2.4	1.3	0.2	2.0	2.5	1.3	3.6	0.1	0.0	0.3	0.1	0.0	0.4	2.7	1.7	3.7	0.0	0.0	0.0	0.1	0.0	0.5	0.1	0.0	0.7
16	Region 25	1.5	0.4	4.0	1.6	0.3	3.9	3.0	1.0	6.3	0.1	0.0	0.3	0.2	0.0	1.4	3.4	1.0	6.4	0.0	0.0	0.0	0.3	0.0	0.8	0.0	0.0	0.0
12	Region 26	1.3	0.6	2.4	1.6	0.4	3.8	2.9	1.1	5.3	0.2	0.0	0.3	0.4	0.0	1.3	3.5	1.8	6.0	0.0	0.0	0.0	0.4	0.0	0.5	0.0	0.0	0.3
1	Region 27	2.3	2.3	2.3	1.8	1.8	1.8	4.1	4.1	4.1	0.2	0.2	0.2	0.4	0.4	0.4	4.7	4.7	4.7	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.0
9	Region 28	1.5	0.5	2.7	1.8	0.9	3.9	3.3	2.1	4.4	0.2	0.1	0.2	0.1	0.0	0.4	3.6	2.2	4.6	0.0	0.0	0.0	0.1	0.0	0.3	0.2	0.0	0.4
33	Region 29	2.4	0.8	4.0	1.4	0.4	3.1	3.8	1.3	5.8	0.1	0.0	0.3	0.2	0.0	0.9	4.1	1.3	6.1	0.0	0.0	0.4	0.5	0.0	0.8	0.0	0.0	0.2
41	Region 30	2.2	0.4	4.5	1.4	0.2	3.0	3.6	0.7	5.7	0.1	0.1	0.2	0.1	0.0	0.4	3.8	0.7	6.0	0.0	0.0	0.0	0.4	0.0	1.8	0.0	0.0	0.2
5	Region 31	2.1	1.4	2.4	1.2	0.8	1.6	3.3	2.7	4.0	0.2	0.1	0.3	0.3	0.2	0.6	3.8	3.0	4.4	0.0	0.0	0.0	0.4	0.0	1.1	0.0	0.0	0.0
19	Region 32	2.1	0.5	3.4	1.2	0.0	2.1	3.3	0.5	5.3	0.1	0.0	0.1	0.2	0.0	1.9	3.6	0.5	6.0	0.0	0.0	0.0	0.4	0.0	1.1	0.0	0.0	0.0
26	Region 33	1.9	1.2	2.8	1.8	0.1	3.1	3.7	1.9	5.5	0.1	0.0	0.2	0.1	0.0	1.0	3.9	1.9	6.4	0.0	0.0	0.2	0.4	0.0	1.0	0.0	0.0	0.2
25	Region 34	2.0	1.0	3.4	1.6	0.7	3.3	3.6	2.1	6.6	0.2	0.1	0.3	0.2	0.0	0.9	3.9	2.3	6.8	0.0	0.0	0.0	0.4	0.0	0.9	0.0	0.0	0.2
14	Region 35	1.3	0.7	2.2	1.2	0.3	3.2	2.6	1.2	5.3	0.1	0.1	0.2	0.0	0.0	0.2	2.7	1.3	5.4	0.0	0.0	0.0	0.4	0.0	0.6	0.0	0.0	0.0
15	Region 36	1.5	0.7	2.5	2.1	0.9	6.0	3.6	1.9	6.8	0.2	0.1	0.3	0.1	0.0	0.5	3.9	2.0	7.1	0.0	0.0	0.0	0.4	0.0	0.8	0.0	0.0	0.1
444	Ave WM 1	1.6			1.5			3.1			0.1			0.1			3.4			0.0			0.1			0.3		0.0
	Min WM 1	0.3			0.0			0.5			0.0			0.0			0.5			0.0			0.0			0.0		0.0
	Max WM 1	4.5			6.0			6.8			0.3			1.9			7.1			0.4			0.7			1.8		0.5



**TABLE 3: RSA GRADING OF YELLOW MAIZE (2007/2008)**

Number of samples	Region	% Defective Kernels						% Total defective		% Foreign matter		% Another Colour		% Total Deviation		% 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.																						
<b>GRADE: YM 1</b>																													
25	Region 10	1.3	0.3	2.3	1.4	0.6	2.4	2.7	1.3	4.2	0.1	0.0	0.1	0.0	0.0	0.4	2.9	1.4	4.4	0.0	0.0	0.0	0.4	0.0	1.0	0.0	0.0	0.0	
14	Region 11	1.0	0.5	2.3	1.9	1.0	3.0	2.9	1.8	5.4	0.1	0.0	0.2	0.0	0.0	0.0	3.0	1.8	5.5	0.0	0.0	0.0	0.3	0.0	0.9	0.0	0.0	0.0	
6	Region 12	1.7	1.2	2.6	0.9	0.4	1.4	2.6	1.6	4.0	0.1	0.1	0.3	0.2	0.0	0.7	3.0	2.3	4.0	0.0	0.0	0.0	0.2	0.0	0.4	0.0	0.0	0.0	
4	Region 13	1.9	1.0	2.7	1.6	1.0	2.2	3.5	2.5	4.6	0.2	0.1	0.3	0.4	0.0	0.8	4.1	3.5	4.7	0.0	0.0	0.0	0.4	0.2	0.5	0.0	0.0	0.2	
12	Region 14	1.2	0.5	2.5	1.5	0.3	2.4	2.6	0.8	3.3	0.1	0.0	0.2	0.1	0.0	0.7	2.9	0.9	4.1	0.1	0.0	0.8	0.0	0.0	0.4	0.0	0.0	0.0	
6	Region 16	1.1	0.7	2.2	1.8	0.8	3.8	3.0	1.5	4.7	0.2	0.1	0.3	0.0	0.0	0.2	3.2	1.6	4.9	0.0	0.0	0.0	0.1	0.0	0.4	0.0	0.0	0.0	
10	Region 17	1.3	0.7	1.8	1.6	0.4	3.7	2.9	1.1	4.7	0.2	0.0	0.3	0.2	0.0	0.7	3.3	1.8	5.1	0.0	0.0	0.4	0.1	0.0	0.4	0.2	0.0	0.5	
7	Region 18	1.5	0.7	2.0	1.5	1.1	2.7	3.0	2.3	3.7	0.2	0.1	0.2	0.2	0.0	0.4	3.4	2.6	4.2	0.0	0.0	0.0	0.1	0.0	0.3	0.3	0.0	0.4	
7	Region 19	1.7	1.1	2.6	1.6	0.4	2.2	3.2	2.0	3.8	0.1	0.1	0.2	0.1	0.0	0.2	3.4	2.1	4.1	0.1	0.0	0.5	0.1	0.0	0.2	0.3	0.0	1.0	
8	Region 20	1.8	0.9	3.0	1.8	1.0	2.7	3.6	2.8	5.0	0.1	0.0	0.3	0.1	0.0	0.4	3.9	3.0	5.6	0.2	0.0	0.4	0.2	0.0	0.4	0.2	0.0	0.7	
2	Region 21	1.2	0.7	1.6	2.2	2.2	2.2	3.4	3.0	3.8	0.1	0.1	0.2	1.0	0.9	1.0	4.5	4.0	4.9	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.0	0.4	
2	Region 22	2.5	1.5	3.6	2.0	1.8	2.3	4.5	3.2	5.8	0.2	0.2	0.3	0.1	0.0	0.2	4.8	3.6	6.1	0.0	0.0	0.0	0.3	0.0	0.6	0.4	0.4	0.0	
7	Region 23	1.2	0.7	1.8	2.5	1.2	3.9	3.7	2.6	4.8	0.2	0.1	0.2	0.1	0.0	0.4	3.9	2.7	5.1	0.0	0.0	0.0	0.1	0.0	0.3	0.2	0.0	0.7	
7	Region 24	1.0	0.7	1.6	1.7	1.0	3.2	2.8	2.1	4.1	0.1	0.1	0.1	0.5	0.0	0.9	3.4	2.9	4.3	0.0	0.0	0.0	0.1	0.0	0.3	0.3	0.0	0.8	
41	Region 25	1.9	0.4	4.8	2.0	0.9	3.6	3.9	1.6	8.0	0.2	0.1	0.3	0.1	0.0	0.5	4.2	2.0	8.1	0.3	0.0	3.2	0.1	0.0	0.7	0.4	0.0	1.4	
23	Region 26	1.2	0.7	1.8	1.5	0.2	2.8	2.7	1.3	4.1	0.2	0.0	0.3	0.1	0.0	0.8	3.0	1.3	4.8	0.0	0.0	0.0	0.1	0.0	0.4	0.3	0.0	0.7	
2	Region 27	1.5	0.8	2.1	1.8	1.6	2.1	3.3	2.9	3.7	0.1	0.1	0.1	0.1	0.0	0.2	3.5	3.2	3.9	0.0	0.0	0.0	0.4	0.2	0.5	0.1	0.0	0.2	
9	Region 28	1.7	0.9	2.4	1.9	1.1	3.8	3.6	2.1	5.3	0.1	0.0	0.2	0.1	0.0	0.3	3.8	2.2	5.4	0.1	0.0	0.4	0.1	0.0	0.3	0.3	0.0	0.6	
47	Region 29	1.9	0.5	4.0	1.6	0.5	2.5	3.6	2.2	5.4	0.1	0.0	0.2	0.1	0.0	0.8	3.8	2.3	5.6	0.0	0.0	0.0	0.1	0.0	0.4	0.5	0.0	1.2	
63	Region 30	1.5	0.7	3.7	2.1	1.0	3.9	3.6	1.9	7.5	0.2	0.1	0.3	0.1	0.0	1.1	3.9	2.5	7.7	0.0	0.0	0.4	0.1	0.0	0.4	0.3	0.0	1.1	
14	Region 31	1.4	0.5	2.5	2.2	1.4	2.9	3.6	2.3	5.4	0.1	0.1	0.3	0.0	0.0	0.4	3.8	2.5	5.5	0.0	0.0	0.0	0.1	0.0	0.4	0.2	0.0	0.4	
17	Region 32	1.5	0.4	2.6	1.4	0.2	2.7	2.9	0.6	4.2	0.1	0.0	0.2	0.1	0.0	0.4	3.1	0.6	4.5	0.0	0.0	0.4	0.1	0.0	0.4	0.2	0.0	0.5	
24	Region 33	2.2	0.7	5.1	2.2	0.9	3.9	4.4	3.0	7.6	0.2	0.1	0.3	0.1	0.0	1.4	4.7	3.1	7.7	0.1	0.0	1.4	0.1	0.0	0.5	0.4	0.0	1.9	
11	Region 34	1.8	1.3	2.3	2.1	0.9	3.2	3.9	2.3	5.5	0.1	0.0	0.2	0.2	0.0	0.7	4.2	2.9	5.6	1.2	0.0	11.8	0.2	0.0	0.4	0.2	0.0	0.8	
12	Region 35	1.4	0.8	2.2	1.8	0.4	3.3	3.2	1.4	4.6	0.1	0.1	0.2	0.0	0.0	0.2	3.4	1.4	5.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.6	
9	Region 36	1.3	0.6	2.1	1.6	0.8	3.4	2.9	1.6	4.1	0.1	0.0	0.2	0.1	0.0	0.7	3.0	1.6	4.2	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.7	
<b>389</b>	<b>Ave YM 1</b>	<b>1.6</b>	<b>0.3</b>	<b>5.1</b>	<b>1.8</b>	<b>0.2</b>	<b>3.9</b>	<b>3.4</b>	<b>0.6</b>	<b>8.0</b>	<b>0.1</b>	<b>0.0</b>	<b>0.3</b>	<b>0.1</b>	<b>0.0</b>	<b>1.4</b>	<b>3.7</b>	<b>0.6</b>	<b>8.1</b>	<b>0.1</b>	<b>0.0</b>	<b>11.8</b>	<b>0.1</b>	<b>0.0</b>	<b>0.7</b>	<b>0.3</b>	<b>0.0</b>	<b>1.9</b>	
	<b>Min YM 1</b>																												
	<b>Max YM 1</b>																												

**TABLE 3: RSA GRADING OF YELLOW MAIZE (2007/2008) (continue)**

Number of samples	Region	% Defective Kernels						% Total defective		% Foreign matter		% Another Colour		% Total Deviation		% 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.				
<b>GRADE: YM 2</b>																													
1	Region 11	8.4	8.4	8.4	2.4	2.4	2.4	10.9	10.9	10.9	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.4	0.4	0.4	3.2	3.2	3.2	0.4	0.4	0.4			
1	Region 16	1.1	1.1	1.1	2.3	2.3	2.3	3.4	3.4	3.4	0.2	0.2	0.2	2.2	2.2	2.2	5.5	5.5	5.5	0.0	0.0	0.0	0.4	0.4	0.4	0.0	0.0	0.0	
1	Region 23	0.8	0.8	0.8	1.9	1.9	1.9	2.7	2.7	2.7	0.2	0.2	0.2	4.3	4.3	4.3	7.2	7.2	7.2	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	
6	Region 25	3.7	1.1	7.5	4.0	2.0	6.9	7.7	5.4	9.4	0.2	0.1	0.4	0.1	0.0	0.4	8.0	5.5	9.9	0.1	0.0	0.7	0.4	0.0	1.0	0.1	0.0	0.4	
1	Region 26	4.0	4.0	4.0	4.5	4.5	4.5	8.6	8.6	8.6	0.3	0.3	0.3	0.0	0.0	0.0	8.9	8.9	8.9	0.0	0.0	0.0	1.3	1.3	1.3	0.0	0.0	0.0	
1	Region 28	2.2	2.2	2.2	4.2	4.2	4.2	6.3	6.3	6.3	0.1	0.1	0.1	0.0	0.0	0.0	6.5	6.5	6.5	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	
3	Region 29	3.7	1.3	7.9	3.5	1.0	5.0	7.3	6.2	9.0	0.2	0.1	0.2	0.2	0.0	0.4	7.6	6.5	9.5	0.0	0.0	0.0	1.5	0.0	4.0	0.1	0.0	0.2	
1	Region 30	0.4	0.4	0.4	4.4	4.4	4.4	4.8	4.8	4.8	0.2	0.2	0.2	0.3	0.3	0.3	5.4	5.4	5.4	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	
1	Region 31	0.8	0.8	0.8	4.6	4.6	4.6	5.4	5.4	5.4	0.1	0.1	0.1	0.2	0.2	0.2	5.7	5.7	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	Region 32	1.2	1.2	1.3	4.4	4.3	4.4	5.6	5.5	5.7	0.2	0.2	0.2	0.1	0.0	0.2	5.9	5.7	6.0	0.0	0.0	0.0	0.1	0.0	0.3	0.1	0.0	0.0	
5	Region 33	1.6	0.9	2.6	5.5	4.1	7.3	7.1	5.0	8.6	0.2	0.1	0.3	0.3	0.0	1.4	7.6	5.1	9.1	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.0	0.4	
3	Region 34	1.7	0.9	2.5	5.0	4.8	5.3	6.7	5.7	7.9	0.3	0.2	0.3	0.5	0.2	0.6	7.4	6.6	8.7	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.0	0.3	
1	Region 35	1.1	1.1	1.1	4.1	4.1	4.1	5.2	5.2	5.2	0.2	0.2	0.2	0.0	0.0	0.0	5.4	5.4	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
27	Ave YM2	2.5	0.4	8.4	4.2	1.0	7.3	6.7	2.7	10.9	0.2	0.1	0.4	0.4	0.0	4.3	7.3	5.1	11.0	0.0	0.0	0.7	0.5	0.0	4.0	0.1	0.0	0.4	
<b>GRADE: COM</b>																													
1	Region 34	1.0	1.0	1.0	1.7	1.7	1.7	2.7	2.7	2.7	0.1	0.1	0.1	0.0	0.0	0.0	2.8	2.8	2.8	17.9	17.9	17.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	Ave COM	1.0	1.0	1.0	1.7	1.7	1.7	2.7	2.7	2.7	0.1	0.1	0.1	0.0	0.0	0.0	2.8	2.8	2.8	17.9	17.9	17.9	0.0	0.0	0.0	0.0	0.0	0.0	
1	Min COM	1.0	1.0	1.0	1.7	1.7	1.7	2.7	2.7	2.7	0.1	0.1	0.1	0.0	0.0	0.0	2.8	2.8	2.8	17.9	17.9	17.9	0.0	0.0	0.0	0.0	0.0	0.0	
1	Max COM	1.0	1.0	1.0	1.7	1.7	1.7	2.7	2.7	2.7	0.1	0.1	0.1	0.0	0.0	0.0	2.8	2.8	2.8	17.9	17.9	17.9	0.0	0.0	0.0	0.0	0.0	0.0	
417	Ave yellow maize	1.6	0.3	8.4	2.0	0.2	7.3	3.6	0.6	10.9	0.1	0.0	0.4	0.1	0.0	4.3	3.9	0.6	11.0	0.1	0.0	0.7	0.3	0.0	4.0	0.0	0.0	0.4	
	Min yellow maize	0.3	0.3	8.4	0.2	0.2	7.3	0.6	0.6	10.9	0.0	0.0	0.4	0.0	0.0	4.3	0.6	0.6	11.0	0.0	0.0	0.7	0.0	0.0	4.0	0.0	0.0	0.4	
	Max yellow maize	8.4	8.4	8.4	7.3	7.3	7.3	10.9	10.9	10.9	0.4	0.4	0.4	4.3	4.3	4.3	11.0	11.0	11.0	17.9	17.9	17.9	0.7	0.7	0.7	4.0	4.0	4.0	
900	Ave maize	1.8	0.3	13.6	1.8	0.0	10.3	3.6	0.5	15.0	0.1	0.0	0.7	0.1	0.0	5.2	3.9	0.5	18.5	0.1	0.0	17.9	0.4	0.0	4.0	0.0	0.0	0.5	
	Min maize	0.3	0.3	13.6	0.0	0.0	10.3	0.5	0.5	15.0	0.0	0.0	0.7	0.0	0.0	5.2	0.5	0.5	18.5	0.0	0.0	17.9	0.0	0.0	4.0	0.0	0.0	0.5	
	Max maize	13.6	13.6	13.6	10.3	10.3	10.3	15.0	15.0	15.0	0.7	0.7	0.7	5.2	5.2	5.2	18.5	18.5	18.5	17.9	17.9	17.9	1.2	1.2	1.2	4.0	4.0	4.0	

**TABLE 4: GRADING QUALITY OF SOUTH AFRICAN  
WHITE MAIZE 1998/99 - 2007/08**

Season	Number of samples	RSA GRADING AVERAGES				
		% Defective kernels		% Foreign matter	% Other colour	% Total deviation
		Above 6.35 mm sieve	Below 6.35 mm sieve			
1998/99	256	3.4	2.0	0.1	0.2	5.6
1999/00	493	6.0	1.7	0.0	0.4	8.1
2000/01	522	3.6	1.5	0.1	0.3	5.5
2001/02	471	5.0	1.4	0.0	0.3	6.7
2002/03	517	2.4	1.6	0.1	0.4	4.5
2003/04	599	4.0	2.1	0.3	0.3	6.7
2004/05	601	3.5	1.9	0.2	0.3	5.9
2005/06	593	6.0	1.8	0.2	0.3	8.3
2006/07	563	2.9	2.0	0.1	0.2	5.3
2007/08	483	2.0	1.6	0.2	0.2	3.9
Weighted average		3.9	1.8	0.1	0.3	6.1

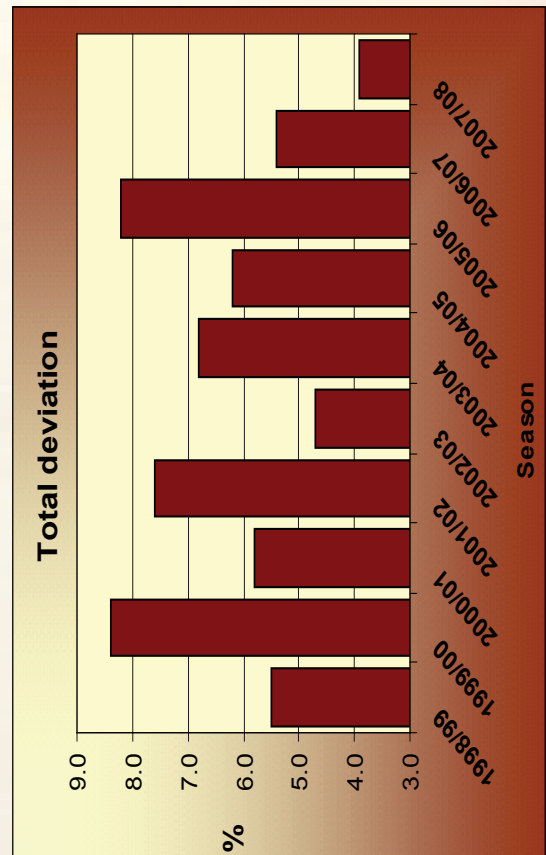
**TABLE 5: GRADING QUALITY OF SOUTH AFRICAN  
YELLOW MAIZE 1998/99 - 2007/08**

Season	Number of samples	RSA GRADING AVERAGES				
		% Defective kernels		% Foreign matter	% Other colour	% Total deviation
		Above 6.35 mm sieve	Below 6.35 mm sieve			
1998/99	189	2.6	2.7	0.0	0.1	5.5
1999/00	407	6.5	2.1	0.0	0.2	8.8
2000/01	378	3.7	2.1	0.1	0.4	6.2
2001/02	429	6.3	1.9	0.1	0.3	8.6
2002/03	383	2.1	2.5	0.2	0.2	5.0
2003/04	301	4.3	2.3	0.3	0.2	7.0
2004/05	399	4.0	2.3	0.2	0.1	6.6
2005/06	307	5.5	2.0	0.2	0.4	8.1
2006/07	337	2.8	2.5	0.2	0.2	5.7
2007/08	417	1.6	2.0	0.1	0.1	3.9
Weighted average		4.0	2.2	0.1	0.2	6.6



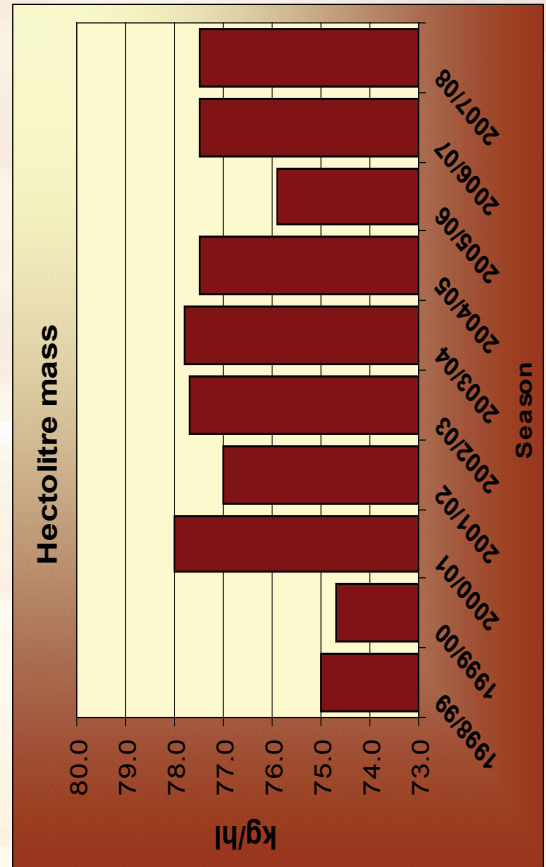
**TABLE 6: GRADING QUALITY OF SOUTH AFRICAN MAIZE 1998/99 - 2007/08**

