Income & Cost Budgets

Summer Crops – 2021/22



A joint initiative between the

Bureau for Food and Agricultural Policy (BFAP)

and the

Protein Research Foundation (PRF)

and the

Oil & Protein Seeds Development Trust / Oilseeds Advisory Committee

and

Grain South Africa

October 2021

INCOME & COST BUDGETS FOR SUMMER CROPS – 2021/22 SEASON

Foreword

The Protein Research Foundation (PRF) strives to make a significant contribution to the promotion of local production of protein on a sustainable basis, in order to satisfy the growing demand for protein for animal production purposes as well as the optimal utilisation thereof, which will lead to an increase in the standard of living of all people in the Republic of South Africa. The main objectives of the Protein Research Foundation (PRF) are to replace imported protein used in animal feed with locally produced protein and to encourage the better utilisation of this protein. The objectives are promoted through research funding and technology transfer.

The collaboration between the Protein Research Foundation (PRF), Grain South Africa, the Bureau for Food and Agricultural Policy (BFAP) and many agribusinesses across South Africa's key producing regions creates the benefit to leverage upon each organisation's ground-level expertise, as well as valuable resources in the field of production systems and commodity enterprise budgets. The purpose of this report is to present regional commodity enterprise budgets for the 2021/22 summer crop season.

It is acknowledged that intra-regional variation will occur and that enterprise budgets will differ from farm to farm. Whilst every care has been taken in preparing this report, it is advised to adjust the estimates according to the farm's respective location, yield potential, cultivation system and/or strategies.

Disclaimer

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Tel: 012 420 5021
Email: admin@bfap.co.za

Area coverage

Table 1.1 and Table 1.2 provides an overview of the area of coverage for dryland and irrigated summer crops in South Africa's key agro-ecological producing regions. The coordinators of this initiative are sincerely grateful for the interaction and assistance with data, knowledge and other inputs from each organisation, agribusiness and farmers.

Table 1.1: Area coverage: Dryland

Area	Dryland Crops	Source & Collaborators
KwaZulu-Natal		
Bloedrivier	Maize & Soybeans	GSA / BFAP / Individual Farmers
Mpumalanga		
Middelburg / Trichardt	Maize, Soybeans & Grain Sorghum	GSA / BFAP / Individual Farmers
Ermelo	Maize & Soybeans	GSA / BFAP / Individual Farmers
Eastern Free State		
Reitz region	Maize, soybeans, sunflower & dry beans	GSA / VKB / BFAP / Individual Farmers
Northern Free State		
Northern Free State – Water table soils / higher potential	Maize	GSA / Senwes / BFAP
Northern Free State – Normal potential	Maize	GSA / Senwes / BFAP
Northern Free State	Maize, soybeans, sunflower, ground nuts & grain sorghum	GSA / Senwes / BFAP
North West		
Koster	Maize, soybeans & sunflower	GSA / NWK / BFAP / Individual Farmers
Lichtenburg	Maize, soybeans, sunflower & ground nuts	GSA / NWK / BFAP / Individual Farmers

Tel: 012 420 5021
Email: admin@bfap.co.za

Table 1.2: Area coverage: Irrigation

Area	Irrigated Crops	Source & Collaborators
Northern Cape		
GWK Area	Maize, soybeans, ground nuts & sunflower	GWK, GSA & BFAP
KwaZulu-Natal		
Bergville	Maize & soybeans	GSA & Individual Farmers
North West		
Brits / Northam / Koedoeskop	Maize, soybeans, sunflower & sorghum	GSA, NWK & Individual Farmers
Limpopo		
Loskop Irrigation Scheme	Maize & Soybeans	GSA & Individual Farmers

Tel: 012 420 5021
Email: admin@bfap.co.za

Yield Assumptions

Figure 1.1 and Figure 1.2 indicate the yield assumptions for dryland and irrigated crops. These assumptions represent target yields which were formulated in round table discussions. These levels are based on crop potential in the respective regions, historic trends and expert opinions. It is important to note that intra-regional variations will occur and it is recommended that producers adjust their target yields based on their location and potential.

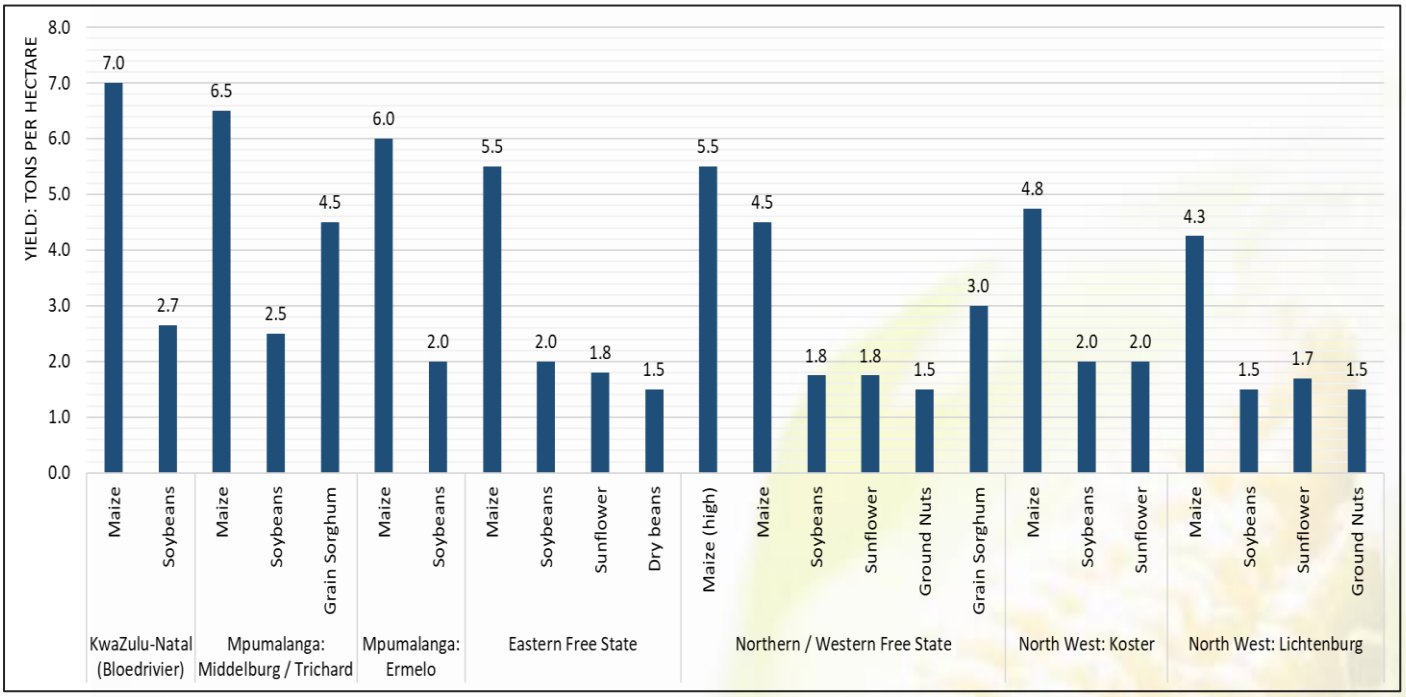


Figure 1.1: Dryland crops yield assumptions

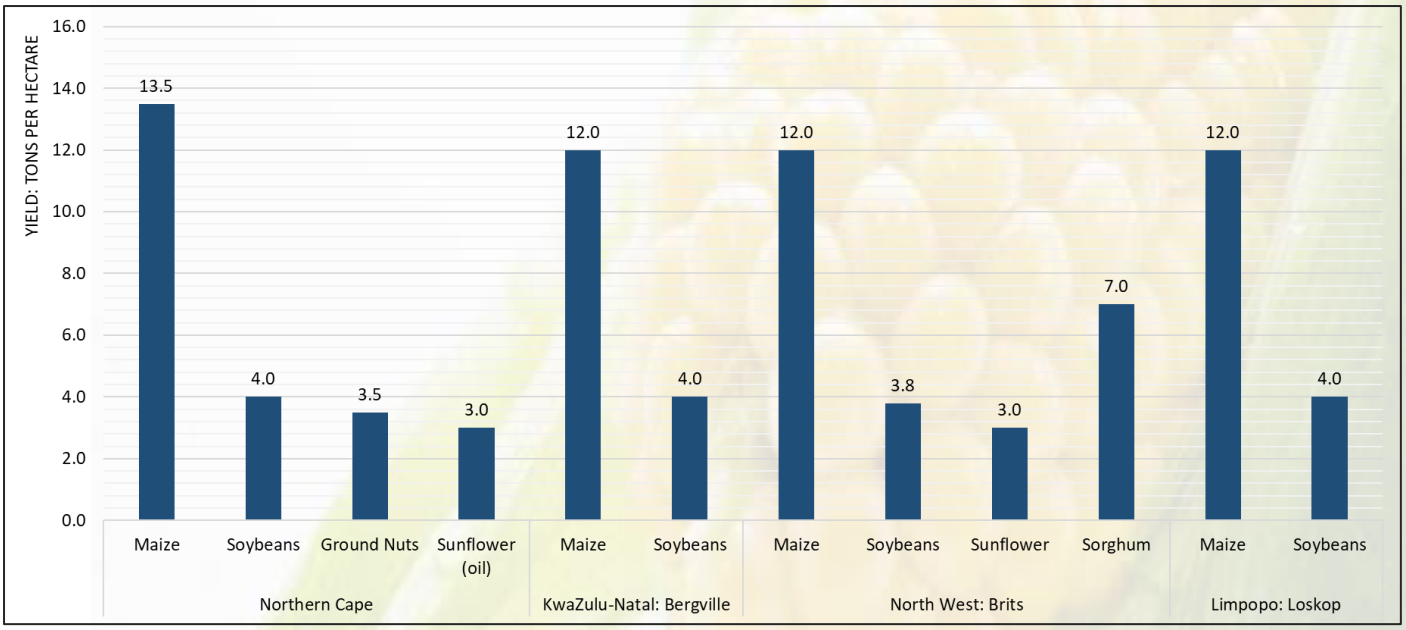


Figure 1.2: Irrigated crops yield assumptions

Tel: 012 420 5021
Email: admin@bfap.co.za

Crop Price Assumptions

Annually, the Bureau for Food and Agricultural Policy (BFAP) presents a baseline outlook for agricultural production, consumption, prices and trade in South Africa over a 10-year horizon. The outlook is generated within the BFAP system of models and is based on a coherent set of assumptions about a range of economic, technological, environmental, political, institutional, and social factors. Of the range of critical assumptions underpinning the baseline projections, one of the most important is that stable weather conditions will prevail in Southern Africa and around the world; therefore, yields grow constantly over the baseline as technology improves. Consequently, it does not represent a forecast, but rather a single plausible future outcome, based on fundamental factors underpinning markets. It presents a future equilibrium and a benchmark against which further analysis can be measured and understood.

Assumptions related to the future macro-economic environment are based on a combination of projections developed by the International Monetary Fund (IMF), the World Bank and the Bureau for Economic Research (BER) at Stellenbosch University. Baseline projections for world commodity markets were generated by FAPRI at the University of Missouri, as well as the Food and Agriculture Association (FAO) of the United Nations. Once these critical assumptions are captured in the BFAP system of models, the Outlook for all commodities is simulated within a closed system of equations. This captures the interlinkages between sectors and, for example, any shocks in the grain sector are transmitted to the livestock sector and vice versa. For each commodity, important components of supply and demand are identified, after which an equilibrium is established through balance sheet principles by equating total demand to total supply.

Figure 1.3 illustrates the key commodity price assumptions for white maize, yellow maize, sorghum, sunflower and soybeans that were used in the summer crop budgets for the 2021/22 production season. Further deductions were made to calculate a farm gate price for each agro-ecological producing region. The sensitivity analysis in the respective crop budgets makes provision for variation in price and yield and indicates the gross margin under each price and yield combination.

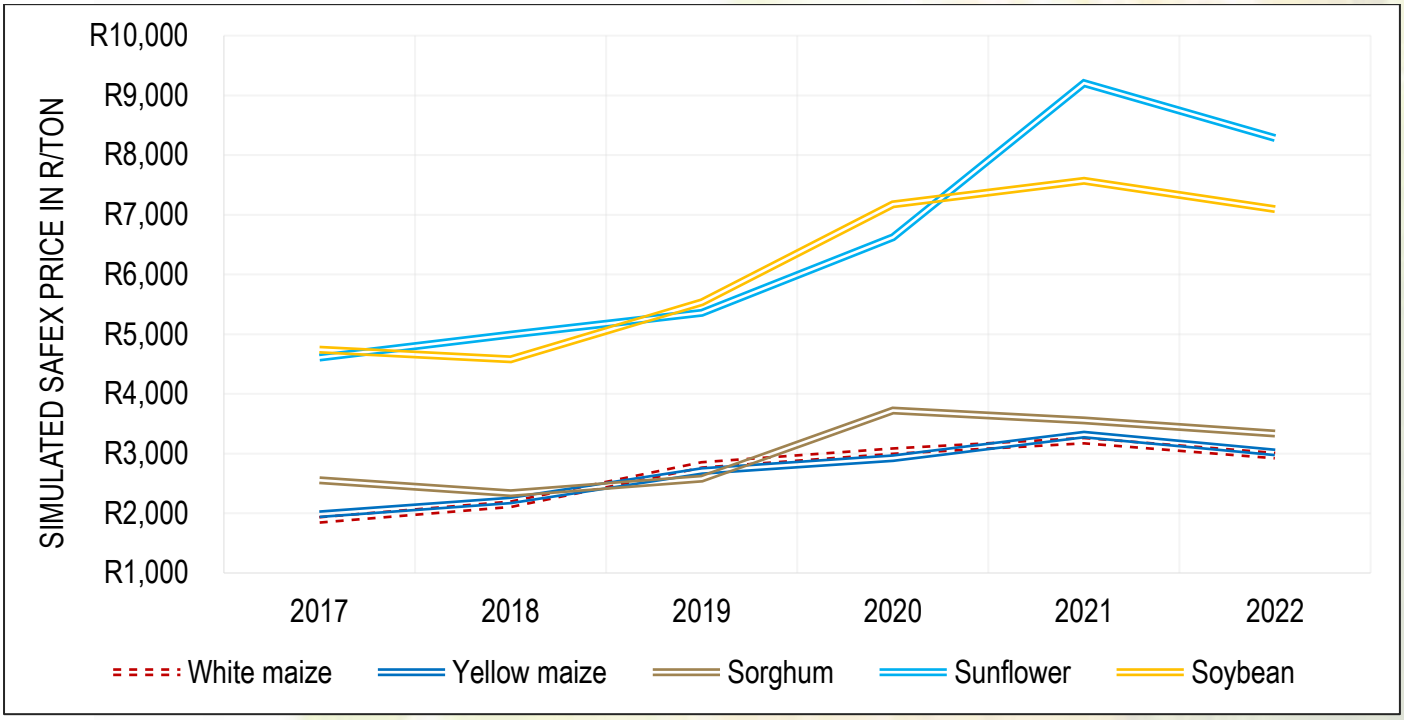


Figure 1.3: BFAP average annual commodity price projections: 2017-2022

Source: BFAP, October 2021

Tel: 012 420 5021
Email: admin@bfap.co.za

Key Input Cost Trends

Figure 1.4 illustrates the cost trends for fuel and fertilisers over the period from January 2019 to October 2021. Fertiliser prices have started to increase from roughly May 2021 with significant price hikes from July 2021. The underpinning drivers of these increases were due to a number of demand and supply dynamics, creating a perfect storm in fertiliser markets. By October 2021, the weighted average fertiliser price (combination between nitrogen, phosphorus and potassium) has indicated a year-on-year increase of 75% with nitrogen increasing by 73% (urea = 92% and LAN28 = 40%), MAP by 67% and potassium by 104% (Grain SA, 2021). This perfect storm in fertiliser markets is underpinned by tight supplies, rising raw material costs such as oil and gas, increasing demand as a result of continuous high commodity prices and global logistical constraints / high freight rates. The fuel price has also increased during the year, returning to its pre-covid level in March 2021 with recent sources indicating that even higher prices towards the end of 2021 may materialise.

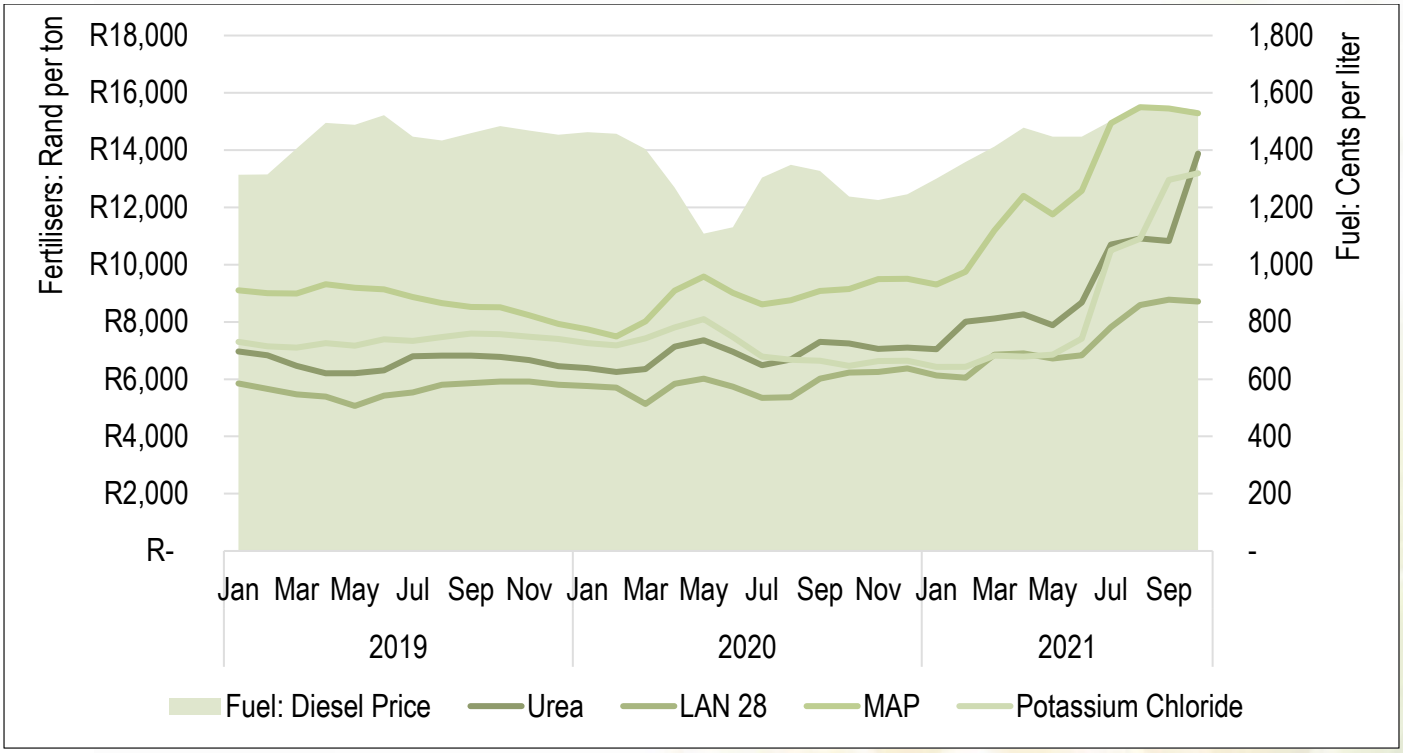


Figure 1.4: Fertiliser & fuel cost trends: January 2019 to September 2021

Source: Grain SA, October 2021

Figure 1.5 presents an overview of the year-on-year percentage changes for key agricultural inputs from 2020 to 2021. The rise in the cost of agricultural inputs remains a concern, with numerous inputs showing double digit percentage change from 2020. The weighted cost for fertiliser (combination between nitrogen, phosphorus and potassium) is projected to increase by 41% in 2021, relative to 2020 with urea and LAN28 projected to increase by 48% and 30% respectively, MAP by 50% and potassium by 34%. Herbicides are projected to increase by 20%, although recent information indicated that this increase may be higher with certain sources expressing their concerns regarding availability of certain products towards the end of 2021 / start of 2022. Administered costs such as wages and electricity are projected to increase on average by 16%.

