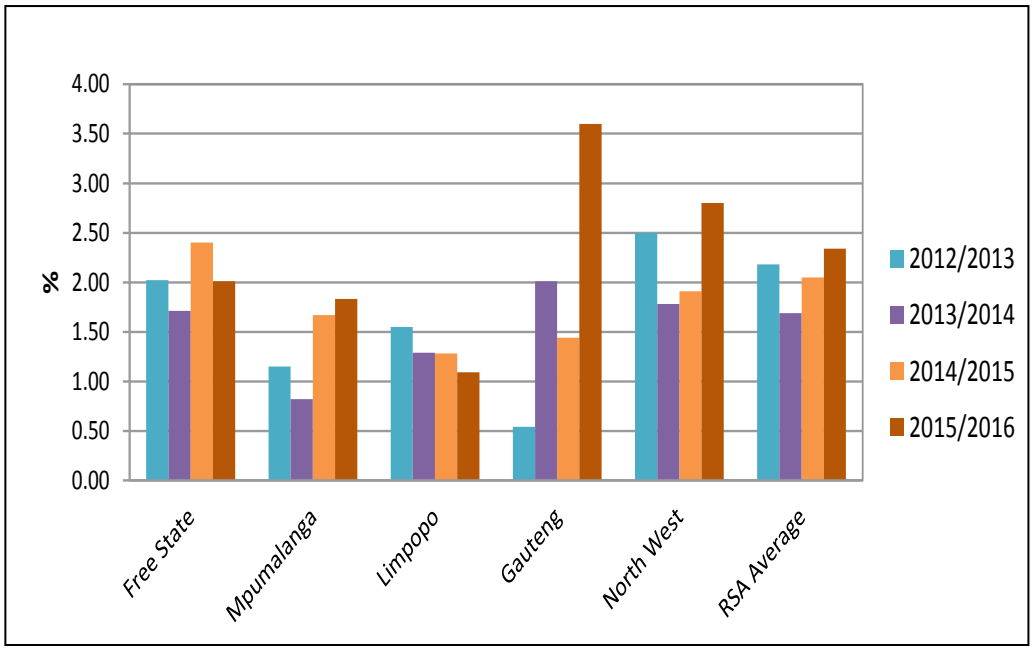
Sunflower Crop Quality 2015/2016 – Summary of results

Seventy eight percent (138) of the 176 samples analysed for the purpose of this survey were graded as Grade FH1 and 38 of the samples were downgraded to COSF (Class Other Sunflower Seed). The percentage of FH1 samples showed a decrease compared to the 86% and 82% of the 2014/2015 and 2013/2014 seasons respectively.

- Two samples were downgraded as a result of the percentage damaged sunflower seed exceeding the maximum permissible deviation of 10%.
- Fifteen of the samples were downgraded as a result of the percentage of either the screenings or the collective deviations or a combination of both exceeding the maximum permissible deviations of 4% and 6% respectively.
- Five samples were downgraded as a result of a combination of the foreign matter and collective deviations exceeding the maximum permissible deviations of 4% and 6% respectively.
- Eight of the samples were downgraded as a result of the presence of poisonous seeds (*Datura sp.*) exceeding the maximum permissible number, namely 1 per 1000 g.
- One sample was downgraded due to the presence of an undesired odour.
- The remaining seven samples were downgraded as a result of a combination of one or more of the following deviations exceeding the maximum permissible deviation: percentage damaged sunflower seed, percentage screenings, percentage foreign matter, percentage collective deviations as well as poisonous seeds (*Datura sp.*).

