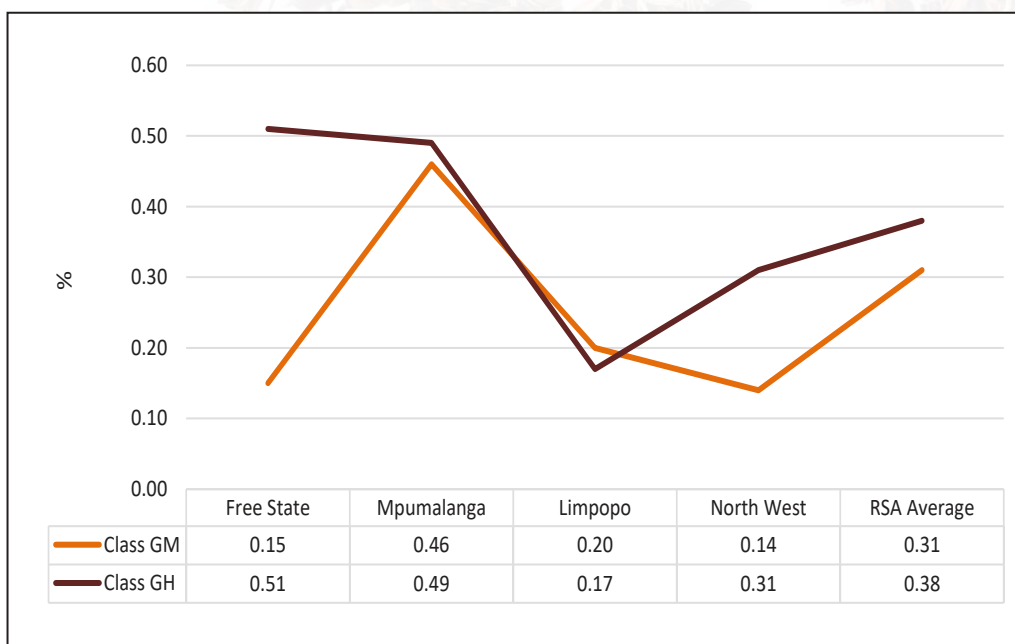


Sorghum Crop Quality 2017/2018– Summary of results

Sixty-four percent (27) of the 42 samples analysed for the purpose of this survey were determined to be class GM. Of these, 82% were graded as Grade GM1, 7% GM2 and 11% GM3. The remaining 15 samples were all class GH. Eleven (73%) of these samples were graded GH1 and four were graded GH2.

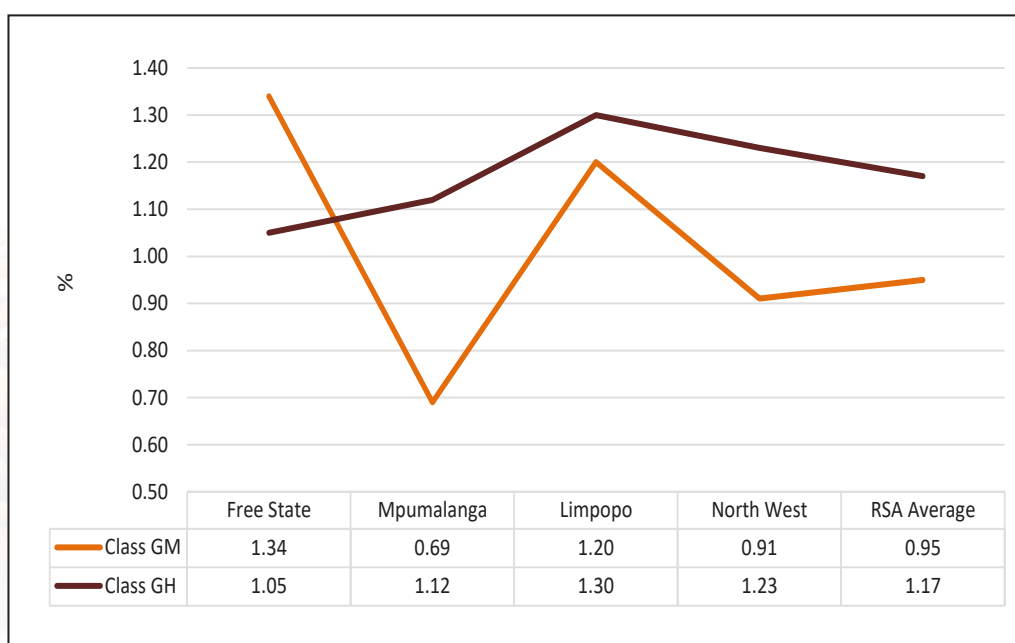
Please see Graphs 16 to 18 for the weighted average percentages foreign matter, defective sorghum and small kernel sorghum per class per province. Mpumalanga (13 samples) had the highest percentage foreign matter for GM sorghum, while both the Free State (5 samples) and Mpumalanga (2 samples) showed high foreign matter percentages for GH sorghum.