Tel: 012 420 5021
Email: admin@bfap.co.za

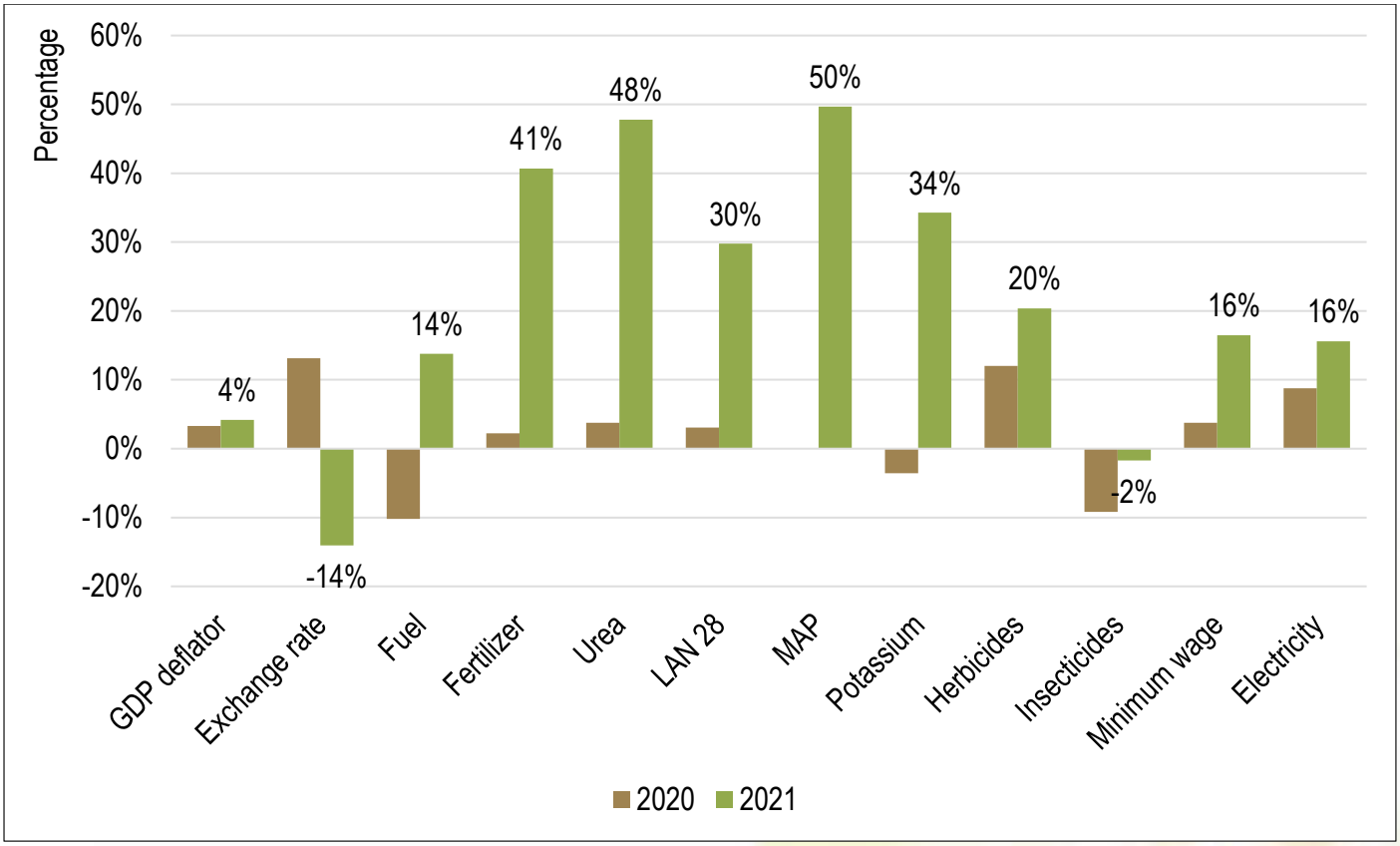


Figure 1.5: Agricultural input cost inflation: Year-on-year percentage change from 2020 - 2021

Source: BFAP & GSA, October 2021

Year-on-year inflation for direct costs will vary significantly between producers which is dependent on the time period when inputs were purchased. Although February is normally an important month when producers acquire some inputs, it cannot be generalised and therefore, direct cost per hectare and respective gross margins will differ substantially. Depending on the period when inputs were purchased, the direct cost for maize for the 2021/22 production season can increase by more than 32%. Figure 1.6 illustrates scenarios which show the impact on the cost of production and gross margins of maize which is based on the month when inputs were purchased in 2021. The figure is representative of maize production in the eastern- and western producing regions of the country. For the eastern regions, the gross margin can decrease by R1500 per hectare if inputs were purchased in August opposed to February 2021.

Tel: 012 420 5021
Email: admin@bfap.co.za

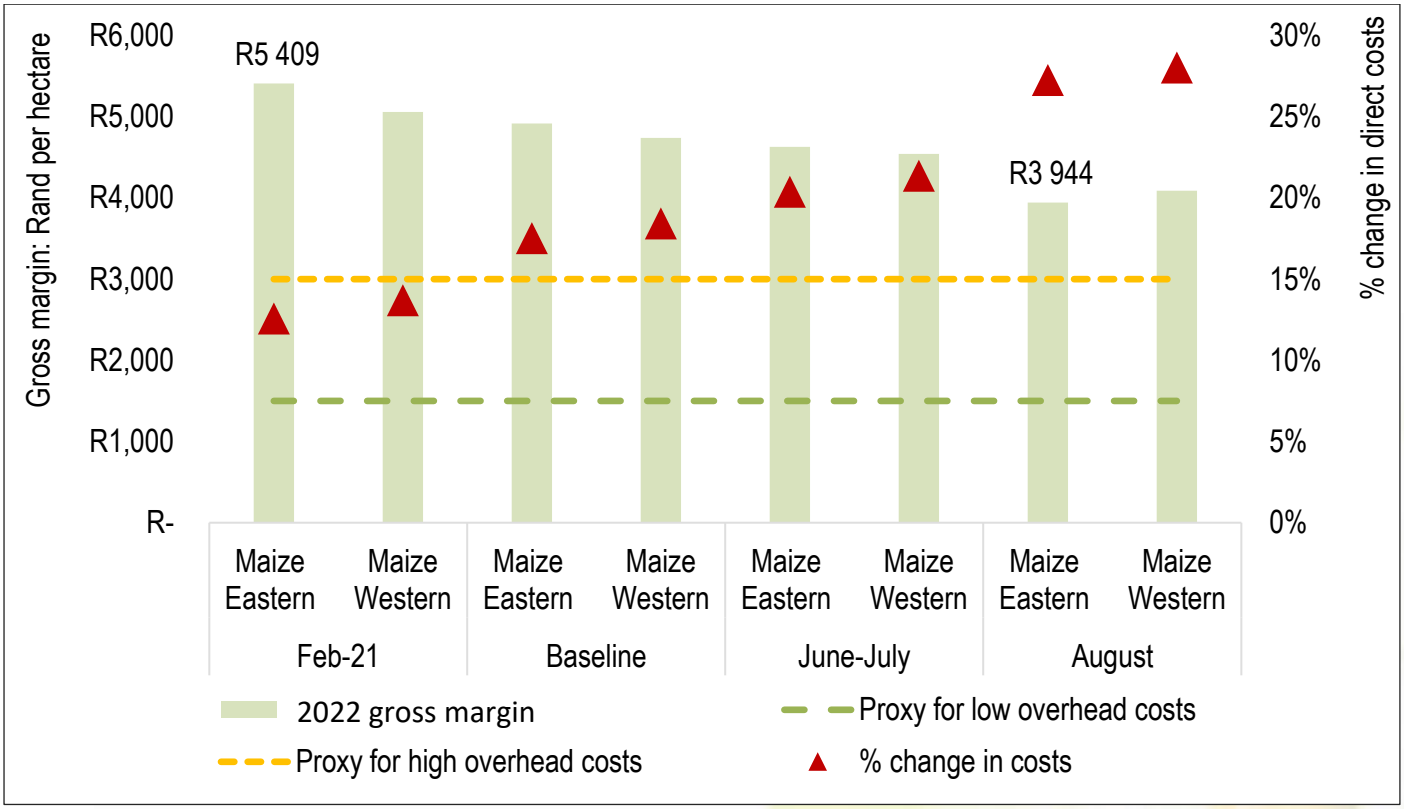


Figure 1.6: Gross margin & impact on production cost inflation: Month when inputs were purchased

Source: BFAP & GrainSA, October 2021

Tel: 012 420 5021
Email: admin@bfap.co.za

Methodology, Approach & Definitions

- A standard operating procedure was used across all crops and regions for generating the cost and income budgets for the 2021/22 production season.
- Deterministic or target yields were based on industry discussions which refers to a yield that should be obtained given a normal production season with normal weather in the respective agro-ecological production regions.
- The farm gate price for each crop was calculated by deducting transport differential, grade differential, handling fees, commission and levies (statutory for seed breeding and technology) from the simulated SAFEX price.
- The gross production value is then calculated by multiplying the yield with the farm gate price.
- The direct costs are calculated by multiplying the cost per unit by the estimated quantity of input use or application rate.
- For the majority of the crops, it was assumed that own machinery was used, except for speciality operations that is coupled with economies of scale. In such cases, a contracting cost item was allocated. For all crops, provision was made for hail insurance.
- Fertiliser and lime application will vary significantly in regions and across crops, however, an attempt was made to follow a standardised approach across the regions. Micro-elements and foliar feed for selective crops are included in the total fertiliser cost.
- The price for fertiliser nutrients (N, P & K) was calculated by using a weighted approach that accounts for 1. variation in discounts received from suppliers and 2. the time period when fertilisers were purchased.
- Fuel consumption is based on the prevalence production system in each region.
- For plant protection, herbicide, insecticide and fungicides are accounted for based on interaction with industry experts and producers. For instance, in certain regions provision was made for fungicide sprays, but for others where the practise is not common, fungicides were excluded from plant protection costs.
- Repairs and maintenance costs are calculated based on the production system operations.
- For seed, an assumption was made in terms of the majority of crop type area that is cultivated in each region. For instance, the cost of maize seed in Northern-Natal, Mpumalanga and Eastern Free State is based on the assumption that the majority of the area under maize cultivation is yellow maize whereas for the western producing regions, white maize was assumed. An average seed price across various seed companies was used for 1) conventional seeds and 2) GM-technology. The cost of seed per hectare is calculated by multiplying the cost per unit (either kilograms or plant population) by the application rate per hectare. For selective crops, seed treatment was included where relevant. For predominantly oilseeds production, the seed application rate was sub-divided according to own and purchased seed. For own seed use, a cost was also allocated which is based on a realistic crop price (hence, opportunity cost) and seed preparation costs such as sifting and treatment.
- For irrigated crops, the cost of water and electricity was calculated according to typical irrigation application rates at their respective regional costs per millimetre. For instance, variations will occur in the cost for water in areas where predominantly boreholes are used compared to irrigation/water scheme areas.
- The gross margin was calculated by subtracting the direct cost from the gross production value.

BFAP DATA DRIVEN INSIGHT
GRAIN SA GRAAN SA
OPOT OAK
Tel: 012 420 5021
Email: admin@bfap.co.za

2021/22 INCOME & COST BUDGETS – DRYLAND PRODUCTION REGIONS

KwaZulu-Natal

Table 2.1: Income & cost budgets for maize & soybeans for KwaZulu-Natal (Bloedrivier Region) - Dryland

		KwaZulu-Natal: Bloedrivier	
Crop		Maize	Soybeans
Production System		Dryland	Dryland
1) INCOME			
Yield: Deterministic	T/HA	7.00	2.65
SAFEX SIMULATED PRICE / PRODUCER PRICE: **2022**	R/TON	R3,046	R7,153
Total deductions	R/TON	R382	R195
- Transport differential	R/TON	R322	R75
- Grade differential	R/TON	R-	R-
- Handling & commission	R/TON	R60	R63
- Seed breeding & technology levy	R/TON	R-	R57
Price premiums	R/TON	R-	R-
Net Farm Gate Price	R/TON	R2,664	R6,958
GROSS INCOME	**R/HA**	**R18,650**	**R18,437**
2) VARIABLE EXPENDITURES			
Contracting	R/HA	R-	R-
Crop insurance	R/HA	R709	R2,249
Fertilizer	R/HA	R4,409	R2,265
Lime	R/HA	R576	R-
Seed	R/HA	R3,031	R1,247
Fuel	R/HA	R1,033	R627
Herbicide	R/HA	R1,376	R1,204
Insecticide/Fungicide	R/HA	R873	R366
Marketing costs	R/HA	R-	R-
Repairs and maintenance	R/HA	R670	R447
Casual labour	R/HA	R245	R-
Aerial spray	R/HA	R-	R-
Other expenditure	R/HA	R-	R-
TOTAL VARIABLE EXPENDITURE	**R/HA**	**R12,922**	**R8,405**
TOTAL VARIABLE EXPENDITURE	**R/TON**	**R1,846**	**R3,172**
3.1) GROSS MARGIN:	**R/HA**	**R5,728**	**R10,032**
3.2) GROSS MARGIN:	**R/TON**	**R818**	**R3,786**
BREAK-EVEN YIELD	T/HA	4.85	1.21
BREAK-EVEN PRICE	R/TON	R1,846	R3,172

Source: BFAP, GSA & Individual Farmers, 2021

Tel: 012 420 5021
Email: admin@bfap.co.za

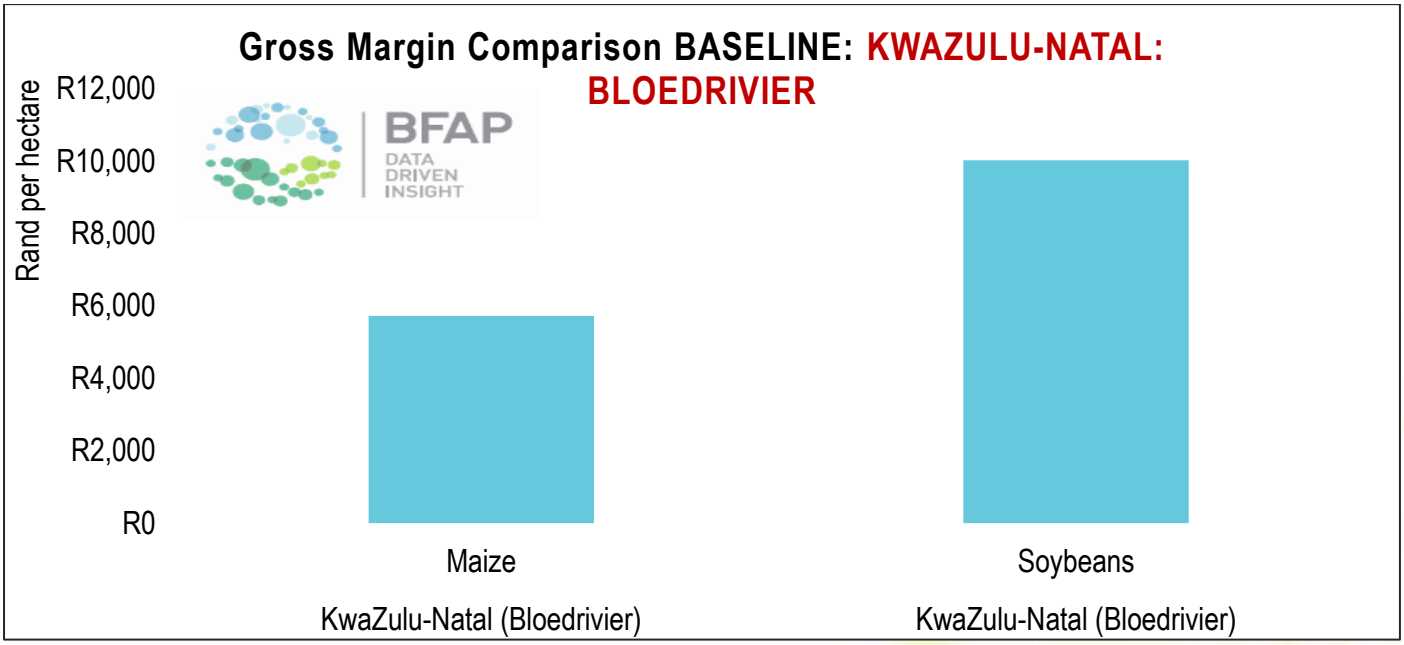


Figure 2.1: Gross margin comparison – Baseline: KwaZulu-Natal (Bloedrivier Region)

MAIZE SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): KWAZULU-NATAL: BLOEDRIVIER

	YIELD (T/HA)													
PRODUCERS PRICE	5.50		6.00		6.50		**7.00**		7.50		8.00		8.50	
R2,264	-R	469	R	663	R	1,796	**R**	**2,928**	R	4,060	R	5,192	R	6,324
R2,364	R	81	R	1,263	R	2,446	**R**	**3,628**	R	4,810	R	5,992	R	7,174
R2,464	R	631	R	1,863	R	3,096	**R**	**4,328**	R	5,560	R	6,792	R	8,024
R2,564	R	1,181	R	2,463	R	3,746	**R**	**5,028**	R	6,310	R	7,592	R	8,874
R2,664	**R**	**1,731**	**R**	**3,063**	**R**	**4,396**	**R**	**5,728**	**R**	**7,060**	**R**	**8,392**	**R**	**9,724**
R2,764	R	2,281	R	3,663	R	5,046	**R**	**6,428**	R	7,810	R	9,192	R	10,574
R2,864	R	2,831	R	4,263	R	5,696	**R**	**7,128**	R	8,560	R	9,992	R	11,424
R2,964	R	3,381	R	4,863	R	6,346	**R**	**7,828**	R	9,310	R	10,792	R	12,274
R3,064	R	3,931	R	5,463	R	6,996	**R**	**8,528**	R	10,060	R	11,592	R	13,124

SOYBEANS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): KWAZULU-NATAL: BLOEDRIVIER

	YIELD (T/HA)													
PRODUCERS PRICE	1.80		2.05		2.30		**2.65**		3.00		3.25		3.50	
R6,558	R	3,398	R	5,038	R	6,677	**R**	**8,972**	R	11,267	R	12,907	R	14,546
R6,658	R	3,578	R	5,243	R	6,907	**R**	**9,237**	R	11,567	R	13,232	R	14,896
R6,758	R	3,758	R	5,448	R	7,137	**R**	**9,502**	R	11,867	R	13,557	R	15,246
R6,858	R	3,938	R	5,653	R	7,367	**R**	**9,767**	R	12,167	R	13,882	R	15,596
R6,958	**R**	**4,118**	**R**	**5,858**	**R**	**7,597**	**R**	**10,032**	**R**	**12,467**	**R**	**14,207**	**R**	**15,946**
R7,058	R	4,298	R	6,063	R	7,827	**R**	**10,297**	R	12,767	R	14,532	R	16,296
R7,158	R	4,478	R	6,268	R	8,057	**R**	**10,562**	R	13,067	R	14,857	R	16,646
R7,258	R	4,658	R	6,473	R	8,287	**R**	**10,827**	R	13,367	R	15,182	R	16,996
R7,358	R	4,838	R	6,678	R	8,517	**R**	**11,092**	R	13,667	R	15,507	R	17,346

Tel: 012 420 5021
Email: admin@bfap.co.za

SOYBEANS MARGIN ABOVE / BELOW MAIZE (GROSS MARGIN PER HECTARE): KWAZULU-NATAL: BLOEDRIVIER													
	PRICE (R/TON)												
YIELD	R	6,658	R	6,758	R	6,858	**R**	**6,958**	R	7,058	R	7,158	R	7,258
1.65	-R	3,148	-R	2,983	-R	2,818	**-R**	**2,653**	-R	2,488	-R	2,323	-R	2,158
1.90	-R	1,484	-R	1,294	-R	1,104	**-R**	**914**	-R	724	-R	534	-R	344
2.15	R	181	R	396	R	611	**R**	**826**	R	1,041	R	1,256	R	1,471
2.40	R	1,845	R	2,085	R	2,325	**R**	**2,565**	R	2,805	R	3,045	R	3,285
2.65	**R**	**3,509**	**R**	**3,774**	**R**	**4,039**	**R**	**4,304**	**R**	**4,569**	**R**	**4,834**	**R**	**5,099**
2.90	R	5,174	R	5,464	R	5,754	**R**	**6,044**	R	6,334	R	6,624	R	6,914
3.15	R	6,838	R	7,153	R	7,468	**R**	**7,783**	R	8,098	R	8,413	R	8,728
3.40	R	8,502	R	8,842	R	9,182	**R**	**9,522**	R	9,862	R	10,202	R	10,542
3.65	R	10,167	R	10,532	R	10,897	**R**	**11,262**	R	11,627	R	11,992	R	12,357

Notes:

- The cost items reflect the input allocation based on the target yield for the respective crops.
- Although some expenditure items are zero, it is reflected in the budgets to allow for individual inclusion.
- Fertiliser assumptions (kg/ha): Maize N:P:K – 130:25:35. Soybeans N:P:K – 25:18:36.
- Other macro- & microelements such as calcium, magnesium and zinc are included in the fertiliser costs.
- The cost of fuel includes pre-harvest and harvesting costs with the assumption that own machinery is used.
- The cost for soybean seed reflects a combination of own- and purchased seed.
- There will be large fluctuations for insurance cost (hail) based on the associated risk in respective areas. It is advised that producers adjust this cost based on their individual premiums.
- It is important to note that overhead costs are not included and should be accounted for.

