

South African Soybean Crop



*Quality Report
2013/2014 Season*

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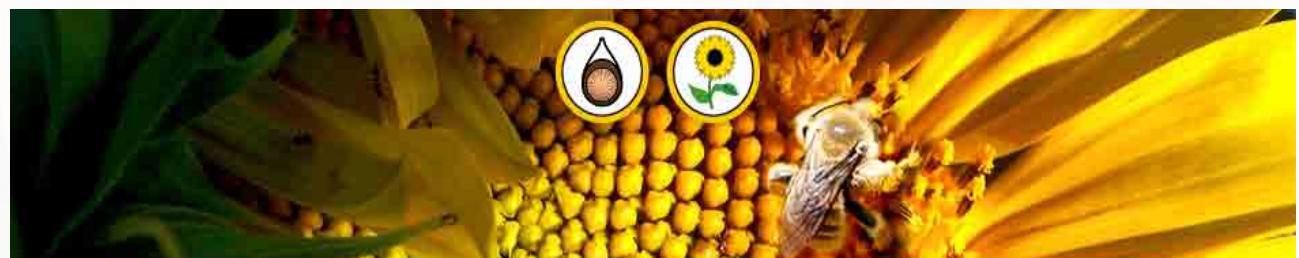
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SOUTH AFRICAN COMMERCIAL SOYBEAN QUALITY FOR THE 2013/2014 SEASON



Acknowledgements

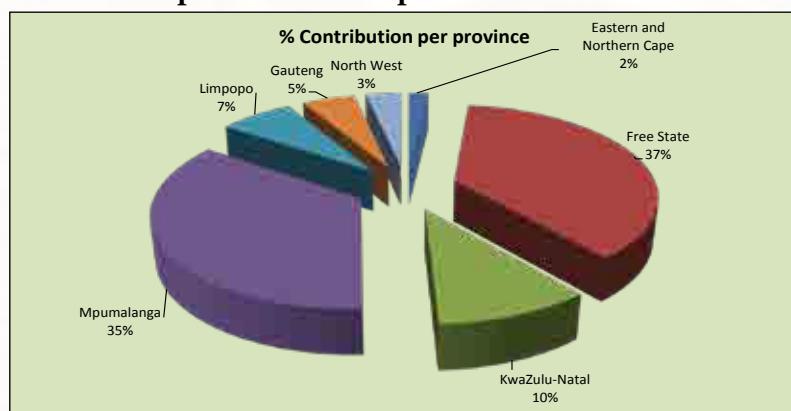
With gratitude to:

- *The Oil & Protein Seed Development Trust for its financial support in conducting this survey.*
- *Agbiz Grain and its members for their cooperation in providing the samples to make the survey possible.*

Introduction

The finalized commercial figure for the soybean crop of the 2013/2014 season as overseen by the National Crop Estimates Liaison Committee (CELC) is 948 000 tons. The final calculated crop figure was adjusted upward by 3 660 tons (0.39%). The commercial soybean crop increased by almost 21% (163 500 tons) from the 2012/2013 season. The major soybean-producing provinces, contributing 72.5% of the total crop, were the Free State and Mpumalanga.

Graph 1: Contribution of the provinces to the production of the 2013/2014 soybean crop



Information provided by the CEC.

During the harvesting season, a representative sample of each delivery of soybeans at the various silos was taken according to the prescribed grading regulations. The sampling procedure for the samples used in this survey is described on page 25. One hundred and fifty composite soybean samples, proportionally representing the different production regions, were analysed for quality. The samples were graded, milled and chemically analysed for moisture, crude protein, crude fat, crude fibre and ash content. Fifteen randomly selected samples were analysed for genetic modification.

The goal of this crop quality survey is to accumulate quality data on the commercial soybean crop on a national level. This valuable data reveal general tendencies, highlight quality differences in the commercial soybeans produced in different local production regions and provide important information on the quality of commercial soybeans intended for export. A detailed database containing information collected over several seasons is essential and will assist with decision making processes.

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

The results are available on the SAGL website (www.sagl.co.za). The hard copy reports are posted to all the Directly Affected Groups and interested parties. The report is also available for download in a PDF format from the website.

In addition to the quality information, production figures (obtained from the Crop Estimates Committee (CEC)) relating to hectares planted, tons produced and yields obtained on a national as well as provincial basis, over an eleven season period, are provided in this report. SAGIS (South African Grain Information Service) supply and demand information over several years is provided in table and graph format.

The 2013/14 Report of the National Soybean Cultivar Trials conducted by the ARC-Grain Crops Institute in Potchefstroom is also included in this report, as is the national grading regulations as published in the Government Gazette of 6 March 2009.

Production

The area utilized for soybean production decreased from 516 500 hectares in the previous season to 502 900 hectares this season. The previous seven seasons showed a steady increase in hectares planted from 183 000 in 2006/2007 to 516 500 in 2012/2013, as producers became aware of the benefit of soybeans in crop rotation programs, especially as part of conservation agriculture. Soybeans also have lower input needs compared to other commodities like maize and wheat. The soybean yield increased from 1.52 t/ha in 2012/2013 to 1.89 t/ha in 2013/2014.

The world oilseed production increased significantly during 2013/2014. Soyabean production played the largest role in this increase, but sunflower and canola crops were also noticeably bigger. The increased oilseed production can be attributed to an increase in area utilized for oilseed production but also to good yields obtained.

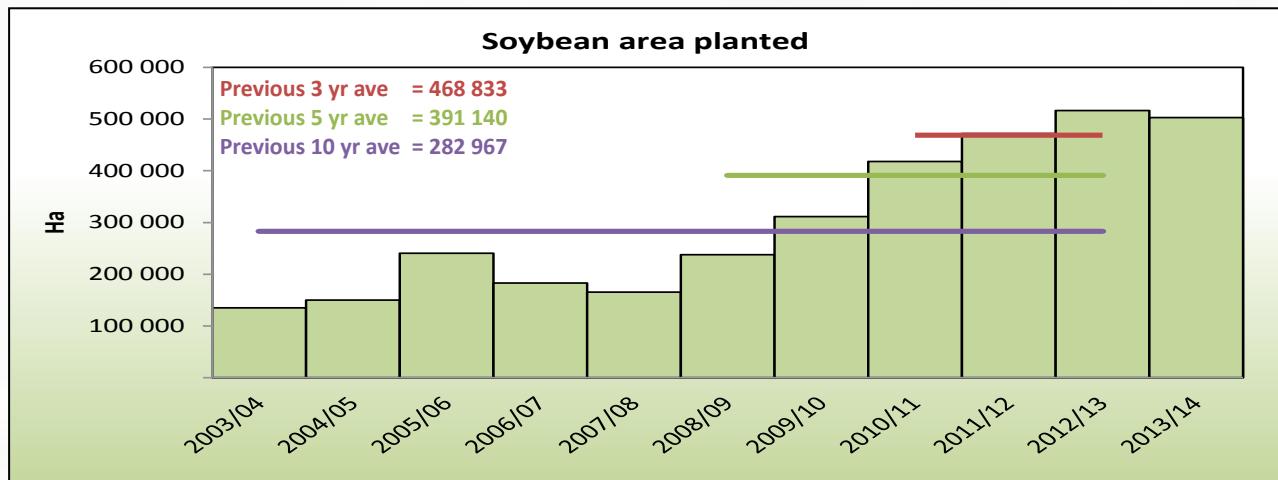
Table 1: World Soybean Production

Country	Million Metric Tons		
	2014	2013	2012
United States	108.0	89.5	82.1
Brazil	94.5	87.5	83.5
Argentina	56.0	54.0	51.5
China	12.4	12.2	12.6
India	10.5	11.0	11.5
Paraguay	8.5	8.1	7.8
Canada	6.1	5.2	4.9
Other	19.4	16.5	14.1
Total	315.4	284.0	268.0

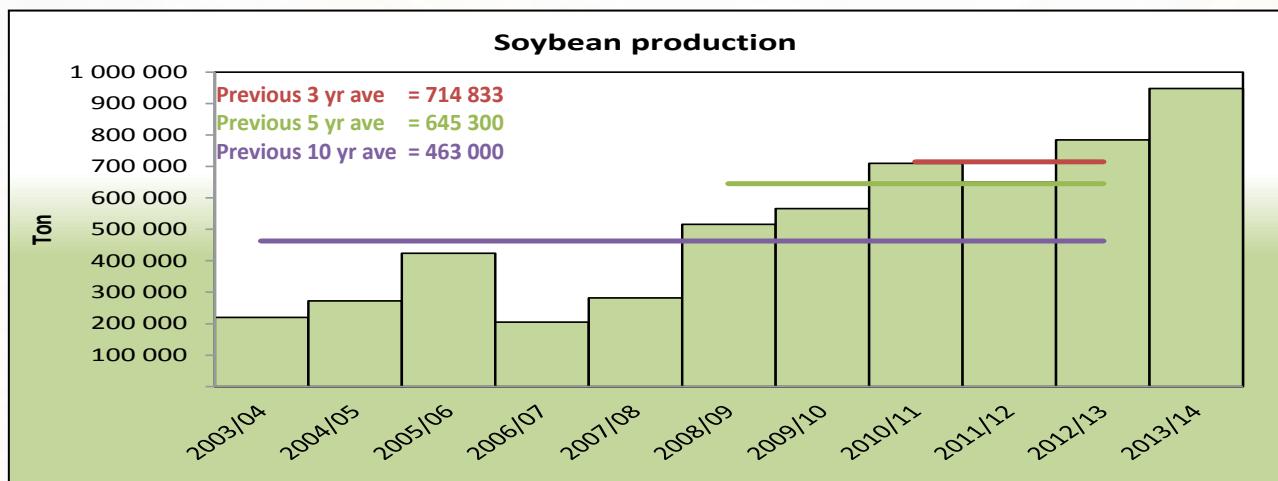
Soystats 2013, - 2014 and - 2015 published by the American Soybean Association

According to the BFAP Baseline, Agricultural Outlook 2014 – 2023, the increase in soybean plantings are expected to continue to ± 900 000 hectares by 2023. Average national yields are expected to increase to 2.3 t/ha by 2023, resulting in domestic soybean production of ± 2 million tons. Investment in local soybean crushing capacity was encouraged by an increase in local soybean availability and some of these crushing plants are already in production. Additional crushing capacity coming into production in the near future may result in a short supply of soybeans. South Africa currently produces more than half of Africa's soybeans.

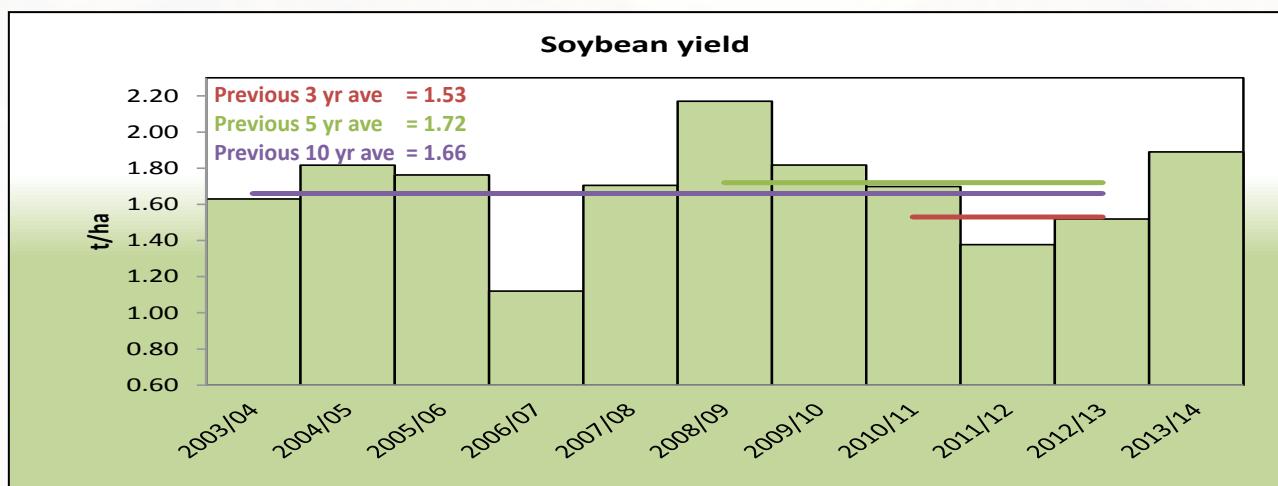
Graph 2: Total RSA area utilized for soybean production from 2003/04 to 2013/14



Graph 3: Soybean production in RSA from 2003/04 to 2013/2014

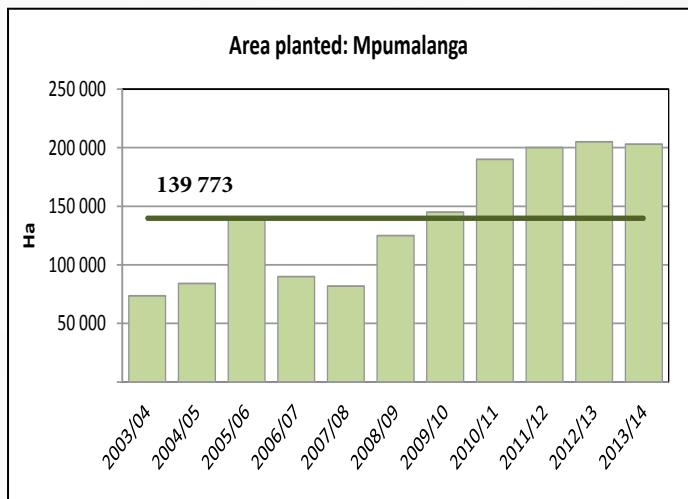


Graph 4: RSA soybean yield from 2003/04 to 2013/14

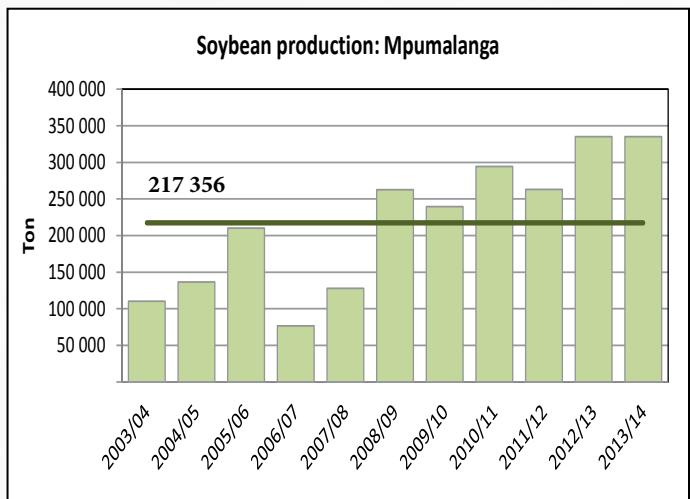


Information provided by the CEC.

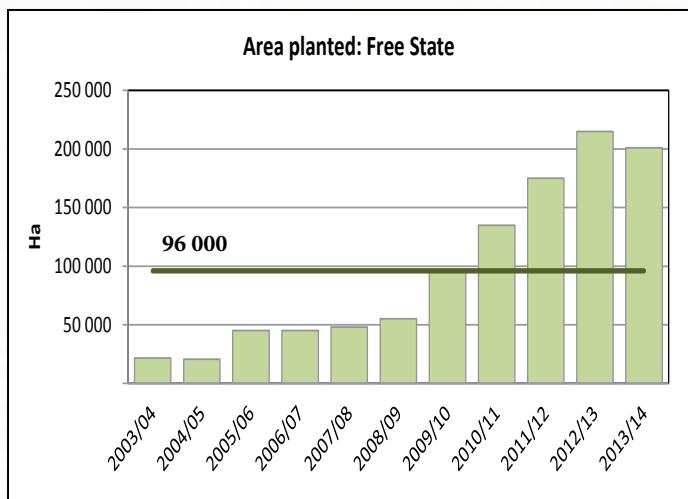
Graph 5: Area utilized for soybean production in Mpumalanga since 2003/04



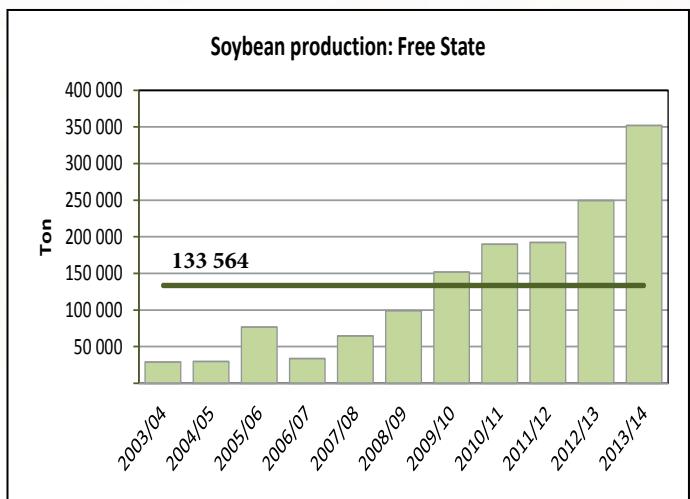
Graph 6: Soybean production in Mpumalanga since 2003/04



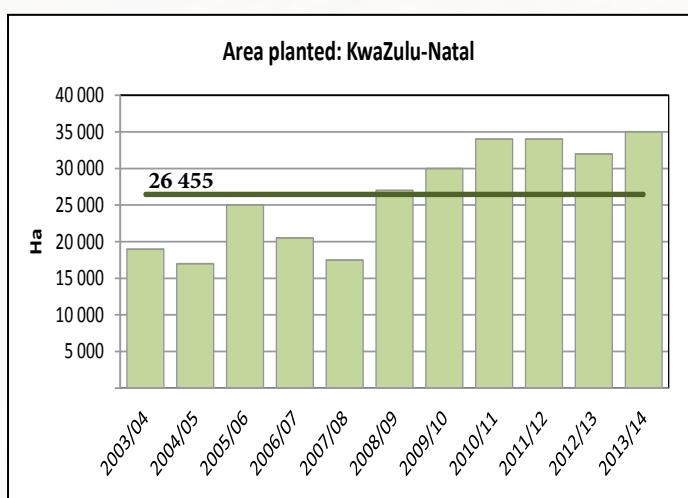
Graph 7: Area utilized for soybean production in the Free State since 2003/04



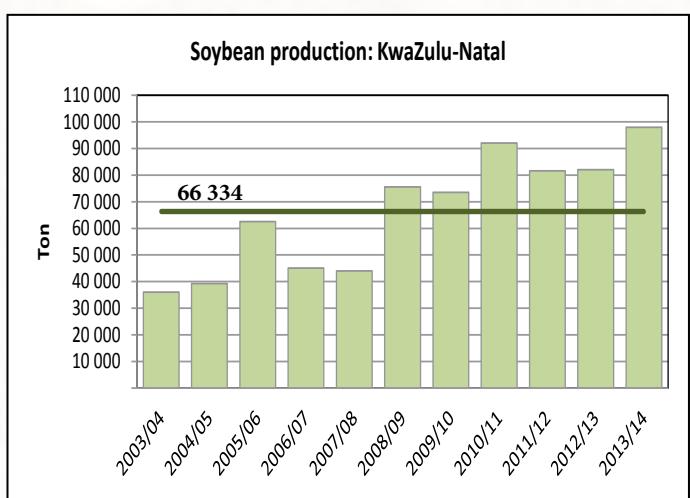
Graph 8: Soybean production in the Free State since 2003/04



Graph 9: Area utilized for soybean production in KwaZulu-Natal since 2003/04



Graph 10: Soybean production in KwaZulu-Natal since 2003/04



Information provided by the CEC.

