Quality of the 2017/18 season's **sunflower crop**

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The sixth annual sunflower crop quality survey performed by the Southern African Grain Laboratory (SAGL) was made possible by the financial support of the Oil & Protein Seed Development Trust and the members of Agbiz Grain, who provided the crop samples.

A total of 176 samples representing the various production regions were submitted by commercial grain silo owners. The samples were received at the SAGL from July to November 2018.



Test weight

The average test weight (a measure of the bulk density) of sunflower seed this season was 40,1kg/hℓ, with values ranging from 33,2 to 45,9kg/hℓ. The previous two seasons averaged 42,1 and 42,5kg/hℓ, respectively, with values varying between 34,2 and 45,5kg/hℓ, and 35 and 48,1kg/hℓ.

These values were determined by means of the Kern 222 apparatus. The g/1ℓ filling mass of the sunflower seed samples were determined, which was then divided by two. The g/½ℓ filling mass obtained was then used to extrapolate the test weight by means of formulas obtained from the Canadian Grain Commission's sunflower seed, oil conversion chart.

Permissible deviations

Full grading was done in accordance with the regulations relating to the grading, packing and marking of sunflower seed intended for sale in the Republic of South Africa (No R45 of 22 January 2016). Of the samples, 81% (143) were graded as Grade FH1, with 33 of the samples downgraded to class other sunflower seed (COSF). During the previous two seasons, 15% (2016/17) and 22% (2015/16) of the samples were downgraded to COSF.

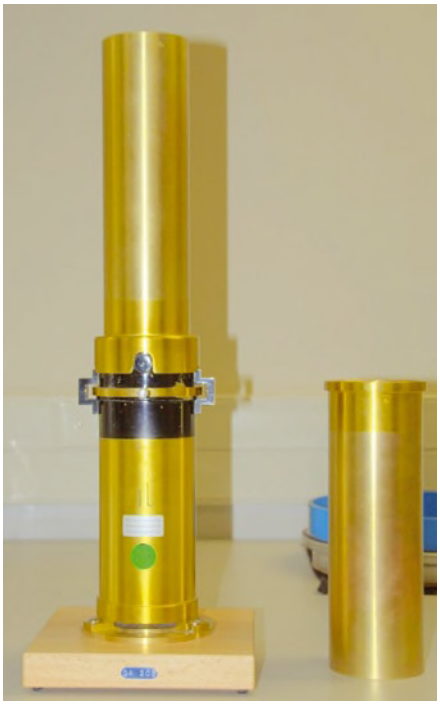
The majority of the samples (18) were downgraded as a result of the percentage of either the screenings or the collective deviations, or a combination of both, exceeding the maximum permissible deviations of 4 and 6%, respectively. A further nine samples were downgraded due to the presence of poisonous seeds (either *Datura spp.*, *Crotalaria spp.* or *Xanthium strumarium*) exceeding the maximum permissible number.

North West (99 samples) reported the highest weighted average percentage screenings of 2,18%, followed by Limpopo (five samples) and the Free State (64 samples) with 1,84 and 1,56%, respectively. Mpumalanga (eight samples) reported the lowest average percentage screenings at 1,33%. The

weighted national average was 1,91% compared to the 2,18% of the previous season. No samples were received from Gauteng this season.

The highest weighted percentage foreign matter (1,4%) was reported on the samples from the Free State, while the lowest percentages were found in Limpopo and Mpumalanga with 0,68 and 0,66%, respectively. The South African average was 1,16% compared to the 1,06 and 1,41% of the previous two seasons.

The number of samples that contained sclerotia from the fungus *Sclerotinia sclerotiorum* almost tripled from 28 samples (16%) in the previous season, to 78 samples (44%) this season. Of these samples, 41 originated in North West, 28 in the Free State, eight in Mpumalanga and one in Limpopo. However, none of these samples exceeded the maximum permissible deviation of 4%. Weighted average levels ranged from 0,02% in Limpopo to 0,36% in Mpumalanga. The national average of 0,17% was slightly higher than the 0,11% of the previous season.