Tel: 012 420 5021
Email: admin@bfap.co.za

Mpumalanga

Table 2.2: Income & cost budgets for maize, soybeans & grain sorghum for Mpumalanga - Dryland

		Middelburg / Trichardt			Ermelo	
Crop		Maize	Soybeans	Grain Sorghum	Maize	Soybeans
Production System		Dryland	Dryland	Dryland	Dryland	Dryland
1) INCOME						
Yield: Deterministic	T/HA	6.50	2.50	4.50	6.00	2.00
SAFEX SIMULATED PRICE / PRODUCER PRICE: **2022**	R/TON	R3,046	R7,153	R3,335	R3,046	R7,153
Total deductions	R/TON	R312	R183	R63	R360	R195
- Transport differential	R/TON	R252	R63	R-	R300	R75
- Grade differential	R/TON	R-	R-	R-	R-	R-
- Handling & commission	R/TON	R60	R63	R63	R60	R63
- Seed breeding & technology levy	R/TON	R-	R57	R-	R-	R57
Price premiums	R/TON	R-	R-	R-	R-	R-
Net Farm Gate Price	R/TON	R2,734	R6,970	R3,272	R2,686	R6,958
GROSS INCOME	**R/HA**	**R17,773**	**R17,424**	**R14,723**	**R16,118**	**R13,915**
2) VARIABLE EXPENDITURES						
Contracting	R/HA	R-	R-	R-	R-	R-
Crop insurance	R/HA	R675	R1,429	R442	R612	R1,141
Fertilizer	R/HA	R3,965	R1,557	R2,271	R3,786	R1,443
Lime	R/HA	R576	R-	R576	R576	R-
Seed	R/HA	R2,728	R1,069	R702	R2,425	R980
Fuel	R/HA	R1,176	R627	R967	R1,001	R607
Herbicide	R/HA	R1,376	R1,204	R1,039	R1,376	R1,204
Insecticide/Fungicide	R/HA	R873	R366	R676	R873	R366
Marketing costs	R/HA	R-	R-	R-	R-	R-
Repairs and maintenance	R/HA	R750	R443	R685	R706	R440
Casual labour	R/HA	R228	R-	R192	R210	R-
Aerial spray	R/HA	R-	R-	R-	R-	R-
Other expenditure	R/HA	R-	R-	R-	R-	R-
TOTAL VARIABLE EXPENDITURE	**R/HA**	**R12,347**	**R6,694**	**R7,551**	**R11,566**	**R6,180**
TOTAL VARIABLE EXPENDITURE	**R/TON**	**R1,899**	**R2,678**	**R1,678**	**R1,928**	**R3,090**
3.1) GROSS MARGIN:	**R/HA**	**R5,426**	**R10,729**	**R7,172**	**R4,552**	**R7,735**
3.2) GROSS MARGIN:	**R/TON**	**R835**	**R4,292**	**R1,594**	**R759**	**R3,868**
BREAK-EVEN YIELD	T/HA	4.52	0.96	2.31	4.31	0.89
BREAK-EVEN PRICE	R/TON	R1,899	R2,678	R1,678	R1,928	R3,090

Source: BFAP, GSA & Individual Farmers, 2021

Tel: 012 420 5021
Email: admin@bfap.co.za

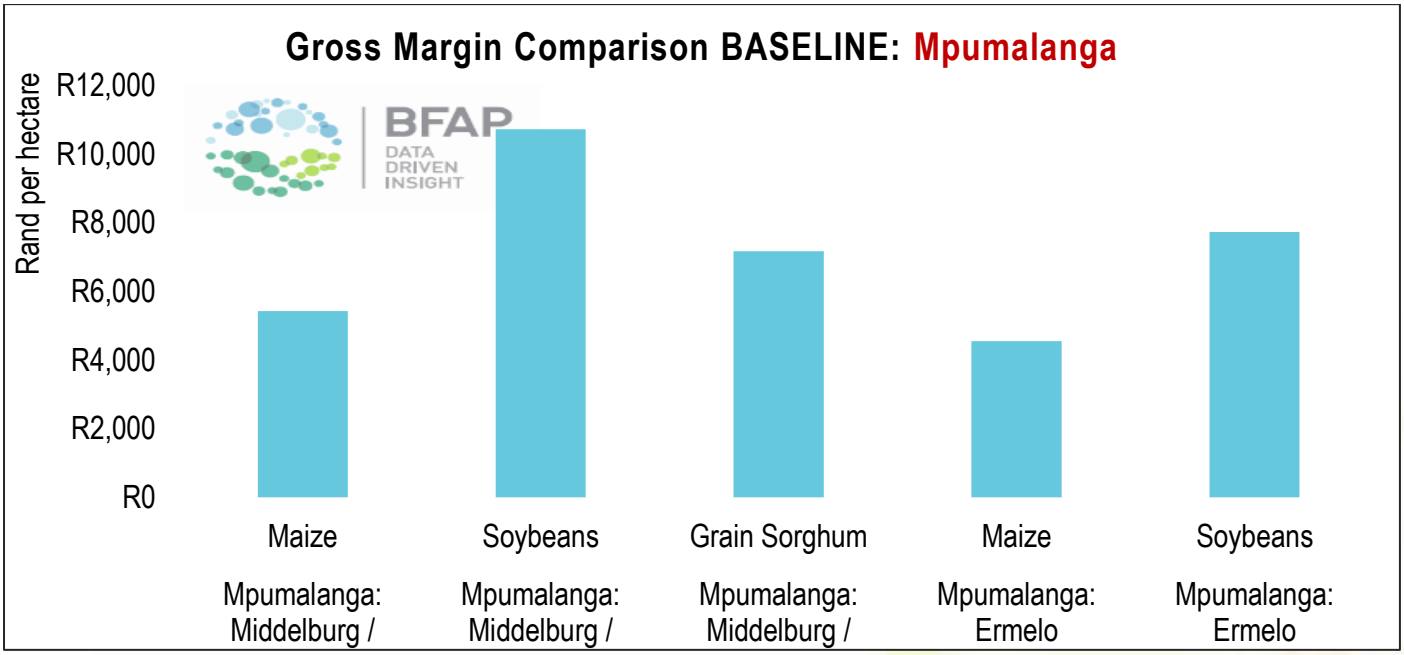


Figure 2.2: Gross margin comparison – Baseline: Mpumalanga

MAIZE SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): MPUMALANGA: MIDDELBURG / TRICHARD

	YIELD (T/HA)												
PRODUCERS PRICE	5.00		5.50		6.00		**6.50**		7.00		7.50		8.00
R2,334	-R 675		R 492		R 1,659		**R 2,826**		R 3,993		R 5,161		R 6,328
R2,434	-R 175		R 1,042		R 2,259		**R 3,476**		R 4,693		R 5,911		R 7,128
R2,534	R 325		R 1,592		R 2,859		**R 4,126**		R 5,393		R 6,661		R 7,928
R2,634	R 825		R 2,142		R 3,459		**R 4,776**		R 6,093		R 7,411		R 8,728
R2,734	**R 1,325**		**R 2,692**		**R 4,059**		**R 5,426**		**R 6,793**		**R 8,161**		**R 9,528**
R2,834	R 1,825		R 3,242		R 4,659		**R 6,076**		R 7,493		R 8,911		R 10,328
R2,934	R 2,325		R 3,792		R 5,259		**R 6,726**		R 8,193		R 9,661		R 11,128
R3,034	R 2,825		R 4,342		R 5,859		**R 7,376**		R 8,893		R 10,411		R 11,928
R3,134	R 3,325		R 4,892		R 6,459		**R 8,026**		R 9,593		R 11,161		R 12,728

SOYBEANS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): MPUMALANGA: MIDDELBURG / TRICHARD

	YIELD (T/HA)												
PRODUCERS PRICE	1.75		2.00		2.25		**2.50**		2.75		3.00		3.25
R6,570	R 4,802		R 6,445		R 8,087		**R 9,729**		R 11,372		R 13,014		R 14,657
R6,670	R 4,977		R 6,645		R 8,312		**R 9,979**		R 11,647		R 13,314		R 14,982
R6,770	R 5,152		R 6,845		R 8,537		**R 10,229**		R 11,922		R 13,614		R 15,307
R6,870	R 5,327		R 7,045		R 8,762		**R 10,479**		R 12,197		R 13,914		R 15,632
R6,970	**R 5,502**		**R 7,245**		**R 8,987**		**R 10,729**		**R 12,472**		**R 14,214**		**R 15,957**
R7,070	R 5,677		R 7,445		R 9,212		**R 10,979**		R 12,747		R 14,514		R 16,282
R7,170	R 5,852		R 7,645		R 9,437		**R 11,229**		R 13,022		R 14,814		R 16,607
R7,270	R 6,027		R 7,845		R 9,662		**R 11,479**		R 13,297		R 15,114		R 16,932
R7,370	R 6,202		R 8,045		R 9,887		**R 11,729**		R 13,572		R 15,414		R 17,257

Tel: 012 420 5021
Email: admin@bfap.co.za

MAIZE SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): MPUMALANGA: ERMELO

	YIELD (T/HA)													
PRODUCERS PRICE	4.50		5.00		5.50		**6.00**		6.50		7.00		7.50	
R2,286	-R	1,277	-R	134	R	1,009	**R**	**2,152**	R	3,295	R	4,438	R	5,582
R2,386	-R	827	R	366	R	1,559	**R**	**2,752**	R	3,945	R	5,138	R	6,332
R2,486	-R	377	R	866	R	2,109	**R**	**3,352**	R	4,595	R	5,838	R	7,082
R2,586	R	73	R	1,366	R	2,659	**R**	**3,952**	R	5,245	R	6,538	R	7,832
R2,686	**R**	**523**	**R**	**1,866**	**R**	**3,209**	**R**	**4,552**	**R**	**5,895**	**R**	**7,238**	**R**	**8,582**
R2,786	R	973	R	2,366	R	3,759	**R**	**5,152**	R	6,545	R	7,938	R	9,332
R2,886	R	1,423	R	2,866	R	4,309	**R**	**5,752**	R	7,195	R	8,638	R	10,082
R2,986	R	1,873	R	3,366	R	4,859	**R**	**6,352**	R	7,845	R	9,338	R	10,832
R3,086	R	2,323	R	3,866	R	5,409	**R**	**6,952**	R	8,495	R	10,038	R	11,582

SOYBEANS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): MPUMALANGA: ERMELO

	YIELD (T/HA)													
PRODUCERS PRICE	1.25		1.50		1.75		**2.00**		2.25		2.50		2.75	
R6,558	R	2,017	R	3,656	R	5,296	**R**	**6,935**	R	8,575	R	10,214	R	11,853
R6,658	R	2,142	R	3,806	R	5,471	**R**	**7,135**	R	8,800	R	10,464	R	12,128
R6,758	R	2,267	R	3,956	R	5,646	**R**	**7,335**	R	9,025	R	10,714	R	12,403
R6,858	R	2,392	R	4,106	R	5,821	**R**	**7,535**	R	9,250	R	10,964	R	12,678
R6,958	**R**	**2,517**	**R**	**4,256**	**R**	**5,996**	**R**	**7,735**	**R**	**9,475**	**R**	**11,214**	**R**	**12,953**
R7,058	R	2,642	R	4,406	R	6,171	**R**	**7,935**	R	9,700	R	11,464	R	13,228
R7,158	R	2,767	R	4,556	R	6,346	**R**	**8,135**	R	9,925	R	11,714	R	13,503
R7,258	R	2,892	R	4,706	R	6,521	**R**	**8,335**	R	10,150	R	11,964	R	13,778
R7,358	R	3,017	R	4,856	R	6,696	**R**	**8,535**	R	10,375	R	12,214	R	14,053

SOYBEANS MARGIN ABOVE / BELOW MAIZE (GROSS MARGIN PER HECTARE): MPUMALANGA: MIDDELBURG / TRICHARD

	PRICE (R/TON)													
YIELD	R	6,670	R	6,770	R	6,870	**R**	**6,970**	R	7,070	R	7,170	R	7,270
1.50	-R	2,116	-R	1,966	-R	1,816	**-R**	**1,666**	-R	1,516	-R	1,366	-R	1,216
1.75	-R	449	-R	274	-R	99	**R**	**76**	R	251	R	426	R	601
2.00	R	1,218	R	1,418	R	1,618	**R**	**1,818**	R	2,018	R	2,218	R	2,418
2.25	R	2,886	R	3,111	R	3,336	**R**	**3,561**	R	3,786	R	4,011	R	4,236
2.50	**R**	**4,553**	**R**	**4,803**	**R**	**5,053**	**R**	**5,303**	**R**	**5,553**	**R**	**5,803**	**R**	**6,053**
2.75	R	6,220	R	6,495	R	6,770	**R**	**7,045**	R	7,320	R	7,595	R	7,870
3.00	R	7,888	R	8,188	R	8,488	**R**	**8,788**	R	9,088	R	9,388	R	9,688
3.25	R	9,555	R	9,880	R	10,205	**R**	**10,530**	R	10,855	R	11,180	R	11,505
3.50	R	11,223	R	11,573	R	11,923	**R**	**12,273**	R	12,623	R	12,973	R	13,323

Tel: 012 420 5021
Email: admin@bfap.co.za

SOYBEANS MARGIN ABOVE / BELOW MAIZE (GROSS MARGIN PER HECTARE): MPUMALANGA: ERMELO													
	PRICE (R/TON)												
YIELD	R	6,658	R	6,758	R	6,858	**R**	**6,958**	R	7,058	R	7,158	R	7,258
1.00	-R	4,074	-R	3,974	-R	3,874	**-R**	**3,774**	-R	3,674	-R	3,574	-R	3,474
1.25	-R	2,410	-R	2,285	-R	2,160	**-R**	**2,035**	-R	1,910	-R	1,785	-R	1,660
1.50	-R	746	-R	596	-R	446	**-R**	**296**	-R	146	R	4	R	154
1.75	R	919	R	1,094	R	1,269	**R**	**1,444**	R	1,619	R	1,794	R	1,969
2.00	**R**	**2,583**	**R**	**2,783**	**R**	**2,983**	**R**	**3,183**	**R**	**3,383**	**R**	**3,583**	**R**	**3,783**
2.25	R	4,247	R	4,472	R	4,697	**R**	**4,922**	R	5,147	R	5,372	R	5,597
2.50	R	5,912	R	6,162	R	6,412	**R**	**6,662**	R	6,912	R	7,162	R	7,412
2.75	R	7,576	R	7,851	R	8,126	**R**	**8,401**	R	8,676	R	8,951	R	9,226
3.00	R	9,241	R	9,541	R	9,841	**R**	**10,141**	R	10,441	R	10,741	R	11,041

Notes:

- The cost items reflect the input allocation based on the target yield for the respective crops.
- Although some expenditure items are zero, it is reflected in the budgets to allow for individual inclusion.
- Fertiliser assumptions (kg/ha): Maize (Middelburg/Trichard) N:P:K – 120:21:30. Soybeans (Middelburg/Trichard) N:P:K – 10:14:20. Grain sorghum N:P:K – 85:10:11. Maize (Ermelo) N:P:K – 111:21:30. Soybeans (Ermelo) N:P:K – 10:12:18.
- Other macro- & microelements such as calcium, magnesium and zinc are included in the fertiliser costs.
- The cost of fuel includes pre-harvest and harvesting costs with the assumption that own machinery is used.
- The cost for soybean seed reflects a combination of own- and purchased seed.
- There will be large fluctuations for insurance cost (hail) based on the associated risk in respective areas. It is advised that producers adjust this cost based on their individual premiums.
- It is important to note that overhead costs are not included and should be accounted for.

BFAP DATA DRIVEN INSIGHT
GRAIN SA GRAAN SA
OPOT OAK
Tel: 012 420 5021
Email: admin@bfap.co.za

Eastern Free State

Table 2.3: Income & cost budgets for maize, soybeans, sunflower & dry beans for Eastern Free State - Dryland

		Eastern Free State			
Crop		Maize	Soybeans	Sunflower	Dry beans
Production System		Dryland	Dryland	Dryland	Dryland
1) INCOME					
Yield: Deterministic	T/HA	5.50	2.00	1.80	1.50
SAFEX SIMULATED PRICE / PRODUCER PRICE: **2022**	R/TON	R3,046	R7,153	R8,318	R15,500
Total deductions	R/TON	R379	R199	R333	R480
- Transport differential	R/TON	R319	R79	R237	R-
- Grade differential	R/TON	R-	R-	R-	R-
- Handling & commission	R/TON	R60	R63	R96	R480
- Seed breeding & technology levy	R/TON	R-	R57	R-	R-
Price premiums	R/TON	R-	R-	R-	R-
Net Farm Gate Price	R/TON	R2,667	R6,954	R7,985	R15,020
GROSS INCOME	**R/HA**	**R14,670**	**R13,907**	**R14,373**	**R22,530**
2) VARIABLE EXPENDITURES					
Contracting	R/HA	R-	R-	R-	R1,268
Crop insurance	R/HA	R528	R1,558	R618	R2,185
Fertilizer	R/HA	R3,076	R1,296	R1,257	R1,893
Lime	R/HA	R538	R-	R-	R457
Seed	R/HA	R1,697	R1,069	R687	R3,456
Fuel	R/HA	R1,062	R839	R803	R735
Herbicide	R/HA	R1,007	R954	R902	R1,007
Insecticide/Fungicide	R/HA	R491	R180	R29	R755
Marketing costs	R/HA	R-	R-	R-	R-
Repairs and maintenance	R/HA	R836	R693	R741	R569
Casual labour	R/HA	R220	R-	R188	R1,800
Aerial spray	R/HA	R-	R-	R-	R-
Other expenditure	R/HA	R-	R-	R-	R120
TOTAL VARIABLE EXPENDITURE	**R/HA**	**R9,456**	**R6,588**	**R5,226**	**R14,245**
TOTAL VARIABLE EXPENDITURE	**R/TON**	**R1,719**	**R3,294**	**R2,903**	**R9,497**
3.1) GROSS MARGIN:	**R/HA**	**R5,214**	**R7,319**	**R9,147**	**R8,285**
3.2) GROSS MARGIN:	**R/TON**	**R948**	**R3,660**	**R5,081**	**R5,523**
BREAK-EVEN YIELD	T/HA	3.55	0.95	0.65	0.95
BREAK-EVEN PRICE	R/TON	R1,719	R3,294	R2,903	R9,497

Source: BFAP, GSA, VKB & Individual Farmers, 2021

Tel: 012 420 5021
Email: admin@bfap.co.za

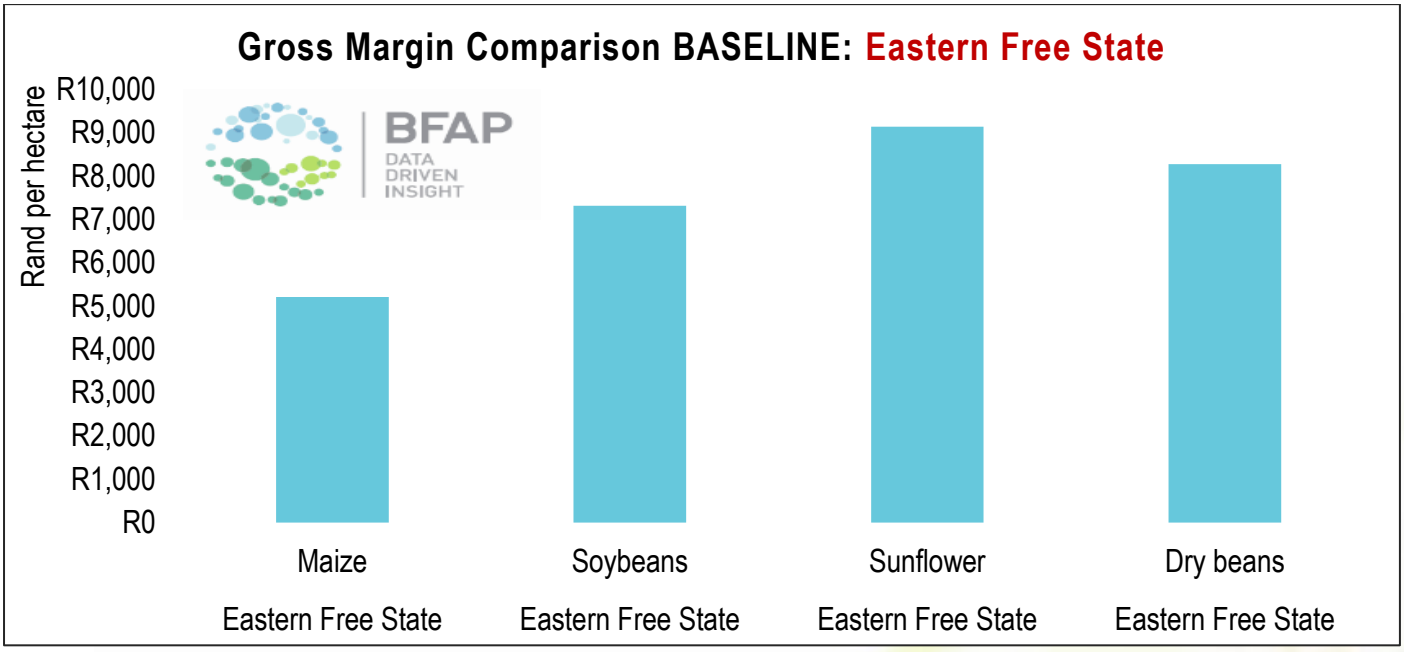


Figure 2.3: Gross margin comparison – Baseline: Eastern Free State

MAIZE SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): EASTERN FREE STATE

	YIELD (T/HA)												
PRODUCERS PRICE	4.00		4.50		5.00		**5.50**		6.00		6.50		7.00
R2,267	-R 387		R 747		R 1,881		**R 3,014**		R 4,148		R 5,282		R 6,415
R2,367	R 13		R 1,197		R 2,381		**R 3,564**		R 4,748		R 5,932		R 7,115
R2,467	R 413		R 1,647		R 2,881		**R 4,114**		R 5,348		R 6,582		R 7,815
R2,567	R 813		R 2,097		R 3,381		**R 4,664**		R 5,948		R 7,232		R 8,515
R2,667	**R 1,213**		**R 2,547**		**R 3,881**		**R 5,214**		**R 6,548**		**R 7,882**		**R 9,215**
R2,767	R 1,613		R 2,997		R 4,381		**R 5,764**		R 7,148		R 8,532		R 9,915
R2,867	R 2,013		R 3,447		R 4,881		**R 6,314**		R 7,748		R 9,182		R 10,615
R2,967	R 2,413		R 3,897		R 5,381		**R 6,864**		R 8,348		R 9,832		R 11,315
R3,067	R 2,813		R 4,347		R 5,881		**R 7,414**		R 8,948		R 10,482		R 12,015

