



The Bureau for Food and Agricultural Policy (BFAP) NPC

Registration no. 2015/000317/08

The Grain Building Agri-hub

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To: Sorghum Cluster Initiative

- **Title of the research project**
 - Feasibility Analysis of establishing a sorghum agro-processing industry in South Africa

- **Main objective or aim of the research**
 - The objective of **Phase 1** is to develop a detailed overview of the sorghum value chain to determine if the sorghum industry (in its current state) has the potential to expand from a production and processing perspective, taking the long-run relative competitiveness into consideration. This will assist in determining if a sorghum processing facility is feasible to further expand the industry.
 - Once it has been determined whether sorghum has the required production and market potential, **Phase 2** aims to investigate the operational and financial feasibility of a sorghum extrusion plant, its products' markets, and the implications on the sorghum value chain. The objectives of **Phase 2** are to:
 1. Evaluate the feasibility and quantify the impact of a sorghum processor on the entire sorghum industry and value chain.
 2. Determine the feasibility of sorghum-based foods in the South African market.

The execution and exact outputs of **Phase 2** depend on the outcomes of **Phase 1**.

- **Co-ordinator of the project, including contact information**
 - Helga Ottermann, helga@bfap.co.za, +27 795888141

- **Co-workers, including from where and their contact information:**

Co-worker	Organisation	Contact information
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- **Methodology or approach**
 - Data gathering and validation
 - Literature review
 - Development of sorghum sector model
 - Farm-level profitability analysis
 - GIS and crop-suitability modelling
 - Result validation and verification

- **What are the key findings or results so far?**
 - The study aims to produce the following outputs:
(a status update is provided with preliminary key findings. The preliminary key findings are difficult to list, as most are still being validated)

Table 1 Project Outputs

Output		Status Update	Preliminary Key findings
Value Chain Overview	<i>Value Chain Product Flow Map</i>	Compiled (Figure 1) Currently being validated	Understanding of how the raw material gets to market. Illustrated below in Figure 1 (preliminary). Raw sorghum is imported and exported, while final sorghum products are being imported (Source: TradeMap).
	<i>Value Chain Spatial Representation</i>	Data has been gathered. Currently busy validating the processor locations, before compiling the final spatial representation of the value chain.	The majority of the production and processing is located in the northern parts of the country
	<i>Develop a 10-year outlook of the supply and demand dynamics of the sorghum industry</i>	The sector model has gone through a preliminary update. Final validation and analysis outstanding.	Sorghum production has declined over the last decade due to a declining area under production and stagnant yields.
Sorghum Production Competitiveness	<i>Geo-spatial Sorghum Context</i>	Spatial data has been gathered and modelled. Spatial illustrations have been compiled. Currently conducting analyses and generating insights.	Production mainly occurs in the northern parts of South Africa.
	<i>Financial Competitiveness and risks of sorghum production</i>	Obtained sorghum trial data from Stellenbosch University. Currently coordinating with GrainSA on potentially obtaining further trial data from them.	Sorghum is competitive if theoretical yields are obtained, however, bird damage is a big problem, decreasing sorghum's realised yield and competitiveness.

		Preliminary profitability analysis has been conducted. Busy refining results by incorporating the trial data, before validating the results.	
	<i>Determine the future sorghum producer profitability</i>	To be conducted once the previous step has been validated and the sector model has been finalised.	
Sorghum Extrusion Processing Analysis	<i>Overview of global sorghum extrusion processing</i>	In progress. Struggling to find a lot of international references to sorghum processing, but still conducting review.	Limited information on international processing.
Sorghum Retail Market Analysis	<i>Market Background and Context</i>	Currently being conducted	
	<i>Retail product market scoping</i>	Currently being conducted	
	<i>Nutritional value-for-money analysis</i>	Currently being conducted	
	<i>Applying consumer food trends to the sorghum market</i>	Currently being conducted	
	<i>A spatial (provincial) view on sorghum product consumption and prices in South Africa</i>	Obtained NielsenIQ data. Conducted analysis.	Decline in total sorghum meal sales Sorghum cereal bars sales also declined, but increased from 2021/22 to 2022/23 Gauteng is the largest sorghum-consuming province (Eastern Cape fifth for meal and fourth for cereal bars). Further findings can be found in the preliminary market analysis in Appendix 1.
Phase 2	Depending on the outcome of Phase 1 (above), Phase 2 may be conducted after 31 July 2024		

