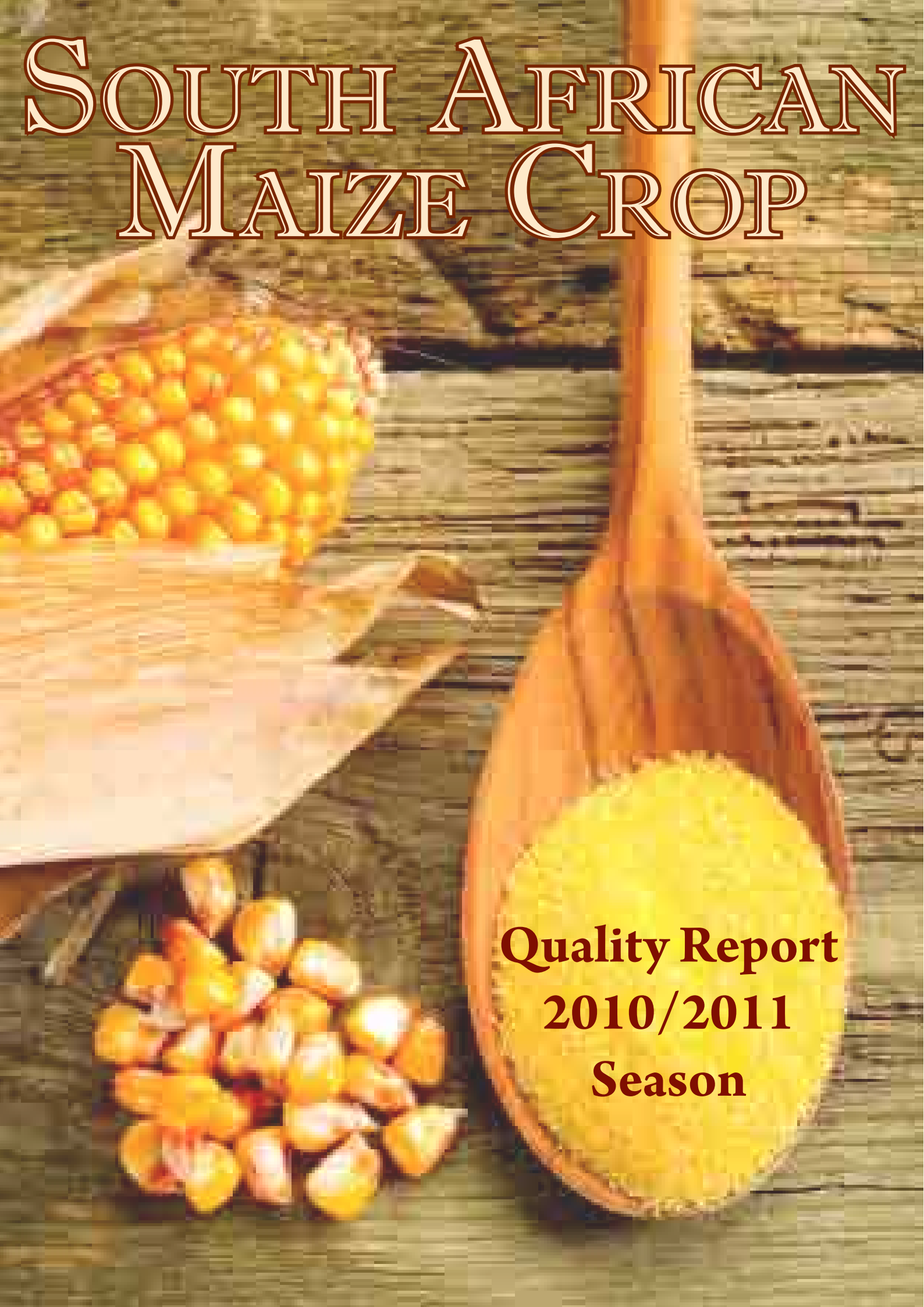
South African Maize Crop



Quality Report 2010/2011 Season

INDEX

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SOUTH AFRICAN
COMMERCIAL MAIZE QUALITY
2010/2011

Acknowledgments
With gratitude to:

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

1. Introduction

The calculated final commercial crop figure for maize for the 2010/2011 season by the National Crop Estimates Committee was 10 360 000 tons. This is 19 % less than the previous season's 12 815 000 tons. The major maize-producing region was the Free State (4 051 500 tons), followed by North West Province (2 332 500 tons) and Mpumalanga (2 190 000 tons). White maize contributed 58 % to the total production, which is 3 % less than the previous season's 61%.

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

693 composite samples, proportionally representing white and yellow maize of each production region, were analysed for quality. The samples consisted of 413 white and 280 yellow maize samples.

The quality attributes which were tested for, include:
a. RSA grading:
All samples were graded according to the following factors, as defined in the South African grading regulation: defective kernels above and below 6.35 mm sieve, total defective kernels, foreign matter, other colour, total deviation and pinked kernels.
b. USA grading according to regulations on all samples to determine the following factors: Grain density expressed as Hectolitre mass, heat damaged, total damaged, broken corn and foreign matter (BCFM) and other colour.
c. Nutritional values (on all samples): Fat, protein and starch.
d. Physical Quality factors (on all samples): Hectolitre mass, 100 kernel mass, kernel size, breakage susceptibility, stress cracks and milling index.
e. Roff milling and whiteness index were done on all white maize samples.
f. Mycotoxin analyses were performed on 77 samples representative of white and yellow maize produced per region.
g. Testing for the presence of Genetically Modified (GM) maize were performed on 77 samples representative of white and yellow maize produced per region.

Please see methods on pages 55 - 59.

2. Maize Crop Quality - summary of results

2.1 RSA Grading

The maize crop was of average good quality, with 69 % of the samples graded as maize grade one (64 % of white samples and 76 % of yellow samples). The persentage defective kernels above and below the 6.35 mm sieve compared with the 2009/2010 season and averaged 7.0 % for white and 6.8 % for yellow maize. Diplodia and Fusarium infected kernel levels were on average 0.4 % and 0.2 % higher than in the previous season. Foreign matter and other colour maize did not pose any problems.

The average percentage total or combined deviations on white maize increased by 0.6 % to 7.5 % this season. The average percentage total deviations on South African maize this season is 1.2 % higher than the ten year weighted average of 6.2 %.

2.2 USA Grading

Of the 693 maize samples, 28 % were graded US1, 36 % US2, 17 % US3, 12 % US4, 5 % US5, 1 % mixed grade and 1 % sample grade, according to USA grading regulations. The samples were downgraded mostly due to the % total damaged kernels.

2.3 Nutritional Values

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

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

The average fat content of the 2010/2011 crop samples was 3.9 % compared to the 4.0 % of the 2009/2010 samples and the weighted ten year average of 3.9 %. The average protein content (7.9 %) was 0.4 % lower than the previous season's average and 0.8 % lower than the ten year weighted average. The starch content this season increased on average with 1.7 % compared to the weighted ten year average of 72.1 % and 0.9 % compared to the previous season.

The fat content of white maize was similar to the previous season and 0.5 % higher than that of yellow maize. The protein content of white maize was 0.1 % higher than that of yellow maize. The starch content of both white and yellow maize is up from the previous season by 1.0 % and 0.8 % respectively.

Please refer to Table 11 on page 36.

2.4 Physical Quality factors

Hectolitre mass/Bushel weight is applied as a grading factor in the USA grading regulations. White maize had an average hectolitre mass of 77.7 kg/hl compared to the 76.2 kg/hl of yellow maize. The hectolitre mass in total varied from 69.0 kg/hl to 81.8 kg/hl. Only seven samples were below the minimum requirement (56.0 lbs or 72.1 kg/hl) for USA grade 1 maize.

The 100 kernel mass averaged 33.5 g which is 1.2 g lower than the previous season but 0.5 g higher than the ten year average.

Yellow maize kernels were smaller on average than white kernels (above the 10 mm sieve). The breakage susceptibility for white maize on average is similar to the previous season and slightly less susceptible than yellow maize. The % stress cracks varied from 0 – 31 %, averaged 5 % and compared well with previous seasons.

The milling index varied from 40.2 to 111.7 and averaged 87.5, slightly lower than the previous season. The average milling index for yellow maize is lower (85.8) than that of white maize (88.6).

2.5 Roff milling and whiteness index (WI)

The average % extraction of total meal with the Roff mill averaged 78.4 % and varied from 70.7 % to 82.3 % in white maize. This average is 0.6 % higher than the previous season (2009/2010).

The whiteness index averaged 31.0 for unsifted and 22.5 for sifted maize meal. Sieving the sample eliminates differences in the readings as a result of particle size.

The whiteness index of the previous season averaged 27.7 for unsifted maize meal. Sifted maize meal averaged 22.4.

The higher the WI value, the whiter the meal. The main contributing factors causing lower WI values are the percentage defective kernels, the presence of another colour maize like yellow maize as well as cultivar.

2.6 Mycotoxins

The average mycotoxin levels were lower than in previous seasons. The Fumonisin level averaged 139 µg/kg (ppb) and ranged from 0 to 1 401 µg/kg. The average Fumonisin level last season was 251 µg/kg. The highest Deoxynivalenol (DON) level detected was 883 µg/kg compared to the 1 845 µg/kg of the previous season. The average DON level was 49 µg/kg, 206 µg/kg the previous season. Zearalenone levels averaged at 5 µg/kg with a maximum of 187 µg/kg. Zearalenone were not detected in any of the samples of the previous season.

No Aflatoxin, Ochratoxin A or T-2 Toxin were detected in the samples.

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

Fumonisin

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

DON

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

Zearalenone

- Unprocessed maize with the exception of unprocessed maize intended to be processed by wet

milling, 350 µg/kg.

- Maize intended for direct human consumption, maize-based snacks and maize-based breakfast cereals, 100 µg/kg.
- Processed maize-based foods for infants and young children, 20 µg/kg.
- Milling fractions and other milling products with particle size > 500 µm not used for direct human consumption, 200 µg/kg.
- Milling fractions and other milling products with particle size ≤ 500 µm not used for direct human consumption, 300 µg/kg.

In the USA, specified maximum levels for Fumonisin in maize and maize by-products used in animal feeds varies between 5 000 and 100 000 µg/kg based on the particular type of animal. Maximum levels in the final animal feed varies between 1 000 and 50 000 µg/kg, also depending on the type of animal. Suggested levels for DON in animal feed varies between 5 000 and 10 000 µg/kg in grains and grain by-products and between 1 000 and 5 000 µg/kg in final feeds depending on the category of animal.

2.7 Genetic Modification (GM)

The SAGL screened 77 (11 %) of the crop samples to test for the presence of Cry1Ab (based on MON810 which is a *Bt* maize event) and CP4 EPSPS (Roundup Ready).

The crop quality samples received by the SAGL are composite samples per class and grade, made up of individual deliveries to grain silos.

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

The limit of detection for the Cry1Ab trait is 0.8 % and the detection range 0.4 % to 5 %. 97 % of the samples tested positive for Cry1Ab with values larger than 0.4 % (Limit of quantification (LOQ)).

The limit of detection for the CP4 EPSPS trait is 0.5 % and the detection range 0.25 % to 5 %. 88 % of the samples tested positive for CP4 EPSPS with values larger than 0.25 % (LOQ).

Values higher than 5 %, the highest value of the detection range for both traits, are reported as > 5 %.

3. Production regions

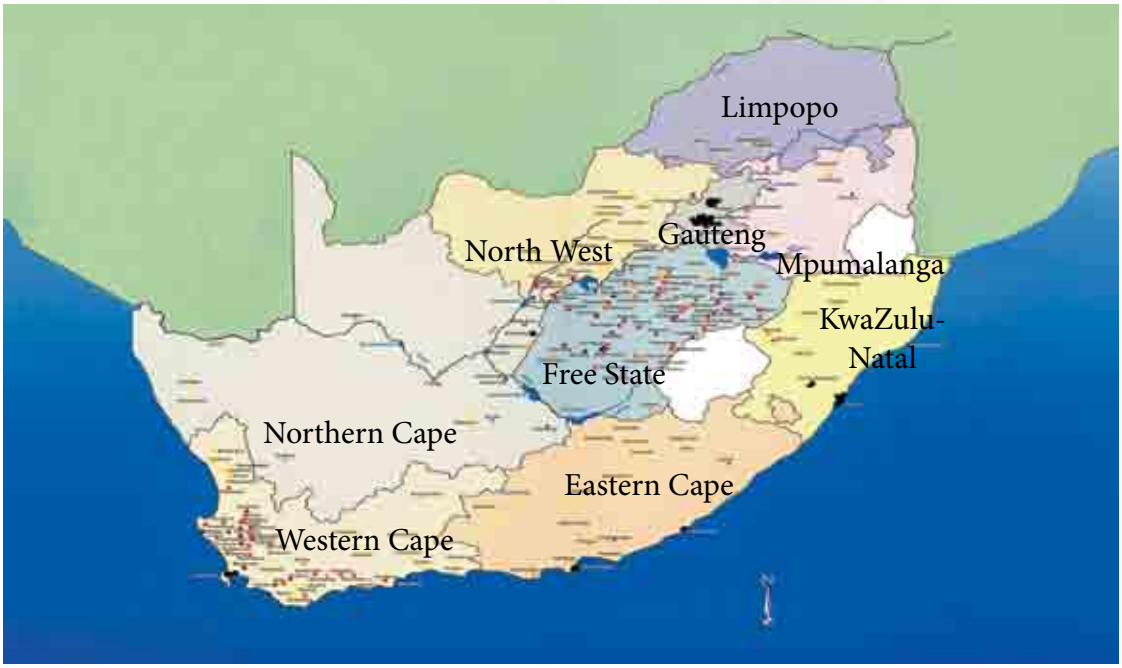
The RSA is divided into 36 grain production regions. Regions 1 to 9 are winter rainfall areas (Western Cape), as well as the Eastern Cape and Karoo where very little commercial maize is being produced.

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

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

The contribution of the three main production areas was as follows:
a) The Free State contributed 39 % of which 64 % was white maize and 36 % yellow maize.
b) North West contributed 23 % of which 78 % was white maize and 22 % yellow maize.
c) Mpumalanga contributed 21 %. Yellow maize contributed 59 % compared to the 41 % of white maize.

South African Provinces



No samples representing region 29 (Mpumalanga) were received for inclusion in this crop survey.

The contributions of the three main production areas made up 83% of the total maize production in the RSA.

See chart for the different provinces and the list of Grain Production regions, Grain Handlers and silos (pages 12 - 15).

3.1 Main production regions – summary of results

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

The Free State and Mpumalanga maize averaged hectolitre mass of 76.7 and 76.6 kg/hl respectively, North West maize averaged almost 1 kg/hl higher at 77.5 kg/hl. North West also had the highest 100 kernel mass of 33.9 g, followed by Mpumalanga with 33.5 g and the Free State with 33.0 g.

The percentage stress cracks observed in the three regions compared very well, with Mpumalanga and North West averaging 5 % and the Free State 6 %. The Free state had a breakage susceptibility of maize passing through the 6.35 mm sieve of 2.1 %, North West 1.7 % and Mpumalanga the lowest of 1.3 %.

North West had the largest kernel size with an average of 23.0 % of the maize having kernels larger than 10 mm (Free State 20.9 % and Mpumalanga 18.6 %).

The average milling index in Mpumalanga was 85.9, 86.8 in the Free State and 89.6 in North West. The % extraction of total meal on the Roff mill followed the same trend with 77.4 % in Mpumalanga, 78.4 % in the Free State and 78.7 % in North West.

The white maize from North West gave an average whiteness index of 30.6 (unsifted) and 22.7 (sifted). Mpumalanga had an average of 33.1 (unsifted) and 24.8 (sifted) and the Free State 31.4 (unsifted) and 22.2 (sifted).

With regards to grading, Mpumalanga had the lowest total deviations percentage of 5.1 %, followed by the Free State with 7.2 % and North West with 9.0 %.

In general there were no significant differences in the nutritional components. North West had the highest fat content of 4.0 %, followed by the Free State with 3.9 % and Mpumalanga with 3.8 %. The protein content ranged from 7.8 % (Free State) to 8.0 % (North West), Mpumalanga averaged 7.9 %. North West and the Free State had similar starch contents of 73.7 % and 73.8 % respectively. Mpumalanga had the highest starch content of 74.1 %.

4. Imported Maize

Five imported maize samples have been received and analysed since the 1st of May 2011 to date. Three of these samples were from Argentina and two from the Ukraine. Three samples were graded YM2 and two samples YM3. The major downgrading factor of imported maize to YM2 and YM3, was the high percentage of defective kernels below the 6.35 mm sieve.

The imported maize had an average hectolitre mass of 72.7 kg/hl (Argentina) and 71.1 kg/hl (Ukraine). South African yellow maize of grades YM2 and YM3 had an average hectolitre mass of 75.4 kg/hl. The same grades RSA yellow maize had an average 100 kernel mass of 31.3 g compared to the 28.9 g of Argentinean maize and 28.7 g of Ukrainian maize.

The percentage stress cracks on imported maize was much higher (60 – 70 %) than on local maize (7 %) and as can be expected therefore also the breakage susceptibility. The imported maize kernels were on average smaller than locally produced maize.

South African maize had lower protein and fat contents than imported maize (7.9 % and 3.6 %) compared to 8.1 % and 4.2 % for Argentina and 8.2 % and 4.2 % for the Ukraine. Argentinean maize had a lower starch content 73.7 % than RSA grades YM2 and YM3 with 74.3 %. The maize from the Ukraine had the highest starch content of 74.8 %.

Mycotoxin and GMO analyses were done on two composite sample of maize, one comprizing maize received from Argentina and the other Ukrainian maize. The sample from Argentina had a DON level of 307 µg/kg compared to the average of 47 µg/kg on RSA YM2 maize. 35 µg/kg T-2 Toxin was also detected, no T-2 Toxin was detected on the RSA maize. No mycotoxins were detected on the Ukrainian sample. Only the Ukrainian sample tested GM positive and also only for the Cry1Ab trait. South African yellow maize YM2 tested positive for both the Cry1Ab and Roundup Ready traits.

The quality of the imported maize are given on pages 61 – 62.

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South African Grain Information Service
Suid- Afrikaanse Graan Inligtingsdiens
Association incorporated under section 21 / Vereniging ingelyf kragtens artikel 21 (Reg No. 1997/019186/08)

MAIZE IMPORTS / EXPORTS

2010/11 Season
Progressive: 2010/05/01 - 2011/02/18
Updated: 2011/02/25

WHITE MAIZE

Imported from:	**Total Tons**	**Destined for:**		
		RSA	Africa	Overseas
Overseas	0	0	0	0
RSA	0	0	0	0
Africa	0	0	0	0
	0	0	0	0
Less: RSA for RSA		0	0	n/a
	0	**0**	**0**	**0**

Exported from:	**Total Tons**	**Destined for:**		
		RSA	Africa	Overseas
Overseas	0	0	0	0
RSA	636402	0	510296	126106
Africa	0	0	0	0
	636402	0	510296	126106
Less: RSA for RSA	0	0	n/a	n/a
	636402	**0**	**510296**	**126106**

YELLOW MAIZE

Imported from:	**Total Tons**	**Destined for:**		
		RSA	Africa	Overseas
Overseas	0	0	0	0
RSA	0	0	0	0
Africa	0	0	0	0
	0	0	0	0
Less: RSA for RSA		0	0	n/a
	0	**0**	**0**	**0**

Exported from:	**Total Tons**	**Destined**		
		RSA	Africa	Overseas
Overseas	0	0	0	0
RSA	844865	0	105417	739448
Africa	0	0	0	0
	844865	0	105417	739448
Less: RSA for RSA	0	0	n/a	n/a
	844865	**0**	**105417**	**739448**

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MAIZE IMPORTS / EXPORTS

2011/12 Season

Progressive: 2011/04/30 - 2012/01/20

Published : 2012/01/24

Updated: 2012/01/30

WHITE MAIZE

Imported from:	Total Tons	Destined for:		
		RSA	Africa	Overseas
Overseas	0	0	0	0
RSA	0	0	0	0
Africa	63681	63681	0	0
	63681	63681	0	0
Less: RSA for RSA	0	0	0	n/a
	63681	**63681**	**0**	**0**

Exported from:	Total Tons	Destined for:		
		RSA	Africa	Overseas
Overseas	0	0	0	0
RSA	1466506	0	301436	1165070
Africa	0	0	0	0
	1466506	0	301436	1165070
Less: RSA for RSA	0	0	n/a	n/a
	1466506	**0**	**301436**	**1165070**

YELLOW MAIZE

Imported from:	Total Tons	Destined for:		
		RSA	Africa	Overseas
Overseas	92842	92842	0	0
RSA	0	0	0	0
Africa	0	0	0	0
	92842	92842	0	0
Less: RSA for RSA	0	0	0	n/a
	92842	**92842**	**0**	**0**

Exported from:	Total Tons	Destined for:		
		RSA	Africa	Overseas
Overseas	0	0	0	0
RSA	684015	0	99502	584513
Africa	0	0	0	0
	684015	0	99502	584513
Less: RSA for RSA	0	0	n/a	n/a
	684015	**0**	**99502**	**584513**

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MAIZE IMPORTS / EXPORTS PER COUNTRY

2010/11 Season

Progressive: 2010/05/01 - 2011/02/18

Updated: 2011/02/25

WHITE MAIZE

COUNTRY	AFRICA Tons	COUNTRY	OVERSEAS Tons
Botswana	126586		
Cameroon	10477		
Chad	3182		
Guiniea	5000		
Kenya	40677		
Lesotho	96910		
Mozambique	59996		
Namibia	52974		
Nigeria	12500		
Somalia	27346		
Swaziland	41433		
Zimbabwe	33215		
		Italy	24407
		Korea	101699
	510296		**126106**

YELLOW MAIZE

COUNTRY	AFRICA Tons	COUNTRY	OVERSEAS Tons
Botswana	13372		
Cameroon	4796		
Lesotho	2832		
Mozambique	19734		
Namibia	16886		
Senegal	4330		
Swaziland	43287		
Zimbabwe	180		
		Japan	97880
		Korea	466799
		Kuwait	81798
		Madagascar	6427
		Mauritius	9585
		Spain	26039
		Taiwan	50920
	105417		**739448**

South African Grain Information Service
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MAIZE EXPORTS

2011/12 Season

Progressive: 2011/04/30 - 2012/01/20

Updated: 2012/01/30

WHITE MAIZE

Africa Country	Tons	Overseas Country	Tons
Botswana	109814		
Lesotho	104803		
Mozambique	45490		
Namibia	15706		
Senegal	258		
Somalia	19442		
Swaziland	5571		
Zimbabwe	352		
		Italy	68005
		Korea	45234
		Mexico	1020831
		Venezuela	31000
	301436		**1165070**

YELLOW MAIZE

Africa Country	Tons	Overseas Country	Tons
Botswana	17920		
Egypt	229		
Ghana	7700		
Lesotho	4536		
Mozambique	12558		
Namibia	13107		
Senegal	2537		
Swaziland	40652		
Zimbabwe	263		
		Korea	302259
		Kuwait	28100
		Iran	40800
		Japan	48880
		Madagascar	2924
		Taiwan	161550
	99502		**584513**

MAIZE IMPORTS

WHITE MAIZE

FROM COUNTRY	Tons	For Africa	For RSA	For Overseas
Zambia	63681		63681	
	63681	**0**	**63681**	**0**

YELLOW MAIZE

FROM COUNTRY	Tons	For Africa	For RSA	For Overseas
Romania	92842		92842	
	92842	**0**	**92842**	**0**

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MAIZE - WHITE '000 t

Updated: 30 January 2012

May - Apr	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	Projection Months: 12	2011/12 Actual May-Dec 8
Opening stock	838.0	947.0	513.0	609.0	1273.0	559.0	1718.0	2123.0	2402.0	2301.0	1630.0	618.0	762.0	1362.0	1609.0	1609.0
Prod deliveries (a)	5183.0	4412.0	4652.0	6440.0	4636.0	5576.0	5845.0	5647.0	6108.0	4392.0	4309.0	7190.0	6737.0	7518.0		5815.0
Crop estimate (b)	4614.0	4383.0	4391.0	6155.0	4109.8	5537.4	6365.6	5805.0	6540.7	4187.4	4315.0	7480.0	7999.0	7830.0	6052.0	6052.0
Imports	5.0	0.0	0.0	0.0	47.0	274.0	33.0	0.0	0.0	1.0	46.0	0.0	0.0	0.0	45.0	45.0
Surplus	0.0	17.0	0.0	0.0	0.0	0.0	40.0	0.0	4.0	20.0	19.0	25.0	48.0	45.0	11.0	11.0
Available	**6026.0**	**5376.0**	**5165.0**	**7049.0**	**5956.0**	**6409.0**	**7636.0**	**7770.0**	**8514.0**	**6714.0**	**6004.0**	**7833.0**	**7547.0**	**8925.0**	**7717.0**	**7480.0**
Processed	3584.0	3586.0	3687.0	4342.0	4202.0	3679.0	4212.0	4313.0	4186.0	4385.0	4751.0	4922.0	4562.0	5873.0	5497.0	3664.0
-human	3316.0	3255.0	3235.0	3377.0	3630.0	3459.0	3467.0	3478.0	3559.0	3526.0	3552.0	4199.0	4132.0	4159.0	4185.0	2790.0
-animal	268.0	331.0	452.0	783.0	446.0	105.0	641.0	733.0	543.0	787.0	1142.0	661.0	362.0	1658.0	1255.5	837.0
-gristing	n/a	n/a	n/a	182.0	126.0	115.0	104.0	102.0	84.0	72.0	57.0	62.0	68.0	56.0	56.0	37.0
-bio-fuel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Producers	87.0	0.0	0.0	349.0	164.0	144.0	144.0	107.0	101.0	112.0	107.0	111.0	81.0	108.0	35.0	35.0
End consumers	0.0	0.0	222.0	96.0	64.0	40.0	76.0	181.0	71.0	80.0	69.0	45.0	62.0	189.0	80.0	80.0
Net receipts(-)/dispatch(+)	0.0	0.0	0.0	7.0	43.0	11.0	12.0	17.0	11.0	27.0	28.0	28.0	10.0	22.0	12.0	12.0
Deficit	0.0	0.0	58.0	121.0	112.0	0.0	0.0	38.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports	1119.0	1108.0	594.0	861.0	812.0	817.0	1069.0	712.0	1844.0	480.0	431.0	1965.0	1470.0	1124.0	1450.0	1450.0
Utilised:	**4790.0**	**4694.0**	**4561.0**	**5776.0**	**5397.0**	**4691.0**	**5513.0**	**5368.0**	**6213.0**	**5084.0**	**5386.0**	**7071.0**	**6185.0**	**7316.0**	**7074.0**	**5241.0**
Stock	**1236.0**	**682.0**	**604.0**	**1273.0**	**559.0**	**1718.0**	**2123.0**	**2402.0**	**2301.0**	**1630.0**	**618.0**	**762.0**	**1362.0**	**1609.0**	**643.0**	**2239.0**
- processed p/month	298.7	298.8	307.3	361.8	350.2	306.6	351.0	359.4	348.8	365.4	395.9	410.2	380.2	489.4	458.1	458.0
- months' stock	4.1	2.3	2.0	3.5	1.6	5.6	6.0	6.7	6.6	4.5	1.6	1.9	3.6	3.3	1.4	4.9

(a) 1998/1999 and 1999/2000 Includes storage on behalf of producers

(b) Estimates of Department of Agriculture's (DAFF) Crop Estimates

Last report: 24 Jan 2012

SAGIS

South African Grain Information Service
Suid-Afrikaanse Graan Inligtingsdiens

Association incorporated under section 21 / Vereniging ingelyf kragtens artikel 21 (Reg No. 1997/019186/08)

MAIZE -YELLOW '000 t

Updated: 30 January 2012

May - Apr	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12 Projection Months: 12	2011/12 Actual May-Dec 8
Opening stock	445.0	1002.0	334.0	374.0	842.0	643.0	992.0	501.0	746.0	868.0	440.0	431.0	819.0	769.0	727.0	727.0
Prod deliveries (a)	4549.0	2442.0	2423.0	3969.0	3300.0	3734.0	2564.0	3446.0	3947.0	2315.0	2573.0	4709.0	4892.0	4498.0		3783.0
Crop estimate (b)	3874.0	2699.0	2625.0	3986.0	3115.4	4194.4	3025.9	3677.0	4909.3	2430.6	2810.0	5220.0	5318.0	4985.0	4308.0	4308.0
Imports	104.0	98.0	569.0	0.0	348.0	651.0	408.0	219.0	360.0	930.0	1074.0	27.0	27.0	0.0	29.0	29.0
Surplus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	10.0	5.0	20.0	32.0	22.0	22.0
Available	**5098.0**	**3542.0**	**3326.0**	**4343.0**	**4490.0**	**5028.0**	**3964.0**	**4166.0**	**5053.0**	**4125.0**	**4097.0**	**5172.0**	**5758.0**	**5299.0**	**5086.0**	**4561.0**
Processed	2799.0	2755.0	2675.0	2510.0	2949.0	3304.0	3031.0	2970.0	3276.0	3275.0	3279.0	3691.0	4103.0	2986.0	3643.5	2429.0
-human	94.0	126.0	191.0	212.0	247.0	249.0	245.0	262.0	266.0	290.0	257.0	326.0	346.0	356.0	400.5	267.0
-animal	2705.0	2629.0	2484.0	2285.0	2700.0	3050.0	2775.0	2694.0	2994.0	2976.0	3016.0	3358.0	3739.0	2613.0	3228.0	2152.0
-gristing	n/a	n/a	n/a	13.0	2.0	5.0	11.0	14.0	16.0	9.0	6.0	7.0	18.0	17.0	15.0	10.0
-bio-fuel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Producers	124.0	0.0	0.0	151.0	161.0	157.0	155.0	148.0	214.0	129.0	110.0	162.0	210.0	159.0	66.0	66.0
End consumers	0.0	0.0	201.0	171.0	150.0	166.0	148.0	170.0	269.0	155.0	161.0	175.0	316.0	337.0	236.0	236.0
Net receipts(-)/dispatch(+)	0.0	0.0	0.0	-5.0	20.0	24.0	13.0	1.0	17.0	9.0	14.0	22.0	41.0	22.0	20.0	20.0
Deficit	0.0	115.0	21.0	47.0	44.0	14.0	0.0	11.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports	802.0	280.0	58.0	627.0	523.0	371.0	116.0	120.0	393.0	117.0	102.0	303.0	319.0	1068.0	723.0	723.0
Utilised:	**3725.0**	**3150.0**	**2955.0**	**3501.0**	**3847.0**	**4036.0**	**3463.0**	**3420.0**	**4185.0**	**3685.0**	**3666.0**	**4353.0**	**4989.0**	**4572.0**	**4688.5**	**3474.0**
Stock	**1373.0**	**392.0**	**371.0**	**842.0**	**643.0**	**992.0**	**501.0**	**746.0**	**868.0**	**440.0**	**431.0**	**819.0**	**769.0**	**727.0**	**397.5**	**1087.0**
- processed p/month	233.3	229.6	222.9	209.2	245.8	275.3	252.6	247.5	273.0	272.9	273.3	307.6	4103.0	248.8	303.6	303.6
- months' stock	5.9	1.7	1.7	4.0	2.6	3.6	2.0	3.0	3.2	1.6	1.6	2.7	0.2	2.9	1.3	3.6

(a) 1998/1999 and 1999/2000 Includes storage on behalf of producers

(b) Estimates of Department of Agriculture's (DAFF) Crop Estimates Committee

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MAIZE - TOTAL '000 t

Updated: 30 January 2012

May - Apr	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	Projection Months: 12	2011/12 Actual May-Dec 8
Opening stock	1283.0	1949.0	847.0	983.0	2115.0	1202.0	2710.0	2624.0	3148.0	3169.0	2070.0	1049.0	1581.0	2131.0	2336.0	2336.0
Prod deliveries (a)	9732.0	6854.0	7075.0	10409.0	7936.0	9310.0	8409.0	9093.0	10055.0	6707.0	6882.0	11899.0	11629.0	12016.0		9598.0
Crop estimate (b)	8488.0	7082.0	7016.0	10141.0	7225.2	9731.8	9391.5	9482.0	11450.0	6618.0	7125.0	12700.0	13317.0	12815.0	10360.0	10360.0
Imports	109.0	98.0	569.0	0.0	395.0	925.0	441.0	219.0	360.0	931.0	1120.0	27.0	27.0	0.0	74.0	74.0
Surplus	0.0	17.0	0.0	0.0	0.0	0.0	40.0	0.0	4.0	32.0	29.0	30.0	68.0	77.0	33.0	33.0
Available	**11124.0**	**8918.0**	8491.0	**11392.0**	**10446.0**	**11437.0**	**11600.0**	**11936.0**	**13567.0**	**10839.0**	**10101.0**	**13005.0**	**13305.0**	**14224.0**	**12803.0**	**12041.0**
Processed	6383.0	6341.0	6362.0	6852.0	7151.0	6983.0	7243.0	7283.0	7462.0	7660.0	8030.0	8613.0	8665.0	8859.0	9140.0	6093.0
-human	3410.0	3381.0	3426.0	3589.0	3877.0	3708.0	3712.0	3740.0	3825.0	3816.0	3809.0	4525.0	4478.0	4515.0	4585.5	3057.0
-animal	2973.0	2960.0	2936.0	3068.0	3146.0	3155.0	3416.0	3427.0	3537.0	3763.0	4158.0	4019.0	4101.0	4271.0	4483.5	2989.0
-gristing	n/a	n/a	n/a	195.0	128.0	120.0	115.0	116.0	100.0	81.0	63.0	69.0	86.0	73.0	71.0	47.0
-bio-fuel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Producers	211.0	0.0	0.0	500.0	325.0	301.0	299.0	255.0	315.0	241.0	217.0	273.0	291.0	267.0	101.0	101.0
End consumers	0.0	0.0	423.0	267.0	214.0	206.0	224.0	351.0	340.0	235.0	230.0	220.0	378.0	526.0	316.0	316.0
Net receipts(-)/dispatch(+)	0.0	0.0	0.0	2.0	63.0	35.0	25.0	18.0	28.0	36.0	42.0	50.0	51.0	44.0	32.0	32.0
Deficit	0.0	115.0	79.0	168.0	156.0	14.0	0.0	49.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports	1921.0	1388.0	652.0	1488.0	1335.0	1188.0	1185.0	832.0	2237.0	597.0	533.0	2268.0	1789.0	2192.0	2173.0	2173.0
Utilised:	**8515.0**	**7844.0**	**7516.0**	**9277.0**	**9244.0**	**8727.0**	**8976.0**	**8788.0**	**10398.0**	**8769.0**	**9052.0**	**11424.0**	**11174.0**	**11888.0**	**11762.5**	**8715.0**
Stock	**2609.0**	**1074.0**	**975.0**	**2115.0**	**1202.0**	**2710.0**	**2624.0**	**3148.0**	**3169.0**	**2070.0**	**1049.0**	**1581.0**	**2131.0**	**2336.0**	**1040.5**	**3326.0**
- processed p/month	531.9	528.4	530.2	571.0	595.9	581.9	603.6	606.9	621.8	638.3	669.2	717.8	722.1	738.3	761.7	761.6
- months' stock	4.9	2.0	1.8	3.7	2.0	4.7	4.3	5.2	5.1	3.2	3.2	4.6	3.0	3.2	2.7	8.5

(a) 1998/1999 and 1999/2000 Includes storage on behalf of producers

(b) Estimates of Department of Agriculture's (DAFF) Crop Estimates Committee

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Grain Production Regions

Grain Handlers with specific silos are given with each region.