Season	Number of samples	RSA GRADING AVERAGES					
		% Defective kernels		% Foreign matter	% Other colour	% Total deviation	
		Above 6.35 mm sieve	Below 6.35 mm sieve				
1998/99	445	3.1	2.3	0.0	0.1	5.5	
1999/00	900	6.2	1.8	0.0	0.3	8.4	
2000/01	900	3.6	1.8	0.1	0.3	5.8	
2001/02	900	5.6	1.6	0.1	0.3	7.6	
2002/03	900	2.3	2.0	0.2	0.3	4.7	
2003/04	900	4.1	2.2	0.3	0.3	6.8	
2004/05	1000	3.7	2.1	0.2	0.2	6.2	
2005/06	900	5.9	1.9	0.2	0.3	8.2	
2006/07	900	2.9	2.2	0.2	0.2	5.4	
2007/08	900	1.8	1.8	0.1	0.1	3.9	
Weighted average		4.0	2.0	0.1	0.2	6.3	



**TABLE 7: HECTOLITRE MASS (kg/hi) OF SOUTH AFRICAN MAIZE 1998/99 - 2007/08**

Season	White maize		Yellow maize		Ave maize	
	Number of samples	Hectolitre mass kg/hi	Number of samples	Hectolitre mass kg/hi	Number of samples	Hectolitre mass kg/hi
1998/99	256	75.2	189	74.8	445	75.0
1999/00	493	74.8	407	74.6	900	74.7
2000/01	522	78.2	378	77.8	900	78.0
2001/02	471	77.3	429	76.7	900	77.0
2002/03	517	78.1	383	77.2	900	77.7
2003/04	599	78.1	301	77.0	900	77.8
2004/05	601	77.9	399	76.8	1000	77.5
2005/06	593	76.2	307	75.4	900	75.9
2006/07	563	78.1	337	76.4	900	77.5
2007/08	483	78.2	417	76.7	900	77.5
Weighted average		77.3		76.4		77.0



**TABLE 8: USA GRADING OF WHITE MAIZE (2007/08)**

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Hectolitre mass kg/hl			Other colour %		
		% Heat damaged			% Total damaged			ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
		ave.	min.	max.	ave.	min.	max.									
<b>GRADE: US 1</b>																
4	Region 12	0.0	0.0	0.0	1.7	1.4	2.0	0.5	0.2	0.8	78.5	77.5	79.0	0.2	0.0	0.4
5	Region 13	0.0	0.0	0.0	1.5	1.3	1.6	0.7	0.2	1.0	77.8	76.5	79.6	0.2	0.0	0.7
17	Region 14	0.0	0.0	0.0	1.4	0.6	2.2	0.6	0.0	1.2	79.4	76.3	81.6	0.1	0.0	0.6
2	Region 15	0.0	0.0	0.0	0.8	0.7	1.0	0.4	0.2	0.6	80.0	79.8	80.1	0.3	0.2	0.5
19	Region 16	0.0	0.0	0.0	1.6	0.5	2.7	0.4	0.1	1.1	78.2	74.8	79.9	0.1	0.0	0.7
15	Region 17	0.0	0.0	0.0	1.4	0.7	2.2	0.7	0.0	1.5	78.3	75.3	79.4	0.1	0.0	0.5
19	Region 18	0.0	0.0	0.0	1.7	0.8	2.6	0.9	0.4	1.3	78.6	77.9	79.3	0.1	0.0	0.4
8	Region 19	0.0	0.0	0.0	1.3	0.6	1.7	0.8	0.2	1.4	78.4	77.1	79.6	0.1	0.0	0.5
11	Region 20	0.0	0.0	0.0	1.6	0.7	3.0	0.4	0.1	0.9	77.9	77.2	79.8	0.0	0.0	0.2
15	Region 21	0.0	0.0	0.0	1.6	0.4	2.9	1.1	0.5	1.7	78.3	75.7	79.4	0.1	0.0	0.5
15	Region 22	0.0	0.0	0.0	1.4	0.8	1.9	0.9	0.3	1.6	78.5	75.7	79.6	0.0	0.0	0.4
47	Region 23	0.0	0.0	0.0	1.4	0.4	2.8	0.8	0.2	1.9	79.0	75.9	81.2	0.1	0.0	0.7
45	Region 24	0.0	0.0	0.0	1.3	0.6	2.4	0.6	0.0	1.3	79.1	76.6	80.6	0.1	0.0	0.4
15	Region 25	0.0	0.0	0.0	1.4	0.5	1.9	0.7	0.0	1.4	77.9	76.3	80.2	0.2	0.0	1.4
10	Region 26	0.0	0.0	0.0	1.5	0.9	2.4	0.8	0.1	2.0	78.4	76.6	80.1	0.4	0.0	1.3
1	Region 27	0.0	0.0	0.0	2.5	2.5	2.5	1.1	1.1	1.1	75.0	75.0	75.0	0.4	0.4	0.4
8	Region 28	0.0	0.0	0.0	1.7	0.9	2.9	0.9	0.7	1.4	77.7	76.6	79.0	0.1	0.0	0.4
29	Region 29	0.0	0.0	0.0	2.3	0.8	3.0	0.4	0.1	0.8	78.5	76.7	79.9	0.3	0.0	1.6
33	Region 30	0.0	0.0	0.0	1.9	0.5	2.9	0.7	0.0	1.7	77.7	75.0	80.6	0.1	0.0	0.4
4	Region 31	0.0	0.0	0.0	2.2	1.5	2.6	0.6	0.2	0.9	77.3	75.0	78.8	0.3	0.2	0.6
17	Region 32	0.0	0.0	0.0	1.9	0.5	2.6	0.6	0.0	1.2	78.1	74.8	80.7	0.2	0.0	1.9
26	Region 33	0.0	0.0	0.0	2.0	1.3	3.0	1.0	0.0	1.7	76.9	73.9	78.9	0.1	0.0	1.0
21	Region 34	0.0	0.0	0.0	1.9	1.1	2.8	0.8	0.2	1.6	78.1	75.2	80.3	0.1	0.0	0.9
14	Region 35	0.0	0.0	0.0	1.4	0.7	2.3	0.6	0.1	1.7	79.6	77.1	81.6	0.0	0.0	0.2
14	Region 36	0.0	0.0	0.0	1.7	0.8	2.7	0.5	0.2	1.0	77.8	75.4	79.9	0.1	0.0	0.5
<b>414</b>	<b>Ave US 1</b>	<b>0.0</b>			<b>1.6</b>			<b>0.7</b>			<b>78.4</b>			<b>0.1</b>		
	<b>Min US 1</b>		<b>0.0</b>			<b>0.4</b>			<b>0.0</b>			<b>73.9</b>			<b>0.0</b>	
	<b>Max US 1</b>			<b>0.0</b>			<b>3.0</b>			<b>2.0</b>			<b>81.6</b>			<b>1.9</b>
<b>GRADE: US 2</b>																
1	Region 12	0.0	0.0	0.0	2.5	2.5	2.5	0.7	0.7	0.7	70.8	70.8	70.8	0.4	0.4	0.4
1	Region 13	0.0	0.0	0.0	0.9	0.9	0.9	3.0	3.0	3.0	77.4	77.4	77.4	0.2	0.2	0.2
1	Region 17	0.0	0.0	0.0	3.5	3.5	3.5	0.7	0.7	0.7	78.7	78.7	78.7	0.2	0.2	0.2
1	Region 19	0.0	0.0	0.0	1.1	1.1	1.1	0.9	0.9	0.9	70.9	70.9	70.9	0.4	0.4	0.4
3	Region 21	0.0	0.0	0.0	1.1	0.9	1.6	2.5	2.1	2.8	79.2	78.8	79.8	0.1	0.0	0.2
1	Region 25	0.0	0.0	0.0	4.1	4.1	4.1	0.9	0.9	0.9	78.5	78.5	78.5	0.0	0.0	0.0
2	Region 26	0.0	0.0	0.0	0.7	0.6	0.9	1.2	0.3	2.2	74.2	70.2	78.1	0.5	0.4	0.5
1	Region 28	0.0	0.0	0.0	0.5	0.5	0.5	2.2	2.2	2.2	74.5	74.5	74.5	0.0	0.0	0.0
6	Region 29	0.0	0.0	0.0	3.7	2.3	5.0	0.4	0.1	0.8	78.1	72.0	80.8	0.2	0.0	0.5
8	Region 30	0.0	0.0	0.0	3.7	3.1	4.6	0.9	0.4	1.3	77.5	75.9	78.4	0.1	0.0	0.3
1	Region 31	0.0	0.0	0.0	2.3	2.3	2.3	0.8	0.8	0.8	71.7	71.7	71.7	0.0	0.0	0.0
2	Region 32	0.0	0.0	0.0	3.4	3.4	3.4	1.0	0.9	1.0	77.9	77.3	78.4	0.1	0.0	0.2
4	Region 34	0.0	0.0	0.0	3.7	3.2	4.5	1.0	0.6	1.3	78.0	75.9	79.7	0.4	0.0	0.7
<b>32</b>	<b>Ave US 2</b>	<b>0.0</b>			<b>2.9</b>			<b>1.1</b>			<b>77.0</b>			<b>0.2</b>		
	<b>Min US 2</b>		<b>0.0</b>			<b>0.5</b>			<b>0.1</b>			<b>70.2</b>			<b>0.0</b>	
	<b>Max US 2</b>			<b>0.0</b>			<b>5.0</b>			<b>3.0</b>			<b>80.8</b>			<b>0.7</b>

**TABLE 8: USA GRADING OF WHITE MAIZE (2007/08)**

(continue)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Hectolitre mass kg/hl			Other colour %		
		% Heat damaged			% Total damaged			ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
		ave.	min.	max.	ave.	min.	max.									
<b>GRADE: US 3</b>																
1	Region 13	0.0	0.0	0.0	1.1	1.1	1.1	3.6	3.6	3.6	72.6	72.6	72.6	0.2	0.2	0.2
1	Region 17	0.0	0.0	0.0	6.1	6.1	6.1	1.2	1.2	1.2	78.3	78.3	78.3	0.0	0.0	0.0
1	Region 19	0.0	0.0	0.0	2.5	2.5	2.5	3.6	3.6	3.6	77.2	77.2	77.2	0.0	0.0	0.0
2	Region 20	0.0	0.0	0.0	6.0	5.8	6.2	1.1	1.1	1.2	78.0	77.0	79.0	0.2	0.0	0.4
1	Region 22	0.0	0.0	0.0	5.1	5.1	5.1	1.8	1.8	1.8	76.3	76.3	76.3	0.4	0.4	0.4
1	Region 26	0.0	0.0	0.0	5.1	5.1	5.1	1.6	1.6	1.6	77.2	77.2	77.2	0.7	0.7	0.7
2	Region 28	0.0	0.0	0.0	5.4	5.2	5.6	1.3	1.3	1.4	76.7	76.3	77.0	0.4	0.4	0.4
3	Region 29	0.0	0.0	0.0	5.9	5.3	6.7	0.7	0.6	0.8	77.4	76.7	78.7	0.1	0.0	0.2
5	Region 30	0.0	0.0	0.0	5.8	5.4	6.1	1.0	0.8	1.3	77.6	75.9	80.1	0.2	0.0	0.4
2	Region 32	0.0	0.0	0.0	5.8	5.4	6.2	2.6	1.2	4.0	78.4	77.9	78.8	0.3	0.2	0.3
3	Region 33	0.0	0.0	0.0	3.8	2.2	6.5	2.5	0.8	3.7	76.0	75.4	76.7	0.1	0.0	0.2
1	Region 36	0.0	0.0	0.0	1.1	1.1	1.1	3.1	3.1	3.1	78.5	78.5	78.5	0.0	0.0	0.0
<b>23</b>	<b>Ave US 3</b>	<b>0.0</b>			<b>4.9</b>			<b>1.7</b>			<b>77.1</b>			<b>0.2</b>		
	<b>Min US 3</b>	<b>0.0</b>			<b>1.1</b>			<b>0.6</b>			<b>72.6</b>			<b>0.0</b>		
	<b>Max US 3</b>	<b>0.0</b>			<b>6.7</b>			<b>4.0</b>			<b>80.1</b>			<b>0.7</b>		
<b>GRADE: US 4</b>																
1	Region 14	0.0	0.0	0.0	1.7	1.7	1.7	4.1	4.1	4.1	65.3	65.3	65.3	0.0	0.0	0.0
1	Region 26	0.0	0.0	0.0	0.6	0.6	0.6	4.1	4.1	4.1	78.9	78.9	78.9	0.4	0.4	0.4
1	Region 30	0.0	0.0	0.0	7.1	7.1	7.1	0.0	0.0	0.0	78.7	78.7	78.7	0.3	0.3	0.3
1	Region 32	0.0	0.0	0.0	8.0	8.0	8.0	0.9	0.9	0.9	77.6	77.6	77.6	0.6	0.6	0.6
3	Region 34	0.0	0.0	0.0	3.5	1.4	7.1	3.4	1.2	4.5	78.7	77.2	79.7	0.3	0.2	0.4
<b>7</b>	<b>Ave US 4</b>	<b>0.0</b>			<b>4.0</b>			<b>2.7</b>			<b>76.7</b>			<b>0.3</b>		
	<b>Min US 4</b>	<b>0.0</b>			<b>0.6</b>			<b>0.0</b>			<b>65.3</b>			<b>0.0</b>		
	<b>Max US 4</b>	<b>0.0</b>			<b>8.0</b>			<b>4.5</b>			<b>79.7</b>			<b>0.6</b>		
<b>GRADE: US 5</b>																
1	Region 13	0.0	0.0	0.0	12.2	12.2	12.2	1.3	1.3	1.3	73.1	73.1	73.1	0.4	0.4	0.4
1	Region 25	0.0	0.0	0.0	13.0	13.0	13.0	0.7	0.7	0.7	75.8	75.8	75.8	0.4	0.4	0.4
1	Region 29	0.0	0.0	0.0	13.9	13.9	13.9	0.6	0.6	0.6	74.3	74.3	74.3	0.2	0.2	0.2
1	Region 30	0.0	0.0	0.0	12.1	12.1	12.1	0.9	0.9	0.9	77.2	77.2	77.2	0.4	0.4	0.4
1	Region 32	0.0	0.0	0.0	10.4	10.4	10.4	0.9	0.9	0.9	78.5	78.5	78.5	0.0	0.0	0.0
<b>5</b>	<b>Ave US 5</b>	<b>0.0</b>			<b>12.3</b>			<b>0.9</b>			<b>75.8</b>			<b>0.3</b>		
	<b>Min US 5</b>	<b>0.0</b>			<b>10.4</b>			<b>0.6</b>			<b>73.1</b>			<b>0.0</b>		
	<b>Max US 5</b>	<b>0.0</b>			<b>13.9</b>			<b>1.3</b>			<b>78.5</b>			<b>0.4</b>		
<b>GRADE: MIXED GRADE</b>																
1	Region 21	0.0	0.0	0.0	3.9	3.9	3.9	0.3	0.3	0.3	78.5	78.5	78.5	5.2	5.2	5.2
1	Region 32	0.0	0.0	0.0	10.0	10.0	10.0	2.4	2.4	2.4	76.5	76.5	76.5	4.1	4.1	4.1
<b>2</b>	<b>Ave Mixed Grade</b>	<b>0.0</b>			<b>6.9</b>			<b>1.4</b>			<b>77.5</b>			<b>4.7</b>		
	<b>Min Mixed Grade</b>	<b>0.0</b>			<b>3.9</b>			<b>0.3</b>			<b>76.5</b>			<b>4.1</b>		
	<b>Max Mixed Grade</b>	<b>0.0</b>			<b>10.0</b>			<b>2.4</b>			<b>78.5</b>			<b>5.2</b>		
<b>483</b>	<b>Ave white maize</b>	<b>0.0</b>			<b>2.0</b>			<b>0.8</b>			<b>78.2</b>			<b>0.2</b>		
	<b>Min white maize</b>	<b>0.0</b>			<b>0.4</b>			<b>0.0</b>			<b>65.3</b>			<b>0.0</b>		
	<b>Max white maize</b>	<b>0.0</b>			<b>13.9</b>			<b>4.5</b>			<b>81.6</b>			<b>5.2</b>		
<b>900</b>	<b>Ave maize</b>	<b>0.0</b>			<b>1.9</b>			<b>0.9</b>			<b>77.5</b>			<b>0.2</b>		
	<b>Min maize</b>	<b>0.0</b>			<b>0.3</b>			<b>0.0</b>			<b>65.3</b>			<b>0.0</b>		
	<b>Max maize</b>	<b>0.3</b>			<b>13.9</b>			<b>4.5</b>			<b>81.6</b>			<b>5.2</b>		

**TABLE 9: USA GRADING OF YELLOW MAIZE (2007/08)**

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Hectolitre mass kg/hl			Other colour %		
		% Heat damaged			% Total damaged			ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
		ave.	min.	max.	ave.	min.	max.									
<b>GRADE: US 1</b>																
25	Region 10	0.0	0.0	0.0	1.4	0.3	2.5	0.7	0.4	1.0	76.8	74.4	78.3	0.0	0.0	0.0
14	Region 11	0.0	0.0	0.0	1.1	0.5	2.5	0.9	0.2	1.7	77.6	75.5	79.3	0.0	0.0	0.0
6	Region 12	0.0	0.0	0.0	1.8	1.2	2.7	0.5	0.2	0.6	77.6	76.5	79.0	0.2	0.0	0.7
4	Region 13	0.0	0.0	0.0	2.0	1.0	2.8	1.0	0.7	1.3	77.0	75.4	77.9	0.4	0.0	0.8
12	Region 14	0.0	0.0	0.0	1.2	0.5	2.5	0.6	0.1	1.3	77.5	73.9	78.9	0.1	0.0	0.7
6	Region 16	0.0	0.0	0.0	1.2	0.7	2.3	0.8	0.3	1.3	77.2	75.4	78.9	0.4	0.0	2.2
9	Region 17	0.0	0.0	0.0	1.4	0.7	1.9	0.8	0.0	1.3	77.0	75.0	77.9	0.2	0.0	0.7
7	Region 18	0.0	0.0	0.0	1.6	0.7	2.0	0.8	0.5	1.5	77.7	77.0	78.1	0.2	0.0	0.4
7	Region 19	0.0	0.0	0.0	1.7	1.1	2.6	0.8	0.2	1.2	76.8	75.4	77.9	0.1	0.0	0.2
7	Region 20	0.0	0.0	0.0	1.8	1.0	2.5	0.8	0.4	1.2	76.2	74.4	77.9	0.1	0.0	0.4
2	Region 21	0.0	0.0	0.0	1.3	0.9	1.7	1.2	1.2	1.3	76.9	76.3	77.5	1.0	0.9	1.0
1	Region 22	0.0	0.0	0.0	1.6	1.6	1.6	1.1	1.1	1.1	78.0	78.0	78.0	0.2	0.2	0.2
6	Region 23	0.0	0.0	0.0	1.3	0.9	1.9	1.0	0.4	1.7	76.9	75.9	79.4	0.7	0.0	4.3
7	Region 24	0.0	0.0	0.0	1.1	0.8	1.7	0.9	0.3	1.7	77.4	76.5	78.4	0.5	0.0	0.9
35	Region 25	0.0	0.0	0.0	1.7	0.4	2.9	0.9	0.1	2.0	75.8	72.6	78.5	0.1	0.0	0.5
23	Region 26	0.0	0.0	0.0	1.3	0.7	2.1	0.9	0.0	1.6	77.2	73.2	79.4	0.1	0.0	0.8
2	Region 27	0.0	0.0	0.0	1.5	0.8	2.2	1.1	0.9	1.2	77.3	77.1	77.4	0.1	0.0	0.2
8	Region 28	0.0	0.0	0.0	1.8	0.9	2.5	1.0	0.7	1.8	77.1	74.8	78.4	0.1	0.0	0.3
44	Region 29	0.0	0.0	0.0	1.9	0.6	3.0	0.6	0.1	1.2	77.5	73.9	79.8	0.1	0.0	0.8
61	Region 30	0.0	0.0	0.0	1.6	0.7	3.0	1.2	0.6	1.8	77.2	74.0	79.9	0.1	0.0	1.1
14	Region 31	0.0	0.0	0.0	1.5	0.5	2.6	1.2	0.7	1.6	76.7	75.7	77.9	0.0	0.0	0.4
18	Region 32	0.0	0.0	0.0	1.6	0.4	2.7	0.8	0.0	1.9	77.6	75.6	79.3	0.1	0.0	0.4
15	Region 33	0.0	0.0	0.0	1.8	0.7	2.9	1.2	0.7	1.6	76.0	73.8	77.5	0.1	0.0	0.7
12	Region 34	0.0	0.0	0.0	1.8	1.0	2.4	1.1	0.3	1.5	77.9	74.4	79.4	0.5	0.0	4.2
12	Region 35	0.0	0.0	0.0	1.5	0.8	2.3	1.0	0.1	1.8	76.1	74.1	79.2	0.0	0.0	0.2
9	Region 36	0.0	0.0	0.0	1.4	0.7	2.1	0.4	0.1	0.8	76.4	75.6	77.8	0.1	0.0	0.7
<b>366</b>	<b>Ave US 1</b>	<b>0.0</b>			<b>1.6</b>			<b>0.9</b>			<b>77.0</b>			<b>0.1</b>		
	<b>Min US 1</b>	<b>0.0</b>			<b>0.3</b>			<b>0.0</b>			<b>72.6</b>			<b>0.0</b>		
	<b>Max US 1</b>	<b>0.0</b>			<b>3.0</b>			<b>2.0</b>			<b>79.9</b>			<b>4.3</b>		
<b>GRADE: US 2</b>																
1	Region 16	0.0	0.0	0.0	1.1	1.1	1.1	2.1	2.1	2.1	77.2	77.2	77.2	0.0	0.0	0.0
1	Region 17	0.0	0.0	0.0	1.2	1.2	1.2	2.1	2.1	2.1	76.5	76.5	76.5	0.2	0.2	0.2
1	Region 20	0.0	0.0	0.0	3.3	3.3	3.3	1.3	1.3	1.3	77.0	77.0	77.0	0.3	0.3	0.3
1	Region 22	0.0	0.0	0.0	3.7	3.7	3.7	1.4	1.4	1.4	74.4	74.4	74.4	0.0	0.0	0.0
2	Region 23	0.0	0.0	0.0	0.9	0.7	1.1	2.2	2.1	2.2	76.9	75.7	78.1	0.2	0.0	0.4
9	Region 25	0.0	0.0	0.0	3.1	1.4	4.9	1.6	1.0	2.5	72.3	69.9	76.1	0.1	0.0	0.4
1	Region 26	0.0	0.0	0.0	4.2	4.2	4.2	2.6	2.6	2.6	74.9	74.9	74.9	0.0	0.0	0.0
2	Region 28	0.0	0.0	0.0	2.0	1.6	2.3	2.3	2.3	2.4	75.1	74.9	75.2	0.0	0.0	0.0
5	Region 29	0.0	0.0	0.0	3.2	1.6	4.1	0.6	0.3	1.7	76.3	71.1	79.4	0.0	0.0	0.2
3	Region 30	0.0	0.0	0.0	1.8	0.5	3.8	2.5	2.3	2.8	76.7	76.3	77.2	0.1	0.0	0.3
1	Region 31	0.0	0.0	0.0	0.9	0.9	0.9	2.4	2.4	2.4	74.4	74.4	74.4	0.2	0.2	0.2
1	Region 32	0.0	0.0	0.0	1.4	1.4	1.4	2.6	2.6	2.6	76.8	76.8	76.8	0.0	0.0	0.0
9	Region 33	0.0	0.0	0.0	2.6	0.9	4.4	1.8	0.8	2.7	74.5	70.9	76.3	0.3	0.0	1.4
1	Region 34	0.0	0.0	0.0	1.6	1.6	1.6	2.7	2.7	2.7	77.5	77.5	77.5	0.2	0.2	0.2
1	Region 35	0.0	0.0	0.0	1.3	1.3	1.3	2.2	2.2	2.2	72.6	72.6	72.6	0.0	0.0	0.0
<b>39</b>	<b>Ave US 2</b>	<b>0.0</b>			<b>2.5</b>			<b>1.8</b>			<b>74.8</b>			<b>0.1</b>		
	<b>Min US 2</b>	<b>0.0</b>			<b>0.5</b>			<b>0.3</b>			<b>69.9</b>			<b>0.0</b>		
	<b>Max US 2</b>	<b>0.0</b>			<b>4.9</b>			<b>2.8</b>			<b>79.4</b>			<b>1.4</b>		