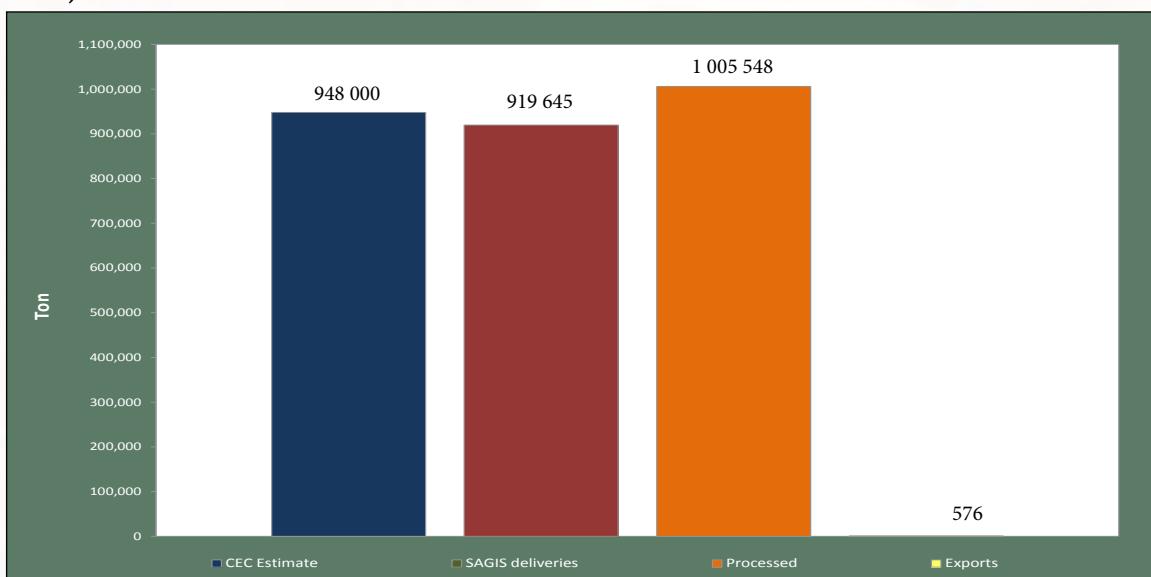
Supply and Demand

For the March 2014 to February 2015 marketing season, imports increased significantly to 103 051 tons. Of the 1 005 548 tons of soybeans processed during this season, 2.5% was used for human consumption, 11.8% for animal feed as full fat soya and 85.7% was crushed to produce oil or oilcake. The demand for full fat soya increased with 11.6% and that for oil/oilcake with 35.8% from the previous season. The amount of soybeans crushed increased with 53% (300 041 tons) compared to the 2013/2014 season.

Only 576 tons of soybeans/products were exported compared to the 15 390 tons in the previous season. Globally, the USA and Brazil are responsible for approximately 81% of the total 117.4 million metric tons soybeans exported in 2014. Argentina is the largest exporter of soybean meal or oilcake, exporting 28.8 million metric tons of the total 64.1 million metric tons exported during 2014. Brazil and the USA is the second and third largest soybean meal exporting countries (Soystats 2015).

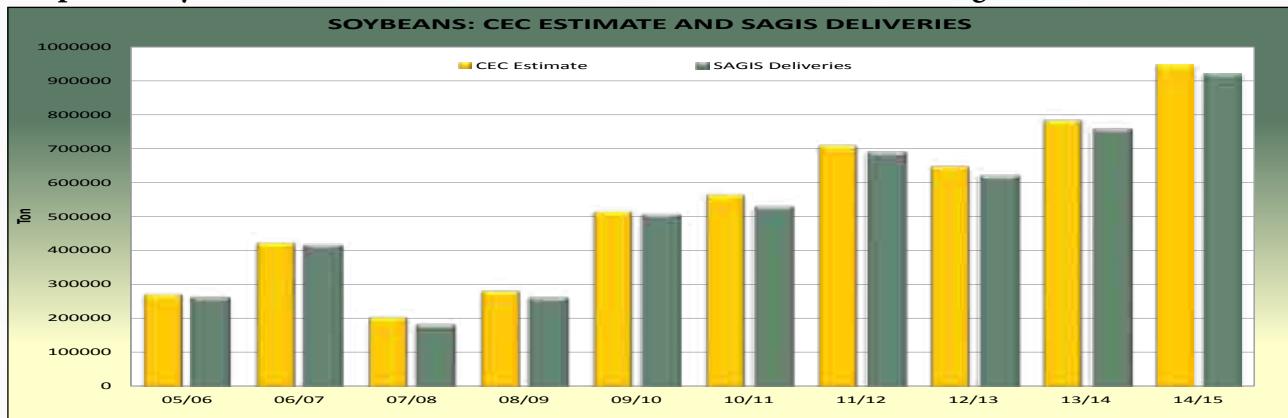
According to the BFAP Baseline, domestic soybean oilcake consumption is currently \pm 1.2 million tons. Local production will provide just over half with imports supplying the deficit. Consumption is projected to increase to \pm 1.8 million tons by 2023. Expansion of local soybean crushing capacity is expected to be able to supply most of the increase in consumption.

Graph 11: Soybean supply and demand overview for the current marketing season (Mar 2014 - Feb 2015)

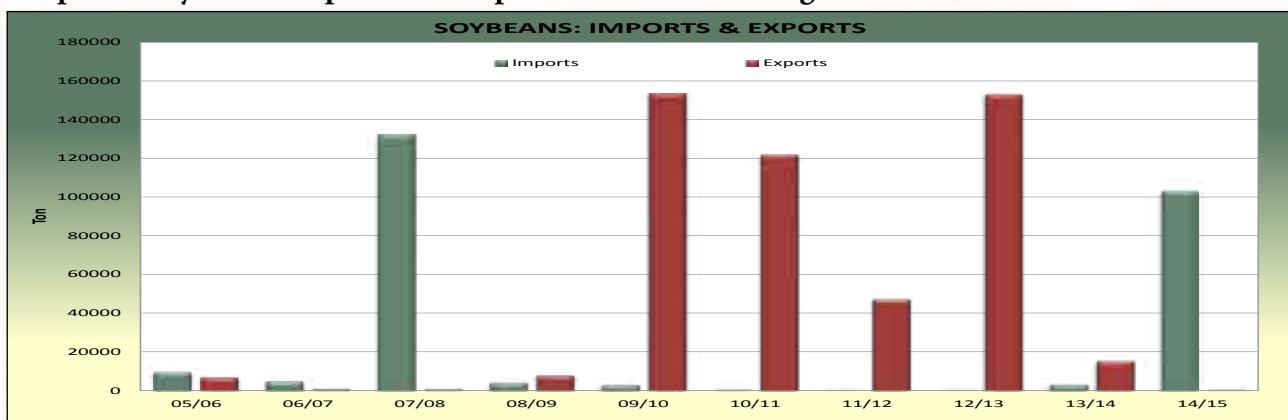


Information provided by SAGIS.

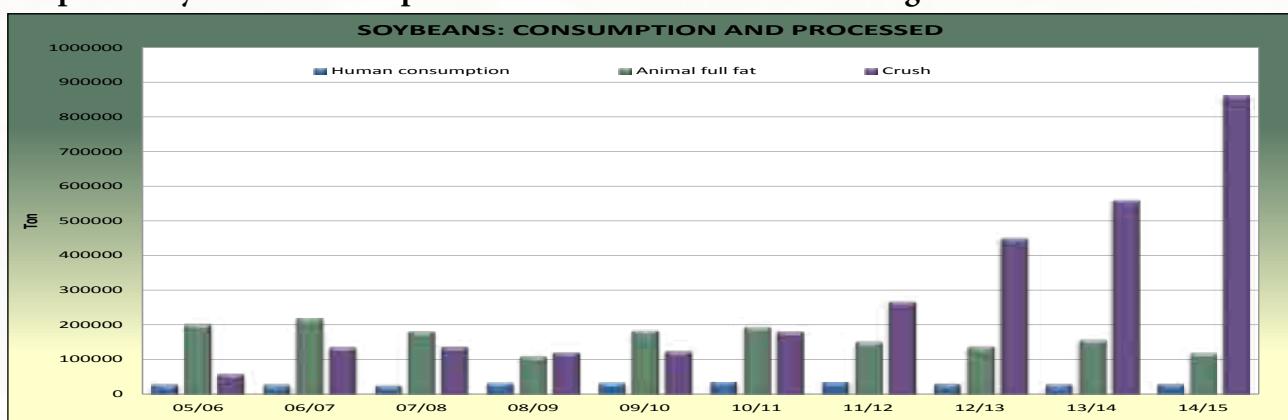
Graph 12: Soybeans: CEC Estimate vs SAGIS deliveries over 10 marketing seasons



Graph 13: Soybeans: Imports and Exports over 10 marketing seasons



Graph 14: Soybeans: Consumption and Processed over 10 marketing seasons



Graph 15: Soybeans: Opening and closing stock over 10 marketing seasons



Information provided by SAGIS.

RSA Production Regions

The RSA is divided into 9 provinces as illustrated in Figure 1.

Figure 1: RSA Provinces



Provincial map with gratitude to SIQ.

The 9 provinces are divided into 36 grain production regions.

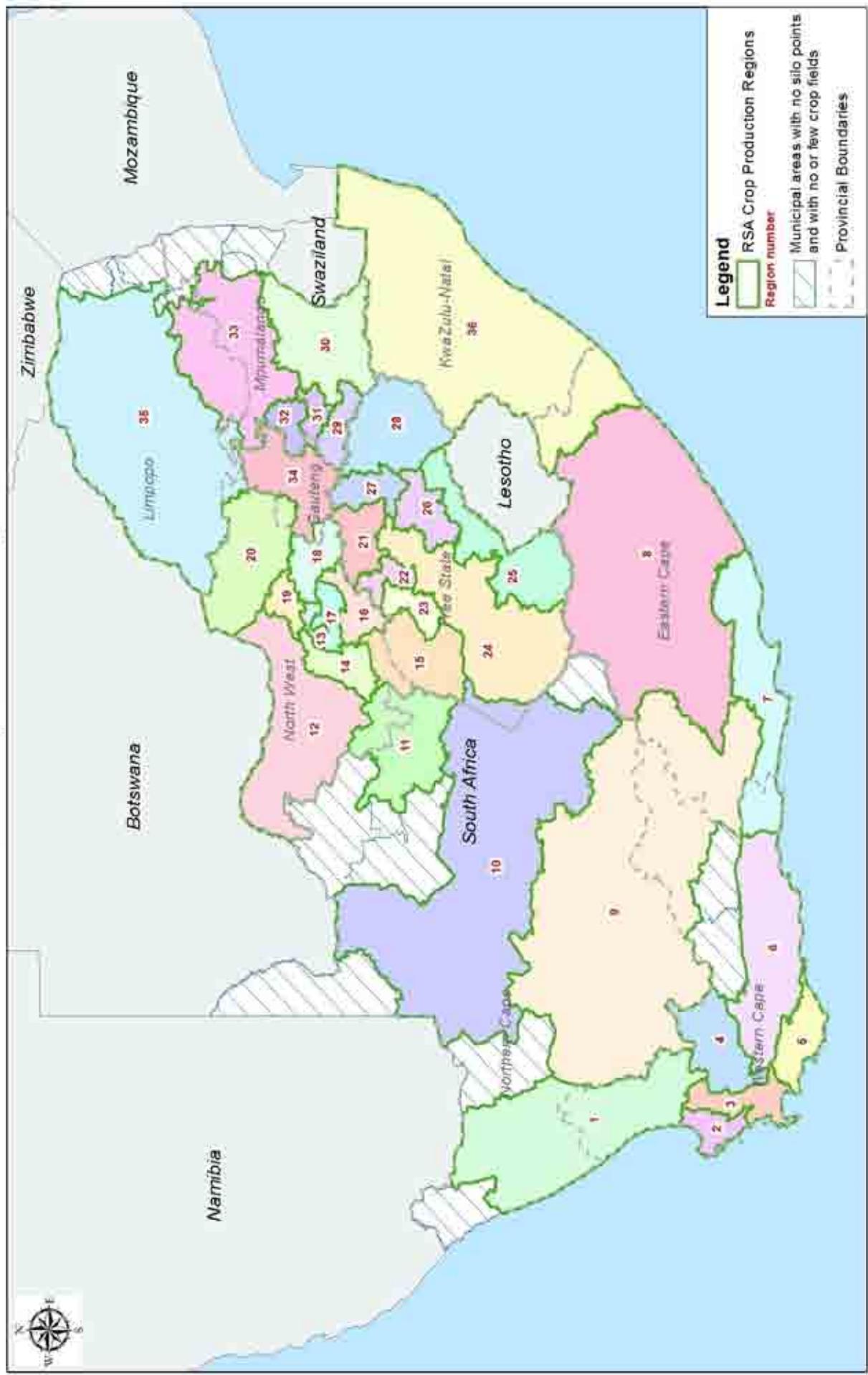
The regions are distributed as follows:

- Region 1: Namakwaland
- Regions 2 and 3: Swartland
- Regions 4 to 6: Rûens
- Regions 7 and 8: Eastern Cape
- Region 9: Karoo
- Region 10: Griqualand West
- Region 11: Vaalharts
- Regions 12 to 20: North West
- Regions 21 to 28: Free State
- Regions 29 to 33: Mpumalanga
- Region 34: Gauteng
- Region 35: Limpopo
- Region 36: KwaZulu-Natal

Please see the Crop Production Regions map on the next page.

The production regions from which soybeans have been received for the crop quality survey of the 2013/2014 production season, are named and described on pages 16 to 24 (in the header of the quality data per region tables.) The silo/intake stands receiving soybeans as well as the type of storage structure are provided.

Figure 2: RSA Crop Production Regions



Soybean Crop Quality 2013/2014 – Summary of results

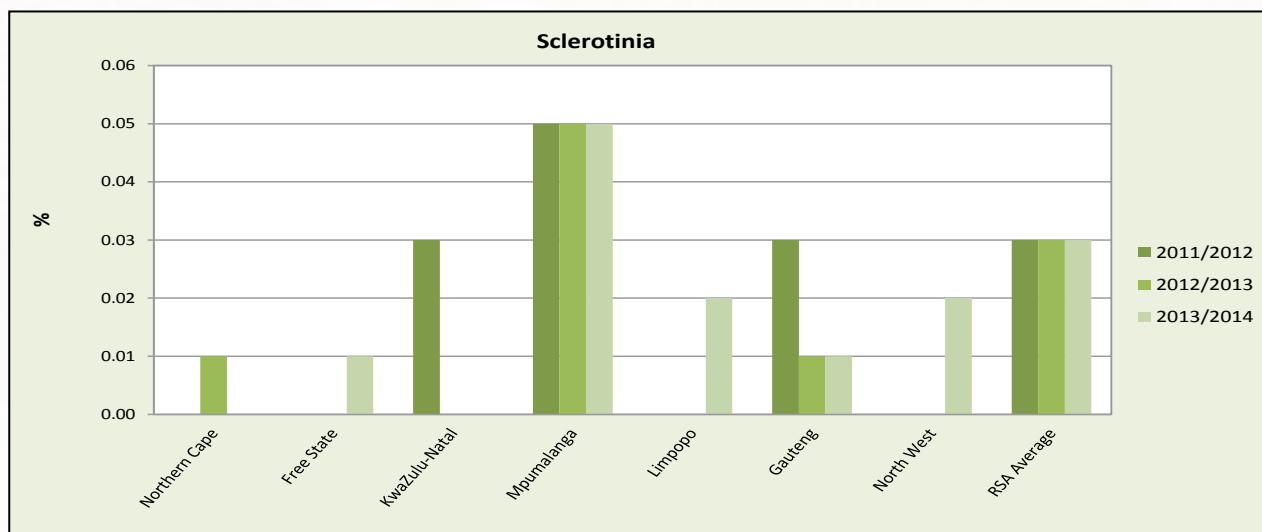
Eighty-eight percent (132) of the 150 samples analysed for the purpose of this survey were graded as Grade SB1 and 18 of the samples were downgraded to COSB (Class Other Soya Beans). During the previous two seasons, 5% (2012/2013) and 15% (2011/2012) of the samples were downgraded to COSB.

- Nine of the 18 samples were downgraded as a result of the percentage other grain present in the samples exceeding the maximum permissible deviation of 0.5%
- Four of the samples were downgraded as a result of the presence of poisonous seeds (*Crotalaria* sp., *Datura* sp., *Ricinis communis*) exceeding the maximum permissible number, namely 1 per 1000 g.
- The remaining five 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, other grain, sunflower seed, defective soybeans on the 4.75 mm round hole screen, poisonous seeds and undesirable odour.

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 \pm 5 kg. Pods were found in 33 of the 150 samples graded, all of these pods were dry on receipt at the SAGL. The percentage of these pods in the samples ranged from 0.02% to 1.67% based on a working sample size of at least 200 g. Fourteen samples contained pods, not identifiable as wet pods according to the definition, in percentages exceeding the wet pod maximum permissible deviation of 0.2%.

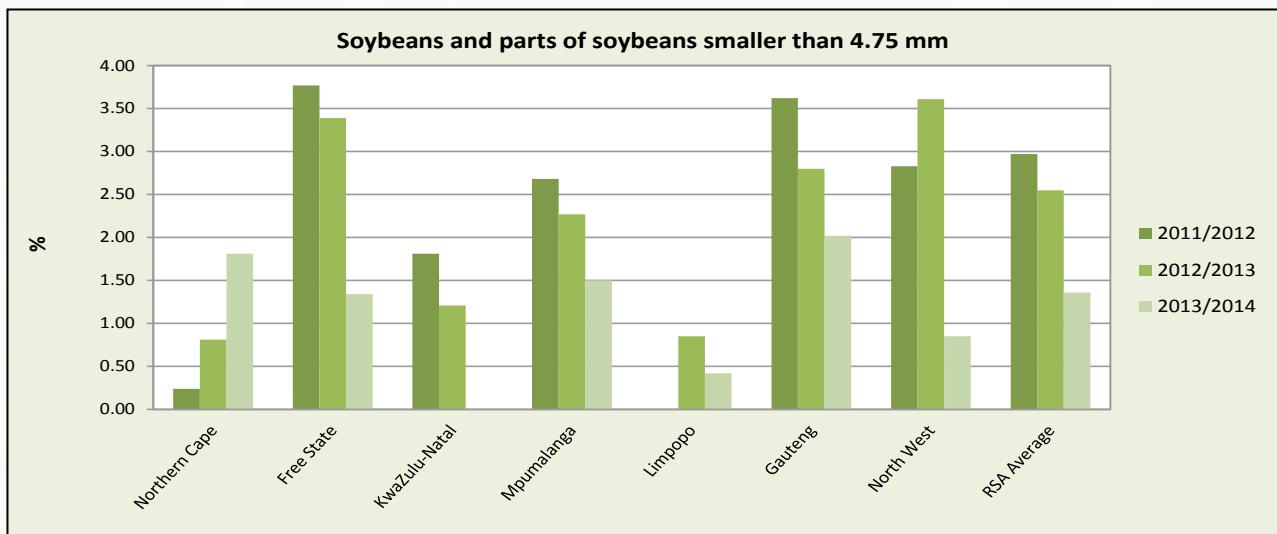
Based on the samples received for this crop survey, Sclerotinia did not pose any problems. The highest percentage of Sclerotinia observed (0.40%) was on a sample from Mpumalanga, which is well below the maximum permissible level of 4%. Over the last three seasons, Mpumalanga consistently had the highest weighted average percentage Sclerotinia compared to the other provinces. The national weighted average percentage over the last three seasons was 0.03%.