Region 8: Eastern Cape Northern Region

	Cradock

Region 10: Griqualand West Region

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

Region 11: Vaalharts Region

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

Region 12: North West Western Region

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

Region 13: North West Central Region (Sannieshof)

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

Region 14: North West Southern Region

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

Region 15: North West South Eastern Region

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

Region 16: North West Central Eastern Region

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

Region 17: North West Central Northern Region (Ottosdal)

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

Grain Production Regions (continue)

Grain Handlers with specific silos are given with each region.

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

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

Region 18: North West Central Region (Ventersdorp)

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

Region 19: North West Central Region (Lichtenburg)

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

Region 20: North West Eastern Region

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

Region 21: Free State North Western Region (Viljoenskroon)

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

Region 22: Free State North Western Region (Bothaville)

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

Region 23: Free state North Western Region (Bultfontein)

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

Region 24: Free State Central Region

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

Grain Production Regions (continue)

Grain Handlers with specific silos are given with each region.

Region 24: Free State Central Region (continue)

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

Region 25: Free State South Western Region

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

Region 26: Free State South Eastern Region

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

Region 27: Free State Northern Region

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

Region 28: Free State Eastern Region

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

Region 29: Mpumalanga Southern Region

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

Region 30: Mpumalanga Eastern Region

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

Grain Production Regions (continue)

Grain Handlers with specific silos are given with each region.

Region 30: Mpumalanga Eastern Region (continue)

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

Region 31: Mpumalanga Central Region

Afgri	Bethal	*Afgri*	Devon
Afgri	Kinross	*Afgri*	Leandra
Afgri	Trichardt		

Region 32: Mpumalanga Western Region

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

Region 33: Mpumalanga Northern Region

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

Region 34: Gauteng Region

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

Region 35: Limpopo Region

Prodsure	Northam	*NTK*	Alma
NTK	Lehau	*NTK*	Naboomspruit
NTK	Nylstroom	*NTK*	Pienaarsrivier
NTK	Pietersburg	*NTK*	Potgietersrus
NTK	Roedtan	*NTK*	Settlers
NTK	Tzaneen	*NTK*	Nutfield
NTK	Warmbad	*NTK*	Vaalwater
NTK	Crecy	*NTK*	Immerpan

Region 36: KwaZulu-Natal Region

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

TABLE 1: COMMERCIAL WHITE AND YELLOW MAIZE - FINAL PRODUCTION FIGURES FOR THE 2010/11 SEASON COMPARED TO THE 2009/10 SEASON

PROVINCES	FINAL FIGURES 2010/11			% difference between 2009/10 and 2010/11	FINAL FIGURES 2009/10		
	White Tons	Yellow Tons	Total Tons		White Tons	Yellow Tons	Total Tons
Western Cape	2 000	12 400	14 400	-18	3 500	14 000	17 500
Northern Cape	23 000	515 200	538 200	-12	23 000	586 000	609 000
Free State	2 590 000	1 461 500	4 051 500	-20	3 174 000	1 902 000	5 076 000
Eastern Cape	10 500	57 600	68 100	-15	14 500	66 000	80 500
KwaZulu-Natal	214 500	235 000	449 500	-14	272 000	252 000	524 000
Mpumalanga	900 000	1 290 000	2 190 000	-20	1 370 000	1 375 000	2 745 000
Limpopo	125 000	48 000	173 000	-18	130 000	80 000	210 000
Gauteng	362 500	180 300	542 800	-21	493 000	192 000	685 000
North West	1 824 500	508 000	2 332 500	-19	2 350 000	518 000	2 868 000
Total RSA	6 052 000	4 308 000	10 360 000	-19	7 830 000	4 985 000	12 815 000
% of crop	58	42			61	39	
Figures obtained from the National Crop Estimates Committee							

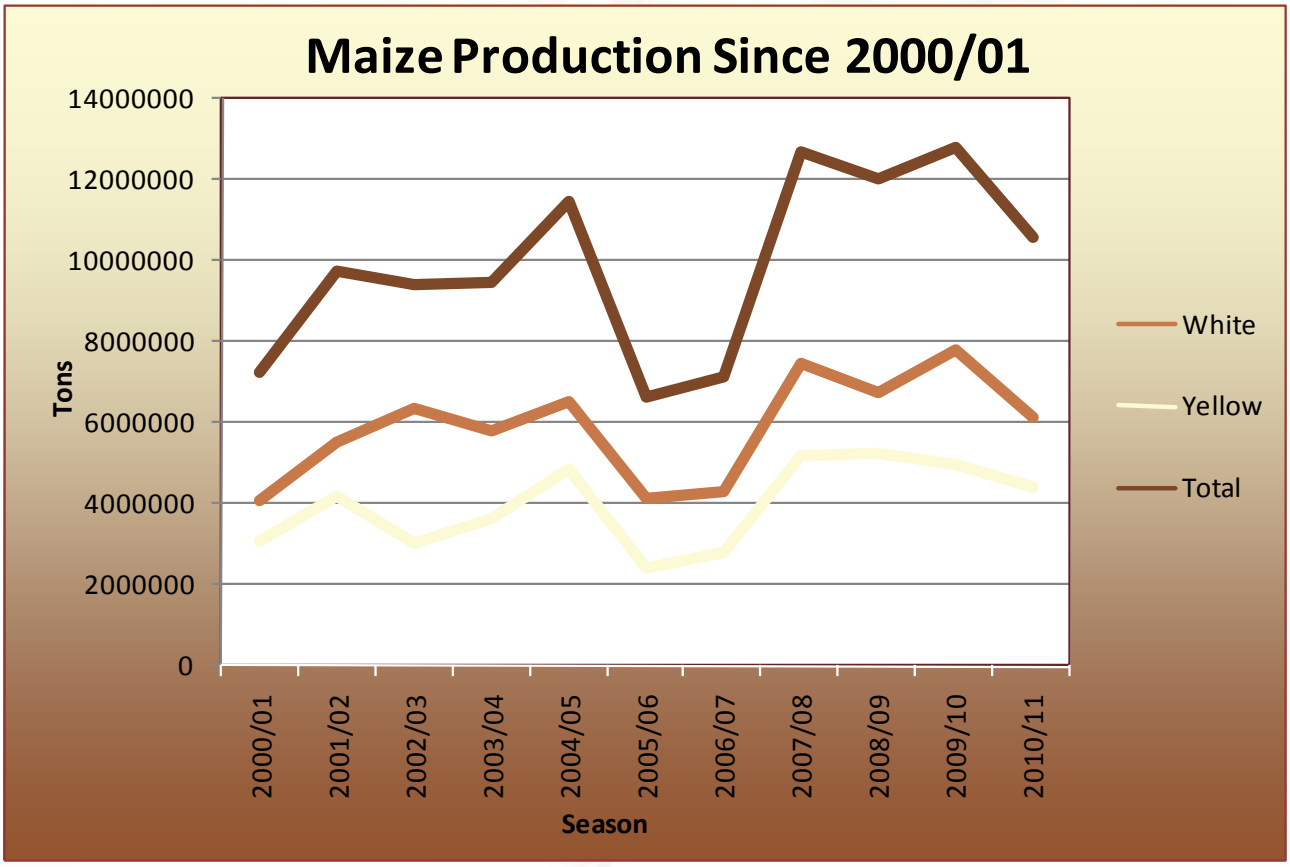


TABLE 2: RSA GRADING OF WHITE MAIZE (2010/2011)

Number of samples	Region	% Defective Kernels						%			%			%			%			%			%			%			%		
		Above 6.35 mm sieve			Below 6.35 mm sieve			Total defective			Foreign matter			Other Colour			Total Deviation			Pinked Kernels			Diplodia Kernels			Fusarium Kernels			Cobrot Kernels		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM 1																															
1	Region 08	2.7	2.7	2.7	1.6	1.6	1.6	4.3	4.3	4.3	0.0	0.0	0.0	0.0	0.0	0.0	4.3	4.3	4.3	0.0	0.0	0.0	0.8	0.8	0.8	0.3	0.3	0.3	0.0	0.0	0.0
9	Region 12	3.6	2.7	5.1	1.4	0.5	3.2	5.0	3.7	6.8	0.1	0.1	0.3	0.3	0.0	0.8	5.5	4.1	7.8	0.0	0.0	0.0	1.4	0.9	1.9	0.6	0.0	0.9	0.3	0.0	0.7
13	Region 13	3.3	2.8	3.7	1.4	1.1	2.1	4.7	3.9	5.5	0.1	0.1	0.2	0.1	0.0	0.9	4.9	4.3	6.5	0.0	0.0	0.0	1.1	0.9	1.7	0.6	0.4	0.9	0.0	0.0	0.0
14	Region 14	3.6	2.2	5.9	1.4	0.5	2.6	5.0	3.1	6.7	0.2	0.1	0.3	0.1	0.0	0.9	5.2	3.4	7.3	0.0	0.0	0.0	1.2	0.4	2.6	0.8	0.4	1.3	0.1	0.0	0.4
4	Region 15	4.7	4.5	4.9	1.3	1.1	1.5	6.0	5.6	6.3	0.1	0.1	0.2	0.1	0.0	0.5	6.2	5.7	6.6	0.0	0.0	0.0	2.1	2.0	2.2	0.8	0.7	0.9	0.0	0.0	0.0
9	Region 16	5.0	3.5	6.0	1.0	0.5	1.8	6.0	4.9	7.0	0.1	0.1	0.2	0.2	0.0	0.5	6.4	5.4	7.7	0.0	0.0	0.0	2.0	0.9	3.4	0.6	0.4	0.9	0.2	0.0	0.5
22	Region 17	4.0	2.1	5.7	1.6	0.4	2.2	5.5	3.2	7.0	0.1	0.1	0.2	0.3	0.0	0.9	6.0	3.3	7.2	0.0	0.0	0.0	1.5	0.6	2.3	0.7	0.4	1.1	0.1	0.0	0.5
14	Region 18	4.0	3.3	4.8	1.8	1.1	3.3	5.8	4.5	7.0	0.2	0.1	0.3	0.3	0.0	0.7	6.2	4.6	7.6	0.0	0.0	0.0	1.4	1.0	1.8	0.8	0.4	1.3	0.2	0.0	0.7
11	Region 19	3.7	2.4	4.7	2.2	1.4	3.6	5.8	4.2	6.9	0.2	0.1	0.3	0.3	0.0	0.9	6.3	4.4	7.5	0.0	0.0	0.0	1.5	0.8	2.1	0.8	0.0	2.0	0.2	0.0	0.5
7	Region 20	4.0	2.9	5.3	1.8	0.4	2.7	5.8	4.5	7.0	0.2	0.1	0.2	0.3	0.0	0.5	6.3	5.1	7.6	0.0	0.0	0.0	1.4	1.0	1.7	0.9	0.4	1.5	0.0	0.0	0.0
8	Region 21	3.1	2.3	3.8	1.8	1.2	2.9	4.9	3.9	6.7	0.2	0.1	0.3	0.3	0.0	1.3	5.4	4.0	7.7	0.0	0.0	0.0	1.5	1.0	3.0	0.8	0.4	1.8	0.3	0.0	0.9
8	Region 22	3.1	1.7	5.2	1.6	0.6	1.9	4.6	2.8	7.0	0.2	0.2	0.2	0.3	0.0	0.8	5.1	3.0	8.0	0.0	0.0	0.0	1.2	0.6	2.6	0.5	0.0	1.0	0.0	0.0	0.0
13	Region 23	3.3	1.5	5.1	1.3	0.5	1.9	4.7	2.7	6.7	0.1	0.1	0.2	0.1	0.0	0.4	4.9	2.8	6.9	0.0	0.0	0.0	1.2	0.4	1.9	0.7	0.3	1.2	0.2	0.0	0.7
12	Region 24	3.5	2.0	4.8	1.8	1.1	2.5	5.2	3.6	6.5	0.2	0.1	0.2	0.1	0.0	0.4	5.5	3.7	6.7	0.0	0.0	0.0	1.2	0.4	1.8	0.8	0.4	1.2	0.1	0.0	0.4
6	Region 25	3.7	2.1	5.1	1.8	0.7	2.6	5.4	3.9	6.8	0.2	0.2	0.2	0.2	0.0	0.5	5.8	4.1	7.3	0.0	0.0	0.0	1.3	0.7	1.6	0.8	0.3	1.5	0.3	0.0	0.4
6	Region 26	2.5	1.9	3.4	1.4	0.6	1.9	3.9	3.3	4.9	0.2	0.1	0.2	0.0	0.0	0.0	4.1	3.5	5.1	0.0	0.0	0.0	0.8	0.4	1.2	0.5	0.2	0.6	0.0	0.0	0.2
1	Region 27	3.1	3.1	3.1	1.3	1.3	1.3	4.4	4.4	4.4	0.2	0.2	0.2	0.3	0.3	0.3	4.9	4.9	4.9	0.0	0.0	0.0	1.4	1.4	1.4	0.4	0.4	0.4	0.0	0.0	0.0
19	Region 28	2.5	0.5	6.0	1.0	0.1	2.1	3.5	0.9	6.8	0.1	0.0	0.2	0.1	0.0	0.9	3.7	0.9	7.8	0.0	0.0	0.0	0.9	0.0	2.0	0.6	0.0	1.8	0.1	0.0	0.5
7	Region 30	3.3	2.3	5.0	1.0	0.5	1.7	4.3	3.2	5.8	0.1	0.0	0.2	0.2	0.0	1.2	4.6	3.4	7.1	0.0	0.0	0.0	0.8	0.4	1.3	0.4	0.2	0.6	0.0	0.0	0.0
2	Region 31	2.5	2.2	2.8	1.5	1.4	1.5	3.9	3.6	4.3	0.2	0.2	0.2	0.7	0.7	0.8	4.8	4.5	5.1	0.0	0.0	0.0	1.0	0.9	1.2	0.3	0.0	0.5	0.0	0.0	0.0
16	Region 32	3.2	2.1	4.8	1.3	0.7	2.5	4.5	3.2	6.3	0.2	0.1	0.3	0.7	0.0	0.5	4.8	3.4	6.7	0.0	0.0	0.0	1.2	0.8	1.6	0.8	0.4	1.6	0.1	0.0	0.5
16	Region 33	3.1	2.0	4.6	1.7	1.3	2.7	4.8	3.4	6.0	0.2	0.1	0.3	0.3	0.0	0.9	5.2	3.6	6.7	0.0	0.0	0.0	1.3	0.8	2.0	0.6	0.3	0.9	0.2	0.0	0.5
28	Region 34	4.0	2.3	5.6	1.2	0.4	3.2	5.2	3.2	6.9	0.1	0.0	0.2	0.4	0.0	1.1	5.7	3.6	7.7	0.0	0.0	0.0	1.6	0.3	2.8	0.7	0.0	1.4	0.1	0.0	0.6
5	Region 35	3.6	2.0	5.7	1.6	0.4	3.3	5.1	2.5	6.9	0.1	0.0	0.2	0.4	0.0	0.9	5.6	2.5	7.9	0.0	0.0	0.0	1.4	0.6	2.1	0.5	0.2	1.2	0.1	0.0	0.4
13	Region 36	2.6	1.5	4.0	1.5	0.2	3.8	4.1	2.0	5.9	0.2	0.1	0.3	0.2	0.0	1.1	4.5	2.1	7.2	0.0	0.0	0.0	0.8	0.4	1.2	0.4	0.0	1.3	0.1	0.0	0.4
264	**Ave WM 1**	**3.5**			**1.5**			**4.9**			**0.1**			**0.2**			**5.3**			**0.0**			**1.3**			**0.7**			**0.1**		
	Min WM 1		**0.5**			**0.1**			**0.9**			**0.0**			**0.0**			**0.9**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max WM 1			**6.0**			**3.8**			**7.0**			**0.3**			**1.3**			**8.0**			**0.0**			**3.4**			**2.0**			**0.9**

TABLE 2: RSA GRADING OF WHITE MAIZE (2010/2011) (continue)

Number of samples	Region	% Defective Kernels						%			%			%			%			%			%			%			%		
		Above 6.35 mm sieve			Below 6.35 mm sieve			Total defective			Foreign matter			Other Colour			Total Deviation			Pinked Kernels			Diplodia Kernels			Fusarium Kernels			Cobrot Kernels		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM 2																															
11	Region 12	5.9	4.5	9.3	3.0	1.3	4.3	8.9	7.2	11.6	0.2	0.1	0.3	0.6	0.0	1.1	9.7	7.4	13.0	0.0	0.0	0.0	2.2	1.4	3.9	1.1	0.7	1.9	0.3	0.0	0.5
14	Region 13	7.3	4.2	10.2	2.3	1.0	4.4	9.5	7.2	12.2	0.2	0.1	0.3	0.4	0.0	1.0	10.1	8.1	12.8	0.0	0.0	0.0	2.9	1.3	4.9	1.5	0.5	2.7	0.4	0.0	0.7
13	Region 14	6.3	3.9	10.8	2.3	0.4	4.5	8.6	5.1	11.2	0.2	0.1	0.3	0.4	0.0	2.8	9.2	7.4	11.9	0.0	0.0	0.0	2.9	1.3	4.7	1.1	0.6	3.1	0.4	0.0	0.6
5	Region 15	8.6	6.8	9.6	2.0	1.3	2.5	10.6	8.1	12.0	0.2	0.2	0.2	0.1	0.0	0.4	10.9	8.4	12.3	0.0	0.0	0.0	3.9	2.3	5.3	1.3	1.0	1.7	0.2	0.0	0.4
5	Region 16	8.4	6.1	11.1	1.7	1.1	3.3	10.1	9.2	12.6	0.2	0.1	0.2	0.0	0.0	0.0	10.2	9.3	12.7	0.0	0.0	0.0	3.7	2.1	5.3	1.1	0.8	1.5	0.3	0.0	0.6
6	Region 17	7.9	4.5	10.7	2.4	2.0	3.1	10.3	7.1	12.6	0.3	0.2	0.4	0.4	0.0	1.0	11.0	7.3	13.9	0.0	0.0	0.0	3.8	1.6	5.6	1.5	0.5	2.6	0.1	0.0	0.6
5	Region 18	7.7	6.2	9.6	2.2	0.8	3.1	9.9	7.9	11.3	0.2	0.2	0.2	1.1	0.0	3.2	11.2	9.2	14.7	0.0	0.0	0.0	2.5	2.1	3.3	2.1	0.7	3.1	0.4	0.3	0.5
11	Region 19	6.9	3.9	8.6	2.7	0.8	4.8	9.6	7.4	11.7	0.2	0.1	0.4	0.4	0.0	0.9	10.3	7.6	12.2	0.0	0.0	0.0	2.7	0.9	4.1	1.4	0.5	2.3	0.5	0.0	0.9
3	Region 20	7.4	6.3	9.2	1.5	0.9	1.9	8.9	8.3	10.1	0.2	0.1	0.3	0.4	0.4	0.4	9.6	9.0	10.7	0.0	0.0	0.0	3.1	1.7	4.5	2.1	1.3	2.7	0.4	0.3	0.4
1	Region 21	5.0	5.0	5.0	2.1	2.1	2.1	7.1	7.1	7.1	0.2	0.2	0.2	0.5	0.5	0.5	7.9	7.9	7.9	0.0	0.0	0.0	1.7	1.7	1.7	1.6	1.6	1.6	0.3	0.3	0.3
2	Region 22	5.5	5.3	5.7	1.5	1.3	1.7	7.0	7.0	7.0	0.2	0.2	0.3	1.3	1.3	1.4	8.6	8.5	8.6	0.0	0.0	0.0	3.0	3.0	3.0	1.0	0.9	1.2	0.0	0.0	0.0
11	Region 23	7.1	4.6	9.3	1.6	0.9	2.7	8.6	7.3	10.3	0.2	0.1	0.4	0.3	0.0	1.1	9.1	7.7	11.2	0.0	0.0	0.0	2.4	1.8	3.1	1.9	0.7	3.6	0.3	0.0	0.7
9	Region 24	6.6	5.1	8.6	2.1	1.5	2.9	8.7	7.1	11.5	0.2	0.2	0.3	0.3	0.0	1.4	9.2	7.7	11.7	0.0	0.0	0.0	2.5	1.1	3.8	1.5	0.6	2.3	0.5	0.0	0.9
12	Region 25	6.3	4.3	8.0	2.2	0.8	4.3	8.5	5.6	11.0	0.2	0.1	0.5	0.8	0.0	3.4	9.6	7.2	13.7	0.0	0.0	0.0	2.4	1.4	3.1	1.3	0.5	2.2	0.2	0.0	0.6
4	Region 26	6.4	4.1	8.3	2.1	1.0	3.6	8.5	7.7	9.3	0.3	0.2	0.3	0.8	0.0	1.1	9.5	8.0	10.3	0.0	0.0	0.0	2.9	1.8	3.9	1.0	0.4	1.6	0.4	0.0	0.8
1	Region 27	4.5	4.5	4.5	2.5	2.5	2.5	7.0	7.0	7.0	0.2	0.2	0.2	1.0	1.0	1.0	8.2	8.2	8.2	0.0	0.0	0.0	2.6	2.6	2.6	0.5	0.5	0.5	0.0	0.0	0.0
6	Region 28	4.5	3.0	7.2	2.6	2.2	3.1	7.1	5.4	9.8	0.2	0.2	0.3	1.3	0.0	3.4	8.7	8.0	10.9	0.0	0.0	0.0	1.6	0.9	2.7	1.3	0.9	2.0	0.3	0.0	0.7
1	Region 33	8.4	8.4	8.4	1.2	1.2	1.2	9.6	9.6	9.6	0.2	0.2	0.2	0.6	0.6	0.6	10.3	10.3	10.3	0.0	0.0	0.0	2.9	2.9	2.9	1.2	1.2	1.2	0.9	0.9	0.9
3	Region 34	6.7	6.4	7.3	1.2	0.6	1.7	7.9	7.7	8.1	0.1	0.1	0.2	0.8	0.6	0.9	8.8	8.5	9.1	0.0	0.0	0.0	2.8	2.5	3.4	0.6	0.4	0.8	0.3	0.0	0.4
2	Region 36	7.0	4.4	9.6	2.3	0.6	4.0	9.3	8.4	10.2	0.1	0.0	0.2	0.2	0.0	0.4	9.6	9.0	10.2	0.0	0.0	0.0	2.6	1.1	4.2	1.8	0.8	2.7	0.3	0.0	0.6
125	**Ave WM 2**	**6.8**			**2.2**			**9.0**			**0.2**			**0.5**			**9.7**			**0.0**			**2.7**			**1.4**			**0.3**		
	Min WM 2		**3.0**			**0.4**			**5.1**			**0.0**			**0.0**			**7.2**			**0.0**			**0.9**			**0.4**			**0.0**	
	Max WM 2			**11.1**			**4.8**			**12.6**			**0.5**			**3.4**			**14.7**			**0.0**			**5.6**			**3.6**			**0.9**

TABLE 2: RSA GRADING OF WHITE MAIZE (2010/2011) (continue)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other 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.
GRADE: WM 3																														
1	Region 12	10.3	10.3	10.3	2.8	2.8	2.8	13.1	13.1	13.1	0.3	0.3	0.3	0.9	0.9	0.9	14.3	14.3	14.3	0.0	0.0	0.0	3.6	3.6	3.6	2.6	2.6	2.6	0.9	0.9	0.9
2	Region 13	14.5	12.5	16.4	2.3	2.2	2.3	16.7	14.8	18.6	0.2	0.2	0.2	0.7	0.4	0.9	17.6	15.4	19.7	0.0	0.0	0.0	6.0	4.9	7.1	2.9	2.2	3.5	1.1	0.4	1.8
4	Region 14	12.7	10.8	16.2	2.0	0.1	3.3	14.7	13.4	16.3	0.2	0.0	0.4	0.4	0.0	0.7	15.3	13.6	17.0	0.0	0.0	0.0	5.3	3.5	6.7	2.7	2.1	3.6	0.8	0.6	0.9
1	Region 15	13.2	13.2	13.2	1.1	1.1	1.1	14.3	14.3	14.3	0.5	0.5	0.5	0.9	0.9	0.9	15.7	15.7	15.7	0.0	0.0	0.0	7.2	7.2	7.2	1.7	1.7	1.7	0.9	0.9	0.9
2	Region 17	11.9	11.0	12.8	1.8	1.3	2.2	13.7	13.2	14.1	0.2	0.1	0.2	0.8	0.4	1.1	14.6	14.6	14.7	0.0	0.0	0.0	4.9	4.1	5.7	3.0	1.8	4.3	0.6	0.5	0.6
2	Region 18	11.9	10.2	13.6	2.5	1.6	3.3	14.4	13.6	15.2	0.2	0.2	0.3	0.5	0.4	0.6	15.2	14.3	16.0	0.0	0.0	0.0	4.3	4.0	4.7	3.6	2.7	4.5	0.9	0.8	1.0
3	Region 19	11.7	7.6	14.8	3.8	1.3	7.0	15.5	14.6	16.1	0.2	0.2	0.3	0.3	0.0	0.5	16.0	15.3	16.4	0.0	0.0	0.0	4.9	2.4	6.3	2.0	1.8	2.1	0.5	0.0	0.8
3	Region 20	12.5	6.7	20.6	5.7	1.0	9.1	18.3	15.8	21.6	0.3	0.2	0.3	0.7	0.0	1.2	19.2	17.3	21.8	0.0	0.0	0.0	6.1	2.0	11.1	2.6	1.1	5.1	0.8	0.5	1.1
3	Region 23	14.5	14.3	14.7	2.5	1.8	3.2	17.0	16.5	17.7	0.2	0.2	0.2	0.4	0.0	0.8	17.6	17.3	17.9	0.0	0.0	0.0	6.9	6.4	7.3	2.5	2.2	2.7	0.0	0.0	0.0
21	**Ave WM3**	**12.7**			**2.9**			**15.6**			**0.2**			**0.6**			**16.4**			**0.0**			**5.5**			**2.6**			**0.7**		
	Min WM3		**6.7**			**0.1**			**13.1**			**0.0**			**0.0**			**13.6**			**0.0**			**2.0**			**1.1**			**0.0**	
	Max WM3			**20.6**			**9.1**			**21.6**			**0.5**			**1.2**			**21.8**			**0.0**			**11.1**			**5.1**			**1.8**
GRADE: COM																															
1	Region 19	27.7	27.7	2.7	13.3	13.3	13.3	41.0	41.0	41.0	0.4	0.4	0.4	0.0	0.0	0.0	41.4	41.4	41.4	0.0	0.0	0.0	15.9	15.9	15.9	6.7	6.7	6.7	1.9	1.9	1.9
1	Region 20	67.1	67.1	67.1	4.5	4.5	4.5	71.5	71.5	71.5	0.3	0.3	0.3	23.2	23.2	23.2	95.1	95.1	95.1	0.0	0.0	0.0	0.6	0.6	0.6	0.5	0.5	0.5	0.0	0.0	0.0
1	Region 25	7.3	7.3	7.3	5.5	5.5	5.5	12.8	12.8	12.8	0.8	0.8	0.8	3.5	3.5	3.5	17.1	17.1	17.1	0.0	0.0	0.0	2.9	2.9	2.9	0.9	0.9	0.9	0.4	0.4	0.4
3	**Ave COM**	**34.0**			**7.8**			**41.8**			**0.5**			**8.9**			**51.2**			**0.0**			**6.5**			**2.7**			**0.8**		
	Min COM		**7.3**			**4.5**			**12.8**			**0.3**			**0.0**			**17.1**			**0.0**			**0.6**			**0.5**			**0.0**	
	Max COM			**67.1**			**13.3**			**71.5**			**0.8**			**23.2**			**95.1**			**0.0**			**15.9**			**6.7**			**1.9**
413	**Ave white maize**	**5.2**			**1.8**			**7.0**			**0.2**			**0.4**			**7.5**			**0.0**			**2.0**			**1.0**			**0.2**		
	Min white maize		**0.5**			**0.1**			**0.9**			**0.0**			**0.0**			**0.9**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max white maize			**67.1**			**13.3**			**71.5**			**0.8**			**23.2**			**95.1**			**0.0**			**15.9**			**6.7**			**1.9**
693	**Ave maize**	**5.0**			**1.9**			**6.9**			**0.2**			**0.3**			**7.4**			**0.0**			**2.0**			**1.0**			**0.2**		
	Min maize		**0.5**			**0.1**			**0.9**			**0.0**			**0.0**			**0.9**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max maize			**67.1**			**13.3**			**71.5**			**0.8**			**23.2**			**95.1**			**0.0**			**18.0**			**7.4**			**2.3**

TABLE 3: RSA GRADING OF YELLOW MAIZE (2010/2011)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other 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.
GRADE: YM 1																														
1	Region 08	5.5	5.5	5.5	1.3	1.3	1.3	6.7	6.7	6.7	0.2	0.2	0.2	0.0	0.0	0.0	6.9	6.9	6.9	0.0	0.0	0.0	2.2	2.2	2.2	1.8	1.8	1.8	0.0	0.0	0.0
29	Region 10	2.3	0.8	5.0	1.4	0.4	2.9	3.7	1.2	6.3	0.1	0.0	0.2	0.0	0.0	0.0	3.8	1.3	6.4	0.0	0.0	0.0	0.7	0.0	1.4	0.5	0.0	0.9	0.1	0.0	0.5
1	Region 11	2.2	2.2	2.2	0.7	0.7	0.7	2.9	2.9	2.9	0.1	0.1	0.1	0.0	0.0	0.0	2.9	2.9	2.9	0.0	0.0	0.0	0.4	0.4	0.4	0.9	0.9	0.9	0.3	0.3	0.3
5	Region 12	3.2	1.9	4.6	1.6	1.2	2.2	4.8	3.6	6.7	0.1	0.1	0.2	0.1	0.0	0.3	5.0	3.7	7.2	0.0	0.0	0.0	1.3	0.6	1.9	0.6	0.5	0.9	0.1	0.0	0.3
6	Region 13	4.2	2.4	5.6	1.8	1.3	2.6	6.0	3.8	7.2	0.2	0.1	0.2	0.1	0.0	0.5	6.3	3.9	7.4	0.0	0.0	0.0	1.5	0.8	2.3	1.0	0.8	1.3	0.4	0.0	0.9
11	Region 14	4.2	2.0	7.0	1.7	0.3	2.6	5.9	3.8	7.6	0.2	0.1	0.2	0.0	0.0	0.5	6.1	3.9	7.8	0.0	0.0	0.0	1.8	0.6	3.1	0.9	0.4	1.9	0.2	0.0	0.6
1	Region 15	5.8	5.8	5.8	1.9	1.9	1.9	7.7	7.7	7.7	0.2	0.2	0.2	0.3	0.3	0.3	8.2	8.2	8.2	0.0	0.0	0.0	3.4	3.4	3.4	0.5	0.5	0.5	0.0	0.0	0.0
2	Region 16	6.6	5.8	7.5	1.0	1.0	1.0	7.6	6.7	8.5	0.1	0.1	0.1	0.2	0.0	0.4	7.9	6.8	9.0	0.0	0.0	0.0	2.7	2.2	3.3	1.2	0.9	1.5	0.3	0.0	0.7
8	Region 17	4.1	3.2	5.8	1.8	1.3	2.7	5.9	4.7	7.4	0.2	0.1	0.2	0.2	0.0	1.0	6.3	4.8	8.0	0.0	0.0	0.0	1.8	1.1	2.6	0.8	0.5	1.1	0.2	0.0	0.5
5	Region 18	4.5	3.0	5.4	2.1	1.4	2.5	6.6	4.4	7.9	0.2	0.1	0.2	0.3	0.0	0.6	7.1	4.6	8.7	0.0	0.0	0.0	1.5	1.1	1.8	1.2	0.5	1.8	0.4	0.0	0.7
10	Region 19	4.3	2.3	6.0	2.2	1.0	3.0	6.5	4.1	7.5	0.2	0.1	0.3	0.0	0.0	0.3	6.8	4.2	7.7	0.0	0.0	0.0	1.7	0.9	2.7	1.0	0.5	2.2	0.3	0.0	0.5
8	Region 20	5.6	4.8	6.8	1.7	1.1	2.1	7.2	5.9	8.1	0.2	0.1	0.2	0.2	0.0	0.7	7.6	6.7	8.3	0.0	0.0	0.0	2.4	1.6	2.9	1.1	0.5	2.1	0.4	0.0	1.0
1	Region 21	2.9	2.9	2.9	1.5	1.5	1.5	4.3	4.3	4.3	0.2	0.2	0.2	0.0	0.0	0.0	4.5	4.5	4.5	0.0	0.0	0.0	1.4	1.4	1.4	0.4	0.4	0.4	0.0	0.0	0.0
2	Region 22	2.0	1.7	2.3	1.6	1.4	1.7	3.6	3.1	4.0	0.1	0.1	0.2	0.0	0.0	0.0	3.7	3.2	4.2	0.0	0.0	0.0	0.7	0.6	0.8	0.3	0.2	0.4	0.0	0.0	0.0
6	Region 23	3.8	1.7	6.3	1.9	1.2	3.0	5.6	3.5	7.5	0.2	0.2	0.2	0.1	0.0	0.9	6.0	3.6	8.6	0.0	0.0	0.0	1.3	0.6	2.5	1.0	0.2	1.7	0.3	0.0	0.5
1	Region 24	3.9	3.9	3.9	1.6	1.6	1.6	5.5	5.5	5.5	0.2	0.2	0.2	1.9	1.9	1.9	7.6	7.6	7.6	0.0	0.0	0.0	1.6	1.6	1.6	0.6	0.6	0.6	0.5	0.5	0.5
19	Region 25	4.6	2.0	6.8	2.0	0.9	3.2	6.6	3.5	8.8	0.2	0.1	0.2	0.1	0.0	0.6	6.9	3.9	9.0	0.0	0.0	0.0	1.7	0.8	2.9	1.2	0.2	2.1	0.2	0.0	0.4
8	Region 26	3.0	2.0	5.4	1.8	0.4	2.7	4.8	3.3	8.1	0.2	0.1	0.2	0.1	0.0	0.4	5.0	3.5	8.7	0.0	0.0	0.0	1.1	0.7	2.7	0.6	0.2	1.2	0.1	0.0	0.4
4	Region 27	3.4	3.1	3.8	3.6	3.2	4.0	7.0	6.3	7.7	0.2	0.2	0.2	0.0	0.0	0.0	7.2	6.5	7.9	0.0	0.0	0.0	1.5	1.3	1.6	0.9	0.5	1.2	0.2	0.0	0.4
27	Region 28	2.9	1.1	5.7	1.7	0.1	3.9	4.5	1.5	8.1	0.2	0.0	0.3	0.2	0.0	1.4	4.8	1.8	8.5	0.0	0.0	0.0	1.1	0.4	2.5	0.7	0.0	1.7	0.1	0.0	0.6
6	Region 30	2.8	1.0	4.2	1.6	0.9	3.3	4.4	3.0	5.4	0.1	0.1	0.2	0.0	0.0	0.0	4.6	3.1	5.6	0.0	0.0	0.0	0.7	0.4	1.0	0.6	0.4	0.8	0.1	0.0	0.4
1	Region 31	4.0	4.0	4.0	2.4	2.4	2.4	6.5	6.5	6.5	0.2	0.2	0.2	0.0	0.0	0.0	6.6	6.6	6.6	0.0	0.0	0.0	1.4	1.4	1.4	0.9	0.9	0.9	0.0	0.0	0.0
8	Region 32	2.5	1.4	3.8	1.6	1.2	2.1	4.1	2.8	5.8	0.2	0.1	0.2	0.1	0.0	0.4	4.3	2.9	5.9	0.0	0.0	0.0	0.8	0.4	1.3	0.6	0.4	0.9	0.1	0.0	0.5
6	Region 33	3.2	2.1	5.0	1.4	0.9	1.9	4.6	3.3	6.3	0.1	0.1	0.2	0.0	0.0	0.0	4.7	3.5	6.5	0.0	0.0	0.0	1.5	0.8	2.6	0.5	0.4	0.6	0.2	0.0	0.5
19	Region 34	3.2	1.8	4.0	1.9	0.7	4.0	5.0	2.9	7.3	0.2	0.1	0.3	0.3	0.0	1.9	5.5	3.1	8.0	0.0	0.0	0.0	1.3	0.4	2.1	0.6	0.3	1.0	0.1	0.0	0.5
3	Region 35	1.7	0.9	2.5	1.7	1.4	2.1	3.4	2.3	4.0	0.1	0.1	0.1	0.1	0.0	0.4	3.6	2.8	4.1	0.0	0.0	0.0	0.6	0.0	1.3	0.3	0.0	0.5	0.0	0.0	0.0
14	Region 36	2.9	1.3	5.4	1.5	0.6	3.2	4.4	2.3	7.0	0.1	0.0	0.2	0.1	0.0	0.7	4.6	2.4	7.1	0.0	0.0	0.0	1.0	0.5	1.7	0.6	0.0	1.7	0.2	0.0	0.6
212	**Ave YM 1**	**3.4**			**1.7**			**5.2**			**0.2**			**0.1**			**5.4**			**0.0**			**1.3**			**0.7**			**0.2**		
	Min YM 1		**0.8**			**0.1**			**1.2**			**0.0**			**0.0**			**1.3**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max YM 1			**7.5**			**4.0**			**8.8**			**0.3**			**1.9**			**9.0**			**0.0**			**3.4**			**2.2**			**1.0**