SOYBEANS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): EASTERN FREE STATE

	YIELD (T/HA)												
PRODUCERS PRICE	1.25		1.50		1.75		**2.00**		2.25		2.50		2.75
R6,554	R 1,604		R 3,243		R 4,881		**R 6,519**		R 8,158		R 9,796		R 11,434
R6,654	R 1,729		R 3,393		R 5,056		**R 6,719**		R 8,383		R 10,046		R 11,709
R6,754	R 1,854		R 3,543		R 5,231		**R 6,919**		R 8,608		R 10,296		R 11,984
R6,854	R 1,979		R 3,693		R 5,406		**R 7,119**		R 8,833		R 10,546		R 12,259
R6,954	**R 2,104**		**R 3,843**		**R 5,581**		**R 7,319**		**R 9,058**		**R 10,796**		**R 12,534**
R7,054	R 2,229		R 3,993		R 5,756		**R 7,519**		R 9,283		R 11,046		R 12,809
R7,154	R 2,354		R 4,143		R 5,931		**R 7,719**		R 9,508		R 11,296		R 13,084
R7,254	R 2,479		R 4,293		R 6,106		**R 7,919**		R 9,733		R 11,546		R 13,359
R7,354	R 2,604		R 4,443		R 6,281		**R 8,119**		R 9,958		R 11,796		R 13,634

Tel: 012 420 5021
Email: admin@bfap.co.za

SUNFLOWER SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): EASTERN FREE STATE														
	YIELD (T/HA)													
PRODUCERS PRICE	1.00		1.25		1.50		**1.80**		2.00		2.25		2.50	
R7,585	R	2,359	R	4,255	R	6,151	**R**	**8,427**	R	9,944	R	11,840	R	13,736
R7,685	R	2,459	R	4,380	R	6,301	**R**	**8,607**	R	10,144	R	12,065	R	13,986
R7,785	R	2,559	R	4,505	R	6,451	**R**	**8,787**	R	10,344	R	12,290	R	14,236
R7,885	R	2,659	R	4,630	R	6,601	**R**	**8,967**	R	10,544	R	12,515	R	14,486
R7,985	**R**	**2,759**	**R**	**4,755**	**R**	**6,751**	**R**	**9,147**	**R**	**10,744**	**R**	**12,740**	**R**	**14,736**
R8,085	R	2,859	R	4,880	R	6,901	**R**	**9,327**	R	10,944	R	12,965	R	14,986
R8,185	R	2,959	R	5,005	R	7,051	**R**	**9,507**	R	11,144	R	13,190	R	15,236
R8,285	R	3,059	R	5,130	R	7,201	**R**	**9,687**	R	11,344	R	13,415	R	15,486
R8,385	R	3,159	R	5,255	R	7,351	**R**	**9,867**	R	11,544	R	13,640	R	15,736

SOYBEANS MARGIN ABOVE / BELOW MAIZE (GROSS MARGIN PER HECTARE): EASTERN FREE STATE														
	PRICE (R/TON)													
YIELD	R	6,654	R	6,754	R	6,854	**R**	**6,954**	R	7,054	R	7,154	R	7,254
1.00	-R	5,149	-R	5,049	-R	4,949	**-R**	**4,849**	-R	4,749	-R	4,649	-R	4,549
1.25	-R	3,485	-R	3,360	-R	3,235	**-R**	**3,110**	-R	2,985	-R	2,860	-R	2,735
1.50	-R	1,822	-R	1,672	-R	1,522	**-R**	**1,372**	-R	1,222	-R	1,072	-R	922
1.75	-R	158	R	17	R	192	**R**	**367**	R	542	R	717	R	892
2.00	**R**	**1,505**	**R**	**1,705**	**R**	**1,905**	**R**	**2,105**	**R**	**2,305**	**R**	**2,505**	**R**	**2,705**
2.25	R	3,168	R	3,393	R	3,618	**R**	**3,843**	R	4,068	R	4,293	R	4,518
2.50	R	4,832	R	5,082	R	5,332	**R**	**5,582**	R	5,832	R	6,082	R	6,332
2.75	R	6,495	R	6,770	R	7,045	**R**	**7,320**	R	7,595	R	7,870	R	8,145
3.00	R	8,158	R	8,458	R	8,758	**R**	**9,058**	R	9,358	R	9,658	R	9,958

Notes:

- The cost items reflect the input allocation based on the target yield for the respective crops.
- Although some expenditure items are zero, it is reflected in the budgets to allow for individual inclusion.
- Fertiliser assumptions (kg/ha): Maize N:P:K – 83:26:13. Soybeans N:P:K – 10:15:20. Sunflower N:P:K – 35:8:8. Dry beans N:P:K – 40:15:20.
- Other macro- & microelements such as calcium, magnesium and zinc are included in the fertiliser costs.
- The cost of fuel includes pre-harvest and harvesting costs with the assumption that own machinery is used.
- The cost for soybean seed reflects a combination of own- and purchased seed.
- There will be large fluctuations for insurance cost (hail) based on the associated risk in respective areas. It is advised that producers adjust this cost based on their individual premiums.
- It is important to note that overhead costs are not included and should be accounted for.

Tel: 012 420 5021
Email: admin@bfap.co.za

Northern Free State

Table 2.4: Income & cost budgets for maize, soybeans, sunflower, ground nuts & grain sorghum for Western / Northern Free State - Dryland

Area		Western / Northern Free State					
Crop		Maize - Higher potential	Maize – Normal potential	Soybean	Sunflower	Ground Nuts	Grain Sorghum
Production System		Dryland	Dryland	Dryland	Dryland	Dryland	Dryland
1) INCOME							
Yield: Deterministic	T/HA	5.50	4.50	1.75	1.75	1.50	3.00
SAFEX SIMULATED PRICE / PRODUCER PRICE: **2022**	R/TON	R3,046	R2,987	R7,153	R8,318	R12,113	R3,335
Total deductions	R/TON	R340	R301	R189	R389	R63	R63
- Transport differential	R/TON	R277	R238	R69	R240	R-	R-
- Grade differential	R/TON	R-	R-	R-	R-	R-	R-
- Handling & commission	R/TON	R63	R63	R63	R93	R63	R63
- Seed breeding & technology levy	R/TON	R-	R-	R57	R56	R-	R-
Price premiums	R/TON	R-	R-	R-	R-	R-	R-
Net Farm Gate Price	R/TON	R2,706	R2,686	R6,964	R7,929	R12,050	R3,272
GROSS INCOME	**R/HA**	**R14,885**	**R12,088**	**R12,186**	**R13,876**	**R18,074**	**R9,815**
2) VARIABLE EXPENDITURES							
Contracting	R/HA	R-	R-	R-	R-	R-	R-
Crop insurance	R/HA	R164	R133	R597	R249	R283	R314
Fertilizer	R/HA	R2,887	R2,276	R1,076	R1,402	R1,620	R2,098
Lime	R/HA	R268	R268	R-	R-	R148	R156
Seed	R/HA	R1,435	R1,079	R819	R519	R1,743	R351
Fuel	R/HA	R1,100	R1,091	R779	R850	R1,093	R1,012
Herbicide	R/HA	R1,007	R1,007	R954	R777	R901	R881
Insecticide/Fungicide	R/HA	R283	R283	R180	R29	R1,204	R613
Marketing costs	R/HA	R-	R-	R-	R-	R-	R-
Repairs and maintenance	R/HA	R798	R790	R714	R586	R719	R778
Casual labour	R/HA	R220	R225	R-	R188	R564	R192
Aerial spray	R/HA	R-	R-	R-	R-	R-	R-
Other expenditure	R/HA	R-	R-	R-	R-	R302	R-
TOTAL VARIABLE EXPENDITURE	**R/HA**	**R8,163**	**R7,152**	**R5,119**	**R4,601**	**R8,576**	**R6,395**
TOTAL VARIABLE EXPENDITURE	**R/TON**	**R1,484**	**R1,589**	**R2,925**	**R2,629**	**R5,718**	**R2,132**
3.1) GROSS MARGIN:	**R/HA**	**R6,722**	**R4,936**	**R7,067**	**R9,275**	**R9,498**	**R3,420**
3.2) GROSS MARGIN:	**R/TON**	**R1,222**	**R1,097**	**R4,038**	**R5,300**	**R6,332**	**R1,140**
BREAK-EVEN YIELD	T/HA	3.02	2.66	0.74	0.58	0.71	1.95
BREAK-EVEN PRICE	R/TON	R1,484	R1,589	R2,925	R2,629	R5,718	R2,132

Source: BFAP, GSA & Senwes, 2021

Tel: 012 420 5021
Email: admin@bfap.co.za

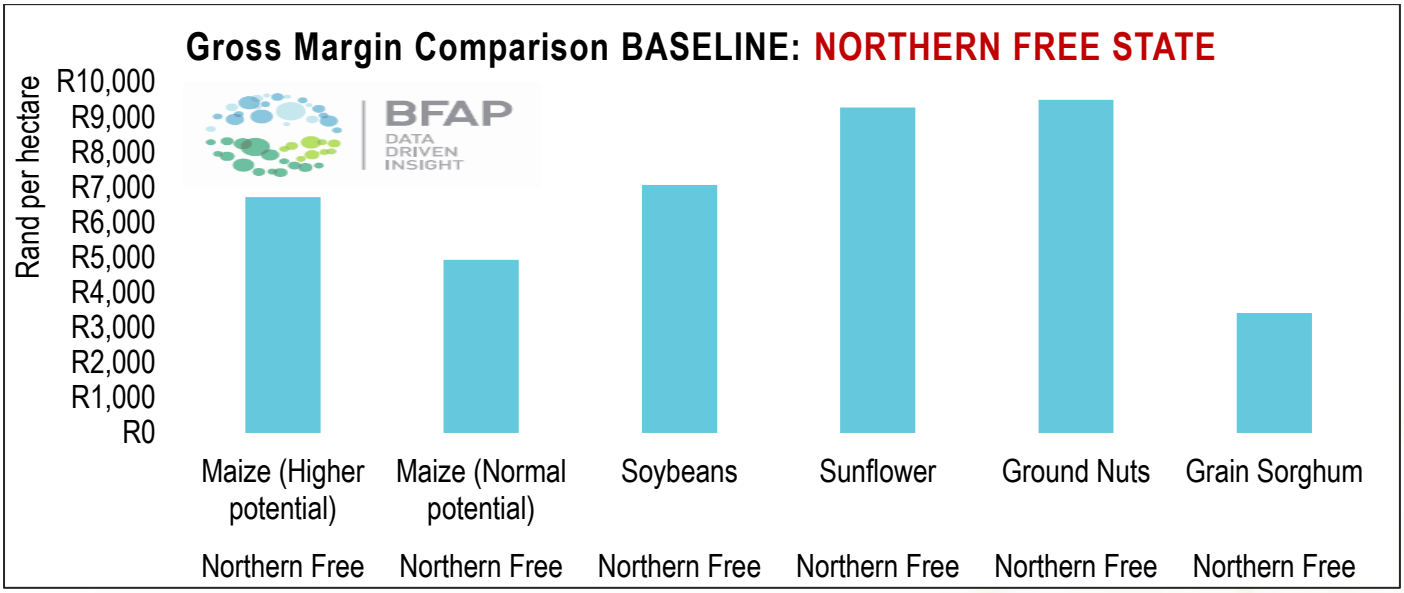


Figure 2.4: Gross margin comparison – Baseline: Western / Northern Free State

MAIZE SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTHERN FREE STATE HIGHER POTENTIAL SOILS														
	YIELD (T/HA)													
PRODUCERS PRICE	4.00		4.50		5.00		**5.50**		6.00		6.50		7.00	
R2,306	R	1,062	R	2,215	R	3,369	**R**	**4,522**	R	5,675	R	6,828	R	7,981
R2,406	R	1,462	R	2,665	R	3,869	**R**	**5,072**	R	6,275	R	7,478	R	8,681
R2,506	R	1,862	R	3,115	R	4,369	**R**	**5,622**	R	6,875	R	8,128	R	9,381
R2,606	R	2,262	R	3,565	R	4,869	**R**	**6,172**	R	7,475	R	8,778	R	10,081
R2,706	**R**	**2,662**	**R**	**4,015**	**R**	**5,369**	**R**	**6,722**	**R**	**8,075**	**R**	**9,428**	**R**	**10,781**
R2,806	R	3,062	R	4,465	R	5,869	**R**	**7,272**	R	8,675	R	10,078	R	11,481
R2,906	R	3,462	R	4,915	R	6,369	**R**	**7,822**	R	9,275	R	10,728	R	12,181
R3,006	R	3,862	R	5,365	R	6,869	**R**	**8,372**	R	9,875	R	11,378	R	12,881
R3,106	R	4,262	R	5,815	R	7,369	**R**	**8,922**	R	10,475	R	12,028	R	13,581

SOYBEANS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTHERN FREE STATE NORMAL POTENTIAL SOILS														
	YIELD (T/HA)													
PRODUCERS PRICE	1.00		1.25		1.50		**1.75**		2.00		2.25		2.50	
R6,564	R	1,444	R	3,085	R	4,726	**R**	**6,367**	R	8,008	R	9,649	R	11,290
R6,664	R	1,544	R	3,210	R	4,876	**R**	**6,542**	R	8,208	R	9,874	R	11,540
R6,764	R	1,644	R	3,335	R	5,026	**R**	**6,717**	R	8,408	R	10,099	R	11,790
R6,864	R	1,744	R	3,460	R	5,176	**R**	**6,892**	R	8,608	R	10,324	R	12,040
R6,964	**R**	**1,844**	**R**	**3,585**	**R**	**5,326**	**R**	**7,067**	**R**	**8,808**	**R**	**10,549**	**R**	**12,290**
R7,064	R	1,944	R	3,710	R	5,476	**R**	**7,242**	R	9,008	R	10,774	R	12,540
R7,164	R	2,044	R	3,835	R	5,626	**R**	**7,417**	R	9,208	R	10,999	R	12,790
R7,264	R	2,144	R	3,960	R	5,776	**R**	**7,592**	R	9,408	R	11,224	R	13,040
R7,364	R	2,244	R	4,085	R	5,926	**R**	**7,767**	R	9,608	R	11,449	R	13,290

Tel: 012 420 5021
Email: admin@bfap.co.za

SUNFLOWER SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTHERN FREE STATE														
	YIELD (T/HA)													
PRODUCERS PRICE		1.00		1.25		1.50		**1.75**		2.00		2.25		2.50
R7,529	R	2,928	R	4,811	R	6,693	**R**	**8,575**	R	10,457	R	12,340	R	14,222
R7,629	R	3,028	R	4,936	R	6,843	**R**	**8,750**	R	10,657	R	12,565	R	14,472
R7,729	R	3,128	R	5,061	R	6,993	**R**	**8,925**	R	10,857	R	12,790	R	14,722
R7,829	R	3,228	R	5,186	R	7,143	R	9,100	R	11,057	R	13,015	R	14,972
R7,929	**R**	**3,328**	**R**	**5,311**	**R**	**7,293**	**R**	**9,275**	**R**	**11,257**	**R**	**13,240**	**R**	**15,222**
R8,029	R	3,428	R	5,436	R	7,443	**R**	**9,450**	R	11,457	R	13,465	R	15,472
R8,129	R	3,528	R	5,561	R	7,593	**R**	**9,625**	R	11,657	R	13,690	R	15,722
R8,229	R	3,628	R	5,686	R	7,743	**R**	**9,800**	R	11,857	R	13,915	R	15,972
R8,329	R	3,728	R	5,811	R	7,893	**R**	**9,975**	R	12,057	R	14,140	R	16,222

GROUND NUTS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTHERN FREE STATE														
	YIELD (T/HA)													
PRODUCERS PRICE		0.75		1.00		1.25		**1.50**		1.75		2.00		2.25
R11,650	R	836	R	3,973	R	7,110	**R**	**10,248**	R	13,385	R	16,523	R	19,660
R11,750	R	911	R	4,073	R	7,235	**R**	**10,398**	R	13,560	R	16,723	R	19,885
R11,850	R	986	R	4,173	R	7,360	**R**	**10,548**	R	13,735	R	16,923	R	20,110
R11,950	R	1,061	R	4,273	R	7,485	**R**	**10,698**	R	13,910	R	17,123	R	20,335
R12,050	**R**	**1,136**	**R**	**4,373**	**R**	**7,610**	**R**	**10,848**	**R**	**14,085**	**R**	**17,323**	**R**	**20,560**
R12,150	R	1,211	R	4,473	R	7,735	**R**	**10,998**	R	14,260	R	17,523	R	20,785
R12,250	R	1,286	R	4,573	R	7,860	**R**	**11,148**	R	14,435	R	17,723	R	21,010
R12,350	R	1,361	R	4,673	R	7,985	**R**	**11,298**	R	14,610	R	17,923	R	21,235
R12,450	R	1,436	R	4,773	R	8,110	**R**	**11,448**	R	14,785	R	18,123	R	21,460

SOYBEANS MARGIN ABOVE / BELOW MAIZE (GROSS MARGIN PER HECTARE): NORTHERN FREE STATE														
	PRICE (R/TON)													
YIELD	R	6,664	R	6,764	R	6,864	**R**	**6,964**	R	7,064	R	7,164	R	7,264
0.75	-R	6,843	-R	6,768	-R	6,693	**-R**	**6,618**	-R	6,543	-R	6,468	-R	6,393
1.00	-R	5,177	-R	5,077	-R	4,977	**-R**	**4,877**	-R	4,777	-R	4,677	-R	4,577
1.25	-R	3,511	-R	3,386	-R	3,261	**-R**	**3,136**	-R	3,011	-R	2,886	-R	2,761
1.50	-R	1,845	-R	1,695	-R	1,545	**-R**	**1,395**	-R	1,245	-R	1,095	-R	945
1.75	**-R**	**180**	**-R**	**5**	**R**	**170**	**R**	**345**	**R**	**520**	**R**	**695**	**R**	**870**
2.00	R	1,486	R	1,686	R	1,886	**R**	**2,086**	R	2,286	R	2,486	R	2,686
2.25	R	3,152	R	3,377	R	3,602	**R**	**3,827**	R	4,052	R	4,277	R	4,502
2.50	R	4,818	R	5,068	R	5,318	**R**	**5,568**	R	5,818	R	6,068	R	6,318
2.75	R	6,484	R	6,759	R	7,034	**R**	**7,309**	R	7,584	R	7,859	R	8,134

Notes:

- The Northern Free State high potential maize budget represents the cultivation of yellow maize under high potential conditions such as water table soils.
- Farm gate price for ground nuts is calculated according to assumptions based on the share of the crop that is graded according to selection grade (40/50-60/70 & 70/80), diverse and crush (human & oil).
- The cost items reflect the input allocation based on the target yield for the respective crops.
- Although some expenditure items are zero, it is reflected in the budgets to allow for individual inclusion.
- Fertiliser assumptions (kg/ha): Maize (higher potential) N:P:K – 92:16:14. Maize (normal potential) N:P:K – 70:15:7. Soybeans N:P:K – 10:10:10. Sunflower N:P:K – 45:7:10. Ground Nuts N:P:K – 15:15:15. Grain Sorghum N:P:K – 69:14:8.
- Other macro- & microelements such as calcium, magnesium and zinc are included in the fertiliser costs.
- The cost of fuel includes pre-harvest and harvesting costs with the assumption that own machinery is used.
- The cost for soybean seed reflects a combination of own- and purchased seed.
- There will be large fluctuations for insurance cost (hail) based on the associated risk in respective areas. It is advised that producers adjust this cost based on their individual premiums.
- It is important to note that overhead costs are not included and should be accounted for.