**TABLE 9: USA GRADING OF YELLOW MAIZE (2007/08)**

(continue)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Hectolitre mass kg/hl			Other colour %		
		% Heat damaged			% Total damaged			ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
		ave.	min.	max.	ave.	min.	max.									
<b>GRADE: US 3</b>																
2	Region 25	0.0	0.0	0.0	3.9	1.6	6.1	1.2	1.2	1.3	72.4	69.3	75.4	0.2	0.2	0.3
5	Region 33	0.1	0.0	0.3	2.6	1.3	5.3	1.9	0.5	3.5	75.1	73.1	76.6	0.1	0.0	0.3
1	Region 34	0.0	0.0	0.0	1.2	1.2	1.2	3.2	3.2	3.2	76.3	76.3	76.3	0.6	0.6	0.6
<b>8</b>	<b>Ave US 3</b>	<b>0.1</b>			<b>2.8</b>			<b>1.9</b>			<b>74.6</b>			<b>0.2</b>		
	<b>Min US 3</b>		<b>0.0</b>			<b>1.2</b>			<b>0.5</b>			<b>69.3</b>			<b>0.0</b>	
	<b>Max US 3</b>			<b>0.3</b>			<b>6.1</b>			<b>3.5</b>			<b>76.6</b>			<b>0.6</b>
<b>GRADE: US 4</b>																
1	Region 11	0.0	0.0	0.0	8.4	8.4	8.4	1.4	1.4	1.4	75.9	75.9	75.9	0.0	0.0	0.0
1	Region 25	0.0	0.0	0.0	7.6	7.6	7.6	1.0	1.0	1.0	76.6	76.6	76.6	0.2	0.2	0.2
1	Region 29	0.0	0.0	0.0	8.1	8.1	8.1	0.6	0.6	0.6	75.0	75.0	75.0	0.4	0.4	0.4
1	Region 34	0.0	0.0	0.0	2.7	2.7	2.7	4.1	4.1	4.1	78.7	78.7	78.7	0.6	0.6	0.6
<b>4</b>	<b>Ave US 4</b>	<b>0.0</b>			<b>6.7</b>			<b>1.8</b>			<b>76.6</b>			<b>0.3</b>		
	<b>Min US 4</b>		<b>0.0</b>			<b>2.7</b>			<b>0.6</b>			<b>75.0</b>			<b>0.0</b>	
	<b>Max US 4</b>			<b>0.0</b>			<b>8.4</b>			<b>4.1</b>			<b>78.7</b>			<b>0.6</b>
<b>417</b>	<b>Ave yellow maize</b>	<b>0.0</b>			<b>1.7</b>			<b>1.0</b>			<b>76.7</b>			<b>0.1</b>		
	<b>Min yellow maize</b>		<b>0.0</b>			<b>0.3</b>			<b>0.0</b>			<b>69.3</b>			<b>0.0</b>	
	<b>Max yellow maize</b>			<b>0.3</b>			<b>8.4</b>			<b>4.1</b>			<b>79.9</b>			<b>4.3</b>
<b>900</b>	<b>Ave maize</b>	<b>0.0</b>			<b>1.9</b>			<b>0.9</b>			<b>77.5</b>			<b>0.2</b>		
	<b>Min maize</b>		<b>0.0</b>			<b>0.3</b>			<b>0.0</b>			<b>65.3</b>			<b>0.0</b>	
	<b>Max maize</b>			<b>0.3</b>			<b>13.9</b>			<b>4.5</b>			<b>81.6</b>			<b>5.2</b>

**TABLE 10: 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 grading sieve	-	-	-	9	20	30
	below 6,35 mm grading sieve	-	-	-	4	10	30
II	Maize kernels of another colour	3	6	10	2	5	5
III	Foreign matter (excluding stone, pieces of coal or glass and dung)	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	12	12	12

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

**TABLE 11: GRADES AND GRADE REQUIREMENTS FOR MAIZE  
ACCORDING TO USA GRADING REGULATIONS**

Grades	Minimum test weight per bushel (pounds)		Maximum limits of -		
			Heat damaged kernels (percent)	Total (percent)	Broken corn and foreign material (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:

- Does not meet the requirements for the grades U.S. Nos. 1, 2, 3, 4 or 5; or
- Contains 8 or more stones which have an aggregate weight in excess of 0.20 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 ssp.) or similar seeds singly or in combination, or animal filth in excess of 0.20 percent in 1000 grams; or
- Has a musty, sour, or commercially foreign odor; or
- Is heating or otherwise of distinctly low quality.

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

TABLE 12: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE 2007/08												TABLE 12: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE 2007/08											
Number of samples	Region	% (db) Fat			% (db) Protein			% (db) Starch			Number of samples	Region	% (db) Fat			% (db) Protein			% (db) Starch				
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.			ave.	min.	max.	ave.	min.	max.	ave.	min.	max.		
<b>GRADE: WM 1</b>												<b>GRADE: YM 1</b>											
5	Region 12	4.0	3.6	4.2	8.5	8.3	8.7	71.3	70.4	73.0	25	Region 10	3.3	3.0	3.6	8.1	7.6	8.6	72.7	71.8	74.6		
6	Region 13	4.1	4.0	4.2	8.9	8.5	9.3	71.2	70.0	71.7	14	Region 11	3.3	2.9	3.5	7.8	7.2	8.5	73.3	72.1	74.0		
17	Region 14	3.9	3.6	4.1	8.5	7.7	9.2	72.2	70.4	73.4	6	Region 12	3.5	2.9	3.9	8.7	7.8	9.3	72.3	71.1	74.2		
2	Region 15	4.1	4.0	4.1	8.8	8.6	8.9	71.6	71.3	71.9	4	Region 13	3.9	3.7	4.1	9.3	9.0	9.7	71.1	70.5	71.6		
19	Region 16	3.8	3.7	4.1	8.5	7.8	9.2	72.7	71.4	73.6	12	Region 14	3.6	3.2	3.9	9.0	8.1	9.8	72.1	70.8	73.8		
16	Region 17	4.1	3.9	4.2	9.0	8.4	10.0	71.4	70.1	72.1	6	Region 16	3.8	3.6	4.3	9.1	8.8	9.5	72.3	71.4	73.1		
19	Region 18	4.1	3.9	4.1	8.6	7.9	9.0	71.8	70.9	72.4	10	Region 17	3.9	3.6	4.2	9.2	9.0	9.5	71.4	70.0	72.4		
9	Region 19	4.1	3.7	4.2	8.8	8.3	9.1	71.0	70.3	71.9	7	Region 18	3.7	3.4	3.9	8.8	8.6	9.1	72.1	71.4	72.6		
11	Region 20	3.9	3.7	4.1	8.4	7.4	9.7	72.1	70.6	73.9	7	Region 19	3.9	3.6	4.3	9.0	8.2	9.9	71.4	70.0	72.5		
18	Region 21	4.0	3.8	4.3	8.9	8.2	10.0	71.8	71.1	72.5	8	Region 20	3.5	2.9	3.9	8.2	7.7	8.5	72.6	71.2	74.3		
15	Region 22	4.0	3.9	4.3	8.6	8.0	9.0	72.0	71.3	72.6	2	Region 21	3.7	3.5	3.8	9.4	8.7	10.0	72.4	71.9	72.9		
46	Region 23	4.0	3.7	4.3	8.8	7.3	9.8	72.0	71.2	73.2	2	Region 22	3.9	3.4	4.3	9.0	8.6	9.4	72.2	71.5	72.9		
45	Region 24	4.0	3.5	4.3	8.9	7.7	9.9	72.0	71.0	73.3	7	Region 23	3.8	3.7	4.0	9.2	8.8	9.7	72.2	72.0	72.4		
16	Region 25	3.9	3.3	4.2	8.2	7.0	10.0	71.9	69.9	73.6	7	Region 24	3.7	3.5	3.9	9.0	8.1	10.0	72.4	71.4	73.3		
12	Region 26	4.1	4.0	4.2	8.8	7.8	9.4	71.5	70.8	72.2	41	Region 25	3.6	3.0	4.3	8.1	7.2	10.4	72.3	70.1	73.6		
1	Region 27	4.0	4.0	4.0	10.5	10.5	10.5	69.9	69.9	69.9	23	Region 26	3.8	3.5	4.1	8.8	8.1	9.8	72.0	70.9	73.4		
9	Region 28	4.0	3.9	4.1	8.5	7.5	9.1	71.3	70.3	72.0	2	Region 27	3.8	3.4	4.2	9.2	8.9	9.4	71.9	71.2	72.5		
33	Region 29	3.8	3.4	4.3	8.5	7.6	9.5	72.5	70.5	74.0	9	Region 28	3.7	3.5	4.1	8.4	7.5	9.3	72.2	70.9	73.5		
41	Region 30	3.9	3.4	4.3	8.5	7.6	9.4	71.9	70.9	73.9	47	Region 29	3.6	3.1	4.0	8.5	7.1	10.0	72.3	70.6	74.3		
5	Region 31	3.8	3.6	4.0	7.8	7.6	8.3	72.3	71.5	72.9	63	Region 30	3.6	3.0	4.1	8.3	7.7	9.2	72.6	71.4	75.0		
19	Region 32	4.1	3.8	4.6	8.4	7.6	9.4	71.2	70.4	71.9	14	Region 31	3.7	3.2	4.0	8.2	7.6	8.9	72.2	71.3	73.0		
26	Region 33	4.0	3.6	4.3	8.3	7.5	9.0	71.7	70.7	73.0	17	Region 32	3.8	3.5	4.3	8.6	8.1	9.0	71.7	70.7	72.5		
25	Region 34	4.0	3.8	4.3	8.3	6.6	10.0	71.5	70.3	72.0	24	Region 33	3.6	3.2	4.1	8.1	7.5	8.9	72.6	71.6	74.2		
14	Region 35	4.0	3.6	4.7	8.8	7.5	10.9	72.1	69.9	74.0	11	Region 34	3.9	3.5	4.1	8.8	8.2	10.1	71.3	70.5	72.1		
15	Region 36	3.9	3.3	4.7	8.5	7.9	9.6	72.2	70.3	73.9	12	Region 35	3.7	3.1	4.8	8.0	6.9	10.1	72.4	70.1	73.7		
<b>444</b>	<b>Ave WM 1</b>	<b>4.0</b>	<b>3.3</b>	<b>4.7</b>	<b>8.6</b>	<b>6.6</b>	<b>10.9</b>	<b>71.9</b>	<b>69.9</b>	<b>74.0</b>	<b>389</b>	<b>Ave YM 1</b>	<b>3.6</b>	<b>2.9</b>	<b>4.8</b>	<b>8.4</b>	<b>6.9</b>	<b>10.4</b>	<b>72.3</b>	<b>70.0</b>	<b>75.0</b>		
	<b>Min WM 1</b>											<b>Min YM 1</b>											
	<b>Max WM 1</b>											<b>Max YM 1</b>											

TABLE 12: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE 2007/08 (continue)												TABLE 12: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE 2007/08 (continue)											
Number of samples	Region	% (db) Fat			% (db) Protein			% (db) Starch			Number of samples	Region	% (db) Fat			% (db) Protein			% (db) Starch				
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.			ave.	min.	max.	ave.	min.	max.	ave.	min.	max.		
<b>GRADE: WM 2</b>												<b>GRADE: YM 2</b>											
1	Region 13	4.1	4.1	4.1	7.6	7.6	7.6	71.8	71.8	71.8	1	Region 11	3.3	3.3	3.3	7.8	7.8	7.8	73.2	73.2	73.2		
1	Region 17	4.0	4.0	4.0	8.9	8.9	8.9	70.6	70.6	70.6	1	Region 16	3.9	3.9	3.9	9.1	9.1	9.1	71.8	71.8	71.8		
1	Region 19	3.8	3.8	3.8	9.1	9.1	9.1	70.5	70.5	70.5	1	Region 23	4.0	4.0	4.0	10.1	10.1	10.1	72.1	72.1	72.1		
2	Region 20	3.9	3.8	3.9	8.1	8.0	8.2	71.3	70.8	71.8	6	Region 25	3.6	3.4	3.8	7.9	7.5	8.4	72.3	71.8	72.6		
1	Region 21	3.9	3.9	3.9	8.9	8.9	8.9	71.8	71.8	71.8	1	Region 26	3.9	3.9	3.9	8.3	8.3	8.3	72.4	72.4	72.4		
1	Region 22	4.0	4.0	4.0	8.5	8.5	8.5	72.3	72.3	72.3	1	Region 28	3.5	3.5	3.5	8.4	8.4	8.4	72.3	72.3	72.3		
1	Region 23	4.0	4.0	4.0	8.5	8.5	8.5	71.9	71.9	71.9	3	Region 29	3.5	3.4	3.7	8.9	8.3	9.6	71.8	70.5	73.2		
2	Region 26	3.8	3.5	4.0	8.3	8.0	8.5	73.0	72.1	73.8	1	Region 30	3.3	3.3	3.3	8.2	8.2	8.2	73.3	73.3	73.3		
2	Region 28	3.9	3.9	3.9	8.5	8.3	8.7	71.8	71.7	71.8	1	Region 31	3.7	3.7	3.7	9.3	9.3	9.3	72.1	72.1	72.1		
5	Region 29	3.7	3.6	3.8	8.9	8.4	10.4	71.5	70.7	73.0	2	Region 32	3.6	3.4	3.7	8.2	8.0	8.3	72.2	71.9	72.5		
6	Region 30	3.8	3.5	4.2	8.4	8.0	8.7	72.4	71.2	73.8	5	Region 33	3.8	3.4	4.2	8.7	8.0	9.1	71.3	70.6	72.1		
4	Region 32	3.9	3.8	4.0	8.7	8.5	8.9	71.5	71.1	71.9	3	Region 34	3.8	3.7	4.0	8.4	8.2	8.9	71.7	71.3	72.2		
3	Region 33	4.0	3.8	4.1	7.7	7.3	8.2	71.8	71.4	72.4	1	Region 35	3.7	3.7	3.7	7.4	7.4	7.4	72.9	72.9	72.9		
3	Region 34	4.0	4.0	4.1	9.2	8.2	9.8	70.7	70.2	71.5													
<b>33</b>	<b>Ave WM 2</b>	<b>3.9</b>		<b>3.5</b>	<b>8.5</b>		<b>7.3</b>	<b>71.7</b>		<b>70.2</b>	<b>27</b>	<b>Ave YM 2</b>	<b>3.7</b>		<b>8.4</b>		<b>7.4</b>	<b>72.0</b>		<b>73.3</b>			
	<b>Min WM 2</b>											<b>Min YM 2</b>											
	<b>Max WM 2</b>			<b>4.2</b>			<b>10.4</b>			<b>73.8</b>		<b>Max YM 2</b>			<b>4.2</b>		<b>10.1</b>			<b>70.5</b>			
<b>GRADE: WM 3</b>												<b>GRADE: COM</b>											
1	Region 13	3.2	3.2	3.2	7.6	7.6	7.6	73.3	73.3	73.3	1	Region 34	4.0	4.0	4.0	8.5	8.5	8.5	71.2	71.2	71.2		
1	Region 14	3.8	3.8	3.8	8.4	8.4	8.4	73.3	73.3	73.3													
1	Region 25	3.4	3.4	3.4	7.8	7.8	7.8	72.5	72.5	72.5													
1	Region 29	3.8	3.8	3.8	8.6	8.6	8.6	72.3	72.3	72.3													
1	Region 30	3.6	3.6	3.6	8.7	8.7	8.7	70.7	70.7	70.7													
1	Region 32	4.0	4.0	4.0	8.5	8.5	8.5	70.8	70.8	70.8													
<b>6</b>	<b>Ave WM 3</b>	<b>3.6</b>		<b>3.2</b>	<b>8.3</b>		<b>7.6</b>	<b>72.2</b>		<b>70.7</b>	<b>1</b>	<b>Ave COM</b>	<b>4.0</b>		<b>8.5</b>		<b>8.5</b>	<b>71.2</b>		<b>71.2</b>			
	<b>Min WM 3</b>											<b>Min COM</b>											
	<b>Max WM 3</b>			<b>4.0</b>			<b>8.7</b>			<b>73.3</b>		<b>Max COM</b>			<b>4.0</b>		<b>8.5</b>			<b>71.2</b>			
<b>483</b>	<b>Ave White</b>	<b>4.0</b>		<b>3.2</b>	<b>8.6</b>		<b>6.6</b>	<b>71.9</b>		<b>69.9</b>	<b>417</b>	<b>Ave Yellow</b>	<b>3.6</b>		<b>8.4</b>		<b>6.9</b>	<b>72.3</b>		<b>70.0</b>			
	<b>Min White</b>											<b>Min Yellow</b>											
	<b>Max White</b>			<b>4.7</b>			<b>10.9</b>			<b>74.0</b>		<b>Max Yellow</b>			<b>4.8</b>		<b>10.4</b>			<b>75.0</b>			
<b>900</b>	<b>Ave Maize</b>	<b>3.8</b>		<b>2.9</b>	<b>8.5</b>		<b>6.6</b>	<b>72.1</b>		<b>69.9</b>	<b>900</b>	<b>Ave Maize</b>	<b>3.8</b>		<b>8.5</b>		<b>6.6</b>	<b>72.1</b>		<b>69.9</b>			
	<b>Min Maize</b>											<b>Min Maize</b>											
	<b>Max Maize</b>			<b>4.8</b>			<b>10.9</b>			<b>75.0</b>		<b>Max Maize</b>			<b>4.8</b>		<b>10.9</b>			<b>75.0</b>			



**TABLE 13: NUTRITIONAL VALUES OF WHITE AND YELLOW  
MAIZE 2007/2008**

Number of samples	Region	% (db) Fat			% (db) Protein			% (db) Starch		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
<b>WHITE</b>										
5	Region 12	4.0	3.6	4.2	8.5	8.3	8.7	71.3	70.4	73.0
8	Region 13	4.0	3.2	4.2	8.6	7.6	9.3	71.5	70.0	73.3
18	Region 14	3.9	3.6	4.1	8.5	7.7	9.2	72.3	70.4	73.4
2	Region 15	4.1	4.0	4.1	8.8	8.6	8.9	71.6	71.3	71.9
19	Region 16	3.8	3.7	4.1	8.5	7.8	9.2	72.7	71.4	73.6
17	Region 17	4.1	3.9	4.2	9.0	8.4	10.0	71.3	70.1	72.1
19	Region 18	4.1	3.9	4.1	8.6	7.9	9.0	71.8	70.9	72.4
10	Region 19	4.0	3.7	4.2	8.8	8.3	9.1	71.0	70.3	71.9
13	Region 20	3.9	3.7	4.1	8.4	7.4	9.7	72.0	70.6	73.9
19	Region 21	4.0	3.8	4.3	8.9	8.2	10.0	71.8	71.1	72.5
16	Region 22	4.0	3.9	4.3	8.6	8.0	9.0	72.0	71.3	72.6
47	Region 23	4.0	3.7	4.3	8.8	7.3	9.8	72.0	71.2	73.2
45	Region 24	4.0	3.5	4.3	8.9	7.7	9.9	72.0	71.0	73.3
17	Region 25	3.9	3.3	4.2	8.2	7.0	10.0	71.9	69.9	73.6
14	Region 26	4.1	3.5	4.2	8.8	7.8	9.4	71.7	70.8	73.8
1	Region 27	4.0	4.0	4.0	10.5	10.5	10.5	69.9	69.9	69.9
11	Region 28	4.0	3.9	4.1	8.5	7.5	9.1	71.4	70.3	72.0
39	Region 29	3.8	3.4	4.3	8.6	7.6	10.4	72.3	70.5	74.0
48	Region 30	3.9	3.4	4.3	8.5	7.6	9.4	71.9	70.7	73.9
5	Region 31	3.8	3.6	4.0	7.8	7.6	8.3	72.3	71.5	72.9
24	Region 32	4.1	3.8	4.6	8.4	7.6	9.4	71.2	70.4	71.9
29	Region 33	4.0	3.6	4.3	8.2	7.3	9.0	71.7	70.7	73.0
28	Region 34	4.0	3.8	4.3	8.4	6.6	10.0	71.5	70.2	72.0
14	Region 35	4.0	3.6	4.7	8.8	7.5	10.9	72.1	69.9	74.0
15	Region 36	3.9	3.3	4.7	8.5	7.9	9.6	72.2	70.3	73.9
<b>483</b>	<b>Ave white</b>	<b>4.0</b>			<b>8.6</b>			<b>71.9</b>		
	<b>Min white</b>		<b>3.2</b>			<b>6.6</b>			<b>69.9</b>	
	<b>Max white</b>			<b>4.7</b>			<b>10.9</b>			<b>74.0</b>
<b>YELLOW</b>										
25	Region 10	3.3	3.0	3.6	8.1	7.6	8.6	72.7	71.8	74.6
15	Region 11	3.3	2.9	3.5	7.8	7.2	8.5	73.2	72.1	74.0
6	Region 12	3.5	2.9	3.9	8.7	7.8	9.3	72.3	71.1	74.2
4	Region 13	3.9	3.7	4.1	9.3	9.0	9.7	71.1	70.5	71.6
12	Region 14	3.6	3.2	3.9	9.0	8.1	9.8	72.1	70.8	73.8
7	Region 16	3.8	3.6	4.3	9.1	8.8	9.5	72.2	71.4	73.1
10	Region 17	3.9	3.6	4.2	9.2	9.0	9.5	71.4	70.0	72.4
7	Region 18	3.7	3.4	3.9	8.8	8.6	9.1	72.1	71.4	72.6
7	Region 19	3.9	3.6	4.3	9.0	8.2	9.9	71.4	70.0	72.5
8	Region 20	3.5	2.9	3.9	8.2	7.7	8.5	72.6	71.2	74.3
2	Region 21	3.7	3.5	3.8	9.4	8.7	10.0	72.4	71.9	72.9
2	Region 22	3.9	3.4	4.3	9.0	8.6	9.4	72.2	71.5	72.9
8	Region 23	3.8	3.7	4.0	9.3	8.8	10.1	72.2	72.0	72.4
7	Region 24	3.7	3.5	3.9	9.0	8.1	10.0	72.4	71.4	73.3
47	Region 25	3.6	3.0	4.3	8.0	7.2	10.4	72.3	70.1	73.6
24	Region 26	3.9	3.5	4.1	8.8	8.1	9.8	72.0	70.9	73.4