TABLE 3: RSA GRADING OF YELLOW MAIZE (2010/2011) (continue)

Number of samples	Region	% Defective Kernels						% Total defective			% Foreign matter			% Other 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.
GRADE: YM 2																														
3	Region 12	9.4	7.2	12.4	2.1	1.4	2.7	11.6	9.9	13.8	0.2	0.2	0.2	0.3	0.0	0.6	12.1	10.1	14.4	0.0	0.0	0.0	4.5	2.9	7.7	1.8	1.4	2.3	0.6	0.6	0.8
3	Region 13	11.1	7.6	13.7	2.4	1.9	3.4	13.5	9.4	17.1	0.2	0.2	0.3	0.5	0.0	1.2	14.3	10.0	18.5	0.0	0.0	0.0	6.3	4.2	7.8	1.6	0.8	2.2	0.5	0.0	0.8
4	Region 14	8.9	4.7	11.3	2.2	0.6	5.1	11.1	9.9	12.5	0.2	0.2	0.2	0.2	0.0	0.7	11.5	10.5	12.7	0.0	0.0	0.0	4.1	1.7	6.7	1.7	0.9	3.2	0.6	0.5	1.1
3	Region 16	8.9	6.5	11.6	3.8	1.3	7.9	12.7	7.8	16.6	0.2	0.2	0.3	0.5	0.0	1.1	13.4	9.1	17.4	0.0	0.0	0.0	4.7	3.3	6.9	1.1	0.7	1.7	0.5	0.5	0.6
1	Region 17	6.0	6.0	6.0	2.2	2.2	2.2	8.2	8.2	8.2	0.2	0.2	0.2	1.1	1.1	1.1	9.6	9.6	9.6	0.0	0.0	0.0	3.0	3.0	3.0	0.8	0.8	0.8	0.6	0.6	0.6
3	Region 18	8.5	6.5	12.1	2.8	2.6	3.2	11.4	9.7	14.7	0.2	0.2	0.2	0.7	0.4	1.1	12.2	10.3	16.0	0.0	0.0	0.0	3.0	1.6	4.6	1.9	1.1	2.7	0.6	0.4	0.9
5	Region 19	8.8	6.2	12.0	3.8	2.2	6.9	12.6	10.5	15.3	0.2	0.2	0.3	0.2	0.0	0.5	13.0	10.8	15.5	0.0	0.0	0.0	3.4	2.7	4.1	2.1	1.4	3.4	0.6	0.4	1.3
4	Region 20	7.3	5.9	8.3	2.9	2.0	3.5	10.2	9.4	11.8	0.3	0.2	0.3	0.1	0.0	0.4	10.6	9.7	12.5	0.0	0.0	0.0	2.8	2.5	3.1	1.9	1.3	2.4	0.6	0.3	1.0
1	Region 22	6.5	6.5	6.5	2.5	2.5	2.5	9.0	9.0	9.0	0.2	0.2	0.2	0.0	0.0	0.0	9.2	9.2	9.2	0.0	0.0	0.0	3.0	3.0	3.0	1.5	1.5	1.5	0.5	0.5	0.5
10	Region 23	8.7	5.7	14.0	2.5	1.6	4.6	11.2	8.7	17.4	0.2	0.1	0.3	0.6	0.0	1.2	11.9	9.5	17.6	0.0	0.0	0.0	3.4	1.8	8.2	1.9	1.3	2.2	0.5	0.4	0.7
9	Region 25	7.8	5.0	10.7	3.4	0.6	9.6	11.2	8.8	15.0	0.2	0.2	0.3	0.5	0.0	2.5	11.9	9.1	15.6	0.0	0.0	0.0	3.3	1.6	5.2	1.6	0.9	2.2	0.5	0.4	0.9
4	Region 26	7.8	7.3	8.3	1.8	1.6	2.1	9.6	9.0	10.4	0.2	0.2	0.3	0.1	0.0	0.4	10.0	9.2	10.7	0.0	0.0	0.0	3.7	3.2	4.4	1.4	1.0	1.7	0.6	0.5	0.9
3	Region 27	6.3	6.0	6.7	3.7	3.3	4.5	10.0	9.3	10.7	0.2	0.2	0.2	0.0	0.0	0.0	10.2	9.5	10.9	0.0	0.0	0.0	2.2	1.6	2.6	1.3	0.5	1.8	0.1	0.0	0.4
6	Region 28	6.4	4.0	7.4	3.9	1.4	9.0	10.3	8.3	15.2	0.2	0.2	0.2	0.2	0.0	0.5	10.7	8.5	15.4	0.0	0.0	0.0	2.4	1.7	2.8	1.7	0.9	2.8	0.4	0.0	0.6
1	Region 30	5.1	5.1	5.1	4.0	4.0	4.0	9.1	9.1	9.1	0.3	0.3	0.3	0.8	0.8	0.8	10.3	10.3	10.3	0.0	0.0	0.0	1.7	1.7	1.7	0.3	0.3	0.3	0.0	0.0	0.0
1	Region 33	6.8	6.8	6.8	2.6	2.6	2.6	9.4	9.4	9.4	0.3	0.3	0.3	0.5	0.5	0.5	10.2	10.2	10.2	0.0	0.0	0.0	2.6	2.6	2.6	1.3	1.3	1.3	0.5	0.5	0.5
2	Region 36	1.9	1.6	2.2	6.5	4.9	8.1	8.4	6.5	10.3	0.1	0.1	0.1	0.0	0.0	0.0	8.5	6.6	10.4	0.0	0.0	0.0	0.6	0.6	0.7	0.6	0.4	0.9	0.0	0.0	0.0
63	**Ave YM2**	**7.9**			**3.1**			**11.0**			**0.2**			**0.4**			**11.5**			**0.0**			**3.3**			**1.6**			**0.5**		
	Min YM2		**1.6**			**0.6**			**6.5**			**0.1**			**0.0**			**6.6**			**0.0**			**0.6**			**0.3**			**0.0**	
	Max YM2			**14.0**			**9.6**			**17.4**			**0.3**			**2.5**			**18.5**			**0.0**			**8.2**			**3.4**			**1.3**

TABLE 3: RSA GRADING OF YELLOW MAIZE (2010/2011) (continue)

Number of samples	Region	% Defective Kernels						%			%			%			%			%			%			%		
		Above 6.35 mm sieve			Below 6.35 mm sieve			Total defective			Foreign matter			Other Colour			Total Deviation			Pinked Kernels			Diplodia Kernels			Fusarium Kernels			Cobrot Kernels		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM3																														
1	Region 20	20.3	20.3	20.3	4.2	4.2	4.2	24.5	24.5	24.5	0.3	0.3	0.3	0.6	0.6	0.6	25.4	25.4	25.4	0.0	0.0	0.0	10.2	10.2	10.2	3.7	3.7	3.7	0.9	0.9	0.9
2	Region 23	18.1	14.2	22.0	2.0	1.6	2.3	20.1	16.5	23.6	0.2	0.2	0.2	1.8	0.0	3.6	22.1	20.4	23.8	0.0	0.0	0.0	7.9	6.7	9.2	5.6	3.7	7.4	0.8	0.7	0.9
3	**Ave YM3**	**18.8**			**2.7**			**21.5**			**0.3**			**1.4**			**23.2**			**0.0**			**8.7**			**4.9**			**0.9**		
	Min YM3		**14.2**			**1.6**			**16.5**			**0.2**			**0.0**			**20.4**			**0.0**			**6.7**			**3.7**			**0.7**	
	Max YM3			**22.0**			**4.2**			**24.5**			**0.3**			**3.6**			**25.4**			**0.0**			**10.2**			**7.4**			**0.9**
GRADE: COM																														
1	Region 12	30.9	30.9	30.9	5.1	5.1	5.1	36.1	36.1	36.1	0.4	0.4	0.4	0.5	0.5	0.5	36.9	36.9	36.9	0.0	0.0	0.0	18.0	18.0	18.0	4.7	4.7	4.7	2.3	2.3	2.3
1	Region 20	16.5	16.5	16.5	2.2	2.2	2.2	18.7	18.7	18.7	0.2	0.2	0.2	6.2	6.2	6.2	25.1	25.1	25.1	0.0	0.0	0.0	8.7	8.7	8.7	2.9	2.9	2.9	0.7	0.7	0.7
2	**Ave COM**	**23.7**			**3.7**			**27.4**			**0.3**			**3.3**			**31.0**			**0.0**			**13.4**			**3.8**			**1.5**		
	Min COM		**16.5**			**2.2**			**18.7**			**0.2**			**0.5**			**25.1**			**0.0**			**8.7**			**2.9**			**0.7**	
	Max COM			**30.9**			**5.1**			**36.1**			**0.4**			**6.2**			**36.9**			**0.0**			**18.0**			**4.7**			**2.3**
280	**Ave yellow maize**	**4.7**			**2.1**			**6.8**			**0.2**			**0.2**			**7.2**			**0.0**			**1.9**			**1.0**			**0.3**		
	Min yellow maize		**0.8**			**0.1**			**1.2**			**0.0**			**0.0**			**1.3**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max yellow maize			**30.9**			**9.6**			**36.1**			**0.4**			**6.2**			**36.9**			**0.0**			**18.0**			**7.4**			**2.3**
693	**Ave maize**	**5.0**			**1.9**			**6.9**			**0.2**			**0.3**			**7.4**			**0.0**			**2.0**			**1.0**			**0.2**		
	Min maize		**0.5**			**0.1**			**0.9**			**0.0**			**0.0**			**0.9**			**0.0**			**0.0**			**0.0**			**0.0**	
	Max maize			**67.1**			**13.3**			**71.5**			**0.8**			**23.2**			**95.1**			**0.0**			**18.0**			**7.4**			**2.3**

TABLE 4: GRADING QUALITY OF SOUTH AFRICAN WHITE AND YELLOW MAIZE 2001/02 - 2010/11

Season	Number of samples	% Defective kernels above 6.35 mm sieve			% Defective kernels below 6.35 mm sieve			% Foreign matter			% Other colour			% Total deviation		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
White Maize																
2001/02	471	5.0	0.7	26.5	1.4	0.0	6.7	0.0	0.0	0.6	0.3	0.0	7.5	6.7	0.9	31.5
2002/03	517	2.4	0.4	12.9	1.6	0.0	7.5	0.1	0.0	2.0	0.4	0.0	12.7	4.5	1.0	22.2
2003/04	599	4.0	0.6	27.2	2.1	0.4	20.4	0.3	0.0	1.2	0.3	0.0	5.7	6.7	1.3	47.9
2004/05	601	3.5	0.5	28.5	1.9	0.1	16.4	0.2	0.0	0.5	0.3	0.0	12.3	5.9	1.3	31.1
2005/06	593	6.0	0.5	27.9	1.8	0.0	8.8	0.2	0.0	0.7	0.3	0.0	5.0	8.3	1.0	31.2
2006/07	563	2.9	0.1	34.9	2.0	0.1	11.6	0.1	0.0	0.7	0.2	0.0	13.5	5.3	0.4	38.8
2007/08	483	2.0	0.3	13.6	1.6	0.0	10.3	0.2	0.0	0.7	0.2	0.0	5.2	3.9	0.5	18.5
2008/09	483	2.6	0.4	16.9	1.6	0.0	5.5	0.2	0.0	4.0	0.2	0.0	5.0	4.5	1.0	20.2
2009/10	458	5.1	1.0	40.1	1.5	0.2	14.0	0.1	0.0	0.4	0.2	0.0	6.5	6.9	1.4	41.4
2010/11	413	5.2	0.5	67.1	1.8	0.1	13.3	0.2	0.0	0.8	0.4	0.0	23.2	7.5	0.9	95.1
Weighted Average		**3.9**			**1.7**			**0.2**			**0.3**			**6.0**		
Minimum			**0.1**			**0.0**			**0.0**			**0.0**			**0.4**	
Maximum				**67.1**			**20.4**			**4.0**			**23.2**			**95.1**
Yellow Maize																
2001/02	429	6.3	0.6	21.6	1.9	0.0	17.2	0.1	0.0	0.9	0.3	0.0	6.3	8.6	0.7	24.3
2002/03	383	2.1	0.0	10.0	2.5	0.1	10.8	0.2	0.0	2.1	0.2	0.0	3.3	5.0	0.0	15.7
2003/04	301	4.3	0.5	22.5	2.3	0.5	8.7	0.3	0.0	0.9	0.2	0.0	5.3	7.0	1.2	28.0
2004/05	399	4.0	0.6	27.2	2.3	0.3	9.4	0.2	0.0	0.6	0.1	0.0	2.8	6.6	1.0	31.5
2005/06	307	5.5	0.8	23.7	2.0	0.0	9.8	0.2	0.0	0.4	0.4	0.0	16.7	8.1	1.3	32.7
2006/07	337	2.8	0.0	67.7	2.5	0.2	17.3	0.2	0.0	1.9	0.2	0.0	4.6	5.7	0.9	70.0
2007/08	417	1.6	0.3	8.4	2.0	0.2	7.3	0.1	0.0	0.4	0.1	0.0	4.3	3.9	0.6	11.0
2008/09	327	2.3	0.5	15.1	2.0	0.0	10.6	0.2	0.0	3.1	0.2	0.0	13.3	4.7	0.9	29.6
2009/10	342	5.1	0.3	23.8	1.9	0.1	12.9	0.2	0.0	4.1	0.1	0.0	4.2	7.2	0.6	25.0
2010/11	280	4.7	0.8	30.9	2.1	0.1	9.6	0.2	0.0	0.4	0.2	0.0	6.2	7.2	1.3	36.9
Weighted Average		**3.8**			**2.1**			**0.2**			**0.2**			**6.4**		
Minimum			**0.0**			**0.0**			**0.0**			**0.0**			**0.0**	
Maximum				**67.7**			**17.3**			**4.1**			**16.7**			**70.0**
White and Yellow Maize																
2001/02	900	5.6	0.6	26.5	1.6	0.0	17.2	0.1	0.0	0.9	0.3	0.0	7.5	7.6	0.7	31.5
2002/03	900	2.3	0.2	12.9	2.0	0.0	10.8	0.2	0.0	2.1	0.3	0.0	12.7	4.7	0.0	22.2
2003/04	900	4.1	0.5	27.2	2.2	0.4	20.4	0.3	0.0	1.2	0.3	0.0	5.7	6.8	1.2	47.9
2004/05	1000	3.7	0.5	28.5	2.1	0.1	16.4	0.2	0.0	0.6	0.2	0.0	12.3	6.2	1.0	31.5
2005/06	900	5.9	0.5	27.9	1.9	0.0	9.8	0.2	0.0	0.7	0.3	0.0	16.7	8.2	1.0	32.7
2006/07	900	2.9	0.0	67.7	2.2	0.1	17.3	0.2	0.0	1.9	0.2	0.0	13.5	5.4	0.4	70.0
2007/08	900	1.8	0.3	13.6	1.8	0.0	10.3	0.1	0.0	0.7	0.1	0.0	5.2	3.9	0.5	18.5
2008/09	810	2.5	0.4	16.9	1.8	0.0	10.6	0.2	0.0	4.0	0.2	0.0	13.3	4.6	0.9	29.6
2009/10	800	5.1	0.3	40.1	1.7	0.1	14.0	0.1	0.0	4.1	0.2	0.0	6.5	7.1	0.6	41.4
2010/11	693	5.0	0.5	67.1	1.9	0.1	13.3	0.2	0.0	0.8	0.3	0.0	23.2	7.4	0.9	95.1
Weighted Average		**3.9**			**1.9**			**0.2**			**0.2**			**6.2**		
Minimum			**0.0**			**0.0**			**0.0**			**0.0**			**0.0**	
Maximum				**67.7**			**20.4**			**4.1**			**23.2**			**95.1**

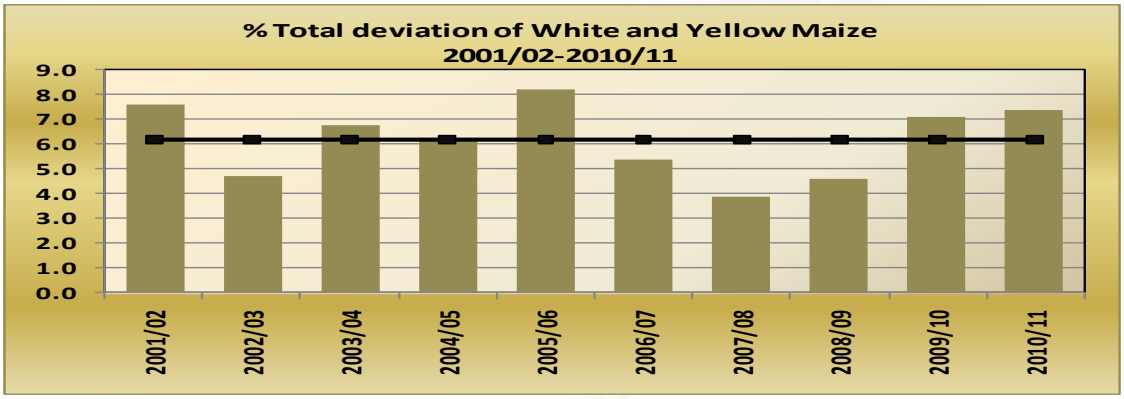


TABLE 5: USA GRADING OF WHITE MAIZE (2010/2011)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight lbs			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: US 1																
1	Region 08	0.0	0.0	0.0	2.9	2.9	2.9	0.2	0.2	0.2	60.6	60.6	60.6	0.0	0.0	0.0
3	Region 12	0.0	0.0	0.0	2.9	2.7	3.0	0.3	0.1	0.5	62.0	61.6	62.5	0.3	0.0	0.4
4	Region 13	0.0	0.0	0.0	2.9	2.8	3.0	0.6	0.4	0.9	61.1	60.5	62.0	0.1	0.0	0.4
6	Region 14	0.0	0.0	0.0	2.6	2.2	3.0	0.5	0.3	0.7	60.7	58.3	61.7	0.1	0.0	0.9
2	Region 17	0.0	0.0	0.0	2.3	2.1	2.4	0.4	0.4	0.4	61.3	60.8	61.8	0.0	0.0	0.0
1	Region 19	0.0	0.0	0.0	2.4	2.4	2.4	0.7	0.7	0.7	60.1	60.1	60.1	0.0	0.0	0.0
4	Region 21	0.0	0.0	0.0	2.6	2.5	2.8	0.6	0.4	0.7	60.4	58.0	61.4	0.0	0.0	0.0
5	Region 22	0.0	0.0	0.0	2.3	1.7	2.8	0.6	0.3	0.7	60.9	60.0	61.4	0.1	0.0	0.4
8	Region 23	0.0	0.0	0.0	2.2	1.4	3.0	0.6	0.4	0.7	61.1	59.0	63.3	0.1	0.0	0.4
4	Region 24	0.0	0.0	0.0	2.6	2.0	2.9	0.6	0.5	1.1	61.1	60.3	61.7	0.0	0.0	0.0
2	Region 25	0.0	0.0	0.0	2.2	2.1	2.2	0.8	0.7	0.9	59.7	59.1	60.4	0.0	0.0	0.0
5	Region 26	0.0	0.0	0.0	2.4	1.9	2.7	0.5	0.3	0.7	59.6	58.2	60.7	0.0	0.0	0.0
14	Region 28	0.0	0.0	0.0	1.8	0.5	2.9	0.2	0.0	0.7	60.3	57.4	62.1	0.1	0.0	0.6
3	Region 30	0.0	0.0	0.0	2.6	2.4	2.8	0.4	0.3	0.7	60.7	60.5	60.9	0.1	0.0	0.4
2	Region 31	0.0	0.0	0.0	2.5	2.2	2.8	0.5	0.5	0.5	60.5	60.3	60.7	0.7	0.7	0.8
9	Region 32	0.0	0.0	0.0	2.7	2.4	3.0	0.4	0.3	0.6	60.1	59.0	61.7	0.2	0.0	0.5
6	Region 33	0.0	0.0	0.0	2.5	2.0	2.8	0.6	0.5	0.7	59.2	57.6	60.1	0.3	0.0	0.9
6	Region 34	0.0	0.0	0.0	2.7	2.3	3.0	0.3	0.1	0.4	61.2	60.8	62.3	0.6	0.0	1.1
3	Region 35	0.0	0.0	0.0	2.5	2.0	2.9	0.5	0.1	1.1	60.6	59.4	62.8	0.3	0.0	0.4
8	Region 36	0.0	0.0	0.0	2.1	1.5	2.9	0.5	0.1	1.2	60.3	58.8	62.1	0.1	0.0	0.8
96	**Ave US 1**	**0.0**			**2.4**			**0.5**			**60.5**			**0.2**		
	Min US 1		**0.0**			**0.5**			**0.0**			**57.4**			**0.0**	
	Max US 1			**0.0**			**3.0**			**1.2**			**63.3**			**1.1**
GRADE: US 2																
9	Region 12	0.0	0.0	0.0	4.2	3.1	5.0	1.1	0.2	1.9	60.8	60.0	61.8	0.4	0.0	0.8
11	Region 13	0.0	0.0	0.0	3.6	3.1	4.9	0.7	0.2	1.2	60.7	58.9	62.0	0.2	0.0	0.9
8	Region 14	0.0	0.0	0.0	4.1	3.2	5.0	0.8	0.3	1.1	61.1	60.1	62.5	0.1	0.0	0.5
4	Region 15	0.0	0.0	0.0	4.7	4.5	4.9	0.5	0.4	0.5	61.6	61.4	61.8	0.1	0.0	0.5
5	Region 16	0.0	0.0	0.0	4.5	3.5	5.0	0.4	0.2	0.6	61.0	60.4	61.9	0.3	0.0	0.5
19	Region 17	0.0	0.0	0.0	4.0	3.2	5.0	0.7	0.4	0.9	61.0	59.5	61.9	0.3	0.0	0.9
14	Region 18	0.0	0.0	0.0	4.0	3.3	4.8	0.7	0.5	1.4	60.7	59.7	62.6	0.3	0.0	0.7
12	Region 19	0.0	0.0	0.0	3.9	3.1	5.0	1.0	0.5	2.0	59.8	57.2	61.9	0.2	0.0	0.9
6	Region 20	0.0	0.0	0.0	3.9	3.1	4.9	0.7	0.1	1.1	60.7	59.6	62.1	0.4	0.0	0.5
4	Region 21	0.0	0.0	0.0	3.6	3.3	3.8	0.9	0.5	1.2	60.2	58.7	61.9	0.6	0.0	1.3
2	Region 22	0.0	0.0	0.0	4.0	3.1	5.0	0.6	0.5	0.8	60.4	60.1	60.7	0.3	0.0	0.6
6	Region 23	0.0	0.0	0.0	4.5	3.6	4.9	0.6	0.3	1.5	62.2	60.8	63.5	0.1	0.0	0.4
8	Region 24	0.0	0.0	0.0	3.9	3.2	4.8	0.7	0.4	1.1	60.4	58.7	61.5	0.2	0.0	0.4
4	Region 25	0.0	0.0	0.0	4.2	3.6	5.0	0.8	0.3	1.0	60.5	58.6	61.4	0.1	0.0	0.5
2	Region 26	0.0	0.0	0.0	3.8	3.4	4.2	1.0	0.7	1.4	60.9	60.1	61.8	0.0	0.0	0.0
2	Region 27	0.0	0.0	0.0	3.9	3.1	4.7	0.8	0.5	1.1	57.6	57.5	57.8	0.7	0.3	1.0
5	Region 28	0.0	0.0	0.0	4.1	3.9	4.7	0.8	0.4	1.2	59.0	57.7	60.5	0.3	0.0	0.7
3	Region 30	0.0	0.0	0.0	3.6	3.1	4.3	0.2	0.1	0.3	59.4	58.2	60.4	0.0	0.0	0.0
7	Region 32	0.0	0.0	0.0	3.9	3.4	4.8	0.6	0.4	1.0	59.8	58.4	61.0	0.1	0.0	0.5
10	Region 33	0.0	0.0	0.0	3.5	3.1	4.8	0.7	0.6	1.1	58.7	57.6	59.8	0.3	0.0	0.9
16	Region 34	0.0	0.0	0.0	4.0	3.3	5.0	0.4	0.0	1.2	60.9	59.6	62.1	0.3	0.0	1.1
1	Region 35	0.0	0.0	0.0	4.8	4.8	4.8	0.7	0.7	0.7	59.3	59.3	59.3	0.9	0.9	0.9
6	Region 36	0.0	0.0	0.0	3.8	3.1	4.6	0.8	0.3	1.8	59.9	59.0	61.1	0.4	0.0	1.1
164	**Ave US 2**	**0.0**			**4.0**			**0.7**			**60.5**			**0.3**		
	Min US 2		**0.0**			**3.1**			**0.0**			**57.2**			**0.0**	
	Max US 2			**0.0**			**5.0**			**2.0**			**63.5**			**1.3**

TABLE 5: USA GRADING OF WHITE MAIZE (2010/2011) (continue)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight lbs			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: US 3																
6	Region 12	0.0	0.0	0.0	5.8	5.1	6.8	1.1	0.2	2.5	61.2	60.4	62.1	0.5	0.0	0.9
5	Region 13	0.0	0.0	0.0	6.4	5.2	6.9	0.9	0.4	1.8	61.2	60.7	61.9	0.4	0.0	1.0
8	Region 14	0.0	0.0	0.0	5.8	5.1	6.6	1.1	0.2	2.6	60.5	58.6	62.1	0.3	0.0	0.8
1	Region 15	0.0	0.0	0.0	6.9	6.9	6.9	0.7	0.7	0.7	60.5	60.5	60.5	0.0	0.0	0.0
5	Region 16	0.0	0.0	0.0	5.7	5.3	6.2	0.5	0.3	1.3	61.5	61.0	62.5	0.1	0.0	0.4
2	Region 17	0.0	0.0	0.0	5.5	5.3	5.7	0.2	0.2	0.3	60.6	60.4	60.8	0.5	0.4	0.5
2	Region 18	0.0	0.0	0.0	6.5	6.3	6.6	0.9	0.8	1.1	60.0	59.9	60.1	0.7	0.0	1.4
3	Region 19	0.0	0.0	0.0	6.9	6.9	7.0	0.8	0.3	1.3	59.6	58.3	60.4	0.5	0.4	0.7
4	Region 20	0.0	0.0	0.0	6.4	5.3	7.0	1.4	0.5	3.5	60.3	58.3	61.9	0.5	0.0	1.2
1	Region 21	0.0	0.0	0.0	5.1	5.1	5.1	1.0	1.0	1.0	61.0	61.0	61.0	0.5	0.5	0.5
3	Region 22	0.0	0.0	0.0	5.5	5.3	5.8	0.7	0.6	0.8	60.0	60.0	60.0	1.2	0.8	1.4
4	Region 23	0.0	0.0	0.0	6.0	5.1	7.0	0.6	0.4	0.9	61.7	61.0	62.1	0.1	0.0	0.4
6	Region 24	0.0	0.0	0.0	6.0	5.1	6.9	0.8	0.6	1.2	60.9	57.5	62.0	0.4	0.0	1.4
7	Region 25	0.0	0.0	0.0	6.1	5.1	6.7	0.9	0.4	1.7	58.8	56.9	60.4	0.6	0.0	1.0
1	Region 26	0.0	0.0	0.0	6.3	6.3	6.3	0.7	0.7	0.7	61.1	61.1	61.1	1.1	1.1	1.1
3	Region 28	0.0	0.0	0.0	5.5	5.1	6.0	0.6	0.3	1.1	58.8	57.8	60.5	0.6	0.0	0.9
1	Region 30	0.0	0.0	0.0	5.1	5.1	5.1	0.4	0.4	0.4	61.4	61.4	61.4	1.2	1.2	1.2
8	Region 34	0.0	0.0	0.0	5.7	5.1	6.6	0.5	0.3	0.7	60.3	56.7	61.8	0.6	0.0	0.9
1	Region 35	0.0	0.0	0.0	5.7	5.7	5.7	0.4	0.4	0.4	62.2	62.2	62.2	0.0	0.0	0.0
71	**Ave US 3**	**0.0**			**5.9**			**0.8**			**60.5**			**0.5**		
	Min US 3		**0.0**			**5.1**			**0.2**			**56.7**			**0.0**	
	Max US 3			**0.0**			**7.0**			**3.5**			**62.5**			**1.4**
GRADE: US 4																
2	Region 12	0.0	0.0	0.0	9.0	8.5	9.5	0.9	0.8	1.0	61.0	60.7	61.4	1.0	0.9	1.1
6	Region 13	0.0	0.0	0.0	8.5	7.3	9.1	0.9	0.4	1.8	60.5	59.7	61.5	0.3	0.0	0.8
3	Region 14	0.0	0.0	0.0	8.2	7.6	8.7	0.6	0.3	0.8	60.4	60.0	61.3	0.0	0.0	0.0
4	Region 15	0.0	0.0	0.0	9.2	8.1	9.8	0.9	0.8	1.0	61.3	61.1	61.5	0.1	0.0	0.4
3	Region 16	0.0	0.0	0.0	8.3	8.2	8.5	0.5	0.3	0.7	61.0	60.6	61.3	0.0	0.0	0.0
3	Region 17	0.0	0.0	0.0	7.4	7.2	7.6	1.2	1.0	1.4	60.2	59.4	60.7	0.6	0.5	0.7
2	Region 18	0.0	0.0	0.0	8.9	8.1	9.6	0.7	0.3	1.1	60.1	59.7	60.6	0.4	0.4	0.4
7	Region 19	0.0	0.0	0.0	7.9	7.1	8.9	1.5	0.8	3.8	59.7	58.3	60.7	0.5	0.0	0.9
1	Region 20	0.0	0.0	0.0	9.2	9.2	9.2	0.4	0.4	0.4	61.1	61.1	61.1	0.4	0.4	0.4
6	Region 23	0.1	0.0	0.8	7.9	6.5	9.4	0.5	0.2	0.7	61.0	60.0	62.3	0.5	0.0	1.1
3	Region 24	0.0	0.0	0.0	8.1	7.7	8.8	1.0	0.7	1.5	60.5	59.1	62.1	0.1	0.0	0.4
3	Region 25	0.0	0.0	0.0	7.8	7.5	8.0	0.6	0.3	0.8	58.2	57.5	59.0	0.4	0.0	0.8
2	Region 26	0.0	0.0	0.0	7.9	7.4	8.4	0.7	0.5	0.8	57.4	57.0	57.7	0.9	0.8	1.1
1	Region 28	0.0	0.0	0.0	7.3	7.3	7.3	1.2	1.2	1.2	60.4	60.4	60.4	0.8	0.8	0.8
1	Region 33	0.0	0.0	0.0	8.6	8.6	8.6	0.4	0.4	0.4	59.7	59.7	59.7	0.6	0.6	0.6
1	Region 34	0.0	0.0	0.0	7.3	7.3	7.3	0.2	0.2	0.2	58.3	58.3	58.3	0.6	0.6	0.6
1	Region 36	0.0	0.0	0.0	9.6	9.6	9.6	0.1	0.1	0.1	62.4	62.4	62.4	0.0	0.0	0.0
49	**Ave US 4**	**0.0**			**8.2**			**0.8**			**60.2**			**0.4**		
	Min US 4		**0.0**			**6.5**			**0.1**			**57.0**			**0.0**	
	Max US 4			**0.8**			**9.8**			**3.8**			**62.4**			**1.1**
GRADE: US 5																
1	Region 12	0.0	0.0	0.0	10.6	10.6	10.6	1.0	1.0	1.0	60.4	60.4	60.4	0.9	0.9	0.9
2	Region 13	0.0	0.0	0.0	11.4	10.2	12.7	0.9	0.8	0.9	59.2	58.9	59.5	0.4	0.4	0.4
4	Region 14	0.5	0.0	1.9	11.5	10.8	12.3	0.9	0.2	1.5	59.4	56.4	62.7	0.2	0.0	0.5
1	Region 15	0.0	0.0	0.0	13.3	13.3	13.3	0.8	0.8	0.8	62.1	62.1	62.1	0.9	0.9	0.9
1	Region 16	0.0	0.0	0.0	11.1	11.1	11.1	0.6	0.6	0.6	62.2	62.2	62.2	0.0	0.0	0.0
4	Region 17	0.0	0.0	0.0	11.3	10.3	12.8	0.8	0.4	1.0	60.4	59.9	61.3	0.6	0.0	1.1