Sorghum Value Chain

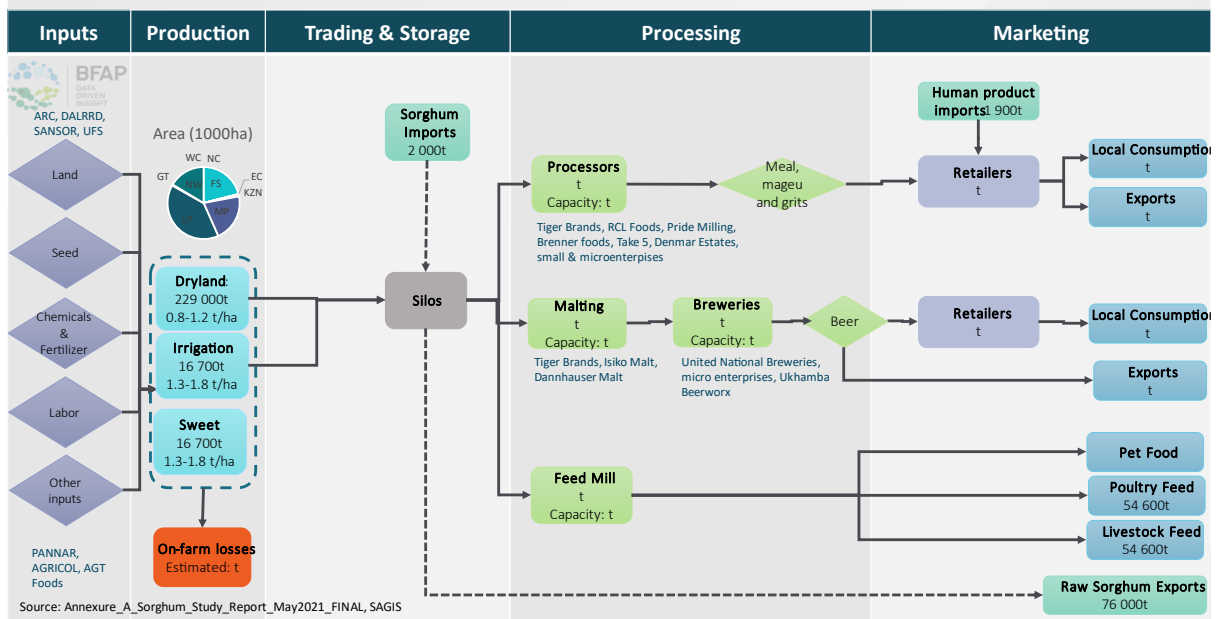


Figure 1 Sorghum Value Chain Product Flow

- **Have any challenges or obstacles been encountered during the research process?**
 - Obtaining the NielsenIQ data took longer than expected, delaying the remaining sections of the market analysis slightly, but we do not foresee any further delays in this section.
 - There seems to be limited literature on sorghum extrusion processing in the public domain. We are considering expanding the search to millet and other similar grains' processing.

- **What are the next steps or planned actions for the research?**
 - The next steps are also listed under the status quo in Table 1, but in summary the following will be conducted during the next 2 months:
 - Validate sorghum processor locations
 - Finalise the value chain overview
 - Finalise the spatial analysis
 - Obtain further sorghum trial data from GrainSA for the profitability analysis
 - Validate farm-level profitability and competitiveness
 - Compare local sorghum price and production cost to imported sorghum
 - Finalise the sorghum processing literature review
 - Conduct consumer overview, retail product market scoping, nutritional value for money analysis and consumer food trends, for the market review
 - Depending on the outcome of Phase 1 (above), Phase 2 may be conducted after 31 July 2024

- **Financial Summary:**

- Total cost of project: R363,691 (excluding VAT)
- Less expenses to date: R185,780
 - NielsenIQ data: R80,000
 - Time spent on project: R105,780
- Total available to complete the project: R177,911

Yours sincerely



Helga Ottermann

Analyst at BFAP

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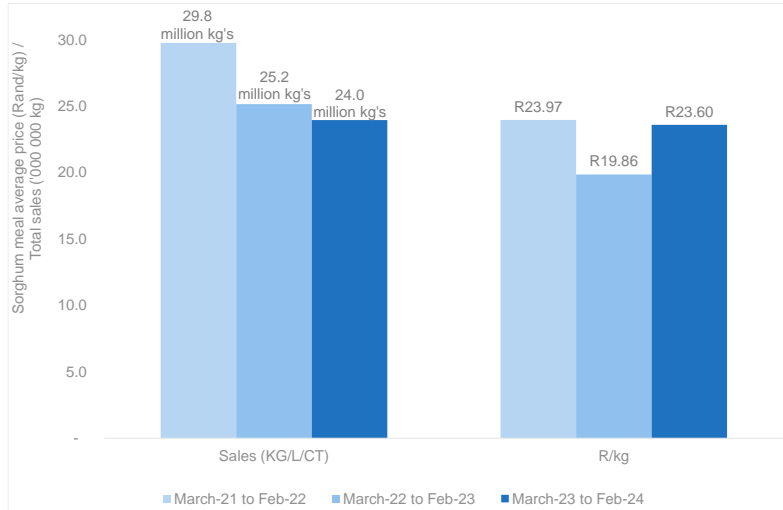
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Appendix 1