**TABLE 13: NUTRITIONAL VALUES OF WHITE AND YELLOW  
MAIZE 2007/2008 (continue)**

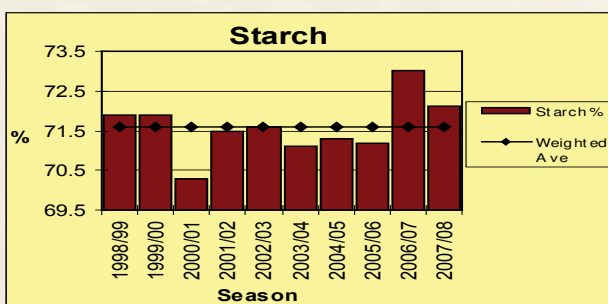
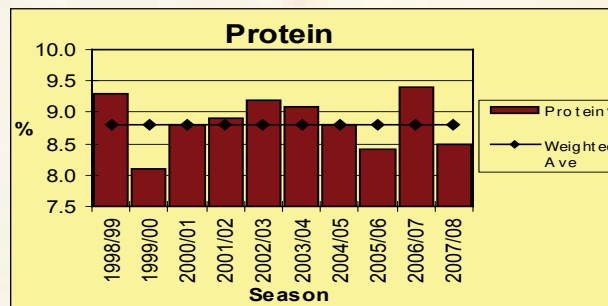
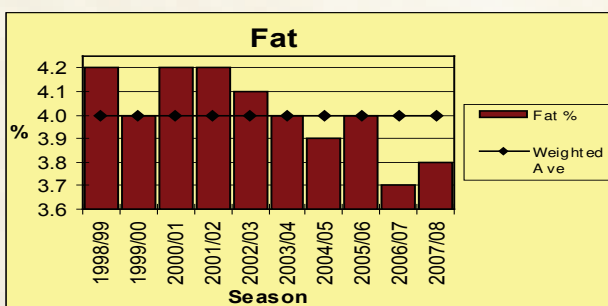
Number of samples	Region	% (db) Fat			% (db) Protein			% (db) Starch		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
<b>YELLOW</b>										
2	Region 27	3.8	3.4	4.2	9.2	8.9	9.4	71.9	71.2	72.5
10	Region 28	3.7	3.5	4.1	8.4	7.5	9.3	72.2	70.9	73.5
50	Region 29	3.6	3.1	4.0	8.5	7.1	10.0	72.2	70.5	74.3
64	Region 30	3.6	3.0	4.1	8.3	7.7	9.2	72.6	71.4	75.0
15	Region 31	3.7	3.2	4.0	8.3	7.6	9.3	72.2	71.3	73.0
19	Region 32	3.8	3.4	4.3	8.6	8.0	9.0	71.7	70.7	72.5
29	Region 33	3.6	3.2	4.2	8.2	7.5	9.1	72.3	70.6	74.2
15	Region 34	3.9	3.5	4.1	8.7	8.2	10.1	71.4	70.5	72.2
13	Region 35	3.7	3.1	4.8	8.0	6.9	10.1	72.5	70.1	73.7
9	Region 36	3.3	3.2	4.1	7.8	7.3	9.1	73.2	71.5	74.0
<b>417</b>	<b>Ave yellow</b>	<b>3.6</b>			<b>8.4</b>			<b>72.3</b>		
	<b>Min yellow</b>		<b>2.9</b>			<b>6.9</b>			<b>70.0</b>	
	<b>Max yellow</b>			<b>4.8</b>			<b>10.4</b>			<b>75.0</b>
<b>WHITE AND YELLOW</b>										
25	Region 10	3.3	3.0	3.6	8.1	7.6	8.6	72.7	71.8	74.6
15	Region 11	3.3	2.9	3.5	7.8	7.2	8.5	73.2	72.1	74.0
11	Region 12	3.7	2.9	4.2	8.6	7.8	9.3	71.8	70.4	74.2
12	Region 13	3.9	3.2	4.2	8.8	7.6	9.7	71.4	70.0	73.3
30	Region 14	3.8	3.2	4.1	8.7	7.7	9.8	72.2	70.4	73.8
2	Region 15	4.1	4.0	4.1	8.8	8.6	8.9	71.6	71.3	71.9
26	Region 16	3.8	3.6	4.3	8.7	7.8	9.5	72.6	71.4	73.6
27	Region 17	4.0	3.6	4.2	9.1	8.4	10.0	71.3	70.0	72.4
26	Region 18	4.0	3.4	4.1	8.7	7.9	9.1	71.9	70.9	72.6
17	Region 19	4.0	3.6	4.3	8.9	8.2	9.9	71.1	70.0	72.5
21	Region 20	3.7	2.9	4.1	8.3	7.4	9.7	72.2	70.6	74.3
21	Region 21	4.0	3.5	4.3	8.9	8.2	10.0	71.9	71.1	72.9
18	Region 22	4.0	3.4	4.3	8.7	8.0	9.4	72.0	71.3	72.9
55	Region 23	4.0	3.7	4.3	8.9	7.3	10.1	72.0	71.2	73.2
52	Region 24	4.0	3.5	4.3	8.9	7.7	10.0	72.1	71.0	73.3
64	Region 25	3.7	3.0	4.3	8.1	7.0	10.4	72.2	69.9	73.6
38	Region 26	3.9	3.5	4.2	8.8	7.8	9.8	71.9	70.8	73.8
3	Region 27	3.9	3.4	4.2	9.6	8.9	10.5	71.2	69.9	72.5
21	Region 28	3.9	3.5	4.1	8.5	7.5	9.3	71.8	70.3	73.5
89	Region 29	3.7	3.1	4.3	8.5	7.1	10.4	72.3	70.5	74.3
112	Region 30	3.7	3.0	4.3	8.4	7.6	9.4	72.3	70.7	75.0
20	Region 31	3.7	3.2	4.0	8.2	7.6	9.3	72.2	71.3	73.0
43	Region 32	3.9	3.4	4.6	8.5	7.6	9.4	71.4	70.4	72.5
58	Region 33	3.8	3.2	4.3	8.2	7.3	9.1	72.0	70.6	74.2
43	Region 34	4.0	3.5	4.3	8.5	6.6	10.1	71.4	70.2	72.2
27	Region 35	3.8	3.1	4.8	8.4	6.9	10.9	72.3	69.9	74.0
24	Region 36	3.7	3.2	4.7	8.3	7.3	9.6	72.6	70.3	74.0
<b>900</b>	<b>Ave white &amp; yellow</b>	<b>3.8</b>			<b>8.5</b>			<b>72.1</b>		
	<b>Min white &amp; yellow</b>		<b>2.9</b>			<b>6.6</b>			<b>69.9</b>	
	<b>Max white &amp; yellow</b>			<b>4.8</b>			<b>10.9</b>			<b>75.0</b>

**TABLE 14: COMPARISON OF THE AVERAGE NUTRITIONAL VALUES BETWEEN WHITE AND YELLOW MAIZE OVER THE PAST TEN SEASONS**

Season	Number of samples	White maize			Number of samples	Yellow maize		
		Fat	Protein	Starch		Fat	Protein	Starch
1998/99	256	4.1	9.2	71.8	189	4.2	9.5	72.1
1999/00	493	4.0	8.1	71.9	407	4.1	8.0	72.0
2000/01	522	4.2	8.8	70.2	378	4.2	8.7	70.5
2001/02	471	4.2	8.9	71.4	429	4.1	8.9	71.7
2002/03	517	4.1	9.2	71.4	383	4.1	9.2	72.0
2003/04	599	4.0	9.1	71.2	301	4.0	9.0	71.1
2004/05	601	4.0	8.9	71.1	399	3.8	8.6	71.7
2005/06	593	4.0	8.5	71.1	307	3.9	8.4	71.5
2006/07	563	3.9	9.3	72.9	337	3.5	9.5	73.3
2007/08	483	4.0	8.6	71.9	417	3.6	8.4	72.3
<b>Weighted averages</b>		4.0	8.9	71.5		3.9	8.8	71.8

**TABLE 15: AVERAGE NUTRITIONAL VALUES OF SOUTH AFRICAN MAIZE (1998/99 - 2007/08)**

Season	Number of samples	Fat %	Protein %	Starch %
1998/99	445	4.2	9.3	71.9
1999/00	900	4.0	8.1	71.9
2000/01	900	4.2	8.8	70.3
2001/02	900	4.2	8.9	71.5
2002/03	900	4.1	9.2	71.6
2003/04	900	4.0	9.1	71.1
2004/05	1000	3.9	8.8	71.3
2005/06	900	4.0	8.4	71.2
2006/07	900	3.7	9.4	73.0
2007/08	900	3.8	8.5	72.1
<b>Weighted averages</b>		4.0	8.8	71.6



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

**TABLE 16: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE 2007/2008**

Number of samples	Region	Hectolitre mass			100 kernel mass (g)			Kernel size (%)						Breakeage susceptibility (%)						Stress cracks (%)			Milling index					
		kg/ht		kernel mass (g)	Above 10 mm sieve		Above 8 mm sieve		Below 8 mm sieve		< 6.3 mm sieve		< 4.75 mm sieve		ave.		min.		max.		ave.		min.		max.			
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.			
<b>GRADE: WM 1</b>																												
5	Region 12	76.9	70.8	79.0	35.3	32.6	36.2	21.1	10.6	30.5	68.2	61.8	76.7	10.7	7.7	13.3	1.9	1.0	2.8	1.3	0.8	1.8	6	1	12	104.0	100.4	106.4
6	Region 13	77.8	76.5	79.6	33.5	31.1	37.9	26.7	18.7	36.5	62.3	54.0	66.7	11.1	6.9	14.6	1.0	0.5	1.7	0.6	0.2	1.1	3	0	8	104.9	101.7	111.1
17	Region 14	79.4	76.3	81.6	34.6	28.8	38.3	28.2	20.7	36.3	63.9	58.5	68.8	7.8	2.1	12.9	0.8	0.2	1.7	0.6	0.1	1.3	3	0	8	102.9	90.8	109.9
2	Region 15	80.0	79.8	80.1	32.9	32.8	32.9	27.0	25.4	28.6	62.7	60.3	65.1	10.3	9.5	11.1	0.8	0.8	0.8	0.6	0.6	0.6	1	0	2	101.0	99.0	102.9
19	Region 16	78.2	74.8	79.9	34.4	25.4	39.3	27.4	14.9	40.0	63.4	55.2	76.2	9.2	4.7	14.5	1.0	0.1	2.0	0.8	0.1	1.8	3	0	12	98.9	87.5	108.0
16	Region 17	78.3	75.3	79.4	34.6	31.8	38.3	25.6	14.6	35.4	64.0	55.0	72.7	10.4	5.2	19.6	1.0	0.3	2.1	0.7	0.3	1.6	3	0	7	100.1	91.9	111.9
19	Region 18	78.6	77.9	79.3	35.6	31.9	38.6	23.0	13.7	34.6	64.3	58.4	70.8	12.7	6.6	18.2	1.0	0.5	2.1	0.8	0.4	1.2	3	0	8	96.6	91.1	106.5
9	Region 19	77.5	70.9	79.6	33.8	31.2	36.1	23.3	13.6	36.5	65.4	59.6	73.6	11.3	3.9	16.7	1.6	0.6	3.9	1.2	0.5	2.6	3	1	9	100.6	93.8	109.2
11	Region 20	77.9	77.2	79.8	35.5	32.9	37.7	25.7	15.2	43.1	64.5	53.0	72.9	9.8	3.9	12.2	1.2	0.3	3.4	0.9	0.3	2.8	3	0	13	95.5	87.7	105.5
18	Region 21	78.5	75.7	79.8	33.6	24.7	36.9	23.3	5.6	32.2	64.4	59.2	73.7	12.4	7.5	24.7	1.1	0.5	2.1	0.8	0.3	1.7	3	0	10	97.0	82.5	109.5
15	Region 22	78.5	75.7	79.6	34.2	31.3	36.7	27.2	11.9	37.3	62.9	55.5	70.2	9.9	6.9	17.9	1.1	0.6	1.9	0.9	0.4	1.4	2	0	6	93.5	82.9	102.0
46	Region 23	79.0	75.9	81.2	34.3	31.5	36.6	26.4	7.8	40.3	63.2	52.7	74.2	10.4	3.9	23.3	0.9	0.1	3.1	0.7	0.1	2.3	3	0	16	97.5	80.2	109.3
45	Region 24	79.1	76.6	80.6	34.2	28.2	38.1	27.6	13.5	48.3	63.4	48.1	72.2	9.0	3.6	16.9	1.2	0.5	5.7	0.9	0.3	4.4	5	0	29	96.4	84.6	111.3
16	Region 25	78.0	76.3	80.2	32.1	26.7	37.3	18.2	2.0	34.9	63.2	49.1	72.1	18.6	6.9	48.5	2.0	0.4	8.0	1.3	0.4	5.1	9	0	44	93.6	81.3	114.6
12	Region 26	77.7	70.2	80.1	33.1	29.8	35.2	16.8	8.5	36.6	68.4	62.5	84.2	14.8	6.1	22.9	1.1	0.3	3.0	0.8	0.3	2.2	3	0	13	99.5	89.2	108.5
1	Region 27	75.0	75.0	75.0	37.3	37.3	37.3	15.2	15.2	15.2	74.6	74.6	74.6	10.2	10.2	10.2	6.5	6.5	6.5	3.6	3.6	3.6	43	43	43	100.1	100.1	100.1
9	Region 28	77.4	74.5	79.0	33.8	31.6	37.1	22.1	14.8	31.9	66.1	60.5	76.5	11.8	7.4	18.0	1.2	0.3	2.7	0.9	0.0	2.2	3	0	5	97.2	86.7	103.3
33	Region 29	78.4	72.0	80.8	35.3	28.1	41.1	26.7	14.5	47.8	63.5	38.8	72.5	9.8	3.6	26.8	1.0	0.1	2.3	0.8	0.0	1.4	2	0	6	100.1	86.7	108.8
41	Region 30	77.6	75.0	80.6	33.9	27.2	39.2	17.6	7.4	35.2	68.2	58.6	79.3	14.3	6.2	29.3	0.9	0.3	2.5	0.7	0.2	1.6	3	0	8	96.6	81.9	111.7
5	Region 31	76.1	71.7	78.8	33.9	30.1	38.6	16.7	4.7	28.5	65.0	60.3	69.3	18.3	8.1	35.0	2.4	0.6	4.2	1.6	0.5	2.4	3	2	5	91.3	80.3	100.3
19	Region 32	78.0	74.8	80.7	36.6	33.0	41.2	28.2	13.7	47.9	63.1	49.0	74.3	8.7	3.0	16.9	1.4	0.2	2.8	1.2	0.2	2.7	4	0	11	102.7	91.0	111.9
26	Region 33	76.9	73.9	78.9	35.3	31.0	39.8	23.8	5.1	42.8	64.1	51.5	72.1	12.1	4.9	33.2	1.6	0.6	4.0	1.1	0.3	2.1	4	0	11	99.0	91.2	107.2
25	Region 34	78.0	75.2	80.3	36.5	31.7	40.6	27.0	11.4	38.2	64.0	54.9	75.3	9.0	4.2	16.6	1.3	0.2	3.4	1.0	0.1	2.5	4	0	13	96.8	83.2	114.9
14	Region 35	79.6	77.1	81.6	34.6	28.6	43.7	18.2	0.4	55.6	59.1	43.4	73.1	22.8	1.0	46.2	0.9	0.2	1.7	0.7	0.0	1.4	2	0	6	103.8	94.1	117.4
15	Region 36	77.9	75.4	79.9	35.0	28.8	39.4	24.1	0.5	44.2	62.1	48.1	71.0	13.8	1.5	51.4	0.9	0.3	1.7	0.6	0.2	1.5	6	0	20	100.8	95.3	106.1
<b>444</b>	<b>Ave WM 1</b>	<b>78.3</b>			<b>34.6</b>			<b>24.3</b>			<b>64.1</b>			<b>11.6</b>			<b>1.2</b>			<b>0.9</b>			<b>4</b>			<b>98.3</b>		
	<b>Min WM 1</b>	<b>70.2</b>			<b>24.7</b>			<b>0.4</b>			<b>38.8</b>			<b>1.0</b>			<b>0.1</b>			<b>0.0</b>			<b>0</b>			<b>80.2</b>		
	<b>Max WM 1</b>	<b>81.6</b>			<b>43.7</b>			<b>55.6</b>			<b>84.2</b>			<b>51.4</b>			<b>8.0</b>			<b>5.1</b>			<b>44</b>			<b>117.4</b>		

**TABLE 16: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE 2007/2008**  
(continue)

Number of samples	Region	Hectolitre mass kg/hl			100 kernel mass (g)			Kernel size (%)						Breakage susceptibility (%)						Stress cracks (%)			Milling index									
		kg/hl		max.	kernel mass (g)		max.	Above 10 mm sieve		Above 8 mm sieve		Below 8 mm sieve		< 6.3 mm sieve		< 4.75 mm sieve		Stress cracks (%)		Milling index												
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.										
<b>GRADE: WM 2</b>																																
1	Region 13	72.6	72.6	72.6	30.2	30.2	30.2	13.1	13.1	13.1	67.5	67.5	67.5	19.4	19.4	19.4	9.7	9.7	9.7	7.3	7.3	7.3	4	4	4	85.3	85.3	85.3				
1	Region 17	78.3	78.3	78.3	33.0	33.0	33.0	32.6	32.6	32.6	57.3	57.3	57.3	10.1	10.1	10.1	2.4	2.4	2.4	2.0	2.0	2.0	1	1	1	105.5	105.5	105.5				
1	Region 19	77.2	77.2	77.2	39.9	39.9	39.9	37.7	37.7	37.7	58.1	58.1	58.1	4.2	4.2	4.2	4.1	4.1	4.1	2.9	2.9	2.9	5	5	5	111.1	111.1	111.1				
2	Region 20	78.0	77.0	79.0	34.2	32.2	36.2	27.9	19.5	36.2	61.5	59.6	63.3	10.7	4.2	17.2	2.3	1.6	3.0	1.8	1.4	2.2	1	0	1	98.5	92.3	104.6				
1	Region 21	78.5	78.5	78.5	33.4	33.4	33.4	26.6	26.6	26.6	61.6	61.6	61.6	11.8	11.8	11.8	1.2	1.2	1.2	0.8	0.8	0.8	2	2	2	91.6	91.6	91.6				
1	Region 22	76.3	76.3	76.3	28.6	28.6	28.6	18.3	18.3	18.3	62.3	62.3	62.3	19.4	19.4	19.4	3.0	3.0	3.0	2.6	2.6	2.6	2	2	2	85.5	85.5	85.5				
1	Region 23	79.5	79.5	79.5	34.6	34.6	34.6	29.4	29.4	29.4	63.0	63.0	63.0	7.6	7.6	7.6	0.6	0.6	0.6	0.3	0.3	0.3	3	3	3	95.6	95.6	95.6				
2	Region 26	78.1	77.2	78.9	28.8	24.7	32.9	12.9	0.5	25.3	42.9	23.3	62.4	44.3	12.3	76.2	1.8	1.5	2.0	1.0	0.6	1.3	2	1	2	99.0	95.0	102.9				
2	Region 28	76.7	76.3	77.0	32.7	31.7	33.6	27.3	25.4	29.1	62.7	61.7	63.7	10.1	7.2	12.9	1.5	1.0	2.0	1.0	0.6	1.4	2	1	2	95.1	92.7	97.4				
5	Region 29	77.8	76.7	79.6	36.4	32.6	44.7	36.4	25.8	69.7	56.5	28.9	64.4	7.1	1.4	11.3	1.3	0.7	2.0	1.0	0.6	1.2	7	1	32	102.6	93.9	115.4				
6	Region 30	77.8	75.9	80.1	33.5	30.0	38.1	20.6	17.5	26.8	65.6	62.1	68.0	13.8	5.7	18.4	2.1	1.5	2.8	1.4	0.9	1.9	1	0	3	92.0	82.4	101.3				
4	Region 32	78.2	77.6	78.8	38.0	37.8	38.2	29.0	27.5	31.3	62.7	61.0	65.2	8.4	5.9	10.9	1.9	0.6	3.1	1.3	0.6	1.8	5	4	7	106.9	100.0	114.3				
3	Region 33	76.0	75.4	76.7	34.7	33.0	37.6	26.9	20.6	35.1	63.4	60.7	67.3	9.7	4.2	12.8	2.3	1.1	3.7	1.4	0.7	2.2	7	0	11	98.4	93.1	105.0				
3	Region 34	79.6	79.3	79.7	38.7	34.3	45.6	39.1	23.3	57.1	54.7	41.3	63.8	6.1	1.6	12.9	1.7	1.2	2.0	1.3	1.0	1.6	11	9	13	109.8	107.3	113.7				
<b>33</b>	<b>Ave WM 2</b>	<b>77.7</b>			<b>34.7</b>			<b>27.7</b>	<b>0.5</b>	<b>69.7</b>	<b>60.2</b>	<b>23.3</b>	<b>68.0</b>	<b>12.2</b>	<b>1.4</b>	<b>76.2</b>	<b>2.1</b>	<b>0.6</b>	<b>9.7</b>	<b>1.5</b>	<b>0.3</b>	<b>7.3</b>	<b>4</b>	<b>0</b>	<b>32</b>	<b>99.3</b>		<b>82.4</b>	<b>115.4</b>			
	<b>Min WM 2</b>		<b>72.6</b>			<b>24.7</b>																										
	<b>Max WM 2</b>			<b>80.1</b>		<b>45.6</b>																										
<b>GRADE: WM 3</b>																																
1	Region 13	73.1	73.1	73.1	31.7	31.7	31.7	28.8	28.8	28.8	62.9	62.9	62.9	8.3	8.3	8.3	4.0	4.0	4.0	1.0	1.0	1.0	3	3	3	94.4	94.4	94.4				
1	Region 14	65.3	65.3	65.3	17.0	17.0	17.0	1.0	1.0	1.0	34.8	34.8	34.8	64.2	64.2	64.2	4.7	4.7	4.7	1.6	1.6	1.6	1	1	1	63.5	63.5	63.5				
1	Region 25	75.8	75.8	75.8	36.3	36.3	36.3	40.6	40.6	40.6	51.4	51.4	51.4	8.0	8.0	8.0	1.1	1.1	1.1	0.9	0.9	0.9	2	2	2	76.0	76.0	76.0				
1	Region 29	74.3	74.3	74.3	28.9	28.9	28.9	16.0	16.0	16.0	71.0	71.0	71.0	13.0	13.0	13.0	3.1	3.1	3.1	2.5	2.5	2.5	4	4	4	86.3	86.3	86.3				
1	Region 30	77.2	77.2	77.2	34.6	34.6	34.6	28.1	28.1	28.1	62.1	62.1	62.1	9.8	9.8	9.8	1.7	1.7	1.7	1.3	1.3	1.3	2	2	2	87.4	87.4	87.4				
1	Region 32	76.5	76.5	76.5	34.6	34.6	34.6	19.3	19.3	19.3	69.1	69.1	69.1	11.6	11.6	11.6	3.7	3.7	3.7	3.0	3.0	3.0	5	5	5	95.3	95.3	95.3				
<b>6</b>	<b>Ave WM 3</b>	<b>73.7</b>			<b>30.5</b>			<b>22.3</b>	<b>1.0</b>	<b>40.6</b>	<b>58.6</b>	<b>34.8</b>	<b>71.0</b>	<b>19.2</b>	<b>8.0</b>	<b>64.2</b>	<b>3.1</b>	<b>1.1</b>	<b>4.7</b>	<b>1.7</b>	<b>0.9</b>	<b>3.0</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>83.8</b>		<b>63.5</b>	<b>95.3</b>			
	<b>Min WM 3</b>		<b>65.3</b>			<b>17.0</b>																										
	<b>Max WM 3</b>			<b>77.2</b>		<b>36.3</b>																										
<b>483</b>	<b>Ave white maize</b>	<b>78.2</b>			<b>34.5</b>			<b>24.5</b>	<b>0.4</b>	<b>69.7</b>	<b>63.8</b>	<b>23.3</b>	<b>84.2</b>	<b>11.7</b>	<b>1.0</b>	<b>76.2</b>	<b>1.2</b>	<b>0.1</b>	<b>9.7</b>	<b>0.9</b>	<b>0.0</b>	<b>7.3</b>	<b>4</b>	<b>0</b>	<b>44</b>	<b>98.2</b>		<b>63.5</b>	<b>117.4</b>			
	<b>Min white maize</b>		<b>65.3</b>		<b>17.0</b>																											
	<b>Max white maize</b>			<b>81.6</b>		<b>45.6</b>																										
<b>900</b>	<b>Ave maize</b>	<b>77.5</b>			<b>33.5</b>			<b>20.2</b>	<b>0.3</b>	<b>69.7</b>	<b>64.8</b>	<b>23.3</b>	<b>84.2</b>	<b>15.0</b>	<b>1.0</b>	<b>76.2</b>	<b>1.5</b>	<b>0.1</b>	<b>15.2</b>	<b>1.1</b>	<b>0.0</b>	<b>8.3</b>	<b>4</b>	<b>0</b>	<b>58</b>	<b>96.9</b>		<b>63.5</b>	<b>118.5</b>			
	<b>Min maize</b>		<b>65.3</b>		<b>17.0</b>																											
	<b>Max maize</b>			<b>81.6</b>		<b>45.6</b>																										

