Potential quality and grading problems in the 2021/22 maize production season

By Sierk Ybema, managing director, SYGS

Summer in South Africa is currently characterised by extremely wet conditions and lower temperatures. These conditions have a negative influence on yield, grain quality and grading. However, higher temperatures and dryer conditions during February and March will create an improvement in yield potential and quality.

In terms of rainfall, comparative figures between 2005/06 and 2021/22 (marketing year to date) are shown in *Figures 1*, *2* and *3*. Given the similarity in rainfall, the industry can expect the same quality and grading problems as in the 2005/06 marketing year. From this, added Marlene Louw, senior agricultural economist at Absa, it is evident that the above-average rainfall was more severe towards the west of the country.

The maize yield

Far below average temperatures in the first part of summer were experienced in the summer rainfall regions, especially in the Eastern Free State. As a result, the development of maize plants was delayed, putting potential yield under pressure – maize needs a certain amount of heat units to be able to produce a high-quality crop.

In the Western Free State, the extreme wet conditions created water-logged fields, with a major reduction in yield.

Quality of grain

Maize kernels tend to become a lot softer in wet seasons, with a big reduction in milling index. This means a huge decrease in the commercial value of maize for processing facilities. The vitreous endosperm part of the kernel becomes smaller and softer, and this factor decreases the flour yield considerably. The reduction in the vitreous endosperm also has a negative effect on the breakfast and snack cereal industries.

According to a 2005/06 report by the South African Grain Laboratory (SAGL), the quality of white maize samples during that

Figure 1: Comparative rainfall between 2005/06 and 2021/22 to date for the Free State. (Source: Weather SA, 2022)

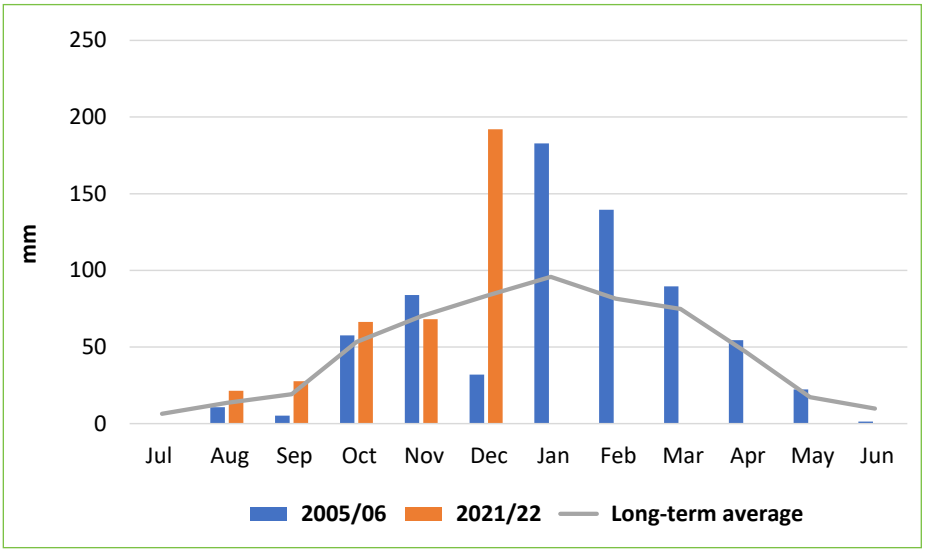
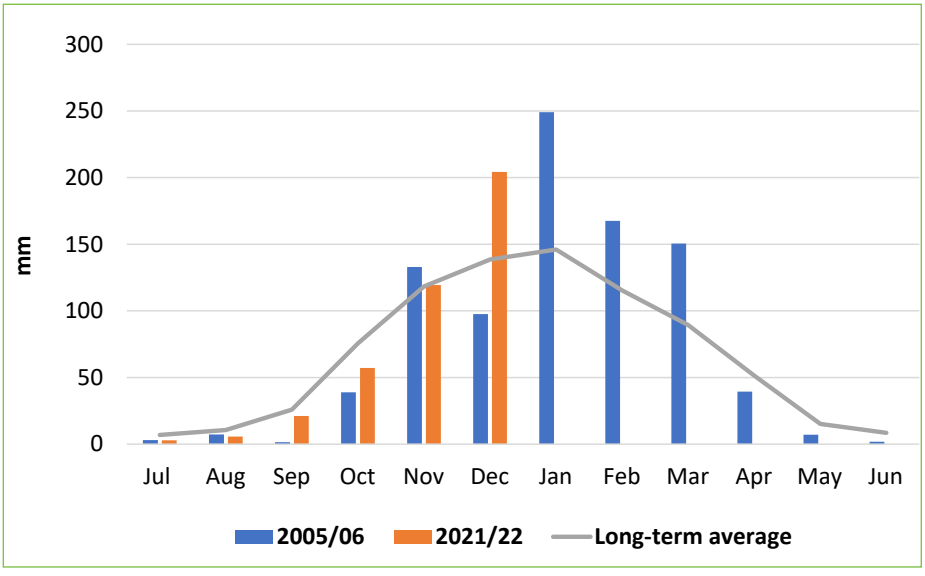