Graph 16: Average percentage Sclerotinia soybeans per province over the last three seasons



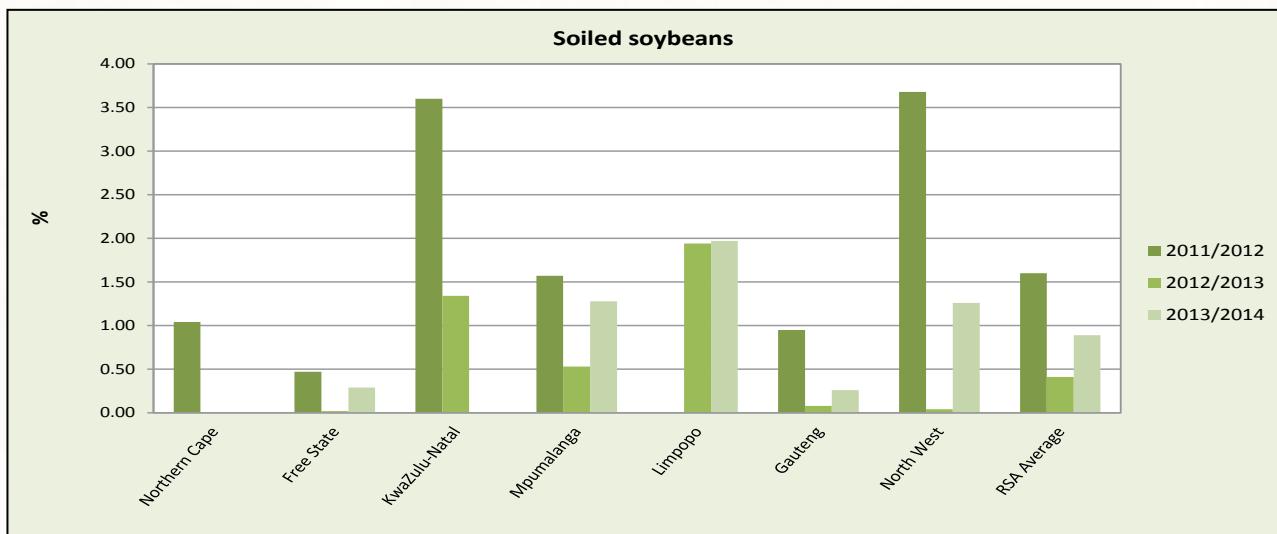
Gauteng province (seven samples) reported the highest weighted average percentage soybeans and parts of soybeans which pass through the 4.75 mm round hole screen namely 2.02% and Limpopo (three samples) the lowest at 0.42%. Mpumalanga province with the highest number of samples (67) reported an average of 1.50%. The Free State province averaged 1.34% (51 samples).

Graph 17: Average percentage soybeans and parts of soybeans which pass through the 4.75 mm round hole screen per province over the last three seasons



The national weighted average percentage over the last three seasons declined from 2.97% in the 2011/2012 season to 1.36% this season. No samples were received from KwaZulu-Natal for the 2013/2014 season. The weighted average percentage soiled soybeans of 0.89% is higher than the 0.41% of the previous season but well below the weighted average (1.60%) of the 2011/2012 season. This season only six samples in total had soiled soybean percentages exceeding 5%, none exceeded the maximum permissible deviation of 10%.

Graph 18: Average percentage soiled soybeans per province over the last three seasons



Hectolitre mass does not form part of the grading regulations for soybeans in South Africa. An approximation of the hectolitre mass of South African soybeans is provided in Table 2 for information purposes. The g/1 L filling weight of the 150 soybeans samples were determined by means of the Kern 222 apparatus. The hectolitre mass 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).

Table 2: Approximation of Hectolitre mass per province for the 2013/2014 season

Province	Hectolitre mass, kg/hl		
	2013/2014 Season		
	Weighted average	Range	No. of samples
Free State (Regions 21 - 28)	71.1	66.6 - 73.6	51
*Mpumalanga (Regions 29 - 33)	70.8	68.3 - 74.7	66
Limpopo (Region 35)	69.7	68.5 - 70.5	3
Gauteng (Region 34)	71.9	71.5 - 73.1	7
North West (Region 12 - 20)	71.2	69.4 - 73.1	20
RSA	71.1	66.6 - 74.7	149

* One sample with an outlier value was not taken into account for calculation purposes.

The protein, fat and ash components are reported as % (g/100g) on a dry/moisture free basis (db). The average crude protein content of the 2013/2014 season was 39.84%, 0.79% lower than the 40.63% of the previous season. Gauteng showed the highest weighted average crude protein content of 41.30% and the Free State the lowest of 39.22%, followed by Mpumalanga with 39.88%. The average crude fat percentage increased from 18.8% in 2012/2013, to 19.7% this season. The samples from North West had the highest weighted average crude fat content of 20.7%. The lowest average fat contents were observed in the Free State and Mpumalanga, both with 19.5%.

The national weighted average ash content did not vary significantly over the last three seasons, 4.66% this season compared to the 4.65% and 4.62% for the previous two seasons. Samples from the Northern Cape and Limpopo tend to show higher ash contents while those from Mpumalanga tend to be lower.

The weighted average percentage crude fibre varied from 5.4% in the Northern Cape to 6.3% in the Free State and Mpumalanga. The RSA weighted average was 6.1%.

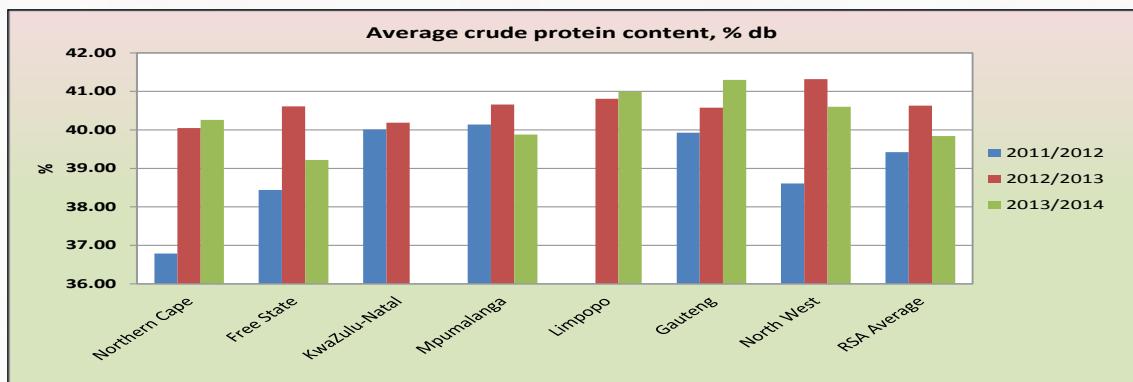
Graphs 19 to 22 on page 13 provide comparisons between provinces for the above mentioned components.

A summary of the RSA Soybean Crop Quality averages of the 2013/2014 season compared to those of the 2012/2013 season, is provided in Table 3 on page 14.

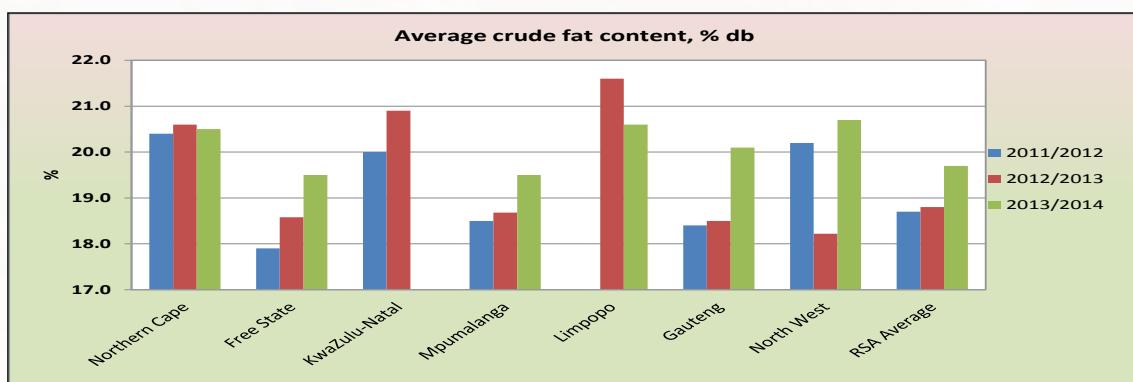
All fifteen samples tested for genetic modification (GM), tested positive for the presence of the CP4 EPSPS trait (Roundup Ready®). Please refer to the results on page 15 of this report.

Please see pages 16 to 24 for the average soybean quality per region.

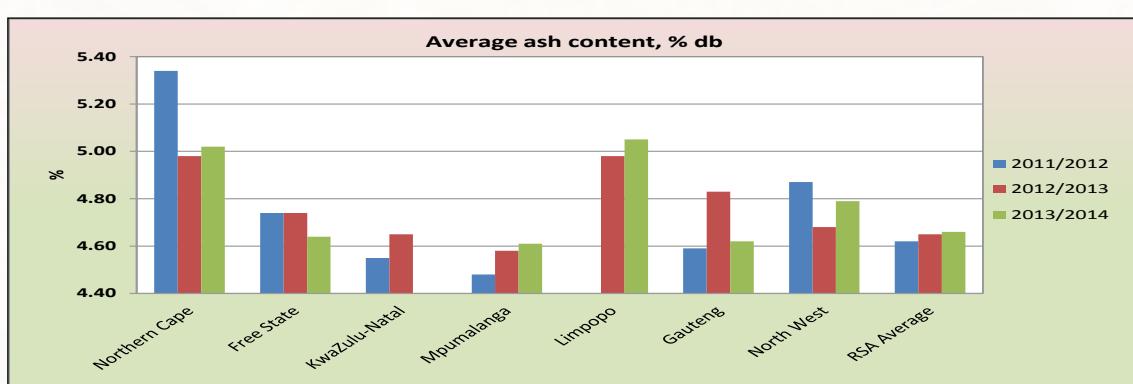
Graph 19: Average crude protein content per province over the last three seasons



Graph 20: Average crude fat content per province over the last three seasons



Graph 21: Average ash content per province over the last three seasons



Graph 22: Average crude fibre content per province over the last season

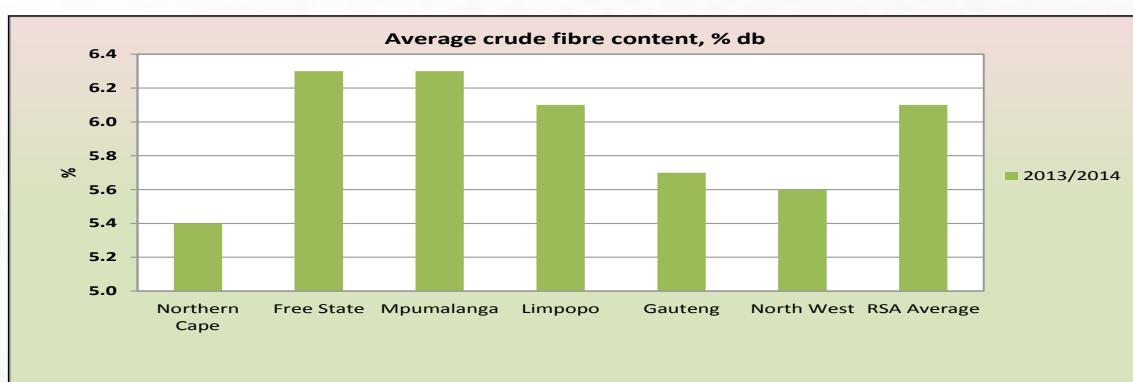


Table 3: South African Soybean Crop Quality Averages 2013/2014 vs 2012/2013

Class and Grade Soya	2013/2014			2012/2013		
	SB1	COSB	Average	SB1	COSB	Average
<u>Grading:</u>						
(A) Wet pods, %	0.00	0.00	0.00	0.00	0.00	0.00
(B) Foreign matter, including stones, other grains, sunflower seeds and stones: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.48	1.72	0.63	0.45	1.20	0.49
(C) Other grain, %	0.06	0.84	0.15	0.06	0.91	0.11
(D) Sunflower seed, %	0.01	0.05	0.01	0.00	0.00	0.00
(E) Stones, %	0.03	0.00	0.03	0.01	0.02	0.02
(F) Sclerotinia, %	0.02	0.04	0.03	0.03	0.00	0.03
(G) Soybeans and parts of Soybeans which pass through the 4.75 mm round hole screen, %	1.25	2.17	1.36	2.53	2.97	2.55
(H) Defective Soybeans on the 4.75 mm round hole screen, %	0.98	1.80	1.07	1.49	12.29	2.07
(I) Soiled Soybeans, %	0.92	0.64	0.89	0.43	0.05	0.41
(J) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.51	1.76	0.66	0.48	1.20	0.52
Poisonous seeds (<i>Crotalaria sp.</i> , <i>Datura sp.</i> , <i>Ricinus communis</i>)	0	3	0	0	0	0
Poisonous seeds (<i>Argemone mexicana L.</i> , <i>Convolvulus sp.</i> , <i>Ipomoea purpurea Roth.</i> , <i>Lolium temulentum</i> , <i>Xanthium sp.</i>)	0	0	0	0	0	0
Undesirable odour	No	No	No	No	No	No
Live insects	No	No	No	No	No	No
Number of samples	132	18	150	142	8	150
<u>Chemical analysis:</u>						
Moisture, % (17hr, 103 °C)	7.1	7.2	7.1	7.2	7.2	7.2
Protein, % (db)	39.80	40.15	39.84	40.58	41.49	40.63
Fat, % (db)	19.7	20.0	19.7	18.8	18.5	18.8
Ash, % (db)	4.66	4.70	4.66	4.65	4.56	4.65
Crude Fibre, % (db)	6.2	5.8	6.1	-	-	-
Number of samples	132	18	150	142	8	150

Genetic Modification (GM)

The majority of soybeans produced/grown in South Africa is genetically modified. These soybeans have tolerance to herbicides (chemical products used to destroy weeds, but not the crop plants).

The SAGL screened 15 of the crop samples to test for the presence of 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 soybeans to quantitatively determine the presence of genetically modified soybeans.

All of the samples tested positive for the presence of CP4 EPSPS.

GMO Protein/Trait	Event	Trade name/Brand
CP4 EPSPS	GTS40-3-2 MON89789	Roundup Ready®

The detection range for the CP4 EPSPS trait is 0.125% to 3%. The limit of quantification (LOQ) is therefore 0.125%.

The Coefficient of Variation for this analysis is 20%.

Table 4: GM results for the 2013/2014 season

Region	Class and grade	CP4 EPSPS, %
11	SB1	1.7
18	SB1	1.7
20	SB1	1.4
21	SB1	1.9
24	SB1	1.7
25	SB1	1.7
26	SB1	1.8
27	SB1	1.6
28	SB1	1.6
29	SB1	1.7
30	SB1	1.9
31	SB1	1.9
32	COSB	1.8
34	SB1	1.9
35	SB1	2.0
<i>Average</i>		1.8
<i>Number of samples</i>		15

SOUTH AFRICAN REGIONAL SOYBEAN QUALITY

PRODUCTION REGION	(10) Griqualand-West Region	(11) Vaalharts Region	(12) North-Western Region
Silo/Intake stands (Type of storage)	Douglas (Bags/Bins) Havenga Brug (Bins) Luckhoff (Bins) Marydale (Bins) Modderrivier (Bags/Bins/Bulk) Morgenzon (Bins) Oranjenvier (Bins/Bunkers) Prieska (Bins/Bunkers/Dams) Rietrivier (Bins) Trans Oranje (Bags/Bins/Bunkers)	Barkly-Wes (Bins/Bulk) Hartswater (Bins) Jan Kempdorp (Bags/Bins/Bunkers) Magogong (Bins)	Blaauwbank (Bins) Buhrmannsdrif (Bins) Kameel (Bins) Mareetsane (Bins) Vryburg (Bins)
<u>Grading:</u>	ave min max stdev	ave min max stdev	ave min max stdev
(a) Wet pods, %	0.00 - - -	0.00 - - -	0.00 - - -
(b) Foreign matter, including stones, other grains, sunflower seeds and stones: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.45 - - -	0.34 - - -	0.83 - - -
(c) Other grain, %	0.00 - - -	0.00 - - -	0.00 - - -
(d) Sunflower seed, %	0.00 - - -	0.00 - - -	0.00 - - -
(e) Stones, %	0.00 - - -	0.00 - - -	0.00 - - -
(f) Sclerotinia, %	0.00 - - -	0.00 - - -	0.02 - - -
(g) Soybeans and parts of Soybeans which pass through the 4.75 mm round hole screen, %	2.20 - - -	1.41 - - -	0.77 - - -
(h) Defective Soybeans on the 4.75 mm round hole screen, %	0.78 - - -	2.62 - - -	1.55 - - -
(i) Soiled Soybeans, %	0.00 - - -	0.00 - - -	0.00 - - -
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.45 - - -	0.34 - - -	0.85 - - -
Poisonous seeds (<i>Crotalaria sp.</i> , <i>Datura sp.</i> , <i>Ricinus communis</i>)	0 - - -	0 - - -	8 - - -
Poisonous seeds (<i>Argemone mexicana L.</i> , <i>Convolvulus sp.</i> , <i>Ipomoea purpurea Roth.</i> , <i>Lolium temulentum</i> , <i>Xanthium sp.</i>)	0 - - -	0 - - -	0 - - -
Number of samples	1	1	1
<u>Chemical analysis:</u>	ave min max stdev	ave min max stdev	ave min max stdev
Moisture, % (17hr, 103 °C)	7.6 - - -	6.6 - - -	7.6 - - -
Crude protein, % (db)	40.22 - - -	40.30 - - -	37.82 - - -
Crude fat, % (db)	21.6 - - -	19.3 - - -	21.7 - - -
Ash, % (db)	5.14 - - -	4.90 - - -	4.95 - - -
Crude Fibre, % (db)	5.0 - - -	5.8 - - -	5.8 - - -
Number of samples	1	1	1

SOUTH AFRICAN REGIONAL SOYBEAN QUALITY

PRODUCTION REGION	(13) North-West Central Region (Sannieshof)	(14) North-West Southern Region	(15) North-West South-Eastern Region
Silo/Intake stands (Type of storage)	Biesiesvlei (Bins) Bossies (Bins) Gerdau (Bins) Oppaslaagte (Bins) Sannieshof (Bins)	Amalia (Bins) Barberspan (Bins) Delareyville (Bins) Excelsior (Bins) Geysdorp (Bins) Hallatshoep (Bins) Migdal (Bins) Nooitgedacht (Bins) Taaibospan (Bins) Schweizer-Reneke (Bins)	Bloemhof (Bins) Christiana (Bins) Hertzogville (Bins) Hoopstand (Bins) Kingswood (Bins) Kruising (Bunkers) Poppieland (Bunkers)
<u>Grading:</u>	ave min max stdev	ave min max stdev	ave min max stdev
(a) Wet pods, %	0.00 - - -	0.00 - - -	0.00 0.00 0.00 0.00
(b) Foreign matter, including stones, other grains, sunflower seeds and stones: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.43 - - -	0.18 - - -	0.29 0.14 0.44 0.21
(c) Other grain, %	0.05 - - -	0.00 - - -	0.04 0.00 0.08 0.06
(d) Sunflower seed, %	0.00 - - -	0.00 - - -	0.01 0.00 0.01 0.01
(e) Stones, %	0.00 - - -	0.00 - - -	0.00 0.00 0.00 0.00
(f) Sclerotinia, %	0.02 - - -	0.00 - - -	0.00 0.00 0.00 0.00
(g) Soybeans and parts of Soybeans which pass through the 4.75 mm round hole screen, %	0.64 - - -	2.46 - - -	0.44 0.23 0.64 0.29
(h) Defective Soybeans on the 4.75 mm round hole screen, %	1.90 - - -	1.26 - - -	2.32 2.26 2.38 0.08
(i) Soiled Soybeans, %	0.00 - - -	0.00 - - -	0.00 0.00 0.00 0.00
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.45 - - -	0.18 - - -	0.29 0.14 0.44 0.21
Poisonous seeds (<i>Crotalaria sp.</i> , <i>Datura sp.</i> , <i>Ricinus communis</i>)	0 - - -	0 - - -	0 0 0 0
Poisonous seeds (<i>Argemone mexicana L.</i> , <i>Convolvulus sp.</i> , <i>Ipomoea purpurea Roth.</i> , <i>Lolium temulentum</i> , <i>Xanthium sp.</i>)	0 - - -	0 - - -	0 0 0 0
Number of samples	1	1	2
<u>Chemical analysis:</u>	ave min max stdev	ave min max stdev	ave min max stdev
Moisture, % (17hr, 103 °C)	7.6 - - -	7.0 - - -	7.3 6.6 8.0 0.99
Crude protein, % (db)	40.13 - - -	41.43 - - -	39.40 39.19 39.60 0.29
Crude fat, % (db)	20.5 - - -	20.3 - - -	22.2 22.2 22.2 0.00
Ash, % (db)	4.58 - - -	4.55 - - -	4.78 4.66 4.89 0.16
Crude Fibre, % (db)	5.8 - - -	5.4 - - -	5.3 5.1 5.4 0.21
Number of samples	1	1	2

