Soybean Crop Quality 2016/2017 – Summary of results

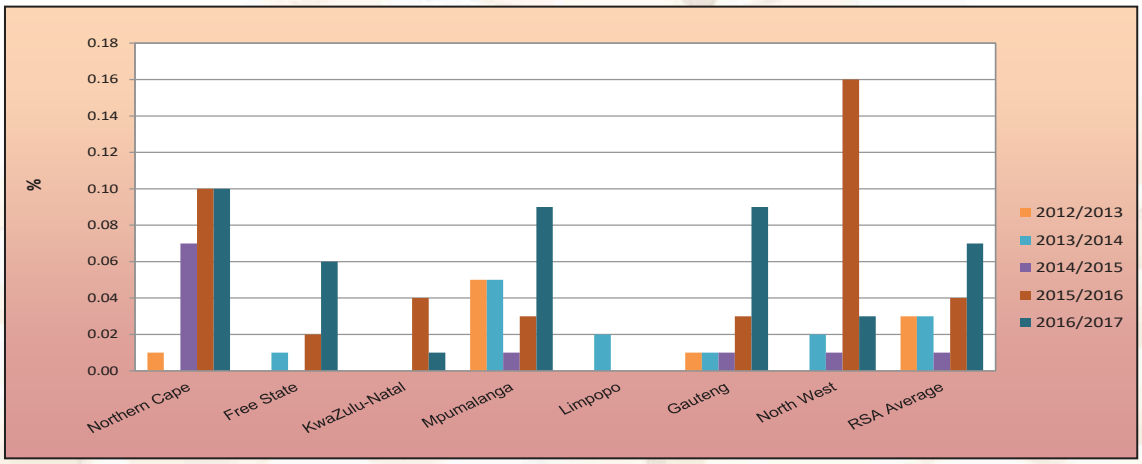
Eighty-eight percent (132) of the 150 samples analysed for the purpose of this survey were graded as Grade SB1 and 18 of the samples were downgraded to COSB (Class Other Soya Beans). During the previous two seasons, 11% (2015/2016) and 13% (2014/2015) of the samples were downgraded to COSB.

- Two of the 18 samples were downgraded as a result of the percentage other grain present in the sample exceeding the maximum permissible deviation of 0.5%.
- One sample was downgraded as a result of the percentage sunflower seed present in the sample exceeding the maximum permissible deviation of 0.1%.
- Eleven samples were downgraded as a result of the percentage soiled soybeans present in the sample exceeding the maximum permissible deviation of 10%.
- One sample was downgraded as a result of the presence of poisonous seeds (*Convolvulus sp.*) exceeding the maximum permissible number, namely 7 per 1000 g.
- The remaining three samples were downgraded as a result of a combination of one or more of the following deviations exceeding the maximum permissible deviation: percentage foreign matter, percentage other grain and collective deviations.

According to the South African soybean grading regulations, the determination of the percentage wet pods in a consignment shall be done on a working sample of at least 10 kg of soybeans from a representative sample of the consignment. Due to practical considerations the samples received at the SAGL from the grain storage companies is typically ± 5 kg. Pods were found in five of the 150 samples graded, all of these pods were green, but not wet according to the definition, upon receival at the SAGL. The percentage of these pods in the samples ranged from 0.04% to 0.60% based on a working sample size of at least 200 g. Only two samples contained pods, not identifiable as wet pods according to the definition, in percentages exceeding the wet pod maximum permissible deviation of 0.2%.