Figure 2: Comparative rainfall between 2005/06 and 2021/22 to date for Mpumalanga. (Source: Weather SA, 2022)



season was below average and downgrading was mainly due to *Fusarium* and *Diplodia*. In addition, explains Wiana Louw of the SAGL, the percentage of defective kernels was higher than the previous season, while the protein was somewhat lower that the ten-year average. Although the occurrence of stress cracks was not higher than in the previous season, the report does point to more break damage.

Grading of grain

Ear rot: Most pathogenic fungi species responsible for maize plant diseases prefer wet conditions. *Diplodia* and *Fusarium* ear rot are the most important types of ear rot that attacks kernels. Ear-rot infected kernels are part of mouldy kernels and count as defective maize kernels in the grading regulations for maize.

Broken kernels: Maize kernels become considerably softer in wet seasons. Soft kernels tend to break easily during harvesting and handling, with an increase in defective maize that measures below the 6,35mm round-hole sieve, resulting in lower grades.

Sprouted maize: Wet conditions late in the season, after the maize kernels are already physiologically matured, cause sprouting in maize kernels. Sprouted kernels count as defective kernels and may be responsible for lower grades.

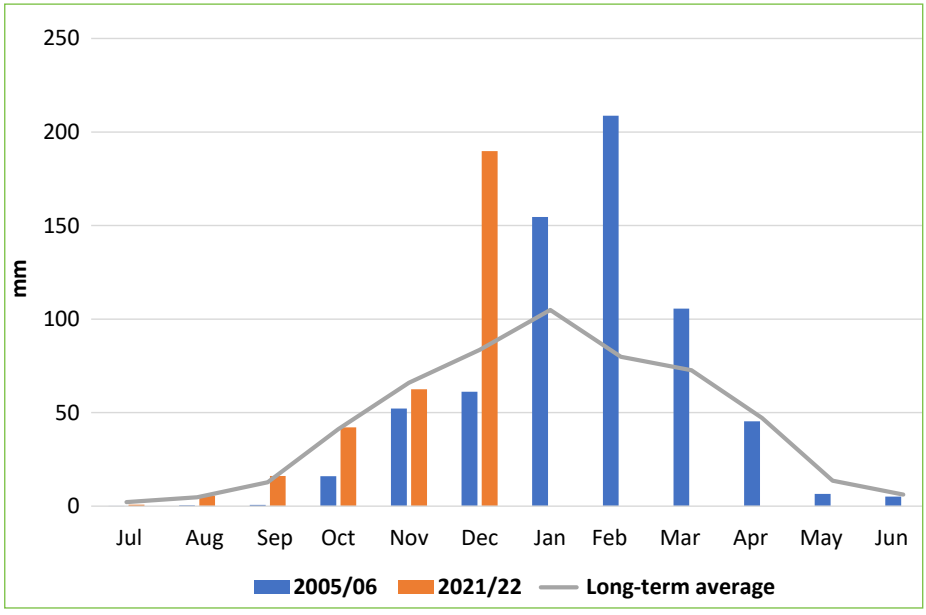
Soft kernels tend to break easily during harvesting and handling, with an increase in defective maize that measures below the 6,35mm round-hole sieve.

Diplodia infected maize (count as defective).

Sprouted maize (count as defective).

Discolouration near the tip of a maize kernel (does not count).

Figure 3: Comparative rainfall between 2005/06 and 2021/22 to date for the North West. (Source: Weather SA, 2022)



Discolouration of kernels: Wet weather during the last part of the season leads to an increase in discoloured kernels. Maize kernels that are discoloured by external factors such as water and sun, count as defective kernels; however, discolouration on both sides of the maize kernel that is limited to less than a quarter from the bottom tip of the kernel, is not considered defective.

For more information, send an email to Sierk Ybema at zirk.ybema@gmail.com, Marlene Louw at marlene.louw@absa.africa or Wiana Louw at wiana.louw@sagl.co.za.