BFAP DATA DRIVEN INSIGHT
GRAIN SA GRAAN SA
OPOT OAK
Tel: 012 420 5021
Email: admin@bfap.co.za

North West: Koster

Table 2.5: Income & cost budgets for maize, soybeans & sunflower for North West: Koster region - Dryland

Area		North West: Koster		
Crop		Maize	Soybeans	Sunflower
Production System		Dryland	Dryland	Dryland
1) INCOME				
Yield: Deterministic	T/HA	4.75	2.00	2.00
SAFEX SIMULATED PRICE / PRODUCER PRICE: **2022**	R/TON	R2,987	R7,153	R8,318
Total deductions	R/TON	R230	R162	R278
- Transport differential	R/TON	R167	R42	R185
- Grade differential	R/TON	R-	R-	R-
- Handling & commission	R/TON	R63	R63	R-
- Seed breeding & technology levy	R/TON	R-	R57	R93
Price premiums	R/TON	R-	R-	R-
Net Farm Gate Price	R/TON	R2,757	R6,991	R8,040
GROSS INCOME	**R/HA**	**R13,097**	**R13,981**	**R16,080**
2) VARIABLE EXPENDITURES				
Contracting	R/HA	R-	R-	R-
Crop insurance	R/HA	R276	R1,565	R467
Fertilizer	R/HA	R2,636	R1,090	R1,506
Lime	R/HA	R314	R-	R-
Seed	R/HA	R1,030	R641	R519
Fuel	R/HA	R1,004	R824	R818
Herbicide	R/HA	R912	R586	R568
Insecticide/Fungicide	R/HA	R283	R180	R29
Marketing costs	R/HA	R-	R-	R-
Repairs and maintenance	R/HA	R714	R596	R629
Casual labour	R/HA	R190	R-	R188
Aerial spray	R/HA	R-	R-	R-
Other expenditure	R/HA	R-	R-	R-
TOTAL VARIABLE EXPENDITURE	**R/HA**	**R7,359**	**R5,482**	**R4,725**
TOTAL VARIABLE EXPENDITURE	**R/TON**	**R1,549**	**R2,741**	**R2,362**
3.1) GROSS MARGIN:	**R/HA**	**R5,738**	**R8,499**	**R11,355**
3.2) GROSS MARGIN:	**R/TON**	**R1,208**	**R4,250**	**R5,677**
BREAK-EVEN YIELD	T/HA	2.67	0.78	0.59
BREAK-EVEN PRICE	R/TON	R1,549	R2,741	R2,362

Source: BFAP, GSA, NWK & Individual Farmers, 2021

Tel: 012 420 5021
Email: admin@bfap.co.za

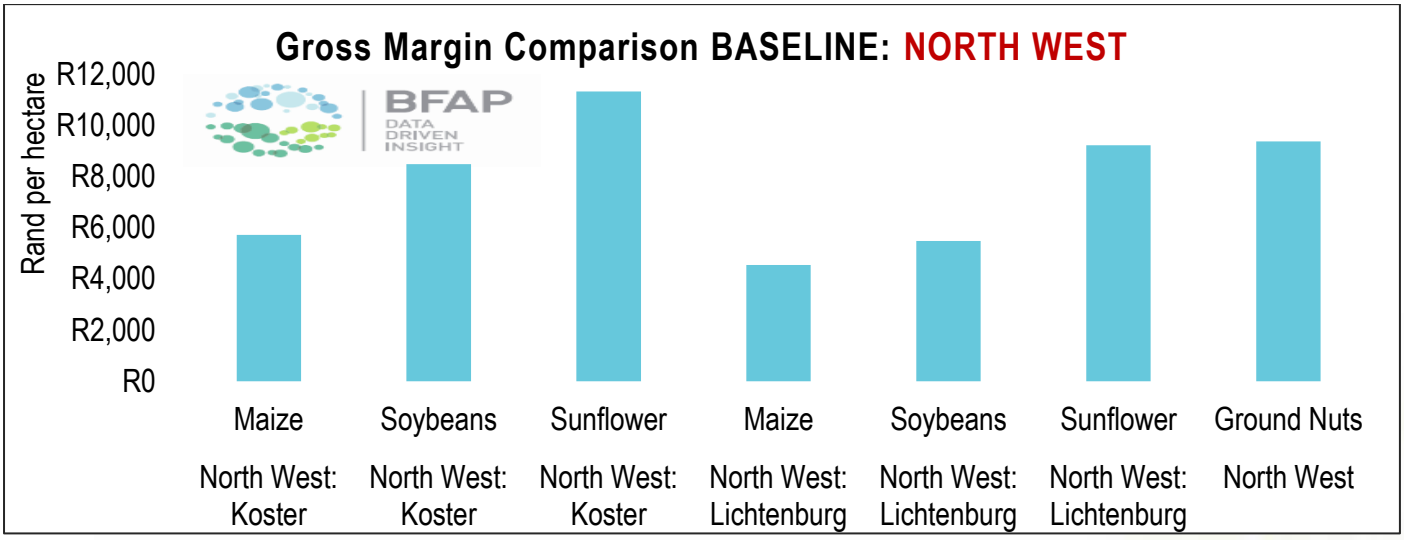


Figure 2.5: Gross margin comparison – Baseline: North West: Koster & Lichtenburg

MAIZE SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTH WEST KOSTER

	YIELD (T/HA)												
PRODUCERS PRICE	3.25		3.75		4.25		**4.75**		5.25		5.75		6.25
R2,357	R	302	R	1,480	R	2,659	**R**	**3,838**	R	5,016	R	6,195	R	7,374
R2,457	R	627	R	1,855	R	3,084	**R**	**4,313**	R	5,541	R	6,770	R	7,999
R2,557	R	952	R	2,230	R	3,509	**R**	**4,788**	R	6,066	R	7,345	R	8,624
R2,657	R	1,277	R	2,605	R	3,934	**R**	**5,263**	R	6,591	R	7,920	R	9,249
R2,757	**R**	**1,602**	**R**	**2,980**	**R**	**4,359**	**R**	**5,738**	**R**	**7,116**	**R**	**8,495**	**R**	**9,874**
R2,857	R	1,927	R	3,355	R	4,784	**R**	**6,213**	R	7,641	R	9,070	R	10,499
R2,957	R	2,252	R	3,730	R	5,209	**R**	**6,688**	R	8,166	R	9,645	R	11,124
R3,057	R	2,577	R	4,105	R	5,634	**R**	**7,163**	R	8,691	R	10,220	R	11,749
R3,157	R	2,902	R	4,480	R	6,059	**R**	**7,638**	R	9,216	R	10,795	R	12,374

SOYBEANS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTH WEST KOSTER

	YIELD (T/HA)												
PRODUCERS PRICE	1.25		1.50		1.75		**2.00**		2.25		2.50		2.75
R6,591	R	2,756	R	4,404	R	6,052	**R**	**7,699**	R	9,347	R	10,995	R	12,642
R6,691	R	2,881	R	4,554	R	6,227	**R**	**7,899**	R	9,572	R	11,245	R	12,917
R6,791	R	3,006	R	4,704	R	6,402	**R**	**8,099**	R	9,797	R	11,495	R	13,192
R6,891	R	3,131	R	4,854	R	6,577	**R**	**8,299**	R	10,022	R	11,745	R	13,467
R6,991	**R**	**3,256**	**R**	**5,004**	**R**	**6,752**	**R**	**8,499**	**R**	**10,247**	**R**	**11,995**	**R**	**13,742**
R5,500	R	1,393	R	2,768	R	4,143	**R**	**5,518**	R	6,893	R	8,268	R	9,643
R5,750	R	1,706	R	3,143	R	4,581	**R**	**6,018**	R	7,456	R	8,893	R	10,331
R6,000	R	2,018	R	3,518	R	5,018	**R**	**6,518**	R	8,018	R	9,518	R	11,018
R6,250	R	2,331	R	3,893	R	5,456	**R**	**7,018**	R	8,581	R	10,143	R	11,706

Tel: 012 420 5021
Email: admin@bfap.co.za

SUNFLOWER SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTH WEST KOSTER														
	YIELD (T/HA)													
PRODUCERS PRICE		1.25		1.50		1.75		**2.00**		2.25		2.50		2.75
R7,640	R	4,825	R	6,735	R	8,645	**R**	**10,555**	R	12,465	R	14,375	R	16,285
R7,740	R	4,950	R	6,885	R	8,820	**R**	**10,755**	R	12,690	R	14,625	R	16,560
R7,840	R	5,075	R	7,035	R	8,995	**R**	**10,955**	R	12,915	R	14,875	R	16,835
R7,940	R	5,200	R	7,185	R	9,170	**R**	**11,155**	R	13,140	R	15,125	R	17,110
R8,040	**R**	**5,325**	**R**	**7,335**	**R**	**9,345**	**R**	**11,355**	**R**	**13,365**	**R**	**15,375**	**R**	**17,385**
R5,250	R	1,838	R	3,150	R	4,463	**R**	**5,775**	R	7,088	R	8,400	R	9,713
R5,500	R	2,150	R	3,525	R	4,900	**R**	**6,275**	R	7,650	R	9,025	R	10,400
R5,750	R	2,463	R	3,900	R	5,338	**R**	**6,775**	R	8,213	R	9,650	R	11,088
R6,000	R	2,775	R	4,275	R	5,775	**R**	**7,275**	R	8,775	R	10,275	R	11,775

SOYBEANS MARGIN ABOVE / BELOW MAIZE (GROSS MARGIN PER HECTARE): NORTH WEST KOSTER														
	PRICE (R/TON)													
YIELD	R	6,691	R	6,791	R	6,891	**R**	**6,991**	R	7,091	R	7,191	R	7,291
0.50	-R	7,874	-R	7,824	-R	7,774	**-R**	**7,724**	-R	7,674	-R	7,624	-R	7,574
0.75	-R	6,202	-R	6,127	-R	6,052	**-R**	**5,977**	-R	5,902	-R	5,827	-R	5,752
1.00	-R	4,529	-R	4,429	-R	4,329	**-R**	**4,229**	-R	4,129	-R	4,029	-R	3,929
1.25	-R	2,856	-R	2,731	-R	2,606	**-R**	**2,481**	-R	2,356	-R	2,231	-R	2,106
2.00	**R**	**2,162**	**R**	**2,362**	**R**	**2,562**	**R**	**2,762**	**R**	**2,962**	**R**	**3,162**	**R**	**3,362**
1.75	R	489	R	664	R	839	**R**	**1,014**	R	1,189	R	1,364	R	1,539
2.00	R	2,162	R	2,362	R	2,562	**R**	**2,762**	R	2,962	R	3,162	R	3,362
2.25	R	3,834	R	4,059	R	4,284	**R**	**4,509**	R	4,734	R	4,959	R	5,184
2.50	R	5,507	R	5,757	R	6,007	**R**	**6,257**	R	6,507	R	6,757	R	7,007

Notes:

- The cost items reflect the input allocation based on the target yield for the respective crops.
- Although some expenditure items are zero, it is reflected in the budgets to allow for individual inclusion.
- Fertiliser assumptions (kg/ha): Maize N:P:K – 81:18:8. Soybeans N:P:K – 10:15:8. Sunflower N:P:K – 54:9:0.
- Other macro- & microelements such as calcium, magnesium and zinc are included in the fertiliser costs.
- The cost of fuel includes pre-harvest and harvesting costs with the assumption that own machinery is used.
- The cost for soybean seed reflects a combination of own- and purchased seed.
- There will be large fluctuations for insurance cost (hail) based on the associated risk in respective areas. It is advised that producers adjust this cost based on their individual premiums.
- It is important to note that overhead costs are not included and should be accounted for.

Tel: 012 420 5021
Email: admin@bfap.co.za

North West: Lichtenburg

Table 2.6: Income & cost budgets for maize, soybeans & sunflower for North West: Lichtenburg region - Dryland

Area		North West: Lichtenburg			
Crop		Maize	Soybeans	Sunflower	Ground Nuts
Production System		Dryland	Dryland	Dryland	Dryland
1) INCOME					
Yield: Deterministic	T/HA	4.25	1.50	1.70	1.50
SAFEX SIMULATED PRICE / PRODUCER PRICE: **2022**	R/TON	R2,987	R7,153	R8,318	R12,113
Total deductions	R/TON	R291	R177	R328	R63
- Transport differential	R/TON	R228	R57	R232	R-
- Grade differential	R/TON	R-	R-	R-	R-
- Handling & commission	R/TON	R63	R63	R96	R63
- Seed breeding & technology levy	R/TON	R-	R57	R-	R-
Price premiums	R/TON	R-	R-	R-	R-
Net Farm Gate Price	R/TON	R2,696	R6,976	R7,990	R12,050
GROSS INCOME	**R/HA**	**R11,459**	**R10,463**	**R13,583**	**R18,074**
2) VARIABLE EXPENDITURES					
Contracting	R/HA	R-	R-	R-	R-
Crop insurance	R/HA	R172	R1,171	R381	R289
Fertilizer	R/HA	R2,376	R1,041	R1,236	R1,615
Lime	R/HA	R314	R-	R-	R173
Seed	R/HA	R932	R641	R519	R1,743
Fuel	R/HA	R990	R791	R805	R1,153
Herbicide	R/HA	R912	R586	R568	R901
Insecticide/Fungicide	R/HA	R283	R180	R29	R1,204
Marketing costs	R/HA	R-	R-	R-	R-
Repairs and maintenance	R/HA	R716	R556	R615	R738
Casual labour	R/HA	R213	R-	R188	R564
Aerial spray	R/HA	R-	R-	R-	R-
Other expenditure	R/HA	R-	R-	R-	R302
TOTAL VARIABLE EXPENDITURE	**R/HA**	**R6,908**	**R4,967**	**R4,341**	**R8,682**
TOTAL VARIABLE EXPENDITURE	**R/TON**	**R1,625**	**R3,312**	**R2,554**	**R5,788**
3.1) GROSS MARGIN:	**R/HA**	**R4,551**	**R5,496**	**R9,241**	**R9,392**
3.2) GROSS MARGIN:	**R/TON**	**R1,071**	**R3,664**	**R5,436**	**R6,262**
BREAK-EVEN YIELD	T/HA	2.56	0.71	0.54	0.72
BREAK-EVEN PRICE	R/TON	R1,625	R3,312	R2,554	R5,788

Source: BFAP, GSA, NWK & Individual Farmers, 2021

Tel: 012 420 5021
Email: admin@bfap.co.za

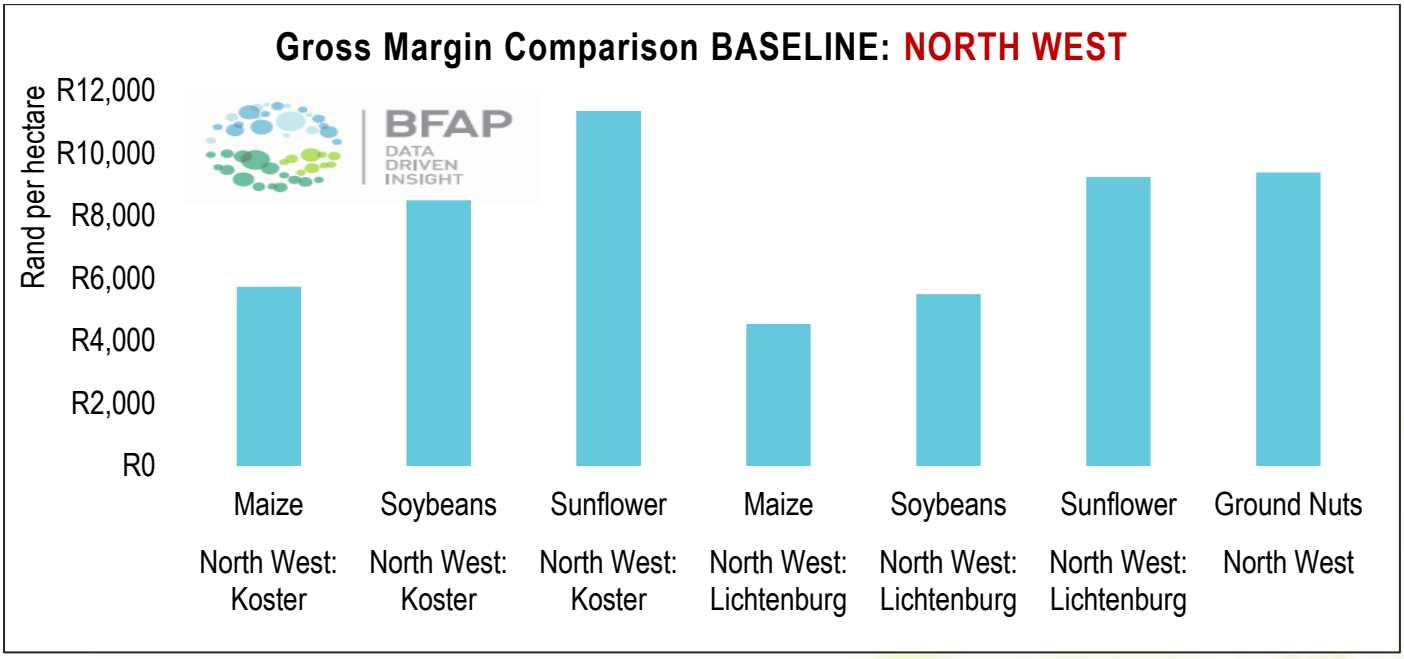


Figure 2.6: Gross margin comparison – Baseline: North West: Koster & Lichtenburg

MAIZE SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTH WEST LICHTENBURG

	YIELD (T/HA)											
PRODUCERS PRICE	2.75		3.25		3.75		**4.25**		4.75		5.25		5.75
R2,296	-R 593	R	555	R	1,703	**R**	**2,851**	R	3,999	R	5,147	R	6,296
R2,396	-R 318	R	880	R	2,078	**R**	**3,276**	R	4,474	R	5,672	R	6,871
R2,496	-R 43	R	1,205	R	2,453	**R**	**3,701**	R	4,949	R	6,197	R	7,446
R2,596	R 232	R	1,530	R	2,828	**R**	**4,126**	R	5,424	R	6,722	R	8,021
R2,696	**R 507**	**R**	**1,855**	**R**	**3,203**	**R**	**4,551**	**R**	**5,899**	**R**	**7,247**	**R**	**8,596**
R2,796	R 782	R	2,180	R	3,578	**R**	**4,976**	R	6,374	R	7,772	R	9,171
R2,896	R 1,057	R	2,505	R	3,953	**R**	**5,401**	R	6,849	R	8,297	R	9,746
R2,996	R 1,332	R	2,830	R	4,328	**R**	**5,826**	R	7,324	R	8,822	R	10,321
R3,096	R 1,607	R	3,155	R	4,703	**R**	**6,251**	R	7,799	R	9,347	R	10,896

SOYBEANS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTH WEST LICHTENBURG

	YIELD (T/HA)											
PRODUCERS PRICE	0.75		1.00		1.25		**1.50**		1.75		2.00		2.25
R6,576	-R 36	R	1,608	R	3,252	**R**	**4,896**	R	6,540	R	8,184	R	9,828
R6,676	R 39	R	1,708	R	3,377	**R**	**5,046**	R	6,715	R	8,384	R	10,053
R6,776	R 114	R	1,808	R	3,502	**R**	**5,196**	R	6,890	R	8,584	R	10,278
R6,876	R 189	R	1,908	R	3,627	**R**	**5,346**	R	7,065	R	8,784	R	10,503
R6,976	**R 264**	**R**	**2,008**	**R**	**3,752**	**R**	**5,496**	**R**	**7,240**	**R**	**8,984**	**R**	**10,728**
R7,076	R 339	R	2,108	R	3,877	**R**	**5,646**	R	7,415	R	9,184	R	10,953
R7,176	R 414	R	2,208	R	4,002	**R**	**5,796**	R	7,590	R	9,384	R	11,178
R7,276	R 489	R	2,308	R	4,127	**R**	**5,946**	R	7,765	R	9,584	R	11,403
R7,376	R 564	R	2,408	R	4,252	**R**	**6,096**	R	7,940	R	9,784	R	11,628

Tel: 012 420 5021
Email: admin@bfap.co.za

SUNFLOWER SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTH WEST LICHTENBURG														
	YIELD (T/HA)													
PRODUCERS PRICE	1.00		1.25		1.50		**1.70**		2.00		2.25		2.50	
R7,590	R	3,248	R	5,146	R	7,043	**R**	**8,561**	R	10,838	R	12,736	R	14,633
R7,690	R	3,348	R	5,271	R	7,193	**R**	**8,731**	R	11,038	R	12,961	R	14,883
R7,790	R	3,448	R	5,396	R	7,343	**R**	**8,901**	R	11,238	R	13,186	R	15,133
R7,890	R	3,548	R	5,521	R	7,493	**R**	**9,071**	R	11,438	R	13,411	R	15,383
R7,990	**R**	**3,648**	**R**	**5,646**	**R**	**7,643**	**R**	**9,241**	**R**	**11,638**	**R**	**13,636**	**R**	**15,633**
R8,090	R	3,748	R	5,771	R	7,793	**R**	**9,411**	R	11,838	R	13,861	R	15,883
R8,190	R	3,848	R	5,896	R	7,943	**R**	**9,581**	R	12,038	R	14,086	R	16,133
R8,290	R	3,948	R	6,021	R	8,093	**R**	**9,751**	R	12,238	R	14,311	R	16,383
R8,390	R	4,048	R	6,146	R	8,243	**R**	**9,921**	R	12,438	R	14,536	R	16,633

GROUND NUTS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTH WEST														
	YIELD (T/HA)													
PRODUCERS PRICE	0.75		1.00		1.25		**1.50**		1.75		2.00		2.25	
R11,650	R	730	R	3,868	R	7,005	**R**	**10,142**	R	13,280	R	16,417	R	19,555
R11,750	R	805	R	3,968	R	7,130	**R**	**10,292**	R	13,455	R	16,617	R	19,780
R11,850	R	880	R	4,068	R	7,255	**R**	**10,442**	R	13,630	R	16,817	R	20,005
R11,950	R	955	R	4,168	R	7,380	**R**	**10,592**	R	13,805	R	17,017	R	20,230
R12,050	**R**	**1,030**	**R**	**4,268**	**R**	**7,505**	**R**	**10,742**	**R**	**13,980**	**R**	**17,217**	**R**	**20,455**
R12,150	R	1,105	R	4,368	R	7,630	**R**	**10,892**	R	14,155	R	17,417	R	20,680
R12,250	R	1,180	R	4,468	R	7,755	**R**	**11,042**	R	14,330	R	17,617	R	20,905
R12,350	R	1,255	R	4,568	R	7,880	**R**	**11,192**	R	14,505	R	17,817	R	21,130
R12,450	R	1,330	R	4,668	R	8,005	**R**	**11,342**	R	14,680	R	18,017	R	21,355

SOYBEANS MARGIN ABOVE / BELOW MAIZE (GROSS MARGIN PER HECTARE): NORTH WEST LICHTENBURG														
	PRICE (R/TON)													
YIELD	R	6,676	R	6,776	R	6,876	**R**	**6,976**	R	7,076	R	7,176	R	7,276
0.50	-R	6,181	-R	6,131	-R	6,081	**-R**	**6,031**	-R	5,981	-R	5,931	-R	5,881
0.75	-R	4,512	-R	4,437	-R	4,362	**-R**	**4,287**	-R	4,212	-R	4,137	-R	4,062
1.00	-R	2,843	-R	2,743	-R	2,643	**-R**	**2,543**	-R	2,443	-R	2,343	-R	2,243
1.25	-R	1,174	-R	1,049	-R	924	**-R**	**799**	-R	674	-R	549	-R	424
1.50	**R**	**495**	**R**	**645**	**R**	**795**	**R**	**945**	**R**	**1,095**	**R**	**1,245**	**R**	**1,395**
1.75	R	2,164	R	2,339	R	2,514	**R**	**2,689**	R	2,864	R	3,039	R	3,214
2.00	R	3,832	R	4,032	R	4,232	**R**	**4,432**	R	4,632	R	4,832	R	5,032
2.25	R	5,501	R	5,726	R	5,951	**R**	**6,176**	R	6,401	R	6,626	R	6,851
2.50	R	7,170	R	7,420	R	7,670	**R**	**7,920**	R	8,170	R	8,420	R	8,670

Notes:

- Farm gate price for ground nuts is calculated according to assumptions based on the share of the crop that is graded according to selection grade (40/50-60/70 & 70/80), diverse and crush (human & oil).
- The cost items reflect the input allocation based on the target yield for the respective crops.
- Although some expenditure items are zero, it is reflected in the budgets to allow for individual inclusion.
- Fertiliser assumptions (kg/ha): Maize N:P:K – 72:16:8. Soybeans N:P:K – 10:12:8. Sunflower N:P:K – 40:9:0. Ground Nuts N:P:K – 15:15:15.
- Other macro- & microelements such as calcium, magnesium and zinc are included in the fertiliser costs.
- The cost of fuel includes pre-harvest and harvesting costs with the assumption that own machinery is used.
- The cost for soybean seed reflects a combination of own- and purchased seed.
- There will be large fluctuations for insurance cost (hail) based on the associated risk in respective areas. It is advised that producers adjust this cost based on their individual premiums.
- It is important to note that overhead costs are not included and should be accounted for.