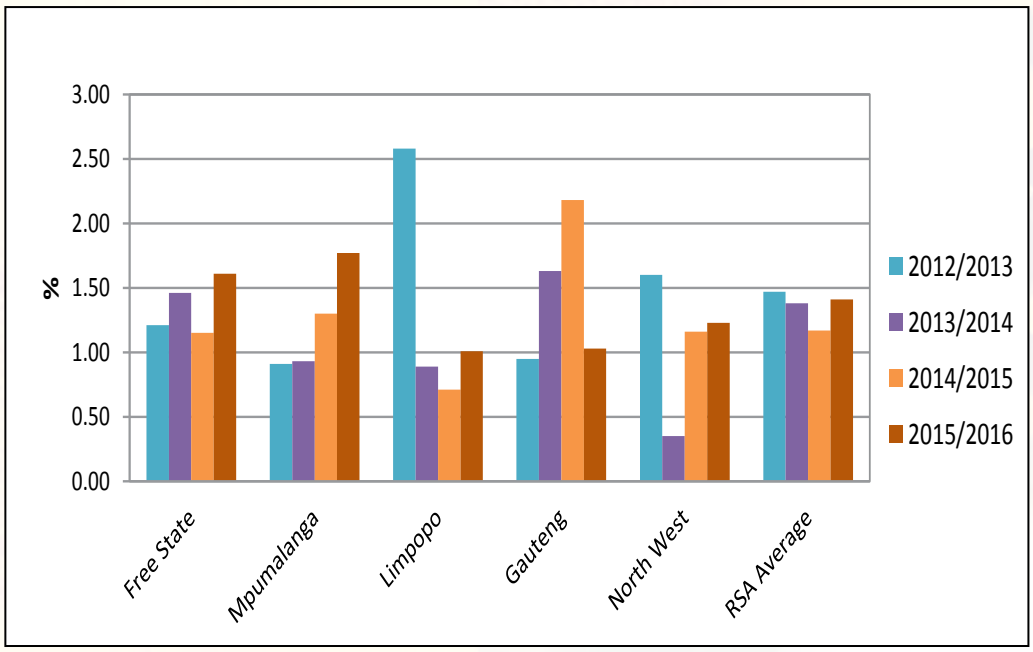
Gauteng province (two samples) reported the highest weighted average percentage screenings namely 3.60%, followed by North West (N = 80) and Free State (N = 80) provinces with 2.80% and 2.01% respectively. Limpopo (seven samples) reported the lowest average percentage screenings of 1.09%. The weighted national average was 2.34% compared to the 2.05% of the previous season.

Graph 16: Average percentage screenings per province over four seasons



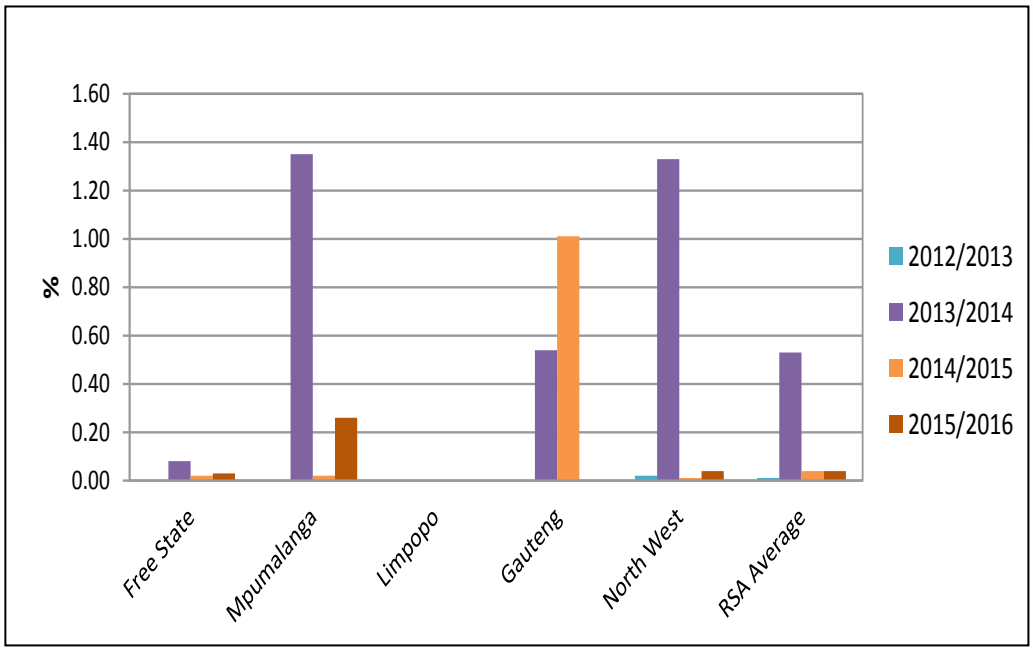
The highest weighted percentage foreign matter (1.77%) was reported for the seven samples from Mpumalanga. The Free State and North West provinces averaged 1.61% and 1.23% respectively. The lowest average percentage was found in Limpopo, namely 1.01%. The RSA average of 1.41% was the highest of the last three seasons.