**TABLE 16: PHYSICAL QUALITY FACTORS OF WHITE MAIZE 2007/2008**

Number of samples	Region	Hectolitre mass		100 kernel mass (g)		Kernel size (%)						Breakage susceptibility (%)						Stress cracks (%)			Milling index							
		ave.	min.	max.	ave.	min.	max.	Above 10 mm sieve		Above 8 mm sieve		Below 8 mm sieve		< 6.3 mm sieve		< 4.75 mm sieve		ave.	min.	max.	ave.	min.	max.					
								ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.							min.	max.			
<b>WHITE</b>																												
5	Region 12	76.9	70.8	79.0	35.3	32.6	36.2	21.1	10.6	30.5	68.2	61.8	76.7	10.7	7.7	13.3	1.9	1.0	2.8	1.3	0.8	1.8	6	1	12	104.0	100.4	106.4
8	Region 13	76.5	72.6	79.6	32.8	30.2	37.9	25.2	13.1	36.5	63.0	54.0	67.5	11.8	6.9	19.4	2.5	0.5	9.7	1.5	0.2	7.3	3	0	8	101.1	85.3	111.1
18	Region 14	78.6	65.3	81.6	33.7	17.0	38.3	26.7	1.0	36.3	62.3	34.8	68.8	11.0	2.1	64.2	1.0	0.2	4.7	0.7	0.1	1.6	3	0	8	100.7	63.5	109.9
2	Region 15	80.0	79.8	80.1	32.9	32.8	32.9	27.0	25.4	28.6	62.7	60.3	65.1	10.3	9.5	11.1	0.8	0.8	0.8	0.6	0.6	0.6	1	0	2	101.0	99.0	102.9
19	Region 16	78.2	74.8	79.9	34.4	25.4	39.3	27.4	14.9	40.0	63.4	55.2	76.2	9.2	4.7	14.5	1.0	0.1	2.0	0.8	0.1	1.8	3	0	12	98.9	87.5	108.0
17	Region 17	78.3	75.3	79.4	34.5	31.8	38.3	26.0	14.6	35.4	63.6	55.0	72.7	10.4	5.2	19.6	1.1	0.3	2.4	0.8	0.3	2.0	3	0	7	100.4	91.9	111.9
19	Region 18	78.6	77.9	79.3	35.6	31.9	38.6	23.0	13.7	34.6	64.3	58.4	70.8	12.7	6.6	18.2	1.0	0.5	2.1	0.8	0.4	1.2	3	0	8	96.6	91.1	106.5
10	Region 19	77.5	70.9	79.6	34.4	31.2	39.9	24.7	13.6	37.7	64.7	58.1	73.6	10.6	3.9	16.7	1.8	0.6	4.1	1.4	0.5	2.9	4	1	9	101.6	93.8	111.1
13	Region 20	78.0	77.0	79.8	35.3	32.2	37.7	26.0	15.2	43.1	64.0	53.0	72.9	10.0	3.9	17.2	1.3	0.3	3.4	1.0	0.3	2.8	3	0	13	96.0	87.7	105.5
19	Region 21	78.5	75.7	79.8	33.6	24.7	36.9	23.5	5.6	32.2	64.2	59.2	73.7	12.3	7.5	24.7	1.1	0.5	2.1	0.8	0.3	1.7	3	0	10	96.7	82.5	109.5
16	Region 22	78.4	75.7	79.6	33.8	28.6	36.7	26.6	11.9	37.3	62.9	55.5	70.2	10.5	6.9	19.4	1.3	0.6	3.0	1.0	0.4	2.6	2	0	6	93.0	82.9	102.0
47	Region 23	79.0	75.9	81.2	34.3	31.5	36.6	26.5	7.8	40.3	63.2	52.7	74.2	10.4	3.9	23.3	0.9	0.1	3.1	0.7	0.1	2.3	3	0	16	97.5	80.2	109.3
45	Region 24	79.1	76.6	80.6	34.2	28.2	38.1	27.6	13.5	48.3	63.4	48.1	72.2	9.0	3.6	16.9	1.2	0.5	5.7	0.9	0.3	4.4	5	0	29	96.4	84.6	111.3
17	Region 25	77.8	75.8	80.2	32.4	26.7	37.3	19.6	2.0	40.6	62.5	49.1	72.1	17.9	6.9	48.5	1.9	0.4	8.0	1.2	0.4	5.1	9	0	44	92.5	76.0	114.6
14	Region 26	77.8	70.2	80.1	32.5	24.7	35.2	16.3	0.5	26.6	64.8	23.3	84.2	19.0	6.1	76.2	1.2	0.3	3.0	0.8	0.3	2.2	3	0	13	99.5	89.2	108.5
1	Region 27	75.0	75.0	75.0	37.3	37.3	37.3	15.2	15.2	15.2	74.6	74.6	74.6	10.2	10.2	10.2	6.5	6.5	6.5	3.6	3.6	3.6	43	43	43	100.1	100.1	100.1
11	Region 28	77.2	74.5	79.0	33.6	31.6	37.1	23.0	14.8	31.9	65.5	60.5	76.5	11.5	7.2	18.0	1.3	0.3	2.7	0.9	0.0	2.2	3	0	5	96.8	86.7	103.3
39	Region 29	78.2	72.0	80.8	35.3	28.1	44.7	27.7	14.5	69.7	62.8	28.9	72.5	9.5	1.4	26.8	1.1	0.1	3.1	0.8	0.0	2.5	3	0	32	100.1	86.3	115.4
48	Region 30	77.6	75.0	80.6	33.9	27.2	39.2	18.2	7.4	35.2	67.7	58.6	79.3	14.1	5.7	29.3	1.1	0.3	2.8	0.8	0.2	1.9	3	0	8	95.9	81.9	111.7
5	Region 31	76.1	71.7	78.8	33.9	30.1	38.6	16.7	4.7	28.5	65.0	60.3	69.3	18.3	8.1	35.0	2.4	0.6	4.2	1.6	0.5	2.4	3	2	5	91.3	80.3	100.3
24	Region 32	78.0	74.8	80.7	36.8	33.0	41.2	28.0	13.7	47.9	63.3	49.0	74.3	8.7	3.0	16.9	1.6	0.2	3.7	1.3	0.2	3.0	4	0	11	103.1	91.0	114.3
29	Region 33	76.8	73.9	78.9	35.3	31.0	39.8	24.1	5.1	42.8	64.0	51.5	72.1	11.8	4.2	33.2	1.6	0.6	4.0	1.1	0.3	2.2	4	0	11	98.9	91.2	107.2
28	Region 34	78.2	75.2	80.3	36.7	31.7	45.6	28.3	11.4	57.1	63.0	41.3	75.3	8.7	1.6	16.6	1.4	0.2	3.4	1.0	0.1	2.5	5	0	13	98.2	83.2	114.9
14	Region 35	79.6	77.1	81.6	34.6	28.6	43.7	18.2	0.4	55.6	59.1	43.4	73.1	22.8	1.0	46.2	0.9	0.2	1.7	0.7	0.0	1.4	2	0	6	103.8	94.1	117.4
15	Region 36	77.9	75.4	79.9	35.0	28.8	39.4	24.1	0.5	44.2	62.1	48.1	71.0	13.8	1.5	51.4	0.9	0.3	1.7	0.6	0.2	1.5	6	0	20	100.8	95.3	106.1
483	Ave white	78.2			34.5			24.5			63.8			11.7		76.2	1.2			0.9			4			98.2		
	Min white	65.3			17.0			0.4			23.3			1.0		0.1	9.7	0.1		0.0			0			63.5		
	Max white	81.6			45.6			69.7			84.2			76.2		7.3							44			117.4		

**TABLE 17: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE 2007/2008**

Number of samples	Region	Hectolitre mass			100 kernel mass (g)			Kernel size (%)						Breakage susceptibility (%)						Stress cracks (%)			Milling index					
		kg/hl			kernel mass (g)			Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.3 mm sieve			< 4.75 mm sieve			ave. min. max.			ave. min. max.		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
<b>GRADE: YM 1</b>																												
25	Region 10	76.8	74.4	78.3	34.6	29.1	37.0	5.0	2.4	7.5	70.3	56.3	77.6	24.7	18.5	41.3	1.4	0.4	2.5	1.0	0.3	1.7	4	0	12	91.5	76.6	103.7
14	Region 11	77.6	75.5	79.3	32.9	29.2	36.6	4.5	1.2	9.1	67.8	56.5	75.3	27.7	15.6	38.5	1.9	1.2	2.7	1.4	0.6	2.3	4	0	11	84.7	76.6	100.9
6	Region 12	77.6	76.5	79.0	35.3	30.0	42.9	14.5	5.9	21.8	69.6	66.3	74.5	15.9	6.9	24.1	1.5	0.4	2.6	1.1	0.4	1.7	6	1	23	100.8	90.5	109.0
4	Region 13	77.0	75.4	77.9	31.6	30.5	32.6	14.9	8.4	20.5	68.8	62.1	71.6	16.3	11.8	20.1	2.2	1.7	3.2	1.6	1.2	2.5	2	0	3	103.9	99.7	108.4
12	Region 14	77.5	73.9	78.9	31.8	26.2	36.9	19.5	2.2	46.7	66.0	48.6	71.7	14.5	4.7	32.6	1.7	0.4	4.8	1.2	0.3	3.3	3	1	8	102.1	91.7	113.4
6	Region 16	77.2	75.4	78.9	33.0	30.4	35.1	18.4	15.3	23.0	70.1	61.9	75.7	11.6	7.8	15.1	1.5	0.8	2.1	1.0	0.7	1.6	7	2	13	100.5	94.9	103.7
10	Region 17	76.9	75.0	77.9	33.0	29.9	37.1	18.0	8.0	33.9	67.7	56.0	73.6	14.3	7.6	20.2	1.4	0.4	2.8	0.9	0.4	1.6	4	2	9	100.3	89.2	107.2
7	Region 18	77.7	77.0	78.1	32.1	26.9	35.0	20.9	5.0	40.3	62.6	53.4	72.1	16.5	6.3	38.6	1.3	0.5	2.3	0.9	0.5	1.4	3	0	6	98.2	94.9	104.5
7	Region 19	76.8	75.4	77.9	31.5	28.3	35.5	16.8	10.9	22.2	68.7	63.5	72.6	14.5	10.2	24.0	1.3	0.5	2.6	0.9	0.4	1.7	4	3	6	102.4	93.1	109.6
8	Region 20	76.3	74.4	77.9	31.9	30.1	34.0	13.6	5.6	32.4	65.4	56.9	69.7	21.0	10.7	29.0	2.2	1.1	3.4	1.6	0.6	2.4	4	1	7	91.1	69.7	101.6
2	Region 21	76.9	76.3	77.5	29.6	28.6	30.5	10.8	7.3	14.3	65.4	63.9	66.9	23.8	18.8	28.8	1.4	0.7	2.1	0.7	0.5	1.0	3	1	4	92.9	89.9	95.8
2	Region 22	76.2	74.4	78.0	32.5	31.6	33.4	25.1	19.2	30.9	63.2	60.2	66.1	11.8	8.9	14.7	1.2	0.9	1.5	1.0	0.9	1.1	2	1	3	92.8	83.1	102.5
7	Region 23	76.6	75.7	78.1	32.0	29.2	33.7	13.7	10.8	18.4	70.8	67.7	76.0	15.5	11.5	20.0	1.5	0.7	2.1	1.3	0.4	1.9	4	1	14	97.2	92.2	99.6
7	Region 24	77.4	76.5	78.4	33.4	29.5	36.2	16.1	4.8	24.5	67.9	65.1	74.0	16.0	7.0	22.9	1.2	0.8	1.7	0.8	0.3	1.2	2	0	5	93.7	80.9	100.8
41	Region 25	75.2	69.3	78.5	30.9	26.0	33.8	9.7	0.3	29.5	65.8	39.6	75.9	24.5	7.7	60.1	3.2	1.0	11.1	2.2	0.5	7.9	11	0	40	89.4	68.7	104.2
23	Region 26	77.2	73.2	79.4	31.6	29.2	34.2	15.6	5.1	24.9	66.9	61.5	75.6	17.5	8.3	30.2	1.4	0.3	2.4	1.1	0.2	1.8	4	0	7	99.5	91.7	110.3
2	Region 27	77.3	77.1	77.4	32.3	31.8	32.7	13.5	5.6	21.4	68.0	64.6	71.4	18.5	14.0	23.0	4.2	0.4	8.0	2.4	0.2	4.5	24	13	34	93.3	86.9	99.6
9	Region 28	76.8	74.8	78.4	31.5	28.1	34.9	16.1	3.7	27.5	66.3	61.2	72.2	17.6	9.2	35.1	1.7	0.3	2.7	1.1	0.3	1.8	4	1	12	95.0	78.4	103.7
47	Region 29	77.5	73.9	79.8	31.8	26.8	37.6	16.8	4.3	43.5	65.3	53.2	75.8	17.8	3.3	32.6	1.4	0.3	3.6	1.0	0.1	2.5	5	0	32	96.9	78.0	110.4
63	Region 30	77.2	74.0	79.9	32.0	25.7	37.6	15.9	2.4	30.8	64.6	44.8	73.6	19.5	8.3	47.6	1.5	0.5	3.5	1.0	0.3	2.0	4	0	13	96.1	81.1	107.0
14	Region 31	76.7	75.7	77.9	32.6	28.6	37.3	19.8	7.5	40.4	64.4	54.8	72.2	15.7	4.8	28.3	2.0	1.1	4.2	1.2	0.7	2.1	6	2	19	99.9	83.2	110.8
17	Region 32	77.7	76.1	79.3	34.7	30.6	38.2	26.3	16.9	42.9	63.2	54.2	73.5	10.5	2.9	15.8	1.9	0.5	2.8	1.4	0.3	2.4	6	1	12	105.3	94.4	118.5
24	Region 33	75.7	73.1	77.5	32.3	26.0	36.9	17.1	6.4	27.5	65.3	56.0	75.0	17.7	8.6	29.0	2.4	0.6	4.4	1.7	0.4	3.5	5	2	15	93.5	78.0	106.8
11	Region 34	77.9	74.4	79.4	34.7	26.7	38.0	22.2	6.2	41.1	64.1	53.3	76.9	13.6	5.6	29.4	1.6	1.0	2.8	1.2	0.6	2.1	5	0	9	105.9	87.4	118.3
12	Region 35	76.1	74.1	79.2	33.3	32.2	34.8	12.7	5.3	28.6	70.1	58.7	78.6	17.2	8.8	23.9	1.2	0.5	1.9	0.9	0.5	1.6	4	0	10	83.3	63.6	108.5
9	Region 36	76.4	75.6	77.8	33.9	29.5	40.2	11.1	1.8	27.0	67.1	62.9	70.1	21.8	8.5	33.0	1.0	0.4	1.5	0.7	0.2	1.2	4	2	11	85.2	79.3	103.1
389	Ave YM 1	76.8			32.4			15.1			66.2			18.7			1.8			1.2			5			95.5		
	Min YM 1	69.3			25.7			0.3			39.6			2.9			0.3			0.1			0			63.5		
	Max YM 1	79.9			42.9			46.7			78.6			60.1			11.1			7.9			40			118.5		

**TABLE 17: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE 2007/2008**  
(continue)

Number of samples	Region	Hectolitre mass kg/hl			100 kernel mass (g)			Kernel size (%)						Breakage susceptibility (%)						Stress cracks (%)			Milling index					
		ave.	min.	max.	ave.	min.	max.	Above 10 mm sieve ave.	min.	max.	Above 8 mm sieve ave.	min.	max.	Below 8 mm sieve ave.	min.	max.	< 6.3 mm sieve ave.	min.	max.	< 4.75 mm sieve ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
<b>GRADE: YM 2</b>																												
1	Region 11	75.9	75.9	75.9	30.0	30.0	30.0	5.9	5.9	5.9	70.7	70.7	70.7	23.4	23.4	23.4	2.7	2.7	2.7	1.8	1.8	1.8	9	9	9	82.5	82.5	85.2
1	Region 16	77.1	77.1	77.1	32.4	32.4	32.4	20.7	20.7	20.7	66.7	66.7	66.7	12.6	12.6	12.6	0.9	0.9	0.9	0.6	0.6	0.6	4	4	4	96.2	96.2	96.2
1	Region 23	79.4	79.4	79.4	35.8	35.8	35.8	27.7	27.7	27.7	66.5	66.5	66.5	5.8	5.8	5.8	1.5	1.5	1.5	1.2	1.2	1.2	2	2	2	109.0	109.0	109.0
6	Region 25	73.8	69.9	76.6	30.4	26.9	32.9	12.6	0.8	22.2	63.0	47.7	71.1	24.4	10.7	51.5	3.0	2.0	4.5	2.6	1.8	3.6	4	1	8	85.1	73.2	93.3
1	Region 26	74.9	74.9	74.9	26.5	26.5	26.5	1.8	1.8	1.8	44.5	44.5	44.5	53.7	53.7	53.7	2.0	2.0	2.0	1.5	1.5	1.5	3	3	3	86.0	86.0	86.0
1	Region 28	75.2	75.2	75.2	27.7	27.7	27.7	6.8	6.8	6.8	56.9	56.9	56.9	36.3	36.3	36.3	0.8	0.8	0.8	0.8	0.8	0.8	1	1	1	81.8	81.8	81.8
3	Region 29	74.3	71.1	76.7	30.5	24.4	34.4	13.9	3.7	23.4	67.5	64.8	71.5	18.6	11.8	30.1	4.3	1.1	10.2	2.9	0.9	6.6	13	0	38	85.5	67.0	95.7
1	Region 30	76.3	76.3	76.3	30.6	30.6	30.6	4.7	4.7	4.7	60.4	60.4	60.4	34.9	34.9	34.9	2.6	2.6	2.6	1.3	1.3	1.3	4	4	4	94.9	94.9	94.9
1	Region 31	74.4	74.4	74.4	25.6	25.6	25.6	14.1	14.1	14.1	60.5	60.5	60.5	25.4	25.4	25.4	4.5	4.5	4.5	2.5	2.5	2.5	1	1	1	93.1	93.1	93.1
2	Region 32	76.2	75.6	76.8	33.2	30.8	35.6	13.1	9.4	16.8	66.1	64.6	67.5	20.9	15.7	26.0	2.6	2.4	2.7	2.1	2.0	2.2	10	7	13	92.7	88.6	96.7
5	Region 33	73.8	70.9	75.9	35.6	31.7	41.2	25.9	13.7	50.9	65.3	45.6	73.5	8.8	2.8	16.8	7.2	1.5	15.2	4.1	1.2	8.3	19	5	58	106.1	98.1	113.6
3	Region 34	77.5	76.3	78.7	33.5	31.0	35.9	21.9	17.2	30.1	62.6	61.4	63.3	15.5	8.5	19.8	2.1	0.8	3.0	1.4	0.6	1.9	7	5	8	102.7	96.9	108.5
1	Region 35	72.6	72.6	72.6	26.1	26.1	26.1	5.9	5.9	5.9	54.6	54.6	54.6	39.5	39.5	39.5	4.2	4.2	4.2	3.6	3.6	3.6	3	3	3	67.3	67.3	67.3
27	<b>Ave YM 2</b>	<b>75.0</b>			<b>31.6</b>			<b>15.8</b>	<b>0.8</b>		<b>63.2</b>			<b>21.0</b>			<b>3.6</b>			<b>2.5</b>			<b>8</b>			<b>92.7</b>		
	<b>Min YM 2</b>	<b>69.9</b>			<b>24.4</b>					<b>50.9</b>	<b>44.5</b>			<b>2.8</b>			<b>0.8</b>			<b>0.6</b>			<b>0</b>			<b>67.0</b>		
	<b>Max YM 2</b>	<b>79.4</b>			<b>41.2</b>						<b>73.5</b>			<b>53.7</b>			<b>15.2</b>			<b>8.3</b>			<b>58</b>			<b>113.6</b>		
<b>GRADE: COM</b>																												
1	Region 34	78.4	78.4	78.4	39.1	39.1	39.1	32.1	32.1	32.1	60.0	60.0	60.0	7.9	7.9	7.9	0.6	0.6	0.6	0.5	0.5	0.5	2	2	2	109.4	109.4	109.4
	<b>Ave COM</b>	<b>78.4</b>			<b>39.1</b>			<b>32.1</b>			<b>60.0</b>			<b>7.9</b>			<b>0.6</b>			<b>0.5</b>			<b>2</b>			<b>109.4</b>		
	<b>Min COM</b>	<b>78.4</b>			<b>39.1</b>			<b>32.1</b>			<b>60.0</b>			<b>7.9</b>			<b>0.6</b>			<b>0.5</b>			<b>2</b>			<b>109.4</b>		
	<b>Max COM</b>	<b>78.4</b>			<b>39.1</b>			<b>32.1</b>			<b>60.0</b>			<b>7.9</b>			<b>0.6</b>			<b>0.5</b>			<b>2</b>			<b>109.4</b>		
417	<b>Ave yellow maize</b>	<b>76.7</b>			<b>32.4</b>			<b>15.2</b>	<b>0.3</b>		<b>66.0</b>			<b>18.8</b>			<b>1.9</b>			<b>1.3</b>			<b>5</b>			<b>95.3</b>		
	<b>Min yellow maize</b>	<b>69.3</b>			<b>24.4</b>					<b>50.9</b>	<b>39.6</b>			<b>2.8</b>			<b>0.3</b>			<b>0.1</b>			<b>0</b>			<b>63.6</b>		
	<b>Max yellow maize</b>	<b>79.9</b>			<b>42.9</b>						<b>78.6</b>			<b>60.1</b>			<b>15.2</b>			<b>8.3</b>			<b>58</b>			<b>118.5</b>		
900	<b>Ave maize</b>	<b>77.5</b>			<b>33.5</b>			<b>20.2</b>	<b>0.3</b>		<b>64.8</b>			<b>15.0</b>			<b>1.5</b>			<b>1.1</b>			<b>4</b>			<b>96.9</b>		
	<b>Min maize</b>	<b>65.3</b>			<b>17.0</b>					<b>69.7</b>	<b>23.3</b>			<b>1.0</b>			<b>0.1</b>			<b>0.0</b>			<b>0</b>			<b>63.5</b>		
	<b>Max maize</b>	<b>81.6</b>			<b>45.6</b>						<b>84.2</b>			<b>76.2</b>			<b>15.2</b>			<b>8.3</b>			<b>58</b>			<b>118.5</b>		