Tel: 012 420 5021
Email: admin@bfap.co.za

Northern Cape

Table 3.1: Income & cost budgets for maize, soybeans, ground nuts & sunflower (oil) for Northern Cape - Irrigation

Area		Northern Cape: Irrigation			
Crop		Maize	Soybeans	Ground Nuts	Sunflower
Production System		Irrigation	Irrigation	Irrigation	Irrigation
1) INCOME					
Yield: Deterministic	T/HA	13.50	4.00	3.50	3.00
SAFEX SIMULATED PRICE / PRODUCER PRICE: **2022**	R/TON	R3,046	R7,153	R13,637	R8,318
Total deductions	R/TON	R454	R218	R63	R541
- Transport differential	R/TON	R391	R98	R-	R448
- Grade differential	R/TON	R-	R-	R-	R-
- Handling & commission	R/TON	R63	R63	R63	R93
- Seed breeding & technology levy	R/TON	R-	R57	R-	R-
Price premiums	R/TON	R-	R-	R-	R-
Net Farm Gate Price	R/TON	R2,592	R6,935	R15,074	R7,777
GROSS INCOME	**R/HA**	**R34,996**	**R27,739**	**R54,259**	**R23,331**
2) VARIABLE EXPENDITURES					
Contracting	R/HA	R1,100	R1,100	R3,560	R1,100
Crop insurance	R/HA	R350	R1,664	R543	R700
Fertilizer	R/HA	R9,899	R6,213	R8,034	R5,799
Lime	R/HA	R703	R-	R518	R-
Seed	R/HA	R5,456	R1,825	R3,082	R807
Fuel	R/HA	R1,040	R727	R1,134	R1,106
Herbicide	R/HA	R631	R427	R1,169	R92
Insecticide/Fungicide	R/HA	R2,557	R1,451	R4,179	R271
Marketing costs	R/HA	R-	R-	R-	R-
Repairs and maintenance	R/HA	R595	R294	R804	R838
Casual labour	R/HA	R215	R-	R195	R-
Aerial spray	R/HA	R900	R-	R-	R-
Irrigation Electricity	R/HA	R4,292	R4,292	R4,416	R3,048
Water	R/HA	R1,187	R1,187	R1,221	R843
Other expenditure: Scheduling / Irrigation Equipment R&M	R/HA	R771	R771	R2,891	R575
TOTAL VARIABLE EXPENDITURE	**R/HA**	**R29,694**	**R19,951**	**R31,745**	**R15,179**
TOTAL VARIABLE EXPENDITURE	**R/TON**	**R2,200**	**R4,988**	**R9,070**	**R5,060**
3.1) GROSS MARGIN:	**R/HA**	**R5,302**	**R7,788**	**R22,514**	**R8,152**
3.2) GROSS MARGIN:	**R/TON**	**R393**	**R1,947**	**R6,432**	**R2,717**
BREAK-EVEN YIELD	T/HA	11.45	2.88	2.11	1.95
BREAK-EVEN PRICE	R/TON	R2,200	R4,988	R9,070	R5,060

Source: BFAP, GSA & GWK, 2021

Tel: 012 420 5021
Email: admin@bfap.co.za

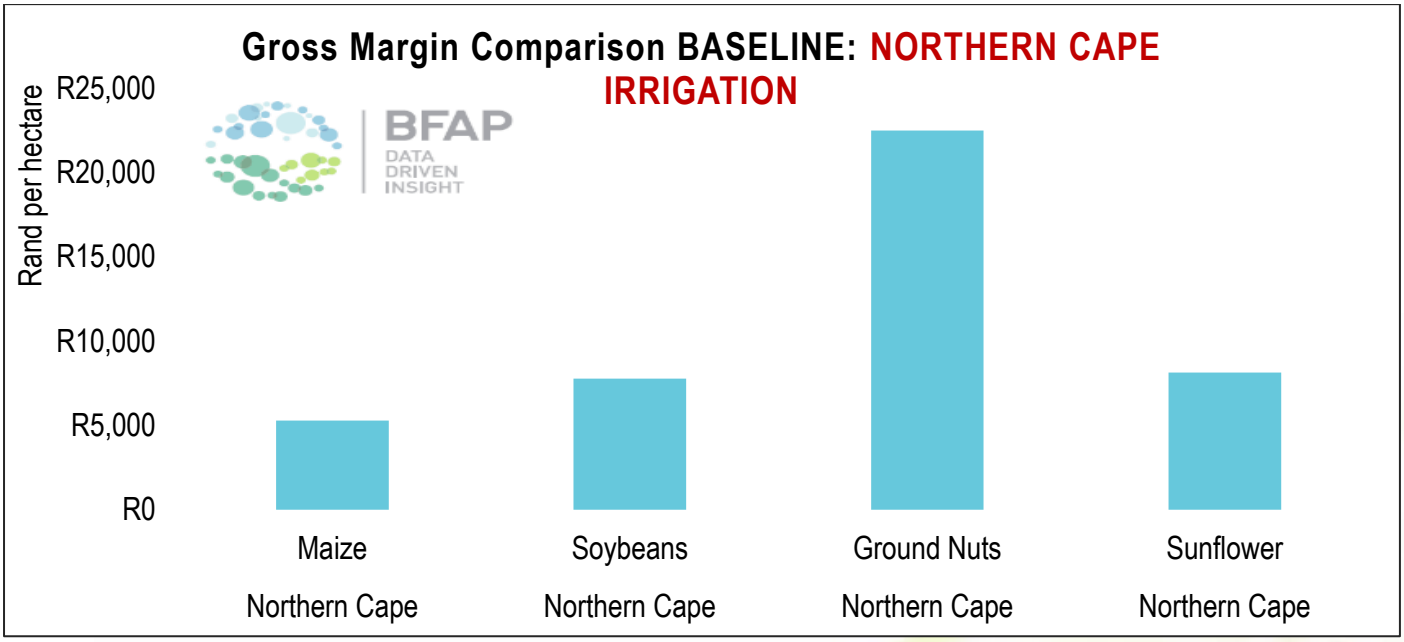


Figure 3.1: Gross margin comparison – Baseline: Northern Cape Irrigation

MAIZE SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTHERN CAPE IRRIGATION

	YIELD (T/HA)														
PRODUCERS PRICE	12.00		12.50		13.00		**13.50**		14.00		14.50		15.00		
R2,192	-R	3,387	-R	2,291	-R	1,194	**-R**	**98**	R	998	R	2,094	R	3,190	
R2,292	-R	2,187	-R	1,041	R	106	**R**	**1,252**	R	2,398	R	3,544	R	4,690	
R2,392	-R	987	R	209	R	1,406	**R**	**2,602**	R	3,798	R	4,994	R	6,190	
R2,492	R	213	R	1,459	R	2,706	**R**	**3,952**	R	5,198	R	6,444	R	7,690	
R2,592	**R**	**1,413**	**R**	**2,709**	**R**	**4,006**	**R**	**5,302**	**R**	**6,598**	**R**	**7,894**	**R**	**9,190**	
R2,692	R	2,613	R	3,959	R	5,306	**R**	**6,652**	R	7,997.85	R	9,344	R	10,690	
R2,792	R	3,813	R	5,209	R	6,606	**R**	**8,002**	R	9,398	R	10,794	R	12,190	
R2,892	R	5,013	R	6,459	R	7,906	**R**	**9,352**	R	10,798	R	12,244	R	13,690	
R2,992	R	6,213	R	7,709	R	9,206	**R**	**10,702**	R	12,198	R	13,694	R	15,190	

SOYBEANS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTHERN CAPE IRRIGATION

	YIELD (T/HA)														
PRODUCERS PRICE	3.25		3.50		3.75		**4.00**		4.25		4.50		4.75		
R6,535	R	1,287	R	2,921	R	4,555	**R**	**6,188**	R	7,822	R	9,456	R	11,090	
R6,635	R	1,612	R	3,271	R	4,930	**R**	**6,588**	R	8,247	R	9,906	R	11,565	
R6,735	R	1,937	R	3,621	R	5,305	**R**	**6,988**	R	8,672	R	10,356	R	12,040	
R6,835	R	2,262	R	3,971	R	5,680	**R**	**7,388**	R	9,097	R	10,806	R	12,515	
R6,935	**R**	**2,587**	**R**	**4,321**	**R**	**6,055**	**R**	**7,788**	**R**	**9,522**	**R**	**11,256**	**R**	**12,990**	
R7,035	R	2,912	R	4,671	R	6,430	**R**	**8,188**	R	9,947	R	11,706	R	13,465	
R7,135	R	3,237	R	5,021	R	6,805	**R**	**8,588**	R	10,372	R	12,156	R	13,940	
R7,235	R	3,562	R	5,371	R	7,180	**R**	**8,988**	R	10,797	R	12,606	R	14,415	
R7,335	R	3,887	R	5,721	R	7,555	**R**	**9,388**	R	11,222	R	13,056	R	14,890	

Tel: 012 420 5021
Email: admin@bfap.co.za

GROUND NUTS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTHERN CAPE IRRIGATION														
PRODUCERS YIELD (T/HA)														
PRICE	2.75		3.00		3.25		**3.50**		4.00		4.50		5.00	
R14,674	R	10,671	R	14,527	R	18,383	**R**	**22,239**	R	29,951	R	37,663	R	45,375
R14,774	R	10,946	R	14,827	R	18,708	**R**	**22,589**	R	30,351	R	38,113	R	45,875
R14,874	R	11,221	R	15,127	R	19,033	**R**	**22,939**	R	30,751	R	38,563	R	46,375
R14,974	R	11,496	R	15,427	R	19,358	**R**	**23,289**	R	31,151	R	39,013	R	46,875
R15,074	**R**	**11,771**	**R**	**15,727**	**R**	**19,683**	**R**	**23,639**	**R**	**31,551**	**R**	**39,463**	**R**	**47,375**
R15,174	R	12,046	R	16,027	R	20,008	**R**	**23,989**	R	31,951	R	39,913	R	47,875
R15,274	R	12,321	R	16,327	R	20,333	**R**	**24,339**	R	32,351	R	40,363	R	48,375
R15,374	R	12,596	R	16,627	R	20,658	**R**	**24,689**	R	32,751	R	40,813	R	48,875
R15,474	R	12,871	R	16,927	R	20,983	**R**	**25,039**	R	33,151	R	41,263	R	49,375

SUNFLOWER OIL SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTHERN CAPE IRRIGATION														
YIELD (T/HA)														
PRODUCERS PRICE	2.25		2.50		2.75		**3.00**		3.50		4.00		4.50	
R7,377	R	1,419	R	3,263	R	5,108	**R**	**6,952**	R	10,640	R	14,329	R	18,017
R7,477	R	1,644	R	3,513	R	5,383	**R**	**7,252**	R	10,990	R	14,729	R	18,467
R7,577	R	1,869	R	3,763	R	5,658	**R**	**7,552**	R	11,340	R	15,129	R	18,917
R7,677	R	2,094	R	4,013	R	5,933	**R**	**7,852**	R	11,690	R	15,529	R	19,367
R7,777	**R**	**2,319**	**R**	**4,263**	**R**	**6,208**	**R**	**8,152**	**R**	**12,040**	**R**	**15,929**	**R**	**19,817**
R7,877	R	2,544	R	4,513	R	6,483	**R**	**8,452**	R	12,390	R	16,329	R	20,267
R7,977	R	2,769	R	4,763	R	6,758	**R**	**8,752**	R	12,740	R	16,729	R	20,717
R8,077	R	2,994	R	5,013	R	7,033	**R**	**9,052**	R	13,090	R	17,129	R	21,167
R8,177	R	3,219	R	5,263	R	7,308	**R**	**9,352**	R	13,440	R	17,529	R	21,617

SOYBEANS MARGIN ABOVE / BELOW MAIZE (GROSS MARGIN PER HECTARE): NORTHERN CAPE IRRIGATION														
	PRICE (R/TON)													
YIELD	R	6,635	R	6,735	R	6,835	**R**	**6,935**	R	7,035	R	7,135	R	7,235
3.00	-R	5,348	-R	5,048	-R	4,748	**-R**	**4,448**	-R	4,148	-R	3,848	-R	3,548
3.25	-R	3,689	-R	3,364	-R	3,039	**-R**	**2,714**	-R	2,389	-R	2,064	-R	1,739
3.50	-R	2,031	-R	1,681	-R	1,331	**-R**	**981**	-R	631	-R	281	R	69
3.75	-R	372	R	3	R	378	**R**	**753**	R	1,128	R	1,503	R	1,878
4.00	**R**	**1,287**	**R**	**1,687**	**R**	**2,087**	**R**	**2,487**	**R**	**2,887**	**R**	**3,287**	**R**	**3,687**
4.25	R	2,945	R	3,370	R	3,795	**R**	**4,220**	R	4,645	R	5,070	R	5,495
4.50	R	4,604	R	5,054	R	5,504	**R**	**5,954**	R	6,404	R	6,854	R	7,304
4.75	R	6,263	R	6,738	R	7,213	**R**	**7,688**	R	8,163	R	8,638	R	9,113
5.00	R	7,922	R	8,422	R	8,922	**R**	**9,422**	R	9,922	R	10,422	R	10,922

Notes:

- Farm gate price for ground nuts is calculated according to assumptions based on the share of the crop that is graded according to selection grade (40/50-60/70 & 70/80), diverse and crush (human & oil).
- The cost items reflect the input allocation based on the target yield for the respective crops.
- Although some expenditure items are zero, it is reflected in the budgets to allow for individual inclusion.
- Fertiliser assumptions (kg/ha): Maize N:P:K – 286:52:80. Soybeans N:P:K – 105:35:46. Ground nuts N:P:K – 160:45:60. Sunflower N:P:K – 100:30:50.
- Other macro- & microelements such as calcium, magnesium and zinc are included in the fertiliser costs.
- The cost of fuel includes pre-harvest and harvesting costs with the assumption that own machinery is used.
- The cost for soybean seed reflects a combination of own- and purchased seed.
- There will be large fluctuations for insurance cost (hail) based on the associated risk in respective areas. It is advised that producers adjust this cost based on their individual premiums.
- It is important to note that overhead costs are not included and should be accounted for.

Tel: 012 420 5021
Email: admin@bfap.co.za

KwaZulu-Natal: Bergville

Table 3.2: Income & cost budgets for maize & soybeans for KwaZulu-Natal: Bergrivier - Irrigation

Area		KwaZulu-Natal: Bergrivier	
Crop		Maize	Soybeans
Production System		Irrigation	Irrigation
1) INCOME			
Yield: Deterministic	T/HA	12.00	4.00
SAFEX SIMULATED PRICE / PRODUCER PRICE: **2022**	R/TON	R3,046	R7,153
Total deductions	R/TON	R389	R207
- Transport differential	R/TON	R329	R87
- Grade differential	R/TON	R-	R-
- Handling & commission	R/TON	R60	R63
- Seed breeding & technology levy	R/TON	R-	R57
Price premiums	R/TON	R-	R-
Net Farm Gate Price	R/TON	R2,657	R6,946
GROSS INCOME	**R/HA**	**R31,888**	**R27,782**
2) VARIABLE EXPENDITURES			
Contracting	R/HA	R-	R-
Crop insurance	R/HA	R1,212	R3,389
Fertilizer	R/HA	R7,501	R2,768
Lime	R/HA	R576	R-
Seed	R/HA	R4,364	R1,754
Fuel	R/HA	R1,370	R1,379
Herbicide	R/HA	R1,376	R1,204
Insecticide/Fungicide	R/HA	R873	R366
Marketing costs	R/HA	R-	R-
Repairs and maintenance	R/HA	R855	R933
Casual labour	R/HA	R215	R-
Aerial spray	R/HA	R-	R-
Irrigation Electricity	R/HA	R2,508	R2,134
Water	R/HA	R1,492	R1,270
Other expenditure: Scheduling / Irrigation Equipment R&M	R/HA	R555	R487
TOTAL VARIABLE EXPENDITURE	**R/HA**	**R22,898**	**R15,684**
TOTAL VARIABLE EXPENDITURE	**R/TON**	**R1,908**	**R3,921**
3.1) GROSS MARGIN:	**R/HA**	**R8,990**	**R12,098**
3.2) GROSS MARGIN:	**R/TON**	**R749**	**R3,025**
BREAK-EVEN YIELD	T/HA	8.62	2.26
BREAK-EVEN PRICE	R/TON	R1,908	R3,921

Source: BFAP, GSA & Individual Farmers, 2021

Tel: 012 420 5021
Email: admin@bfap.co.za

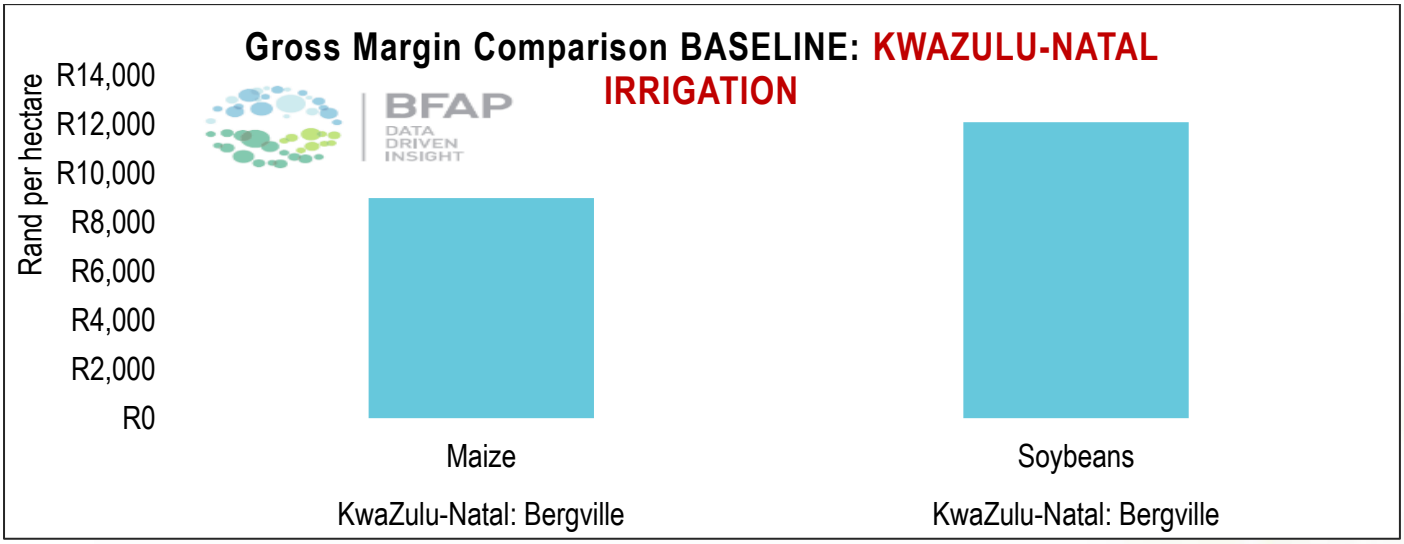


Figure 3.2: Gross margin comparison – Baseline: KwaZulu-Natal: Bergrivier

MAIZE SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): KWAZULU-NATAL:BERGVILLE