Graph 17: Average percentage foreign matter per province over four seasons



Based on the samples received for this survey, *Sclerotinia sclerotiorum* did not pose a significant problem and was observed on 18 of the samples (10%). Fourteen of these samples originated in the North West province and three in the Free State. The highest percentage (1.80%) was present on a sample from Mpumalanga, this is however still well below the maximum allowable level of 4%. Weighted average levels ranged from 0% for the Gauteng and Limpopo provinces, 0.03% in the Free State, 0.04% in the North West to 0.26% in Mpumalanga. The national average of 0.04% was equal to the previous season.

Graph 18: Average percentage sclerotia per province over four seasons

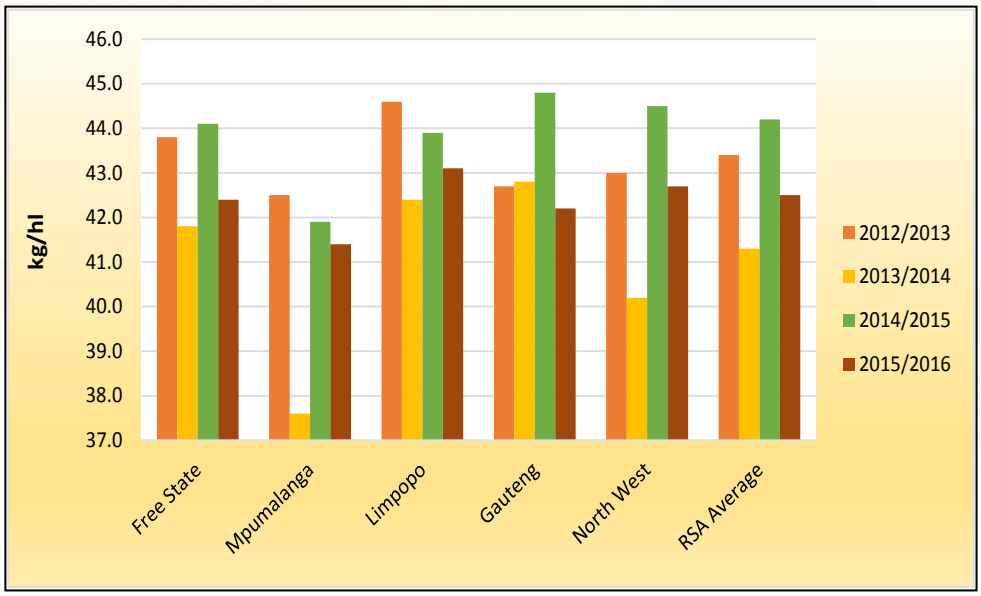


Test weight does not form part of the grading regulations for sunflower seed in South Africa. An approximation of the test weight of South African sunflower seeds is provided in Table 3 for information purposes. The g/1 L filling weight of sunflower seed were determined by means of the Kern 222 apparatus. The test weight was extrapolated by means of the following formulas obtained from the Test Weight Conversion Chart for Sunflower Seed, Oil of the Canadian Grain Commission: $y = 0.1936x + 2.2775$ (138 to 182 g/0.5 L) and $y = 0.1943x + 2.1665$ (183 to 227 g/0.5 L). Please see also Graph 19 for a comparison of the test weight per province over the last four seasons.