TABLE 5: USA GRADING OF WHITE MAIZE (2010/2011) (continue)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight lbs			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: US 5 (continue)																
2	Region 18	0.0	0.0	0.0	12.0	10.4	13.6	1.0	0.7	1.2	59.0	58.7	59.4	0.5	0.4	0.6
2	Region 19	0.6	0.0	1.3	13.8	12.8	14.8	1.0	0.7	1.3	60.0	59.7	60.2	0.3	0.0	0.5
1	Region 20	0.0	0.0	0.0	10.6	10.6	10.6	3.9	3.9	3.9	59.2	59.2	59.2	0.8	0.8	0.8
3	Region 23	0.0	0.0	0.0	14.6	14.4	14.9	1.1	0.8	1.3	58.7	55.9	60.5	0.4	0.0	0.8
21	**Ave US 5**	**0.1**			**12.2**			**1.0**			**59.8**			**0.5**		
	Min US 5		**0.0**			**10.2**			**0.2**			**55.9**			**0.0**	
	Max US 5			**1.9**			**14.9**			**3.9**			**62.7**			**1.1**
GRADE: MIXED GRADE																
1	Region 14	0.0	0.0	0.0	3.9	3.9	3.9	0.6	0.6	0.6	61.7	61.7	61.7	2.8	2.8	2.8
1	Region 18	0.0	0.0	0.0	8.6	8.6	8.6	1.0	1.0	1.0	60.7	60.7	60.7	3.2	3.2	3.2
3	Region 25	0.0	0.0	0.0	6.4	4.3	7.4	1.7	0.5	2.7	58.7	57.1	60.0	3.0	2.2	3.5
2	Region 28	0.0	0.0	0.0	3.3	3.0	3.5	0.8	0.7	1.0	59.3	59.2	59.4	2.9	2.3	3.4
7	**Ave Mixed Grade**	**0.0**			**5.5**			**1.2**			**59.6**			**3.0**		
	Min Mixed Grade		**0.0**			**3.0**			**0.5**			**57.1**			**2.2**	
	Max Mixed Grade			**0.0**			**8.6**			**2.7**			**61.7**			**3.5**
GRADE:SAMPLE GRADE																
1	Region 13	0.0	0.0	0.0	16.6	16.6	16.6	0.9	0.9	0.9	59.7	59.7	59.7	0.9	0.9	0.9
1	Region 14	0.0	0.0	0.0	16.2	16.2	16.2	0.0	0.0	0.0	60.3	60.3	60.3	0.7	0.7	0.7
1	Region 19	0.0	0.0	0.0	28.1	28.1	28.1	7.3	7.3	7.3	55.4	55.4	55.4	0.0	0.0	0.0
2	Region 20	33.0	0.0	66.0	43.8	20.6	67.1	1.2	0.4	1.9	59.3	58.6	60.0	11.6	0.0	23.2
5	**Ave Sample Grade**	**13.2**			**29.7**			**2.1**			**58.8**			**5.0**		
	Min Sample Grade		**0.0**			**16.2**			**0.0**			**55.4**			**0.0**	
	Max Sample Grade			**66.0**			**67.1**			**7.3**			**60.3**			**23.2**
413	**Ave white maize**	**0.2**			**5.2**			**0.7**			**60.4**			**0.4**		
	Min white maize		**0.0**			**0.5**			**0.0**			**55.4**			**0.0**	
	Max white maize			**66.0**			**67.1**			**7.3**			**63.5**			**23.2**
693	**Ave maize**	**0.1**			**5.0**			**0.8**			**59.9**			**0.3**		
	Min maize		**0.0**			**0.5**			**0.0**			**53.6**			**0.0**	
	Max maize			**66.0**			**67.1**			**7.3**			**63.5**			**23.2**

TABLE 6: USA GRADING OF YELLOW MAIZE (2010/2011)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight lbs			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: US 1																
24	Region 10	0.0	0.0	0.0	2.0	0.8	3.0	0.5	0.0	0.9	60.1	58.4	63.3	0.0	0.0	0.0
1	Region 11	0.0	0.0	0.0	2.2	2.2	2.2	0.2	0.2	0.2	58.8	58.8	58.8	0.0	0.0	0.0
3	Region 12	0.0	0.0	0.0	2.3	1.9	2.5	0.5	0.4	0.6	59.1	58.6	59.4	0.0	0.0	0.0
1	Region 13	0.0	0.0	0.0	2.4	2.4	2.4	0.5	0.5	0.5	60.1	60.1	60.1	0.0	0.0	0.0
2	Region 14	0.0	0.0	0.0	2.2	2.0	2.4	0.7	0.4	0.9	59.9	59.2	60.5	0.0	0.0	0.0
1	Region 18	0.0	0.0	0.0	3.0	3.0	3.0	0.5	0.5	0.5	61.2	61.2	61.2	0.0	0.0	0.0
1	Region 19	0.0	0.0	0.0	2.3	2.3	2.3	0.7	0.7	0.7	60.5	60.5	60.5	0.0	0.0	0.0
1	Region 21	0.0	0.0	0.0	2.9	2.9	2.9	0.5	0.5	0.5	58.2	58.2	58.2	0.0	0.0	0.0
2	Region 22	0.0	0.0	0.0	2.0	1.7	2.3	0.6	0.5	0.7	59.0	58.5	59.6	0.0	0.0	0.0
2	Region 23	0.0	0.0	0.0	2.1	1.7	2.5	0.7	0.6	0.7	59.7	59.5	60.0	0.0	0.0	0.0
2	Region 25	0.0	0.0	0.0	2.3	2.0	2.6	0.9	0.6	1.2	58.7	58.5	59.0	0.2	0.2	0.2
6	Region 26	0.0	0.0	0.0	2.5	2.0	2.9	0.6	0.2	0.9	59.5	58.2	61.0	0.0	0.0	0.0
14	Region 28	0.0	0.0	0.0	2.0	1.3	3.0	0.4	0.0	1.1	58.7	57.1	60.8	0.2	0.0	1.4
3	Region 30	0.0	0.0	0.0	2.1	1.0	2.9	1.0	0.5	1.4	60.1	58.7	61.0	0.0	0.0	0.0
7	Region 32	0.0	0.0	0.0	2.3	1.4	3.0	0.6	0.5	0.8	60.0	58.0	61.5	0.1	0.0	0.4
4	Region 33	0.0	0.0	0.0	2.5	2.1	3.0	0.5	0.3	0.8	57.7	56.6	58.3	0.0	0.0	0.0
8	Region 34	0.0	0.0	0.0	2.6	1.8	3.0	0.6	0.3	1.0	60.1	59.4	62.1	0.0	0.0	0.0
3	Region 35	0.0	0.0	0.0	1.7	0.9	2.5	0.4	0.2	0.6	59.9	59.7	60.4	0.1	0.0	0.4
11	Region 36	0.0	0.0	0.0	2.3	1.4	3.0	0.7	0.1	1.7	59.5	56.4	61.0	0.0	0.0	0.4
96	**Ave US 1**	**0.0**			**2.2**			**0.6**			**59.6**			**0.0**		
	Min US 1		**0.0**			**0.8**			**0.0**			**56.4**			**0.0**	
	Max US 1			**0.0**			**3.0**			**1.7**			**63.3**			**1.4**
GRADE: US 2																
5	Region 10	0.0	0.0	0.0	3.7	3.1	5.0	0.6	0.1	1.1	59.8	58.5	61.3	0.0	0.0	0.0
2	Region 12	0.0	0.0	0.0	4.5	4.4	4.6	0.6	0.3	0.8	60.1	60.0	60.1	0.2	0.0	0.3
3	Region 13	0.0	0.0	0.0	4.1	3.2	4.8	0.9	0.5	1.2	59.9	59.4	60.2	0.0	0.0	0.0
7	Region 14	0.0	0.0	0.0	4.0	3.5	4.9	0.9	0.4	2.1	58.9	57.9	59.7	0.2	0.0	0.7
6	Region 17	0.0	0.0	0.0	3.7	3.2	4.4	0.7	0.4	1.1	59.3	57.7	60.1	0.2	0.0	1.0
2	Region 18	0.0	0.0	0.0	4.5	4.1	5.0	0.7	0.7	0.7	59.5	59.0	60.0	0.2	0.0	0.4
6	Region 19	0.0	0.0	0.0	4.0	3.7	4.3	1.0	0.9	1.1	58.5	56.8	59.6	0.1	0.0	0.3
2	Region 20	0.0	0.0	0.0	4.9	4.8	5.0	0.5	0.2	0.8	59.4	59.0	59.7	0.3	0.0	0.7
2	Region 23	0.0	0.0	0.0	3.3	3.1	3.5	0.9	0.6	1.2	59.6	57.9	61.4	0.0	0.0	0.0
1	Region 24	0.0	0.0	0.0	3.9	3.9	3.9	0.5	0.5	0.5	60.1	60.1	60.1	1.9	1.9	1.9
10	Region 25	0.0	0.0	0.0	4.4	3.1	5.0	0.8	0.2	1.6	60.3	58.2	61.1	0.0	0.0	0.4
1	Region 26	0.0	0.0	0.0	3.6	3.6	3.6	1.1	1.1	1.1	59.9	59.9	59.9	0.0	0.0	0.0
4	Region 27	0.0	0.0	0.0	3.5	3.1	4.0	1.3	1.1	1.5	58.8	58.5	59.0	0.0	0.0	0.0
11	Region 28	0.0	0.0	0.0	3.8	1.1	4.9	1.0	0.4	2.1	57.8	55.5	59.3	0.2	0.0	0.6
3	Region 30	0.0	0.0	0.0	3.8	3.4	4.4	0.5	0.4	0.5	59.7	59.6	59.9	0.0	0.0	0.0
1	Region 31	0.0	0.0	0.0	4.0	4.0	4.0	1.0	1.0	1.0	61.1	61.1	61.1	0.0	0.0	0.0
1	Region 32	0.0	0.0	0.0	3.8	3.8	3.8	0.7	0.7	0.7	59.0	59.0	59.0	0.0	0.0	0.0
2	Region 33	0.0	0.0	0.0	4.7	4.4	5.0	0.5	0.3	0.7	58.3	57.6	58.9	0.0	0.0	0.0
11	Region 34	0.0	0.0	0.0	3.7	3.2	4.0	0.8	0.4	1.8	59.1	56.0	61.4	0.5	0.0	1.9
4	Region 36	0.0	0.0	0.0	3.8	3.5	4.2	0.5	0.3	1.0	60.1	59.4	61.3	0.2	0.0	0.7
84	**Ave US 2**	**0.0**			**4.0**			**0.8**			**59.2**			**0.2**		
	Min US 2		**0.0**			**1.1**			**0.1**			**55.5**			**0.0**	
	Max US 2			**0.0**			**5.0**			**2.1**			**61.4**			**1.9**

TABLE 6: USA GRADING OF YELLOW MAIZE (2010/2011) (continue)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight lbs			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: US 3																
1	Region 08	0.0	0.0	0.0	5.5	5.5	5.5	0.6	0.6	0.6	53.6	53.6	53.6	0.0	0.0	0.0
2	Region 13	0.0	0.0	0.0	5.4	5.2	5.6	0.6	0.6	0.7	59.6	59.4	59.8	0.2	0.0	0.5
2	Region 14	0.0	0.0	0.0	6.8	6.7	7.0	0.3	0.1	0.4	60.4	60.1	60.7	0.0	0.0	0.0
1	Region 15	0.0	0.0	0.0	5.8	5.8	5.8	0.9	0.9	0.9	58.9	58.9	58.9	0.3	0.3	0.3
2	Region 16	0.0	0.0	0.0	6.1	5.8	6.5	0.4	0.3	0.5	59.2	58.9	59.5	0.5	0.0	1.1
3	Region 17	0.0	0.0	0.0	5.7	5.3	6.0	0.7	0.6	0.9	59.6	58.8	60.6	0.7	0.0	1.1
4	Region 18	0.0	0.0	0.0	6.0	5.3	6.9	1.1	0.8	1.3	59.5	59.0	59.7	0.5	0.4	0.6
4	Region 19	0.0	0.0	0.0	6.0	5.4	6.4	0.9	0.4	1.7	60.3	58.7	61.5	0.0	0.0	0.0
7	Region 20	0.0	0.0	0.0	5.9	5.1	6.8	0.8	0.5	1.5	58.9	58.3	59.7	0.1	0.0	0.5
1	Region 22	0.0	0.0	0.0	6.6	6.6	6.6	0.9	0.9	0.9	57.7	57.7	57.7	0.0	0.0	0.0
4	Region 23	0.0	0.0	0.0	6.1	5.7	6.7	0.8	0.5	1.3	59.8	58.7	61.4	0.6	0.0	1.2
8	Region 25	0.0	0.0	0.0	6.0	5.1	7.0	1.0	0.9	1.3	59.6	58.2	61.1	0.3	0.0	0.9
1	Region 26	0.0	0.0	0.0	5.5	5.5	5.5	1.0	1.0	1.0	59.7	59.7	59.7	0.4	0.4	0.4
3	Region 27	0.0	0.0	0.0	6.4	6.0	6.8	1.6	1.3	2.3	57.5	54.9	59.0	0.0	0.0	0.0
4	Region 28	0.0	0.0	0.0	4.6	1.2	6.2	0.8	0.2	1.1	57.3	53.7	59.9	0.0	0.0	0.0
1	Region 30	0.0	0.0	0.0	5.4	5.4	5.4	1.7	1.7	1.7	61.2	61.2	61.2	0.8	0.8	0.8
1	Region 36	0.0	0.0	0.0	5.6	5.6	5.6	0.6	0.6	0.6	59.6	59.6	59.6	0.0	0.0	0.0
49	**Ave US 3**	**0.0**			**5.9**			**0.9**			**59.1**			**0.3**		
	Min US 3		**0.0**			**1.2**			**0.1**			**53.6**			**0.0**	
	Max US 3			**0.0**			**7.0**			**2.3**			**61.5**			**1.2**
GRADE: US 4																
2	Region 12	0.0	0.0	0.0	8.1	7.3	9.0	0.9	0.8	0.9	58.5	58.0	59.0	0.3	0.0	0.6
1	Region 13	0.0	0.0	0.0	7.6	7.6	7.6	0.8	0.8	0.8	59.3	59.3	59.3	0.4	0.4	0.4
3	Region 14	0.2	0.0	0.6	8.2	5.0	10.0	0.6	0.3	0.8	59.2	58.1	60.4	0.0	0.0	0.0
2	Region 16	0.0	0.0	0.0	8.2	7.5	9.0	1.7	0.3	3.1	58.9	58.1	59.7	0.5	0.4	0.5
3	Region 19	0.0	0.0	0.0	8.7	8.4	9.1	1.5	0.9	2.5	57.7	57.3	58.2	0.2	0.0	0.5
3	Region 20	0.0	0.0	0.0	7.9	7.5	8.6	1.0	0.9	1.2	59.0	58.1	59.7	0.1	0.0	0.4
5	Region 23	0.0	0.0	0.0	8.1	7.2	8.8	0.7	0.6	0.8	59.6	57.7	60.4	0.7	0.4	0.9
5	Region 25	0.0	0.0	0.0	7.7	7.1	8.2	1.5	0.2	3.4	58.8	57.2	61.0	0.3	0.0	0.9
4	Region 26	0.0	0.0	0.0	8.0	7.4	8.5	0.7	0.5	0.9	57.5	56.1	58.4	0.1	0.0	0.4
4	Region 28	0.0	0.0	0.0	7.2	6.4	7.6	2.0	0.6	4.3	58.2	57.5	59.7	0.4	0.0	0.5
1	Region 33	0.0	0.0	0.0	7.1	7.1	7.1	1.1	1.1	1.1	54.5	54.5	54.5	0.5	0.5	0.5
33	**Ave US 4**	**0.0**			**7.9**			**1.2**			**58.5**			**0.3**		
	Min US 4		**0.0**			**5.0**			**0.2**			**54.5**			**0.0**	
	Max US 4			**0.6**			**10.0**			**4.3**			**61.0**			**0.9**
GRADE: US 5																
1	Region 12	0.0	0.0	0.0	12.4	12.4	12.4	0.5	0.5	0.5	60.0	60.0	60.0	0.5	0.5	0.5
2	Region 13	0.0	0.0	0.0	13.1	12.3	14.0	1.0	0.9	1.2	58.8	58.4	59.3	0.6	0.0	1.2
1	Region 14	0.0	0.0	0.0	11.3	11.3	11.3	0.6	0.6	0.6	58.5	58.5	58.5	0.0	0.0	0.0
1	Region 16	0.0	0.0	0.0	11.8	11.8	11.8	0.7	0.7	0.7	59.0	59.0	59.0	0.0	0.0	0.0
1	Region 18	0.0	0.0	0.0	12.2	12.2	12.2	1.1	1.1	1.1	58.0	58.0	58.0	1.1	1.1	1.1
1	Region 19	0.0	0.0	0.0	12.0	12.0	12.0	1.1	1.1	1.1	57.8	57.8	57.8	0.4	0.4	0.4
4	Region 23	0.0	0.0	0.0	12.3	10.3	14.2	1.2	0.7	1.9	58.7	58.2	59.3	1.1	0.0	3.6
3	Region 25	0.0	0.0	0.0	8.7	5.2	10.9	3.1	1.3	6.4	58.6	57.5	60.8	0.1	0.0	0.4
14	**Ave US 5**	**0.0**			**11.5**			**1.4**			**58.7**			**0.6**		
	Min US 5		**0.0**			**5.2**			**0.5**			**57.5**			**0.0**	
	Max US 5			**0.0**			**14.2**			**6.4**			**60.8**			**3.6**

TABLE 6: USA GRADING OF YELLOW MAIZE (2010/2011) (continue)

Number of samples	Region	Damaged kernels						% Broken corn and foreign material			Bushel weight lbs			% Other colour		
		% Heat damaged			% Total damaged											
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: Mixed Grade																
1	Region 20	0.0	0.0	0.0	16.7	16.7	16.7	0.9	0.9	0.9	57.7	57.7	57.7	6.2	6.2	6.2
1	**Ave Sample Grade**	**0.0**			**16.7**			**0.9**			**57.7**			**6.2**		
	Min Sample Grade		**0.0**			**16.7**			**0.9**			**57.7**			**6.2**	
	Max Sample Grade			**0.0**			**16.7**			**0.9**			**57.7**			**6.2**
GRADE: Sample Grade																
1	Region 12	0.0	0.0	0.0	31.1	31.1	31.1	2.9	2.9	2.9	58.1	58.1	58.1	0.5	0.5	0.5
1	Region 20	0.0	0.0	0.0	20.5	20.5	20.5	2.0	2.0	2.0	57.3	57.3	57.3	0.6	0.6	0.6
1	Region 23	0.0	0.0	0.0	22.0	22.0	22.0	0.6	0.6	0.6	57.6	57.6	57.6	0.0	0.0	0.0
3	**Ave Sample Grade**	**0.0**			**24.5**			**1.9**			**57.6**			**0.4**		
	Min Sample Grade		**0.0**			**20.5**			**0.6**			**57.3**			**0.0**	
	Max Sample Grade			**0.0**			**31.1**			**2.9**			**58.1**			**0.6**
280	**Ave yellow maize**	**0.0**			**4.8**			**0.8**			**59.2**			**0.2**		
	Min yellow maize		**0.0**			**0.8**			**0.0**			**53.6**			**0.0**	
	Max yellow maize			**0.6**			**31.1**			**6.4**			**63.3**			**6.2**
693	**Ave maize**	**0.1**			**5.0**			**0.8**			**59.9**			**0.3**		
	Min maize		**0.0**			**0.5**			**0.0**			**53.6**			**0.0**	
	Max maize			**66.0**			**67.1**			**7.3**			**63.5**			**23.2**

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

Description of deviation		Maximum percentage of deviation allowed (m/m)					
		White maize			Yellow maize		
		GRADE					
		WM1	WM2	WM3	YM1	YM2	YM3
I	Defective maize kernels	7	13	30	*	*	*
	above 6.35 mm grading sieve	*	*	*	9	20	30
	below 6.35 mm grading sieve	*	*	*	4	10	30
II	Other colour maize kernels	3	6	10	2	5	5
III	Foreign matter (excluding glass, stone, coal, dung or metal)	0,3	0,5	0,75	0,3	0,5	0,75
IV	Total deviations in terms I, II and III collectively, provided such deviations are individually within the limits specified above	8	16	30	9	20	30
V	Pinked maize kernels	12	12	12	*	*	*

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

* Not specified

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

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

U.S. Sample grade is corn that:

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

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

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

d) Is heating or otherwise of distinctly low quality.

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

TABLE 9: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2010/2011)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM 1										
1	Region 08	4.2	4.2	4.2	8.2	8.2	82.2	73.5	73.5	73.5
9	Region 12	4.1	3.9	4.3	8.3	7.9	8.5	73.5	72.9	74.2
13	Region 13	4.1	4.0	4.3	7.9	7.4	9.0	73.3	72.4	74.1
14	Region 14	4.1	4.0	4.4	7.9	7.4	8.2	73.3	72.7	74.1
4	Region 15	4.2	4.1	4.3	8.3	8.1	8.4	73.2	72.9	73.4
9	Region 16	4.2	3.8	4.4	7.8	7.3	8.4	73.6	72.9	74.2
22	Region 17	4.1	3.8	4.3	7.8	6.9	8.6	73.4	72.5	74.3
14	Region 18	4.1	3.9	4.4	7.9	7.6	8.6	73.4	72.6	73.8
11	Region 19	4.1	4.0	4.5	7.9	7.6	8.9	73.3	72.6	73.9
7	Region 20	4.1	4.0	4.3	7.7	7.5	8.3	73.7	73.2	74.0
8	Region 21	4.0	3.9	4.2	8.0	6.9	8.8	73.4	72.4	73.9
8	Region 22	4.1	4.0	4.4	7.9	7.1	8.3	73.3	72.5	74.2
13	Region 23	4.2	3.9	4.6	8.2	6.9	9.1	73.2	72.2	74.0
12	Region 24	4.1	4.0	4.2	8.2	7.5	8.5	73.3	72.3	73.7
6	Region 25	4.0	3.2	4.5	7.3	6.1	8.1	74.1	73.2	77.0
6	Region 26	4.2	4.0	4.4	7.7	7.1	8.2	73.5	72.6	74.5
1	Region 27	4.2	4.2	4.2	7.5	7.5	7.5	74.0	74.0	74.0
19	Region 28	4.1	3.7	4.4	7.9	7.0	9.5	73.6	72.7	74.6
7	Region 30	3.9	3.7	4.3	8.0	7.8	8.2	73.6	72.8	74.7
2	Region 31	4.2	4.1	4.3	8.1	8.0	8.1	73.5	73.1	73.8
16	Region 32	4.0	3.6	4.2	7.8	7.1	8.6	74.0	72.9	74.7
16	Region 33	3.9	3.7	4.0	8.0	7.2	8.5	74.0	73.2	74.5
28	Region 34	4.1	3.8	4.4	7.8	7.0	8.5	73.7	72.7	74.5
5	Region 35	3.9	3.6	4.2	8.4	8.2	8.6	73.8	73.3	74.0
13	Region 36	4.1	3.8	4.4	8.1	7.4	9.4	73.6	73.0	74.1
264	**Ave WM 1**	**4.1**			**7.9**			**73.5**		
	Min WM 1		**3.2**			**6.1**			**72.2**	
	Max WM 1			**4.6**			**9.5**			**77.0**

TABLE 9: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2010/2011)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM 1										
1	Region 08	2.8	2.8	2.8	8.5	8.5	8.5	75.2	75.2	75.2
29	Region 10	3.3	3.1	3.6	7.1	6.3	8.3	74.8	73.6	76.0
1	Region 11	3.5	3.5	3.5	7.0	7.0	7.0	75.1	75.1	75.1
5	Region 12	3.6	3.5	3.8	8.7	8.1	9.1	73.9	72.9	74.9
6	Region 13	3.6	3.4	3.8	8.1	7.8	8.5	74.3	73.5	74.9
11	Region 14	3.6	3.5	3.8	8.4	7.7	9.3	73.8	72.4	75.0
1	Region 15	3.8	3.8	3.8	8.3	8.3	8.3	73.2	73.2	73.2
2	Region 16	3.8	3.8	3.8	7.6	7.2	8.0	74.1	74.0	74.1
8	Region 17	3.7	3.3	3.9	8.1	7.6	8.6	74.1	72.8	75.2
5	Region 18	3.6	3.6	3.8	8.1	7.8	8.6	74.1	73.8	74.3
10	Region 19	3.7	3.4	3.9	8.0	7.5	8.6	74.1	73.6	75.0
8	Region 20	3.8	3.6	3.9	8.0	7.5	8.6	73.8	73.3	74.4
1	Region 21	3.8	3.8	3.8	8.0	8.0	8.0	73.7	73.7	73.7
2	Region 22	3.5	3.3	3.6	8.3	8.3	8.3	74.5	74.5	74.5
6	Region 23	3.7	3.2	3.8	8.2	7.0	9.3	74.0	73.3	74.6
1	Region 24	3.7	3.7	3.7	8.7	8.7	8.7	73.8	73.8	73.8
19	Region 25	3.7	3.3	4.0	7.5	6.5	8.2	74.3	73.3	75.7
8	Region 26	3.7	3.5	4.1	7.6	7.1	8.3	74.3	73.7	74.9
4	Region 27	3.5	3.4	3.6	7.8	7.6	7.9	74.2	74.1	74.3
27	Region 28	3.7	3.4	4.2	7.9	6.9	9.8	74.2	72.7	75.0
6	Region 30	3.5	3.2	3.8	7.1	6.3	8.1	74.7	72.9	75.6
1	Region 31	3.7	3.7	3.7	8.1	8.1	8.1	74.8	74.8	74.8
8	Region 32	3.8	3.4	3.9	8.1	7.6	8.7	74.2	73.6	74.9
6	Region 33	3.7	3.4	4.0	7.9	7.3	8.4	74.5	73.8	75.8
19	Region 34	3.7	3.4	4.2	8.1	6.5	9.1	74.0	72.7	75.5
3	Region 35	3.4	3.4	3.5	7.1	7.1	7.2	74.6	74.1	75.2
14	Region 36	3.9	3.4	4.4	7.7	7.0	8.4	74.1	73.3	75.1
212	**Ave YM 1**	**3.6**			**7.8**			**74.2**		
	Min YM 1		**2.8**			**6.3**			**72.4**	
	Max YM 1			**4.4**			**9.8**			**76.0**

TABLE 9: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2010/2011) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM 2										
11	Region 12	4.1	3.8	4.2	7.9	7.4	8.5	73.6	72.8	74.2
14	Region 13	4.0	3.7	4.3	7.5	7.0	8.1	73.7	73.0	74.9
13	Region 14	4.1	3.9	4.3	8.2	7.4	8.8	73.3	71.9	74.5
5	Region 15	4.1	3.9	4.3	8.4	8.2	8.7	73.5	73.1	74.0
5	Region 16	4.1	4.0	4.2	8.0	7.8	8.2	73.1	72.6	74.2
6	Region 17	4.0	3.8	4.2	7.7	7.3	8.2	73.9	73.3	74.1
5	Region 18	4.0	3.9	4.1	7.8	7.6	8.1	73.9	73.2	74.6
11	Region 19	4.0	3.8	4.3	7.9	7.0	9.0	73.8	72.4	74.5
3	Region 20	4.0	3.9	4.0	7.8	7.2	8.6	73.6	72.9	74.1
1	Region 21	4.3	4.3	4.3	7.7	7.7	7.7	72.7	72.7	72.7
2	Region 22	4.2	4.2	4.2	7.7	7.1	8.3	73.7	73.6	73.7
11	Region 23	4.2	3.9	4.3	8.2	7.2	9.0	73.2	72.7	74.0
9	Region 24	4.1	4.0	4.3	8.0	7.0	9.0	73.2	72.2	74.2
12	Region 25	4.2	3.6	4.5	7.2	6.2	8.2	73.8	73.1	74.8
4	Region 26	4.1	3.8	4.2	7.4	6.5	8.3	74.3	73.6	75.1
1	Region 27	3.7	3.7	3.7	7.4	7.4	7.4	73.4	73.4	73.4
6	Region 28	4.1	3.9	4.2	7.7	7.1	8.5	73.6	73.1	74.2
1	Region 33	3.9	3.9	3.9	8.3	8.3	8.3	73.9	73.9	73.9
3	Region 34	3.8	3.6	4.0	8.2	7.9	8.7	74.1	73.6	74.7
2	Region 36	4.1	4.0	4.2	7.8	7.5	8.1	73.6	73.5	73.6
125	**Ave WM 2**	**4.1**			**7.8**			**73.6**		
	Min WM 2		**3.6**			**6.2**			**71.9**	
	Max WM 2			**4.5**			**9.0**			**75.1**

TABLE 9: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2010/2011) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM 2										
3	Region 12	3.5	3.4	3.8	8.6	8.1	9.4	74.3	72.9	75.2
3	Region 13	3.7	3.6	3.9	7.7	7.6	7.7	74.4	74.1	74.6
4	Region 14	3.7	3.5	3.9	8.5	7.5	9.6	73.8	72.4	74.6
3	Region 16	3.7	3.4	3.9	8.2	8.0	8.6	74.3	73.3	75.4
1	Region 17	3.4	3.4	3.4	7.7	7.7	7.7	75.0	75.0	75.0
3	Region 18	3.5	3.4	3.7	8.0	8.0	8.1	74.2	73.4	74.7
5	Region 19	3.9	3.6	4.1	8.2	7.9	8.4	73.9	72.8	74.8
4	Region 20	3.8	3.7	3.9	8.2	7.7	8.6	73.8	73.1	74.6
1	Region 22	3.5	3.5	3.5	8.5	8.5	8.5	74.3	74.3	74.3
10	Region 23	3.8	3.5	4.0	8.2	6.6	9.3	73.7	72.3	74.6
9	Region 25	3.6	3.3	4.1	7.2	6.5	7.8	74.6	73.5	75.8
4	Region 26	3.6	3.2	3.9	7.0	6.6	7.2	75.1	74.7	75.6
3	Region 27	3.4	3.4	3.4	7.7	7.5	8.0	75.1	74.8	75.5
6	Region 28	3.6	3.5	3.7	7.9	7.3	8.7	74.6	73.6	75.1
1	Region 30	3.5	3.5	3.5	8.1	8.1	8.1	74.3	74.3	74.3
1	Region 33	3.5	3.5	3.5	7.2	7.2	7.2	75.0	75.0	75.0
2	Region 36	3.5	3.2	3.7	7.8	7.7	7.9	75.0	74.4	75.5
63	**Ave YM 2**	**3.6**			**7.9**			**74.3**		
	Min YM 2		**3.2**			**6.5**			**72.3**	
	Max YM 2			**4.1**			**9.6**			**75.8**

TABLE 9: NUTRITIONAL VALUES OF WHITE MAIZE ACCORDING TO GRADE (2010/2011) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM 3										
1	Region 12	4.2	4.2	4.2	8.1	8.1	8.1	73.1	73.1	73.1
2	Region 13	4.0	3.9	4.0	7.4	7.3	7.5	74.4	74.3	74.5
4	Region 14	4.1	4.0	4.2	8.0	7.0	8.5	73.2	72.3	73.6
1	Region 15	4.2	4.2	4.2	8.8	8.8	8.8	73.0	73.0	73.0
2	Region 17	4.1	4.1	4.1	8.2	7.6	8.7	74.0	73.3	74.6
2	Region 18	4.0	3.9	4.0	7.6	7.3	7.9	73.3	73.1	73.5
3	Region 19	3.8	3.7	3.9	8.0	7.5	8.5	73.8	73.4	74.2
3	Region 20	3.9	3.7	4.0	7.7	6.8	8.9	73.5	72.5	74.2
3	Region 23	4.1	3.7	4.3	8.9	8.5	9.4	72.9	72.5	73.3
21	**Ave WM 3**	**4.0**			**8.1**			**73.5**		
	Min WM 3		**3.7**			**6.8**			**72.3**	
	Max WM 3			**4.3**			**9.4**			**74.6**
GRADE: COM										
1	Region 19	3.4	3.4	3.4	6.6	6.6	6.6	75.0	75.0	75.0
1	Region 20	2.8	2.8	2.8	7.2	7.2	7.2	75.6	75.6	75.6
1	Region 25	3.7	3.7	3.7	7.0	7.0	7.0	74.1	74.1	74.1
3	**Ave COM**	**3.3**			**6.9**			**74.9**		
	Min COM		**2.8**			**6.6**			**74.1**	
	Max COM			**3.7**			**7.2**			**75.6**
413	**Ave White**	**4.1**			**7.9**			**73.6**		
	Min White		**2.8**			**6.1**			**71.9**	
	Max White			**4.6**			**9.5**			**77.0**
693	**Ave Maize**	**3.9**			**7.9**			**73.8**		
	Min Maize		**2.8**			**6.1**			**71.9**	
	Max Maize			**4.6**			**9.8**			**77.0**

TABLE 9: NUTRITIONAL VALUES OF YELLOW MAIZE ACCORDING TO GRADE (2010/2011) (continue)

Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM3										
1	Region 20	3.8	3.8	3.8	7.7	7.7	7.7	73.9	73.9	73.9
2	Region 23	3.9	3.6	4.1	8.3	7.5	9.0	73.6	72.2	75.0
3	**Ave YM3**	**3.8**			**8.1**			**73.7**		
	Min YM3		**3.6**			**7.5**			**72.2**	
	Max YM3			**4.1**			**9.0**			**75.0**
GRADE: COM										
1	Region 12	3.8	3.8	3.8	7.7	7.7	7.7	74.0	74.0	74.0
1	Region 20	4.0	4.0	4.0	8.2	8.2	8.2	73.1	73.1	73.1
2	**Ave COM**	**3.9**			**8.0**			**73.6**		
	Min COM		**3.8**			**7.7**			**73.1**	
	Max COM			**4.0**			**8.2**			**74.0**
280	**Ave Yellow**	**3.6**			**7.8**			**74.2**		
	Min Yellow		**2.8**			**6.3**			**72.2**	
	Max Yellow			**4.4**			**9.8**			**76.0**
693	**Ave Maize**	**3.9**			**7.9**			**73.8**		
	Min Maize		**2.8**			**6.1**			**71.9**	
	Max Maize			**4.6**			**9.8**			**77.0**

TABLE 10: NUTRITIONAL VALUES OF WHITE AND YELLOW MAIZE (2010/2011)

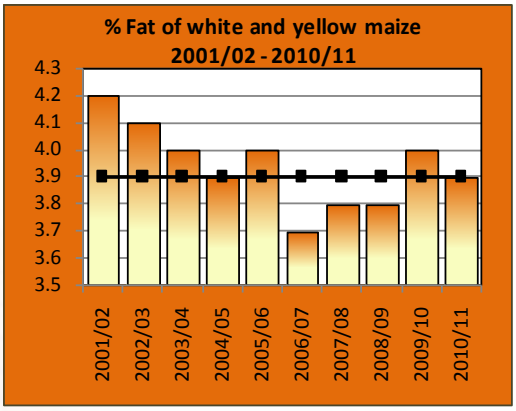
Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
	WHITE									
1	Region 08	4.2	4.2	4.2	8.2	8.2	8.2	73.5	73.5	73.5
21	Region 12	4.1	3.8	4.3	8.0	7.4	8.5	73.5	72.8	74.2
29	Region 13	4.1	3.7	4.3	7.7	7.0	9.0	73.6	72.4	74.9
31	Region 14	4.1	3.9	4.4	8.0	7.0	8.8	73.3	71.9	74.5
10	Region 15	4.2	3.9	4.3	8.4	8.1	8.8	73.3	72.9	74.0
14	Region 16	4.1	3.8	4.4	7.9	7.3	8.4	73.4	72.6	74.2
30	Region 17	4.1	3.8	4.3	7.8	6.9	8.7	73.5	72.5	74.6
21	Region 18	4.1	3.9	4.4	7.8	7.3	8.6	73.5	72.6	74.6
26	Region 19	4.0	3.4	4.5	7.9	6.6	9.0	73.6	72.4	75.0
14	Region 20	3.9	2.8	4.3	7.7	6.8	8.9	73.8	72.5	75.6
9	Region 21	4.1	3.9	4.3	8.0	6.9	8.8	73.3	72.4	73.9
10	Region 22	4.2	4.0	4.4	7.8	7.1	8.3	73.4	72.5	74.2
27	Region 23	4.2	3.7	4.6	8.3	6.9	9.4	73.2	72.2	74.0
21	Region 24	4.1	4.0	4.3	8.2	7.0	9.0	73.2	72.2	74.2
19	Region 25	4.1	3.2	4.5	7.2	6.1	8.2	73.9	73.1	77.0
10	Region 26	4.1	3.8	4.4	7.6	6.5	8.3	73.9	72.6	75.1
2	Region 27	4.0	3.7	4.2	7.5	7.4	7.5	73.7	73.4	74.0
25	Region 28	4.1	3.7	4.4	7.8	7.0	9.5	73.6	72.7	74.6
7	Region 30	3.9	3.7	4.3	8.0	7.8	8.2	73.6	72.8	74.7
2	Region 31	4.2	4.1	4.3	8.1	8.0	8.1	73.5	73.1	73.8
16	Region 32	4.0	3.6	4.2	7.8	7.1	8.6	74.0	72.9	74.7
17	Region 33	3.9	3.7	4.0	8.0	7.2	8.5	74.0	73.2	74.5
31	Region 34	4.1	3.6	4.4	7.9	7.0	8.7	73.7	72.7	74.7
5	Region 35	3.9	3.6	4.2	8.4	8.2	8.6	73.8	73.3	74.0
15	Region 36	4.1	3.8	4.4	8.1	7.4	9.4	73.6	73.0	74.1
413	**Ave white**	**4.1**			**7.9**			**73.6**		
	Min white		**2.8**			**6.1**			**71.9**	
	Max white			**4.6**			**9.5**			**77.0**
	YELLOW									
1	Region 08	2.8	2.8	2.8	8.5	8.5	8.5	75.2	75.2	75.2
29	Region 10	3.3	3.1	3.6	7.1	6.3	8.3	74.8	73.6	76.0
1	Region 11	3.5	3.5	3.5	7.0	7.0	7.0	75.1	75.1	75.1
9	Region 12	3.6	3.4	3.8	8.5	7.7	9.4	74.1	72.9	75.2
9	Region 13	3.6	3.4	3.9	7.9	7.6	8.5	74.3	73.5	74.9
15	Region 14	3.6	3.5	3.9	8.4	7.5	9.6	73.8	72.4	75.0
1	Region 15	3.8	3.8	3.8	8.3	8.3	8.3	73.2	73.2	73.2
5	Region 16	3.7	3.4	3.9	8.0	7.2	8.6	74.2	73.3	75.4
9	Region 17	3.6	3.3	3.9	8.0	7.6	8.6	74.2	72.8	75.2
8	Region 18	3.6	3.4	3.8	8.1	7.8	8.6	74.2	73.4	74.7
15	Region 19	3.7	3.4	4.1	8.1	7.5	8.6	74.0	72.8	75.0
14	Region 20	3.8	3.6	4.0	8.0	7.5	8.6	73.8	73.1	74.6
1	Region 21	3.8	3.8	3.8	8.0	8.0	8.0	73.7	73.7	73.7
3	Region 22	3.5	3.3	3.6	8.4	8.3	8.5	74.4	74.3	74.5
18	Region 23	3.7	3.2	4.1	8.2	6.6	9.3	73.8	72.2	75.0
1	Region 24	3.7	3.7	3.7	8.7	8.7	8.7	73.8	73.8	73.8
28	Region 25	3.7	3.3	4.1	7.4	6.5	8.2	74.4	73.3	75.8

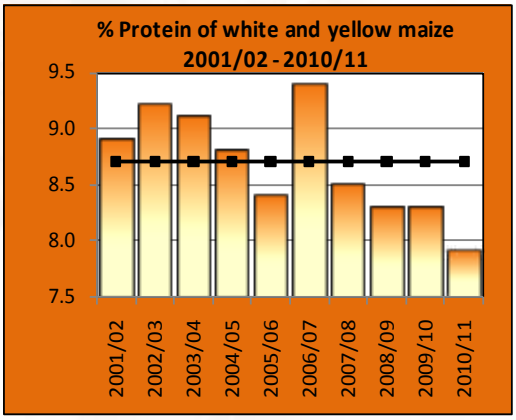
TABLE 10: NUTRITIONAL VALUES OF WHITE AND YELLOW MAIZE (2010/2011) (continue)

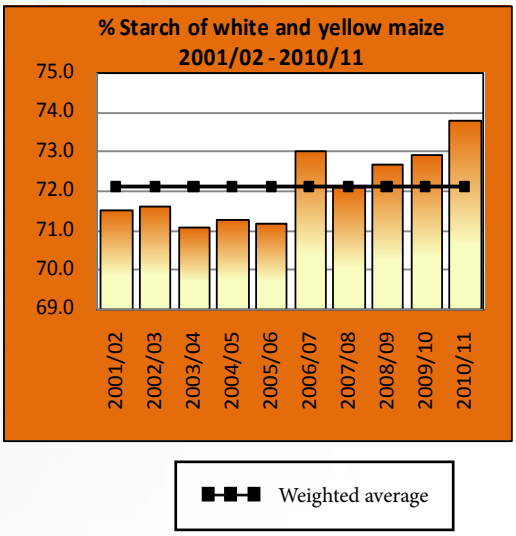
Number of samples	Region	Fat % (db)			Protein % (db)			Starch % (db)		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
YELLOW										
12	Region 26	3.7	3.2	4.1	7.4	6.6	8.3	74.6	73.7	75.6
7	Region 27	3.5	3.4	3.6	7.8	7.5	8.0	74.6	74.1	75.5
33	Region 28	3.7	3.4	4.2	7.9	6.9	9.8	74.3	72.7	75.1
7	Region 30	3.5	3.2	3.8	7.3	6.3	8.1	74.7	72.9	75.6
1	Region 31	3.7	3.7	3.7	8.1	8.1	8.1	74.8	74.8	74.8
8	Region 32	3.8	3.4	3.9	8.1	7.6	8.7	74.2	73.6	74.9
7	Region 33	3.7	3.4	4.0	7.8	7.2	8.4	74.6	73.8	75.8
19	Region 34	3.7	3.4	4.2	8.1	6.5	9.1	74.0	72.7	75.5
3	Region 35	3.4	3.4	3.5	7.1	7.1	7.2	74.6	74.1	75.2
16	Region 36	3.8	3.2	4.4	7.7	7.0	8.4	74.2	73.3	75.5
280	**Ave yellow**	**3.6**			**7.8**			**74.2**		
	Min yellow		**2.8**			**6.3**			**72.2**	
	Max yellow			**4.4**			**9.8**			**76.0**
WHITE AND YELLOW										
2	Region 08	3.5	2.8	4.2	8.4	8.2	8.5	74.4	73.5	75.2
29	Region 10	3.3	3.1	3.6	7.1	6.3	8.3	74.8	73.6	76.0
1	Region 11	3.5	3.5	3.5	7.0	7.0	7.0	75.1	75.1	75.1
30	Region 12	4.0	3.4	4.3	8.2	7.4	9.4	73.7	72.8	75.2
38	Region 13	4.0	3.4	4.3	7.7	7.0	9.0	73.7	72.4	74.9
46	Region 14	4.0	3.5	4.4	8.2	7.0	9.6	73.4	71.9	75.0
11	Region 15	4.1	3.8	4.3	8.4	8.1	8.8	73.3	72.9	74.0
19	Region 16	4.0	3.4	4.4	7.9	7.2	8.6	73.6	72.6	75.4
39	Region 17	4.0	3.3	4.3	7.9	6.9	8.7	73.7	72.5	75.2
29	Region 18	3.9	3.4	4.4	7.9	7.3	8.6	73.7	72.6	74.7
41	Region 19	3.9	3.4	4.5	7.9	6.6	9.0	73.8	72.4	75.0
28	Region 20	3.9	2.8	4.3	7.9	6.8	8.9	73.8	72.5	75.6
10	Region 21	4.0	3.8	4.3	8.0	6.9	8.8	73.3	72.4	73.9
13	Region 22	4.0	3.3	4.4	7.9	7.1	8.5	73.6	72.5	74.5
45	Region 23	4.0	3.2	4.6	8.3	6.6	9.4	73.4	72.2	75.0
22	Region 24	4.1	3.7	4.3	8.2	7.0	9.0	73.3	72.2	74.2
47	Region 25	3.9	3.2	4.5	7.3	6.1	8.2	74.2	73.1	77.0
22	Region 22	3.9	3.2	4.4	7.5	6.5	8.3	74.2	72.6	75.6
9	Region 27	3.6	3.4	4.2	7.7	7.4	8.0	74.4	73.4	75.5
58	Region 28	3.9	3.4	4.4	7.8	6.9	9.8	74.0	72.7	75.1
14	Region 30	3.7	3.2	4.3	7.6	6.3	8.2	74.1	72.8	75.6
3	Region 31	4.0	3.7	4.3	8.1	8.0	8.1	73.9	73.1	74.8
24	Region 32	3.9	3.4	4.2	7.9	7.1	8.7	74.1	72.9	74.9
24	Region 33	3.8	3.4	4.0	8.0	7.2	8.5	74.2	73.2	75.8
50	Region 34	3.9	3.4	4.4	8.0	6.5	9.1	73.8	72.7	75.5
8	Region 35	3.8	3.4	4.2	7.9	7.1	8.6	74.1	73.3	75.2
31	Region 36	3.9	3.2	4.4	7.9	7.0	9.4	73.9	73.0	75.5
693	**Ave white & yellow**	**3.9**			**7.9**			**73.8**		
	Min white & yellow		**2.8**			**6.1**			**71.9**	
	Max white & yellow			**4.6**			**9.8**			**77.0**

TABLE 11: NUTRITIONAL VALUES OF SOUTH AFRICAN WHITE AND YELLOW MAIZE 2001/02 - 2010/11

Season	Number of samples	% Fat av.	% Fat min.	% Fat max.	% Protein av.	% Protein min.	% Protein max.	% Starch av.	% Starch min.	% Starch max.
White Maize										
2001/02	471	4.2	3.2	5.1	8.9	6.7	11.5	71.4	58.3	78.3
2002/03	517	4.1	3.0	5.4	9.2	7.3	11.7	71.4	62.5	75.7
2003/04	599	4.0	3.7	4.6	9.1	7.9	10.2	71.2	70.2	72.3
2004/05	601	4.0	3.1	4.5	8.9	6.5	12.0	71.1	68.9	73.7
2005/06	593	4.0	3.3	5.0	8.5	6.4	10.4	71.1	69.5	73.4
2006/07	563	3.9	2.9	4.8	9.3	7.5	12.0	72.9	70.1	74.9
2007/08	483	4.0	3.2	4.7	8.6	6.6	10.9	71.9	69.9	74.0
2008/09	483	4.0	3.5	5.1	8.3	6.4	10.4	72.4	70.7	74.2
2009/10	483	4.2	3.5	5.8	8.4	6.6	10.0	72.6	70.6	74.6
2010/11	413	4.1	2.8	4.6	7.9	6.1	9.5	73.6	71.9	77.0
Weighted Average		**4.0**			**8.7**			**71.9**		
Minimum			**2.8**			**6.1**			**58.3**	
Maximum				**5.8**			**12.0**			**78.3**
Yellow Maize										
2001/02	429	4.1	3.0	5.5	8.9	6.8	11.6	71.7	66.2	74.7
2002/03	383	4.1	3.1	5.1	9.2	7.2	11.5	72.0	66.0	75.9
2003/04	301	4.0	3.5	4.4	9.0	8.2	9.9	71.1	70.2	72.6
2004/05	399	3.8	2.9	4.7	8.6	6.9	11.1	71.7	69.1	74.3
2005/06	307	3.9	3.2	4.9	8.4	6.6	9.7	71.5	69.5	73.3
2006/07	337	3.5	2.8	4.6	9.5	6.9	12.7	73.3	70.5	75.2
2007/08	417	3.6	2.9	4.8	8.4	6.9	10.4	72.3	70.0	75.0
2008/09	327	3.6	2.9	4.7	8.2	6.2	10.6	73.2	71.1	74.8
2009/10	342	3.8	3.3	4.7	8.1	6.5	10.1	73.4	71.0	75.4
2010/11	280	3.6	2.8	4.4	7.8	6.3	9.8	74.2	72.2	76.0
Weighted Average		**3.8**			**8.6**			**72.4**		
Minimum			**2.8**			**6.2**			**66.0**	
Maximum				**5.5**			**12.7**			**76.0**
White and Yellow Maize										
2001/02	900	4.2	3.0	5.5	8.9	6.7	11.6	71.5	58.3	74.7
2002/03	900	4.1	3.0	5.4	9.2	7.2	11.7	71.6	62.5	75.9
2003/04	900	4.0	3.5	4.6	9.1	7.9	10.2	71.1	70.2	72.6
2004/05	1000	3.9	2.9	4.7	8.8	6.5	12.0	71.3	68.9	74.3
2005/06	900	4.0	3.2	5.0	8.4	6.4	10.4	71.2	69.5	73.4
2006/07	900	3.7	2.8	4.8	9.4	6.9	12.7	73.0	70.1	75.2
2007/08	900	3.8	2.9	4.8	8.5	6.6	10.9	72.1	69.9	75.0
2008/09	810	3.8	2.9	5.1	8.3	6.2	10.6	72.7	70.7	74.8
2009/10	800	4.0	3.3	5.8	8.3	6.5	10.1	72.9	70.6	75.4
2010/11	693	3.9	2.8	4.6	7.9	6.1	9.8	73.8	71.9	77.0
Weighted Average		**3.9**			**8.7**			**72.1**		
Minimum			**2.8**			**6.1**			**58.3**	
Maximum				**5.8**			**12.7**			**77.0**







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

TABLE 12: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE (2010/2011)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM 1																												
1	Region 08	78.0	78.0	78.0	32.0	32.0	32.0	27.5	27.5	27.5	62.8	62.8	62.8	9.7	9.7	9.7	3.0	3.0	3.0	1.9	1.9	1.9	10	10	10	93.2	93.2	93.2
9	Region 12	79.1	77.8	80.4	34.7	32.5	38.2	24.9	19.5	32.0	64.4	60.2	68.3	10.7	7.1	14.1	1.1	0.4	1.9	0.8	0.4	1.8	4	1	9	93.6	84.6	99.0
13	Region 13	78.2	75.8	79.8	34.7	32.8	38.1	25.1	11.1	34.9	64.3	55.8	73.5	10.6	5.2	15.4	1.6	0.9	2.6	1.2	0.6	2.1	4	2	8	91.5	81.1	102.7
14	Region 14	78.6	75.1	80.4	34.6	30.4	40.3	26.4	14.0	41.7	62.1	37.4	74.4	11.6	4.4	31.4	1.5	0.2	4.7	1.1	0.0	3.1	5	0	18	90.5	74.1	99.2
4	Region 15	79.4	79.1	79.6	37.1	36.1	38.1	35.6	27.4	40.5	57.7	53.9	63.2	6.7	5.6	9.4	0.4	0.3	0.5	0.4	0.3	0.5	3	2	4	96.9	95.6	99.0
9	Region 16	78.8	77.7	80.5	36.0	33.4	38.3	31.2	22.7	37.4	61.1	54.9	66.4	7.7	4.5	10.9	0.8	0.3	1.3	0.7	0.3	1.2	3	0	5	92.4	83.9	102.3
22	Region 17	78.5	76.6	79.7	35.1	32.6	37.7	25.4	9.1	41.7	64.5	53.0	74.9	10.1	5.3	17.1	1.2	0.4	3.0	0.9	0.4	2.5	3	0	7	89.2	81.7	99.7
14	Region 18	78.2	76.8	80.6	34.6	31.9	37.3	26.9	14.2	39.9	62.2	51.7	69.1	10.9	4.7	19.0	1.4	0.9	2.8	1.1	0.7	2.0	6	2	12	90.6	86.2	101.4
11	Region 19	76.9	73.6	79.7	33.3	28.7	41.4	20.0	9.1	32.8	67.3	60.2	83.9	12.7	7.0	24.5	1.4	0.6	3.1	1.1	0.3	2.4	3	2	14	87.7	70.1	95.4
7	Region 20	78.4	76.7	79.9	34.5	30.4	37.8	25.7	19.9	33.6	64.8	57.9	70.8	9.5	6.0	13.4	1.4	0.5	2.6	1.1	0.1	2.3	4	1	8	89.1	84.9	95.5
8	Region 21	77.7	74.6	79.7	35.3	34.0	37.6	21.8	9.3	32.1	65.9	58.6	72.8	12.2	7.7	19.6	1.7	0.5	3.9	1.5	0.5	3.6	3	0	5	90.1	80.6	97.5
8	Region 22	78.1	77.2	79.0	34.6	31.2	37.1	27.6	21.7	32.8	62.2	56.0	68.0	10.2	6.2	15.5	1.3	0.3	1.9	1.0	0.3	1.5	3	0	5	91.0	86.2	94.9
13	Region 23	79.2	75.9	81.8	37.0	31.6	40.4	35.7	23.9	46.9	58.4	47.8	70.8	6.0	2.7	8.4	1.8	0.7	3.9	1.4	0.7	2.7	7	0	17	89.9	54.4	103.0
12	Region 24	78.0	75.5	79.4	36.8	34.8	44.0	31.9	12.5	44.0	59.5	48.7	70.7	8.6	5.4	16.8	2.0	0.0	3.6	1.6	0.0	2.6	8	2	19	94.1	89.3	99.1
6	Region 25	77.5	76.1	78.8	32.8	25.0	36.5	20.1	1.4	35.3	61.1	33.5	73.9	18.9	6.1	65.1	1.5	0.8	2.4	1.2	0.6	1.8	4	1	7	81.9	67.8	94.7
6	Region 26	76.8	74.9	78.2	34.6	31.1	38.7	20.0	10.1	33.2	69.1	60.3	76.7	11.0	6.5	15.4	1.3	0.6	1.9	1.1	0.4	1.4	6	3	9	86.4	82.3	93.9
1	Region 27	74.4	74.4	74.4	32.6	32.6	32.6	3.5	3.5	3.5	65.9	65.9	65.9	30.6	30.6	30.6	3.2	3.2	3.2	2.3	2.3	2.3	9	9	9	85.4	85.4	85.4
19	Region 28	77.3	73.9	80.0	33.9	28.0	37.8	22.6	7.4	42.6	65.1	52.7	78.9	12.3	4.7	20.4	1.4	0.2	3.7	0.9	0.2	2.6	8	1	31	85.7	68.1	98.1
7	Region 30	77.6	74.9	79.1	35.0	30.6	38.9	26.9	14.5	35.5	62.5	54.8	71.2	10.6	6.2	15.2	2.1	0.4	4.1	1.7	0.4	3.1	6	1	18	88.9	76.3	96.7
2	Region 31	77.9	77.6	78.1	37.0	35.9	38.1	11.4	10.6	12.1	71.7	70.2	73.1	17.0	14.8	19.2	1.3	1.1	1.4	0.8	0.6	0.9	4	4	4	88.0	87.3	88.7
16	Region 32	77.2	75.2	79.4	34.4	31.2	40.1	17.9	4.5	32.2	65.3	58.5	72.1	16.9	8.0	33.0	1.1	0.6	2.5	0.9	0.4	1.6	5	2	7	84.7	75.7	98.6
16	Region 33	75.8	74.1	77.3	34.0	30.4	37.6	21.9	12.6	30.6	63.3	59.0	69.4	14.8	8.5	23.3	0.6	0.2	1.6	0.5	0.2	1.1	6	1	12	86.4	72.8	96.4
28	Region 34	78.4	76.7	80.2	35.1	31.2	39.8	25.5	6.2	47.3	62.5	48.4	70.9	12.0	4.3	28.4	0.8	0.0	1.7	0.7	0.0	1.4	4	0	13	87.8	71.5	99.7
5	Region 35	78.1	76.3	80.8	34.0	27.2	37.4	28.7	2.6	42.3	59.5	52.2	64.4	11.8	5.5	35.4	1.7	0.7	2.3	1.3	0.7	1.8	3	1	6	87.6	81.8	94.8
13	Region 36	77.5	75.7	79.9	34.1	29.9	38.2	14.6	3.9	32.8	71.0	62.0	79.8	14.5	5.2	22.3	1.5	1.2	2.0	1.2	0.5	1.6	6	1	18	96.2	92.4	102.4
264	**Ave WM 1**	**77.9**			**34.8**			**24.7**			**63.6**			**11.7**			**1.3**			**1.0**			**5**			**89.3**		
	Min WM 1		**73.6**			**25.0**			**1.4**			**33.5**			**2.7**			**0.0**			**0.0**			**0**			**54.4**	
	Max WM 1			**81.8**			**44.0**			**47.3**			**83.9**			**65.1**			**4.7**			**3.6**			**31**			**103.0**

TABLE 12: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE (2010/2011)
(continue)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM 2																												
11	Region 12	78.3	77.2	79.9	35.3	33.6	40.3	27.8	20.9	43.8	62.8	52.8	67.0	9.4	3.4	13.5	1.4	0.5	2.6	1.1	0.4	1.7	4	2	8	89.2	83.4	96.0
14	Region 13	78.2	76.6	79.7	34.0	32.1	35.8	22.4	2.7	30.1	63.8	57.0	72.8	13.9	6.4	40.3	1.9	0.8	2.7	1.4	0.7	2.2	3	0	9	87.2	82.0	98.1
13	Region 14	78.0	75.4	80.7	34.3	29.5	36.8	25.5	8.6	46.2	63.7	52.1	74.5	10.8	1.7	20.9	1.4	0.1	2.7	1.1	0.1	2.0	4	2	6	92.3	73.3	103.5
5	Region 15	78.7	77.9	79.2	37.2	35.8	37.9	36.7	32.0	43.0	56.9	52.7	61.6	6.4	4.3	9.1	1.0	0.3	1.7	0.9	0.3	1.2	4	2	5	94.9	90.2	99.5
5	Region 16	78.9	78.0	80.1	35.0	33.2	36.7	35.9	29.2	43.0	58.7	53.4	63.8	5.5	3.6	7.7	1.1	0.9	1.3	0.9	0.8	1.1	4	2	7	90.8	88.0	93.8
6	Region 17	77.9	76.4	78.9	35.0	32.0	38.6	18.5	9.1	29.2	64.6	59.3	72.3	16.9	7.9	31.6	1.3	0.4	1.8	1.0	0.3	1.4	4	2	6	85.7	72.8	94.1
5	Region 18	77.5	76.8	78.1	34.0	32.8	35.7	23.6	12.9	36.0	62.7	53.1	67.6	13.7	9.6	20.4	1.6	1.2	2.5	1.1	0.8	1.6	5	1	13	89.7	84.1	96.8
11	Region 19	77.0	75.0	78.1	33.0	28.5	36.5	25.2	12.5	37.0	65.5	57.0	74.7	9.3	2.9	18.7	1.6	0.6	3.7	1.2	0.6	2.9	6	2	11	90.8	73.7	111.7
3	Region 20	77.0	75.1	78.6	33.7	31.7	35.0	30.5	21.0	36.3	60.1	55.5	67.4	9.4	8.2	11.6	1.9	1.6	2.1	1.6	1.4	1.9	9	7	14	83.7	75.9	92.8
1	Region 21	78.5	78.5	78.5	36.7	36.7	36.7	28.3	28.3	28.3	61.7	61.7	61.7	10.0	10.0	10.0	0.8	0.8	0.8	0.8	0.8	0.8	2	2	2	91.4	91.4	91.4
2	Region 22	77.2	77.2	77.2	34.2	34.1	34.2	28.6	27.3	29.8	62.8	59.5	66.0	8.7	6.7	10.7	1.4	1.2	1.5	1.1	0.9	1.3	4	4	4	88.4	86.9	89.8
11	Region 23	79.0	77.2	81.5	35.2	33.4	36.9	31.0	16.7	38.6	61.2	54.8	66.8	7.8	4.6	17.5	1.7	0.9	2.7	1.4	0.8	2.3	3	0	5	93.5	85.7	97.7
9	Region 24	78.3	74.0	80.0	35.1	33.7	40.3	31.4	12.5	55.8	58.8	41.4	66.9	9.7	2.8	20.6	1.7	0.9	5.1	1.2	0.8	2.3	6	0	21	90.6	82.3	100.7
12	Region 25	75.7	73.2	79.0	32.2	29.7	36.1	17.2	3.6	35.0	67.2	56.6	75.7	15.6	6.3	39.5	3.0	0.5	8.4	2.1	0.5	5.9	4	0	12	76.7	56.6	96.1
4	Region 26	76.5	73.4	79.5	30.8	26.2	33.7	17.8	14.7	22.9	64.5	55.2	72.6	17.7	11.7	30.1	1.9	0.3	3.1	1.5	0.2	2.5	3	0	5	81.0	73.3	92.1
1	Region 27	74.0	74.0	74.0	35.6	35.6	35.6	34.0	34.0	34.0	58.0	58.0	58.0	8.0	8.0	8.0	6.2	6.2	6.2	4.7	4.7	4.7	12	12	12	87.1	87.1	87.1
6	Region 28	75.8	74.3	77.8	32.6	29.1	37.0	14.4	10.4	22.0	68.8	64.4	73.7	16.8	9.2	22.1	2.8	1.4	6.0	1.8	0.8	3.2	10	0	31	83.4	73.5	94.5
1	Region 33	76.8	76.8	76.8	32.7	32.7	32.7	13.3	13.3	13.3	66.5	66.5	66.5	20.2	20.2	20.2	0.5	0.5	0.5	0.2	0.2	0.2	4	4	4	88.9	88.9	88.9
3	Region 34	75.8	73.0	79.2	32.5	25.2	36.7	21.5	7.5	31.7	62.3	56.9	65.4	16.2	10.1	27.1	1.6	0.4	2.4	1.3	0.3	1.9	6	4	8	77.9	64.2	84.8
2	Region 36	78.7	77.1	80.3	36.4	35.2	37.6	23.5	20.9	26.1	69.7	69.0	70.4	6.8	3.5	10.1	1.4	1.2	1.5	1.2	1.1	1.2	3	2	3	93.5	91.0	96.0
125	**Ave WM 2**	**77.6**			**34.1**			**25.1**			**63.3**			**11.6**			**1.8**			**1.3**			**5**			**88.0**		
	Min WM 2		**73.0**			**25.2**			**2.7**			**41.4**			**1.7**			**0.1**			**0.1**			**0**			**56.6**	
	Max WM 2			**81.5**			**40.3**			**55.8**			**75.7**			**40.3**			**8.4**			**5.9**			**31**			**111.7**

TABLE 12: PHYSICAL QUALITY FACTORS OF WHITE MAIZE ACCORDING TO GRADE (2010/2011)
(continue)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM 3																												
1	Region 12	77.8	77.8	77.8	36.4	36.4	36.4	31.4	31.4	31.4	64.8	64.8	64.8	3.8	3.8	3.8	3.4	3.4	3.4	3.0	3.0	3.0	3	3	3	89.8	89.8	89.8
2	Region 13	76.4	75.8	76.9	31.4	30.2	32.5	16.3	5.4	27.1	63.0	61.7	64.2	20.8	11.2	30.4	2.2	1.5	2.9	1.6	1.3	1.8	7	5	8	78.4	74.6	82.2
4	Region 14	75.8	72.6	78.6	34.1	32.7	36.6	33.5	28.6	36.4	58.6	49.6	63.2	8.0	4.6	14.0	2.5	0.5	4.5	2.1	0.5	3.6	3	1	4	86.0	75.4	92.8
1	Region 15	79.9	79.9	79.9	35.0	35.0	35.0	33.9	33.9	33.9	59.0	59.0	59.0	7.1	7.1	7.1	1.8	1.8	1.8	1.4	1.4	1.4	3	3	3	99.7	99.7	99.7
2	Region 17	77.6	77.3	77.8	33.8	31.1	36.5	11.5	10.4	12.5	69.3	62.8	75.8	19.3	13.8	24.7	1.6	1.4	1.8	1.2	1.1	1.3	3	5	5	84.5	81.3	87.7
2	Region 18	76.0	75.6	76.4	33.6	31.3	35.9	27.0	13.0	41.0	61.1	52.9	69.3	11.9	6.1	17.7	2.8	2.1	3.4	2.5	1.7	3.3	6	1	10	86.8	77.1	96.4
3	Region 19	76.5	75.1	77.5	32.6	31.2	34.0	25.2	25.1	25.3	64.0	60.7	66.5	10.8	8.2	14.2	3.2	2.2	4.2	1.9	1.5	2.5	7	5	8	92.5	87.1	101.0
3	Region 20	76.7	75.4	78.6	36.3	33.2	42.4	26.1	24.5	27.3	63.4	61.8	65.3	10.5	7.4	12.5	3.3	1.8	4.3	2.6	1.6	3.1	8	6	12	82.3	59.1	100.3
3	Region 23	75.6	71.9	77.9	31.6	26.0	34.7	24.9	13.6	32.0	66.9	63.2	74.1	8.2	4.8	12.3	2.7	2.6	2.9	2.2	2.0	2.4	5	4	7	90.0	72.0	103.7
3	Region 23	75.6	71.9	77.9	31.6	26.0	34.7	24.9	13.6	32.0	66.9	63.2	74.1	8.2	4.8	12.3	2.7	2.6	2.9	2.2	2.0	2.4	5	4	7	90.0	72.0	103.7
21	**Ave WM 3**	**76.5**			**33.7**			**25.6**			**63.2**			**11.2**			**2.7**			**2.1**			**5**			**87.0**		
	Min WM 3		**71.9**			**26.0**			**5.4**			**49.6**			**3.8**			**0.5**			**0.5**			**1**			**59.1**	
	Max WM 3			**79.9**			**42.4**			**41.0**			**75.8**			**30.4**			**4.5**			**3.6**			**12**			**103.7**
GRADE: COM																												
1	Region 19	71.3	71.3	71.3	30.8	30.8	30.8	22.0	22.0	22.0	65.9	65.9	65.9	12.1	12.1	12.1	5.6	5.6	5.6	3.2	3.2	3.2	16	16	16	63.6	63.6	63.6
1	Region 20	77.2	77.2	77.2	35.5	35.5	35.5	23.6	23.6	23.6	61.0	61.0	61.0	15.4	15.4	15.4	4.6	4.6	4.6	3.3	3.3	3.3	12	12	12	70.0	70.0	70.0
1	Region 25	73.5	73.5	73.5	33.9	33.9	33.9	27.3	27.3	27.3	61.4	61.4	61.4	11.3	11.3	11.3	4.5	4.5	4.5	3.4	3.4	3.4	3	3	3	71.0	71.0	71.0
3	**Ave COM**	**74.0**			**33.4**			**24.3**			**62.8**			**12.9**			**4.9**			**3.3**			**10**			**68.2**		
	Min COM		**71.3**			**30.8**			**22.0**			**61.0**			**11.3**			**4.5**			**3.2**			**3**			**63.6**	
	Max COM			**77.2**			**35.5**			**27.3**			**65.9**			**15.4**			**5.6**			**3.4**			**16**			**71.0**
413	**Ave white maize**	**77.7**			**34.5**			**24.9**			**63.5**			**11.6**			**1.6**			**1.2**			**5**			**88.6**		
	Min white maize		**71.3**			**25.0**			**1.4**			**33.5**			**1.7**			**0.0**			**0.0**			**0**			**54.4**	
	Max white maize			**81.8**			**44.0**			**55.8**			**83.9**			**65.1**			**8.4**			**5.9**			**31**			**111.7**
693	**Ave maize**	**77.1**			**33.5**			**20.7**			**65.6**			**13.8**			**1.8**			**1.3**			**5**			**87.5**		
	Min maize		**69.0**			**22.0**			**1.1**			**33.5**			**1.7**			**0.0**			**0.0**			**0**			**40.2**	
	Max maize			**81.8**			**44.0**			**55.8**			**83.9**			**65.1**			**8.4**			**5.9**			**31**			**111.7**