Part 2: A national and spatial view on the consumption of sorghum meal and cereal bars in South Africa, based on NielsenIQ retail scanner data for the period March 2021 to February 2024

1.1 Sorghum meal

National annual sorghum meal sales and average prices for the last three years:

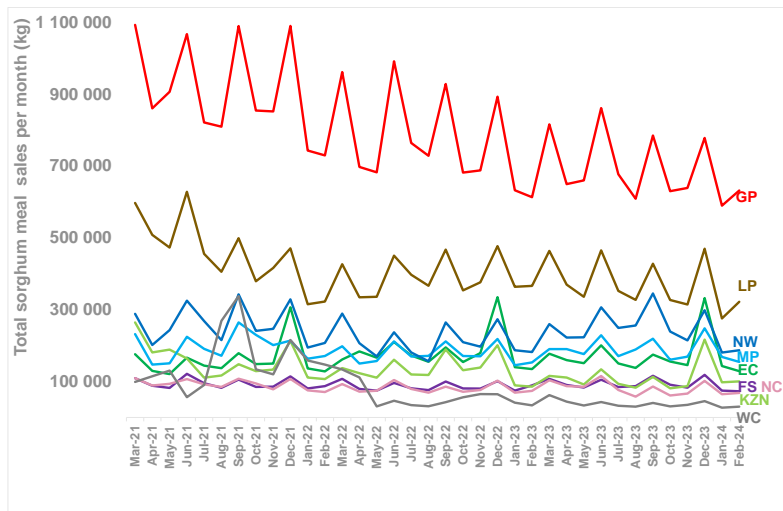


- Declining trend in total sales, decreasing by 20% over last three years, to 24 000 tons at retail level for the period March 2023 to February 2024.
- Fluctuation price trends observed with the average price for the most recent year only 2% lower than three years ago.

Figure xx: National annual sorghum meal sales and average prices for the last three years

(Source: BFAP calculations based on NielsenIQ retail scanner data)

A provincial view on total monthly sorghum meal sales for the last three years:

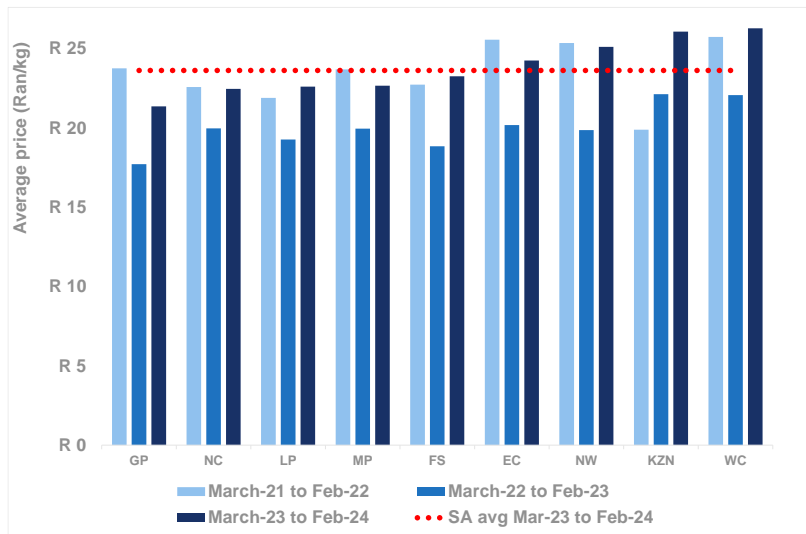


Total monthly sorghum meal sales for the period March 2021 to February 2024

(Source: BFAP calculations based on NielsenIQ retail scanner data)

- On a provincial level, the largest total quantity of sorghum meal is sold in: GP (35% of total sales volumes from Mar-23 to Feb-24), followed by LP (19%), NW (12%), MP (9%) and EC (8%).
- Least popular in the WC and NC.
- Decreasing provincial total sales over last three years observed for: KZN (-29%), GP (-24%), LP (-19%), NC (-12%), MP (-4%), NW (-4%) and FS (-2%).
- Increasing provincial total sales over last three years observed for: WC (+76%) & EC (+7%).