Table 3: Approximation of test weight per province over three seasons									
Province	Test weight, kg/hl								
	2015/2016 Season			2014/2015 Season			2013/2014 Season		
	Weighted average	Range	No. of samples	Weighted average	Range	No. of samples	Weighted average	Range	No. of samples
Free State (Regions 21 - 28)	42.4	36.3 - 48.1	80	44.1	38.9 - 49.9	69	41.8	36.4 - 48.2	*96
Mpumalanga (Regions 29 - 33)	41.4	35.0 - 42.2	7	41.9	35.0 - 42.2	8	37.6	35.0 - 42.2	5
Limpopo (Region 35)	43.1	42.7 - 43.8	7	43.9	42.2 - 50.5	8	42.4	37.7 - 44.0	11
Gauteng (Region 34)	42.2	41.7 - 42.8	2	44.8	42.2 - 47.6	5	42.8	41.7 - 44.6	4
North West (Region 12 - 20)	42.7	40.0 - 46.2	80	44.5	34.0 - 48.9	86	40.2	31.1 - 46.6	58
RSA	***42.5***	***35.0 - 48.1***	***176***	***44.2***	***34.0 - 50.5***	***176***	***41.3***	***31.1 - 48.2***	***174***

* Two samples with outlier values as a result of Deviations (Screenings + Sclerotinia + Foreign matter) exceeding 18%, was not taken into account for calculation purposes.

Graph 19: Comparison of the test weight per province over four seasons



The nutritional component analyses, namely crude protein, -fat, -fibre and ash are reported as % (g/100g) on an 'as received' or 'as is' basis. See Table 4 for a summary of the RSA Sunflower Crop Quality averages of the 2015/2016 season compared to those of the 2014/2015 season.

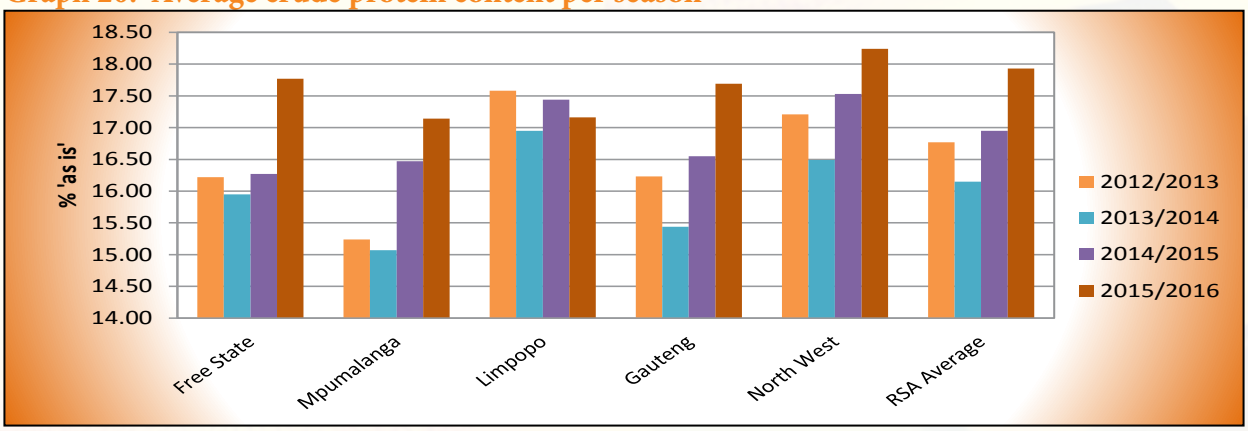
The weighted average crude protein content this season was 17.93%, almost one percent higher than the previous season and the highest average value since the start of this survey in 2012/2013. North West had the highest weighted average crude protein content of 18.24% and Mpumalanga the lowest with 17.14%. The Free State's crude protein content averaged 17.77%. The weighted average crude fat percentage of 38.2% was the lowest of the last four seasons and 1.5% lower than the previous season. Gauteng had the highest weighted average crude fat content of 40.3%. The lowest average fat content was observed in the Free State (38.0%). North West and Mpumalanga averaged 38.2% and 38.8% respectively.

The weighted average percentage crude fibre increased slightly from 20.0% in the previous season to 20.3% this season. Average values varied between 19.2% in Gauteng to 20.9% in Mpumalanga. The weighted average ash content is slightly higher (2.59%) than last season (2.55%). The provincial averages ranged from 2.49% in Mpumalanga to 2.69% in Limpopo.