**TABLE 17: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE 2007/2008**

Number of samples	Region	Hectolitre mass			100 kernel mass (g)			Kernel size (%)						Breakage susceptibility (%)						Stress cracks (%)			Milling index						
		kg/ht		kernel mass (g)	kernel mass (g)		Above 10 mm sieve		Above 8 mm sieve		Below 8 mm sieve		< 6.3 mm sieve		< 4.75 mm sieve		ave.		min.		max.		ave.		min.		max.		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	
<b>YELLOW</b>																													
25	Region 10	76.8	74.4	78.3	34.6	29.1	37.0	5.0	2.4	7.5	70.3	56.3	77.6	24.7	18.5	41.3	1.4	0.4	2.5	1.0	0.3	1.7	4	0	12	91.5	76.6	103.7	
15	Region 11	77.5	75.5	79.3	32.7	29.2	36.6	4.6	1.2	9.1	68.0	56.5	75.3	27.4	15.6	38.5	1.9	1.2	2.7	1.4	0.6	2.3	5	0	11	84.5	76.6	100.9	
6	Region 12	77.6	76.5	79.0	35.3	30.0	42.9	14.5	5.9	21.8	69.6	66.3	74.5	15.9	6.9	24.1	1.5	0.4	2.6	1.1	0.4	1.7	6	1	23	100.8	90.5	109.0	
4	Region 13	77.0	75.4	77.9	31.6	30.5	32.6	14.9	8.4	20.5	68.8	62.1	71.6	16.3	11.8	20.1	2.2	1.7	3.2	1.6	1.2	2.5	2	0	3	103.9	99.7	108.4	
12	Region 14	77.5	73.9	78.9	31.8	26.2	36.9	19.5	2.2	46.7	66.0	48.6	71.7	14.5	4.7	32.6	1.7	0.4	4.8	1.2	0.3	3.3	3	1	8	102.1	91.7	113.4	
7	Region 16	77.2	75.4	78.9	32.9	30.4	35.1	18.7	15.3	23.0	69.6	61.9	75.7	11.7	7.8	15.1	1.4	0.8	2.1	1.0	0.6	1.6	6	2	13	99.9	94.9	103.7	
10	Region 17	76.9	75.0	77.9	33.0	29.9	37.1	18.0	8.0	33.9	67.7	56.0	73.6	14.3	7.6	20.2	1.4	0.4	2.8	0.9	0.4	1.6	4	2	9	100.3	89.2	107.2	
7	Region 18	77.7	77.0	78.1	32.1	26.9	35.0	20.9	5.0	40.3	62.6	53.4	72.1	16.5	6.3	38.6	1.3	0.5	2.3	0.9	0.5	1.4	3	0	6	98.2	94.9	104.5	
7	Region 19	76.8	75.4	77.9	31.5	28.3	35.5	16.8	10.9	22.2	68.7	63.5	72.6	14.5	10.2	24.0	1.3	0.5	2.6	0.9	0.4	1.7	4	3	6	102.4	93.1	109.6	
8	Region 20	76.3	74.4	77.9	31.9	30.1	34.0	13.6	5.6	32.4	65.4	56.9	69.7	21.0	10.7	29.0	2.2	1.1	3.4	1.6	0.6	2.4	4	1	7	91.1	69.7	101.6	
2	Region 21	76.9	76.3	77.5	29.6	28.6	30.5	10.8	7.3	14.3	65.4	63.9	66.9	23.8	18.8	28.8	1.4	0.7	2.1	0.7	0.5	1.0	3	1	4	92.9	89.9	95.8	
2	Region 22	76.2	74.4	78.0	32.5	31.6	33.4	25.1	19.2	30.9	63.2	60.2	66.1	11.8	8.9	14.7	1.2	0.9	1.5	1.0	0.9	1.1	2	1	3	92.8	83.1	102.5	
8	Region 23	76.9	75.7	79.4	32.4	29.2	35.8	15.4	10.8	27.7	70.2	66.5	76.0	14.3	5.8	20.0	1.5	0.7	2.1	1.3	0.4	1.9	4	1	14	98.7	92.2	109.0	
7	Region 24	77.4	76.5	78.4	33.4	29.5	36.2	16.1	4.8	24.5	67.9	65.1	74.0	16.0	7.0	22.9	1.2	0.8	1.7	0.8	0.3	1.2	2	0	5	93.7	80.9	100.8	
47	Region 25	75.0	69.3	78.5	30.8	26.0	33.8	10.1	0.3	29.5	65.4	39.6	75.9	24.5	7.7	60.1	3.2	1.0	11.1	2.3	0.5	7.9	10	0	40	88.8	68.7	104.2	
24	Region 26	77.1	73.2	79.4	31.4	26.5	34.2	15.0	1.8	24.9	66.0	44.5	75.6	19.0	8.3	53.7	1.4	0.3	2.4	1.1	0.2	1.8	4	0	7	98.9	86.0	110.3	
2	Region 27	77.3	77.1	77.4	32.3	31.8	32.7	13.5	5.6	21.4	68.0	64.6	71.4	18.5	14.0	23.0	4.2	0.4	8.0	2.4	0.2	4.5	24	13	34	93.3	86.9	99.6	
10	Region 28	76.7	74.8	78.4	31.1	27.7	34.9	15.2	3.7	27.5	65.4	56.9	72.2	19.5	9.2	36.3	1.6	0.3	2.7	1.1	0.3	1.8	4	1	12	93.7	78.4	103.7	
50	Region 29	77.3	71.1	79.8	31.7	24.4	37.6	16.6	3.7	43.5	65.5	53.2	75.8	17.9	3.3	32.6	1.5	0.3	10.2	1.1	0.1	6.6	5	0	38	96.2	67.0	110.4	
64	Region 30	77.1	74.0	79.9	32.0	25.7	37.6	15.7	2.4	30.8	64.5	44.8	73.6	19.7	8.3	47.6	1.6	0.5	3.5	1.1	0.3	2.0	4	0	13	96.1	81.1	107.0	
15	Region 31	76.6	74.4	77.9	32.1	25.6	37.3	19.4	7.5	40.4	64.2	54.8	72.2	16.4	4.8	28.3	2.1	1.1	4.5	1.3	0.7	2.5	6	1	19	99.4	83.2	110.8	
19	Region 32	77.6	75.6	79.3	34.6	30.6	38.2	24.9	9.4	42.9	63.5	54.2	73.5	11.6	2.9	26.0	1.9	0.5	2.8	1.4	0.3	2.4	6	1	13	104.0	88.6	118.5	
29	Region 33	75.4	70.9	77.5	32.9	26.0	41.2	18.6	6.4	50.9	65.3	45.6	75.0	16.1	2.8	29.0	3.2	0.6	15.2	2.1	0.4	8.3	7	2	58	95.7	78.0	113.6	
15	Region 34	77.8	74.4	79.4	34.8	26.7	39.1	22.8	6.2	41.1	63.5	53.3	76.9	13.6	5.6	29.4	1.6	0.6	3.0	1.2	0.5	2.1	5	0	9	105.5	87.4	118.3	
13	Region 35	75.8	72.6	79.2	32.7	26.1	34.8	12.1	5.3	28.6	68.9	54.6	78.6	18.9	8.8	39.5	1.5	0.5	4.2	1.1	0.5	3.6	4	0	10	82.0	63.6	108.5	
9	Region 36	76.4	75.6	77.8	33.9	29.5	40.2	11.1	1.8	27.0	67.1	62.9	70.1	21.8	8.5	33.0	1.0	0.4	1.5	0.7	0.2	1.2	4	2	11	85.2	79.3	103.1	
417	Ave yellow	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	95.3	63.6	118.5	
	Min yellow																												
	Max yellow																												

**TABLE 18: PHYSICAL QUALITY FACTORS OF MAIZE IN TOTAL FOR 2007/2008**

Number of samples	Region	Hectolitre mass			100 kernel mass (g)			Kernel size (%)						Breakage susceptibility (%)						Stress cracks (%)			Milling index						
		kg/hl		max.	kernel mass (g)		max.	Above 10 mm sieve		Above 8 mm sieve		Below 8 mm sieve		< 6.3 mm sieve		< 4.75 mm sieve		ave.		min.		max.		ave.		min.		max.	
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	
<b>WHITE AND YELLOW</b>																													
25	Region 10	76.8	74.4	78.3	34.6	29.1	37.0	5.0	2.4	7.5	70.3	56.3	77.6	24.7	18.5	41.3	1.4	0.4	2.5	1.0	0.3	1.7	4	0	12	91.5	76.6	103.7	
15	Region 11	77.5	75.5	79.3	32.7	29.2	36.6	4.6	1.2	9.1	68.0	56.5	75.3	27.4	15.6	38.5	1.9	1.2	2.7	1.4	0.6	2.3	5	0	11	84.5	76.6	100.9	
11	Region 12	77.3	70.8	79.0	35.3	30.0	42.9	17.5	5.9	30.5	69.0	61.8	76.7	13.5	6.9	24.1	1.7	0.4	2.8	1.2	0.4	1.8	6	1	23	102.3	90.5	109.0	
12	Region 13	76.7	72.6	79.6	32.4	30.2	37.9	21.8	8.4	36.5	64.9	54.0	71.6	13.3	6.9	20.1	2.4	0.5	9.7	1.5	0.2	7.3	3	0	8	102.0	85.3	111.1	
30	Region 14	78.2	65.3	81.6	32.9	17.0	38.3	23.8	1.0	46.7	63.8	34.8	71.7	12.4	2.1	64.2	1.3	0.2	4.8	0.9	0.1	3.3	3	0	8	101.3	63.5	113.4	
2	Region 15	80.0	79.8	80.1	32.9	32.8	32.9	27.0	25.4	28.6	62.7	60.3	65.1	10.3	9.5	11.1	0.8	0.8	0.8	0.6	0.6	0.6	1	0	2	101.0	99.0	102.9	
26	Region 16	78.0	74.8	79.9	34.0	25.4	39.3	25.1	14.9	40.0	65.1	55.2	76.2	9.9	4.7	15.1	1.1	0.1	2.1	0.8	0.1	1.8	4	0	13	99.2	87.5	108.0	
27	Region 17	77.8	75.0	79.4	33.9	29.9	38.3	23.0	8.0	35.4	65.1	55.0	73.6	11.9	5.2	20.2	1.2	0.3	2.8	0.9	0.3	2.0	3	0	9	100.4	89.2	111.9	
26	Region 18	78.3	77.0	79.3	34.6	26.9	38.6	22.4	5.0	40.3	63.8	53.4	72.1	13.7	6.3	38.6	1.1	0.5	2.3	0.8	0.4	1.4	3	0	8	97.0	91.1	106.5	
17	Region 19	77.2	70.9	79.6	33.2	28.3	39.9	21.5	10.9	37.7	66.3	58.1	73.6	12.2	3.9	24.0	1.6	0.5	4.1	1.2	0.4	2.9	4	1	9	101.9	93.1	111.1	
21	Region 20	77.3	74.4	79.8	34.0	30.1	37.7	21.3	5.6	43.1	64.5	53.0	72.9	14.1	3.9	29.0	1.7	0.3	3.4	1.2	0.3	2.8	3	0	13	94.1	69.7	105.5	
21	Region 21	78.3	75.7	79.8	33.2	24.7	36.9	22.3	5.6	32.2	64.3	59.2	73.7	13.4	7.5	28.8	1.1	0.5	2.1	0.8	0.3	1.7	3	0	10	96.4	82.5	109.5	
18	Region 22	78.1	74.4	79.6	33.7	28.6	36.7	26.5	11.9	37.3	62.9	55.5	70.2	10.7	6.9	19.4	1.3	0.6	3.0	1.0	0.4	2.6	2	0	6	93.0	82.9	102.5	
55	Region 23	78.7	75.7	81.2	34.0	29.2	36.6	24.9	7.8	40.3	64.2	52.7	76.0	10.9	3.9	23.3	1.0	0.1	3.1	0.8	0.1	2.3	3	0	16	97.6	80.2	109.3	
52	Region 24	78.8	76.5	80.6	34.1	28.2	38.1	26.0	4.8	48.3	64.0	48.1	74.0	10.0	3.6	22.9	1.2	0.5	5.7	0.9	0.3	4.4	4	0	29	96.0	80.9	111.3	
64	Region 25	75.8	69.3	80.2	31.2	26.0	37.3	12.6	0.3	40.6	64.6	39.6	75.9	22.7	6.9	60.1	2.9	0.4	11.1	2.0	0.4	7.9	10	0	44	89.8	68.7	114.6	
38	Region 26	77.3	70.2	80.1	31.8	24.7	35.2	15.5	0.5	26.6	65.5	23.3	84.2	19.0	6.1	76.2	1.4	0.3	3.0	1.0	0.2	2.2	3	0	13	99.1	86.0	110.3	
3	Region 27	76.5	75.0	77.4	33.9	31.8	37.3	14.1	5.6	21.4	70.2	64.6	74.6	15.7	10.2	23.0	5.0	0.4	8.0	2.8	0.2	4.5	30	13	43	95.5	86.9	100.1	
21	Region 28	77.0	74.5	79.0	32.4	27.7	37.1	19.3	3.7	31.9	65.4	56.9	76.5	15.3	7.2	36.3	1.4	0.3	2.7	1.0	0.0	2.2	3	0	12	95.3	78.4	103.7	
89	Region 29	77.7	71.1	80.8	33.3	24.4	44.7	21.5	3.7	69.7	64.3	28.9	75.8	14.2	1.4	32.6	1.4	0.1	10.2	1.0	0.0	6.6	4	0	38	97.9	67.0	115.4	
112	Region 30	77.4	74.0	80.6	32.8	25.7	39.2	16.8	2.4	35.2	65.9	44.8	79.3	17.3	5.7	47.6	1.4	0.3	3.5	0.9	0.2	2.0	3	0	13	96.0	81.1	111.7	
20	Region 31	76.5	71.7	78.8	32.6	25.6	38.6	18.8	4.7	40.4	64.4	54.8	72.2	16.9	4.8	35.0	2.2	0.6	4.5	1.4	0.5	2.5	5	1	19	97.4	80.3	110.8	
43	Region 32	77.8	74.8	80.7	35.8	30.6	41.2	26.6	9.4	47.9	63.4	49.0	74.3	10.0	2.9	26.0	1.7	0.2	3.7	1.4	0.2	3.0	5	0	13	103.5	88.6	118.5	
58	Region 33	76.1	70.9	78.9	34.1	26.0	41.2	21.4	5.1	50.9	64.7	45.6	75.0	14.0	2.8	33.2	2.4	0.6	15.2	1.6	0.3	8.3	6	0	58	97.3	78.0	113.6	
43	Region 34	78.0	74.4	80.3	36.1	26.7	45.6	26.4	6.2	57.1	63.2	41.3	76.9	10.4	1.6	29.4	1.5	0.2	3.4	1.1	0.1	2.5	5	0	13	100.7	83.2	118.3	
27	Region 35	77.8	72.6	81.6	33.7	26.1	43.7	15.3	0.4	55.6	63.8	43.4	78.6	20.9	1.0	46.2	1.2	0.2	4.2	0.9	0.0	3.6	3	0	10	93.3	63.6	117.4	
24	Region 36	77.3	75.4	79.9	34.6	28.8	40.2	19.2	0.5	44.2	64.0	48.1	71.0	16.8	1.5	51.4	0.9	0.3	1.7	0.6	0.2	1.5	6	0	20	95.0	79.3	106.1	
<b>900</b>	<b>Ave w &amp; y</b>	<b>77.5</b>	<b>65.3</b>	<b>81.6</b>	<b>33.5</b>	<b>17.0</b>	<b>45.6</b>	<b>20.2</b>	<b>0.3</b>	<b>69.7</b>	<b>64.8</b>	<b>23.3</b>	<b>84.2</b>	<b>15.0</b>	<b>1.0</b>	<b>76.2</b>	<b>1.5</b>	<b>0.1</b>	<b>15.2</b>	<b>1.1</b>	<b>0.0</b>	<b>8.3</b>	<b>4</b>	<b>0</b>	<b>58</b>	<b>96.9</b>	<b>63.5</b>	<b>118.5</b>	
	<b>Min white &amp; yellow</b>																												
	<b>Max white &amp; yellow</b>																												