A provincial view on average sorghum meal retail prices for the last three years:



A provincial view on average sorghum meal retail prices for the period March 2021 to February 2024

(Source: BFAP calculations based on NielsenIQ retail scanner data)

- On a provincial level sorghum meal is typically most expensive in: WC > NC > EC > KZN > MP, and most affordable in GP, LP, FS and NW.
- In the last year (Mar-23 to Feb-24) sorghum meal was more expensive than the national average price in: WC (11% higher than SA price), KZN (10% higher), NC (6% higher), EC (3% higher).
- Comparing 2021/22 to 2023/24 the largest price increases were observed in: KZN (+31%), LP (+3%), WC (+2%) and FS (+2%), while the largest price decreases were observed in: GP (-10%), EC (-5%) & MP (-4%).

popular sorghum meal pack sizes in South Africa and the various provinces:

(% of total quantities sold in Jan & Feb 2024)

SA 2kg (34%) > 1kg (26%) > 10kg (19%)
 EC 1kg (37%) > 2kg (27%) > 10kg (16%)
 FS 1kg (37%) > 2kg (27%) > 10kg (15%)
 GP 2kg (37%) > 1kg (28%) > 10kg (17%)
 KZN 1kg (58%) > 2kg (18%) > 3kg (17%)
 LP 2kg (34%) > 10kg (27%) > 5kg (24%)
 MP 2kg (30%) > 10kg (23%) > 1kg (17%)
 NW 2kg (33%) > 10kg (24%) > 1kg (23%)
 NC 2kg (54%) > 1kg (23%) > 5kg (13%)
 WC 1kg (43%) > 2kg (28%) > 3kg (16%)

- In general, the 2kg and 1kg sorghum meal pack sizes are the most popular.
- Larger pack sizes (10kg and 5kg) more popular in the LP province.
- Smaller pack sizes (1kg and 2kg) more popular in the KZN & WC province.

1.2 Cereal bars

(Note: Analysis based on NielsenIQ sales and price data on all types of cereal bars, not only those containing sorghum)

National annual cereal bar sales and average prices for the last three years:

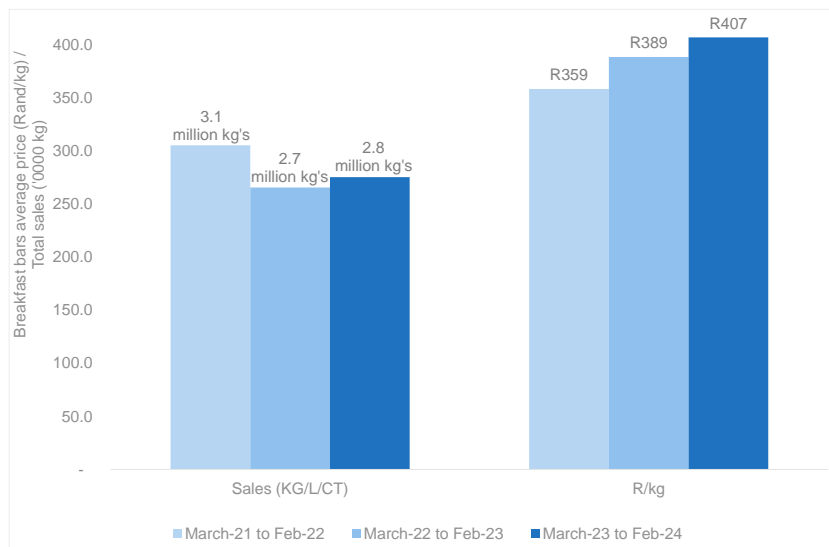
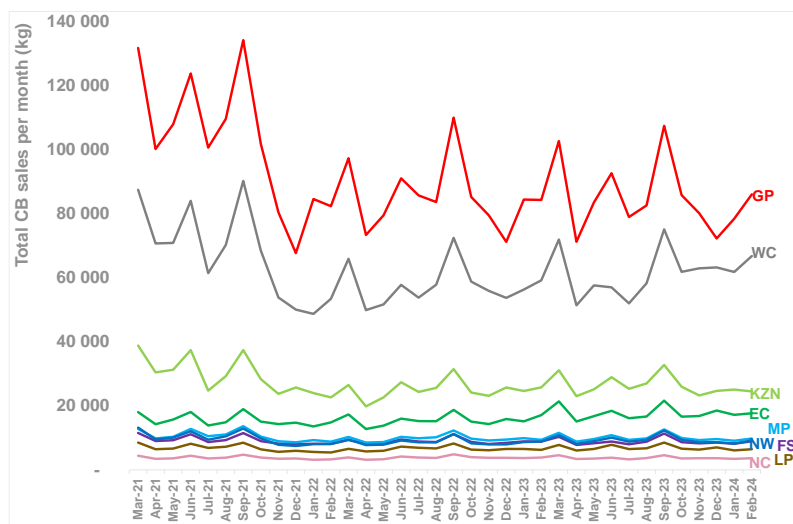