SOUTH AFRICAN REGIONAL SOYBEAN QUALITY

PRODUCTION REGION	(17) North-West Central Northern Region (Ottosdal)	(18) North-West Central Region (Venterdorp)	(19) North-West Central Region (Lichtenburg)
Silo/Intake stands (Type of storage)	Boschpoort (Bags/Bins/Bulk) Hartbeesfontein (Bins) Kleinhardt (Bins) Melliodora (Bins) Ottosdal (Bins) Rostrataville (Bins) Vermaas (Bins) Werda (Bins)	Bodenstein (Bins) Buckingham (Bins) Coligny (Bins) Enselepruit (Bins) Makokskraal (Bins) Potchefstroom (Bins) Venterdorp (Bins)	Grootpan (Bins) Halfpad (Bins) Hibernia (Bins) Lichtenburg (Bunkers) Lichtenburg Silo 3 (Bins) Lichtenburg Silo 5 (Bins) Lottie Halte (Bins) Lusthoff (Bins)
Grading:	ave min max stdev	ave min max stdev	ave min max stdev
(a) Wet pods, %	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 - - -
(b) Foreign matter, including stones, other grains, sunflower seeds and stones: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.82 0.57 1.10 0.27	0.98 0.21 1.97 0.90	0.30 - - -
(c) Other grain, %	0.09 0.00 0.28 0.16	0.54 0.14 0.82 0.35	0.04 - - -
(d) Sunflower seed, %	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.04 - - -
(e) Stones, %	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 - - -
(f) Sclerotinia, %	0.03 0.00 0.08 0.05	0.00 0.00 0.00 0.00	0.00 - - -
(g) Soybeans and parts of Soybeans which pass through the 4.75 mm round hole screen, %	1.42 0.75 2.63 1.05	0.78 0.05 1.60 0.78	2.15 - - -
(h) Defective Soybeans on the 4.75 mm round hole screen, %	1.50 0.65 2.63 1.02	2.02 1.12 3.27 1.12	0.90 - - -
(i) Soiled Soybeans, %	0.10 0.00 0.29 0.17	1.68 0.00 2.54 1.45	0.00 - - -
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.85 0.57 1.10 0.27	0.98 0.21 1.97 0.90	0.30 - - -
Poisonous seeds (<i>Crotalaria sp.</i> , <i>Datura sp.</i> , <i>Ricinus communis</i>)	3 0 7 3.79	0 0 0 0	2 - - -
Poisonous seeds (<i>Argemone mexicana L.</i> , <i>Convolvulus sp.</i> , <i>Ipomoea purpurea Roth.</i> , <i>Lolium temulentum</i> , <i>Xanthium sp.</i>)	0 0 1 0.58	0 0 0 0	0 - - -
Number of samples	3		1
Chemical analysis:	ave min max stdev	ave min max stdev	ave min max stdev
Moisture, % (17hr, 103 °C)	7.6 7.5 7.7 0.10	7.3 6.5 7.7 0.67	7.2 - - -
Crude protein, % (db)	40.12 38.92 40.77 1.04	41.00 39.31 42.25 1.52	39.15 - - -
Crude fat, % (db)	20.1 20.0 20.2 0.12	19.9 18.6 21.1 1.25	21.6 - - -
Ash, % (db)	4.66 4.60 4.74 0.07	4.75 4.39 4.99 0.32	4.81 - - -
Crude Fibre, % (db)	6.0 5.8 6.1 0.15	5.8 5.5 6.1 0.31	5.5 - - -
Number of samples	3		1

SOUTH AFRICAN REGIONAL SOYBEAN QUALITY

PRODUCTION REGION	(20) North-West Eastern Region	(21) Free State North-Western Region (Viljoenskroon)	(22) Free State North-Western Region (Bothaville)
Silo/Intake stands (Type of storage)	Battery (Bins) Brits (Bins) Boons (Bins) Derby (Bins) Koster (Bins) Swartruggens (Bins) Syferbuilt (Bins)	Attie (Bins) Groenebloem (Bins) Heuningspruit (Bins) Koppies (Bins) Rooival (Bins) Vierfontein (Bins) Viljoenskroon (Bins) Vrededorf (Bins) Weiveld (Bins)	Allanridge (Bins) Bothaville (Bins) Mirage (Bins) Odendaalsrus (Bins) Schoonspruit (Bins) Schuttesdraai (Bins) Misgunst (Bunkers)
<u>Grading:</u>	ave min max stdev	ave min max stdev	ave min max stdev
(a) Wet pods, %	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 - - -
(b) Foreign matter, including stones, other grains, sunflower seeds and stones: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.42 0.14 0.88 0.30	0.47 0.29 0.78 0.16	0.42 - - -
(c) Other grain, %	0.02 0.00 0.06 0.03	0.07 0.00 0.21 0.10	0.12 - - -
(d) Sunflower seed, %	0.00 0.00 0.00 0.00	0.00 0.00 0.02 0.01	0.00 - - -
(e) Stones, %	0.06 0.00 0.35 0.12	0.03 0.00 0.13 0.05	0.00 - - -
(f) Sclerotinia, %	0.04 0.00 0.26 0.09	0.00 0.00 0.00 0.00	0.00 - - -
(g) Soybeans and parts of Soybeans which pass through the 4.75 mm round hole screen, %	0.44 0.00 1.18 0.51	1.33 0.16 2.78 1.02	1.33 - - -
(h) Defective Soybeans on the 4.75 mm round hole screen, %	2.03 0.89 3.21 0.77	0.97 0.50 1.96 0.61	1.14 - - -
(i) Soiled Soybeans, %	2.49 0.22 7.10 2.42	0.24 0.00 0.89 0.34	0.44 - - -
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.45 0.14 1.14 0.37	0.47 0.29 0.78 0.16	0.42 - - -
Poisonous seeds (<i>Crotalaria sp.</i> , <i>Datura sp.</i> , <i>Ricinis communis</i>)	0 0 1 0.35	0 0 0 0	0 - - -
Poisonous seeds (<i>Argemone mexicana L.</i> , <i>Convolvulus sp.</i> , <i>Ipomoea purpurea Roth.</i> , <i>Lolium temulentum</i> , <i>Xanthium sp.</i>)	0 0 0 0	0 0 0 0	0 - - -
Number of samples	8	7	1
<u>Chemical analysis:</u>	ave min max stdev	ave min max stdev	ave min max stdev
Moisture, % (17hr, 103 °C)	7.8 7.6 8.1 0.19	7.2 6.3 7.7 0.56	7.7 - - -
Crude protein, % (db)	41.42 40.20 42.37 0.97	39.06 37.55 41.32 1.36	38.54 - - -
Crude fat, % (db)	20.6 18.8 21.5 1.07	20.4 18.5 21.3 0.95	21.5 - - -
Ash, % (db)	4.90 4.56 5.11 0.24	4.74 4.55 5.11 0.19	4.89 - - -
Crude Fibre, % (db)	5.4 5.0 5.7 0.26	5.8 5.4 6.4 0.45	5.3 - - -
Number of samples	8	7	1

SOUTH AFRICAN REGIONAL SOYBEAN QUALITY

PRODUCTION REGION	(23) Free State North-Western Region (Bultfontein)	(24) Free State Central Region	(25) Free State South-Western Region
Silo/Intake stands (Type of storage)	Bultfontein (Bins) Losdoorns (Bins) Protespan (Bins) Tierfontein (Bins) Wesselsbron (Bins) Willemrus (Bins)	Bloemfontein (Bins) Brandfort (Bins) De Brug (Bins) Geneva (Bins) Hennenman (Bins) Kroonstad (Bins) Petrusburg (Bins) Theunissen (Bins) Van Tonder (Bins) Welgeleë (Bins) Winburg (Bins)	Bethlehem (Bins) Cocolan (Bins) Ficksburg (Bins) Fouriesburg (Bins) Marseilles (Bins) Modderpoort (Bins) Slabberts (Bins) Tweespruit (Bins) Westminster (Bins)
<u>Grading:</u>	ave min max stdev	ave min max stdev	ave min max stdev
(a) Wet pods, %	0.00 - - -	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00
(b) Foreign matter, including stones, other grains, sunflower seeds and stones: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	2.92 - - -	0.77 0.61 1.03 0.20	0.94 0.36 3.09 0.83
(c) Other grain, %	0.61 - - -	0.17 0.09 0.30 0.09	0.44 0.00 2.70 0.85
(d) Sunflower seed, %	0.00 - - -	0.11 0.05 0.22 0.08	0.06 0.00 0.40 0.12
(e) Stones, %	0.00 - - -	0.00 0.00 0.00 0.00	0.02 0.00 0.12 0.04
(f) Sclerotinia, %	0.00 - - -	0.00 0.00 0.00 0.00	0.01 0.00 0.05 0.02
(g) Soybeans and parts of Soybeans which pass through the 4.75 mm round hole screen, %	3.32 - - -	1.51 0.43 2.42 0.84	2.49 0.75 7.84 2.08
(h) Defective Soybeans on the 4.75 mm round hole screen, %	2.69 - - -	0.73 0.24 1.33 0.47	0.30 0.16 0.54 0.12
(i) Soiled Soybeans, %	0.17 - - -	0.00 0.00 0.00 0.00	0.11 0.00 1.12 0.35
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	2.92 - - -	0.77 0.61 1.03 0.20	0.95 0.36 3.09 0.83
Poisonous seeds (<i>Crotalaria sp.</i> , <i>Datura sp.</i> , <i>Ricinus communis</i>)	0 - - -	1 0 2 1.00	0 0 0 0
Poisonous seeds (<i>Argemone mexicana L.</i> , <i>Convolvulus sp.</i> , <i>Ipomoea purpurea Roth.</i> , <i>Lolium temulentum</i> , <i>Xanthium sp.</i>)	0 - - -	0 0 0 0	0 0 0 0
Number of samples	1	4	10
<u>Chemical analysis:</u>	ave min max stdev	ave min max stdev	ave min max stdev
Moisture, % (17hr, 103 °C)	7.4 - - -	7.2 6.5 7.6 0.48	7.2 6.3 9.2 1.03
Crude protein, % (db)	40.47 - - -	38.72 36.45 40.57 1.72	38.59 36.40 41.22 1.65
Crude fat, % (db)	20.4 - - -	20.7 20.2 21.2 0.42	19.0 17.7 21.4 1.00
Ash, % (db)	4.58 - - -	4.62 4.52 4.73 0.09	4.64 4.51 4.76 0.08
Crude Fibre, % (db)	5.5 - - -	5.3 5.1 5.5 0.21	6.3 4.7 7.9 0.81
Number of samples	1	4	10

SOUTH AFRICAN REGIONAL SOYBEAN QUALITY

PRODUCTION REGION	(26) Free State South-Eastern Region	(27) Free State Northern Region	(28) Free State Eastern Region
Silo/Intake stands (Type of storage)	Arlington (Bins) Kaallaagte (Bins) Libertas (Bins) Marquard (Bins) Meets (Bins) Monte Video (Bins) Senekal (Bins) Steynsrus (Bins)	Gottenburg (Bins) Heilbron (Bins) Hoogte (Bins) Mooigeleë (Bins) Petrus Steyn (Bins) Wolwehoek (Bins)	Afrikaskop (Bins/Bunkers) Ascent (Bins) Vrede (Bins) Cornelia (Bins) Warden (Bins) Daniëlsrus (Bins) Windfield (Bins) Eeram (Bins) Frankfort (Bins) Harrismith (Bins) Jim Fouché (Bins) Kransfontein (Bins/Bunkers) Memel (Bins) Reitz (Bins) Tweeling (Bins) Villiers (Bins/Bulk)
<u>Grading:</u>	ave min max stdev	ave min max stdev	ave min max stdev
(a) Wet pods, %	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00
(b) Foreign matter, including stones, other grains, sunflower seeds and stones: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.70 0.24 1.58 0.45	0.78 0.33 1.49 0.46	0.30 0.07 0.71 0.19
(c) Other grain, %	0.17 0.00 0.64 0.23	0.10 0.00 0.34 0.14	0.02 0.00 0.15 0.05
(d) Sunflower seed, %	0.05 0.00 0.10 0.04	0.02 0.00 0.11 0.05	0.00 0.00 0.02 0.01
(e) Stones, %	0.04 0.00 0.19 0.07	0.04 0.00 0.15 0.07	0.02 0.00 0.14 0.04
(f) Sclerotinia, %	0.01 0.00 0.06 0.03	0.00 0.00 0.00 0.00	0.01 0.00 0.14 0.04
(g) Soybeans and parts of Soybeans which pass through the 4.75 mm round hole screen, %	1.40 0.18 7.05 2.32	0.59 0.26 1.55 0.54	0.61 0.07 2.86 0.75
(h) Defective Soybeans on the 4.75 mm round hole screen, %	0.68 0.22 1.34 0.43	0.70 0.47 0.87 0.16	0.68 0.31 1.32 0.33
(i) Soiled Soybeans, %	0.09 0.00 0.35 0.16	0.71 0.00 1.34 0.52	0.46 0.00 2.04 0.64
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.71 0.24 1.58 0.46	0.78 0.33 1.49 0.46	0.31 0.07 0.71 0.19
Poisonous seeds (<i>Crotalaria sp.</i> , <i>Datura sp.</i> , <i>Ricinus communis</i>)	0 0 0 0	0 0 2 0.89	0 0 0 0
Poisonous seeds (<i>Argemone mexicana L.</i> , <i>Convolvulus sp.</i> , <i>Ipomoea purpurea Roth.</i> , <i>Lolium temulentum</i> , <i>Xanthium sp.</i>)	0 0 0 0	0 0 0 0	0 0 0 0
Number of samples	8	5	15
<u>Chemical analysis:</u>	ave min max stdev	ave min max stdev	ave min max stdev
Moisture, % (17hr, 103 °C)	6.8 6.4 7.7 0.53	7.5 6.9 7.9 0.36	7.0 6.6 8.1 0.47
Crude protein, % (db)	37.59 32.84 40.50 2.50	40.42 39.96 40.77 0.38	40.28 37.80 43.79 1.57
Crude fat, % (db)	19.3 16.7 20.6 1.24	20.1 17.6 21.6 1.50	18.8 17.4 20.3 1.12
Ash, % (db)	4.57 4.45 4.63 0.07	4.69 4.48 5.07 0.23	4.61 4.46 4.76 0.11
Crude Fibre, % (db)	6.7 5.6 8.3 0.84	5.6 4.9 6.2 0.47	6.8 5.5 7.5 0.58
Number of samples	8	5	15

SOUTH AFRICAN REGIONAL SOYBEAN QUALITY

PRODUCTION REGION	(29) Mpumalanga Southern Region	(30) Mpumalanga Eastern Region	(31) Mpumalanga Central Region									
	Silo/Intake stands (Type of storage)	Balfour (Bins) Grootvlei (Bins) Greylingsstad (Bins) Harvard (Bins) Holmdene (Bins) Leeuspruit (Bins) Platrand (Bins) Standerton (Bins) Val (Bins)	Amersfoort (Bins) Carolina (Bins) Davel (Bins) Eerstelingsfontein (Bunkers) Ermelo (Bins) Estancia (Bins) Lothair (Bins) Maizefield (Bins) Mkondo (Bins) Morgenzon (Bins) Overvaal (Bins) Sandspruit (Bunkers) Panbuilt (Bins)	Bakenlaagte (Bunkers) Brakfontein (Bunkers) Bethal (Bins) Devon (Bins) Kinross (Bins/Bunkers) Klipfontein (Bunkers) Leslie (Bins) Palmietfontein (Bunkers) Trichardt (Bins) Vaalkrantz (Bunkers)								
<u>Grading:</u>	ave min max stdev	ave min max stdev	ave min max stdev									
(a) Wet pods, %	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0..00									
(b) Foreign matter, including stones, other grains, sunflower seeds and stones: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.34 0.08 0.56 0.14	0.46 0.05 2.25 0.46	0.48 0.19 1.04 0.28									
(c) Other grain, %	0.08 0.00 0.24 0.09	0.02 0.00 0.15 0.04	0.09 0.00 0.44 0.13									
(d) Sunflower seed, %	0.00 0.00 0.03 0.01	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00									
(e) Stones, %	0.03 0.00 0.15 0.06	0.04 0.00 0.21 0.07	0.01 0.00 0.09 0.03									
(f) Sclerotinia, %	0.02 0.00 0.06 0.02	0.03 0.00 0.30 0.07	0.02 0.00 0.08 0.03									
(g) Soybeans and parts of Soybeans which pass through the 4.75 mm round hole screen, %	0.70 0.13 1.64 0.51	0.96 0.23 2.67 0.61	1.22 0.15 2.21 0.62									
(h) Defective Soybeans on the 4.75 mm round hole screen, %	0.80 0.22 2.00 0.56	0.99 0.20 3.17 0.69	1.06 0.28 2.85 0.72									
(i) Soiled Soybeans, %	0.35 0.00 0.94 0.36	1.61 0.00 4.89 1.71	0.49 0.00 6.12 1.57									
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.35 0.08 0.61 0.16	0.49 0.05 2.25 0.46	0.50 0.19 1.04 0.29									
Poisonous seeds (<i>Crotalaria sp.</i> , <i>Datura sp.</i> , <i>Ricinis communis</i>)	0 0 0 0	0 0 0 0	0 0 0 0									
Poisonous seeds (<i>Argemone mexicana L.</i> , <i>Convolvulus sp.</i> , <i>Ipomoea purpurea Roth.</i> , <i>Lolium temulentum</i> , <i>Xanthium sp.</i>)	0 0 0 0	0 0 0 0	0 0 0 0									
Number of samples	10				22				15			
<u>Chemical analysis:</u>	ave min max stdev	ave min max stdev	ave min max stdev	ave min max stdev								
Moisture, % (17hr, 103 °C)	7.2 6.5 7.9 0.58	6.7 6.4 7.0 0.17	7.0 6.5 7.9 0.46									
Crude protein, % (db)	38.68 36.29 40.73 1.24	39.09 35.83 41.64 1.45	40.33 38.96 42.89 0.89									
Crude fat, % (db)	20.1 19.2 22.3 0.87	19.6 17.5 21.6 1.06	19.5 17.4 20.6 0.95									
Ash, % (db)	4.67 4.56 4.84 0.08	4.57 4.32 4.69 0.09	4.56 4.18 5.01 0.21									
Crude Fibre, % (db)	6.5 5.6 7.6 0.79	6.5 5.4 7.4 0.53	5.9 5.0 6.6 0.54									
Number of samples	10				22				15			