**TABLE 19: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2007/2008)**

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.
<b>GRADE: WM 1</b>																									
5	Region 12	13.1	11.6	14.1	10.2	9.8	10.6	28.0	27.5	29.6	27.7	26.9	28.5	21.1	20.5	21.7	78.9	78.3	79.5	28.2	21.7	32.3	20.9	18.8	24.4
6	Region 13	12.2	11.9	12.6	10.0	9.8	10.3	29.2	27.6	31.0	28.5	27.2	30.5	20.1	16.0	22.1	79.9	77.9	84.0	28.5	26.4	30.3	19.4	17.7	20.9
17	Region 14	13.1	11.3	15.1	10.3	9.8	10.7	30.8	28.4	33.1	26.3	23.3	30.6	19.5	14.8	22.1	80.5	77.9	85.2	26.8	20.3	30.2	18.0	12.3	20.7
2	Region 15	12.3	11.8	12.7	9.6	9.5	9.8	25.6	24.7	26.4	32.5	32.4	32.7	20.0	19.9	20.1	80.0	79.9	80.1	31.5	30.7	32.3	24.7	24.3	25.1
19	Region 16	13.3	12.0	15.1	9.9	9.1	11.1	29.3	25.7	31.2	26.7	23.7	33.8	20.7	18.6	23.0	79.3	77.0	81.4	26.9	23.0	34.6	18.5	15.1	26.3
16	Region 17	12.2	10.2	14.0	9.6	8.0	11.5	27.7	24.8	31.3	30.5	26.9	34.1	19.9	15.0	23.0	80.1	77.0	85.0	28.3	24.7	32.0	20.0	16.1	26.3
19	Region 18	12.7	11.8	14.1	9.6	8.9	10.8	26.8	25.1	30.5	30.5	26.6	33.2	20.4	19.4	22.1	79.6	77.9	80.6	27.9	25.9	31.2	19.8	15.9	26.7
9	Region 19	13.5	12.2	16.1	10.5	9.5	12.2	28.8	28.0	30.0	27.3	25.4	30.4	19.9	15.6	22.6	80.1	77.4	84.4	29.3	25.4	32.6	20.7	18.3	23.9
11	Region 20	14.0	11.9	16.5	10.3	9.8	11.4	29.4	27.2	31.5	26.0	22.9	29.5	20.3	15.4	22.8	79.7	77.2	84.6	25.9	22.3	30.3	17.0	12.2	21.2
18	Region 21	12.2	9.3	13.8	9.5	8.7	10.7	27.6	25.2	37.3	30.4	21.1	34.9	20.3	18.8	22.0	79.7	78.0	81.2	29.7	21.8	37.7	22.1	17.7	31.2
15	Region 22	12.9	12.0	14.6	9.7	9.2	10.1	27.6	25.4	29.9	29.4	26.2	31.6	20.4	18.6	22.4	79.6	77.6	81.4	30.9	24.6	37.6	21.6	18.1	26.1
46	Region 23	12.1	10.2	15.3	9.6	8.9	10.7	28.0	24.8	31.7	30.4	24.9	33.5	19.8	15.6	22.5	80.2	77.5	84.4	29.6	22.6	35.7	20.6	13.4	29.3
45	Region 24	12.2	10.2	14.9	9.5	7.9	10.7	28.1	21.6	31.2	30.2	26.7	34.1	20.0	18.3	22.2	80.0	77.8	81.7	28.2	21.6	41.7	20.7	15.1	37.4
16	Region 25	14.7	11.7	17.7	10.6	9.1	11.9	28.7	25.6	31.6	25.7	21.2	30.7	20.3	15.9	23.2	79.7	76.8	84.1	28.2	22.5	34.2	18.2	12.9	24.5
12	Region 26	12.3	10.8	14.4	9.5	8.5	10.1	27.4	25.1	29.0	29.9	26.7	33.9	20.9	18.3	23.1	79.1	76.9	81.7	27.7	22.4	31.5	20.3	12.6	25.4
1	Region 27	11.8	11.8	11.8	9.9	9.9	9.9	25.7	25.7	25.7	33.0	33.0	33.0	19.6	19.6	19.6	80.4	80.4	80.4	27.2	27.2	27.2	19.1	19.1	19.1
9	Region 28	13.6	12.4	15.8	10.4	9.5	12.1	27.4	26.4	28.8	28.1	26.0	30.9	20.4	16.8	24.8	79.6	75.2	83.2	30.8	25.6	34.9	21.9	15.6	25.7
33	Region 29	13.4	11.4	15.8	10.4	9.1	11.7	29.8	25.7	31.9	25.9	23.4	29.8	20.5	15.0	28.2	79.5	71.8	85.0	26.7	22.2	32.0	17.0	13.4	22.2
41	Region 30	13.9	11.2	16.6	10.6	9.8	13.3	30.2	28.0	33.0	24.7	21.8	32.5	20.6	14.5	22.9	79.4	77.1	85.5	25.5	22.3	33.0	18.2	11.0	26.3
5	Region 31	14.7	13.7	16.3	10.8	10.7	11.0	29.0	26.3	30.9	23.8	21.8	25.2	21.7	19.3	24.6	78.3	75.4	80.7	24.8	22.1	27.3	14.5	12.7	18.3
19	Region 32	13.1	11.0	15.1	10.5	9.6	14.5	27.7	25.4	29.9	28.0	25.2	30.5	20.7	15.3	23.7	79.3	76.3	84.7	27.6	23.8	31.2	19.5	16.1	25.6
26	Region 33	13.6	12.1	16.0	10.7	9.8	11.9	29.0	26.4	31.8	26.4	23.5	30.4	20.4	15.4	24.5	79.6	75.5	84.6	27.7	21.8	31.9	17.2	11.6	21.4
25	Region 34	13.6	11.2	17.5	10.4	9.2	12.4	27.8	24.7	30.8	27.2	21.2	35.4	20.9	16.6	24.0	79.1	76.0	83.4	28.1	25.1	33.0	18.6	12.3	25.4
14	Region 35	11.7	8.6	13.4	9.5	8.4	10.1	27.1	25.0	30.1	30.4	26.1	35.1	21.3	16.5	24.8	78.7	75.2	83.5	32.0	25.0	36.5	21.8	16.8	27.0
15	Region 36	12.9	11.2	14.7	10.2	9.6	11.1	29.9	27.8	31.7	25.4	23.1	27.9	21.6	20.1	24.8	78.4	75.2	79.9	25.8	20.7	28.8	16.4	12.9	20.3
<b>444</b>	<b>Ave WM 1</b>	<b>13.0</b>			<b>10.1</b>			<b>28.6</b>			<b>28.0</b>			<b>20.4</b>			<b>79.6</b>			<b>28.0</b>			<b>19.3</b>		
	<b>Min WM 1</b>	<b>8.6</b>			<b>7.9</b>			<b>21.6</b>			<b>21.1</b>			<b>14.5</b>			<b>71.8</b>			<b>20.3</b>			<b>11.0</b>		
	<b>Max WM 1</b>	<b>17.7</b>			<b>14.5</b>			<b>37.3</b>			<b>35.4</b>			<b>28.2</b>			<b>85.5</b>			<b>41.7</b>			<b>37.4</b>		

**TABLE 19: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2007/2008)**  
(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.	
<b>GRADE: WM 2</b>																										
1	Region 13	18.0	18.0	18.0	12.1	12.1	12.1	27.4	27.4	27.4	24.2	24.2	24.2	18.3	18.3	18.3	81.7	81.7	81.7	36.1	36.1	36.1	25.4	25.4	25.4	
1	Region 17	12.5	12.5	12.5	10.0	10.0	10.0	26.6	26.6	26.6	29.3	29.3	29.3	21.5	21.5	21.5	78.5	78.5	78.5	29.3	29.3	29.3	18.0	18.0	18.0	
1	Region 19	12.5	12.5	12.5	10.3	10.3	10.3	29.3	29.3	29.3	31.3	31.3	31.3	16.6	16.6	16.6	83.4	83.4	83.4	31.2	31.2	31.2	21.8	21.8	21.8	
2	Region 20	14.5	14.5	14.6	10.1	9.9	10.2	27.1	26.6	27.6	26.0	25.4	26.5	22.3	22.3	22.3	77.7	77.7	77.7	29.7	29.0	30.4	21.0	19.8	22.2	
1	Region 21	12.9	12.9	12.9	9.7	9.7	9.7	27.1	27.1	27.1	30.5	30.5	30.5	19.9	19.9	19.9	80.1	80.1	80.1	21.1	21.1	21.1	8.6	8.6	8.6	
1	Region 22	13.8	13.8	13.8	10.0	10.0	10.0	26.2	26.2	26.2	27.8	27.8	27.8	22.2	22.2	22.2	77.8	77.8	77.8	31.0	31.0	31.0	19.2	19.2	19.2	
1	Region 23	12.9	12.9	12.9	9.5	9.5	9.5	27.2	27.2	27.2	30.1	30.1	30.1	20.2	20.2	20.2	79.8	79.8	79.8	30.0	30.0	30.0	24.6	24.6	24.6	
2	Region 26	13.7	12.9	14.6	10.7	10.4	11.1	27.7	27.3	28.1	30.9	30.3	31.4	17.0	16.8	17.2	83.0	82.8	83.2	27.9	25.8	30.0	19.5	18.3	20.6	
2	Region 28	13.9	13.3	14.5	10.1	9.9	10.3	26.6	26.5	26.8	28.7	28.6	28.9	20.6	19.8	21.4	79.4	78.6	80.2	27.7	27.4	27.9	19.7	19.7	19.7	
5	Region 29	12.3	8.6	14.3	10.5	9.1	11.5	29.9	28.9	30.9	26.7	23.9	32.2	20.6	19.7	21.1	79.4	78.9	80.3	25.4	19.6	30.1	14.1	8.5	16.9	
6	Region 30	14.2	12.6	15.2	10.4	9.6	10.9	29.7	28.3	30.9	24.4	23.0	26.4	21.3	19.5	23.9	78.7	76.1	80.5	24.9	23.1	26.9	15.2	12.4	17.3	
4	Region 32	12.7	11.5	13.7	10.8	10.3	11.3	27.8	27.3	28.2	27.8	27.2	29.0	21.0	19.9	21.6	79.0	78.4	80.1	26.5	23.2	31.1	16.5	13.0	18.2	
3	Region 33	15.2	13.9	16.3	11.6	11.1	12.1	29.5	28.5	31.4	26.8	22.1	30.5	16.9	15.2	19.7	83.1	80.3	84.8	30.2	29.1	31.0	18.7	17.0	20.5	
3	Region 34	11.4	10.9	12.1	10.7	10.2	11.4	29.5	28.5	30.0	29.2	27.5	31.7	19.3	16.4	21.2	80.7	78.8	83.6	25.4	21.9	30.8	15.6	9.9	23.6	
<b>33</b>	<b>Ave WM 2</b>	<b>13.4</b>			<b>10.5</b>			<b>28.6</b>	<b>26.2</b>	<b>31.4</b>	<b>27.4</b>			<b>20.1</b>			<b>79.9</b>	<b>76.1</b>	<b>84.8</b>	<b>27.2</b>			<b>17.2</b>			
	<b>Min WM 2</b>	<b>8.6</b>			<b>9.1</b>			<b>26.2</b>		<b>31.4</b>	<b>22.1</b>			<b>15.2</b>			<b>76.1</b>		<b>84.8</b>	<b>19.6</b>			<b>8.5</b>			
	<b>Max WM 2</b>	<b>18.0</b>			<b>12.1</b>			<b>31.4</b>		<b>32.2</b>	<b>32.2</b>			<b>23.9</b>			<b>84.8</b>			<b>36.1</b>			<b>25.4</b>			
<b>GRADE: WM 3</b>																										
1	Region 13	15.3	15.3	15.3	10.3	10.3	10.3	28.3	28.3	28.3	30.6	30.6	30.6	15.5	15.5	15.5	84.5	84.5	84.5	27.8	27.8	27.8	17.4	17.4	17.4	
1	Region 14	16.9	16.9	16.9	10.9	10.9	10.9	27.9	27.9	27.9	23.9	23.9	23.9	20.5	20.5	20.5	79.5	79.5	79.5	34.9	34.9	34.9	24.7	24.7	24.7	
1	Region 25	15.7	15.7	15.7	11.3	11.3	11.3	30.4	30.4	30.4	21.6	21.6	21.6	21.0	21.0	21.0	79.0	79.0	79.0	28.0	28.0	28.0	17.3	17.3	17.3	
1	Region 29	14.3	14.3	14.3	10.2	10.2	10.2	26.7	26.7	26.7	25.1	25.1	25.1	23.7	23.7	23.7	76.3	76.3	76.3	32.8	32.8	32.8	21.4	21.4	21.4	
1	Region 30	14.6	14.6	14.6	10.2	10.2	10.2	28.0	28.0	28.0	24.5	24.5	24.5	22.7	22.7	22.7	77.3	77.3	77.3	20.7	20.7	20.7	12.6	12.6	12.6	
1	Region 32	13.2	13.2	13.2	10.2	10.2	10.2	27.1	27.1	27.1	27.0	27.0	27.0	22.5	22.5	22.5	77.5	77.5	77.5	22.7	22.7	22.7	11.6	11.6	11.6	
<b>6</b>	<b>Ave WM 3</b>	<b>15.0</b>			<b>10.5</b>			<b>28.1</b>	<b>26.7</b>	<b>30.4</b>	<b>25.5</b>			<b>21.0</b>			<b>79.0</b>	<b>76.3</b>	<b>84.5</b>	<b>27.8</b>			<b>17.5</b>			
	<b>Min WM 3</b>	<b>13.2</b>			<b>10.2</b>			<b>26.7</b>		<b>30.4</b>	<b>21.6</b>			<b>15.5</b>			<b>76.3</b>		<b>84.5</b>	<b>20.7</b>			<b>11.6</b>			
	<b>Max WM 3</b>	<b>16.9</b>			<b>11.3</b>			<b>30.4</b>		<b>32.2</b>	<b>30.6</b>			<b>23.7</b>			<b>84.5</b>			<b>34.9</b>			<b>24.7</b>			
<b>483</b>	<b>Ave white maize</b>	<b>13.1</b>			<b>10.1</b>			<b>28.5</b>	<b>21.6</b>	<b>37.3</b>	<b>27.9</b>			<b>20.4</b>			<b>79.6</b>	<b>71.8</b>	<b>85.5</b>	<b>27.9</b>			<b>19.1</b>			
	<b>Min white maize</b>	<b>8.6</b>			<b>7.9</b>			<b>21.6</b>		<b>35.4</b>	<b>21.1</b>			<b>14.5</b>			<b>71.8</b>		<b>85.5</b>	<b>19.6</b>			<b>8.5</b>			
	<b>Max white maize</b>	<b>18.0</b>			<b>14.5</b>			<b>37.3</b>			<b>35.4</b>			<b>28.2</b>			<b>85.5</b>			<b>41.7</b>			<b>37.4</b>			

**TABLE 19: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE (2007/2008)**

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.
<b>GRADE: WHITE</b>																									
5	Region 12	13.1	11.6	14.1	10.2	9.8	10.6	28.0	27.5	29.6	27.7	26.9	28.5	21.1	20.5	21.7	78.9	78.3	79.5	28.2	21.7	32.3	20.9	18.8	24.4
8	Region 13	13.3	11.9	18.0	10.3	9.8	12.1	28.8	27.4	31.0	28.3	24.2	30.6	19.3	15.5	22.1	80.7	77.9	84.5	29.3	26.4	36.1	19.9	17.4	25.4
18	Region 14	13.3	11.3	16.9	10.3	9.8	10.9	30.6	27.9	33.1	26.2	23.3	30.6	19.6	14.8	22.1	80.4	77.9	85.2	27.2	20.3	34.9	18.4	12.3	24.7
2	Region 15	12.3	11.8	12.7	9.6	9.5	9.8	25.6	24.7	26.4	32.5	32.4	32.7	20.0	19.9	20.1	80.0	79.9	80.1	31.5	30.7	32.3	24.7	24.3	25.1
19	Region 16	13.3	12.0	15.1	9.9	9.1	11.1	29.3	25.7	31.2	26.7	23.7	33.8	20.7	18.6	23.0	79.3	77.7	81.4	26.9	23.0	34.6	18.5	15.1	26.3
17	Region 17	12.2	10.2	14.0	9.6	8.0	11.5	27.7	24.8	31.3	30.4	26.9	34.1	20.0	15.0	23.0	80.0	77.0	85.0	28.4	24.7	32.0	19.9	16.1	26.3
19	Region 18	12.7	11.8	14.1	9.6	8.9	10.8	26.8	25.1	30.5	30.5	26.6	33.2	20.4	19.4	22.1	79.6	77.9	80.6	27.9	25.9	31.2	19.8	15.9	26.7
10	Region 19	13.4	12.2	16.1	10.4	9.5	12.2	28.9	28.0	30.0	27.7	25.4	31.3	19.6	15.6	22.6	80.4	77.4	84.4	29.5	25.4	32.6	20.9	18.3	23.9
13	Region 20	14.1	11.9	16.5	10.3	9.8	11.4	29.0	26.6	31.5	26.0	22.9	29.5	20.6	15.4	22.8	79.4	77.2	84.6	26.4	22.3	30.4	17.6	12.2	22.2
19	Region 21	12.2	9.3	13.8	9.5	8.7	10.7	27.6	25.2	37.3	30.4	21.1	34.9	20.3	18.8	22.0	79.7	78.0	81.2	29.2	21.1	37.7	21.4	8.6	31.2
16	Region 22	13.0	12.0	14.6	9.7	9.2	10.1	27.5	25.4	29.9	29.3	26.2	31.6	20.5	18.6	22.4	79.5	77.6	81.4	30.9	24.6	37.6	21.5	18.1	26.1
47	Region 23	12.2	10.2	15.3	9.6	8.9	10.7	28.0	24.8	31.7	30.4	24.9	33.5	19.8	15.6	22.5	80.2	77.5	84.4	29.6	22.6	35.7	20.6	13.4	29.3
45	Region 24	12.2	10.2	14.9	9.5	7.9	10.7	28.1	21.6	31.2	30.2	26.7	34.1	20.0	18.3	22.2	80.0	77.8	81.7	28.2	21.6	41.7	20.7	15.1	37.4
17	Region 25	14.7	11.7	17.7	10.6	9.1	11.9	28.8	25.6	31.6	25.4	21.2	30.7	20.4	15.9	23.2	79.6	76.8	84.1	28.2	22.5	34.2	18.2	12.9	24.5
14	Region 26	12.5	10.8	14.6	9.7	8.5	11.1	27.4	25.1	29.0	30.0	26.7	33.9	20.3	16.8	23.1	79.7	76.9	83.2	27.7	22.4	31.5	20.2	12.6	25.4
1	Region 27	11.8	11.8	11.8	9.9	9.9	9.9	25.7	25.7	25.7	33.0	33.0	33.0	19.6	19.6	19.6	80.4	80.4	80.4	27.2	27.2	27.2	19.1	19.1	19.1
11	Region 28	13.7	12.4	15.8	10.4	9.5	12.1	27.3	26.4	28.8	28.2	26.0	30.9	20.5	16.8	24.8	79.5	75.2	83.2	30.2	25.6	34.9	21.5	15.6	25.7
39	Region 29	13.3	8.6	15.8	10.4	9.1	11.7	29.7	25.7	31.9	26.0	23.4	32.2	20.6	15.0	28.2	79.4	71.8	85.0	26.7	19.6	32.8	16.7	8.5	22.2
48	Region 30	13.9	11.2	16.6	10.6	9.6	13.3	30.1	28.0	33.0	24.7	21.8	32.5	20.7	14.5	23.9	79.3	76.1	85.5	25.4	20.7	33.0	17.7	11.0	26.3
5	Region 31	14.7	13.7	16.3	10.8	10.7	11.0	29.0	26.3	30.9	23.8	21.8	25.2	21.7	19.3	24.6	78.3	75.4	80.7	24.8	22.1	27.3	14.5	12.7	18.3
24	Region 32	13.0	11.0	15.1	10.5	9.6	14.5	27.7	25.4	29.9	27.9	25.2	30.5	20.8	15.3	23.7	79.2	76.3	84.7	27.2	22.7	31.2	18.7	11.6	25.6
29	Region 33	13.8	12.1	16.3	10.8	9.8	12.1	29.1	26.4	31.8	26.4	22.1	30.5	20.0	15.2	24.5	80.0	75.5	84.8	27.9	21.8	31.9	17.3	11.6	21.4
28	Region 34	13.4	10.9	17.5	10.5	9.2	12.4	28.0	24.7	30.8	27.4	21.2	35.4	20.7	16.4	24.0	79.3	76.0	83.6	27.8	21.9	33.0	18.3	9.9	25.4
14	Region 35	11.7	8.6	13.4	9.5	8.4	10.1	27.1	25.0	30.1	30.4	26.1	35.1	21.3	16.5	24.8	78.7	75.2	83.5	32.0	25.0	36.5	21.8	16.8	27.0
15	Region 36	12.9	11.2	14.7	10.2	9.6	11.1	29.9	27.8	31.7	25.4	23.1	27.9	21.6	20.1	24.8	78.4	75.2	79.9	25.8	20.7	28.8	16.4	12.9	20.3
483	Ave white	13.1			10.1			28.5			27.9			20.4			79.6			27.9			19.1		
	Min white	8.6			7.9			21.6			21.1			14.5			71.8			19.6			8.5		
	Max white	18.0			14.5			37.3			35.4			28.2			85.5			41.7			37.4		

## Genetic modification

Eleven percent (100 samples) of this crop samples (crop samples are made up of individual deliveries) were tested for the presence of MON810 (Bt maize event) and NK603 (RUR). The limit of detection for the MON810 methodology used is 0,15 %. The highest reference standard is 2,0 % and the accuracy of results can only be guaranteed up to 2,0 %. Ninety-five percent of the samples tested positive for

MON810 with values larger than 0,15 % (LOD).

The limit of detection for the NK603 methodology used is 0,25 %. The highest reference standard is 1,8 % and the accuracy of the results can only be guaranteed up to 1,8 %. Sixty-nine percent of the samples tested positive with values larger than 0,25 % (LOD).

**TABLE 20: PRESENCE OF GENETICALLY MODIFIED MAIZE (2007/2008)**

REGION	RSA Final Grade	% MON810, (LOD: 0.15%)	% NK603 (Roundup Ready) (LOD: 0.25%)	REGION	RSA Final Grade	% MON810, (LOD: 0.15%)	% NK603 (Roundup Ready) (LOD: 0.25%)
10	YM1	>2	>1.8	25	YM1	0.2	<0.25
11	YM1	>2	>1.8	25	YM1	>2	>1.8
11	YM1	>2	0.3	25	YM1	>2	>1.8
11	YM1	<0.15	<0.25	26	WM1	>2	<0.25
12	WM1	>2	>1.8	26	WM1	>2	>1.8
13	WM3	0.5	<0.25	26	WM1	>2	<0.25
14	WM1	>2	<0.25	26	YM1	>2	0.4
14	WM1	>2	>1.8	26	YM1	>2	<0.25
14	YM1	>2	<0.25	27	WM1	>2	<0.25
15	WM1	>2	>1.8	27	WM1	>2	>1.8
16	WM1	>2	<0.25	28	WM1	>2	<0.25
16	WM1	>2	>1.8	28	YM1	>2	>1.8
16	YM1	0.4	<0.25	29	WM1	>2	0.6
17	WM1	>2	0.4	29	WM1	<0.15	<0.25
17	WM1	>2	>1.8	29	WM1	>2	>1.8
17	WM1	>2	>1.8	29	WM2	0.8	>1.8
17	WM1	>2	>1.8	29	WM2	<0.15	>1.8
17	YM1	>2	>1.8	29	YM1	>2	>1.8
18	WM1	1.8	<0.25	29	YM1	>2	>1.8
18	WM1	>2	>1.8	29	YM1	0.3	>1.8
18	WM1	>2	>1.8	29	YM1	>2	>1.8
18	WM1	>2	>1.8	29	YM1	1.9	>1.8
18	YM1	>2	>1.8	30	WM1	>2	<0.25
19	YM1	>2	>1.8	30	WM1	0.2	>1.8
20	WM1	>2	>1.8	30	WM1	1.1	<0.25
20	WM2	>2	>1.8	30	WM1	<0.15	<0.25
21	WM1	>2	>1.8	30	WM1	>2	>1.8
21	WM1	>2	>1.8	30	WM2	0.5	1.3
21	WM1	>2	>1.8	30	YM1	>2	>1.8
21	WM1	>2	>1.8	30	YM1	>2	0.7
21	WM1	>2	<0.25	30	YM1	>2	>1.8
22	WM1	>2	>1.8	30	YM1	>2	<0.25
22	WM1	>2	>1.8	31	YM1	0.7	>1.8
22	WM2	>2	>1.8	32	WM1	>2	<0.25
22	YM1	>2	<0.25	33	WM1	>2	>1.8
23	WM1	>2	1.3	33	WM1	>2	>1.8
23	WM1	>2	<0.25	33	WM2	0.2	>1.8
23	WM1	>2	>1.8	33	YM1	0.8	0.3
23	WM1	>2	>1.8	33	YM1	>2	1.1
23	WM1	>2	1.3	33	YM1	>2	>1.8
23	YM2	>2	>1.8	34	WM1	>2	<0.25
24	WM1	>2	>1.8	34	WM1	>2	1.7
24	WM1	>2	>1.8	34	YM2	>2	>1.8
24	WM1	>2	>1.8	35	WM1	>2	<0.25
24	WM1	>2	>1.8	35	WM1	>2	<0.25
24	WM1	>2	1.1	35	YM1	>2	<0.25
25	WM1	>2	<0.25	35	YM1	>2	>1.8
25	WM1	>2	<0.25	36	WM1	<0.15	<0.25
25	WM1	>2	<0.25	36	WM1	>2	>1.8
25	WM3	>2	<0.25	36	YM1	>2	>1.8
<b>% Samples positive for MON810 (Bt)</b>				<b>% Samples positive for NK603 (RUR)</b>			
2007/2008		95,0%		2007/2008		69,0%	
2006/2007		97,0%		2006/2007		59,0%	
2005/2006		91,0%		2005/2006		31,0%	
2004/2005		78,0%		2004/2005		31,0%	