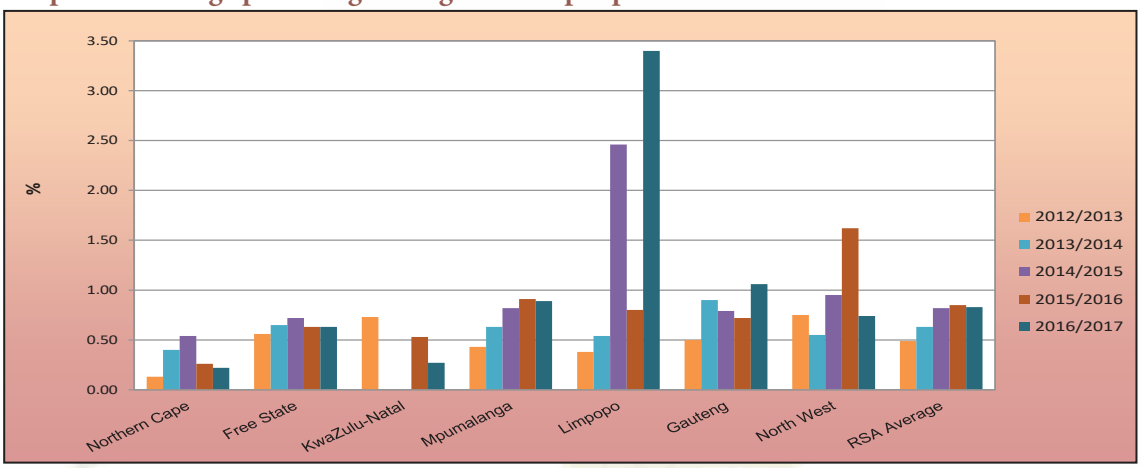
The number of samples containing sclerotia from the fungus *Sclerotinia sclerotiorum*, almost tripled from the previous season (from 36 to 105 samples). The three highest percentages of sclerotia observed (0.38%, 0.36% and 0.30%) were on samples from Mpumalanga. These percentages are however still well below the maximum permissible level of 4%. The national weighted average percentage this season was 0.07% compared to the 0.04% of the previous season. See Graph 16.

Graph 16: Average percentage sclerotia per province over five seasons



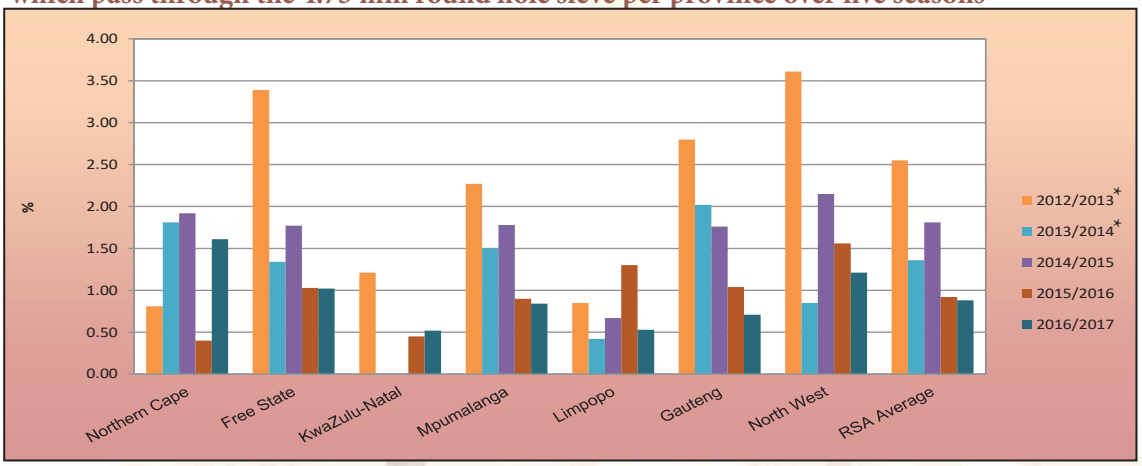
Limpopo province (two samples) had the highest weighted average percentage foreign matter (3.40%). The percentage foreign matter in the rest of the samples ranged from 0.22 in the Northern Cape (two samples) to 1.06 in Gauteng (11 samples). Please refer to Graph 17.

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



Northern Cape province reported the highest weighted average percentage soybeans and parts of soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve, namely 1.61% and the samples from KwaZulu-Natal and Limpopo the lowest with 0.52% and 0.53% respectively. Mpumalanga province (86 samples) averaged 0.84% and the Free State province (33 samples) 1.02%. The national weighted average percentage decreased from 0.92% the previous season to 0.88% this season. This is the lowest percentage of the six seasons for which crop quality data is available. Please see Graph 18.