Graph 16: Average percentage foreign matter per class per province

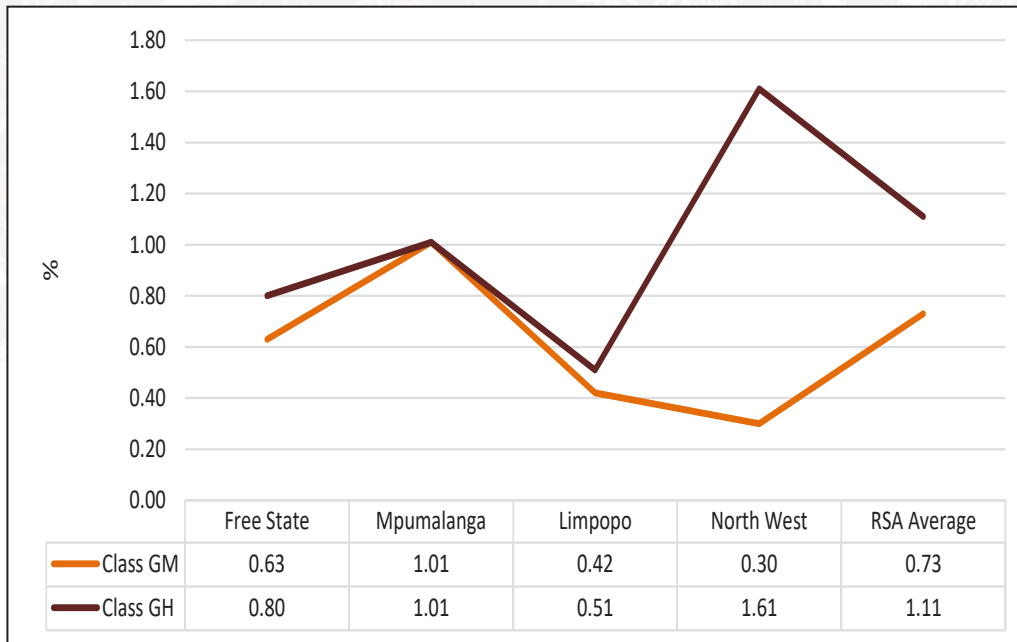


The percentage defective GH sorghum was the highest in all the provinces except for the Free State. GH sorghum also showed the highest percentages small kernels, with the six samples from North West having the highest average of 1.61%. GM sorghum had the lowest percentage small kernels in North West.

