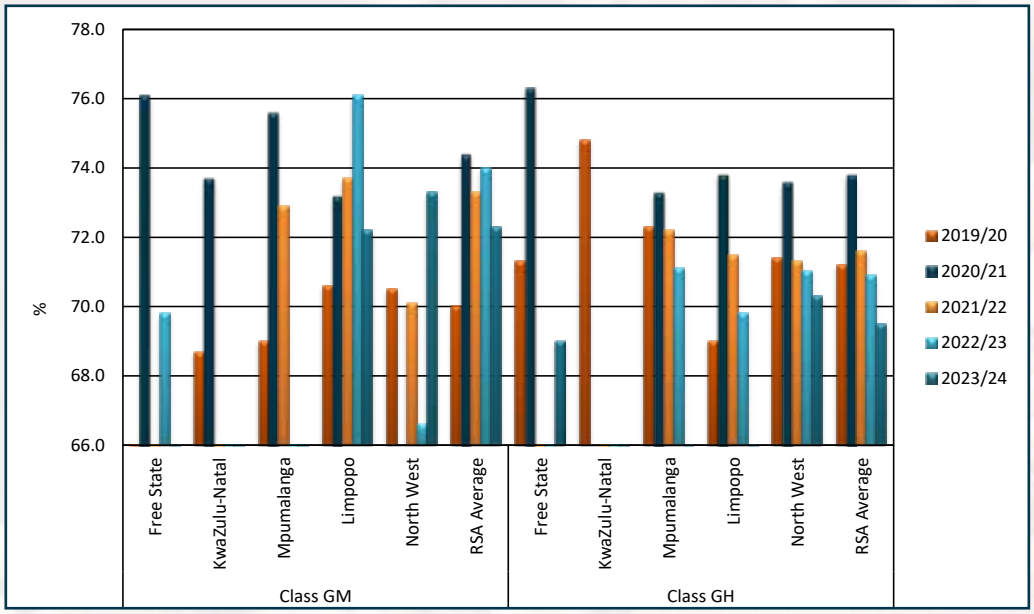
Graph 21 shows that the average total starch content for GM sorghum varied from 72.2% in Limpopo to 73.3% in North West. GH sorghum, varied between 69.0% (Free State) to 70.3% (North West). The weighted total starch content of GM sorghum was 72.3% and that of GH sorghum 69.5%.

Graph 21: Average percentage total starch per class per province over five seasons



The crude fat content of the crop samples was determined for the third consecutive season. The national average for GM sorghum was 3.9% and that for GH sorghum 3.2%. The previous season's averages were 3.3% for GM sorghum and 3.0% for GH sorghum.

The crude protein, total starch and crude fat contents of the samples were calculated and reported on a dry basis.

Hunterlab colour determinations were done on a milled fraction of dehulled sample above the 1.8 mm slotted sieve. The Hunterlab spectrophotometer separates the components of reflected color into a threedimensional colour scale, namely the Hunter L, a, b scale where L represents lightness (100 being white and 0 being black), a represents green to red variation and b represents variation from blue to yellow.

Please see Graphs 22 to 27 for a comparison of the ranges in the L, a, b values obtained on GM and GH sorghum over the seven seasons since the commencement of this project. The minimum and maximum values are based on a single composite grading sample's result in a specific season.

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 determine the end product colour.

Mycotoxins

Mycotoxin analyses were performed on all 25 sorghum crop samples. The samples were tested by means of a SANAS ISO/IEC 17025 accredited multi-mycotoxin method using UPLC-MS/MS. With this technique simultaneous quantification and confirmation of Aflatoxin B_1; B_2; G_1; G_2, Fumonisin B_1; B_2; B_3, 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 this season or in seasons 2022/23, 2020/21, 2019/20 and 2017/18.

One sample from Limpopo tested positive for Fumonisin B_1 residues in the 2021/22 season. Fumonisin, Deoxynivalenol (DON) and Zearalenone residues were found on some of the samples of the 2018/19 season. None of the levels however raised any concerns.

The limit of quantification (LOQ) for each of the above-mentioned mycotoxins according to this method is:

- Aflatoxin B_1 5 µg/kg
- Aflatoxin B_2 5 µg/kg
- Aflatoxin G_1 5 µg/kg
- Aflatoxin G_2 5 µg/kg
- Fumonisin B_1 20 µg/kg
- Fumonisin B_2 20 µg/kg
- Fumonisin B_3 20 µg/kg
- Deoxynivalenol 100 µg/kg
- 15-ADON 100 µg/kg
- Ochratoxin A 5 µg/kg
- Zearalenone 20 µg/kg
- HT-2 toxin 20 µg/kg
- T-2 toxin 20 µg/kg

The LOQ means the lowest concentration level that can be quantified with acceptable precision and accuracy by the LC-MS/MS.

The limit of detection (LOD) is the lowest concentration level that can be detected but not quantified and is 50% of the LOQ of each mycotoxin.

The Methods section of this report on pages 28 to 30 provides a description of the procedures and methodologies followed.