The Impact of **High 2022 Summer Rainfall** on **Grain Production**

This article summarises recent rainfall statistics and presents a quantification of the impact of excessive rainfall impact on summer crop production in the 2021/2022 season.

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DESPITE EXTREMELY WET CONDITIONS, PRICE IMPACTS ARE EXPECTED TO BE DAMPENED BY HIGH STOCK LEVELS. PRODUCTION IMPACTS ON SOYBEAN AND SUNFLOWER CROPS ARE EXPECTED TO BE LESS EXTENSIVE THAN THAT FOR MAIZE.

The rainfall to date for the summer grain production region in South Africa has been amongst the highest in more than a century, while the "season to date" average rainfall (the sum of October, November and December) of 338.66mm is very close the maximum of 353.66mm recorded in 1996 (Figure 1).

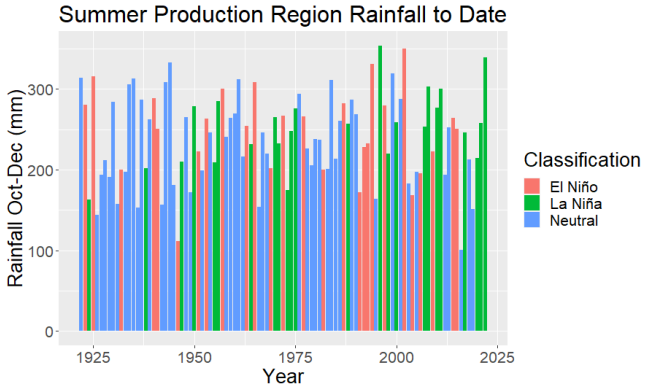

Figure 1: Summer Production Region Rainfall to Date
Source: WeatherSA (2022), BFAP (2022)

The biggest driver of the high-rainfall to date was the December contribution, which falls into the 99th percentile of an estimated distribution for the Western Free State's historical December rainfall records.

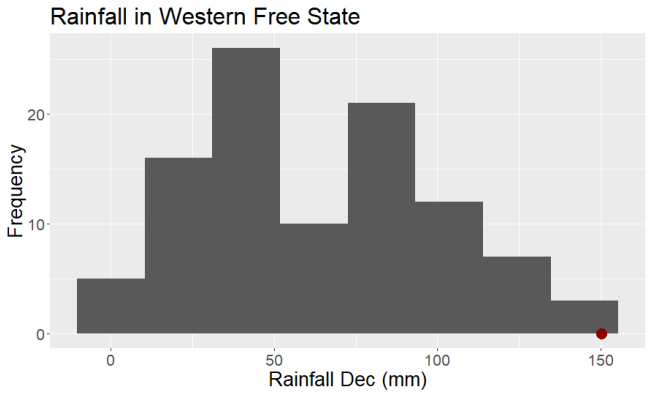

Figure 2: Western Free State December rainfall distribution vs. December 2021 Rainfall
Source: WeatherSA (2022), BFAP (2022)

Multiple climate modelling platforms report 2022 as being a strong-signal La Nina year, according to the Southern Oscillation Index. However, it is clear from Figure 1 that a La Nina classification does not guarantee high rainfall or a large crop, and especially not high rainfall in any particular district in South Africa. It merely points to a higher probability of a wetter and cooler summer. In fact, Figure 3 illustrates the estimated distribution of "season to date rainfall" by climate cycle classification. The highest point of the distribution for La Nina years is not significantly higher than that of El Nino years, while seasons classified as La Nina and El Nino both seem to have higher average rainfall than observed in neutral years.