Graph 17: Average percentage defective sorghum per class per province

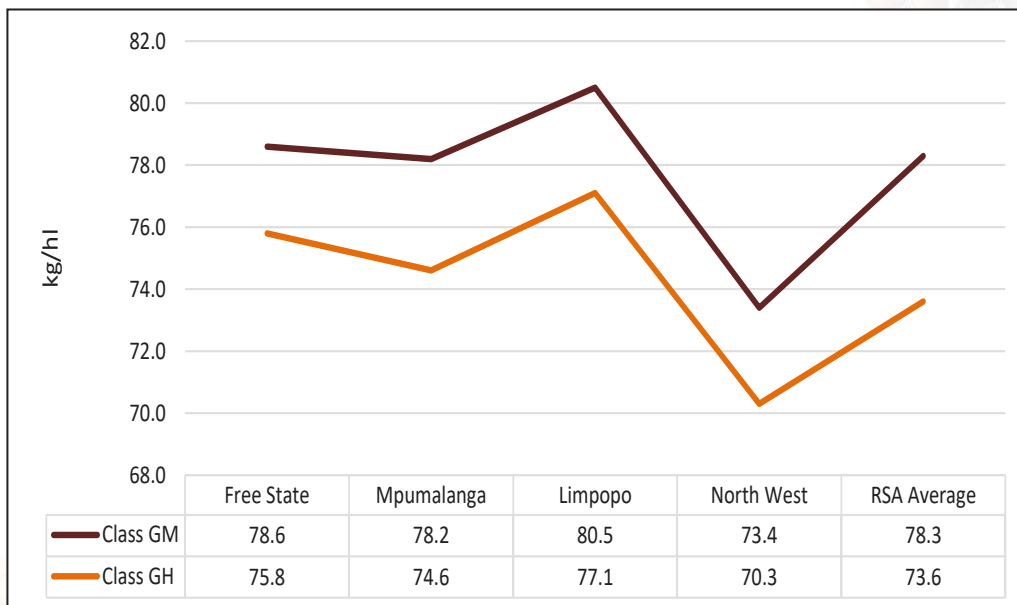


Graph 18: Average percentage small kernel sorghum per class per province



Although GM sorghum had the highest average test weights in all of the provinces, the distribution of the values for both GM and GH showed the same trend over provinces. Please refer to Graph 19. Test weight values for GM sorghum ranged between 71.7 and 82.3 kg/hl, while GH values ranged between a low of 54.1 kg/hl (one sample from North West province) to a high of 79.4 kg/hl. Test weight was determined on unscreened samples.

Graph 19: Average test weight per class per province

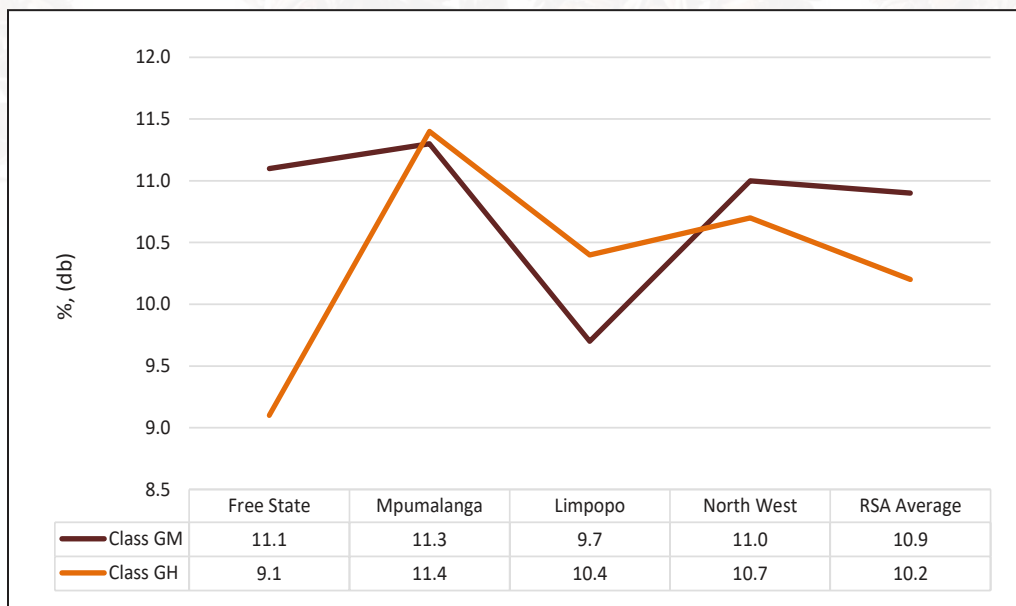


GM sorghum also had the highest 1 000 kernel mass values on average, ranging between 19.9 and 31.3 g (14% moisture basis) and averaging 25.5 g. GH sorghum averaged 22.3 g and varied between 17.0 and 27.8 g.