	YIELD (T/HA)													
PRODUCERS PRICE	10.50		11.00		11.50		**12.00**		12.50		13.00		13.50	
R2,257	R	804	R	1,933	R	3,061	**R**	**4,190**	R	5,319	R	6,447	R	7,576
R2,357	R	1,854	R	3,033	R	4,211	**R**	**5,390**	R	6,569	R	7,747	R	8,926
R2,457	R	2,904	R	4,133	R	5,361	**R**	**6,590**	R	7,819	R	9,047	R	10,276
R2,557	R	3,954	R	5,233	R	6,511	**R**	**7,790**	R	9,069	R	10,347	R	11,626
R2,657	**R**	**5,004**	**R**	**6,333**	**R**	**7,661**	**R**	**8,990**	**R**	**10,319**	**R**	**11,647**	**R**	**12,976**
R2,757	R	6,054	R	7,433	R	8,811	**R**	**10,190**	R	11,568.55	R	12,947	R	14,326
R2,857	R	7,104	R	8,533	R	9,961	**R**	**11,390**	R	12,819	R	14,247	R	15,676
R2,957	R	8,154	R	9,633	R	11,111	**R**	**12,590**	R	14,069	R	15,547	R	17,026
R3,057	R	9,204	R	10,733	R	12,261	**R**	**13,790**	R	15,319	R	16,847	R	18,376

SOYBEANS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): KWAZULU-NATAL:BERGVILLE

	YIELD (T/HA)													
PRODUCERS PRICE	3.25		3.50		3.75		**4.00**		4.25		4.50		4.75	
R6,546	R	5,589	R	7,225	R	8,862	**R**	**10,498**	R	12,135	R	13,771	R	15,407
R6,646	R	5,914	R	7,575	R	9,237	**R**	**10,898**	R	12,560	R	14,221	R	15,882
R6,746	R	6,239	R	7,925	R	9,612	**R**	**11,298**	R	12,985	R	14,671	R	16,357
R6,846	R	6,564	R	8,275	R	9,987	**R**	**11,698**	R	13,410	R	15,121	R	16,832
R6,946	**R**	**6,889**	**R**	**8,625**	**R**	**10,362**	**R**	**12,098**	**R**	**13,835**	**R**	**15,571**	**R**	**17,307**
R7,046	R	7,214	R	8,975	R	10,737	**R**	**12,498**	R	14,260	R	16,021	R	17,782
R7,146	R	7,539	R	9,325	R	11,112	**R**	**12,898**	R	14,685	R	16,471	R	18,257
R7,246	R	7,864	R	9,675	R	11,487	**R**	**13,298**	R	15,110	R	16,921	R	18,732
R7,346	R	8,189	R	10,025	R	11,862	**R**	**13,698**	R	15,535	R	17,371	R	19,207

Tel: 012 420 5021
Email: admin@bfap.co.za

SOYBEANS MARGIN ABOVE / BELOW MAIZE (GROSS MARGIN PER HECTARE): KWAZULU-NATAL:BERGVILLE														
	PRICE (R/TON)													
YIELD	R	6,646	R	6,746	R	6,846	**R**	**6,946**	R	7,046	R	7,146	R	7,246
3.00	-R	4,737	-R	4,437	-R	4,137	**-R**	**3,837**	-R	3,537	-R	3,237	-R	2,937
3.25	-R	3,076	-R	2,751	-R	2,426	**-R**	**2,101**	-R	1,776	-R	1,451	-R	1,126
3.50	-R	1,414	-R	1,064	-R	714	**-R**	**364**	-R	14	R	336	R	686
3.75	R	247	R	622	R	997	**R**	**1,372**	R	1,747	R	2,122	R	2,497
4.00	**R**	**1,908**	**R**	**2,308**	**R**	**2,708**	**R**	**3,108**	**R**	**3,508**	**R**	**3,908**	**R**	**4,308**
4.25	R	3,570	R	3,995	R	4,420	**R**	**4,845**	R	5,270	R	5,695	R	6,120
4.50	R	5,231	R	5,681	R	6,131	**R**	**6,581**	R	7,031	R	7,481	R	7,931
4.75	R	6,892	R	7,367	R	7,842	**R**	**8,317**	R	8,792	R	9,267	R	9,742
5.00	R	8,554	R	9,054	R	9,554	**R**	**10,054**	R	10,554	R	11,054	R	11,554

Notes:

- The cost items reflect the input allocation based on the target yield for the respective crops.
- Although some expenditure items are zero, it is reflected in the budgets to allow for individual inclusion.
- Fertiliser assumptions (kg/ha): Maize N:P:K – 212:49:56. Soybeans N:P:K – 20:36:40.
- Other macro- & microelements such as calcium, magnesium and zinc are included in the fertiliser costs.
- The cost of fuel includes pre-harvest and harvesting costs with the assumption that own machinery is used.
- The cost for soybean seed reflects a combination of own- and purchased seed.
- There will be large fluctuations for insurance cost (hail) based on the associated risk in respective areas. It is advised that producers adjust this cost based on their individual premiums.
- It is important to note that overhead costs are not included and should be accounted for.

Tel: 012 420 5021
Email: admin@bfap.co.za

North-West

Table 3.3: Income & cost budgets for maize, soybeans, sunflower & sorghum for North West: Brits region - Irrigation

Area		North West: Brits / Northam / Koedoeskop			
Crop		Maize	Soybeans	Sunflower	Sorghum
Production System		Irrigation	Irrigation	Irrigation	Irrigation
1) INCOME					
Yield: Deterministic	T/HA	12.00	3.80	3.00	7.00
SAFEX SIMULATED PRICE / PRODUCER PRICE: **2022**	R/TON	R3,046	R7,153	R8,318	R3,335
Total deductions	R/TON	R206	R156	R269	R63
- Transport differential	R/TON	R143	R36	R176	R-
- Grade differential	R/TON	R-	R-	R-	R-
- Handling & commission	R/TON	R63	R63	R93	R63
- Seed breeding & technology levy	R/TON	R-	R57	R-	R-
Price premiums	R/TON	R-	R-	R-	R-
Net Farm Gate Price	R/TON	R2,840	R6,997	R8,049	R3,272
GROSS INCOME	**R/HA**	**R34,084**	**R26,587**	**R24,147**	**R22,902**
2) VARIABLE EXPENDITURES					
Contracting	R/HA	R850	R890	R-	R-
Crop insurance	R/HA	R1,159	R1,462	R580	R583
Fertilizer	R/HA	R7,615	R2,605	R2,342	R4,677
Lime	R/HA	R523	R-	R-	R340
Seed	R/HA	R4,243	R1,824	R890	R754
Fuel	R/HA	R1,254	R1,074	R1,063	R1,125
Herbicide	R/HA	R1,035	R586	R849	R1,167
Insecticide/Fungicide	R/HA	R742	R339	R194	R606
Marketing costs	R/HA	R-	R-	R-	R-
Repairs and maintenance	R/HA	R654	R570	R544	R561
Casual labour	R/HA	R215	R-	R-	R158
Aerial spray	R/HA	R-	R-	R-	R230
Irrigation Electricity	R/HA	R3,383	R2,768	R1,538	R2,153
Water	R/HA	R1,141	R933	R519	R726
Other expenditure: Scheduling / Irrigation Equipment R&M	R/HA	R634	R536	R340	R438
TOTAL VARIABLE EXPENDITURE	**R/HA**	**R23,448**	**R13,587**	**R8,860**	**R13,517**
TOTAL VARIABLE EXPENDITURE	**R/TON**	**R1,954**	**R3,576**	**R2,953**	**R1,931**
3.1) GROSS MARGIN:	**R/HA**	**R10,635**	**R13,000**	**R15,287**	**R9,385**
3.2) GROSS MARGIN:	**R/TON**	**R886**	**R3,421**	**R5,096**	**R1,341**
BREAK-EVEN YIELD	T/HA	8.26	1.94	1.10	4.13
BREAK-EVEN PRICE	R/TON	R1,954	R3,576	R2,953	R1,931

Source: BFAP, GSA, NWK & Individual Farmers, 2021

Tel: 012 420 5021
Email: admin@bfap.co.za

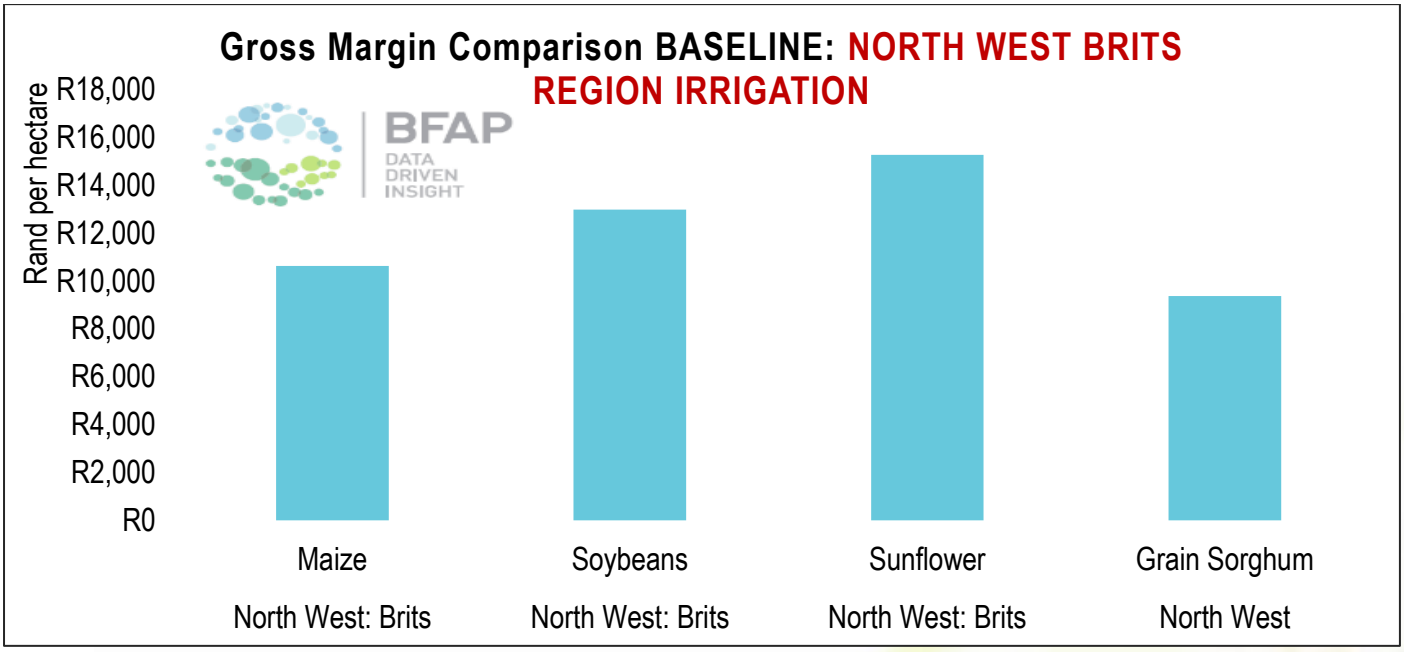


Figure 3.3: Gross margin comparison – Baseline: North West: Brits Region

MAIZE SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTH WEST BRITS

	YIELD (T/HA)						
PRODUCERS PRICE	10.50	11.00	11.50	**12.00**	12.50	13.00	13.50
R2,440	R 2,175	R 3,395	R 4,615	**R 5,835**	R 7,055	R 8,276	R 9,496
R2,540	R 3,225	R 4,495	R 5,765	**R 7,035**	R 8,305	R 9,576	R 10,846
R2,640	R 4,275	R 5,595	R 6,915	**R 8,235**	R 9,555	R 10,876	R 12,196
R2,740	R 5,325	R 6,695	R 8,065	**R 9,435**	R 10,805	R 12,176	R 13,546
R2,840	**R 6,375**	**R 7,795**	**R 9,215**	**R 10,635**	**R 12,055**	**R 13,476**	**R 14,896**
R2,940	R 7,425	R 8,895	R 10,365	**R 11,835**	R 13,305.47	R 14,776	R 16,246
R3,040	R 8,475	R 9,995	R 11,515	**R 13,035**	R 14,555	R 16,076	R 17,596
R3,140	R 9,525	R 11,095	R 12,665	**R 14,235**	R 15,805	R 17,376	R 18,946
R3,240	R 10,575	R 12,195	R 13,815	**R 15,435**	R 17,055	R 18,676	R 20,296

SOYBEANS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTH WEST BRITS

	YIELD (T/HA)						
PRODUCERS PRICE	3.00	3.25	3.50	**3.80**	4.00	4.25	4.50
R6,597	R 6,202	R 7,852	R 9,501	**R 11,480**	R 12,799	R 14,448	R 16,097
R6,697	R 6,502	R 8,177	R 9,851	**R 11,860**	R 13,199	R 14,873	R 16,547
R6,797	R 6,802	R 8,502	R 10,201	**R 12,240**	R 13,599	R 15,298	R 16,997
R6,897	R 7,102	R 8,827	R 10,551	**R 12,620**	R 13,999	R 15,723	R 17,447
R6,997	**R 7,402**	**R 9,152**	**R 10,901**	**R 13,000**	**R 14,399**	**R 16,148**	**R 17,897**
R7,097	R 7,702	R 9,477	R 11,251	**R 13,380**	R 14,799	R 16,573	R 18,347
R7,197	R 8,002	R 9,802	R 11,601	**R 13,760**	R 15,199	R 16,998	R 18,797
R7,297	R 8,302	R 10,127	R 11,951	**R 14,140**	R 15,599	R 17,423	R 19,247
R7,397	R 8,602	R 10,452	R 12,301	**R 14,520**	R 15,999	R 17,848	R 19,697

Tel: 012 420 5021
Email: admin@bfap.co.za

SUNFLOWER SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): NORTH WEST BRITS														
	YIELD (T/HA)													
PRODUCERS PRICE	2.30		2.55		2.80		**3.00**		3.30		3.55		3.80	
R7,649	R	8,732	R	10,645	R	12,557	**R**	**14,087**	R	16,381	R	18,294	R	20,206
R7,749	R	8,962	R	10,900	R	12,837	**R**	**14,387**	R	16,711	R	18,649	R	20,586
R7,849	R	9,192	R	11,155	R	13,117	**R**	**14,687**	R	17,041	R	19,004	R	20,966
R7,949	R	9,422	R	11,410	R	13,397	**R**	**14,987**	R	17,371	R	19,359	R	21,346
R8,049	**R**	**9,652**	**R**	**11,665**	**R**	**13,677**	**R**	**15,287**	**R**	**17,701**	**R**	**19,714**	**R**	**21,726**
R8,149	R	9,882	R	11,920	R	13,957	**R**	**15,587**	R	18,031	R	20,069	R	22,106
R8,249	R	10,112	R	12,175	R	14,237	**R**	**15,887**	R	18,361	R	20,424	R	22,486
R8,349	R	10,342	R	12,430	R	14,517	**R**	**16,187**	R	18,691	R	20,779	R	22,866
R8,449	R	10,572	R	12,685	R	14,797	**R**	**16,487**	R	19,021	R	21,134	R	23,246

SOYBEANS MARGIN ABOVE / BELOW MAIZE (GROSS MARGIN PER HECTARE): NORTH WEST BRITS														
	PRICE (R/TON)													
YIELD	R	6,697	**R**	**6,797**	R	6,897	**R**	**6,997**	R	7,097	R	7,197	R	7,297
2.75	-R	5,807	-R	5,532	-R	5,257	**-R**	**4,982**	-R	4,707	-R	4,432	-R	4,157
3.00	-R	4,133	-R	3,833	-R	3,533	**-R**	**3,233**	-R	2,933	-R	2,633	-R	2,333
3.25	-R	2,459	-R	2,134	-R	1,809	**-R**	**1,484**	-R	1,159	-R	834	-R	509
3.50	-R	785	-R	435	-R	85	**R**	**265**	R	615	R	965	R	1,315
3.80	**R**	**1,224**	**R**	**1,604**	**R**	**1,984**	**R**	**2,364**	**R**	**2,744**	**R**	**3,124**	**R**	**3,504**
4.00	R	2,564	R	2,964	R	3,364	**R**	**3,764**	R	4,164	R	4,564	R	4,964
4.25	R	4,238	R	4,663	R	5,088	**R**	**5,513**	R	5,938	R	6,363	R	6,788
4.50	R	5,912	R	6,362	R	6,812	**R**	**7,262**	R	7,712	R	8,162	R	8,612
4.75	R	7,586	R	8,061	R	8,536	**R**	**9,011**	R	9,486	R	9,961	R	10,436

Notes:

- The cost items reflect the input allocation based on the target yield for the respective crops.
- Although some expenditure items are zero, it is reflected in the budgets to allow for individual inclusion.
- Fertiliser assumptions (kg/ha): Maize N:P:K – 240:42:48. Soybeans N:P:K – 14:36:42. Sunflower N:P:K – 60:15:24. Grain sorghum N:P:K – 140:25:28.
- Other macro- & microelements such as calcium, magnesium and zinc are included in the fertiliser costs.
- The cost of fuel includes pre-harvest and harvesting costs with the assumption that own machinery is used.
- The cost for soybean seed reflects a combination of own- and purchased seed.
- There will be large fluctuations for insurance cost (hail) based on the associated risk in respective areas. It is advised that producers adjust this cost based on their individual premiums.
- It is important to note that overhead costs are not included and should be accounted for.

Tel: 012 420 5021
Email: admin@bfap.co.za

Limpopo

Table 3.4: Income & cost budgets for maize & soybeans for Limpopo: Loskop region - Irrigation

Area		Limpopo: Loskop	
Crop		Maize	Soybeans
Production System		Irrigation	Irrigation
1) INCOME			
Yield: Deterministic	T/HA	12.00	4.00
SAFEX SIMULATED PRICE / PRODUCER PRICE: **2022**	R/TON	R3,046	R7,153
Total deductions	R/TON	R338	R189
- Transport differential	R/TON	R275	R69
- Grade differential	R/TON	R-	R-
- Handling & commission	R/TON	R63	R63
- Seed breeding & technology levy	R/TON	R-	R57
Price premiums	R/TON	R-	R-
Net Farm Gate Price	R/TON	R2,708	R6,964
GROSS INCOME	**R/HA**	**R32,500**	**R27,854**
2) VARIABLE EXPENDITURES			
Contracting	R/HA	R850	R890
Crop insurance	R/HA	R1,105	R1,532
Fertilizer	R/HA	R7,615	R2,816
Lime	R/HA	R665	R-
Seed	R/HA	R4,243	R1,824
Fuel	R/HA	R1,254	R1,074
Herbicide	R/HA	R1,035	R586
Insecticide/Fungicide	R/HA	R742	R339
Marketing costs	R/HA	R-	R-
Repairs and maintenance	R/HA	R775	R580
Casual labour	R/HA	R215	R-
Aerial spray	R/HA	R-	R-
Irrigation Electricity	R/HA	R4,060	R2,922
Water	R/HA	R1,369	R985
Other expenditure: Scheduling / Irrigation Equipment R&M	R/HA	R742	R560
TOTAL VARIABLE EXPENDITURE	**R/HA**	**R24,670**	**R14,108**
TOTAL VARIABLE EXPENDITURE	**R/TON**	**R2,056**	**R3,527**
3.1) GROSS MARGIN:	**R/HA**	**R7,829**	**R13,746**
3.2) GROSS MARGIN:	**R/TON**	**R652**	**R3,437**
BREAK-EVEN YIELD	T/HA	9.11	2.03
BREAK-EVEN PRICE	R/TON	R2,056	R3,527

