

Quality of the 2016/17 season's soya bean crop

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The 2016/17 soya bean crop quality survey is the sixth annual survey performed by the Southern African Grain Laboratory NPC (SAGL). The goal of this survey is to compile a detailed database by accumulating quality data, collected over several seasons, on the national commercial soya bean crop.

The South African weighted average percentage soiled soya beans of 2,87% is the highest since this survey was started in the 2011/12 season.

The majority of soya beans produced in South Africa are genetically modified (GM), with an estimated 95% of the area planted with soya beans in the country being GM. Worldwide, GM soya beans occupy 80% of the area planted with soya beans.

Grading according to regulations

SAGL screened 15 of the crop samples to test for the presence of CP4 EPSPS (Roundup Ready®). The EnviroLogix QuickComb kit for bulk soya beans was used to quantitatively determine the presence of genetically modified soya beans.

The kit is designed to extract and detect the presence of certain proteins at the levels typically expressed in genetically modified bulk soya beans. Results were scanned and interpreted quantitatively with the EnviroLogix

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

Grading was done in accordance with the regulations relating to the grading, packing and marking of soya beans intended for sale in the Republic of South Africa (No R 370 of 21 April 2017). Of the 150 samples, 85% (132) were graded as Grade SB1, with 18 (15%) of the samples downgraded to class other soya beans (COSB). During the previous two seasons, 11% (2015/16) and 13% (2014/15) of the samples were downgraded to COSB.

High percentage soiled

The majority of samples (61%) downgraded this season resulted from the percentage soiled soya beans present in the sample, which exceeded the maximum permissible deviation of 10%. More than half of these samples originated from Mpumalanga.

This essential data set is a valuable tool, assisting industry with decision-making processes. General trends are revealed and quality differences highlighted in the commercial soya bean produced in different local production regions.

Quality analyses, which included grading, were performed on 150 composite samples. These composite samples, representing each delivery of soya beans at the various silos throughout the soya bean production regions, were taken according to the prescribed grading regulations during the 2017 harvesting season.

Figure 1: Average percentage soiled soya beans per province over five seasons.

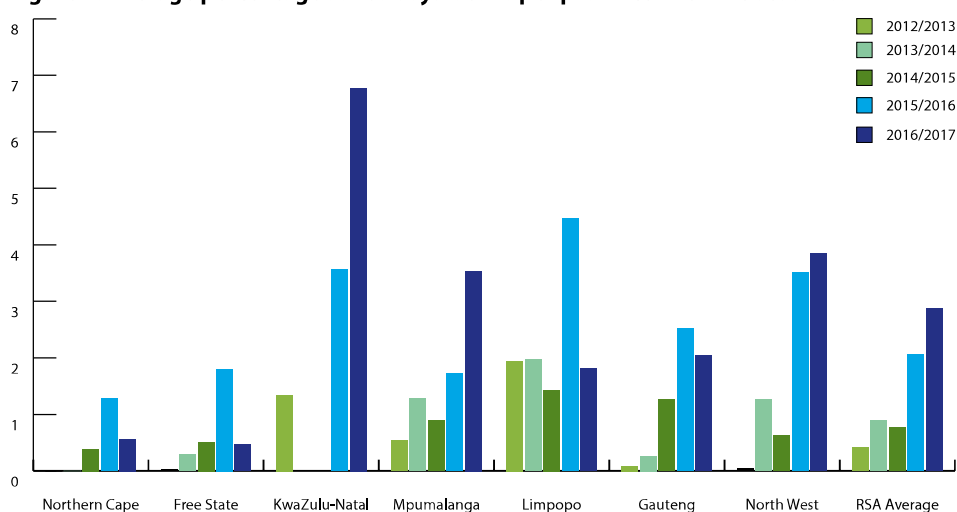


Table 1: Comparison of weighted average nutritional component values on a dry and 'as is' basis over five seasons.