**TABLE 21: MYCOTOXIN RESULTS 2007/2008**

Region	Grade	Aflatoxin ppb (LOD: 2 ppb)	Fumonisin ppm (LOD: 0.1 ppm)	Deoxynivalenol ppm (LOD: 0.25 ppm)	Zearalenone ppm (LOD: 0.025 ppm)	Ochratoxin A ppb (LOD: 1 ppb)
10	YM1	0	0.00	0.46	0.00	1.00
11	YM1	0	0.40	0.00	0.00	1.00
11	YM1	0	4.70	0.38	0.00	0.00
11	YM1	0	0.75	0.31	0.00	0.00
12	WM1	0	0.00	0.74	0.09	0.00
13	WM3	0	1.90	0.50	0.00	0.00
14	WM1	0	0.00	0.00	0.00	1.00
14	WM1	0	0.00	0.00	0.00	0.00
14	YM1	0	2.50	0.00	0.00	0.00
15	WM1	0	0.15	0.00	0.00	0.00
16	WM1	0	0.00	0.00	0.00	0.00
16	WM1	0	1.20	0.00	0.00	0.00
16	YM1	0	0.10	0.00	0.00	0.00
17	WM1	0	0.00	0.00	0.00	0.00
17	WM1	0	0.00	0.00	0.00	0.00
17	WM1	0	0.10	0.00	0.00	1.00
17	WM1	0	0.00	0.00	0.00	0.00
17	YM1	0	0.30	0.00	0.00	1.00
18	WM1	0	0.00	0.00	0.00	0.00
18	WM1	0	0.00	0.00	0.00	1.00
18	WM1	0	0.00	0.36	0.00	0.00
18	WM1	0	0.00	0.00	0.00	0.00
18	YM1	0	0.25	0.00	0.00	0.00
19	YM1	0	0.30	0.00	0.00	0.00
20	WM1	0	0.16	0.00	0.00	0.00
20	WM2	0	0.00	0.00	0.00	0.00
21	WM1	0	0.20	0.00	0.00	1.00
21	WM1	0	0.60	0.00	0.00	0.00
21	WM1	0	0.55	0.00	0.00	1.00
21	WM1	0	0.00	0.00	0.00	0.00
21	WM1	2	0.10	0.00	0.00	0.00
22	WM1	0	2.70	0.00	0.00	1.00
22	WM1	0	3.20	0.00	0.00	1.00
22	WM2	0	0.40	0.00	0.00	1.00
22	YM1	0	1.00	0.00	0.00	1.00
23	WM1	0	0.61	0.00	0.00	1.00
23	WM1	0	0.10	0.00	0.00	0.00
23	WM1	0	0.00	0.00	0.00	0.00
23	WM1	0	0.55	0.28	0.00	1.00
23	WM1	0	0.85	0.00	0.00	0.00
23	YM2	0	0.36	0.00	0.00	0.00
24	WM1	0	0.47	0.00	0.00	0.00
24	WM1	0	0.00	0.00	0.00	1.00
24	WM1	0	0.45	0.00	0.00	0.00
24	WM1	0	0.15	0.00	0.00	0.00
24	WM1	0	0.15	0.00	0.00	1.00
25	WM1	0	0.00	0.00	0.00	0.00
25	WM1	0	0.10	0.00	0.00	0.00
25	WM1	0	0.00	0.00	0.00	1.00
25	WM3	0	0.00	0.98	0.00	0.00
25	YM1	0	0.20	0.00	0.00	0.00

**TABLE 21: MYCOTOXIN RESULTS 2007/2008 (continue)**

Region	Grade	Aflatoxin ppb (LOD: 2 ppb)	Fumonisin ppm (LOD: 0.1 ppm)	Deoxynivalenol ppm (LOD: 0.25 ppm)	Zearalenone ppm (LOD: 0.025 ppm)	Ochratoxin A ppb (LOD: 1 ppb)
25	YM1	0	3.70	0.74	0.00	0.00
25	YM1	0	0.00	0.00	0.00	0.00
26	WM1	0	0.00	0.70	0.00	2.00
26	WM1	0	0.10	0.00	0.00	1.00
26	WM1	0	0.00	0.31	0.10	0.00
26	YM1	0	0.00	0.00	0.00	0.00
26	YM1	0	0.00	0.61	0.00	0.00
27	WM1	0	0.00	0.00	0.00	0.00
27	WM1	0	0.15	0.00	0.00	1.00
28	WM1	0	0.00	0.77	0.00	0.00
28	YM1	0	0.00	0.00	0.00	0.00
29	WM1	0	0.00	0.34	0.00	0.00
29	WM1	0	1.00	0.47	0.00	0.00
29	WM1	0	1.70	0.56	0.00	0.00
29	WM2	0	0.18	0.00	0.00	0.00
29	WM2	0	0.00	1.70	0.05	0.00
29	YM1	0	0.00	0.00	0.00	1.00
29	YM1	0	0.00	0.00	0.00	0.00
29	YM1	0	0.00	0.00	0.00	0.00
29	YM1	0	0.00	0.39	0.00	0.00
29	YM1	0	0.25	0.00	0.00	0.00
30	WM1	0	0.00	1.20	0.00	0.00
30	WM1	0	0.00	0.85	0.00	0.00
30	WM1	0	0.00	0.36	0.00	0.00
30	WM1	0	0.00	0.53	0.00	0.00
30	WM1	0	0.00	0.30	0.00	0.00
30	WM2	0	0.00	0.73	0.00	0.00
30	YM1	0	0.10	0.79	0.00	0.00
30	YM1	0	0.00	0.61	0.00	0.00
30	YM1	0	0.00	0.39	0.00	0.00
30	YM1	0	0.00	0.54	0.00	0.00
31	YM1	0	0.00	0.44	0.00	0.00
32	WM1	0	0.00	0.61	0.00	0.00
33	WM1	0	1.00	0.83	0.00	0.00
33	WM1	0	0.00	0.49	0.00	0.00
33	WM2	0	0.10	1.70	0.00	0.00
33	YM1	0	0.00	0.48	0.00	0.00
33	YM1	0	0.00	0.00	0.00	0.00
33	YM1	0	1.80	0.49	0.00	0.00
34	WM1	0	0.00	0.00	0.04	0.00
34	WM1	0	0.15	1.00	0.00	0.00
34	YM2	0	0.00	0.00	0.00	1.00
35	WM1	0	0.00	0.00	0.00	1.00
35	WM1	0	2.50	0.00	0.00	0.00
35	YM1	0	0.00	0.54	0.00	1.00
35	YM1	0	2.30	0.00	0.00	0.00
36	WM1	0	5.50	0.00	0.00	0.00
36	WM1	0	0.00	0.00	0.00	0.00
36	YM1	0	0.55	0.54	0.00	1.00
<b>N = 100 2007/2008 Average</b>		0	0.47	0.24	0.00	0.26
<b>2007/2008 Max</b>		2	5.50	1.70	0.10	2.00
<b>Average 2006/2007</b>		0	0.97	2.74	0.03	0.12
<b>Average 2005/2006</b>		0	0.97	2.74	0.03	0.12
<b>Average 2004/2005</b>		0	1.06	0.53	0.04	0.02

**Note:** All results <LOD and zero are reported as 0 or 0.00

**LOD:** Limit of detection



## Methods

### 1. Grading

#### 1.1 RSA grading

RSA grading was done in accordance with the Grading Regulations for maize, as published in the Government Gazette No. 19131 of 14 August 1998, regulation No. R.1013.

#### Description of deviations relating to RSA grading

##### a. Defective maize kernels

The term “defective kernels” means all maize kernels and pieces of maize kernels which are shrivelled, obviously immature, frost-damaged, heat-damaged, mouldy or discoloured, have sprouted (including kernels whose growing point in the germ is visibly discoloured), have cavities in the germ or endosperm caused by insects or rodents, are visibly contaminated by smut, soil, smoke or coal-dust, can pass through the 6,35 mm round-hole sieve, are clearly of inferior quality and of subspecies other than *Zea mays indentata* or *Zea Mays indurata*.

##### b. Foreign matter

The term “foreign matter” means all matter other than maize, glass, stone, coal, dung or metal.

##### c. Other colour

The term “other colour” means maize kernels of a colour other than white (in a white sample) or yellow (in a yellow sample), but excludes pinked maize kernels.

##### d. Total deviation

The term “total deviation” means the total defective kernels plus foreign matter plus other colour kernels.

##### e. Pinked kernels

The term “pinked kernels” means maize kernels whose endosperm is white or yellow and whose pericarp or part thereof is red or pink in colour.

The specification, according to the Grading Regulations for classes 1 to 3 of white and yellow maize is a maximum of 12 %.

#### Fungal infection

All samples were inspected for the visual symptoms of Diplodia and Fusarium cobrot. There are four fungi which cause cobrot in South Africa namely *Stenocarpella maydis* (*Diplodia maydis*), *Fusarium moniliforme*, *Fusarium graminearum* and *Stenocarpella macrospora* (*Diplodia Macrospora*).

*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.

#### 1.2 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

##### a. 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.

##### b. Heat-damaged kernels

Kernels and pieces of kernels which are materially discoloured 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 discoloured by external heat caused by artificial drying methods.

**b. 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.

**c. Bushel weight (Hectolitre mass)**

Bushel weight is specified as a grading factor in the USA Grading Regulations.

Hectolitre mass was determined on the maize crop samples and the bushel weight spec in the USA Regulations converted to hectolitre mass by multiplication with a factor of 1,2872 to enable the grading of the samples according to the USA Grading Regulations.

**d. 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 %.

## **2. Nutritional value**

The Infratec 1241 Grain Analyzer (Near Infrared) (NIT) was calibrated against the different international chemical methods for determining nutritional values.

The chemical methods used to establish a set of calibration samples were:

a) for fat, the petroleum ether extraction (Soxhlet) method (AACC 30-25, 1999),

b) for protein, the Dumas (Leco) method (AACC 46-30,1999), and

c) for starch, the Hydrochloric Acid dissolution method (Polarimeter) In house method 019 (Zeiss Polarimeter manual).

These sets of calibration samples were used to calibrate the Infratec 1241 Grain Analyzer (NIT) and results were checked by analysing every tenth sample by means of the primary methods.

## **3. Physical characteristics**

### **Hectolitre mass**

Hectolitre mass (grain density) means the mass in kilogram per hectolitre.

### **100 kernel mass - Industry accepted method 001**

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

### **Kernel size - Industry accepted method 017**

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

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

Kernel size is less important to the animal feed manufacturing industry. Larger kernels are nevertheless preferred, as small kernels

are easily lost during the screening stage of processing. The determination of kernel size comprises the sieving of a 100 g representative whole maize sample through both 8 mm and 10 mm round-hole grading sieves, normally used in the seed industry.

#### **Breakage susceptibility - Industry accepted method 007**

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

In the modern dry milling industry, maize is first cleaned 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 other maize products, like the various grades of maize meal, because the quantity of germ required to be returned to the milled endosperm cannot be accurately determined.

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 problems.

Every sample was 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 sieve was collected and the percentage broken kernels < 6,35 mm and < 4,75 mm was determined.

#### **Stress cracks - Industry accepted method 006**

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

#### **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 Grain Analyzer. The SAGL uses a calibration developed by the Grain Crops Institute of the ARC.

#### **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.

### 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 should be 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

Break 3 grits

Break 1, 2 and 3 germ and bran are combined and then weighed for determination of Bran/ Germ %.

Break 3 grits is weighed for determination of % Grits.

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

### 4. 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.

The SAGL uses ROSA (Rapid One Step Assay) Quantitative tests, that are lateral flow immuno assay tests, together with the ROSA-M Reader for measuring the mycotoxin content. This methods are GIPSA approved (GIPSA: Grain Inspection, Packers and Stockyards Administration (USA)). 100 of the 900 maize crop samples were tested for Aflatoxin, Fumonisin, Deoxynivalenol, Zearalenone and Ochratoxin.

### 5. GMO (Genetically Modified Organisms)

100 samples of the 900 maize crop samples were tested for Bt (MON810) and RUR (NK603) Modified maize. Quantitative analyses for MON810 maize were done using the procedure supplied with the Strategic Diagnostics Incorporated GMO Bt maize test kit. Cry 1 Ab protein in corn is produced from a gene derived from *Bacillus thuringiensis* (Bt). This method is a quantitative enzyme-linked immunosorbent assay (ELISA) test for the determination of Bt modified corn in corn flour. Proprietary antibodies specific for Cry 1 Ab protein are used.

The GMO Soya test kit from Strategic Diagnostics Incorporated (SDI) were used to quantitatively determine Roundup Ready (RUR). The procedure was adapted by SDI for maize.

Fungi	Toxin	Method reference	LOD: (Limit of detection)	Range
<i>Aspergillus flavus</i>	Aflatoxin	Aflatoxin ROSA Quantitative Method, 2008	2 ppb	0 - 100 ppb
<i>Aspergillus ochraceus</i> and several species of <i>Penicillium sp.</i>	Ochratoxin A	ROSA Quantitative Method, 2008	1 ppb	0 - 150 ppb
<i>Fusarium moniliforme</i>	Fumonisin	ROSA Quantitative Method, 2008	0,1 ppm	0 - 60 ppm
<i>Fusarium graminearum</i>	Zearalenone	ROSA Quantitative Method, 2008	0,025 ppm	0 - 1000 ppb 0 - 1 ppm
<i>Fusarium graminearum</i>	Deoxynivalenol (DON)	ROSA Quantitative Method, 2007	0,25 ppm	0 - 5 ppm

**IMPORTED MAIZE QUALITY**  
**Imported maize quality versus RSA crop quality**  
**2006/2007**

<b>Country of origin</b>	<b>Argentina Average</b>		<b>RSA Crop Average</b>	
<b>Class and grade yellow maize</b>	<b>YM2</b>	<b>COM</b>	<b>YM2</b>	<b>COM</b>
<b>RSA Grading</b>				
Defective kernels above 6.35 mm sieve, %	2.7	2.4	3.8	24.7
Defective kernels below 6.35 mm sieve, %	6.2	5.0	4.7	2.9
Total defective kernels, %	8.9	7.4	8.4	27.5
Other colour maize kernels, %	0.0	0.0	0.4	0.4
Foreign matter, %	0.1	0.2	0.2	0.8
Combined deviation, %	9.0	7.8	9.1	28.8
Pinked maize kernels, %	10.1	21.6	0.0	0.2
Noxious seeds	0	0	0	0
<b>Physical Factors</b>				
Hectolitre mass, kg/hl	77.1	76.1	74.4	73.3
100 Kernel mass, g	30.8	30.0	24.0	28.1
Stress cracks, %	16	9	4	8
Milling Index	107.7	97.1	91.6	97.4
<b>Kernel Size</b>				
% on top 10 mm	3.9	4.1	5.5	10.1
% on top 8 mm	51.4	57.4	55.9	65.6
% through 8 mm	44.7	38.4	38.6	24.3
<b>Breakage susceptibility, g</b>				
Below 6.35 mm sieve	1.0	0.9	2.9	3.3
Below 4.8 mm sieve	0.6	0.8	1.7	2.3
<b>Nutritional Factors</b>				
Protein, %	9.1	8.7	9.9	9.9
Fat, % (db)	5.2	4.8	3.5	3.8
Starch, % (db)	70.0	70.6	73.4	72.4
<b>Number of samples</b>	<b>3</b>	<b>83</b>	<b>60</b>	<b>8</b>
<b>Mycotoxins</b>				
Total Aflatoxin, ppb (ug/kg) [max. value]	0.41 [9.00]		0.00 [0.00]	
Fumonisin, ppm (mg/kg) [max. value]	1.71 [5.30]		1.05 [4.50]	
Deoxynivalenol, ppm (mg/kg) [max. value]	0.89 [2.80]		0.96 [2.10]	
Ochratoxin A, ppb (ug/kg) [max. value]	0.39 [3.50]		0.00 [<2]	
Zearalenone, ppm (mg/kg) [max. value]	0.00 [0.14]		0.00 [<0.01]	
<b>Number of samples</b>	<b>29</b>		<b>9</b>	
<b>GMO</b>				
MON 810, % Samples positive (> LOD of 0.15 %) [Max value]	100		100	
NK 603 (Roundup Ready), % Samples positive (> LOD of 0.25 %) [Max value]	90		78	
<b>Number of samples</b>	<b>29</b>		<b>9</b>	

**IMPORTED MAIZE QUALITY**  
**Imported maize quality versus RSA crop quality**  
**2006/2007 (continue)**

Country of origin	Switzerland Average		RSA Crop Average	
	YM2	COM	YM2	COM
<b>Class and grade yellow maize</b>				
<b>RSA Grading</b>				
Defective kernels above 6.35 mm sieve, %	2.5	2.6	3.8	24.7
Defective kernels below 6.35 mm sieve, %	7.1	6.1	4.7	2.9
Total defective kernels, %	9.6	8.7	8.4	27.5
Other colour maize kernels, %	0.0	0.0	0.4	0.4
Foreign matter, %	0.2	0.7	0.2	0.8
Combined deviation, %	9.8	9.4	9.1	28.8
Pinked maize kernels, %	10.2	25.5	0.0	0.2
Noxious seeds	0	1	0	0
<b>Physical Factors</b>				
Hectolitre mass, kg/hl	76.2	76.3	74.4	73.3
100 Kernel mass, g	26.8	27.6	24.0	28.1
Stress cracks, %	10	9	4	8
Milling Index	96.4	85.5	91.6	97.4
<b>Kernel Size</b>				
% on top 10 mm	6.5	2.5	5.5	10.1
% on top 8 mm	57.1	49.4	55.9	65.6
% through 8 mm	36.4	48.1	38.6	24.3
<b>Breakage susceptibility, g</b>				
Below 6.35 mm sieve	1.0	0.9	2.9	3.3
Below 4.8 mm sieve	0.6	0.5	1.7	2.3
<b>Nutritional Factors</b>				
Protein, %	9.1	8.9	9.9	9.9
Fat, % (db)	5.3	5.0	3.5	3.8
Starch, % (db)	68.2	70.3	73.4	72.4
<b>Number of samples</b>	<b>1</b>	<b>7</b>	<b>60</b>	<b>8</b>
<b>Mycotoxins</b>				
Total Aflatoxin, ppb (ug/kg) [max. value]	1.33 [4.00]		0.00 [0.00]	
Fumonisin, ppm (mg/kg) [max. value]	1.82 [3.00]		1.05 [4.50]	
Deoxynivalenol, ppm (mg/kg) [max. value]	1.12 [2.10]		0.96 [2.10]	
Ochratoxin A, ppb (ug/kg) [max. value]	<2 [<2]		0.00 [<2]	
Zearalenone, ppm (mg/kg) [max. value]	0.04 [0.11]		0.00 [<0.1]	
<b>Number of samples</b>	<b>3</b>		<b>9</b>	
<b>GMO</b>				
MON 810, % Samples positive (> LOD of 0.15 %) [Max value]	100		100	
NK 603 (Roundup Ready), % Samples positive (> LOD of 0.25 %) [Max value]	67		78	
<b>Number of samples</b>	<b>3</b>		<b>9</b>	

## SOUTH AFRICAN MAIZE CROP QUALITY 2007/2008 (Averages)

Class and grade of maize	WM1	WM2	WM3	YM1	YM2	COM	Weighted Ave
<b>RSA Grading</b>							
Defective kernels above 6.35 mm sieve, %	1.6	5.0	10.2	1.6	2.5	1.0	1.8
Defective kernels below 6.35 mm sieve, %	1.5	2.9	3.5	1.8	4.2	1.7	1.8
Total defective kernels, %	3.1	8.0	13.7	3.4	6.7	2.7	3.6
Other colour maize kernels, %	0.1	0.4	0.9	0.1	0.4	0.0	0.1
Foreign matter, %	0.1	0.2	0.3	0.1	0.2	0.1	0.1
Combined deviation, %	3.4	8.6	14.9	3.7	7.3	2.8	3.9
Pinked maize kernels, %	0.0	0.0	0.0	0.1	0.0	17.9	0.1
Noxious seeds	0	0	0	0	0	0	0
<b>Physical Factors</b>							
Hectolitre mass, kg/hl	78.3	77.7	73.7	76.8	75.0	78.4	77.5
100 Kernel mass, g	34.6	34.7	30.5	32.4	31.6	39.1	33.5
Stress cracks, %	4	4	3	5	8	2	5
Milling Index	98.3	99.3	83.8	95.5	92.7	109.4	96.9
<b>Kernel Size</b>							
% on top 10 mm	24.3	27.7	22.3	15.1	15.8	32.1	20.2
% on top 8 mm	64.1	60.2	58.6	66.2	63.2	60.0	64.8
% through 8 mm	11.6	12.2	19.2	18.7	21.0	7.9	15.0
<b>Breakage susceptibility, g</b>							
Below 6.35 mm sieve	1.2	2.1	3.1	1.8	3.6	0.6	1.6
Below 4.8 mm sieve	0.9	1.5	1.7	1.2	2.5	0.5	1.1
<b>Nutritional Values</b>							
Protein, %	8.6	8.5	8.3	8.4	8.4	8.5	8.5
Fat, % (db)	4.0	3.9	3.6	3.6	3.7	4.0	3.8
Starch, % (db)	71.9	71.7	72.2	72.3	72.0	71.2	72.1
<b>Number of samples</b>	<b>444</b>	<b>33</b>	<b>6</b>	<b>389</b>	<b>27</b>	<b>1</b>	<b>900</b>
<b>Mycotoxins</b>							
Total Aflatoxin, ppb (ug/kg) [max. value] (LOD 2 ppb)	0.03 [2.00]	0.00 [0.00]	0.00 [0.00]	0.00 [0.00]	0.00 [0.00]		0.02
Fumonisin, ppm (mg/kg) [max. value] (LOD 0.1 ppm)	0.42 [5.50]	0.11 [0.40]	0.95 [1.90]	0.60 [4.70]	0.18 [0.36]		0.46
Deoxynivalenol, ppm (mg/kg) [max. value] (LOD 0.25 ppm)	0.18 [1.20]	0.69 [1.70]	0.74 [0.98]	0.24 [0.79]	<0.25 [<0.25]		0.24
Ochratoxin A, ppb (ug/kg) [max. value] (LOD 1 ppb)	0.29 [2.00]	0.17 [1.00]	0.00 [0.00]	0.22 [1.00]	0.50 [1.00]		0.26
Zearalenone, ppm (mg/kg) [max. value] (LOD 0.025 ppm)	0.00 [0.10]	0.01 [0.05]	0.00 [0.00]	0.00 [0.00]	0.00 [0.00]		0.00
<b>Number of samples</b>	<b>58</b>	<b>6</b>	<b>2</b>	<b>32</b>	<b>2</b>	<b>1</b>	<b>100</b>
<b>GMO</b>							
MON810, % Samples positive (> LOD of 0.15 %)	95	83	100	97	100		95
NK603 (Roundup Ready), % Samples positive (> LOD of 0.25 %)	64	100	0	75	100		69
<b>Number of samples</b>	<b>58</b>	<b>6</b>	<b>2</b>	<b>32</b>	<b>2</b>	<b>1</b>	<b>100</b>