TABLE 13: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE (2010/2011)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM 1																												
1	Region 08	69.0	69.0	69.0	25.3	25.3	25.3	1.2	1.2	1.2	68.3	68.3	68.3	30.5	30.5	30.5	3.2	3.2	3.2	2.5	2.5	2.5	3	3	3	40.2	40.2	40.2
29	Region 10	77.3	75.2	81.5	33.1	28.2	40.4	5.0	1.1	11.9	70.1	59.6	79.1	24.9	13.5	36.3	2.2	0.8	4.3	1.8	0.7	3.6	2	0	13	75.8	58.9	101.1
1	Region 11	75.7	75.7	75.7	31.0	31.0	31.0	2.9	2.9	2.9	66.5	66.5	66.5	30.6	30.6	30.6	0.8	0.8	0.8	0.5	0.5	0.5	4	4	4	74.8	74.8	74.8
5	Region 12	76.6	75.4	77.4	31.8	27.8	33.2	16.2	6.7	31.4	68.2	57.9	73.1	15.6	10.7	20.2	2.1	1.1	2.8	1.6	1.0	2.3	4	0	9	90.3	84.7	95.1
6	Region 13	77.0	76.5	77.5	30.4	27.9	34.4	14.6	11.1	18.8	67.9	64.7	71.6	17.5	14.8	21.4	1.5	0.5	2.4	1.1	0.0	1.7	3	2	4	91.6	84.9	100.5
11	Region 14	76.2	74.5	78.1	32.6	30.1	34.6	16.2	10.2	25.1	68.5	59.2	75.3	15.3	9.7	22.9	1.8	0.9	2.6	1.4	0.6	2.1	4	0	8	92.7	86.1	100.1
1	Region 15	75.8	75.8	75.8	35.5	35.5	35.5	8.9	8.9	8.9	70.3	70.3	70.3	20.8	20.8	20.8	1.1	1.1	1.1	1.0	1.0	1.0	8	8	8	77.3	77.3	77.3
2	Region 16	76.8	76.6	76.9	33.4	32.9	33.8	19.5	16.1	22.9	68.7	66.1	71.3	11.8	11.0	12.6	1.2	0.9	1.5	0.9	0.8	0.9	6	2	9	95.1	93.0	97.1
8	Region 17	76.4	74.3	78.0	33.5	31.4	37.0	17.7	11.5	23.9	70.2	67.2	75.2	12.1	8.8	20.2	1.9	0.7	3.4	1.4	0.7	2.2	6	1	21	89.7	84.8	93.0
5	Region 18	76.9	75.9	78.8	29.5	22.0	32.3	14.5	7.3	22.6	68.6	60.6	72.8	16.9	13.3	24.9	1.8	1.0	2.5	1.6	1.0	2.3	5	3	9	95.3	87.7	101.2
10	Region 19	76.4	73.1	79.2	32.7	25.0	36.1	14.7	7.6	21.1	69.7	57.8	73.4	15.6	9.7	34.6	1.8	0.5	3.5	1.3	0.4	2.4	6	1	15	93.3	85.6	100.1
8	Region 20	76.1	75.2	76.9	33.8	31.6	37.5	19.1	10.8	28.1	68.0	61.9	73.7	12.9	1.9	19.2	1.9	1.0	3.4	1.5	0.8	2.9	6	2	9	88.4	72.9	99.7
1	Region 21	74.9	74.9	74.9	30.1	30.1	30.1	15.6	15.6	15.6	68.8	68.8	68.8	15.6	15.6	15.6	3.2	3.2	3.2	2.4	2.4	2.4	7	7	7	84.9	84.9	84.9
2	Region 22	76.0	75.3	76.7	30.1	28.9	31.3	20.6	18.5	22.7	67.7	63.7	71.6	11.8	9.9	13.6	2.3	1.9	2.7	1.6	1.5	1.7	3	2	4	96.8	89.9	103.6
6	Region 23	77.4	74.5	79.0	32.2	30.6	34.4	13.3	5.1	17.1	70.4	66.3	73.9	16.3	10.8	24.9	2.3	1.1	5.1	1.6	0.8	2.9	6	2	17	95.6	68.8	107.5
1	Region 24	77.4	77.4	77.4	34.2	34.2	34.2	18.6	18.6	18.6	69.3	69.3	69.3	12.1	12.1	12.1	1.6	1.6	1.6	1.3	1.3	1.3	8	8	8	87.0	87.0	87.0
19	Region 25	77.1	74.9	78.7	32.6	28.6	35.1	20.3	5.5	30.9	66.5	59.8	74.0	13.2	6.0	26.5	2.1	0.9	4.1	1.5	0.6	2.8	4	1	11	86.4	68.7	100.8
8	Region 26	76.7	74.9	78.5	33.1	30.9	34.8	17.4	9.7	27.9	68.7	64.1	74.6	14.0	7.0	19.7	1.5	0.9	1.9	1.2	0.6	1.6	6	2	10	87.5	82.7	94.2
4	Region 27	75.7	75.3	76.0	32.5	31.8	33.6	17.2	14.3	19.6	69.6	67.9	71.4	13.3	10.7	16.4	2.0	1.3	2.4	1.6	1.3	1.9	4	2	5	85.9	81.5	88.8
27	Region 28	74.9	69.1	78.3	29.9	23.2	34.0	12.6	2.8	23.4	68.2	62.6	75.5	19.2	8.5	33.0	2.3	0.5	4.6	1.6	0.4	3.4	7	1	23	84.3	74.0	90.0
6	Region 30	77.1	75.6	78.5	31.6	27.8	35.3	10.8	7.6	13.4	74.4	71.0	79.6	14.8	11.8	20.2	3.0	0.8	8.1	2.2	0.8	5.0	4	1	10	79.2	71.8	89.4
1	Region 31	78.7	78.7	78.7	30.3	30.3	30.3	21.9	21.9	21.9	65.4	65.4	65.4	12.7	12.7	12.7	1.0	1.0	1.0	0.5	0.5	0.5	4	4	4	93.8	93.8	93.8
8	Region 32	77.1	74.6	79.2	33.4	29.2	38.2	20.9	10.2	40.2	64.6	49.1	73.4	14.5	7.5	20.2	1.7	0.9	2.7	1.3	0.7	2.2	6	1	17	90.6	77.8	97.4
6	Region 33	74.5	72.9	75.8	30.6	27.9	32.6	10.5	6.7	13.4	68.5	58.8	74.1	21.0	15.9	27.8	1.0	0.5	2.5	0.8	0.3	2.1	4	2	9	82.3	76.1	89.9
9	Region 34	76.6	72.1	80.0	32.0	24.1	39.2	17.4	5.2	43.7	67.9	52.6	75.7	14.8	3.7	40.4	1.4	0.6	2.6	1.1	0.6	2.0	6	0	13	86.2	70.3	102.7
3	Region 35	77.1	76.8	77.7	33.4	29.4	35.5	5.5	2.8	9.9	65.1	62.7	67.4	29.4	24.8	34.5	2.0	1.8	2.4	1.7	1.3	2.1	3	2	6	78.3	71.2	85.4
14	Region 36	77.0	75.6	78.9	33.0	28.2	35.0	13.4	5.7	23.3	71.0	62.4	76.2	15.6	6.9	31.9	2.1	1.3	3.1	1.6	1.0	2.4	5	1	12	88.8	83.0	97.4
212	**Ave YM 1**	**76.5**			**32.1**			**14.1**			**68.7**			**17.1**			**2.0**			**1.5**			**5**			**86.0**		
	Min YM 1		**69.0**			**22.0**			**1.1**			**49.1**			**1.9**			**0.5**			**0.0**			**0**			**40.2**	
	Max YM 1			**81.5**			**40.4**			**43.7**			**79.6**			**40.4**			**8.1**			**5.0**			**23**			**107.5**

TABLE 13: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE (2010/2011)
(continue)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM 2																												
3	Region 12	75.9	74.6	77.2	31.5	28.9	35.3	13.9	10.4	20.6	69.7	67.4	70.9	16.4	8.5	21.9	2.9	2.1	3.4	2.1	1.7	2.8	3	1	6	87.8	81.1	97.8
3	Region 13	75.9	75.2	76.3	31.0	30.3	32.1	18.0	15.8	21.5	69.7	65.3	73.6	12.3	9.7	13.9	1.9	1.6	2.1	1.3	1.2	1.6	3	0	9	85.3	84.2	86.6
4	Region 14	76.4	75.3	77.8	32.9	29.1	37.5	17.2	14.1	18.7	69.0	67.1	73.0	13.9	9.0	17.7	1.7	1.2	2.3	1.4	0.9	1.8	5	2	8	90.5	83.0	98.3
3	Region 16	75.5	74.8	75.9	33.7	32.8	35.2	21.1	19.7	22.2	63.1	62.0	64.0	15.7	15.1	16.3	2.7	1.8	3.9	1.9	1.3	2.5	13	7	23	89.0	86.2	92.1
1	Region 17	76.5	76.5	76.5	32.7	32.7	32.7	18.2	18.2	18.2	63.5	63.5	63.5	18.3	18.3	18.3	2.0	2.0	2.0	1.9	1.9	1.9	5	5	5	83.9	83.9	83.9
3	Region 18	76.0	74.6	76.8	30.7	28.6	32.1	16.0	14.2	17.4	66.7	64.9	67.7	17.3	15.0	20.9	3.0	2.4	3.8	2.2	1.7	2.7	3	0	7	89.2	83.1	94.8
5	Region 19	74.5	73.8	75.5	30.4	28.2	34.4	8.7	6.3	12.5	72.0	68.5	79.1	19.3	14.6	23.7	2.0	0.9	4.2	1.4	0.5	2.6	9	2	24	84.2	81.1	86.3
4	Region 20	75.8	74.8	76.9	32.4	30.2	34.9	17.4	13.4	20.5	68.3	66.3	71.7	14.4	10.6	16.0	3.6	1.9	5.3	2.7	1.4	4.8	8	5	12	88.5	80.2	99.1
1	Region 22	74.3	74.3	74.3	33.7	33.7	33.7	14.4	14.4	14.4	68.8	68.8	68.8	16.8	16.8	16.8	1.7	1.7	1.7	1.3	1.3	1.3	10	10	10	74.3	74.3	74.3
10	Region 23	76.1	74.3	77.8	32.6	28.5	36.6	15.3	9.6	23.0	70.5	67.5	76.9	14.2	8.7	22.9	2.3	1.2	4.1	1.9	0.9	3.4	5	1	8	90.6	81.4	96.6
9	Region 25	75.6	73.6	78.5	30.5	27.0	33.4	16.3	6.3	36.6	69.4	58.4	78.5	14.3	5.0	27.6	3.0	0.9	6.7	2.1	0.4	4.7	6	0	14	82.0	71.0	96.4
4	Region 26	74.0	72.2	75.2	29.6	27.9	33.1	12.0	8.0	15.5	66.7	62.8	70.4	21.3	18.1	24.4	2.7	1.5	4.1	1.9	1.0	3.1	10	5	18	75.4	72.8	82.0
3	Region 27	74.1	70.7	75.9	29.5	28.8	30.1	13.7	9.6	17.8	70.2	66.5	73.2	16.2	15.6	17.2	2.0	1.7	2.5	1.5	1.3	1.9	9	4	18	87.4	86.2	88.1
6	Region 28	74.8	74.0	76.8	29.7	26.9	31.9	13.9	11.3	15.3	66.4	57.6	71.5	19.8	14.7	29.0	3.3	2.3	4.2	2.4	1.8	3.2	8	6	11	83.5	80.5	87.3
1	Region 30	78.8	78.8	78.8	33.4	33.4	33.4	10.9	10.9	10.9	75.6	75.6	75.6	13.5	13.5	13.5	1.8	1.8	1.8	1.7	1.7	1.7	8	8	8	95.3	95.3	95.3
1	Region 33	70.2	70.2	70.2	30.4	30.4	30.4	20.6	20.6	20.6	67.7	67.7	67.7	11.7	11.7	11.7	1.1	1.1	1.1	1.0	1.0	1.0	9	9	9	73.7	73.7	73.7
2	Region 36	75.6	72.6	78.5	29.4	22.6	36.1	13.1	1.8	24.4	53.2	39.5	66.8	33.8	8.8	58.7	2.1	1.9	2.3	1.7	1.6	1.7	9	1	16	79.4	58.8	100.0
63	**Ave YM 2**	**75.4**			**31.3**			**15.1**			**68.3**			**16.6**			**2.5**			**1.9**			**7**			**85.5**		
	Min YM 2		**70.2**			**22.6**			**1.8**			**39.5**			**5.0**			**0.9**			**0.4**			**0**			**58.8**	
	Max YM 2			**78.8**			**37.5**			**36.6**			**79.1**			**58.7**			**6.7**			**4.8**			**24**			**100.0**

TABLE 13: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE ACCORDING TO GRADE (2010/2011)
(continue)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: YM3																												
1	Region 20	73.7	73.7	73.7	30.4	30.4	30.4	19.3	19.3	19.3	65.8	65.8	65.8	14.9	14.9	14.9	3.5	3.5	3.5	2.7	2.7	2.7	9	9	9	68.9	68.9	68.9
2	Region 23	75.2	74.1	76.3	32.4	27.7	37.1	17.8	13.5	22.0	69.3	67.1	71.5	13.0	6.5	19.4	3.2	2.6	3.7	2.4	1.9	2.9	4	2	5	84.7	82.3	87.1
3	**Ave YM 3**	**74.7**			**31.7**			**18.3**			**68.1**			**13.6**			**3.3**			**2.5**			**5**			**79.4**		
	Min YM 3		**73.7**			**27.7**			**13.5**			**65.8**			**6.5**			**2.6**			**1.9**			**2**			**68.9**	
	Max YM 3			**76.3**			**37.1**			**22.0**			**71.5**			**19.4**			**3.7**			**2.9**			**9**			**87.1**
GRADE: COM																												
1	Region 12	74.8	74.8	74.8	33.2	33.2	33.2	19.9	19.9	19.9	67.3	67.3	67.3	12.8	12.8	12.8	3.9	3.9	3.9	3.3	3.3	3.3	4	4	4	74.1	74.1	74.1
1	Region 20	74.3	74.3	74.3	38.1	38.1	38.1	21.9	21.9	21.9	70.5	70.5	70.5	7.6	7.6	7.6	1.8	1.8	1.8	1.6	1.6	1.6	6	6	6	74.9	74.9	74.9
2	**Ave COM**	**74.6**			**35.7**			**20.9**			**68.9**			**10.2**			**2.9**			**2.5**			**5**			**74.5**		
	Min COM		**74.3**			**33.2**			**19.9**			**67.3**			**7.6**			**1.8**			**1.6**			**4**			**74.1**	
	Max COM			**74.8**			**38.1**			**21.9**			**70.5**			**12.8**			**3.9**			**3.3**			**6**			**74.9**
280	**Ave yellow maize**	**76.2**			**31.9**			**14.4**			**68.6**			**16.9**			**2.1**			**1.6**			**5**			**85.8**		
	Min yellow maize		**69.0**			**22.0**			**1.1**			**39.5**			**1.9**			**0.5**			**0.0**			**0**			**40.2**	
	Max yellow maize			**81.5**			**40.4**			**43.7**			**79.6**			**58.7**			**8.1**			**5.0**			**24**			**107.5**
693	**Ave maize**	**77.1**			**33.5**			**20.7**			**65.6**			**13.8**			**1.8**			**1.3**			**5**			**87.5**		
	Min maize		**69.0**			**22.0**			**1.1**			**33.5**			**1.7**			**0.0**			**0.0**			**0**			**40.2**	
	Max maize			**81.8**			**44.0**			**55.8**			**83.9**			**65.1**			**8.4**			**5.9**			**31**			**111.7**

TABLE 14: PHYSICAL QUALITY FACTORS OF WHITE MAIZE (2010/2011)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
WHITE																												
1	Region 08	78.0	78.0	78.0	32.0	32.0	32.0	27.5	27.5	27.5	62.8	62.8	62.8	9.7	9.7	9.7	3.0	3.0	3.0	1.9	1.9	1.9	10	10	10	93.2	93.2	93.2
21	Region 12	78.7	77.2	80.4	35.1	32.5	40.3	26.7	19.5	43.8	63.6	52.8	68.3	9.7	3.4	14.1	1.4	0.4	3.4	1.1	0.4	3.0	4	1	9	91.1	83.4	99.0
29	Region 13	78.1	75.8	79.8	34.1	30.2	38.1	23.2	2.7	34.9	63.9	55.8	73.5	12.9	5.2	40.3	1.8	0.8	2.9	1.4	0.6	2.2	4	0	9	88.5	74.6	102.7
31	Region 14	78.0	72.6	80.7	34.4	29.5	40.3	26.9	8.6	46.2	62.3	37.4	74.5	10.8	1.7	31.4	1.6	0.1	4.7	1.2	0.0	3.6	4	0	18	90.7	73.3	103.5
10	Region 15	79.1	77.9	79.9	36.9	35.0	38.1	36.0	27.4	43.0	57.5	52.7	63.2	6.6	4.3	9.4	0.8	0.3	1.8	0.7	0.3	1.4	3	2	5	96.2	90.2	99.7
14	Region 16	78.9	77.7	80.5	35.7	33.2	38.3	32.9	22.7	43.0	60.2	53.4	66.4	6.9	3.6	10.9	0.9	0.3	1.3	0.8	0.3	1.2	3	0	7	91.8	83.9	102.3
30	Region 17	78.3	76.4	79.7	35.0	31.1	38.6	23.1	9.1	41.7	64.8	53.0	75.8	12.1	5.3	31.6	1.2	0.4	3.0	0.9	0.3	2.5	3	0	7	88.2	72.8	99.7
21	Region 18	77.8	75.6	80.6	34.4	31.3	37.3	26.1	12.9	41.0	62.2	51.7	69.3	11.7	4.7	20.4	1.6	0.9	3.4	1.2	0.7	3.3	6	1	13	90.0	77.1	101.4
26	Region 19	76.7	71.3	79.7	33.0	28.5	41.4	22.9	9.1	37.0	66.1	57.0	83.9	11.0	2.9	24.5	1.9	0.6	5.6	1.3	0.3	3.2	6	2	16	88.6	63.6	111.7
14	Region 20	77.7	75.1	79.9	34.8	30.4	42.4	26.7	19.9	36.3	63.2	55.5	70.8	10.1	6.0	15.4	2.1	0.5	4.6	1.7	0.1	3.3	7	1	14	85.1	59.1	100.3
9	Region 21	77.7	74.6	79.7	35.4	34.0	37.6	22.5	9.3	32.1	65.5	58.6	72.8	12.0	7.7	19.6	1.6	0.5	3.9	1.5	0.5	3.6	3	0	5	90.2	80.6	97.5
10	Region 22	77.9	77.2	79.0	34.5	31.2	37.1	27.8	21.7	32.8	62.3	56.0	68.0	9.9	6.2	15.5	1.3	0.3	1.9	1.0	0.3	1.5	3	0	5	90.5	86.2	94.9
27	Region 23	78.7	71.9	81.8	35.6	26.0	40.4	32.5	13.6	46.9	60.5	47.8	74.1	7.0	2.7	17.5	1.9	0.7	3.9	1.5	0.7	2.7	5	0	17	91.4	54.4	103.7
21	Region 24	78.1	74.0	80.0	36.1	33.7	44.0	31.7	12.5	55.8	59.2	41.4	70.7	9.1	2.8	20.6	1.9	0.0	5.1	1.4	0.0	2.6	7	0	21	92.6	82.3	100.7
19	Region 25	76.1	73.2	79.0	32.5	25.0	36.5	18.7	1.4	35.3	64.9	33.5	75.7	16.4	6.1	65.1	2.6	0.5	8.4	1.8	0.5	5.9	4	0	12	78.0	56.6	96.1
10	Region 26	76.7	73.4	79.5	33.1	26.2	38.7	19.1	10.1	33.2	67.3	55.2	76.7	13.7	6.5	30.1	1.5	0.3	3.1	1.2	0.2	2.5	4	0	9	84.3	73.3	93.9
2	Region 27	74.2	74.0	74.4	34.1	32.6	35.6	18.8	3.5	34.0	62.0	58.0	65.9	19.3	8.0	30.6	4.7	3.2	6.2	3.5	2.3	4.7	11	9	12	86.3	85.4	87.1
25	Region 28	77.0	73.9	80.0	33.6	28.0	37.8	20.6	7.4	42.6	66.0	52.7	78.9	13.4	4.7	22.1	1.7	0.2	6.0	1.1	0.2	3.2	8	0	31	85.2	68.1	98.1
7	Region 30	77.6	74.9	79.1	35.0	30.6	38.9	26.9	14.5	35.5	62.5	54.8	71.2	10.6	6.2	15.2	2.1	0.4	4.1	1.7	0.4	3.1	6	1	18	88.9	76.3	96.7
2	Region 31	77.9	77.6	78.1	37.0	35.9	38.1	11.4	10.6	12.1	71.7	70.2	73.1	17.0	14.8	19.2	1.3	1.1	1.4	0.8	0.6	0.9	4	4	4	88.0	87.3	88.7
16	Region 32	77.2	75.2	79.4	34.4	31.2	40.1	17.9	4.5	32.2	65.3	58.5	72.1	16.9	8.0	33.0	1.1	0.6	2.5	0.9	0.4	1.6	5	2	7	84.7	75.7	98.6
17	Region 33	75.9	74.1	77.3	33.9	30.4	37.6	21.4	12.6	30.6	63.5	59.0	69.4	15.1	8.5	23.3	0.6	0.2	1.6	0.5	0.2	1.1	6	1	12	86.5	72.8	96.4
31	Region 34	78.2	73.0	80.2	34.8	25.2	39.8	25.1	6.2	47.3	62.5	48.4	70.9	12.4	4.3	28.4	0.9	0.0	2.4	0.7	0.0	1.9	4	0	13	86.9	64.2	99.7
5	Region 35	78.1	76.3	80.8	34.0	27.2	37.4	28.7	2.6	42.3	59.5	52.2	64.4	11.8	5.5	35.4	1.7	0.7	2.3	1.3	0.7	1.8	3	1	6	87.6	81.8	94.8
15	Region 36	77.6	75.7	80.3	34.4	29.9	38.2	15.7	3.9	32.8	70.8	62.0	79.8	13.5	3.5	22.3	1.5	1.2	2.0	1.2	0.5	1.6	5	1	18	95.8	91.0	102.4
413	**Ave white**	**77.7**			**34.5**			**24.9**			**63.5**			**11.6**			**1.6**			**1.2**			**5**			**88.6**		
	Min white		**71.3**			**25.0**			**1.4**			**33.5**			**1.7**			**0.0**			**0.0**			**0**			**54.4**	
	Max white			**81.8**			**44.0**			**55.8**			**83.9**			**65.1**			**8.4**			**5.9**			**31**			**111.7**

TABLE 14: PHYSICAL QUALITY FACTORS OF YELLOW MAIZE (2010/2011)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
YELLOW																												
1	Region 8	69.0	69.0	69.0	25.3	25.3	25.3	1.2	1.2	1.2	68.3	68.3	68.3	30.5	30.5	30.5	3.2	3.2	3.2	2.5	2.5	2.5	3	3	3	40.2	40.2	40.2
29	Region 10	77.3	75.2	81.5	33.1	28.2	40.4	5.0	1.1	11.9	70.1	59.6	79.1	24.9	13.5	36.3	2.2	0.8	4.3	1.8	0.7	3.6	2	0	13	75.8	58.9	101.1
1	Region 11	75.7	75.7	75.7	31.0	31.0	31.0	2.9	2.9	2.9	66.5	66.5	66.5	30.6	30.6	30.6	0.8	0.8	0.8	0.5	0.5	0.5	4	4	4	74.8	74.8	74.8
9	Region 12	76.2	74.6	77.4	31.8	27.8	35.3	15.8	6.7	31.4	68.6	57.9	73.1	15.6	8.5	21.9	2.5	1.1	3.9	2.0	1.0	3.3	4	0	9	87.7	74.1	97.8
9	Region 13	76.7	75.2	77.5	30.6	27.9	34.4	15.8	11.1	21.5	68.5	64.7	73.6	15.7	9.7	21.4	1.7	0.5	2.4	1.2	0.0	1.7	3	0	9	89.5	84.2	100.5
15	Region 14	76.3	74.5	78.1	32.7	29.1	37.5	16.5	10.2	25.1	68.6	59.2	75.3	14.9	9.0	22.9	1.8	0.9	2.6	1.4	0.6	2.1	4	0	8	92.1	83.0	100.1
1	Region 15	75.8	75.8	75.8	35.5	35.5	35.5	8.9	8.9	8.9	70.3	70.3	70.3	20.8	20.8	20.8	1.1	1.1	1.1	1.0	1.0	1.0	8	8	8	77.3	77.3	77.3
5	Region 16	76.0	74.8	76.9	33.6	32.8	35.2	20.5	16.1	22.9	65.4	62.0	71.3	14.2	11.0	16.3	2.1	0.9	3.9	1.5	0.8	2.5	10	2	23	91.4	86.2	97.1
9	Region 17	76.4	74.3	78.0	33.4	31.4	37.0	17.8	11.5	23.9	69.4	63.5	75.2	12.8	8.8	20.2	1.9	0.7	3.4	1.5	0.7	2.2	6	1	21	89.1	83.9	93.0
8	Region 18	76.6	74.6	78.8	30.0	22.0	32.3	15.1	7.3	22.6	67.9	60.6	72.8	17.1	13.3	24.9	2.3	1.0	3.8	1.8	1.0	2.7	4	0	9	93.0	83.1	101.2
15	Region 19	75.8	73.1	79.2	31.9	25.0	36.1	12.7	6.3	21.1	70.4	57.8	79.1	16.8	9.7	34.6	1.9	0.5	4.2	1.3	0.4	2.6	7	1	24	90.3	81.1	100.1
14	Region 20	75.7	73.7	76.9	33.5	30.2	38.1	18.8	10.8	28.1	68.1	61.9	73.7	13.1	1.9	19.2	2.5	1.0	5.3	1.9	0.8	4.8	7	2	12	86.1	68.9	99.7
1	Region 21	74.9	74.9	74.9	30.1	30.1	30.1	15.6	15.6	15.6	68.8	68.8	68.8	15.6	15.6	15.6	3.2	3.2	3.2	2.4	2.4	2.4	7	7	7	84.9	84.9	84.9
3	Region 22	75.4	74.3	76.7	31.3	28.9	33.7	18.5	14.4	22.7	68.0	63.7	71.6	13.4	9.9	16.8	2.1	1.7	2.7	1.5	1.3	1.7	5	2	10	89.3	74.3	103.6
18	Region 23	76.4	74.1	79.0	32.5	27.7	37.1	14.9	5.1	23.0	70.4	66.3	76.9	14.7	6.5	24.9	2.4	1.1	5.1	1.8	0.8	3.4	5	1	17	91.6	68.8	107.5
1	Region 24	77.4	77.4	77.4	34.2	34.2	34.2	18.6	18.6	18.6	69.3	69.3	69.3	12.1	12.1	12.1	1.6	1.6	1.6	1.3	1.3	1.3	8	8	8	87.0	87.0	87.0
28	Region 25	76.6	73.6	78.7	31.9	27.0	35.1	19.0	5.5	36.6	67.4	58.4	78.5	13.6	5.0	27.6	2.4	0.9	6.7	1.7	0.4	4.7	5	0	14	85.0	68.7	100.8
12	Region 26	75.8	72.2	78.5	31.9	27.9	34.8	15.6	8.0	27.9	68.0	62.8	74.6	16.4	7.0	24.4	1.9	0.9	4.1	1.4	0.6	3.1	7	2	18	83.4	72.8	94.2
7	Region 27	75.0	70.7	76.0	31.2	28.8	33.6	15.7	9.6	19.6	69.8	66.5	73.2	14.5	10.7	17.2	2.0	1.3	2.5	1.6	1.3	1.9	6	2	18	86.5	81.6	88.8
33	Region 28	74.8	69.1	78.3	29.9	23.2	34.0	12.8	2.8	23.4	67.9	57.6	75.5	19.3	8.5	33.0	2.5	0.5	4.6	1.7	0.4	3.4	7	1	23	84.1	74.0	90.0
7	Region 30	77.4	75.6	78.8	31.8	27.8	35.3	10.8	7.6	13.4	74.5	71.0	79.6	14.6	11.8	20.2	2.8	0.8	8.1	2.2	0.8	5.0	4	1	10	81.5	71.4	95.3
1	Region 31	78.7	78.7	78.7	30.3	30.3	30.3	21.9	21.9	21.9	65.4	65.4	65.4	12.7	12.7	12.7	1.0	1.0	1.0	0.5	0.5	0.5	4	4	4	93.8	93.8	93.8
8	Region 32	77.1	74.6	79.2	33.4	29.2	38.2	20.9	10.2	40.2	64.6	49.1	73.4	14.5	7.5	20.2	1.7	0.9	2.7	1.3	0.7	2.2	6	1	17	90.6	77.8	97.4
7	Region 33	73.9	70.2	75.8	30.6	27.9	32.6	12.0	6.7	20.6	68.4	58.8	74.1	19.7	11.7	27.8	1.0	0.5	2.5	0.8	0.3	2.1	5	2	9	81.1	73.7	89.9
19	Region 34	76.6	72.1	80.0	32.0	24.1	39.2	17.4	5.2	43.7	67.9	52.6	75.7	14.8	3.7	40.4	1.4	0.6	2.6	1.1	0.6	2.0	6	0	13	86.2	70.3	102.7
3	Region 35	77.1	76.8	77.7	33.4	29.4	35.5	5.5	2.8	9.9	65.1	62.7	67.4	29.4	24.8	34.5	2.0	1.8	2.4	1.7	1.3	2.1	3	2	6	78.3	71.2	85.4
16	Region 36	76.8	72.6	78.9	32.5	22.6	36.1	13.3	1.8	24.4	68.8	39.5	76.2	17.9	6.9	58.7	2.1	1.3	3.1	1.6	1.0	2.4	5	1	16	87.7	58.8	100.0
280	**Ave yellow**	**76.2**			**31.9**			**14.4**			**68.6**			**16.9**			**2.1**			**1.6**			**5**			**85.8**		
	Min yellow		**69.0**			**22.0**			**1.1**			**39.5**			**1.9**			**0.5**			**0.0**			**0**			**40.2**	
	Max yellow			**81.5**			**40.4**			**43.7**			**79.6**			**58.7**			**8.1**			**5.0**			**24**			**107.5**

TABLE 14: PHYSICAL QUALITY FACTORS OF WHITE AND YELLOW MAIZE FOR (2010/2011)

Number of samples	Region	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)			Milling index		
								Above 10 mm sieve			Above 8 mm sieve			Below 8 mm sieve			< 6.35 mm sieve			< 4.75 mm sieve								
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
WHITE AND YELLOW																												
2	Region 08	73.5	69.0	78.0	28.7	25.3	32.0	14.4	1.2	27.5	65.6	62.8	68.3	20.1	9.7	30.5	3.1	3.0	3.2	2.2	1.9	2.5	7	3	10	66.7	40.2	93.2
29	Region 10	77.3	75.2	81.5	33.1	28.2	40.4	5.0	1.1	11.9	70.1	59.6	79.1	24.9	13.5	36.3	2.2	0.8	4.3	1.8	0.7	3.6	2	0	13	75.8	58.9	101.1
1	Region 11	75.7	75.7	75.7	31.0	31.0	31.0	2.9	2.6	2.9	66.5	66.5	66.5	30.6	30.6	30.6	0.8	0.8	0.8	0.5	0.5	0.5	4	4	4	74.8	74.8	74.8
30	Region 12	77.9	74.6	80.4	34.1	27.8	40.3	23.5	6.7	43.8	65.1	52.8	73.1	11.4	3.4	21.9	1.7	0.4	3.9	1.3	0.4	3.3	4	0	9	90.1	74.1	99.0
38	Region 13	77.8	75.2	79.8	33.3	27.9	38.1	21.4	2.7	34.9	65.0	55.8	73.6	13.6	5.2	40.3	1.8	0.5	2.9	1.3	0.0	2.2	4	0	9	88.8	74.6	102.7
46	Region 14	77.4	72.6	80.7	33.9	29.1	40.3	23.5	8.6	46.2	64.4	37.4	75.3	12.1	1.7	31.4	1.6	0.1	4.7	1.3	0.0	3.6	4	0	18	91.1	73.3	103.5
11	Region 15	78.8	75.8	79.9	36.8	35.0	38.1	33.5	8.9	43.0	58.6	52.7	70.3	7.8	4.3	20.8	0.9	0.3	1.8	0.8	0.3	1.4	4	2	8	94.5	77.3	99.7
19	Region 16	78.1	74.8	80.5	35.1	32.8	38.3	29.6	16.1	43.0	61.6	53.4	71.3	8.8	3.6	16.3	1.2	0.3	3.9	1.0	0.3	2.5	5	0	23	91.7	83.9	102.3
39	Region 17	77.9	74.3	79.7	34.6	31.1	38.6	21.9	9.1	41.7	65.9	53.0	75.8	12.2	5.3	31.6	1.4	0.4	3.4	1.1	0.3	2.5	4	0	21	88.4	72.8	99.7
29	Region 18	77.5	74.6	80.6	33.1	22.0	37.3	23.1	7.3	41.0	63.8	51.7	72.8	13.2	4.7	24.9	1.8	0.9	3.8	1.4	0.7	3.3	5	0	13	90.8	77.1	101.4
41	Region 19	76.4	71.3	79.7	32.6	25.0	41.4	19.2	6.3	37.0	67.7	57.0	83.9	13.2	2.9	34.6	1.9	0.5	5.6	1.3	0.3	3.2	7	1	24	89.2	63.6	111.7
28	Region 20	76.7	73.7	79.9	34.1	30.2	42.4	22.7	10.8	36.3	65.7	55.5	73.7	11.6	1.9	19.2	2.3	0.5	5.3	1.8	0.1	4.8	7	1	14	85.6	59.1	100.3
10	Region 21	77.5	74.6	79.7	34.9	30.1	37.6	21.9	9.3	32.1	65.8	58.6	72.8	12.4	7.7	19.6	1.8	0.5	3.9	1.6	0.5	3.6	3	0	7	89.7	80.6	97.5
13	Region 22	77.3	74.3	79.0	33.8	28.9	37.1	25.7	14.4	32.8	63.6	56.0	71.6	10.7	6.2	16.8	1.5	0.3	2.7	1.1	0.3	1.7	4	0	10	90.2	74.3	103.6
45	Region 23	77.8	71.9	81.8	34.4	26.0	40.4	25.5	5.1	46.9	64.4	47.8	76.9	10.1	2.7	24.9	2.1	0.7	5.1	1.6	0.7	3.4	5	0	17	91.5	54.4	107.5
22	Region 24	78.1	74.0	80.0	36.0	33.7	44.0	31.1	12.5	55.8	59.7	41.4	70.7	9.2	2.8	20.6	1.9	0.0	5.1	1.4	0.0	2.6	7	0	21	92.4	82.3	100.7
47	Region 25	76.4	73.2	79.0	32.1	25.0	36.5	18.9	1.4	36.6	66.4	33.5	78.5	14.7	5.0	65.1	2.5	0.5	8.4	1.8	0.4	5.9	4	0	14	82.2	56.6	100.8
22	Region 26	76.2	72.2	79.5	32.5	26.2	38.7	17.2	8.0	33.2	67.7	55.2	76.7	15.2	6.5	30.1	1.7	0.3	4.1	1.3	0.2	3.1	6	0	18	83.8	72.8	94.2
9	Region 27	74.8	70.7	76.0	31.9	28.8	35.6	16.4	3.5	34.0	68.1	58.0	73.2	15.6	8.0	30.6	2.6	1.3	6.2	2.0	1.3	4.7	7	2	18	86.5	81.5	88.8
58	Region 28	75.8	69.1	80.0	31.5	23.2	37.8	16.2	2.8	42.6	67.1	52.7	78.9	16.8	4.7	33.0	2.1	0.2	6.0	1.5	0.2	3.4	8	0	31	84.6	68.1	98.1
14	Region 30	77.5	74.9	79.1	33.4	27.8	38.9	18.9	7.6	35.5	68.5	54.8	79.6	12.6	6.2	20.2	2.5	0.4	8.1	1.9	0.4	5.0	5	1	18	85.2	71.4	96.7
3	Region 31	78.1	77.6	78.7	34.8	30.3	38.1	14.9	10.6	21.9	69.6	65.4	73.1	15.6	12.7	19.2	1.2	1.0	1.4	0.7	0.5	0.9	4	4	4	89.9	87.3	93.8
24	Region 32	77.2	74.6	79.4	34.1	29.2	40.1	18.9	4.5	40.2	65.0	49.1	73.4	16.1	7.5	33.0	1.3	0.6	2.7	1.0	0.4	2.2	5	1	17	86.7	75.7	98.6
24	Region 33	75.3	70.2	77.3	32.9	27.9	37.6	18.7	6.7	30.6	64.9	58.8	74.1	16.4	8.5	27.8	0.7	0.2	2.5	0.6	0.2	2.1	5	1	12	84.9	72.8	96.4
50	Region 34	77.6	72.1	80.2	33.8	24.1	39.8	22.2	5.2	47.3	64.5	48.4	75.7	13.3	3.7	40.4	1.1	0.0	2.6	0.9	0.0	2.0	5	0	13	86.6	64.2	102.7
8	Region 35	77.7	76.3	80.8	33.8	27.2	37.4	20.0	2.6	42.3	61.6	52.2	67.4	18.4	5.5	35.4	1.8	0.7	2.4	1.5	0.7	2.1	3	1	6	84.1	71.2	94.8
31	Region 36	77.2	72.6	80.3	33.4	22.6	38.2	14.5	1.8	32.8	69.8	39.5	79.8	15.7	3.5	58.7	1.8	1.2	3.1	1.4	0.5	2.4	5	1	18	91.6	58.8	102.4
693	**Ave w & y**	**77.1**			**33.5**			**20.7**			**65.6**			**13.8**			**1.8**			**1.3**			**5**			**87.5**		
Min white & yellow			**69.0**			**22.0**			**1.1**			**33.5**			**1.7**			**0.0**			**0.0**			**0**			**40.2**	
Max white & yellow				**81.8**			**44.0**			**55.8**			**83.9**			**65.1**			**8.4**			**5.9**			**31**			**111.7**