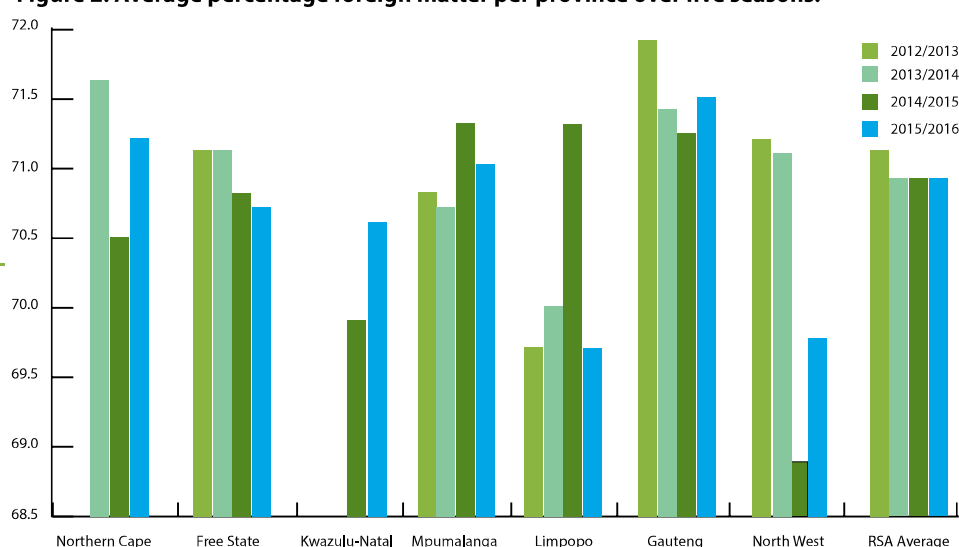
Season	2016/2017		2015/2016		2014/2015		2013/2014		2012/2013	
Moisture, % (17hr, 103°C)	7,4		7,4		7,0		7,1		7,2	
Moisture basis	Dry basis	As is	Dry basis	As is	Dry basis	As is	Dry basis	As is	Dry basis	As is
Crude protein, %	40,15	37,18	40,22	37,24	39,89	37,10	39,84	37,01	40,63	37,70
Crude fat, %	19,8	18,3	19,4	18,0	19,3	17,9	19,7	18,3	18,8	17,4
Crude fibre, %	5,9	5,9	7,3	7,3	6,4	6,4	6,1	6,1	-	-
Ash, %	4,58	4,24	4,61	4,27	4,64	4,32	4,66	4,33	4,65	4,32
No. of samples	150		143		150		150		150	

The South African weighted average percentage soiled soya beans of 2,87% is the highest since this survey was started in the 2011/12 season, when the average was 1,60%. The average last season was 2,06%. See *Figure 1* for the weighted average percentage soiled soya beans per province over five seasons.

General trends are revealed and quality differences highlighted in the commercial soya bean produced in different local production regions.

Other deviations that resulted in the downgrading of samples were the percentage other grain, the percentage sunflower seed present, the percentage foreign matter, as well as the presence of poisonous seeds. None of the samples graded contained any wet pods.

The national weighted average percentage soya beans and parts of soya beans above the 1,8mm slotted sieve, which pass through the 4,75mm round hole sieve, decreased from 0,92% the previous season to 0,88% this season. This is the lowest percentage of the six seasons for which crop quality data is available. The national weighted average percentage defective soya beans on the 4,75mm sieve increased slightly from 2,02% last season to 2,22% this season. The percentage of samples containing sclerotia from the fungus *Sclerotinia*

Figure 2: Average percentage foreign matter per province over five seasons.

sclerotium almost tripled from the previous season (from 25% to 70%). The three highest percentages of sclerotia observed (0,38%, 0,36% and 0,30%) were on samples from Mpumalanga. These percentages are, however, still well below the maximum permissible level of 4%. The national weighted average percentage this season was 0,07% compared to the 0,04% of the previous season.

Weight conversion chart

Although test weight does not form part of the grading regulations for soya beans in South Africa, the g/1ℓ filling weight of each soya bean sample was determined by means of the Kern 222 apparatus. The test weight values were then extrapolated by means of formulae obtained from the Canadian Grain Commission's test weight conversion chart for soya bean.

See *Figure 2* for a comparison of

the test weight per province over the last four seasons. These approximated values provide a measure of the bulk density of South African soya beans.

For a summary of the nutritional content analyses, namely crude protein, crude fat, crude fibre and ash, obtained over a period of five seasons, see *Table 1*. These results are routinely reported on a dry or moisture-free basis (db) for comparison purposes. However, the national 'as is' basis results are provided as well. These 'as is' values were calculated using the weighted national average moisture values. 🌱

Visit www.sagl.co.za for detailed results of this as well as previous surveys. The reports are also available for download in PDF format.

With gratitude to the Oil & Protein Seed Development Trust for financial support for these annual surveys, and to the members of Agbiz Grain for providing the crop samples.