Source: BFAP, GSA & Individual Farmers, 2021

Tel: 012 420 5021
Email: admin@bfap.co.za

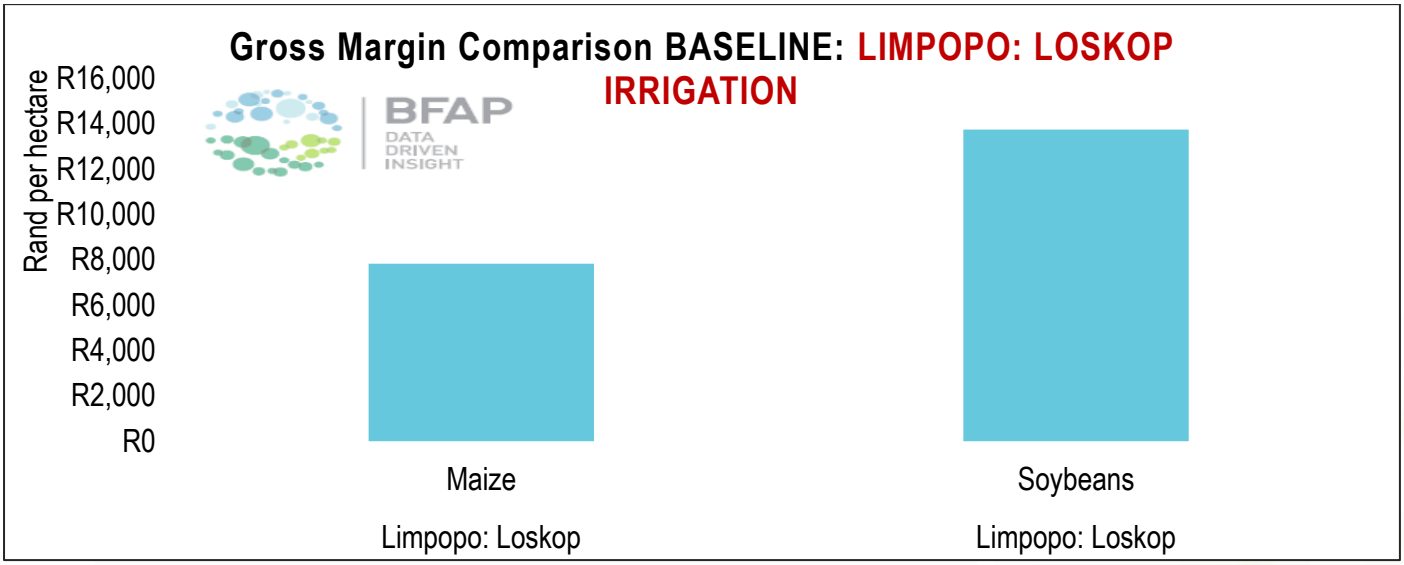


Figure 3.4: Gross margin comparison – Baseline: Limpopo: Loskop Region

MAIZE SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): LOSKOP AREA

	YIELD (T/HA)												
PRODUCERS PRICE	10.50		11.00		11.50		**12.00**		12.50		13.00		13.50
R2,308	-R 433		R 721		R 1,875		**R 3,029**		R 4,183		R 5,337		R 6,492
R2,408	R 617		R 1,821		R 3,025		**R 4,229**		R 5,433		R 6,637		R 7,842
R2,508	R 1,667		R 2,921		R 4,175		**R 5,429**		R 6,683		R 7,937		R 9,192
R2,608	R 2,717		R 4,021		R 5,325		**R 6,629**		R 7,933		R 9,237		R 10,542
R2,708	**R 3,767**		**R 5,121**		**R 6,475**		**R 7,829**		**R 9,183**		**R 10,537**		**R 11,892**
R2,808	R 4,817		R 6,221		R 7,625		**R 9,029**		R 10,433		R 11,837		R 13,242
R2,908	R 5,867		R 7,321		R 8,775		**R 10,229**		R 11,683		R 13,137		R 14,592
R3,008	R 6,917		R 8,421		R 9,925		**R 11,429**		R 12,933		R 14,437		R 15,942
R3,108	R 7,967		R 9,521		R 11,075		**R 12,629**		R 14,183		R 15,737		R 17,292

SOYBEANS SENSITIVITY ANALYSIS (GROSS MARGIN PER HECTARE): LIMPOPO: LOSKOP AREA

	YIELD (T/HA)												
PRODUCERS PRICE	3.25		3.50		3.75		**4.00**		4.25		4.50		4.75
R6,564	R 7,223		R 8,864		R 10,505		**R 12,146**		R 13,787		R 15,428		R 17,069
R6,664	R 7,548		R 9,214		R 10,880		**R 12,546**		R 14,212		R 15,878		R 17,544
R6,764	R 7,873		R 9,564		R 11,255		**R 12,946**		R 14,637		R 16,328		R 18,019
R6,864	R 8,198		R 9,914		R 11,630		**R 13,346**		R 15,062		R 16,778		R 18,494
R6,964	**R 8,523**		**R 10,264**		**R 12,005**		**R 13,746**		**R 15,487**		**R 17,228**		**R 18,969**
R7,064	R 8,848		R 10,614		R 12,380		**R 14,146**		R 15,912		R 17,678		R 19,444
R7,164	R 9,173		R 10,964		R 12,755		**R 14,546**		R 16,337		R 18,128		R 19,919
R7,264	R 9,498		R 11,314		R 13,130		**R 14,946**		R 16,762		R 18,578		R 20,394
R7,364	R 9,823		R 11,664		R 13,505		**R 15,346**		R 17,187		R 19,028		R 20,869

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SOYBEANS MARGIN ABOVE / BELOW MAIZE (GROSS MARGIN PER HECTARE): LIMPOPO: LOSKOP AREA													
	PRICE (R/TON)												
YIELD	R	6,664	R	6,764	R	6,864	**R**	**6,964**	R	7,064	R	7,164	R	7,264
3.00	-R	1,947	-R	1,647	-R	1,347	**-R**	**1,047**	-R	747	-R	447	-R	147
3.25	-R	281	R	44	R	369	**R**	**694**	R	1,019	R	1,344	R	1,669
3.50	R	1,385	R	1,735	R	2,085	**R**	**2,435**	R	2,785	R	3,135	R	3,485
3.75	R	3,051	R	3,426	R	3,801	**R**	**4,176**	R	4,551	R	4,926	R	5,301
4.00	**R**	**4,717**	**R**	**5,117**	**R**	**5,517**	**R**	**5,917**	**R**	**6,317**	**R**	**6,717**	**R**	**7,117**
4.25	R	6,383	R	6,808	R	7,233	**R**	**7,658**	R	8,083	R	8,508	R	8,933
4.50	R	8,049	R	8,499	R	8,949	**R**	**9,399**	R	9,849	R	10,299	R	10,749
4.75	R	9,715	R	10,190	R	10,665	**R**	**11,140**	R	11,615	R	12,090	R	12,565
5.00	R	11,380	R	11,880	R	12,380	**R**	**12,880**	R	13,380	R	13,880	R	14,380

Notes:

- The cost items reflect the input allocation based on the target yield for the respective crops.
- Although some expenditure items are zero, it is reflected in the budgets to allow for individual inclusion.
- Fertiliser assumptions (kg/ha): Maize N:P:K – 240:42:48. Soybeans N:P:K – 14:38:45.
- Other macro- & microelements such as calcium, magnesium and zinc are included in the fertiliser costs.
- The cost of fuel includes pre-harvest and harvesting costs with the assumption that own machinery is used.
- The cost for soybean seed reflects a combination of own- and purchased seed.
- There will be large fluctuations for insurance cost (hail) based on the associated risk in respective areas. It is advised that producers adjust this cost based on their individual premiums.
- It is important to note that overhead costs are not included and should be accounted for.

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Summary: 2021/22 Income & Cost Budgets

Figures 4.1 - 4.4 provide a summary on gross margin performance of dryland and irrigated crops over the period from 2018 (adjusted to account for actual yields) to 2023 (projected).

Across the 24 dryland crops in 7 agro-ecological regions, an average gross margin of R7,355 per hectare is projected for the 2021/22 production season, approximately 34% lower compared to the 2020/21 realised production season. Important to note, is that this only considers direct costs and excludes overhead costs. For the 2021/22 season, it is projected that on average, maize gross margins will decrease from 2020/21 levels by approximately 50%. This is due to increasing input costs, lower expected commodity crop prices and assuming trend yields. The gross margin for irrigated crops is also projected to decrease, with maize projected to decline by an average of 59% in 2021/22 (relative to 2020/21 levels), sunflower by 30%, and soybeans by 8%. The cultivation of sunflower is projected to outperform maize and soybeans on dryland and under irrigation for the 2021/22 production season.

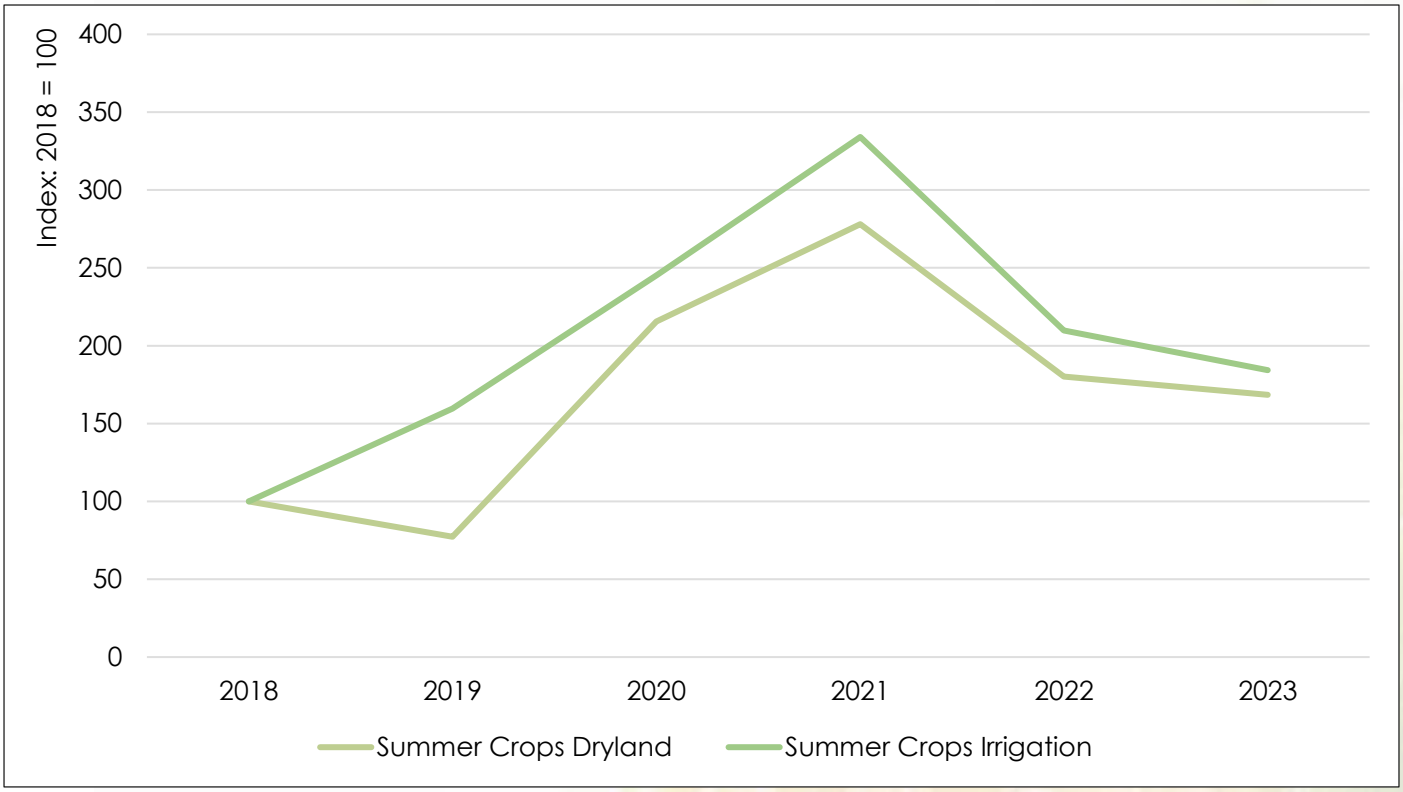


Figure 4.1: Gross margin index between dryland & irrigated summer crops: 2018-2023

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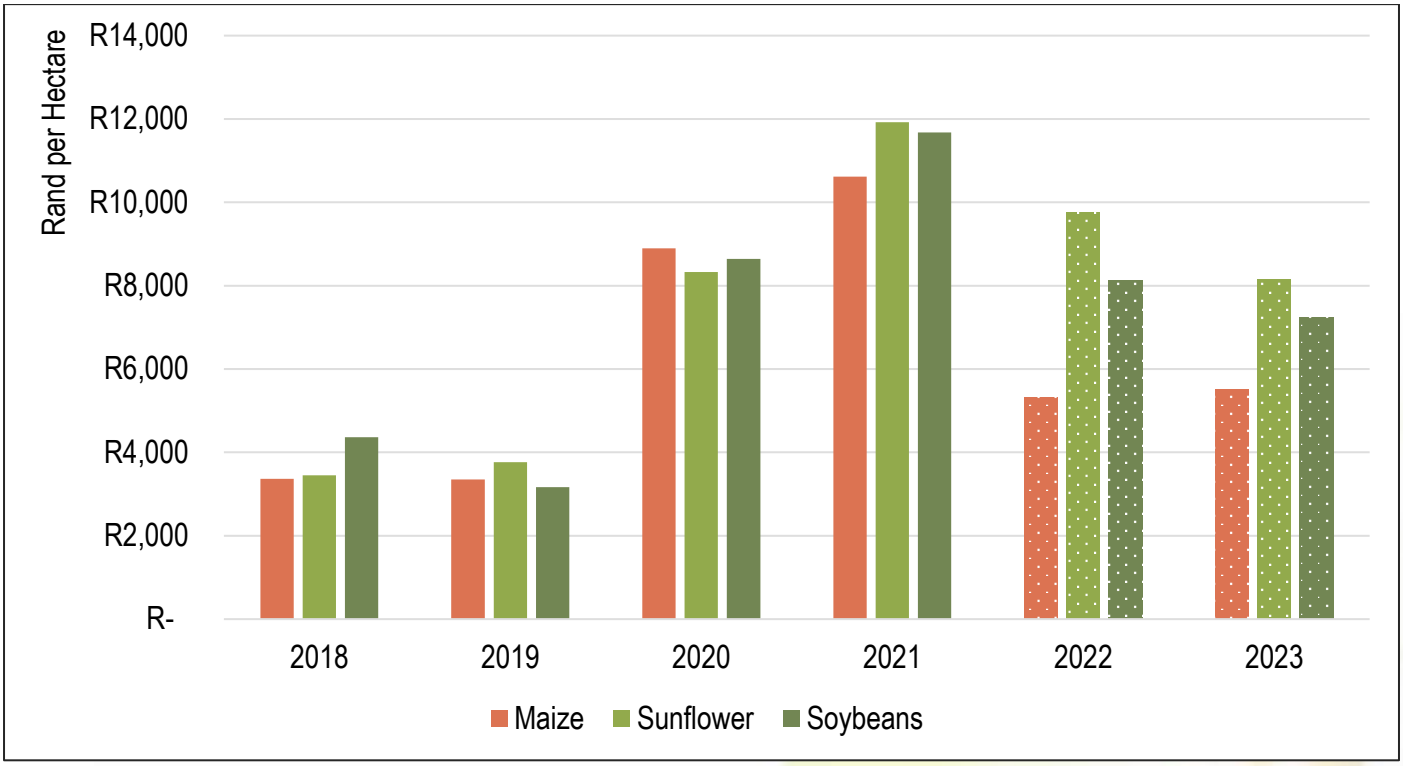


Figure 4.2: Dryland - **Deterministic** gross margin average by crop type: 2018-2023

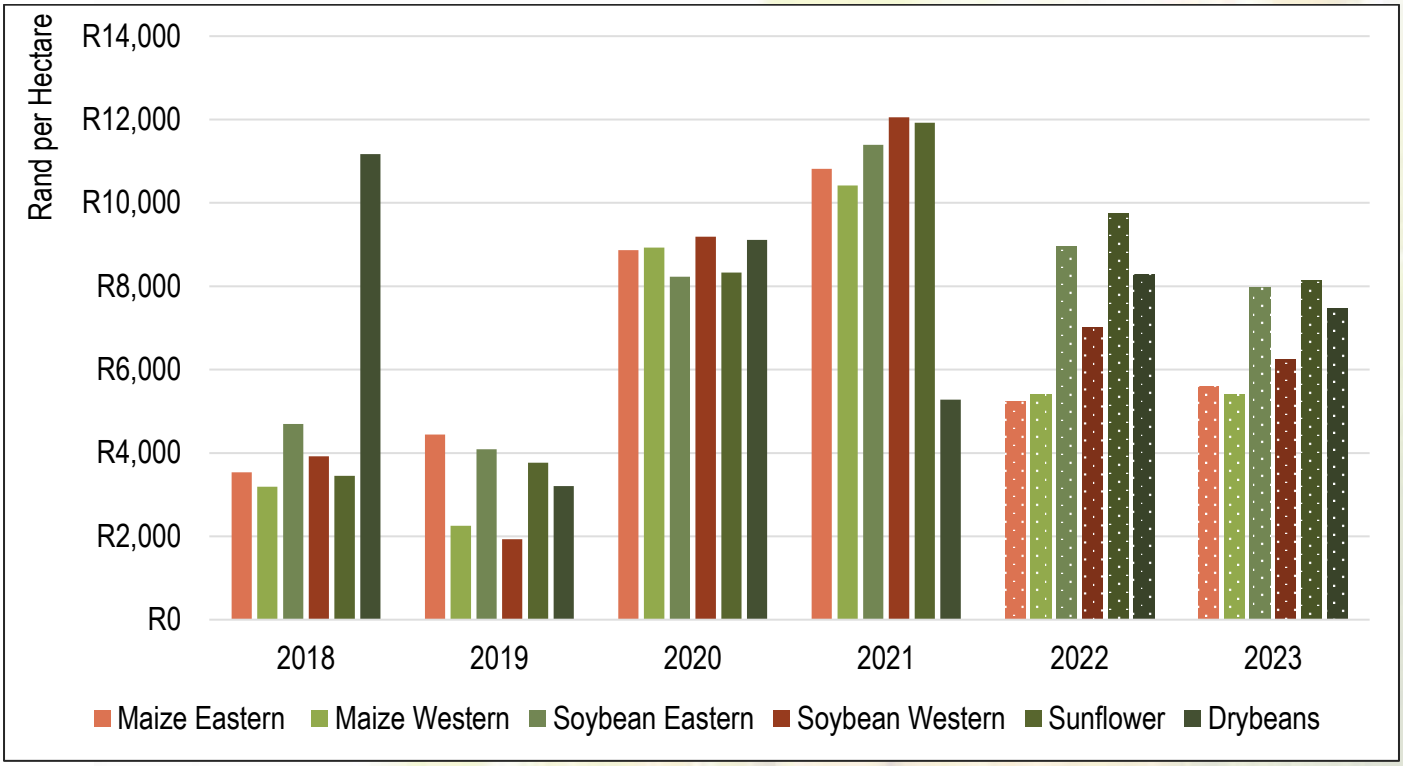


Figure 4.3: Dryland - **Deterministic** gross margin average by key producing region: 2018-2023

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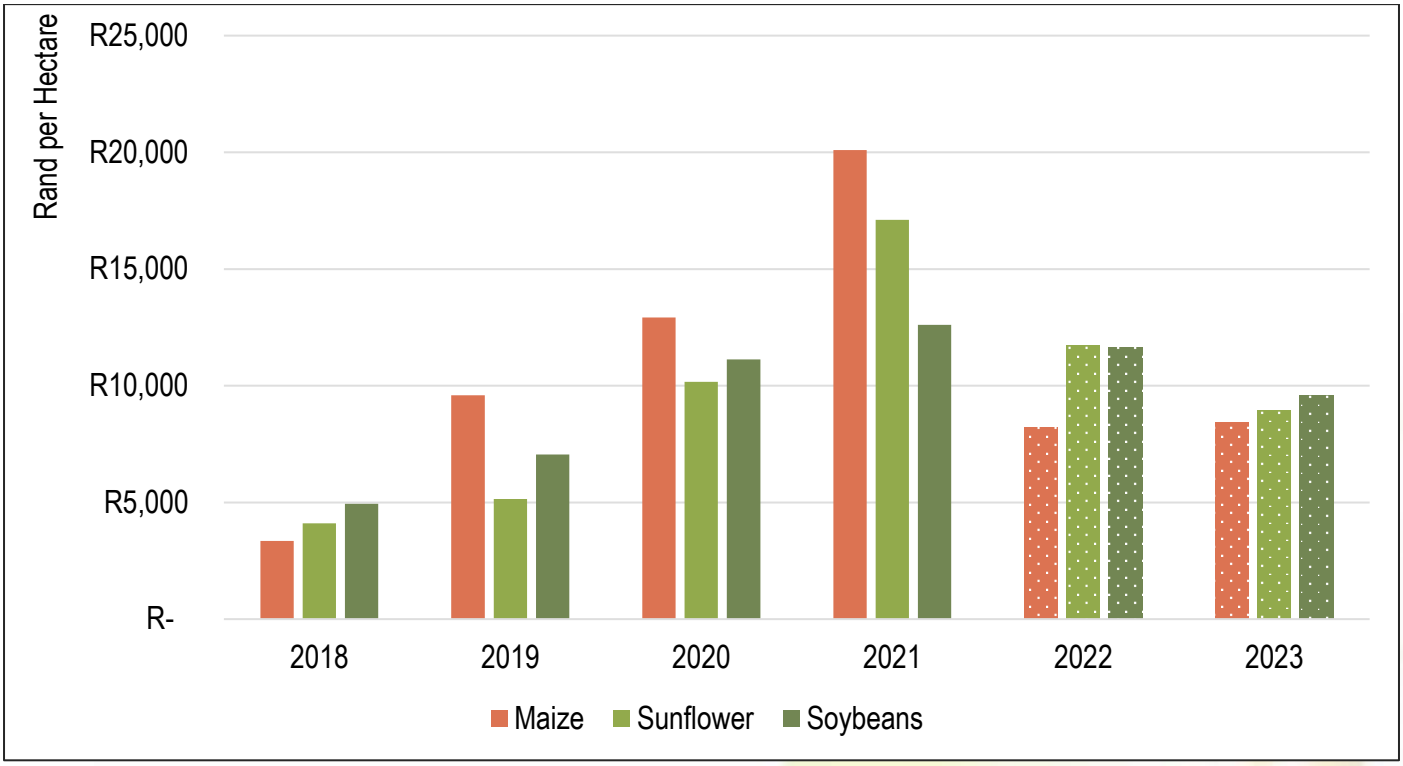


Figure 4.4: Irrigation - **Deterministic** gross margin average by crop type: 2018-2023

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