SOUTH AFRICAN REGIONAL SOYBEAN QUALITY

PRODUCTION REGION	(32) Mpumalanga Western Region	(33) Mpumalanga Northern Region	(34) Gauteng
Silo/Intake stands (Type of storage)	Argent (Bins/Bunkers) Dryden (Bins) Endicott (Bins) Eloff (Bins) Hawerklip (Bins) Kendal (Bins) Ogies (Bins)	Arnot (Bins) Driefontein (Bins) Lydenburg (Bins) Marble Hall (Bins) Middelburg (Bins) Pan (Bins) Stoffberg (Bins) Wonderfontein (Bins)	Bloekomspruit (Bins) Bronkhorstspruit (Bins) Glenroy (Bins) Goeie Hoek (Bins) Kaalfontein (Bins) Kliprivier (Bunkers) Meyerton (Bunkers) Middelvlei (Bins) Nigel (Bins) Oberholzer (Bins) Pretoria Wes (Bins) Raatshvlei (Bins) Vogelvallei (Bunkers)
<u>Grading:</u>	ave min max stdev	ave min max stdev	ave min max stdev
(a) Wet pods, %	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00
(b) Foreign matter, including stones, other grains, sunflower seeds and stones: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	1.16 0.19 4.12 1.12	0.23 0.14 0.32 0.13	0.90 0.31 2.68 0.83
(c) Other grain, %	0.35 0.00 2.65 0.70	0.04 0.00 0.08 0.06	0.36 0.00 2.21 0.82
(d) Sunflower seed, %	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00
(e) Stones, %	0.03 0.00 0.16 0.06	0.05 0.00 0.10 0.07	0.10 0.00 0.64 0.24
(f) Sclerotinia, %	0.11 0.00 0.40 0.13	0.00 0.00 0.00 0.00	0.01 0.00 0.04 0.02
(g) Soybeans and parts of Soybeans which pass through the 4.75 mm round hole screen, %	2.90 0.14 5.67 1.71	0.99 0.78 1.19 0.29	2.02 1.15 3.65 1.08
(h) Defective Soybeans on the 4.75 mm round hole screen, %	0.90 0.40 2.34 0.52	6.87 0.58 13.15 8.89	0.61 0.38 0.92 0.19
(i) Soiled Soybeans, %	1.85 0.00 9.67 2.57	3.01 0.36 5.65 3.74	0.26 0.00 0.63 0.27
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	1.27 0.22 4.38 1.18	0.23 0.14 0.32 0.13	0.92 0.31 2.68 0.82
Poisonous seeds (<i>Crotalaria sp.</i> , <i>Datura sp.</i> , <i>Ricinus communis</i>)	0 0 1 0.24	0 0 0 0	4 0 30 11.34
Poisonous seeds (<i>Argemone mexicana L.</i> , <i>Convolvulus sp.</i> , <i>Ipomoea purpurea Roth.</i> , <i>Lolium temulentum</i> , <i>Xanthium sp.</i>)	0 0 3 0.71	0 0 0 0	0 0 0 0
Number of samples	18		2
<u>Chemical analysis:</u>	ave min max stdev	ave min max stdev	ave min max stdev
Moisture, % (17hr, 103 °C)	6.9 6.5 7.7 0.45	7.5 7.1 7.8 0.49	7.5 6.6 7.9 0.42
Crude protein, % (db)	41.03 38.37 46.85 2.19	40.73 40.16 41.29 0.80	41.30 37.51 44.03 2.28
Crude fat, % (db)	18.7 17.2 20.3 0.85	21.9 20.4 23.4 2.12	20.1 18.8 21.4 0.94
Ash, % (db)	4.64 4.42 4.83 0.11	4.84 4.68 5.00 0.23	4.62 4.44 4.81 0.14
Crude Fibre, % (db)	6.5 5.0 7.4 0.65	5.5 4.5 6.4 1.34	5.7 4.9 6.2 0.5
Number of samples	18		2
			7

SOUTH AFRICAN

REGIONAL SOYBEAN QUALITY

PRODUCTION REGION	(35) Limpopo
Silo/Intake stands (Type of storage)	Alma (Bins) Lehau (Bins) Naboomspruit (Mookgophong) (Bins) Northam (Bins) Nutfield (Bins) Nylstroom (Modimolle) (Bins) Potgietersrus (Mokopane) (Bins) Roedtan (Bins) Settlers (Bins) Warmbad (Bela-Bela) (Bins)
<u>Grading:</u>	ave min max stdev
(a) Wet pods, %	0.00 0.00 0.00 0.00
(b) Foreign matter, including stones, other grains, sunflower seeds and stones: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.54 0.25 1.02 0.42
(c) Other grain, %	0.15 0.00 0.45 0.26
(d) Sunflower seed, %	0.01 0.00 0.04 0.02
(e) Stones, %	0.00 0.00 0.00 0.00
(f) Sclerotinia, %	0.02 0.00 0.03 0.02
(g) Soybeans and parts of Soybeans which pass through the 4.75 mm round hole screen, %	0.42 0.24 0.67 0.22
(h) Defective Soybeans on the 4.75 mm round hole screen, %	1.71 0.48 3.10 1.32
(i) Soiled Soybeans, %	1.97 0.00 5.91 3.41
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.56 0.27 1.02 0.40
Poisonous seeds (<i>Crotalaria sp.</i> , <i>Datura sp.</i> , <i>Ricinis communis</i>)	0 0 0 0
Poisonous seeds (<i>Argemone mexicana L.</i> , <i>Convolvulus sp.</i> , <i>Ipomoea purpurea Roth.</i> , <i>Lolium temulentum</i> , <i>Xanthium sp.</i>)	1 0 2 1.15
Number of samples	3
<u>Chemical analysis:</u>	ave min max stdev
Moisture, % (17hr, 103 °C)	8.1 7.7 8.6 0.46
Crude protein, % (db)	40.99 40.47 41.31 0.45
Crude fat, % (db)	20.6 19.2 22.1 1.46
Ash, % (db)	5.05 4.83 5.27 0.22
Crude Fibre, % (db)	6.1 5.3 6.5 0.69
Number of samples	3

METHODS

SAMPLING PROCEDURE:

A working group determined the process which needs to be followed to ensure that the crop quality samples which were sent to the SAGL by the various grain silo owners, were representative of the total crop.

Each delivery was sampled as per the grading regulations for grading purposes.

After grading, the grading samples are placed in separate containers according to class and grade.

After 80% of the expected harvest has been received, the content of each container is divided with a multi slot divider in order to obtain a 3 kg sample. (This should be done for each class and grade separately).

If there is more than one container per class and grade, the combined contents of the containers are mixed thoroughly before dividing it with a multi slot divider to obtain the required 3 kg sample.

The samples are marked clearly with the name of the depot, the bin/bag/bunker number(s) represented by each individual sample as well as the class and grade and are then forwarded to the SAGL.

GRADING:

Full grading was done in accordance with the Regulations relating to the Grading, Packing and Marking of soybeans intended for sale in the Republic of South Africa (No. R 225 of 6 March 2009).

Please see pages 76 to 83 of this report.

CHEMICAL ANALYSIS:

Milling

Prior to the chemical analyses, the soybean samples were milled on a Retch ZM 200 mill fitted with a 1.0 mm screen.

Moisture

The method prescribed under the ISTA International Rules for Seed Testing, Section 9, latest edition was used to determine the moisture content of the soya samples. This method determines moisture content as a loss in weight of a sample when dried in an oven at 103 °C for 17 hours.

Crude protein

The Dumas combustion analysis technique was used to determine the crude protein content, according to AACCI method 46-30.01, latest edition.

This method prescribes a generic combustion method for the determination of crude protein. Combustion at high temperature in pure oxygen sets nitrogen free, which is measured by thermal conductivity detection. The total nitrogen content of the sample is determined and converted to equivalent protein by multiplication with a factor of 6.25 to obtain the protein content.

Crude fat

In-House method 024 was used for the determination of the crude fat in the samples. After sample preparation the fat is extracted by petroleum ether with the aid of the Soxhlet extraction apparatus, followed by the removal of the solvent by evaporation and weighing the dried residue thus obtained. The residue is expressed as % crude fat.

Ash

Ash is defined as the quantity of mineral matter which remains as incombustible residue of the tested substance, after application of the described working method. In-house method No. 011, based on AACCI method 08-02.01 Rapid (Magnesium Acetate) method, was used for the determination.

Crude Fibre

In-House method 020 was used for the determination of the crude fibre in the samples. Crude fibre is the loss on ignition of the dried residue remaining after digestion of the sample with 1.25% H₂SO₄ (Sulphuric acid) and 1.25% NaOH (Sodium hydroxide) solutions under specific conditions.

GMO (Genetically Modified Organisms):

The EnviroLogix QuickComb kit for bulk soybeans was used to quantitatively determine the presence of genetically modified soybeans. The kit is designed to extract and detect the presence of certain proteins at the levels typically expressed in genetically modified bulk soybeans. The procedure prescribed in the EnviroLogix – QuickScan Instruction Manual, latest edition was followed. Results were scanned and interpreted quantitatively with the EnviroLogix QuickScan 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 NPC
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 AND PHYSICAL ANALYSIS

The facility is accredited in accordance with the recognised International Standard

ISO/IEC 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 2014

Certificate Expires: 31 October 2019

ANNEXURE A

SCHEDULE OF ACCREDITATION

Facility Number: T0116

<u>Permanent Address of Laboratory:</u> Southern African Grain Laboratory (NPC) Grain Building 477 Witherite Road The Willows 0040	<u>Technical Signatories:</u> Ms J Nortjé (All) Ms M Fourie (In-house method 012) Ms M Hammes (Chemical) Ms A de Jager (Nutrients & Contaminants) Ms W Louw (In-House Methods 001, 002, 003, 010, and 026) Ms D Moleke (Rheological) Ms I Terblanche (Rheological) Ms H Meyer (Chemical, Nutrients, Contaminants & Grading) Ms J Kruger (Chemical, excluding In-house method 012) Mr L Badenhorst (Grading) Ms P Modiba (Chemical) Ms M Motlanthe (In-house method 001, 003)	
<u>Postal Address:</u> Postnet Suite # 391 Private Bag X 1 The Willows 0041	<u>Nominated Representative:</u> Ms S du Preez <u>Management Representative:</u> Ms W Louw	
Tel: (012) 807-4019 Fax: (086) 216-7672 E-mail: info@sagl.co.za	Issue No.: 24 Date of Issue: 04 March 2015 Expiry Date: 31 October 2019	
Materials / Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Equipment / Technique Used
<u>CHEMICAL</u>		
Ground Barley	Moisture (Oven Method)	Analytical EBC Method 3.2, Latest Edition (2hour; 130°C)
Cereal and cereal products specifically-wheat, rice, (hulled paddy), barley, millet, rye and oats as grains, semolina and flour	Moisture (Oven Method)	ICC Std No.110/1, Latest Edition (90 min; 130°C) (2 hour, 130°C)
Flour, semolina, bread, all kind of grains and cereal products, and food products (except those that are sugar coated)	Moisture (Oven method)	AACCI 44-15.02, Latest Edition (1hour; 130°C) (72 hour, 103°C)

Original Date of Accreditation: 01 November 1999

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Field Manager

ANNEXURE A

Facility No.: T0116

Date of Issue: 04 March 2015

Expiry Date: 31 October 2019

Materials / Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Equipment / Technique Used
All flours, cereal grains, oilseeds and animal feeds	Nitrogen and protein (Combustion method - Dumas)	AACCI 46-30.01, Latest Edition
Food stuff	Dietary fibre (total)	In-house method 012
Food stuff and feeds	Carbohydrates (by difference) (calculation) Energy value (calculation) Total digestible nutrition value (calculation)	SOP MC 23
Food stuff and feeds	Determination of ash	In-house method 011
Wheat kernels	Moisture (Oven method)	Government Gazette Wheat Grading Regulation, Latest Edition (72 hour, 103°C)
Flours of grains, e.g. barley, oats, triticale, maize, rye, sorghum and wheat; oilseeds like soybeans and sunflower, feeds and mixed feeds and foodstuffs	Crude Fat (Ether extraction by Soxhlet)	In-house method 024
Meal and flour of wheat, rye, barley, other grains, starch containing and malted products	Falling number	ICC No 107/1, Latest Edition
<u>NUTRIENTS & CONTAMINANTS</u>		
Vitamin fortified food and feed products and fortification mixes grain based	Vitamin A as all trans Retinol (Saponification) (HPLC)	In-house method 001
Vitamin fortified food and feed products and fortification mixes grain based	Thiamine Mononitrate (HPLC) Riboflavin (HPLC) Nicotinamide (HPLC) Pyridoxine Hydrochloride (HPLC)	In-house method 002
Vitamin fortified food and feed products and fortification mixes grain based	Folic Acid (HPLC)	In-house method 003

Original Date of Accreditation: 01 November 1999

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Field Manager

ANNEXURE A

Facility No.: T0116
 Date of Issue: 04 March 2015
 Expiry Date: 31 October 2019

Materials / Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Equipment / Technique Used
Grain based food and feed products (fortified and unfortified) and fortification mixes	Total sodium (Na) Total Iron (Fe) Total zinc (Zn)	In-house method 010
Food and feed	Multi-Mycotoxin: - Aflatoxin G ₁ , B ₁ , G ₂ , B ₂ and total - Deoxynivalenol (DON), 15-ADON - Fumonisin B ₁ , B ₂ , B ₃ - Ochratoxin A - T ₂ , HT-2 - Zearalenone	In-house method 026
<u>GRADING</u>		
Maize	Defective kernels (white maize/yellow maize)	Government Gazette Maize Regulation, Latest Edition
Cereal as grains (wheat, barley, rye and oats)	Hectolitre mass (Kern222)	ISO 7971-3, Latest Edition
Wheat	Screenings	Government Gazette Wheat Grading Regulation, Latest Edition
<u>RHEOLOGICAL</u>		
Wheat flour	Alveograph (Rheological properties)	ICC No 121, Latest Edition
Flours	Farinograph (Rheological properties)	AACCI 54.02, Latest Edition (Rheological behaviour of Flour Farinograph: Constant Flour Weight procedure)
Hard, soft and durum wheat, (flour and whole wheat flour)	Mixograph (Rheological properties)	Industry Accepted Method 020 (based on AACCI 54-40.02, Latest Edition Mixograph Method)

Original Date of Accreditation: 01 November 1999

Page 3 of 3

ISSUED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM

Field Manager



ACCURACY AWARD FEED ANALYSIS

Southern African Grain Laboratory

Is awarded this certificate for achieving the most accurate and precise results among Series D Check Sample subscribers for 2013

Moisture, Protein, Ash, Crude Fat, Crude Fiber
Calcium, Phosphorus

Andy Thorne
Executive Vice President

April 22, 2014

David A. Scherzer
President

CERTIFICATE SERTIFIKAAT

IT IS HEREBY CERTIFIED THAT
HERMEE WORD GESERTIFIIEER DAT

Southern African Grain Laboratory

Die Wilgers, Pretoria

Feeds / Voere

FOR THE PERIOD OF
VIR DIE TYDPERK VAN

9 June 2014

TO
TOT

9 February 2015

PARTICIPATED IN THE PROFICIENCY TEST SCHEME AND THE FOLLOWING ANALYTES HAVE CONFORMED TO 83%
PARTICIPATION WITH A Z VALUE <=2, AS SET BY AgriLASA:

DEELGENEEM HET AAN DIE INTERLAB-KONTROLESKEMA EN DIE VOLGENDE ONTELDINGS HET AAN DIE AgriLASA
VOORGESKREWE 83% DEELNAME MET N Z WAARDE VAN <=2 VOLDOEN:

Ash

Crude Fibre

Fat

Moisture

Nx6.25-Protein

Starch

J. W. van der Linde
FOR AGRILASA



Prepared and published by Thistle QA on behalf of, and under direction of, AGRILASA Printed: 06/03/2015

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Landbounavorsingsraad
Potchefstroom

Grain Crops Institute
Agricultural Research Council
Potchefstroom

Republiek van Suid Afrika
Republic of South Africa

**VERSLAG VAN DIE NASIONALE
SOJABOON KULTIVARPROEWE/
2013/14
REPORT OF THE NATIONAL
SOYBEAN CULTIVAR TRIALS**

Verantwoordelike beamppte:

Responsible officer:

AS de Beer

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Dank is verskuldig aan die volgende persone vir hul onderskeie bydraes in die verwesenliking van hierdie verslag:

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1 INTRODUCTION

The National Soybean Cultivar Trials (project M101/60) were planted for the 36th successive year this past growing season. A total of 21 trials were planted at 20 localities, illustrated in the locality list.

1.1 AIM

The aim of the project was primarily the following:

- (I) To compare cultivars for agronomic and economic performance;
- (ii) to test the adaptability of cultivars and new releases for specific areas and cultivation practices.

2 MATERIALS AND METHODS

2.1 GENERAL

The trials were planted as randomized block designs (rows & columns) using three replications with 32 cultivars. Cultivar characteristics are shown in Table 1.

Each trial plot consisted of four, 5 m rows. Four metres were harvested from each of the middle two rows, in order to avoid border effects. Soil form, fertilization and weed control are indicated together with row spacing in Table 3. All seeds were inoculated with *Bradyrhizobium japonicum* bacteria at planting.

The localities where trials were planted represent a wide range of climatic conditions. Trials were carried out on the ARC and Departmental Research Stations as well as on privately owned farms. Observations were recorded by responsible officers and collaborators as indicated in the list of collaborators. Planting time and cultivation practice were executed to correspond with that of commercial plantings in the specific areas. Rainfall and irrigation are indicated in Table 3. Note that rainfall is only recorded from October to April and not for the specific growing season of a trial.

2.2 OBSERVATIONS

A brief definition of some of the observations in the trials is as follow:

- 2.2.1 Date of flowering: The time at which one fully open flower per plant was observed across 50% of the plots.
- 2.2.2 Date of harvest maturity: When 95% of the pods for a given plot had turned brown.
- 2.2.3 Length of growing season: The number of days from date of planting to date of maturity.
- 2.2.4 Plant height: The average height in centimetre (cm) of plants from the soil surface to the growth point at maturity.
- 2.2.5 Pod height: The average height in centimetre (cm) of the lowest pods on the plant from soil surface at maturity.
- 2.2.6 Green stem: The percentage green stems at harvest rated on a 1 (normally mature) to 5 (more than 80% green stems) scale.
- 2.2.7 Lodging: Lodging at time of harvest was rated on the following scale:
 - 1 = No lodging
 - 2 = Few lodging, will not hamper mechanical harvesting
 - 3 = Few lodging, lodging less than what will hamper mechanical harvesting
 - 4 = Few lodging, will hamper mechanical harvesting, with yield loss
 - 5 = Fair number of plants lodged, will hamper mechanical harvesting, with yield loss
 - 6 = Many plants lodged, will hamper mechanical harvesting, with yield loss

- 7 = A large number of plants lodged, will hamper mechanical harvesting, with yield loss
- 8 = Nearly all plants lodged, will hamper mechanical harvesting, yield loss
- 9 = All plants lodged, will hamper mechanical harvesting, yield loss

- 2.2.8 Shattering: Measured at time of harvest and three weeks later. Shattering is reported on a scale of 1 (no shattering) to 5 (more than 91-100% pods shattered).
- 2.2.9 100 seeds mass: Determined on an air dry basis from a randomly selected sample retained on a 4,75 mm standard grading screen.
- 2.2.10 Undesirable seed: The mass of undesirable seed was determined in a random 100 g sample with seed size greater than 4,75 mm (excluding mechanical damaged seeds).
- 2.2.11 Protein and oil percentage: The determinations were done on a sample with whole seeds (moisture free) and a variation can be expected.
- 2.2.12 Seed yield: Four metres of the two centre rows were harvested by hand at soil level and threshed. Seed moisture was determined and seed yield calculated on a basis of 12,5 % moisture content.

2.3 THE EVALUATION OF TRIALS

The yield data of the individual trials were subjected to analysis of variance, and from the mean square error and components of variance the following parameters were calculated, *viz*: Ce (error coefficient of variation); Cg (genetic coefficient of variation); t (repeatability of plot yield or intra class correlation coefficient) and tn (repeatability of mean yield).