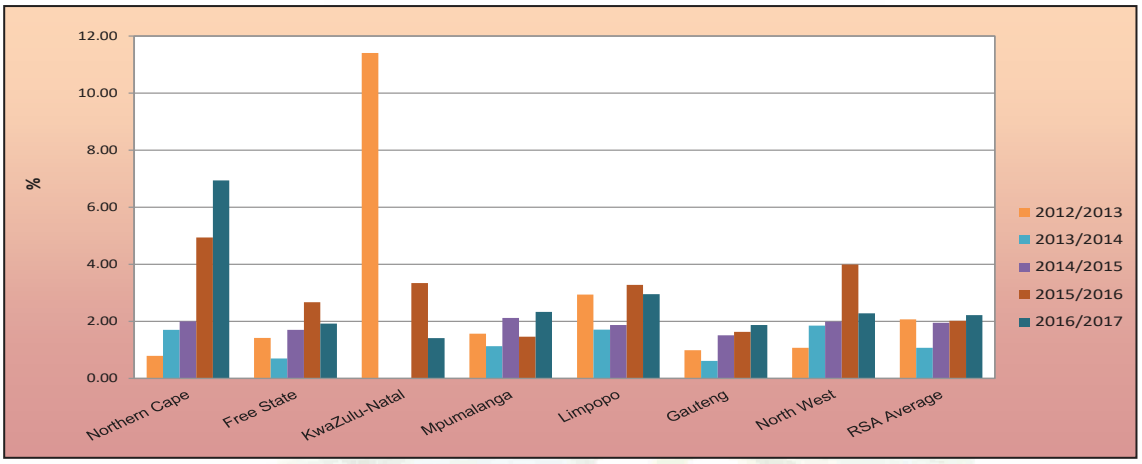
Graph 18: Average percentage soybeans and parts of soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve per province over five seasons



** Represent soybeans and parts of soybeans which pass through the 4.75 mm round hole sieve.*

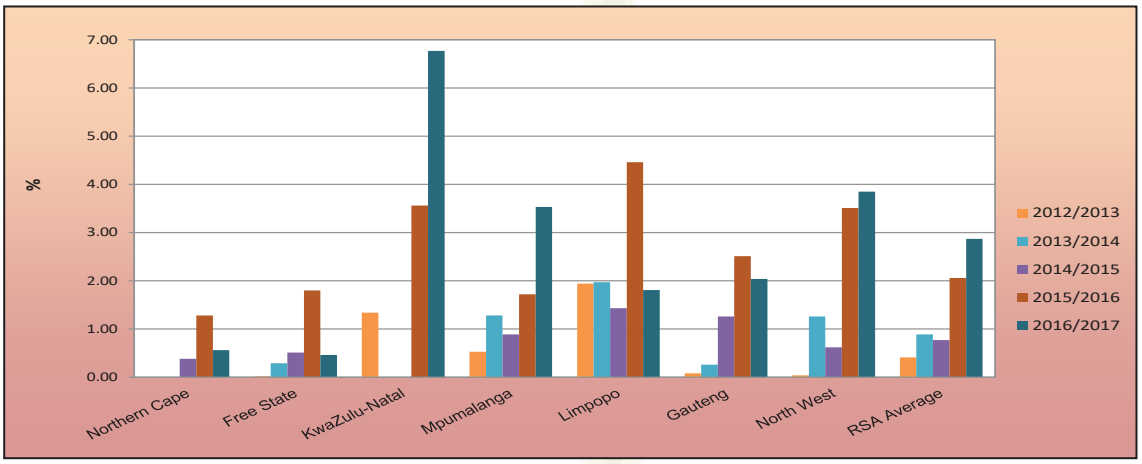
The lowest weighted average percentage defective soybeans on the 4.75 mm sieve was observed on the eight samples from KwaZulu-Natal, namely 1.41%. The Northern Cape province reported the highest percentage namely 6.94, followed by Limpopo and Mpumalanga provinces with 2.95 and 2.33 respectively. The national weighted average increased slightly from 2.02% last season to 2.22% this season. Please see Graph 19.