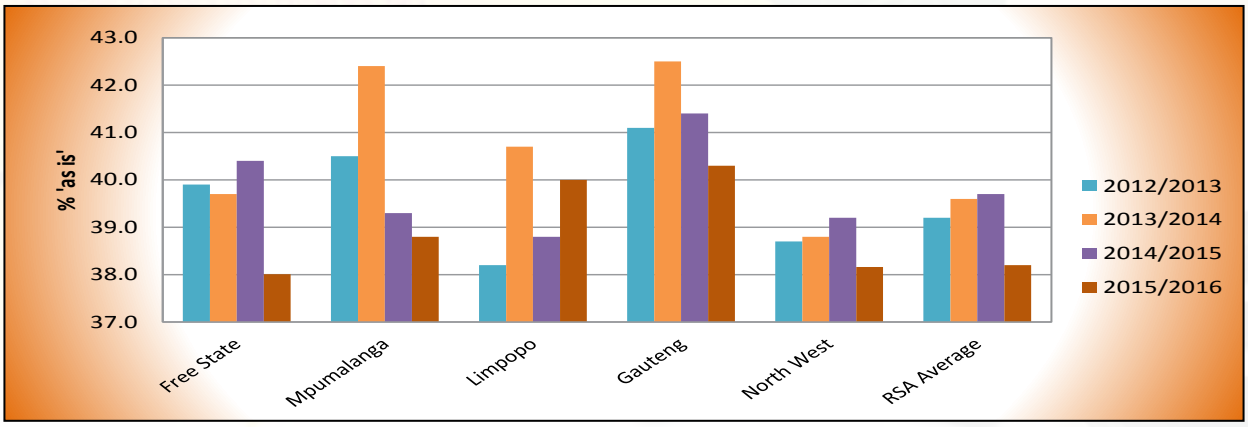
Graphs 20 to 23 on page 15 provide comparisons between provinces for the nutritional components discussed above.

Please also see pages 17 to 22 for the average sunflower quality per region.

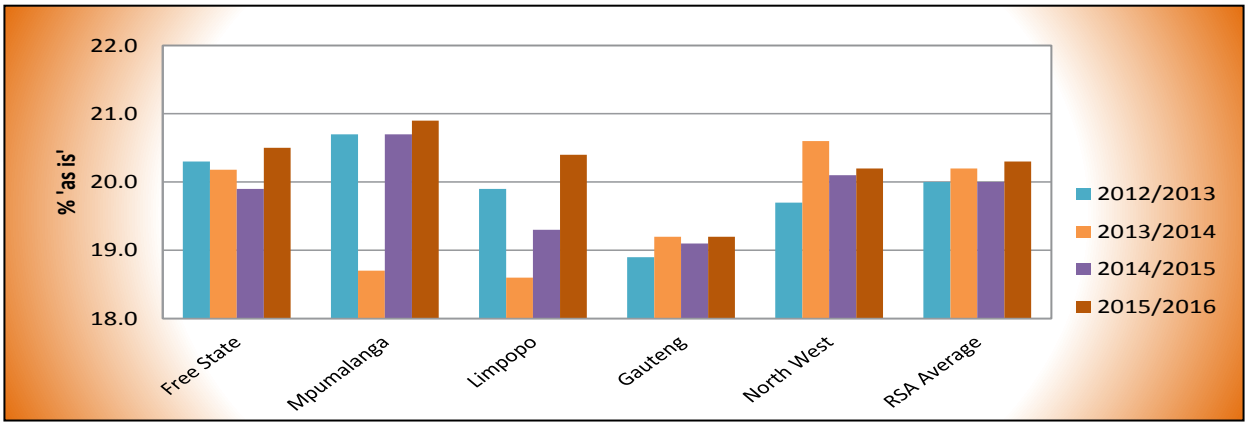
Graph 20: Average crude protein content per season



Graph 21: Average crude fat content per season



Graph 22: Average crude fibre content per season



Graph 23: Average ash content per season