TABLE 15: PHYSICAL QUALITY FACTORS OF WHITE AND YELLOW MAIZE 2001/02 - 2010/11

Season	Number of samples	Hectolitre mass (kg/hl)			100 kernel mass (g)			Kernel size (%)									Breakage susceptibility (%)						Stress cracks (%)		
								Above 10mm sieve			Above 8mm sieve			Below 8mm sieve			< 6.35mm sieve			<4.75mm sieve					
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
White Maize																									
2001/02	471	77.3	68.1	81.1	31.8	17.5	44.4	21.1	1.7	59.5	62.7	32.9	77.1	16.2	0.0	45.6	1.8	0.2	11.0	1.3	0.1	6.7	6	0	60
2002/03	517	78.1	65.3	83.2	33.0	22.5	44.4	20.4	0.3	69.4	62.9	29.4	75.4	16.7	1.0	65.6	1.4	0.0	21.4	1.0	0.0	21.0	5	0	34
2003/04	599	78.1	63.8	83.2	36.2	23.7	58.8	29.9	0.4	65.5	59.2	31.0	78.0	11.0	1.0	64.9	1.4	0.0	15.0	1.0	0.0	9.5	6	0	58
2004/05	601	77.9	68.9	83.2	35.3	26.3	44.3	29.7	0.8	59.7	60.1	31.3	80.3	10.2	0.1	54.5	1.4	0.1	8.0	1.1	0.0	6.2	5	0	23
2005/06	593	76.2	58.3	81.6	33.7	18.0	44.7	30.1	0.0	73.9	59.4	24.2	75.0	10.5	1.2	75.8	2.1	0.2	12.6	1.6	0.1	10.4	4	0	36
2006/07	563	78.1	68.1	82.8	29.8	19.4	40.1	17.1	0.2	51.7	63.3	16.7	78.2	19.6	0.8	81.6	1.5	0.0	12.1	1.0	0.0	11.5	3	0	27
2007/08	483	78.2	65.3	81.6	34.5	17.0	45.6	24.5	0.4	69.7	63.8	23.3	84.2	11.7	1.0	76.2	1.2	0.1	9.7	0.9	0.0	7.3	4	0	44
2008/09	483	77.6	61.6	82.8	35.1	27.1	44.0	26.2	0.5	46.4	63.3	43.1	84.0	10.5	2.1	51.0	1.5	0.2	11.7	1.1	0.1	8.7	5	0	50
2009/10	458	77.9	60.2	84.4	36.0	24.1	59.1	26.3	1.2	90.7	62.6	9.2	82.0	11.2	0.1	53.5	1.5	0.2	24.3	1.2	0.1	23.1	4	0	36
2010/11	413	77.7	71.3	81.8	34.5	25.0	44.0	24.9	1.4	55.8	63.5	33.5	83.9	11.6	1.7	65.1	1.6	0.0	8.4	1.2	0.0	5.9	5	0	31
Weighted Average		**77.7**			**34.1**			**25.3**			**62.0**			**12.7**			**1.5**			**1.1**			**5**		
Minimum			**58.3**			**17.0**			**0.0**			**9.2**			**0.0**			**0.0**			**0.0**			**0**	
Maximum				**84.4**			**59.1**			**90.7**			**84.2**			**81.6**			**24.3**			**23.1**			**60**
Yellow Maize																									
2001/02	429	76.7	63.3	80.6	29.7	21.7	37.8	13.9	0.0	40.6	63.8	7.8	77.6	22.3	6.2	92.1	2.2	0.2	12.6	1.5	0.1	8.3	7	0	57
2002/03	383	77.2	68.6	81.9	30.8	19.9	46.0	13.5	0.0	72.7	63.6	16.9	77.7	22.9	1.3	77.2	1.6	0.0	5.5	1.2	0.0	4.4	5	0	38
2003/04	301	77.0	68.0	80.1	34.0	25.5	62.9	20.2	0.9	59.8	65.4	35.8	79.4	14.4	0.8	53.9	1.7	0.2	22.0	1.2	0.1	21.5	8	0	60
2004/05	399	76.8	68.4	81.0	33.0	21.5	44.4	19.8	1.0	46.9	64.3	32.9	82.3	15.9	1.4	66.1	1.7	0.2	24.4	1.2	0.0	12.9	5	0	21
2005/06	307	75.4	53.4	81.9	31.5	22.0	40.1	19.0	1.1	53.1	65.4	43.3	80.1	15.7	3.2	50.8	2.5	0.1	17.6	1.7	0.0	11.7	5	0	24
2006/07	337	76.4	70.2	81.2	27.4	16.6	38.6	8.5	0.0	34.2	61.7	17.1	79.5	29.8	6.4	82.9	2.1	0.2	10.9	1.3	0.0	6.0	4	0	24
2007/08	417	76.7	69.3	79.9	32.4	24.4	42.9	15.2	0.3	50.9	66.0	39.6	78.6	18.8	2.8	60.1	1.9	0.3	15.2	1.3	0.1	8.3	5	0	58
2008/09	327	76.6	69.9	81.2	32.9	24.2	45.4	15.7	1.3	52.8	66.5	44.3	79.9	17.8	1.6	44.6	1.8	0.1	10.3	1.3	0.0	9.9	6	0	32
2009/10	342	76.6	69.0	81.6	33.0	23.3	42.5	14.3	0.0	41.7	68.5	50.9	79.9	17.2	4.0	47.7	2.1	0.4	10.3	1.6	0.3	8.4	5	0	27
2010/11	280	76.2	69.0	81.5	31.9	22.0	40.4	14.4	1.1	43.7	68.6	39.5	79.6	16.9	1.9	58.7	2.1	0.5	8.1	1.6	0.0	5.0	5	0	24
Weighted Average		**76.6**			**31.7**			**15.4**			**65.4**			**19.2**			**1.9**			**1.4**			**5**		
Minimum			**53.4**			**16.6**			**0.0**			**7.8**			**0.8**			**0.0**			**0.0**			**0**	
Maximum				**81.9**			**62.9**			**72.7**			**82.3**			**92.1**			**24.4**			**21.5**			**60**
White and Yellow Maize																									
2001/02	900	77.0	63.3	81.1	30.8	17.5	44.4	17.7	0.0	59.5	63.2	7.8	77.6	19.1	0.0	92.1	2.0	0.2	12.6	1.4	0.1	8.3	7	0	60
2002/03	900	77.7	65.3	83.2	32.1	19.9	46.0	17.5	0.0	72.7	63.2	16.9	77.7	19.3	1.0	77.2	1.5	0.0	21.4	1.1	0.0	21.0	5	0	38
2003/04	900	77.8	63.8	83.2	35.5	23.7	62.9	26.6	0.4	65.5	61.3	31.0	79.4	12.1	0.8	64.9	1.5	0.0	22.0	1.1	0.0	21.5	7	0	60
2004/05	1000	77.5	68.4	83.2	34.4	21.5	44.4	25.7	0.8	59.7	61.8	31.8	82.3	12.5	0.1	66.1	1.5	0.1	24.4	1.1	0.0	12.9	5	0	23
2005/06	900	75.9	53.4	81.9	32.9	18.0	44.7	26.3	0.0	73.9	61.4	24.2	80.1	12.3	1.2	75.8	2.3	0.1	17.6	1.6	0.0	11.7	4	0	36
2006/07	900	77.5	68.1	82.8	28.9	16.6	40.1	13.9	0.0	51.7	62.7	16.7	79.5	23.4	0.8	82.9	1.7	0.0	12.1	1.1	0.0	11.5	3	0	27
2007/08	900	77.5	65.3	81.6	33.5	17.0	45.6	20.2	0.3	69.7	64.8	23.3	84.2	15.0	1.0	76.2	1.5	0.1	15.2	1.1	0.0	8.3	4	0	58
2008/09	810	77.2	61.6	82.8	34.2	24.2	45.4	21.9	0.5	52.8	64.6	43.1	84.0	13.4	1.6	51.0	1.6	0.1	11.7	1.2	0.0	9.9	5	0	50
2009/10	800	77.4	60.2	84.4	34.7	23.3	59.1	21.1	0.0	90.7	65.1	9.2	82.0	13.7	0.1	53.5	1.8	0.2	24.3	1.4	0.1	23.1	4	0	36
2010/11	693	77.1	69.0	81.8	33.5	22.0	44.0	20.7	1.1	55.8	65.6	33.5	83.9	13.8	1.7	65.1	1.8	0.0	8.4	1.3	0.0	5.9	5	0	31
Weighted Average		**77.3**			**33.0**			**21.2**			**63.3**			**15.5**			**1.7**			**1.2**			**5**		
Minimum			**53.4**			**16.6**			**0.0**			**7.8**			**0.0**			**0.0**			**0.0**			**0**	
Maximum				**84.4**			**62.9**			**90.7**			**84.2**			**92.1**			**24.4**			**23.1**			**60**

Weighted average

TABLE 16: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2010/2011)

Number of samples	Region	Roff Milling																		Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Bran/Germ, %			Extraction, % (Total meal)			Whiteness index unsifted			Whiteness index sifted 87:13		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM 1																									
1	Region 08	13.8	13.8	13.8	12.7	12.7	12.7	19.5	19.5	19.5	32.2	32.4	32.4	21.6	21.6	21.6	78.4	78.4	78.4	31.8	31.8	31.8	28.5	28.5	28.5
9	Region 12	13.6	12.5	15.1	12.5	12.0	13.1	20.7	19.2	21.8	32.7	29.7	34.7	20.4	19.2	22.3	79.6	77.7	80.8	32.4	30.4	35.3	23.9	21.4	26.0
13	Region 13	14.7	12.0	16.1	12.8	11.5	13.7	20.1	18.7	20.9	31.1	29.2	35.3	21.3	19.9	24.6	78.7	75.4	80.1	32.1	28.9	37.0	25.2	18.5	30.3
14	Region 14	14.5	13.4	16.8	12.5	11.7	14.1	19.9	18.4	21.5	31.9	28.1	33.4	21.1	19.2	23.6	78.9	76.4	80.8	31.4	27.9	34.0	23.2	20.1	26.8
4	Region 15	12.6	12.3	13.0	12.4	12.1	12.7	18.9	18.3	19.2	34.0	33.8	34.4	22.1	21.5	22.6	77.9	77.4	78.5	31.7	30.8	32.8	22.6	21.6	23.7
9	Region 16	14.0	12.0	15.6	12.7	11.8	13.5	19.6	18.7	20.8	32.9	30.1	35.2	20.8	19.8	21.8	79.2	78.2	80.2	30.6	26.9	32.3	22.6	18.0	24.5
22	Region 17	15.1	14.1	16.5	13.2	12.1	20.7	19.7	18.0	21.4	30.9	27.9	32.4	21.0	18.0	23.9	79.0	76.1	82.0	31.0	25.3	36.2	24.0	17.0	30.2
14	Region 18	14.9	13.0	16.2	12.8	12.1	13.3	20.2	18.8	21.1	30.9	29.3	33.8	21.2	19.9	22.7	78.8	77.3	80.1	31.3	28.8	33.7	24.2	19.1	28.2
11	Region 19	14.9	13.0	17.5	12.5	11.7	13.4	19.8	17.0	21.5	31.0	26.7	33.7	21.7	19.5	26.3	78.3	73.7	80.5	31.0	27.0	36.4	21.7	17.4	28.6
7	Region 20	15.0	13.2	16.7	13.0	12.5	13.8	19.9	19.4	20.5	31.3	29.5	33.5	20.8	19.0	21.8	79.2	78.2	81.0	33.6	32.0	35.4	25.3	22.6	32.2
8	Region 21	14.3	12.6	16.9	12.4	11.8	13.1	20.7	18.9	22.7	31.8	26.7	34.8	20.8	18.0	24.9	79.2	75.1	82.0	30.6	25.1	38.3	22.9	17.0	28.9
8	Region 22	14.5	13.3	15.6	12.5	11.4	13.6	20.1	18.8	21.2	32.6	30.7	34.9	20.3	18.4	22.0	79.7	78.0	81.6	30.9	27.1	35.1	23.1	18.9	28.3
13	Region 23	14.0	11.8	16.2	12.9	10.9	14.1	19.9	18.8	20.7	32.2	30.1	34.7	20.9	18.8	23.7	79.1	76.3	81.2	31.7	28.3	38.7	23.1	20.1	28.2
12	Region 24	14.0	12.2	15.9	13.0	11.7	13.9	20.8	19.8	21.9	31.2	27.1	34.5	21.0	18.5	22.8	79.0	77.2	81.5	29.2	22.0	32.8	21.1	16.7	24.7
6	Region 25	16.4	14.3	18.5	13.2	12.3	13.7	18.9	17.9	20.0	28.7	27.3	29.7	22.8	20.5	24.5	77.2	75.5	79.5	30.9	29.0	35.2	20.8	17.4	25.7
6	Region 26	15.6	14.9	16.6	12.2	11.9	12.8	18.8	18.1	19.8	31.4	30.2	32.8	22.1	20.4	24.1	77.9	75.9	79.6	30.8	27.6	34.3	18.9	16.4	22.1
1	Region 27	15.0	15.0	15.0	11.5	11.5	11.5	18.7	18.7	18.7	29.8	29.8	29.8	25.1	25.1	25.1	74.9	74.9	74.9	31.2	31.2	31.2	22.0	22.0	22.0
19	Region 28	15.0	11.9	16.9	12.5	11.7	13.4	20.1	18.6	21.6	31.1	27.4	34.3	21.2	18.3	24.3	78.8	75.7	81.7	33.5	28.8	39.8	23.4	19.5	28.5
7	Region 30	14.2	13.2	15.6	13.2	12.7	13.9	19.1	18.5	20.0	31.3	29.1	32.8	22.2	21.2	23.6	77.8	76.4	78.8	33.6	31.6	35.7	28.6	24.0	31.6
2	Region 31	14.1	13.9	14.3	12.5	12.4	12.6	19.0	18.5	19.5	31.5	31.4	31.5	22.9	22.4	23.5	77.1	76.5	77.6	30.9	30.7	31.1	18.4	18.1	18.7
16	Region 32	15.1	12.3	17.8	12.9	12.3	14.0	19.1	18.4	20.5	30.5	28.3	34.3	22.3	20.7	24.1	77.7	75.9	79.3	31.9	29.1	34.7	22.1	18.8	25.3
6	Region 33	13.4	12.6	14.0	11.9	11.6	12.7	19.3	17.7	22.4	31.4	29.7	34.1	24.0	21.2	26.9	76.0	73.1	78.8	36.3	31.9	39.8	29.4	22.5	39.6
28	Region 34	14.8	12.9	17.3	12.9	11.6	14.4	19.6	18.3	22.9	31.1	26.9	33.7	21.6	19.0	24.3	78.4	75.7	81.0	30.3	24.3	33.5	20.8	17.7	24.9
5	Region 35	14.1	13.4	14.7	13.6	13.0	14.1	20.1	19.1	21.6	31.2	29.5	32.7	21.0	17.7	22.1	79.0	77.9	82.3	32.0	30.0	34.3	23.6	21.3	26.8
13	Region 36	13.4	12.3	14.4	12.6	11.8	13.5	18.8	17.9	20.1	32.4	30.8	34.1	22.8	19.7	25.4	77.2	74.6	80.3	30.0	27.0	33.7	20.7	16.4	24.2
254	**Ave WM 1**	**14.6**			**12.8**			**19.8**			**31.4**			**21.5**			**78.5**			**31.5**			**23.0**		
	Min WM 1		**11.8**			**10.9**			**17.0**			**26.7**			**17.7**			**73.1**			**22.0**			**16.4**	
	Max WM 1			**18.5**			**20.7**			**22.9**			**35.3**			**26.9**			**82.3**			**39.8**			**39.6**

TABLE 16: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2010/2011) (continue)

Number of samples	Region	Roff Milling																			Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Bran/Germ, %			Extraction, % (Total meal)			Whiteness index unsifted			Whiteness index sifted 87:13		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM 2																										
11	Region 12	14.3	12.5	15.6	12.5	12.1	12.9	19.5	18.6	20.4	32.3	30.6	35.4	21.4	19.7	23.5	78.6	76.5	80.3	32.6	28.9	35.6	23.7	20.6	26.0
14	Region 13	15.3	13.6	16.4	12.7	11.9	13.4	19.9	19.0	20.7	31.0	28.3	34.3	21.2	19.2	23.2	78.8	76.8	80.8	30.6	24.2	32.6	22.8	17.7	29.1
13	Region 14	14.0	12.6	16.8	12.5	11.5	13.5	19.9	18.5	21.3	32.4	27.4	35.5	21.3	18.9	23.8	78.7	76.2	81.1	30.8	27.6	36.0	22.5	17.8	30.1
5	Region 15	12.7	12.1	13.2	12.6	12.2	13.2	18.9	18.5	19.5	33.8	33.3	34.3	22.0	20.9	23.0	78.0	77.0	79.1	30.2	26.0	32.8	21.1	16.8	23.7
5	Region 16	14.3	13.1	14.9	13.2	12.5	13.8	19.6	19.2	20.2	33.3	32.2	34.7	19.5	18.4	20.5	80.5	79.5	81.6	28.5	26.9	29.8	19.6	17.9	20.8
6	Region 17	14.4	14.0	14.9	12.4	11.4	12.9	19.6	19.3	20.0	31.7	30.4	33.5	21.7	21.0	22.4	78.2	77.6	78.7	30.1	27.6	31.3	20.5	18.3	23.7
5	Region 18	15.3	14.6	15.9	12.6	12.0	13.3	20.0	19.2	20.5	30.6	29.4	31.3	21.5	20.3	23.0	78.5	77.0	79.7	28.6	26.0	30.3	21.3	18.6	22.5
11	Region 19	15.1	11.9	17.6	12.7	12.0	14.1	19.6	18.1	20.8	30.7	27.8	35.5	22.0	19.5	24.6	78.0	75.4	80.5	33.4	28.0	37.7	25.1	14.7	32.2
3	Region 20	16.1	14.6	17.0	13.6	12.7	14.3	19.6	18.5	20.6	29.4	28.4	31.2	21.2	20.9	21.6	78.8	78.4	79.1	32.1	29.9	34.7	22.0	21.5	22.4
1	Region 21	14.8	14.8	14.8	12.8	12.8	12.8	21.1	21.1	21.1	30.7	30.7	30.7	20.5	20.5	20.5	79.5	79.5	79.5	31.1	31.1	31.1	23.6	23.6	23.6
2	Region 22	14.7	13.7	15.6	11.8	11.5	12.0	20.6	20.3	20.9	33.1	31.7	34.4	19.9	19.4	20.3	80.1	79.7	80.6	30.8	28.3	33.2	24.1	22.0	26.2
11	Region 23	13.6	12.2	15.0	13.1	12.1	14.1	19.9	19.2	20.8	32.1	30.3	33.6	21.3	20.0	23.7	78.7	76.3	80.0	31.4	26.8	34.0	22.8	19.3	31.0
9	Region 24	14.1	11.9	15.1	13.0	12.0	13.8	20.5	19.3	22.0	31.6	29.3	33.1	20.9	19.1	24.0	79.1	76.0	80.9	30.5	28.9	31.8	22.5	20.4	24.4
12	Region 25	17.0	15.0	19.8	13.3	12.2	13.9	18.3	16.8	20.3	27.4	22.4	31.2	24.0	19.7	29.3	76.0	70.7	80.3	31.9	26.8	36.6	21.7	15.2	26.6
4	Region 26	15.9	13.8	18.2	12.3	11.6	13.2	18.9	17.7	20.3	31.4	29.4	33.1	21.5	19.7	25.5	78.5	74.5	80.3	31.4	29.9	34.7	21.3	18.4	25.1
1	Region 27	15.4	15.4	15.4	11.4	11.4	11.4	19.7	19.7	19.7	31.1	31.1	31.1	22.5	22.5	22.5	77.5	77.5	77.5	27.4	27.4	27.4	18.7	18.7	18.7
6	Region 28	15.6	14.4	16.9	12.8	12.2	13.5	18.9	17.8	20.0	29.2	27.2	30.8	23.5	21.6	25.9	76.5	74.1	78.4	31.9	26.4	38.6	21.6	14.3	28.1
3	Region 34	14.4	13.8	15.0	12.8	12.4	13.2	19.1	18.9	19.2	30.5	29.3	31.2	23.1	21.5	24.5	76.9	75.5	78.5	32.7	28.3	37.0	23.6	19.9	26.8
2	Region 36	14.3	14.0	14.6	13.1	12.9	13.3	19.3	18.3	20.2	32.0	31.7	32.3	21.3	19.5	23.0	78.7	77.0	80.5	29.1	27.2	31.0	20.5	19.3	21.8
124	**Ave WM 2**	**14.8**			**12.8**			**19.6**			**31.2**			**21.7**			**78.3**			**31.2**			**22.4**		
	Min WM 2		**11.9**			**11.4**			**16.8**			**22.4**			**18.4**			**70.7**			**24.2**			**14.3**	
	Max WM 2			**19.8**			**14.3**			**22.0**			**35.5**			**29.3**			**81.6**			**38.6**			**32.2**

TABLE 16: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE ACCORDING TO GRADE (2010/2011) (continue)

Number of samples	Region	Roff Milling																		Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Bran/Germ, %			Extraction, % (Total meal)			Whiteness index unsifted			Whiteness index sifted 87:13		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WM 3																									
1	Region 12	14.0	14.0	14.0	12.7	12.7	12.7	20.5	20.5	20.5	31.9	31.9	31.9	20.8	20.8	20.8	79.2	79.2	79.2	30.1	30.1	30.1	25.5	25.5	25.5
2	Region 13	15.4	14.7	16.0	12.4	12.0	12.9	18.9	18.8	18.9	30.4	29.5	31.2	23.0	22.8	23.2	77.0	76.8	77.2	31.0	29.5	32.5	22.8	21.4	24.1
4	Region 14	14.8	12.8	17.8	12.9	12.1	13.9	19.4	18.7	20.5	30.8	27.0	33.7	22.1	20.6	24.0	77.9	76.0	79.4	29.3	26.9	32.0	19.9	16.1	24.1
1	Region 15	12.9	12.9	12.9	12.5	12.5	12.5	19.8	19.8	19.8	35.6	35.6	35.6	19.2	19.2	19.2	80.8	80.8	80.8	23.0	23.0	23.0	17.3	17.3	17.3
2	Region 17	14.5	14.0	15.0	12.7	12.5	12.9	19.6	19.3	19.9	31.4	30.9	31.9	21.8	20.7	22.9	78.2	77.1	79.3	26.2	26.0	26.5	21.5	17.0	26.0
2	Region 18	15.9	15.4	16.4	12.6	12.5	12.8	19.7	19.3	20.1	30.0	29.1	31.0	21.7	20.7	22.7	78.3	77.3	79.3	26.9	26.6	27.2	22.9	19.6	26.1
3	Region 19	14.5	13.3	16.5	12.7	12.3	13.2	20.1	19.6	20.8	30.8	29.1	32.0	21.9	20.5	23.2	78.1	76.8	79.5	27.6	25.6	30.0	21.7	15.4	25.5
3	Region 20	15.8	13.1	18.0	12.9	12.0	13.9	19.0	18.3	19.9	29.8	26.1	31.9	22.5	20.3	23.6	77.5	76.4	79.7	28.5	27.8	29.4	24.0	18.3	27.2
3	Region 23	14.1	12.3	16.1	12.9	12.6	13.1	20.4	20.0	20.8	30.8	27.9	32.4	21.9	20.2	23.1	78.1	76.9	79.8	33.0	27.6	39.9	22.8	16.4	27.0
21	**Ave WM 3**	**14.8**			**12.7**			**19.6**			**30.9**			**21.9**			**78.1**			**28.9**			**22.0**		
	Min WM 3		**12.3**			**12.0**			**18.3**			**26.1**			**19.2**			**76.0**			**23.0**			**15.4**	
	Max WM 3			**18.0**			**13.9**			**20.8**			**35.6**			**24.0**			**80.8**			**39.9**			**27.2**
GRADE: COM																									
1	Region 19	18.4	18.4	18.4	14.6	14.6	14.6	18.8	18.8	18.8	26.1	26.1	26.1	22.1	22.1	22.1	77.9	77.9	77.9	24.5	24.5	24.5	19.5	19.5	19.5
1	Region 20	14.8	14.8	14.8	12.0	12.0	12.0	19.5	19.5	19.5	31.5	31.5	31.5	22.2	22.2	22.2	77.8	77.8	77.8	-48.7	-48.7	-48.7	-63.0	-63.0	-63.0
1	Region 25	16.9	16.9	16.9	13.2	13.2	13.2	18.6	18.6	18.6	26.3	26.3	26.3	24.9	24.9	24.9	75.1	75.1	75.1	25.3	25.3	25.3	16.7	16.7	16.7
3	**Ave COM**	**16.7**			**13.3**			**19.0**			**27.9**			**23.1**			**76.9**			**0.4**			**-9.0**		
	Min COM		**14.8**			**12.0**			**18.6**			**26.1**			**22.1**			**75.1**			**-48.7**			**-63.0**	
	Max COM			**18.4**			**14.6**			**19.5**			**31.5**			**24.9**			**77.9**			**25.3**			**19.5**
402	**Ave white maize**	**14.7**			**12.8**			**19.7**			**31.3**			**21.6**			**78.4**			**31.0**			**22.5**		
	Min white maize		**11.8**			**10.9**			**16.8**			**22.4**			**17.7**			**70.7**			**-48.7**			**-63.0**	
	Max white maize			**19.8**			**20.7**			**22.9**			**35.6**			**29.3**			**82.3**			**39.9**			**39.6**

TABLE 16: ROFF MILLING AND WHITENESS INDEX OF WHITE MAIZE (2010/2011)

Number of samples	Region	Roff Milling																		Whiteness index					
		Break 1, %			Break 2, %			Break 3, %			Grits, %			Bran/Germ, %			Extraction, % (Total meal)			Whiteness index unsifted			Whiteness index sifted 87:13		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: WHITE																									
1	Region 08	13.8	13.8	13.8	12.7	12.7	12.7	19.5	19.5	19.5	32.4	32.4	32.4	21.6	21.6	21.6	78.4	78.4	78.4	31.8	31.8	31.8	28.5	28.5	28.5
21	Region 12	14.0	12.5	15.6	12.5	12.0	13.1	20.0	18.6	21.8	32.5	29.7	35.4	21.0	19.2	23.5	79.0	76.5	80.8	32.4	28.9	35.6	23.9	20.6	26.0
29	Region 13	15.0	12.0	16.4	12.7	11.5	13.7	19.9	18.7	20.9	31.0	28.3	35.3	21.4	19.2	24.6	78.6	75.4	80.8	31.3	24.2	37.0	23.9	17.7	30.3
31	Region 14	14.3	12.6	17.8	12.6	11.5	14.1	19.8	18.4	21.5	32.0	27.0	35.5	21.3	18.9	24.0	78.7	76.0	81.1	30.9	26.9	36.0	22.5	16.1	30.1
10	Region 15	12.7	12.1	13.2	12.5	12.1	13.2	19.0	18.3	19.8	34.1	33.3	35.6	21.8	19.2	23.0	78.2	77.0	80.8	30.1	23.0	32.8	21.3	16.8	23.7
14	Region 16	14.1	12.0	15.6	12.9	11.8	13.8	19.6	18.7	20.8	33.1	30.1	35.2	20.3	18.4	21.8	79.7	78.2	81.6	29.9	26.9	32.3	21.6	17.9	24.5
30	Region 17	15.0	14.0	16.5	13.0	11.4	20.7	19.7	18.0	21.4	31.1	27.9	33.5	21.2	18.0	23.9	78.8	76.1	82.0	30.5	25.3	36.2	23.2	17.0	30.2
21	Region 18	15.1	13.0	16.4	12.7	12.0	13.3	20.1	18.8	21.1	30.8	29.1	33.8	21.3	19.9	23.0	78.7	77.0	80.1	30.2	26.0	33.7	23.4	18.6	28.2
26	Region 19	15.1	11.9	18.4	12.7	11.7	14.6	19.7	17.0	21.5	30.6	26.1	35.5	21.9	19.5	26.3	78.1	73.7	80.5	31.4	24.5	37.7	23.1	14.7	32.2
14	Region 20	15.4	13.1	18.0	13.0	12.0	14.3	19.6	18.3	20.6	30.6	26.1	33.5	21.4	19.0	23.6	78.6	76.4	81.0	26.3	-48.7	35.4	18.0	-63.0	32.2
9	Region 21	14.4	12.6	16.9	12.4	11.8	13.1	20.8	18.9	22.7	31.7	26.7	34.8	20.8	18.0	24.9	79.2	75.1	82.0	30.7	25.1	38.3	23.0	17.0	28.9
10	Region 22	14.5	13.3	15.6	12.3	11.4	13.6	20.2	18.8	21.2	32.7	30.7	34.9	20.2	18.4	22.0	79.8	78.0	81.6	30.8	27.1	35.1	23.3	18.9	28.3
27	Region 23	13.8	11.8	16.2	13.0	10.9	14.1	20.0	18.8	20.8	32.0	27.9	34.7	21.2	18.8	23.7	78.8	76.3	81.2	31.7	26.8	39.9	23.0	16.4	31.0
21	Region 24	14.0	11.9	15.9	13.0	11.7	13.9	20.6	19.3	22.0	31.3	27.1	34.5	21.0	18.5	24.0	79.0	76.0	81.5	29.7	22.0	32.8	21.7	16.7	24.7
19	Region 25	16.8	14.3	19.8	13.2	12.2	13.9	18.5	16.8	20.3	27.8	22.4	31.2	23.7	19.7	29.3	76.3	70.7	80.3	31.2	25.3	36.6	21.2	15.2	26.6
10	Region 26	15.7	13.8	18.2	12.2	11.6	13.2	18.8	17.7	20.3	31.4	29.4	33.1	21.8	19.7	25.5	78.2	74.5	80.3	31.0	27.6	34.7	19.9	16.4	25.1
2	Region 27	15.2	15.0	15.4	11.5	11.4	11.5	19.2	18.7	19.7	30.4	29.8	31.4	23.8	22.5	25.1	76.2	74.9	77.5	29.3	27.4	31.2	20.4	18.7	22.0
25	Region 28	15.2	11.9	16.9	12.6	11.7	13.5	19.8	17.8	21.6	30.7	27.2	34.3	21.8	18.3	25.9	78.2	74.1	81.7	33.1	26.4	39.8	23.0	14.3	28.5
7	Region 30	14.2	13.2	15.6	13.2	12.7	13.9	19.1	18.5	20.0	31.3	29.1	32.8	22.2	21.2	23.6	77.8	76.4	78.8	33.6	31.6	35.7	28.6	24.0	31.6
2	Region 31	14.1	13.9	14.3	12.5	12.4	12.6	19.0	18.5	19.5	31.5	31.4	31.5	22.9	22.4	23.5	77.1	76.5	77.6	30.9	30.7	31.1	18.4	18.1	18.7
16	Region 32	15.1	12.3	17.8	12.9	12.3	14.0	19.1	18.4	20.5	30.5	28.3	34.3	22.3	20.7	24.1	77.7	75.9	79.3	31.9	29.1	34.7	22.1	18.8	25.3
6	Region 33	13.4	12.6	14.0	11.9	11.6	12.7	19.3	17.7	22.4	31.4	29.7	34.1	24.0	21.2	26.9	76.0	73.1	78.8	36.3	31.9	39.8	29.4	22.5	39.6
31	Region 34	14.8	12.9	17.3	12.9	11.6	14.4	19.5	18.3	22.9	31.1	26.9	33.7	21.7	19.0	24.5	78.3	75.5	81.0	30.6	24.3	37.0	21.0	17.7	26.8
5	Region 35	14.1	13.4	14.7	13.6	13.0	14.1	20.1	19.1	21.6	31.2	29.5	32.7	21.0	17.7	22.1	79.0	77.9	82.3	32.0	30.0	34.3	23.6	21.3	26.8
15	Region 36	13.5	12.3	14.6	12.6	11.8	13.5	18.9	17.9	20.2	32.3	30.8	34.1	22.6	19.5	25.4	77.4	74.6	80.5	29.9	27.0	33.7	20.7	16.4	24.2
402	**Ave white**	**14.7**			**12.8**			**19.7**			**31.3**			**21.6**			**78.4**			**31.0**			**22.5**		
	Min white		**11.8**			**10.9**			**16.8**			**22.4**			**17.7**			**70.7**			**-48.7**			**-63.0**	
	Max white			**19.8**			**20.7**			**22.9**			**35.6**			**29.3**			**82.3**			**39.9**			**39.6**