Figure xx: National annual cereal bar sales and average prices for the last three years

(Source: BFAP calculations based on NielsenIQ retail scanner data)

- Total sales of cereal bars declining by 13% from 2021/22 to 2022/23, followed by an increase of 4% towards 2023/24 to a total sales volume of 2.8 million kg's.
- Increasing price trends observed with the average price for the most recent year, 14% higher than three years ago.
- Average price for most recent year: R16.28/40g bar (or R407/kg).

A provincial view on total monthly cereal bar sales for the last three years:

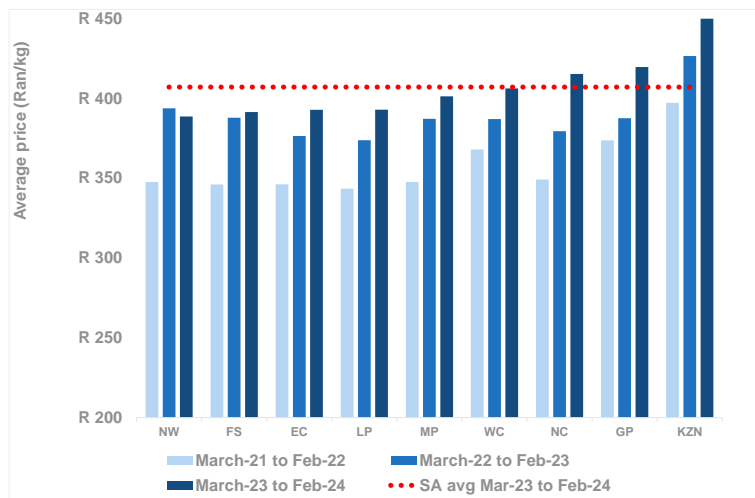


Total monthly cereal bar sales for the period March 2021 to February 2024

(Source: BFAP calculations based on NielsenIQ retail scanner data)

- On a provincial level, the largest total quantity of sorghum meal is sold in: GP (37% of total sales volumes from Mar-23 to Feb-24), followed by WC (27%), KZN (11%) [generally more affluent provinces) & EC (8%).
- Least popular in the NC, LP, MP, NW & FS [generally less affluent provinces)
- Decreasing provincial total sales over last three years observed for: GP (-17%), KZN (-10%) SA (-10%), WC (-9%), NW (-5%), FS (-5%), MP (-5%), NC (-1%).
- Increasing provincial total sales over last three years observed for: EC (+14%) & LP (+1%).

A provincial view on average cereal bar retail prices for the last three years:



A provincial view on average cereal bar retail prices for the period March 2021 to February 2024

(Source: BFAP calculations based on NielsenIQ retail scanner data)

- On a provincial level, cereal bars are typically most expensive in: KZN > GP > WC > MP.
- In the last year (Mar-23 to Feb-24) sorghum meal was more expensive than the national average price in: KZN (11% higher than SA price), GP (3% higher) and NC (2% higher).
- Comparing 2021/22 to 2023/24 the largest price increases were observed in: NC (+19%) > MP (+15%) > LP (+14%) > EC, KZN, FS (+13% each), GP, NW (+12%) > WC (+10%).

Most popular cereal bar pack sizes in South Africa and the various provinces:

(% of total quantities sold in Jan & Feb 2024)

SA	40g (33%) > 48g (15%) > 45g (12%)
EC	40g (37%) > 48g (19%) > 45g (13%)
FS	40g (38%) > 45g (16%) > 48g (12%)
GP	40g (32%) > 45g (14%) > 48g (11%)
KZN	40g (36%) > 48g (19%) > 45g (8%)
LP	40g (40%) > 48g (14%) > 45g (13%)
MP	40g (36%) > 45g (15%) > 48g (14%)
NW	40g (35%) > 45g (16%) > 48g (13%)
NC	40g (43%) > 48g (12%) > 47g (11%)
WC	40g (30%) > 48g (17%) > 45g (10%)

- In general, the 40g, 48g and 45g cereals bar pack sizes are the most popular.