The Kern 222 apparatus.

Figure 1: Average crude protein content per province per season.

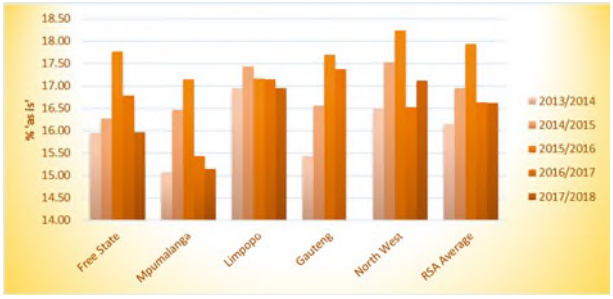
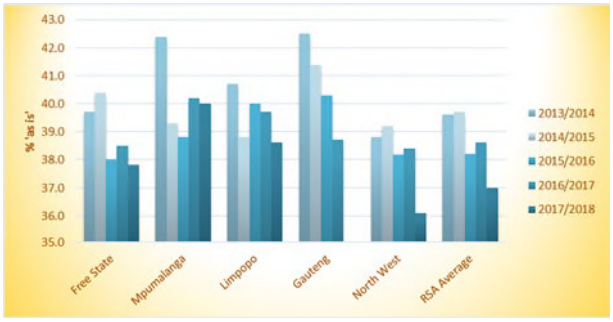


Figure 2: Average crude fat content per province per season.



According to an article by researchers of the Department of Plant Sciences: Plant Pathology Division of the University of the Free State, there are currently no commercially available sunflower or soya bean cultivars in the world that are resistant to the fungus (pathogen).

The manner in which sunflower and soya bean cultivars differ in their response to the pathogen under disease-favourable conditions, enables farmers to select cultivars that are more tolerant, which reduces the risk of infection, yield losses and inoculum buildup in the fields.

Nutritional content

The weighted average crude protein content (total nitrogen content x 6,25) was 16,61%, similar to the 16,63% of the previous season. North West had the highest weighted average crude protein content of 17,12% and Mpumalanga the lowest (15,15%).

Mpumalanga has consistently reported the lowest average protein content since commencement of this survey in the 2012/13 season. Limpopo's crude protein content averaged 16,95% and that of the Free State 15,97%. *Figure 1* shows the average crude protein content per province over the last five seasons.

The weighted average crude fat percentage of 37% was the lowest of the past six seasons, and 1,6% lower than the previous season. Mpumalanga had the highest weighted average crude fat content of 40%. Last season, Mpumalanga also reported the highest fat content. The North West recorded the lowest average fat content (36,1%).

The weighted average percentage crude fibre was the highest of the six seasons at 21,9% (21% in 2016/17). Average values varied from 20,2% in Limpopo to 22,2% in Free State. At 2,69% the weighted average ash (mineral matter) content was also the highest over six seasons. The provincial averages ranged from 2,56% in Mpumalanga to 2,74% in Limpopo.

The nutritional component analyses, namely crude protein, fat, fibre and ash, are reported as a % (g/100g) on an 'as received' or 'as is' basis.

Production overview

World sunflower seed production in the 2017/18 season decreased by 1% year-on-year to 49,6 million tons. The local crop followed the same trend, decreasing by 1,4% (12 000 tons) to 862 000 tons. Globally, the Ukraine and Russia are the main sunflower-producing countries, while in South Africa, the Free State and North West contributed 95% of the total crop.

The area utilised for sunflower production decreased by 5,4% to 601 500ha, compared to the 635 700ha of the previous season. This season's areas planted are in line with the five-year average of 606 780ha. The national yield average increased by 4,4% to 1,43 t/ha, the highest national average to date. Less than 1,5% of the sunflower seed produced in South Africa this season was planted under irrigation.

Visit *www.sagl.co.za* for detailed results of this as well as previous surveys. The reports are available in PDF format. For more information, contact SAGL on 012 807 4019.