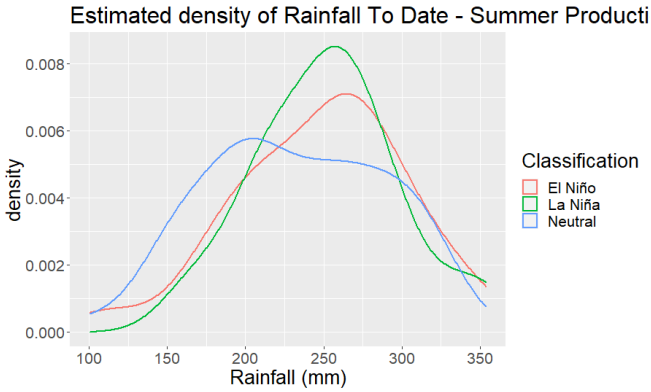

Figure 3: Rainfall to Date estimated density functions per climate cycle classification
Source: WeatherSA (2022), BFAP (2022)

While it is true that the rainfall to date has been considerable, it also follows two above-average rainfall seasons in 2020 and 2021. In those years total rainfall (October to the following March), averaged over the summer grain production region, was 488mm and 561mm respectively. These three consecutive high-rainfall summer seasons lead to the significant and wide-spread water logging observed especially in the Western Free State.

The area impact was evident in the preliminary summer crop area estimates published by the Crop Estimates Committee on 28 January 2022. The Free State Maize area planted was estimated to be 82 000 hectares (4%) less than intended, while estimated soybean and sunflower area

declined by 14 000 and 15 000 hectares respectively.

Apart from area losses, it is expected that summer crop yields will also be affected by the unusually wet and cool conditions. Some crop losses in the Western Free State have been reported, while below average yields are expected in other cases.

Our preliminary estimates at BFAP put the average white maize yield at 4.3t/ha, a little below the 3-year average, bringing the projected white maize harvest to 6.78 million tonnes in 2022 (Table 1). For yellow maize an average yield of 5.5t/ha is estimated, resulting in a 5.69 million tonnes of yellow maize for 2022. This brings the total maize harvest for 2022 to 12.46 million tonnes, a 3.7 million ton decrease from 2021. However, high stock levels from the 16.16 million ton harvest in 2021 will most likely dampen the price impact.

Table 1: Maize Area and Production Estimates
Source: CEC (2022), BFAP (2022)

	White Maize	Yellow Maize	Maize
Area ('000ha)	1 575.70	1 034.00	2 609.70
3-year average Yield (2019 - 2021) (t/ha)	4.88	6.54	
2022 Yield* (t/ha)	4.30	5.50	4.78
2022 Production* ('000 tonnes)	6 775.51	5 687.00	12 462.51
***BFAP Estimate**			

Soybeans are planted slightly earlier in the summer planting season, and were therefore somewhat more mature when the heavy rains came in December and January (Table 2). During the sunny and warm last two weeks of January 2022, many farmers reported that soybean plants largely recovered very well. BFAP estimates the national average soybean yield to be slightly below the 3-year average, at 1.7t/ha. This brings the soybean harvest to 1.547 million tonnes off a record area of 910 000 hectares.

Sunflower plantings were still in progress at the time of the preliminary estimates of the Crop Estimates Committee. As the North West province contributes the largest share of sunflower area, where lower water-logging impacts were reported than in the Free State Province, BFAP estimates the national average sunflower yield to be very close to the 3-year average at 1.3t/ha, bringing the 2022 sunflower harvest to 654 thousand hectares.

Table 2: Soybean and Sunflower Area and Production Estimates
Source: CEC (2022), BFAP (2022)

	Soybeans	Sunflower
Area ('000ha)	910.00	580.00
3-year average Yield (2019 - 2021) (t/ha)	1.88	1.44
2022 Yield* (t/ha)	1.70	1.30
2022 Production* ('000 tonnes)	1 547.00	754.00
***BFAP Estimate**		

IN SUMMARY…

With an initial estimated maize harvest of 12.5 million tonnes plus high stock levels at the beginning of the marketing season, South Africa should have sufficient maize to meet local consumption (approx. 12 million tonnes) as well as the traditional import requirements of our neighbours. Hence, large scale price gains will most likely be mitigated and prices will tend to trade closer to export parity levels, unless production conditions deteriorate further and crop estimates are reduced below current expectation.

Export parity price levels are determined by the exchange rate and global prices. Any movement of these drivers will also have an influence on domestic prices levels.