Table 17: Presence of Genetically Modified Maize (2010/2011)

REGION	RSA Grade	Cry1Ab (MON810) % (LOQ: 0.4%)	CP4 EPSPS (Roundup Ready) % (LOQ: 0.25%)	REGION	RSA Grade	Cry1Ab (MON810) % (LOQ: 0.4%)	CP4 EPSPS (Roundup Ready) % (LOQ: 0.25%)
10	YM1	<0.4	<0.25	23	WM1	>5.0	3.4
10	YM1	>5.0	>5.0	23	WM2	>5.0	>5.0
12	WM2	>5.0	<0.25	23	WM2	>5.0	>5.0
12	YM2	>5.0	>5.0	23	WM3	>5.0	>5.0
12	WM2	>5.0	>5.0	23	YM2	>5.0	>5.0
13	WM1	>5.0	>5.0	24	WM1	>5.0	>5.0
13	YM1	>5.0	>5.0	24	WM1	>5.0	>5.0
13	YM1	>5.0	>5.0	25	YM1	>5.0	0.57
14	YM1	>5.0	>5.0	25	WM2	>5.0	3.8
14	WM3	0.58	<0.25	25	WM2	>5.0	0.54
14	WM1	>5.0	<0.25	25	YM2	>5.0	<0.25
14	YM1	>5.0	>5.0	25	WM2	>5.0	>5.0
14	WM2	>5.0	>5.0	26	WM2	>5.0	>5.0
15	WM1	>5.0	>5.0	26	WM1	>5.0	>5.0
15	WM2	>5.0	>5.0	26	YM2	>5.0	>5.0
16	YM1	>5.0	>5.0	26	WM2	>5.0	>5.0
16	WM2	>5.0	>5.0	27	YM1	>5.0	>5.0
17	WM1	>5.0	>5.0	28	YM1	>5.0	>5.0
17	WM2	>5.0	>5.0	28	WM1	>5.0	>5.0
17	YM1	>5.0	>5.0	28	WM1	>5.0	>5.0
17	YM1	>5.0	>5.0	28	WM1	>5.0	<0.25
17	WM1	>5.0	<0.25	28	WM1	>5.0	4.0
18	WM1	>5.0	>5.0	30	YM1	>5.0	>5.0
18	YM1	>5.0	>5.0	30	YM1	>5.0	>5.0
18	YM1	>5.0	>5.0	31	WM1	>5.0	>5.0
18	WM3	>5.0	3.6	32	YM1	>5.0	>5.0
18	WM1	>5.0	>5.0	32	WM1	>5.0	>5.0
19	WM2	>5.0	>5.0	33	WM2	>5.0	>5.0
19	WM2	>5.0	1.1	33	YM2	>5.0	>5.0
19	YM1	>5.0	4.1	33	WM1	>5.0	>5.0
20	YM2	>5.0	>5.0	33	YM1	>5.0	>5.0
20	WM2	>5.0	>5.0	34	WM1	>5.0	>5.0
20	COM	>5.0	>5.0	34	WM1	<0.4	<0.25
20	COM	>5.0	4.3	35	WM1	>5.0	>5.0
20	WM2	>5.0	>5.0	36	WM1	>5.0	>5.0
21	YM1	>5.0	>5.0	36	WM1	1.1	<0.25
22	WM1	>5.0	>5.0	36	WM1	>5.0	>5.0
22	WM1	>5.0	>5.0	36	YM2	>5.0	>5.0
22	WM1	>5.0	>5.0				

n	Season	% Samples positive for Cry1Ab (MON810)	n	Season	% Samples positive for CP4 EPSPS (RUR)
77	**2010/2011**	**97**	**77**	**2010/2011**	**88**

n	Season	% Samples positive for MON810 *(Bt)* (ELISA)	n	Season	% Samples positive for NK603 (RUR) (ELISA)
90	2009/2010	96	90	2009/2010	61
90	2008/2009	91	90	2008/2009	90
100	2007/2008	95	100	2007/2008	69
90	2006/2007	97	90	2006/2007	59
90	2005/2006	91	100	2005/2006	31

LOQ: Limit of Quantification

TABLE 18: Mycotoxin results - Maize Crop Quality 2010/2011

Region	Grade	Aflatoxin µg/kg				Fumonisin µg/kg		DON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	T-2 Toxin µg/kg
		G_1	B_1	G_2	B_2	B_1	B_2				
		LOD									
		5 µg/kg	5 µg/kg	5 µg/kg	5 µg/kg	100 µg/kg	5 µg/kg	5 µg/kg	5 µg/kg	20 µg/kg	5 µg/kg
10	YM1	0	0	0	0	239	97	0	0	0	0
10	YM1	0	0	0	0	0	0	0	0	0	0
12	WM2	0	0	0	0	0	0	0	0	0	0
12	YM2	0	0	0	0	0	0	104	0	0	0
12	WM2	0	0	0	0	971	370	214	0	0	0
13	WM1	0	0	0	0	0	5	0	0	0	0
13	YM1	0	0	0	0	735	337	0	0	0	0
13	YM1	0	0	0	0	209	76	0	0	0	0
14	YM1	0	0	0	0	281	83	0	0	0	0
14	WM3	0	0	0	0	0	0	0	0	0	0
14	WM1	0	0	0	0	0	0	0	0	0	0
14	YM1	0	0	0	0	999	402	0	0	0	0
14	WM2	0	0	0	0	0	0	236	0	0	0
15	WM1	0	0	0	0	0	0	0	0	0	0
15	WM2	0	0	0	0	666	223	249	0	0	0
16	YM1	0	0	0	0	770	367	0	0	0	0
16	WM2	0	0	0	0	0	0	306	0	55	0
17	WM1	0	0	0	0	0	0	0	0	0	0
17	WM2	0	0	0	0	0	7	0	0	0	0
17	YM1	0	0	0	0	0	0	119	0	0	0
17	YM1	0	0	0	0	0	0	0	0	0	0
17	WM1	0	0	0	0	0	0	112	0	187	0
18	WM1	0	0	0	0	541	175	0	0	0	0
18	YM1	0	0	0	0	0	0	0	0	0	0
18	YM1	0	0	0	0	501	192	0	0	0	0
18	WM3	0	0	0	0	0	0	0	0	0	0
18	WM1	0	0	0	0	0	0	0	0	0	0
19	WM2	0	0	0	0	0	13	0	0	0	0
19	WM2	0	0	0	0	0	0	147	0	0	0
19	YM1	0	0	0	0	0	0	0	0	0	0
20	YM2	0	0	0	0	0	0	0	0	0	0
20	WM2	0	0	0	0	0	0	883	0	0	0
20	COM	0	0	0	0	0	0	0	0	0	0
20	COM	0	0	0	0	0	0	0	0	0	0
20	WM2	0	0	0	0	0	0	173	0	0	0
21	YM1	0	0	0	0	0	0	197	0	0	0
22	WM1	0	0	0	0	135	74	0	0	0	0
22	WM1	0	0	0	0	767	229	0	0	0	0
22	WM1	0	0	0	0	0	0	0	0	0	0
23	WM1	0	0	0	0	791	335	0	0	0	0
23	WM2	0	0	0	0	0	0	0	0	41	0
23	WM2	0	0	0	0	0	0	0	0	0	0
23	WM3	0	0	0	0	0	57	0	0	0	0
23	YM2	0	0	0	0	0	0	0	0	0	0
24	WM1	0	0	0	0	0	0	0	0	0	0
24	WM1	0	0	0	0	0	0	0	0	0	0
25	YM1	0	0	0	0	0	0	0	0	0	0
25	WM2	0	0	0	0	0	0	128	0	22	0

TABLE 18: Mycotoxin results - Maize Crop Quality 2010/2011 (continue)

Region	Grade	Aflatoxin µg/kg				Fumonisin µg/kg		DON µg/kg	Ochratoxin A µg/kg	Zearalenone µg/kg	T-2 Toxin µg/kg
		G_1	B_1	G_2	B_2	B_1	B_2				
		LOD									
		5 µg/kg	5 µg/kg	5 µg/kg	5 µg/kg	100 µg/kg	5 µg/kg	5 µg/kg	5 µg/kg	20 µg/kg	5 µg/kg
25	WM2	0	0	0	0	0	0	146	0	0	0
25	YM2	0	0	0	0	0	0	222	0	0	0
25	WM2	0	0	0	0	0	0	0	0	0	0
26	WM2	0	0	0	0	0	11	0	0	0	0
26	WM1	0	0	0	0	0	0	0	0	0	0
26	YM2	0	0	0	0	0	0	0	0	0	0
26	WM2	0	0	0	0	0	0	0	0	0	0
27	YM1	0	0	0	0	0	0	0	0	0	0
28	YM1	0	0	0	0	0	0	0	0	0	0
28	WM1	0	0	0	0	0	0	0	0	0	0
28	WM1	0	0	0	0	0	0	0	0	0	0
28	WM1	0	0	0	0	0	0	0	0	0	0
28	WM1	0	0	0	0	0	0	201	0	0	0
30	YM1	0	0	0	0	0	0	0	0	0	0
30	YM1	0	0	0	0	0	0	213	0	0	0
31	WM1	0	0	0	0	0	0	0	0	0	0
32	YM1	0	0	0	0	0	0	0	0	0	0
32	WM1	0	0	0	0	0	0	0	0	0	0
33	WM2	0	0	0	0	0	0	0	0	0	0
33	YM2	0	0	0	0	0	0	0	0	0	0
33	WM1	0	0	0	0	0	0	0	0	27	0
33	YM1	0	0	0	0	0	0	0	0	0	0
34	WM1	0	0	0	0	0	0	0	0	0	0
34	WM1	0	0	0	0	0	0	109	0	0	0
35	WM1	0	0	0	0	0	0	0	0	0	0
36	WM1	0	0	0	0	0	0	0	0	0	0
36	WM1	0	0	0	0	0	0	0	0	0	0
36	WM1	0	0	0	0	0	0	0	0	23	0
36	YM2	0	0	0	0	0	0	0	0	0	0
Average		***0***	***0***	***0***	***0***	***99***	***40***	***49***	***0***	***5***	***0***
Maximum		***0***	***0***	***0***	***0***	***999***	***402***	***883***	***0***	***187***	***0***
Number of samples		***77***	***77***	***77***	***77***	***77***	***77***	***77***	***77***	***77***	***77***

Note: All results <LOD and non detected are reported as 0
LOD: Limit of detection, see table
µg/kg = ppb (parts per billion)

TABLE 19: MYCOTOXIN RESULTS - SUMMARY OF SEASONS 1999/2000 TO 2010/2011

Season	Total Number of samples received	Number of samples tested for mycotoxins	Aflatoxin µg/kg			Fumonisin µg/kg			Deoxynivalenol µg/kg			Zearalenone µg/kg			Ochratoxin A µg/kg			T-2 Toxin µg/kg		
			ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
1999/2000	900	90	0	0	0	650	30	4 900	Not tested			Not tested			Not tested			Not tested		
2000/2001	900	57	<1	0	22	1 670	0	8 100	680	0	5 400	<100	0	120	<2.0	0	0	0	0	0
2001/2002	900	90	0	0	0	760	0	5 100	630	0	2 200	<100	0	30	<2.0	0	0	0	0	0
2002/2003	900	90	0	0	0	730	0	3 900	<500	0	4 300	<100	0	140	<2.0	0	2.0	<150	0	290
2003/2004	900	90	0	0	0	1 140	160	5 600	200	0	13 000	<100	0	120	<2.0	0	5.7	Not tested		
2004/2005	1 000	100	0	0	0	1 080	0	5 300	600	0	3 900	<100	0	440	<2.0	0	2.4	Not tested		
2005/2006	900	90	0	0	0	970	0	13 000	2 740	0	6 200	30	0	390	<2.0	0	2.9	Not tested		
2006/2007	900	90	<1	0	9	640	0	4 500	530	0	3 100	0	0	0	<2.0	0	6.5	Not tested		
2007/2008	900	100	0	0	2	470	0	5 500	240	0	1 700	0	0	100	<1.0	0	2.0	Not tested		
2008/2009	810	90	0	0	0	490	0	3 300	430	0	2 900	<25	0	160	<1.0	0	1.0	Not tested		
*2009/2010	800	90	0	0	0	251	0	4 035	206	0	1 845	0	0	0	0	0	0	0	0	0
*2010/2011	693	77	0	0	0	139	0	1 401	49	0	883	5	0	187	0	0	0	0	0	0
Total	10 503	1 054																		
Min				0			0			0			0			0			0	
Max					22			13 000			13 000			440			6.5			290

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

Mycotoxin methodology

Technique used for season 1999/2000 - 2006/2007

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

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

Technique used for season 2007/2008 - 2008/2009

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

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

Technique used for season 2009/2010 - 2010/2011

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

Mycotoxin	LOD for maize µg/kg
Aflatoxin G_1	5
Aflatoxin B_1	5
Aflatoxin G_2	5
Aflatoxin B_2	5
Fumonisin B_1	100
Fumonisin B_2	5
Deoxynivalenol	5
Zearalenone	20
Ochratoxin A	5
T - 2 Toxin	5

Notes:

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

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

µg/kg = ppb (parts per billion).

Methods

1. RSA grading

RSA grading was done in accordance with the Grading Regulations for maize, as published in the Government Gazette No. 32190 of 8 May 2009, Regulation No. R.473.

Description of deviations relating to RSA grading

1.1 Defective maize kernels

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

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

1.2 Foreign matter

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

1.3 Other colour

"Other colour maize kernels" in relation to-

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

1.4 Total deviation

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

1.5 Pinked kernels

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

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

1.6. Fungal infection

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

"Mouldy" means kernels and pieces of kernels that –

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

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

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

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

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

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

2. USA Grading

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

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

Description of deviations relating to USA grading

2.1. Damaged kernels

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

2.2. Heat damaged kernels

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

2.3. Broken corn and foreign material

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

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

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

2.4. Bushel weight

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

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

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

2.5. Other colour

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

3. Nutritional value

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

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

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

4. Physical characteristics

4.1 Hectolitre mass (See USA grading- Bushel weight)

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

4.2 Hundred (100) kernel mass - Industry accepted method 001

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

4.3 Kernel size - Industry accepted method 017

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

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

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

4.4 Breakage susceptibility - Industry accepted method 007

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

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

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

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

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

4.5 Stress cracks - Industry accepted method 006

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

4.6 Milling index - Industry accepted method 015

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

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

The Roff 150 Series maize mill is used to mill representative samples of 500 g. The mill 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 and Break 3 grits. Break 1, 2 and 3 germ and bran are combined and then weighed for determination of Bran/ Germ %. Break 3 grits are weighed for determination of % Grits. Break 1, 2 and 3 meal are weighed for determination of % extraction total meal.

4.8 Whiteness index - Industry accepted method 004

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

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

5. Mycotoxin analyses

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

During 2010 SAGL implemented a multi-mycotoxin screening method using UPLC - MS/MS. 77 of the 693 maize crop samples were tested for Aflatoxin G_1; B_1; G_2; B_2, Fumonisin B_1 and B_2, Deoxynivalenol, T2 - Toxin, Zearalenone and Ochratoxin A.

6. GMO (Genetically Modified Organisms)

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

77 crop samples were tested for Cry1Ab (MON810) and CP4 EPSPS (Roundup Ready) modified maize. Cry1Ab protein in maize is produced from a gene derived from *Bacillus thuringiensis (Bt)*.

7. Sampling Procedure

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 each of the 10 kg samples are transferred to a 50 kg bag representing a certain class and grade. When this bag is full, it is divided and a 3 kg sample according to class and grade per silo bin is sent to the SAGL.

A working sample is obtained by dividing the representative sample of the consignment according to ICC standard method no. 101/1.

SOUTH AFRICAN MAIZE CROP QUALITY 2010/2011 (Averages)

Class and grade of maize	WM1	WM2	WM3	WCOM	YM1	YM2	YM3	YCOM	Weighted Ave.
RSA Grading									
Defective kernels above 6.35 mm sieve, %	3.5	6.8	12.7	34.0	3.4	7.9	18.8	23.7	5.0
Defective kernels below 6.35 mm sieve, %	1.5	2.2	2.9	7.8	1.7	3.1	2.7	3.7	1.9
Total defective kernels, %	4.9	9.0	15.6	41.8	5.2	11.0	21.5	27.4	6.9
Other colour maize kernels, %	0.2	0.5	0.6	8.9	0.1	0.4	1.4	3.3	0.8
Foreign matter, %	0.1	0.2	0.2	0.5	0.2	0.2	0.3	0.3	0.2
Combined deviation, %	5.3	9.7	16.4	51.2	5.4	11.5	23.2	31.0	7.4
Pinked maize kernels, %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Physical Factors									
Hectolitre mass, kg/hl	77.9	77.6	76.5	74.0	76.5	75.4	74.7	74.6	77.1
100 Kernel mass, g	34.8	34.1	33.7	33.4	32.1	31.3	31.7	35.7	33.5
Stress cracks, %	5	5	5	10	5	7	5	5	5
Milling Index	89.3	88.0	87.0	68.2	86.0	85.5	79.4	74.5	87.5
Kernel Size									
% on top 10 mm	24.7	25.1	25.6	24.3	14.1	15.1	18.3	20.9	20.7
% on top 8 mm	63.6	63.3	63.2	62.8	68.7	68.3	68.1	68.9	65.6
% through 8 mm	11.7	11.6	11.2	12.9	17.1	16.6	13.6	10.2	13.8
Breakage susceptibility									
% Below 6.35 mm sieve	1.3	1.8	2.7	4.9	2.0	2.5	3.3	2.9	1.8
% Below 4.75 mm sieve	1.0	1.3	2.1	3.3	1.5	1.9	2.5	2.5	1.3
Nutritional Values									
Protein, %	7.9	7.8	8.1	6.9	7.8	7.9	8.1	8.0	7.9
Fat, % (db)	4.1	4.1	4.0	3.3	3.6	3.6	3.8	3.9	3.9
Starch, % (db)	73.5	73.6	73.5	74.9	74.2	74.3	73.7	73.6	73.8
Number of samples	***264***	***125***	***21***	***3***	***212***	***63***	***3***	***2***	***693***
Mycotoxins									
Total Aflatoxin, µg/kg (ppb) [max. value]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	-	0 [0]	0 [0]
Total Fumonisin, µg/kg (ppb) [max. value]	113 [1 126]	126 [1 341]	19 [57]	0 [0]	265 [1 401]	0 [0]	-	0 [0]	139 [1 401]
Deoxynivalenol, µg/kg (ppb) [max. value]	36 [541]	138 [883]	0 [<100]	<100 [<100]	26 [213]	47 [222]	-	<100 [<100]	49 [883]
Ochratoxin A, µg/kg (ppb) [max. value]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	-	0 [0]	0 [0]
Zearalenone, µg/kg (ppb) [max. value]	9 [187]	7 [55]	0 [0]	<20 [<20]	0 [<20]	0 [<20]	-	0 [0]	5 [187]
T - 2 Toxin, µg/kg (ppb) [max. value]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	0 [0]	-	0 [0]	0 [0]
Number of samples	***27***	***18***	***3***	***1***	***20***	***7***	***-***	***1***	***77***
GMO									
Cry1Ab (MON810), % Samples positive (> LOQ of 0.4%)	96	100	100	100	95	100	-	100	97
CP4 EPSPS (Roundup Ready), % Samples positive (> LOQ of 0.25 %)	81	94	67	100	95	86	-	100	88
Number of samples	***27***	***18***	***3***	***1***	***20***	***7***	***-***	***1***	***77***

Note: Non detective results are reported as 0, see LOD.

IMPORTED MAIZE QUALITY

Quality of maize imported from 1 May 2011 to date versus RSA crop quality 2010/2011

Country of origin	ARGENTINA		RSA Crop Average	
Class and grade yellow maize	**YM2**	**YM3**	**YM2**	**YM3**
RSA Grading				
Defective kernels above 6.35 mm sieve, %	4.1	11.0	7.9	18.8
Defective kernels below 6.35 mm sieve, %	9.2	14.7	3.1	2.7
Total defective kernels, %	13.3	25.7	11.0	21.5
Other colour maize kernels, %	0.0	0.0	0.4	1.4
Foreign matter, %	0.0	0.0	0.2	0.3
Combined deviation, %	13.3	25.7	11.5	23.2
Pinked maize kernels, %	0.0	0.0	0.0	0.0
Noxious seeds	1	0	0	0
Physical Factors				
Hectolitre mass, kg/hl	73.2	71.7	75.4	74.7
100 Kernel mass, g	28.7	29.4	31.3	31.7
Stress cracks, %	51	79	7	5
Milling Index	73.7	75.0	85.5	79.4
Kernel Size				
% on top 10 mm	5.7	6.4	15.1	18.3
% on top 8 mm	62.7	62.1	68.3	68.1
% through 8 mm	31.6	31.5	16.6	13.6
Breakage susceptibility				
% Below 6.35 mm sieve	16.9	32.3	2.5	3.3
% Below 4.75 mm sieve	12.0	25.5	1.9	2.5
Nutritional Factors				
Protein, %	8.2	7.9	7.9	8.1
Fat, % (db)	4.1	4.5	3.6	3.8
Starch, % (db)	72.6	76.0	74.3	73.7
Number of samples	***2***	***1***	***63***	***3***
Mycotoxins				
Afla G_1 (µg/kg) [max. value]	0 [0]		0 [0]	-
Afla B_1 (µg/kg) [max. value]	0 [0]		0 [0]	-
Afla G_2 (µg/kg) [max. value]	0 [0]		0 [0]	-
Afla B_2 (µg/kg) [max. value]	0 [0]		0 [0]	-
Fum B_1 (µg/kg) [max. value]	0 [0]		0 [0]	-
Fum B_2 (µg/kg) [max. value]	0 [0]		0 [0]	-
Deoxynivalenol (µg/kg) [max. value]	307 [307]		47 [222]	-
Ochratoxin A (µg/kg) [max. value]	0 [0]		0 [0]	-
Zearalenone (µg/kg) [max. value]	0 [0]		0 [<20]	-
T-2 Toxin (µg/kg) [max. value]	35 [35]		0 [0]	-
Number of samples	***1***		***7***	***-***
GMO				
Cry1Ab (MON810) (LOQ: 0.4%), %	<0.4		>5.0	-
CP4 EPSPS (Roundup Ready) (LOQ: 0.25%), %	<0.25		4.29	-
Number of samples	***1***		***7***	***-***

IMPORTED MAIZE QUALITY

Quality of maize imported from 1 May 2011 to date versus RSA crop quality 2010/2011

Country of origin	UKRAINE		RSA Crop Average	
Class and grade yellow maize	**YM2**	**YM3**	**YM2**	**YM3**
RSA Grading				
Defective kernels above 6.35 mm sieve, %	7.4	6.6	7.9	18.8
Defective kernels below 6.35 mm sieve, %	8.5	10.4	3.1	2.7
Total defective kernels, %	15.9	17.0	11.0	21.5
Other colour maize kernels, %	0.0	0.0	0.4	1.4
Foreign matter, %	0.0	0.2	0.2	0.3
Combined deviation, %	15.9	17.2	11.5	23.2
Pinked maize kernels, %	0.0	0.0	0.0	0.0
Noxious seeds	0	0	0	0
Physical Factors				
Hectolitre mass, kg/hl	72.9	69.3	75.4	74.7
100 Kernel mass, g	29.6	27.8	31.3	31.7
Stress cracks, %	71	68	7	5
Milling Index	77.1	77.6	85.5	79.4
Kernel Size				
% on top 10 mm	5.4	6.6	15.1	18.3
% on top 8 mm	66.5	73.4	68.3	68.1
% through 8 mm	28.1	20.0	16.6	13.6
Breakage susceptibility				
% Below 6.35 mm sieve	17.1	29.1	2.5	3.3
% Below 4.75 mm sieve	13.4	22.4	1.9	2.5
Nutritional Factors				
Protein, %	8.3	8.1	7.9	8.1
Fat, % (db)	4.1	4.3	3.6	3.8
Starch, % (db)	75.1	74.5	74.3	73.7
Number of samples	***1***	***1***	***63***	***3***
Mycotoxins				
Afla G_1 (µg/kg) [max. value]	0 [0]		0 [0]	-
Afla B_1 (µg/kg) [max. value]	0 [0]		0 [0]	-
Afla G_2 (µg/kg) [max. value]	0 [0]		0 [0]	-
Afla B_2 (µg/kg) [max. value]	0 [0]		0 [0]	-
Fum B_1 (µg/kg) [max. value]	0 [0]		0 [0]	-
Fum B_2 (µg/kg) [max. value]	0 [0]		0 [0]	-
Deoxynivalenol (µg/kg) [max. value]	0 [0]		47 [222]	-
Ochratoxin A (µg/kg) [max. value]	0 [0]		0 [0]	-
Zearalenone (µg/kg) [max. value]	0 [0]		0 [<20]	-
T-2 Toxin (µg/kg) [max. value]	0 [0]		0 [0]	-
Number of samples	***1***		***7***	***-***
GMO				
Cry1Ab (MON810) (LOQ: 0.4%), %	0.80		>5.0	-
CP4 EPSPS (Roundup Ready) (LOQ: 0.25%), %	<0.25		4.29	-
Number of samples	***1***		***7***	***-***

Accuracy Award

SAGL participates in several international proficiency schemes including AACC International, BIPEA and FAPAS, as part of our quality assurance procedures to demonstrate technical competency. SAGL has received the 2010 AACC International Accuracy Award for the Mixograph analysis (also received in 2006, 2007, 2008 and 2009). SAGL received the Accuracy Award for Feed analysis (moisture, crude protein, crude fibre and ash) in 2004 and 2009.


AACC INTERNATIONAL

ACCURACY AWARD

Operation of the Mixograph

South African Grain Laboratory, Pretoria, SOUTH AFRICA

Is awarded this certificate for achieving the most accurate and precise results among Series J Check Sample Subscribers for 2010

Moisture, Peak Height, Peak Time
8-Minute Height, Descending Slope

Executive Vice President

June 2, 2011

President

sanas
South African National Accreditation System

CERTIFICATE OF ACCREDITATION

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

SOUTHERN AFRICAN GRAIN LABORATORY

Co. reg no: 1997/018518/08

Facility Accreditation Number: **T0116**

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

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

CHEMICAL & PHYSICAL ANALYSIS

The facility is accredited in accordance with the recognised International Standard

ISO/I EC 17025:2005

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

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

Mr R Josias
Chief Executive Officer

Effective Date: 01 November 2009
Certificate Expires: 31 October 2014

ANNEXURE A

SCHEDULE OF ACCREDITATION

Testing Laboratory Number: T0116

Permanent Address of Laboratory: Southern African Grain Laboratory Grain Building 477 Witherite Road The Willows 0040	**Technical Signatories**	: Ms J Nortjé (All) : Ms M Hammes (Chemical) : Ms M E Vorster (Physical) : Mr B van der Linde (Grading) : Ms A de Jager (Nutrients & Contaminants) : Mrs M Henning (Chemical) : Ms H Schoeman (In House Method 24 & Grading) : Ms D Moleke (Physical) : Ms I Delport (Physical) : Mrs W Louw (In House Methods 1, 2, 3, 10 & 26) : Ms J Kruger (Chemical excluding In-House Method 12)
Postal Address: PostNet Suite # 391 Private Bag X 1 The Willows 0041	**Nominated Representative** **Management Representative**	: Mrs S du Preez : Mrs W Louw
Tel : (012) 807-4019 Fax : (012) 807-4160 E-mail : info@sagl.co.za	Issue No. Date of issue Expiry date	: 18 : 22 November 2011 : 31 October 2014

Materials/Products Tested	Types of Tests/Properties Measured, Range of Measurement	Standard Specifications, Equipment/ Techniques Used
CHEMICAL		
Ground barley	Moisture (Oven method)	Analytical EBC 3.2, Latest Edition
Ground grains, semolina and flour, milled-wheat, bran, rice (hulled, paddy), millet, rye & oats as grains, milled pasta, brown bread flour.	Moisture (Oven method)	ICC No 110/1, Latest Edition
Whole and milled maize and soya beans, milled maize products	Moisture (Oven method)	AACC 44-15.02, Latest Edition
All flours, cereal grains, oil seeds and animal feeds	Nitrogen and protein (Combustion method)	AACC 46-30.01, Latest Edition
Food stuffs	Dietary fibre (total)	In-House Method 12
Food Stuff and Feeds	Carbohydrates (by difference) (calculation) Energy Value (calculation) Total Digestible Nutritional Value (calculation)	SOP MC 23
Food Stuffs and Feeds, Semolina and Milled Pasta	Determination of Ash	In-House Method 11
Wheat Kernels	Moisture (oven method)	Government Gazette Wheat Grading Regulation , Latest Edition

Original date of accreditation: 01 November 1999

Field Manager

ANNEXURE A

Laboratory No: T0116
Date of issue: 22 November 2011
Expiry date: 31 October 2014

Materials/Products Tested	Types of Tests/Properties Measured, Range of Measurement	Standard Specifications, Equipment/ Techniques Used
CHEMICAL Continued...		
Flours of grains, e.g. barley, triticale, maize, rye, sorghum and wheat, oilseeds, feeds, mixed feeds and foodstuffs	Crude fat (Ether extraction by Soxhlet)	In-House Method 24
Meal and flour of wheat, rye, barley, other grains, starch containing and malted products	Falling Number	ICC No 107/1, Latest Edition
NUTRIENTS & CONTAMINANTS		
Grain based fortified food and feed products and fortification mixes	Vitamin A as all trans Retinol (Saponification) (HPLC)	In-House Method 1
	Thiamine Mononitrate (HPLC)	In-House Method 2
	Riboflavin (HPLC)	In-House Method 2
	Nicotinamide (HPLC)	In-House Method 2
	Pyridoxine Hydrochloride (HPLC)	In-House Method 2
	Folic Acid (HPLC)	In-House Method 3
Grain based fortified food and feed products and fortification mixes	Total Iron and Total Zinc (AA)	In-House Method 10
Food and Feed	Mycotoxins - Aflatoxins - Deoxynivalenol (DON) - Fumonisin - Ochratoxin A - T2 - Zearalenone	In-House Method 26 UPLC-MS/MS
GRADING		
Maize	Defective Kernels (white maize/ yellow maize)	Government Gazette Maize Grading Regulation, Latest Edition
Cereals as grain (Wheat, barley, rye and oats)	Hectolitre mass (Kern 222)	ISO 7971-3, Latest Edition
Wheat	Screenings	Government Gazette Wheat Grading Regulation, Latest Edition
PHYSICAL		
Wheat flour	Alveograph (Rheological properties)	ICC No 121, Latest Edition
Wheat Flour and brown bread flour	Farinograph (Rheological properties)	AACC 54-21.01, Latest Edition Constant Flour Weight Procedure
Wheat flour and whole wheat flour of hard/soft wheat	Mixograph (Rheological properties)	Industry Accepted Method 020 (Based on AACC 54-40.02, Latest Edition.)

Original date of accreditation: 01 November 1999

ISSUED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM

Field Manager

GOVERNMENT NOTICES
GOEWERMENTSKENNISGEWINGS

DEPARTMENT OF AGRICULTURE
DEPARTEMENT VAN LANDBOU

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

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

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

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

(a) made the regulations in the Schedule; and

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

SCHEDULE

Definitions

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

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

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

(b) polypropylene that complies with SABS specification CKS632;

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

"**consignment**" means -

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

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

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

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

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

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

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

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

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

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

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

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

Provided that:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Scope of regulations

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

(a) maize in retail quantities; and

(b) maize for seed production purposes.

Restrictions on sale of maize

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

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

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

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

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

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

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

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

PART I
QUALITY STANDARDS

Classes of maize

4. The classes of Maize shall be -

(a) Class White Maize;

(b) Class Yellow Maize; and

(c) Class Other Maize.

Standards for classes of maize

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

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

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

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

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

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

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

Grades of maize

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

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

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

Standards for grades of Class White Maize and Class Yellow Maize

7. All grades of maize -

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

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

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

(d) shall be free from insects;

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

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

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

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

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

PART II
PACKING AND MARKING REQUIREMENTS

Packing requirements

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

Marking requirements

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

(a) the class of the maize;

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

PART III
SAMPLING

Obtaining sample

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

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

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

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

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

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

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

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

Sampling if contents differ

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

(a) the bags concerned shall be placed separately;

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

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

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

Working sample

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

PART IV
DETERMINATION OF OTHER SUBSTANCES

Determination of undesirable odours and harmful substances

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

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

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

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

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

Determination of percentage of foreign matter

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

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

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

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

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

PART V
MAIZE KERNELS

Determination of percentage of defective maize kernels

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

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

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

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

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

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

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

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

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

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

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

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

Determination of percentage of other colour maize kernels

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

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

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

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

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

Determination of percentage of pinked maize kernels

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

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

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

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

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

PART VI
MOISTURE CONTENT

Determination of moisture content

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

OFFENCE AND PENALTIES

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

ANNEXURE/AANHANGSEL
TABLE/TABEL

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

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

* Not specified/Nie gespesifiseer nie.