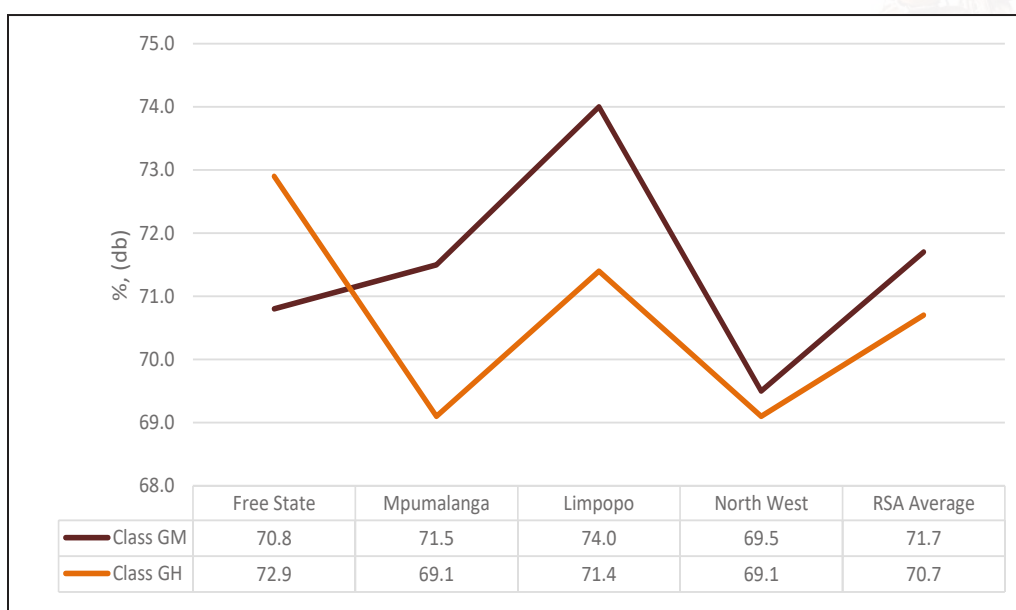
The image analysis results showed that the GM sorghum has slightly longer and wider kernels than the GH sorghum. The variation (indicated by the standard deviation) in these parameters is similar for both GM and GH sorghum. Kernel roundness, defined as W/L% (width divided by length, expressed as a percentage) showed a wider variation. A totally round kernel will have a W/L% of 100.

The crude protein and total starch contents of the samples were calculated and reported on a dry basis. Mpumalanga had the highest protein averages for both GM and GH sorghum. The highest total starch content for GM sorghum was reported in Limpopo, while the Free State had the highest total starch content for GH sorghum. Please see Graphs 20 and 21.

Graph 20: Average percentage crude protein per class per province



Graph 21: Average percentage total starch per class per province



Hunterlab colour determinations were done on a milled fraction of dehulled sample above the 1.8 mm slotted sieve. Please see the comparison of the Hunter L a b values obtained below. The average and range (in brackets) are provided:

GM sorghum: L 73.81 (67.49 – 83.08), a 4.43 (1.68 – 5.62) and b 10.17 (8.00 – 11.52)

GH sorghum: L 70.00 (66.17 – 73.93), a 4.71 (3.78 – 5.47) and b 9.16 (7.91 – 10.49)

Although there are currently no acceptable ranges for these parameters defined, the colour must be within the consumer-acceptable range, which traditionally are products with a slightly pink hue. Not only the dehulling process, but also other traits such as pigmentation differences determines the end product colour.

Mycotoxin analyses were performed on all 42 sorghum crop samples. The samples were tested by means of a SANAS ISO/IEC 17025 accredited multi-mycotoxin screening method using UPLC-MS/MS. With this technique simultaneous quantification and confirmation of Aflatoxin B₁; B₂; G₁; G₂, Fumonisin B₁; B₂; B₃, Deoxynivalenol, 15-ADON, HT-2 Toxin, T-2 Toxin, Zearalenone and Ochratoxin A is possible in one run. None of the samples tested positive for any of these mycotoxins. Please see mycotoxin results in Table 10 on pages 28 to 29.

The Methods section of this report on pages 31 to 32 provide a description of the procedures and methodologies followed.

Please see Table 3 on page 19 for a summary of the South African crop quality averages per class and grade.

The Sorghum Trust requested SAGL to also monitor the quality of all sorghum imported into South Africa. A subsample of all samples drawn by inspectors of the South African Agricultural Food, Quarantine and Inspection Services (SAAFQIS) of the Department of Agriculture, Forestry and Fisheries (DAFF) is forwarded to the SAGL for analysis. To assist with quality comparisons between local and imported sorghum, the same scope of analysis is used for both sets of samples.

SAGL received four sorghum samples that were sampled from May to August of 2018. Please see Table 11 on page 30 for a comparison of the quality of imported and local sorghum.