Graph 19: Average percentage defective soybeans on the 4.75 mm round hole sieve per province over five seasons



The South African weighted average percentage soiled soybeans of 2.87% is the highest since this survey was started in the 2011/2012 season when the average was 1.60%. The average last season was 2.06%. Average weighted percentages per province ranged from 0.46 in the Free State to 6.77 in KwaZulu-Natal. Please see Graph 20. Eleven samples exceeded the maximum permissible deviation of 10% according to the grading regulations. More than half of these samples originated from Mpumalanga. Last season, no samples exceeded this grading limit.

Graph 20: Average percentage soiled soybeans per province over five seasons

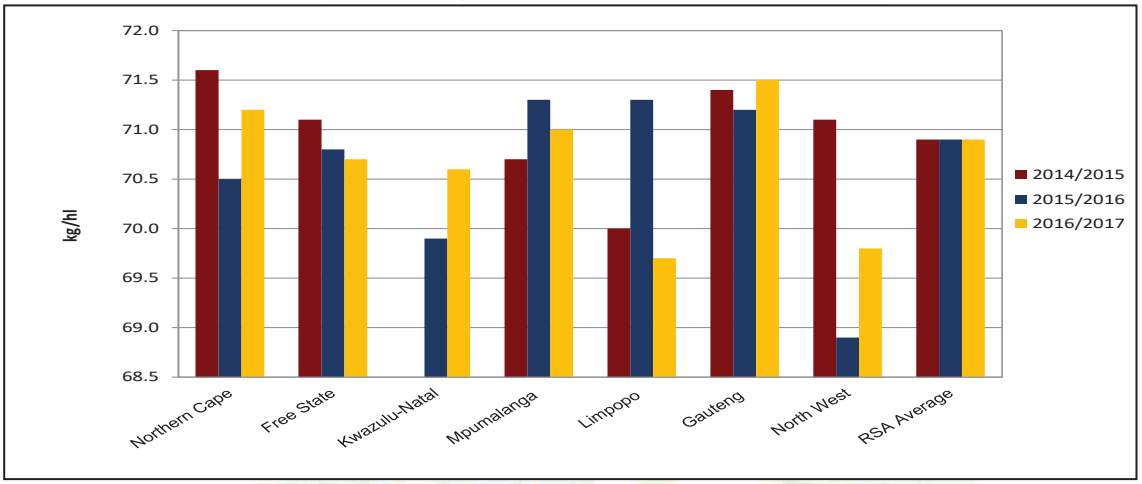


Test weight does not form part of the grading regulations for soybeans in South Africa. An approximation of the test weight of South African soybeans is provided in Table 2 for information purposes. The g/1L filling weight of the 150 soybeans samples was determined by means of the Kern 222 apparatus. The test weight was extrapolated by means of the following formulas obtained from the Test Weight Conversion Chart for Soybean of the Canadian Grain Commission: $y = 0.1898x + 2.2988$ (291 to 350 g/0.5 L) and $y = 0.1895x + 2.3964$ (351 to 410 g/0.5 L). Please see Graph 21 for a comparison of the test weight per province over the last three seasons.