The diagnostic value of these parameters may be illustrated as follows:

The t parameter as defined above relates to the repeatability of plot means over replications, and is interpreted in the same way as the normal correlation coefficient, i.e. the greater the concurrence of plot values per entry over replications the closer t will strive towards unity. The standard error SE (t) calculated for a particular t-value indicates the accuracy for the estimate of t.

The tn parameter relates to the repeatability of entry means, and can be defined as the relationship of genetic variance (the variance of true yield of entries) to the total variance of observed means. In cultivar trials this parameter is useful only when the number of replications between trials varies, where this is not the case, the t-value is sufficient.

3 DISCUSSION OF RESULTS

3.1 GENERAL

The rainfall and irrigation data are shown in Table 3. Sporadic early rains limited the ideal planting period. Most of the soybean production areas also experienced early drought with a heavy rainy season during the pod fill stage.

A total of five (5) of the 21 trials (23.8%) could not be included in the report compared to the nine (9) out of 24 trials (37.5%) in the 2012/13 season.

The following trials could not be included in the report for the following reasons:

- 1 Vaalharts – Nematode damage resulting in a high CV
- 2 Rustenburg – Very high CV due to excessive rain during the late season which resulted in waterlogging
- 3 Villiers – Herbicides damage
- 4 Marquard – CV too high, grazed by cattle
- 5 Dundee – CV too high, extreme drought.

As in the previous seasons the evaluation of the trials were based on a number of parameters. No conclusion can be made on a single parameter.

3.2 DISCUSSION OF TABLES

3.2.1 Days to flowering (Table 4), physiologically mature (Table 5) and length of the growing season (Table 6)

The number of days from planting to flowering (Table 4) is an effective measure for the grouping of cultivars because the relative order for this characteristic is repeated to a great extent over localities and years. As expected, average days to flowering was the lowest in the warm areas (45 days at Brits and 46 in Groblersdal) and the highest in the cooler areas (83 days at Delmas).

The number of days to physiological maturity (Table 5) is an effective measure for scheduling the spray of soybean rust. The longest average days to maturity was experienced at Kinross.

The number of days to harvest maturity (Table 6) was used to determine the length of the growing season of a cultivar. The number of days to harvest maturity is however, more dependent on climatic changes and planting date for soybeans and, the number of days to flowering is therefore a more reliable maturity grouping criterion.

3.2.2 Plant height (Table 7)

The indeterminate cultivar Marula (MG 6) showed a mean plant height of 111 cm (highest) in the warm area compared to 59 cm (lowest) of the semi-determinate cultivar LS 6444 R (MG 4) in the moderate region. Plant height for cultivars with an indeterminate growth habit was in general higher than those with a determinate growth habit.

The average plant height between localities varied from a mean of 59 cm at Hoopstad to 102 cm at Bethlehem.

3.2.3 Pod height (Table 8)

The variation in pod and plant height between cultivars is linked with the length of the growing season of a cultivar. The cultivar Dundee (MG 6) showed a mean pod height of 14 cm for the third successive year in the moderate area, while PAN 1614 R (MG 6.2) also had an average pod height of 14 cm in the cool areas. Both cultivars had an indeterminate growth habit and belong to the medium-long (6 - 6.9) maturity grouping.

LS 6444 R (MG 4) (semi-determinate) which, as for the two (2) previous seasons, had the lowest pod height (respectively 6, 4 and 2) in the cool, moderate and warm regions. Considerable harvest losses can occur due to low pod height; thus pod height is an important factor influencing cultivar choice. Differences in pod height between localities can mainly be attributed to differences in row width and climate.

3.2.4 Lodging (Table 9)

The highest lodging occurred in the trials at Cedara and Delmas. The highest lodging figures was reported for S 722/6/1E in the cool and moderate production areas with the highest number 4 and 2.67, respectively.

3.2.5 Green stem (Table 10)

A lot of green stem was reported at Groblersdal and Greytown. The cultivar PHB95Y40, as reported for the 4th successive growing season, showed a high tendency for green stem, across all three climatic regions. Plants also retained their leaves that could hamper the harvesting process.

3.2.6 Shattering 3 weeks after harvesting (Table 11)

The highest shattering occurred at Delmas in the cool production area, as in the previous season. No shattering was reported at 10 of the localities.

3.2.7 Number of plants (Table 12)

Enough certified seed was provided to establish 400 000 plants ha⁻¹ for the irrigation and high rainfall areas and 350 000 for dry-land. A very low plant density was reported for Groblersdal and Delmas. The low plant numbers at Groblersdal were due to pigeon damage. It seems as if PHB 95 Y 20 and S 722/6/1E might have a problem with plant density at the warm areas.

3.2.8 Percentage undesirable seed (Table 13)

The lowest mean of 0.04% undesirable seeds was recorded for the cool region. The range varied from 0.1 5% at Migdol to 0.16% at Cedara.

3.2.9 Mass (g) 100⁻¹ seeds (Table 14)

The variation in seed mass among localities ranged between 13.90 g 100⁻¹ seeds at Kokstad to 20.18 g 100⁻¹ seeds at Brits. The highest seed mass was recorded for S722/6/1E across all climatic regions, while LS 6444 R had the smallest seed for the most part across all areas.

3.2.10 Oil percentage (Table 15)

LS 6146 R had, like the two previous seasons, the highest average oil percentage for all the regions. The lowest oil percentage was recorded for Egret for the third successive year in all the climatic regions.

3.2.11 Crude Protein percentage (Table 16)

The crude protein is negatively correlated to the oil percentage thus LS 6444 R had the lowest crude protein for all regions. Egret had the highest figure for the past two seasons in the moderate area.

3.2.12 Profat (Table 17)

The inclusion of this table in the report was requested by Dr Erhard Bredenham as the total value of oil and protein is a much better indicator for the selection of a cultivar than the single oil or protein factor. As with the two (2) previous seasons, PHB95Y40 had the highest average profat value for all the regions. PAN 1623 R and Ibis 2000 had a percentage above 60% in the warm regions.

3.2.13 Yield (Table 18)

Due to the sensitivity of soybean cultivars to environmental conditions, it is preferable to divide the soybean production areas into cool, moderate and warm regions. A better yield can be established by choosing a cultivar suitably adapted for a specific region. It is also necessary to use data from more than one year to select between cultivars. Due to the significant cultivar and locality interaction, conclusions on cultivar performance should not be made from average yield data alone. The mean yield over localities has therefore been omitted.

4 INTERPRETATION OF YIELD RESULTS

4.1 INTRODUCTION

A given aim of the national soybean cultivar trials is the evaluation of cultivars for their adaptability to a potential production area, and for their yield performance. Adaptability is especially important because of the fact that soybean cultivars are known to be restricted in terms of recommended production area. This fact is also demonstrated by the results discussed in this report.

Because of genotypic restriction in adaptability the statistical analysis of data over all trial entries and localities tend to demonstrate strong interaction components which confound interpretation. Interaction makes genotype rankings at one site inapplicable to another site. The larger the interaction the more information is lost if interaction is not analysed effectively. This will be a lesser problem for homogeneous areas than for non-homogeneous areas. However, a purpose of the national trials is to identify

homogeneous areas or homogeneous growing conditions based on cultivar performance. Localities were therefore grouped together based on past research experience and with the assistance of photo-thermal charts provided by the Institute for Soil, Climate and Water. Localities were grouped in cool, moderate and warm production areas.

4.2 YIELD RELIABILITY AND YIELD (Tables 19, 20, 21, 22, 23, 24 & 25)

A minimum number of successful trials per climatic area are needed to calculate reliability values. Yield reliability tables are set up for cool-, moderate and warm regions, if enough data is available.

LS 6164 R and PAN 1583 R are the cultivars that performed the best across all three production seasons (2011/12, 2012/13, 2013/14) in the cool areas. LS 6161 R and PHB 95 Y 40 performed above average in the moderate areas, while LS 6161 R, PHB95Y40 and Egret performed above average in the warm areas.

Lokaliteit, medewerkers en adresse van kultivarproewe soos bepien vir, 2013/14
 Localities, co-operators and addresses of the cultivar trials , 2013/14

Nr No	Lokaliteit Locality	Adres van proeflokaliteit Address of trial locality	Tel. no. Tel. nr.	Verantwoordelike beamppte Responsible officer
1	Bethlehem	Kleingraan Instituut Bethlehem 9700	082 576 8545	N de Klerk en E Maree
2	Brits	Hartebeespoort Nav. Stasie Posbus 1261 Brits 0250	082 576 8545	N de Klerk en T Kruger
3	Cedara	Cedara P/bag X9059 Pietermaritzburg 3200	033-355 9495/072 241 9182	J Arathoon
4	Delmas	Pannar Saad Navorsingsplaas Posbus 439 Delmas 2210	013-665 8524/082 715 4878	K van Huyssteen
5	Dundee	Dundee Navorsingsstasie Posbus 626 Dundee 3000	034 212 479/076 953 3587	M Buthalezi
6	Glen	Glen Proefplaas Bioemfontein 9300	082 576 8545	N de Klerk, J Richter en E Maree
7	Greytown	Pannar Proefplaas Posbus 19 Greytown 3250	033-413 9639	A Jarvie
8	Greytown	Umvoyuna Farm Posbus 755 Greytown 3250	033-417 1494(6)/082 553 1766	P Herbst
9	Groblersdal-Loskop	Loskopproefplaas Posbus 1367 Groblersdal 0470	013-262 3042/083 274 1951	C Fourie
10	Hoopstad		082 576 8545	N de Klerk
11	Kinross	Vosstoffel Boerdery Posbus 80 Kinross 2270	082 576 8545	N de Klerk
12	Kokstad	Research Station P/Bag X501 Kokstad 4700	039 727 2105/072 778 8785	MP Skhakthane
13	Marquard	J Bester Plaas Leeuwkop Posbus 109 Marquard 9610	082 576 8545	N de Klerk en E Maree
14	Middelburg	G Anderson Postnet Suite 15 P/Bag 1866 Middelburg 1050	082 576 8545	N de Klerk
15	Migdol	Koos Bezuidenhout Posbus 90 Migdol 2775	082 576 8545	N de Klerk
16-17	Potchefstroom	IGG Proefplaas Privaatsak X1251 Potchefstroom 2520	018-299 6303/082 576 8545	N de Klerk
18	Rustenburg	NITK Proefplaas Privaatsak X82075 Rustenburg 0300	014-536 3151-7/082 576 8545	N de Klerk en Ishmael
19	Stoffberg	Piet Prinsloo Posbus 107 Stoffberg 1056	082 576 8545	J van Schalkwyk
20	Vaalharts	LNS Privaatsak X9 Jan Kempdorp 8550	053-456 0084	
21	WILLIERS	O du Plessis Posbus 34 Villiers 9840	082 576 8545	N de Klerk en E Maree

Tabel 1 Sojaboonaad eienskappe en inligting oor verskaffers, 2013/14
 Table 1 Soybean seed characteristics and information about agents, 2013/14

Kultivar Cultivar	Volwassenheids- groepings Maturity Group	Groeiyse Growth habit *1	Hilum kleur Hilum colour *2	Blomkleur Flower colour *3	Haarkleur Pubescence *4	Op varieteits lys On variety list	Verskaffer Agent	Telersregte Breeding rights
Sonop	4.0	I	B	P	B	JAYES	GW Bührmann	JAYES
LS 6240 R	4.0	SD	BL	W	G	JAYES	Linkseed	JAYES
LS 6444 R	4.0	SD	BL	P	G	JAYES	Link Seed	JAYES
LS 6146 R	4.4	-	BL	P	B	JAYES	Pannar	JAYES
PAN 1454 R	4.3	-	LB	P	W	JAYES	Pioneer	JAYES
PHB 94 Y 80 R	4.8	ID	BL	W	W	JAYES	Link Seed	JAYES
LS 6248 R	4.8	SD	BL	P	B	JAYES	GW Bührmann	JAYES
Highield Top	5.0	-	BL	P	B	JAYES	GW Bührmann	JAYES
Knap	5.0	-	B/BL	P	B	JAYES	Pioneer	JAYES
PHB 95 Y 20	5.2	D	BL	P	G	JAYES	Pannar	JAYES
PAN 1583 R	5.0	D	LB	P	G	JAYES	Link Seed	JAYES
LS 6453 R	5.0	SD	BL	W	B	JAYES	Pannar	JAYES
PAN 1664 R	5.3	D	LB	P	G	JAYES	Pioneer	JAYES
PHB 95 Y 40	5.4	D	BL	W	B	JAYES	Pannar	JAYES
PAN 1521 R	5.7	-	IB	P	P	JAYES	Pannar	JAYES
PAN 1500 R	5.8	-	IB	P	G	JAYES	GW Bührmann	JAYES
Marula	6.0	-	B/BL	W	B	JAYES	Pannar	NEE/NO
PAN 1513 R	6.0	-	KL	P	B	JAYES	Allgro	JAYES
Dundee	6.0	-	B	P	B	JAYES	Seed-co	JAYES
S 722/6/1E	6.0	-	KL	W	B	JAYES	Link Seed	JAYES
LS 6261 R	6.0	SD	BL	W	B	JAYES	Pannar	JAYES
PAN 1666 R	6.1	-	KL	W	G	JAYES	Pannar	JAYES
PAN 1623 R	6.1	-	LB	W	G	JAYES	Link Seed	JAYES
LS 6164 R	6.0	D	LB	P	G	JAYES	Agricoll	JAYES
DM 6.21 RR	6.2	-	LB	P	B	JAYES	Link Seed	NEE/NO
LS 6161 R	6.3	D	IB	W	G	JAYES	Pannar	JAYES
PAN 1614 R	6.2	-	B	P	G	JAYES	LNR/ARC	JAYES
Egret	7.0	D	KL	P	G	JAYES	LNR/ARC	JAYES
Heron	7.0	D	LB	P	G	JAYES	LNR/ARC	JAYES
Ibis 2000	7.0	D	IB	P	G	JAYES	Pannar	JAYES
PAN 1729 R	7.3	-	KL	W	JAYES			

*1 D - Bepaald/determinate

I - Onbepaald/indeterminate

SD - Semi-Bepaald/semi determinate

*2 BL - Swart/black

LB - Ligbruin/buff

G - Grys/grey

B - Bruin/brown

KL - Kleurloos/buff

*3 P - Pers/purple

W - Wit/white

W - Wit/white

*4 B - Bruin/brown

G - Grys/grey

Tabel 2 Algemene inligting aangaande grond en verbouwingpraktiese by die onderskele proeflokaliteite van die kultivarproewe, 2013/14
 Table 2 General information in connection with soil and cultivation practices at the different trial localities, 2013/14

Lokaliteit Locality	Plantdatum Date of planting	Grondvorm Soil type	Grond ontleding Soil analysis			Bemesting Fertilization			Spasiering Spacing (cm)	Onkruid beheer Weed control
			pH (H ₂ O)	P	K	N	P	K		
Bethlehem/D	30/10/13	Avalon	6.73	58	138	4.76	2.52	0	90	Bateleur Gold, skoffel
Brits/B	04/12/13	Arcadia	7.53	7	230	2.24	17.64	0	75	Bateleur Gold, skoffel
Cedaral/D	13/11/13	Hutton (Doveton)	5.34	10	284	0	20	0	45	Hammer, Dual Gold, Basagran
Delmas/D	04/11/13	Rooi Hutton	5.74	102	228	7.28	26.46	34	75	Metolachlor 960, Broadstrike
Dundee/D	06/11/13	Hutton	5.02	50	308	8.68	2.52	35	90	Bateleur Gold, skoffel
Glen/B	19/11/13	Hutton	7.35	23	163	5.04	12.50	0	75	Bateleur Gold, skoffel
Greytown/D	26/11/13	Hutton	-	-	-	22.22	33.33	44	75	Metagan Gold, Classic
Greytown Kranskop/D	14/11/13	Hutton	5.03	27	190	0	21	0	90	Feigan Gold, Classic
Groblerdal/B	03/12/13	Avalon	-	-	-	8.4	31.71	41	75	Bateleur Gold, skoffel
Hoopstad	27/11/13	-	7.35	37	233	7.56	2.52	0	90	Bateleur Gold
Kinross/D	01/11/13	-	6.99	78	150	5.6	2.31	0	75	Bateleur Gold, skoffel
Kokstad/D	04/12/13	-	5.03	30	105	2.8	9.24	11.5	45	Dual Gold
Marquard/D	29/10/13	-	5.36	25	180	5.88	6.93	0	90	Bateleur Gold
Middelburg/D	15/11/13	-	Boer werk op globale monsterr			0	5.25	0	75	Bateleur Gold
Middol	26/11/13	-	5.56	28	175	5.32	6.62	0	90	Bateleur Gold
Potchefstroom/B	12/11/13	Hutton	7.39	20	128	2.24	13.02	0	75	Bateleur Gold, skoffel
Potchefstroom/D	11/11/13	Hutton	6.46	29	115	1.68	6.51	0	90	Bateleur Gold, skoffel, Basagran
Rustenburg/B	09/12/13	Arcadia	7.89	21	243	0	12.81	0	75	Bateleur Gold, skoffel
Stoffberg/D	13/11/13	-	5.72	4	98	0	19.95	17	75	Bateleur Gold, skoffel
Vaalharts/B	02/12/13	Hutton	7.32	55	185	3.92	1.37	0	45	Hammer, Metagan
Villiers/D	31/10/13	-	6.62	15	165	5.32	10.29	0	75	Bateleur Gold

- Inligting nie beskikbaar/information not available

Tabel 3 Reënval en besproeiing vir die verskillende lokaliteite (mm), 2013/14
 Table 3 Rainfall and irrigation at the different localities (mm), 2013/124

Lokaliteit Locality	Maandelikse reënval (mm)/ Monthly rainfall (mm)					Totaal Total * **	Besproeiing Irrigation	Totaal Total **
	Okt	Nov	Des	Jan	Feb			
Bethlehem	91.95	81.54	178.81	146.56	124.97	88.89	34.29	747.01
Brits	60.5	90.5	178	25	228	27	835	160
Cedara	108	105	138	98	96	240	17	802
Dundee	52.5	75	156.5	32	77	105.5	3.5	502
Glen Bespr	65	7	167	32	30.5	63	30	394.5
Greytown	90.6	120.6	144	59	64.2	244.6	41.8	764.8
Greytown Kranskop	86	89	112	64	49	153	28	581
Groblersdal Bespr	143	121	251.5	44.5	82	225	58	925
Hoopstad	24.64	47.5	115.32	39.11	106.17	74.17	0.76	407.67
Kokstad	71.1	91.5	142	216.5	79.5	110	32.5	743.1
Marquard	42.67	38.1	99.31	45.21	106.43	75.44	16.51	423.67
Middelburg	194.31	213.87	244.09	67.82	106.17	182.12	19.56	1027.94
Migdal	-	-	-	93.73	133.6	62.48	2.79	292.6
Potchefstroom Bespr	102.36	59.44	216.66	81.03	116.84	182.12	6.1	764.55
Potchefstroom Drg	102.36	59.44	216.66	81.03	116.84	182.12	6.1	764.55
Rustenburg	65.28	39.87	155.21	112.02	257.81	168.65	25.65	824.49
Stoffberg	182.36	161.54	182.11	154.44	58.42	195.07	48.26	982.2
Vaalharts	9.4	20.07	72.9	11.18	-	-	113.55	557
Villiers	40.13	47.75	159.26	87.37	100.33	108.46	28.96	572.26

* Vir reënval/For rainfall

** Vir reënval en besproeiing/For rainfall and irrigation

Tabel 4 Die aantal dae vanaf plant tot 50% blomstadium van die verskillende sojaboontkultivars by die verskillende proef lokalteite, 2013/14
 Table 4 The number of days from planting to 50% flowering stage of the different soybean cultivars at the different trial localities, 2013/14

Kultivar	Cultivar	Koel/Cool		Matig/Moderate					Warm		
		Kinross	Delmars	Koksstad	Middleburg	Glen	Gretown	Kranskop	Groblersdal	Brits	Gem/Mean
Sonor	77	84	70	75	73	76	66	54	55	69	54
LS 6240 R	50	66	48	51	52	53	55	41	44	47	48
LS 6444 R	50	73	48	54	52	55	54	43	44	47	48
LS 6146 R	50	71	48	61	52	56	55	53	43	44	47
PAN 1454 R	57	67	59	51	52	57	57	43	55	47	48
PHB 94 Y 80 R	57	71	55	65	56	61	63	43	48	44	56
LS 6248 R	68	84	55	77	70	71	73	70	65	54	55
Highveld Top	86	84	75	76	74	79	78	56	67	58	55
Knap	77	84	75	76	66	76	78	60	67	61	55
PHB 95 Y 20 R	94	89	87	75	74	84	82	70	67	62	59
PAN 1583 R	72	84	80	75	70	76	75	60	61	62	55
LS 6453 R	72	77	70	65	66	70	75	62	61	54	55
PAN 1664 R	77	80	80	75	70	76	74	60	63	43	55
PHB 95 Y 40 R	77	85	80	76	74	78	81	70	67	62	59
PAN 1521 R	86	87	80	75	70	80	78	63	67	61	59
PAN 1500 R	94	85	84	72	70	81	78	70	65	58	55
Marula	72	83	88	77	73	79	77	65	66	62	55
PAN 1513 R	86	89	87	61	66	78	80	65	70	54	59
Dundee	72	88	84	75	74	79	77	70	67	62	59
S 7226/1E	94	93	88	84	81	88	84	70	73	68	70
LS 6261 R	68	82	70	75	70	73	73	62	64	54	44
PAN 1666 R	77	84	75	75	74	77	78	70	66	58	62
PAN 1623 R	72	84	75	76	73	76	80	70	66	61	59
LS 6164 R	77	84	70	76	70	75	77	60	64	54	59
DM 6.21 RR	68	80	87	76	74	77	79	69	67	61	59
LS 6161 R	77	84	75	84	70	78	78	65	66	58	59
PAN 1614 R	86	87	75	77	70	79	79	63	65	58	59
Egret	94	90	84	82	81	86	87	70	72	65	59
Heron	94	89	87	79	86	84	84	70	68	54	66
Ibis 2000	86	81	48	82	81	76	86	70	72	68	66
PAN 1729 R	94	89	88	82	74	85	87	70	72	69	63
Standaard	77	89	80	77	81	81	83	69	67	62	59
Gen/Mean	76	83	74	73	70	75	76	64	63	57	56
										69	67
										65	45
										46	45

Tabel 5 Die aantal dae vanaf plant tot fisielogiese ryptadium van die verskillende sojaboontkultivars by die verskillende proef lokaliteite, 2013/14
Table 5 The number of days from planting to physiological maturity of the different soybean cultivars at the different trial localities, 2013/14

	Kultivar/Cultivar	Koel/Cool		Matig/Moderate		Warm	
		Klinoss	Middleburg	Koxstad	Gem/Mean	Cedara	Gem/Mean
Sonop	135	165	146	145	148	144	140
LS 6240 R	131	131	128	132	131	132	113
LS 6444 R	131	131	128	132	131	131	108
LS 6146 R	131	137	128	132	131	108	108
PAN 1454 R	131	131	131	132	131	133	120
PHB 94 Y 80 R	131	131	128	132	131	133	137
LS 6248 R	146	153	139	138	144	139	127
Highveld Top	155	148	139	145	147	139	127
Knap	155	165	141	145	152	144	140
PHB 95 Y 20 R	155	148	146	151	150	144	140
PAN 1583 R	155	134	139	145	143	143	140
LS 6453 R	146	148	133	138	141	140	127
PAN 1664 R	146	148	133	145	143	143	140
PHB 95 Y 40 R	155	148	139	145	147	147	140
PAN 1521 R	146	137	142	138	141	141	140
PAN 1500 R	146	148	146	145	146	142	140
Marula	155	160	146	145	152	144	140
PAN 1513 R	155	160	139	151	151	145	140
Dundee	155	170	149	151	156	143	140
S 7226/1E	162	-	161	156	160	152	157
LS 6261 R	146	160	131	138	144	143	140
PAN 1666 R	146	148	141	145	145	139	140
PAN 1623 R	146	148	141	145	145	143	140
LS 6164 R	155	160	139	145	150	144	140
DM 6.2i RR	146	148	146	138	145	145	140
LS 6161 R	146	160	141	145	148	143	140
PAN 1614 R	146	148	149	145	147	144	140
Egret	162	165	147	151	156	152	140
Heron	155	160	149	151	154	151	140
Ibis 2000	155	160	141	145	150	146	140
PAN 1729 R	155	160	149	151	154	150	146
Standaard	155	160	146	151	153	143	140
Gem/Mean	148	151	141	144	146	142	135
						141	128
						142	128
						121	128
						143	141
						136	112
						141	112

Tabel 6 Die aantal dae vanaf plant tot oesstadium van die verskillende sojaboontkultivars by die verskillende proef lokalteite, 2013/14
 Table 6 The number of days from planting to maturity of the different soybean cultivars at the different trial localities, 2013/14

Kultivar	Betlehem	Koel/Cool		Matig/Moderate						Warm	
		Kinross	Kokstad	Gem/Mean	Cederberg	Gem/Mean	Grytown	Granskop	Groblersdal	Brits	Gem/Mean
Sonop	166	171	174	166	170	157	151	142	141	164	163
LS 6240 R	146	154	147	141	145	147	162	127	130	134	135
LS 6444 R	146	154	147	139	132	144	162	127	130	134	135
LS 6146 R	146	154	147	141	132	144	162	127	130	134	135
PAN 1454 R	146	154	147	141	132	144	162	136	130	143	135
PHB 94 Y 80 R	146	154	147	139	132	144	162	127	130	142	137
LS 6248 R	163	171	176	160	151	164	162	157	138	133	135
Highveld Top	170	180	174	160	166	170	162	157	152	142	141
Knap	170	185	174	150	166	169	176	157	152	142	141
PHB 95 Y 20 R	177	171	174	172	166	172	176	159	168	146	142
PAN 1583 R	166	171	174	153	166	166	176	177	152	151	147
LS 6453 R	162	176	174	153	151	163	162	157	130	140	135
PAN 1664 R	166	171	174	153	166	166	176	157	152	153	158
PHB 95 Y 40 R	177	176	176	173	166	173	176	160	168	147	165
PAN 1521 R	165	180	165	153	151	163	162	157	139	151	143
PAN 1500 R	165	185	174	173	166	173	162	162	140	141	165
Marula	170	176	174	173	166	172	166	167	144	141	164
PAN 1513 R	166	185	174	170	166	172	162	167	144	142	165
Dundee	177	185	179	173	166	176	176	157	168	148	141
S 722/6/1E	177	185	-	180	166	177	176	157	168	153	147
LS 6261 R	162	171	174	170	166	169	176	157	152	140	138
PAN 1666 R	166	171	174	160	166	167	162	157	144	146	141
PAN 1623 R	163	180	174	173	166	171	166	167	152	144	141
LS 6164 R	166	176	174	170	166	170	176	157	168	146	143
DM 6.21 RR	173	185	174	180	166	176	176	157	168	153	147
LS 6161 R	167	171	174	160	166	168	176	159	152	144	141
PAN 1614 R	166	184	176	180	166	174	176	159	168	142	143
Egret	177	180	177	173	166	175	176	167	151	147	174
Heron	177	185	179	170	166	175	176	157	151	148	147
Ibis 2000	177	176	174	173	166	173	176	167	168	143	138
PAN 1729 R	177	185	174	170	166	174	176	157	168	153	147
Standaard	173	176	176	160	166	170	162	157	139	151	145
Gem/Mean	166	174	170	163	160	167	170	155	151	145	140
										161	156
										132	136
										133	134

Tabel 8 Die peulhoogte van die verskillende soyaboonkultivars by die verskillende proef lokaliteitte, 2013/14
Table 8 The pod height of the different soybean cultivars at the different trial localities, 2013/14

Kultivar/Cultivar	Betlehem/Bethelhem	Koel/Cool		Matig/Moderate											
		Kirkwood/Kirkwood	Middleburg/Middleburg	Gem/Mean	Cederberg/Cederberg	Gretown/Gretown	Kranskopp/Kranskopp	Hoopsstad/Hoopsstad	Midgolf/Midgolf	Potchefstroom/Potchefstroom	Stoffberg/Stoffberg	Brits/Brits	Grootbosdal/Grootbosdal	Gem/Mean	
Sondop	20	9	10	8	10	11	25	13	19	8	11	7	3	18	13
LS 6240 R	7	8	7	5	5	7	12	8	5	10	4	3	2	9	6
LS 6444 R	4	5	7	7	6	11	7	6	7	0	0	0	0	4	0
LS 6146 R	7	7	8	6	8	7	13	10	6	10	2	2	4	0	6
PAN 1454 R	7	5	10	5	5	6	14	13	5	8	0	2	5	2	11
PHB 94 Y 80 R	9	5	8	5	5	6	12	14	6	10	2	5	2	3	12
LS 6248 R	11	17	13	7	10	12	21	13	14	19	6	8	3	15	12
Highveld Top	12	15	8	10	12	23	14	14	19	2	12	3	5	13	12
Knap	18	11	8	7	12	22	15	11	19	4	10	10	2	18	12
PHB 95 Y 20 R	12	13	10	8	8	10	20	4	13	18	0	3	2	20	9
PAN 1583 R	10	7	12	6	7	8	18	12	12	15	5	2	1	2	13
LS 6453 R	13	7	12	6	10	17	8	11	9	3	3	10	7	12	9
PAN 1664 R	5	13	7	5	7	7	19	7	11	19	0	0	2	2	13
PHB 95 Y 40 R	12	13	13	7	8	11	20	17	13	24	3	0	5	7	17
PAN 1521 R	11	18	12	8	8	11	19	19	13	20	2	8	10	3	17
PAN 1500 R	15	13	8	7	12	18	10	10	20	7	7	5	3	17	11
Marula	17	17	13	8	10	13	22	15	14	19	7	10	7	8	17
PAN 1513 R	12	17	15	6	7	11	23	12	9	20	3	8	8	7	17
Dundee	15	15	20	4	8	13	25	14	13	25	3	10	8	3	20
S 7226/E	7	17	-	7	10	21	5	10	25	0	5	3	8	15	10
LS 6261 R	5	10	5	7	7	18	6	13	17	3	7	7	0	15	10
PAN 1666 R	20	15	15	8	8	13	24	13	20	3	3	5	5	17	12
PAN 1623 R	9	15	10	7	8	10	18	10	12	19	3	7	10	6	13
LS 6164 R	13	10	12	5	10	10	20	13	12	15	0	3	7	7	12
DM 6.21 RR	12	15	17	7	11	17	19	10	19	2	5	7	2	17	11
LS 6161 R	13	23	10	5	7	12	27	14	15	24	2	12	8	3	15
PAN 1614 R	20	22	15	9	5	14	24	13	15	27	5	6	5	7	17
Egret	13	13	15	6	8	11	19	7	10	17	3	0	2	0	15
Heron	10	17	10	9	8	11	23	9	10	20	3	4	5	2	17
Ibis 2000	8	15	10	8	7	10	28	19	12	20	2	5	7	3	15
PAN 1729 R	10	15	13	5	5	10	18	10	8	19	2	7	3	5	13
Standdaard	13	15	9	10	12	19	10	14	27	0	2	5	2	13	10
Gem/Mean	12	13	12	7	8	10	20	12	11	18	3	5	5	3	15
															6

Tabel 12 Die plantelling gees (x 1000) van die verskillende soyaboonkultivars by die verskillende proeflokaliteite, 2013/14
 Table 12 The number of plant harvested (x 1000) of the different soybean cultivars at the different trial localities, 2013/14

Cultivar	Koel/Cool	Matig/Moderate						Warm			
		Bethlehem	Kinross	Middleburg	Cedara	Geytown	Hoopsstad	Stofberg	Otchefstroom	Brits	Gem/Mean
Sonop	253	163	192	196	287	218	254	285	263	294	211
LS 6240 R	114	174	296	155	269	202	181	329	230	302	186
LS 6444 R	144	186	292	235	257	223	284	378	278	238	188
LS 6146 R	113	192	302	205	328	228	245	363	281	174	250
PAN 1454 R	137	136	288	205	283	210	222	328	285	196	244
PHB 94 Y 80 R	177	171	323	217	331	244	229	333	259	197	249
LS 6248 R	275	193	324	242	294	266	279	339	289	247	271
Highveld Top	252	172	296	239	289	249	289	255	300	183	260
Knap	244	160	315	196	283	240	296	249	259	202	253
PHB 95 Y 20 R	246	137	298	119	287	218	220	186	241	184	218
PAN 1583 R	276	163	256	239	286	244	268	222	285	205	210
LS 6453 R	235	137	312	173	267	225	235	322	267	189	236
PAN 1664 R	258	150	331	234	292	253	272	234	267	176	200
PHB 95 Y 40 R	268	153	305	268	288	256	332	326	359	192	225
PAN 1521 R	279	175	378	240	296	273	264	319	300	192	270
PAN 1500 R	234	160	292	203	294	237	281	266	267	249	205
Marula	254	140	307	176	294	234	318	266	259	216	256
PAN 1513 R	269	176	287	229	294	251	293	153	300	191	246
Dundee	267	113	301	143	299	224	231	223	181	194	267
S722/6/1E	196	131	-	221	299	212	232	231	193	183	206
LS 6261 R	208	137	290	195	291	224	310	186	270	156	251
PAN 1666 R	283	191	323	250	277	265	341	163	330	190	250
PAN 1623 R	251	167	342	360	272	279	391	249	344	198	267
LS 6164 R	273	179	321	213	298	257	263	141	237	156	246
DM 6.2i RR	230	143	283	144	288	217	197	202	211	169	249
LS 6161 R	254	219	325	303	300	280	412	254	289	206	277
PAN 1614 R	281	184	319	267	287	268	362	304	378	223	235
Egret	263	129	333	142	294	232	292	321	274	190	218
Heron	269	129	299	168	297	232	249	161	241	162	244
Ibis 2000	262	177	332	296	288	271	396	277	278	220	237
PAN 1729 R	227	111	293	106	295	207	177	278	244	160	231
Standaard	257	143	265	167	301	226	256	211	319	176	207
Gem/Mean	236	159	304	211	291	240	277	261	274	192	242

Tabel 19 Oesekerheid by die verskillende opbrengsmikpunte vir die koeler produksiegebiede, 2011/12, 2012/13, 2013/14
 Table 19 Yield reliability at the different yield targets for the cooler production areas, 2011/12, 2012/13, 2013/14

Kultivar Cultivar	Opbrengsmikpunte/Yield targets ton ha ⁻¹					Gem/Mean 3 jaar/year	D ²
	1.00	1.50	2.00	2.50	3.00		
PAN 1454 R	1.40*	1.52*	1.60*	1.76	1.87	1.99	2.11
LS 6161 R	0.19	0.75	1.32	1.88*	2.45*	3.01*	3.58*
LS 6164 R	0.45	1.06*	1.66*	2.27*	2.88*	3.48*	4.09*
LS 6146 R	0.77*	0.98*	1.21	1.43	1.65	1.87	2.08
PAN 1666 R	0.25	0.69	1.13	1.57	2.02	2.46	2.90
Sonop	0.47	0.92	1.38*	1.83	2.28	2.73	3.19
PHB 95 Y 20	0.44	0.91	1.38*	1.85	2.32	2.79	3.26
Heron	0.00	0.54	1.14	1.75	2.36	2.97*	3.57*
Egret	0.00	0.09	0.75	1.40	2.05	2.70	3.35
Ibis 2000	0.38	0.80	1.22	1.64	2.06	2.48	2.90
PAN 1664 R	0.14	0.76	1.39*	2.01*	2.63*	3.25*	3.87*
Dundee	0.03	0.60	1.17	1.74	2.31	2.88	3.45
LS 6444 R	1.36*	1.37*	1.37	1.38	1.38	1.38	1.39
LS 6248 R	0.01	0.58	1.15	1.71	2.28	2.85	3.42
PAN 1583 R	0.43	0.96*	1.50*	2.04	2.58*	3.11*	3.65*
PHB 95 Y 40	0.03	0.61	1.19	1.77	2.35	2.93	3.51*
Highveld Top	0.05	0.62	1.19	1.76	2.33	2.91	3.48
Knap	0.20	0.75	1.30	1.85	2.40*	2.95*	3.50*
Marula	0.34	0.81	1.27	1.74	2.21	2.68	3.14

Tabel 20 Saadopbrengs (kg/ha^{-1}) van kultivars gedurende die 2012/13 en 2013/14 groeiseisoen ten opsigte van die verskillende lokaliteite wat in die koeler produksiegebiede geleë is

Table 20 Seed yield (kg/ha^{-1}) of cultivars during the 2012/13 and 2013/14 growing season for the various localities situated in the cooler production areas

Kultivar Cultivar	2012/13		2013/14		Gem/Mean Gem/Mean	
	Middleburg Delmas	Bethlehem Delmas	Middleburg Delmas	Bethlehem Delmas		
Sonop	1427	3278	2696	2467	3657	3325
LS 6444 R	2184	1828	2383	2132	3688	3117
PAN 1454 R	2691	2482	3535	2903	2547	3458
LS 6146 R	2617	2596	2250	2488	2923	4798
LS 6248 R	1633	5016	2441	3030	3561	3720
PAN 1583 R	1318	4828	2752	2966	3960	3424
Highveld Top	1157	3969	2596	2574	2963	3906
Knap	1217	4410	2728	2785	3069	4535
PHB 95 Y 20	1429	3831	3177	2812	1948	3939
PHB 95 Y 40	1943	4925	1802	2890	2784	4033
A 5409 RG	1881	4574	2987	3148	-	-
PHB 95 B 53	1797	4607	2915	3106	-	-
PAN 1666 R	1130	4001	3037	2723	3438	2650
PAN 1664 R	1430	5394	2750	3191	3441	3799
LS 6164 R	1389	4858	2407	2885	3795	4186
Dundee	1255	4293	2434	2661	2096	4108
Marula	1118	3462	3214	2598	2721	4109
LS 6161 R	2046	4467	2456	2990	3444	4161
LS 6150 R	998	4481	2180	2553	-	-
Egret	936	4985	1746	2556	2214	4307
Heron	1415	4911	2042	2789	2679	4391
Ibis 2000	1450	3433	2150	2344	1966	3768
LS 6453 R	2065	3591	2701	2786	3271	2508
PAN 1500 R	1085	4318	2361	2588	3830	3610
LS 6261 R	1653	4109	2509	2757	3559	3394
PAN 1614 R	764	3951	2460	2392	3778	4871
PAN 1616 R	1279	4671	2696	2882	-	-
LS 6240 R	-	-	-	-	3185	5133
PHB 94 Y 80 R	-	-	-	-	3310	4712
PAN 1521 R	-	-	-	-	3729	5024
PAN 1513 R	-	-	-	-	3466	5474
S 722/6/1E	-	-	-	-	1797	2606
PAN 1623 R	-	-	-	-	3574	4664
DM 6.2i RR	-	-	-	-	3037	4772
PAN 1729 R	-	-	-	-	2095	3955
Gem/Mean	1530	4121	2571	2741	3081	4015
					3211	2920
						2660
						3170

Tabel 21 Oesekerheid by die verskillende opbrengsmikpunte vir die matige produksiegebiede, 2011/12, 2012/13, 2013/14
 Table 21 Yield reliability at the different yield targets for the moderate production areas, 2011/12, 2012/13, 2013/14