Table 2: Approximation of test weight per province over three seasons

Province	Test weight, kg/hl								
	2016/2017 Season			2015/2016 Season			2014/2015 Season		
	Weighted average	Range	No. of samples	Weighted average	Range	No. of samples	Weighted average	Range	No. of samples
Northern Cape (Regions 10 - 11)	71.2	71.1 - 71.2	2	70.5	-	1	71.6	71.2 - 71.9	3
Free State (Regions 21 - 28)	70.7	65.8 - 72.1	33	70.8	68.5 - 73.0	23	71.1	67.0 - 72.7	42
KwaZulu-Natal (Regions 36)	70.6	69.2 - 71.5	8	69.9	67.7 - 71.6	14	-	-	-
Mpumalanga (Regions 29 - 33)	71.0	67.6 - 72.6	86	71.3	68.9 - 72.7	91	70.7	63.3 - 78.2	77
Limpopo (Region 35)	69.7	69.1 - 70.2	2	71.3	-	1	70.0	69.3 - 70.8	2
Gauteng (Region 34)	71.5	70.8 - 73.6	11	71.2	70.6 - 72.2	5	71.4	69.5 - 72.4	8
North West (Region 12 - 20)	69.8	67.7 - 70.9	8	68.9	64.9 - 70.5	8	71.1	68.8 - 72.2	18
RSA	***70.9***	***65.8 - 73.6***	***150***	***70.9***	***64.9 - 73.0***	***143***	***70.9***	***63.3 - 78.2***	***150***

Graph 21: Comparison of the test weight per province over three seasons



The nutritional component analyses, namely crude protein, - fat, - fibre and ash are reported on a dry/moisture-free basis (db) for the current as well as the previous surveys. For comparison purposes the national 'as is' basis results are provided in Table 3. These 'as is' values were calculated using the weighted national average values.

Table 3: Comparison of weighted average nutritional component values on a dry and 'as is' basis over four seasons

Season	2016/2017		2015/2016		2014/2015		2013/2014	
Moisture, % (17hr, 103°C)	7.4		7.4		7.0		7.1	
Moisture basis	**Dry basis**	**As is**	**Dry basis**	**As is**	**Dry basis**	**As is**	**Dry basis**	**As is**
Crude protein, %	40.15	37.18	40.22	37.24	39.89	37.10	39.84	37.01
Crude fat, %	19.8	18.3	19.4	18.0	19.3	17.9	19.7	18.3
Crude fibre, %	5.9	5.9	7.3	7.3	6.4	6.4	6.1	6.1
Ash, %	4.58	4.24	4.61	4.27	4.64	4.32	4.66	4.33
No. of samples	***150***		***143***		***150***		***150***	

The weighted average crude protein content this season was 40.15%, slightly lower than the 40.22 of the previous season. The samples from Limpopo had the highest weighted average crude protein content of 40.65%, while the Free State reported the lowest average, namely 39.45%. The weighted average crude fat percentage of 19.8% was almost half a percentage point higher than the 19.4% in 2015/2016. This is also the highest average percentage over the six seasons that this survey has been done. The samples from North West had the highest weighted average crude fat content of 21.9%. The lowest average fat content was observed in Mpumalanga with 19.4%.

The weighted average percentage crude fibre varied from 5.3% in the Northern Cape to 6.0% in Gauteng. The RSA weighted average was the lowest of the past four seasons. A small variation of only 0.08% is observed with regards to the national weighted average ash content over the six seasons that this survey has been conducted. This season, the average ash content was 4.58%, the lowest of the six seasons. Samples from the Northern Cape tend to show higher ash contents over seasons compared to the other provinces. With the exception of this season, this is also true for Limpopo province.

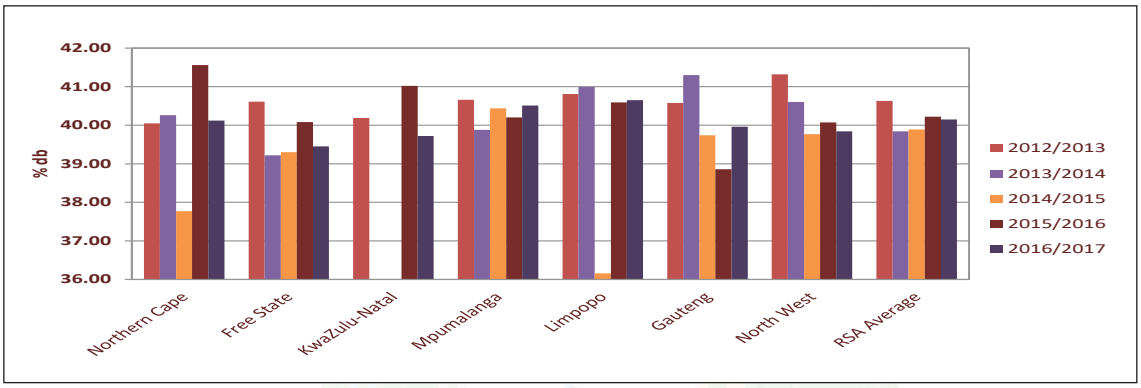
Graphs 22 to 25 on page 18 provide comparisons between provinces over seasons for the nutritional components mentioned above.

A summary of the RSA Soybean Crop Quality averages of the 2016/2017 season compared to those of the 2015/2016 season, is provided in Table 4 on page 19.

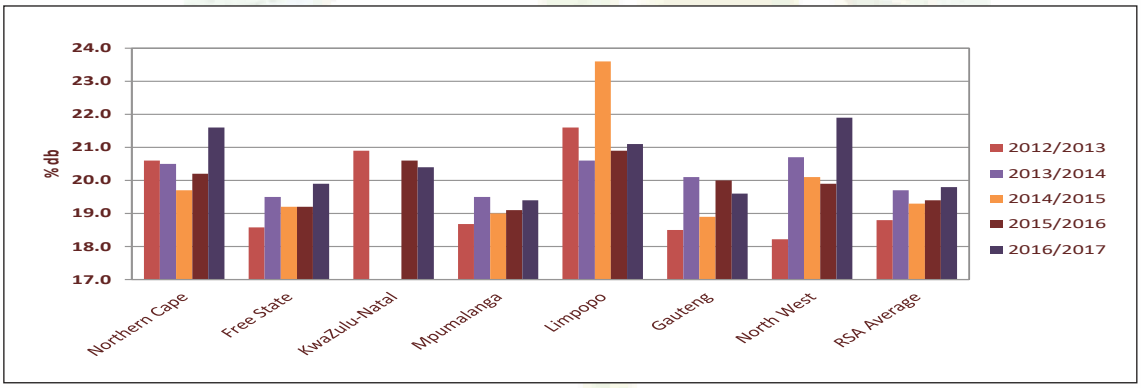
All fifteen samples tested for genetic modification (GM), tested positive for the presence of the CP4 EPSPS trait (Roundup Ready®). Please refer to the results in Table 5 on page 20 of this report.

Please see pages 21 to 26 for the average soybean quality per region.

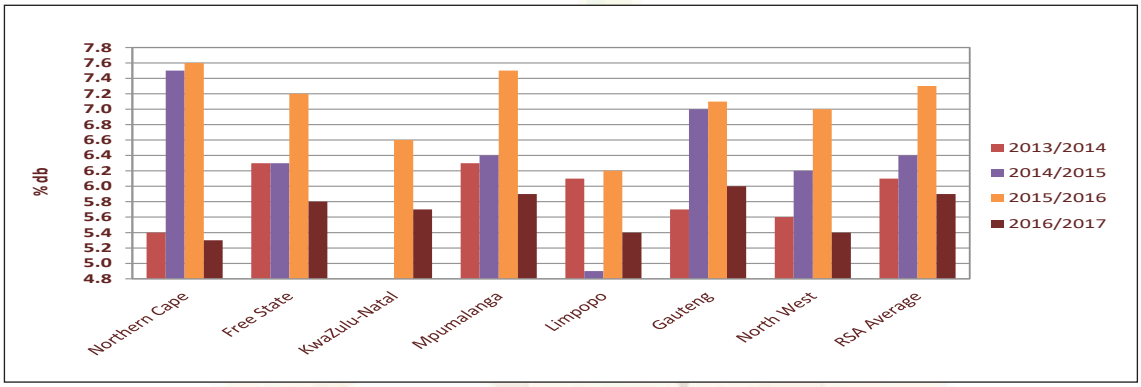
Graph 22: Average crude protein content per province over five seasons



Graph 23: Average crude fat content per province over five seasons



Graph 24: Average crude fibre content per province over four seasons



Graph 25: Average ash content per province over five seasons