Kultivar Cultivar	Opbrengsmikpunte/Yield targets ton ha ⁻¹				Gem/Mean 3 jaar/year	D2
	1.00	1.50	2.00	2.50		
PAN 1454 R	0.47	0.94	1.41	1.87	2.34	2.80
LS 6161 R	0.73*	1.22*	1.70*	2.19*	2.67*	3.16*
LS 6164 R	0.53	1.00	1.48	1.95	2.42	2.90
Sonop	0.74*	1.25*	1.76*	2.27*	2.78*	3.29*
PAN 1666 R	0.57	1.06	1.55	2.05	2.54	3.03
LS 6146 R	0.19	0.66	1.14	1.61	2.08	2.55
Heron	0.42	0.91	1.39	1.88	2.36	2.85
Egret	0.48	0.89	1.30	1.71	2.12	2.53
Ibis 2000	0.25	0.66	1.07	1.48	1.89	2.30
Dundee	0.32	0.86	1.40	1.94	2.49	3.03
LS 6444 R	0.00	0.42	0.96	1.50	2.04	2.58
LS 6248 R	0.54	1.07	1.60*	2.12*	2.65*	3.18*
PHB 95 Y 20	0.54	1.00	1.46	1.92	2.39	2.85
PHB 95 Y 40	0.58	1.09*	1.61*	2.13*	2.64*	3.16*
PAN 1583 R	0.81*	1.30*	1.80*	2.29*	2.78*	3.27*
PAN 1664 R	0.51	1.04	1.57	2.10*	2.63*	3.16*
Highveld Top	0.53	1.08	1.63*	2.17*	2.72*	3.27*
Knap	0.64*	1.13*	1.63*	2.13*	2.62*	3.12*
Marula	0.59*	1.14*	1.69*	2.25*	2.80*	3.35*

Tabel 22 Oesekerheid by die verskillende opbrengsmikpunte vir die matige produksiegebiede, 2012/13, 2013/14
 Table 22 Yield reliability at the different yield targets for the moderate production areas, 2012/13, 2013/14

Kultivar Cultivar	Opbrengsmikpunte/Yield targets ton ha ⁻¹				Gem/Mean 3 jaar/year	D ²
	1.00	1.50	2.00	2.50		
PAN 1454 R	0.27	0.77	1.27	1.77	2.27	3.27
LS 6161 R	0.76*	1.21*	1.67*	2.12*	2.57*	3.02
LS 6164 R	0.58*	1.03	1.47	1.91	2.36	3.48
PAN 1666 R	0.46	0.96	1.45	1.95	2.45	2.95
LS 6146 R	0.00	0.44	0.93	1.42	1.92	2.45
Heron	0.23	0.74	1.25	1.76	2.27	2.78
PHB 95 Y 20	0.38	0.85	1.33	1.80	2.28	2.76
Egret	0.42	0.82	1.23	1.63	2.04	2.44
Ibis 2000	0.41	0.78	1.14	1.51	1.87	2.24
PAN 1664 R	0.42	0.93	1.44	1.96	2.47	2.98
Dundee	0.48	1.01	1.53	2.06*	2.58*	3.11*
LS 6444 R	0.00	0.05	0.68	1.30	1.92	2.54
PHB 95 Y 40	0.77*	1.25*	1.72*	2.20*	2.67*	3.15*
LS 6248 R	0.41	0.95	1.49	2.03	2.56*	3.10*
PAN 1583 R	0.83*	1.30*	1.77*	2.24*	2.71*	3.18*
Sonop	0.66*	1.19*	1.72*	2.25*	2.78*	3.31*
Highyield Top	0.42	0.97	1.53	2.08*	2.64*	3.19*
Knap	0.43	0.98	1.54	2.09*	2.64*	3.19*
Marula	0.63*	1.17*	1.70*	2.23*	2.76*	3.30*
LS 6261 R	0.17	0.69	1.22	1.75	2.28	2.81
PAN 1614 R	0.32	0.96	1.60*	2.24*	2.88*	3.52*
PAN 1500 R	0.57*	1.07*	1.58*	2.08*	2.59*	3.09*

Tabel 23 Oesekerheid by die verskillende opbrengsmikpunte vir die warm produksiegebiede, 2011/12, 2012/13, 2013/14
 Table 23 Yield reliability at the different yield targets for the warm production areas, 2011/12, 2012/13, 2013/14

Kultivar Cultivar	Opbrengsmikpunte/Yield targets ton ha ⁻¹					Gem/Mean 3 jaar/year	D ²
	1.00	1.50	2.00	2.50	3.00		
PAN 1454 R	0.36	0.86	1.36	1.86	2.36	2.86	3.36
LS 6161 R	0.59*	1.10*	1.61*	2.11*	2.62*	3.13*	3.64*
LS 6164 R	0.00	0.75	1.28	1.80	2.33	2.86	3.39
Sonop	0.66*	1.11*	1.56*	2.01*	2.46*	2.91	3.36
PAN 1666 R	0.55*	1.04*	1.52*	2.01*	2.50*	2.99*	3.48*
PHB 95 Y 40	0.76*	1.25*	1.74*	2.23*	2.71*	3.20*	3.69*
LS 6146 R	0.14	0.68	1.23	1.77	2.32	2.87	3.41
PHB 95 Y 20	0.00	0.02	0.70	1.38	2.07	2.75	3.43
Heron	0.26	0.77	1.27	1.78	2.28	2.79	3.30
Egret	0.67*	1.15*	1.64*	2.12*	2.61*	3.09*	3.58*
Ibis 2000	0.00	0.00	1.11	1.53	1.95	2.36	2.78
PAN 1664 R	0.40	0.88	1.36	1.84	2.32	2.80	3.28
Dundee	0.72*	1.07*	1.41	1.75	2.09	2.43	2.78
LS 6444 R	0.00	0.58	1.13	1.67	2.22	2.77	3.32
LS 6248 R	0.17	0.73	1.29	1.85	2.41	2.97*	3.53*
PAN 1583 R	0.36	0.89	1.42	1.95	2.48*	3.01*	3.54*
Highyield Top	0.31	0.76	1.21	1.66	2.11	2.56	3.01
Knap	0.71*	1.16*	1.62*	2.07*	2.52*	2.97*	3.43
Marula	0.86*	1.27*	1.69*	2.10*	2.51*	2.92	3.34

Tabel 24 Saadopbrengs (kg/ha^{-1}) van kultivars gedurende die 2012/13 en 2013/14 groeiëisoen ten opsigte van die verskillende lokaliteite wat in die warm produksiegebiede geleë is

Table 24 Seed yield (kg/ha^{-1}) of cultivars during the 2012/13 and 2013/14 growing season for the various localities situated in the warm production areas

Kultivar Cultivar	2012/13		2013/14		Gem/Mean Gem/Mean
	DBTS Groblersdal	DBTS Koedoeskop	DBTS Rustenburg	DBTS Groblersdal	
Sonop	3256	2790	3967	3933	3280
LS 6444 R	3742	2599	3836	4731	2395
PAN 1454 R	3455	3271	4554	4263	2926
LS 6146 R	4028	3027	4338	4377	2042
LS 6248 R	3796	2853	3929	4245	4010
PAN 1583 R	4086	3216	4434	4715	3224
Highveld Top	3241	2915	3761	3872	3367
Knap	3187	3151	4539	3942	3440
PHB 95 Y 20	4237	3315	5978	4289	2851
PHB 95 Y 40	4507	3064	4920	4031	3295
A 5409 RG	3590	2873	4340	4087	3496
PHB 95 B 53	4428	2454	4576	4334	3815
PAN 1666 R	3723	3280	3978	4223	3894
PAN 1664 R	4643	3318	4064	4064	4739
LS 6164 R	4088	3508	4747	4436	2094
Dundee	2888	2389	3111	3768	4109
Marula	3192	3055	3849	4141	2926
LS 6161 R	4168	3541	4612	4125	4374
LS 6150 R	3810	3054	4415	4390	2027
Egret	4319	2577	5011	4131	3829
Heron	3370	2919	4719	4295	3743
Ibis 2000	4453	2799	3472	3638	2162
LS 6453 R	4155	3537	3629	4349	2797
PAN 1500 R	3940	2805	4148	4140	3566
LS 6261 R	3987	2765	5000	4821	4022
PAN 1614 R	4281	2545	4256	3340	3429
PAN 1616 R	4168	2938	4649	4095	3571
LS 6240 R	-	-	-	-	-
PHB 94 Y 80 R	-	-	-	-	-
PAN 1521 R	-	-	-	-	-
PAN 1513 R	-	-	-	-	-
S 722/6/1E	-	-	-	-	-
PAN 1623 R	-	-	-	-	-
DM 6.2i RR	-	-	-	-	-
PAN 1729 R	-	-	-	-	-
Gem/Mean	3879	2984	4335	4202	3228

GOVERNMENT NOTICES GOEWERMENSKENNISGEWINGS

DEPARTMENT OF AGRICULTURE DEPARTEMENT VAN LANDBOU

No. R. 225

6 March 2009

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

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

The Minister of Agriculture has 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 CKS 632;

"bulk container" means any vehicle or container in which bulk soya beans is transported or stored;

"consignment" means --

- (a) a quantity of soya beans 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;

"container" means a bag or a bulk container;

"cultivar list" means the list of cultivars determined from time to time by the Executive Officer: Agricultural Product Standards and which is obtainable from the Executive Officer: Agricultural Product Standards, Private Bag X258, Pretoria, 0001;

"defective soya beans" means soya beans and pieces of beans which --

- (a) have been damaged by frost, heat or weather conditions;
- (b) have been visibly damaged by insects;
- (c) are contaminated by moulds or plant diseases;
- (d) have a distinctly immature form or which are covered with a whitish membrane or where the testa have a green discolouration; and
- (e) when the testa is removed, display discolouration, excluding green discolouration;

Provided that soya beans which were damaged by insects in the green pod stage and of which the discolouration as a result of the damage is not larger than half of the surface of the soya beans, shall not be deemed as defective soya beans;

"**foreign matter**" means all matter other than soya beans, glass, coal, dung, sclerotinia or metal and loose seed coats of soya beans as well as pods;

"**frost damaged**" means soya beans with green to green brown seed-lobes with a waxy appearance;

"**heat damaged**" means soya beans with light to dark brown seed-lobes in a cross section;

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

"**mould infected**" means soya beans that is shrivelled and deformed in appearance with a colour that varies from medium to dark brown, parts of infected beans covered in mould;

"**other grains**" means kernels or pieces of kernels of wheat, barley, oats, triticale, maize, rye and sorghum;

"**pods**" means all whole or damaged soya bean pods;

"**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*L, *Convolvulus* spp., *Crotalaria* spp., *Datura* spp., *Ipomoea* spp., *Lolium temulentum*, *Ricinus communis* or *Xanthium* spp.;

"**sclerotinia**" *Sclerotinia sclerotiorum* is a fungus that produces hard masses of fungi tissue and is also known as sclerotinia. The sclerotinia varies in size and form and consists of a dark black exterior, a white interior and a rough surface texture;

"**soiled soya beans**" means whole soya beans which do not pass through the 4,75 mm screen and which are discoloured by soil or any other substance: Provided that if the discolouration is caused by plant material such soya beans shall not be regarded as soiled soya beans;

"**soya beans**" means the threshed seed and parts of seeds of the plant *Glycine max* and where the word "soya beans" is used in conjunction with the word "consignment", it includes matter other than soya beans that is included in a consignment;

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

"**the 4,75 mm round-hole sieve**" means a sieve --

- (a) with a flat metal sheet of 1,0 mm thickness perforated with round holes of 4,75 mm in diameter that are arranged with the centers 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 sieve 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) that fits onto a tray with a solid bottom; and must be at least 20 mm above the bottom of the tray; and

"**wet pods**" means all whole or damaged soya bean pods with a moisture content higher than the permissible moisture content.

Restriction on sale of soya beans

2. (1) No person shall sell soya beans in the Republic of South Africa --
- (a) unless the soya beans are sold according to the classes set out in regulation 3;
 - (b) unless the soya beans comply with the standards for the class concerned set out in regulation 4;
 - (c) unless the soya beans, where applicable, comply with the grades of soya beans and the standards for grades set out in regulation 5 and 6 respectively;
 - (d) unless the soya beans are packed in accordance with the packing requirements set out in regulation 7;
 - (e) unless the containers or sale documents, as the case may be, are marked in accordance with the marking requirements set out in regulation 8; and
 - (f) if such soya beans contains a substances that renders it unfit for human or animal 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 provision 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 soya beans

3. There are two classes of soya beans, namely Class SB and Class Other soya beans.

Standards for classes of soya beans

4. (1) A consignment of soya beans shall --
- (a) be free from a musty, sour, khaki bush or other undesired odour;
 - (b) be free from any substance that renders it unsuitable for human or animal consumption or for processing into or utilisation as food or feed;
 - (c) contain no more poisonous seeds than permitted in terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972);
 - (d) shall be free from glass, metal, coal or dung;
 - (e) with the exception of Class Other soya beans, be free from insects; and
 - (f) with the exception of Class Other soya beans, have a moisture content of not more than 13 percent.
- (2) A consignment of soya beans is classified as Class SB if it --
- (a) consists of any cultivar of soya beans; and
 - (b) complies with the standards for the grade of Class SB soya beans as set out in regulation 6.
- (3) A consignment of soya beans is classified as Class Other soya beans if it does not comply

with the standards for Class SB.

Grades for soya beans

5. (1) Soya beans of Class SB shall be graded as Grade SB1.
- (2) No grades are determined for Class Other soya beans.

Standards for grades of soya beans

6. A consignment of soya beans shall be graded as --

- (a) Grade SB1 if the nature of the deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 2 of the said table opposite the deviation concerned.

**PART II
PACKING AND MARKING REQUIREMENTS**

Packing requirements

7. Soya beans of different classes and grades shall be packed in different containers or stored separately.

Marking requirements

8. Each container or the accompanying sales documents of a consignment of soya beans shall be marked or endorsed with the class and grade of the soya beans.

**PART III
SAMPLING**

Obtaining sample

9. (1) A representative sample of a consignment of soya beans shall --
 - (a) in the case of soya beans delivered in bags and subject to regulation 10, 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 soya beans 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 to be representative of the

consignment from which it was taken.

Sampling if contents differ

10. (1) If, after an examination of the soya beans taken from different bags in a consignment in terms of regulation 9(1), it appears that the contents of those bags differ substantially --

- (a) all the bags in the consignment concerned shall be sampled in order to do such separation;
- (b) the bags concerned shall be placed separately; and
- (c) each group of bags with a similar contents in that consignment shall for the purpose of these regulations be deemed to be a separate consignment.

(2) If, after the discharge of a consignment of soya beans in bulk has commenced, it is suspected that the consignment could be of a 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 soya beans 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 off loading period with a suitable container from the steam of grain that is flowing in bulk.

Working sample

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

**PART IV
INSPECTION METHODS**

Determination of undesired odours, harmful substances, poisonous seeds, glass, metal, coal, dung and insects

12. A consignment or a sample of a consignment of soya beans shall be sensorially assessed or chemically analysed in order to determine --

- (a) whether it has musty, sour, khaki bush or other undesired odour;
- (b) whether it contains soya beans in which or on which a substance is found, that renders it unfit for human or animal consumption or for processing into or for utilisation as food or feed;
- (c) whether it contains poisonous seeds;
- (d) whether it contains glass, metal, coal or dung; and
- (e) whether it contains any insects.

Determination of moisture content

13. The moisture content of a consignment of soya beans may be determined according to any suitable method: Provided that the result thus obtained is in accordance with the maximum permitted deviation for a class 1 moisture meter as detailed in ISO 7700/2, based on results of the 72 hour, 103°C oven dried method (AACC Method 44-15A).

Determination of percentage of wet pods

14. The percentage of wet pods in a consignment of soya beans shall be determined as follows:

- (a) Obtain a working sample of at least 10 kg of soya beans from a representative sample of the

consignment.

- (b) Remove all wet pods by hand 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 concerned.
- (d) Such percentage represents the percentage of wet pods in the consignment concerned.

Determination of percentage of other grains, sunflower seed, stones and foreign matter

15. The percentage of other grains, sunflower seed, stones and foreign matter in a consignment of soya beans shall be determined as follows:

- (a) Obtain a working sample of at least 200g from a representative sample of the consignment.
- (b) Remove all other grains, sunflower seed, stones and foreign matter by hand from the working sample and determine the mass of the other grain, sunflower seed, stones and foreign matter separately.
- (c) Express the respective masses thus determined as a percentage of the mass of the working sample concerned.
- (d) Such percentages represent the percentage of other grains, sunflower seed, stones and foreign matter respectively in the consignment concerned.

Determination of the percentage defective soya beans

16. The percentage of defective soya beans shall be determined as follows:

- (a) Obtain a working sample of at least 100g soya beans, which is free of other grains, sunflower seed, stones and foreign matter, from the representative sample of the consignment.
- (b) Sieve the working sample over the 4, 75 mm round hole sieve and a pan.
- (c) Sort the soya beans on the 4, 75 mm round hole sieve so that the defective soya beans retained.
- (d) Determine the mass of the defective soya beans on the 4, 75 mm round hole sieve and express it as a percentage of the mass of the working sample concerned.
- (e) Such percentage represents the percentage of defective soya beans in the consignment.

Determination of the soya beans and pieces of soya beans which pass through the 4,75 mm round hole sieve

17. The percentage of soya beans and pieces of soya beans which pass through the 4, 75 mm round hole sieve shall be determined as follows:

- (a) Determine the mass of the soya beans and pieces of soya beans in the pan as obtained according to 16(a) and (b) and express it as a percentage of the mass of the working sample obtained in 16(a).
- (b) Such percentage represents the percentage soya beans and pieces of soya beans in the consignment which passes through the 4, 75 mm round hole sieve.

Determination of percentage of soiled soya beans

18. The percentage of soiled soya beans in a consignment of soya beans shall be determined as follows:

- (a) Remove all soiled soya beans from the working sample obtained in 16(a) by hand and determine the mass thereof.
- (b) Express the mass thus determined, as a percentage of the mass of the working sample obtained in 16(a).
- (c) Such percentage represents the percentage of soiled soya beans in the consignment concerned.

Determination of percentage sclerotinia

19. The percentage sclerotinia in a consignment of soya beans shall be determined as follows:
- (a) Remove all sclerotinia in the working sample in 16(a) obtained by hand and determine the mass thereof.
 - (b) Express the mass thus determined as a percentage of the working sample in 16(a).
 - (c) Such percentage represents the percentage sclerotinia in the consignment.

PART V
OFFENCES AND PENALTIES

20. Any person who 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 accordance with article 11 of the Act.

ANNEXURE/AANHANGSEL

TABLE/TABEL

STANDARDS FOR GRADES OF SOYA BEANS/STANDAARDE VIR GRADE VAN SOJABONE

Nature of deviation/Aard van afwyking	Maximum percentage permissible deviation (m/m)/ Maksimum persentasie toelaatbare afwyking (m/m)	Grade/Graad SB1
		2
1		
(a) Wet pods/Nat peule	0,2%	
(b) Foreign matter, including stones, other grain and sunflower seeds: Provided that such deviations are individually within the limits specified in items (c), (d), (e) and (f)/Vreemde voorwerpe, insluitende klippies, ander graan en sonneblomsaad: Met dien verstande dat sodanige afwykings individueel binne die perke gespesifieer in items (c), (d), (e) en (f) is	4%	
(c) Other grain/Ander graan	0,5%	
(d) Sunflower seed/Sonneblomsaad	0,1%	
(e) Stones/Klippies	1%	
(f) Sclerotinia	4%	
(g) Soya beans and parts of soya beans which pass through the 4,75 mm round hole screen/Sojabone en gedeeltes van sojabone wat deur die 4,75 mm-rondegatsif gaan	10%	
(h) Defective soya beans on the 4,75 mm round hole screen/Gebrekkige sojabone op die 4,75 mm-rondegatsif	10%	
(i) Soiled soya beans/Vuilgesmeerde sojabone	10%	
(j) Deviation in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items/Afwykings in (b) en (f) gesamentlik: Met dien verstande dat sodanige afwykings individueel binne die perke van genoemde items is	6%	

