

# The Southern African Grain Laboratory NPC



WE MEASURE SO THAT YOU KNOW!

Since 1997



## Background information - SAGL

Wiana Louw



# OUTLINE OF THE PRESENTATION

- ✓ SAGL - Introduction, stakeholders, scope of services
- ✓ Quality parameters tested for different commodities
- ✓ Reporting format – availability of testing results
- ✓ Research & Development based on crop surveys





**AIM:**  
TO DELIVER ACCURATE  
QUALITY ANALYSES TO THE GRAIN INDUSTRY



**VISION:**

TO BE RECOGNIZED AS THE MARKET LEADER IN GRAIN ANALYSIS IN SOUTHERN AFRICA

**MISSION:**

TO DELIVER MARKET DRIVEN ANALYTICAL LABORATORY SERVICES  
EFFECTIVELY / INDEPENDENTLY / TRUSTWORTHY  
TO STAY AHEAD WITH TECHNOLOGY  
TO BE INTERNATIONALLY COMPETITIVE  
TO BE FINANCIALLY INDEPENDENT



# SAGL - STAKEHOLDERS



Research



Baking



Storage



Production



Milling



Trading



Animal Feed



# SAGL - SCOPE OF TESTING – CROP QUALITY

<b>CROP QUALITY SURVEYS: MAIZE, WHEAT, SOYBEANS, SUNFLOWER SEEDS AND GRAIN SORGHUM</b>	<b>BREEDING – WHEAT CULTIVARS</b>	<b>IMPORTED WHEAT, MAIZE AND GRAIN SORGHUM</b>	<b>ANALYSES ON REQUEST FOR INDUSTRY</b>	<b>TRAINING COURSES OFFERED</b>	<b>SAGL PROFICIENCY SCHEMES OFFERED (RINGTESTS)</b>	<b>RESEARCH PROJECTS ADDITIONAL REQUESTS (EXAMPLES)</b>
Grading, Milling and Physical testing	Milling and Physical testing	Grading, Milling and Physical testing	Grading, Milling and Physical testing	Wheat and wheat flour	Grading	Milling Index Calibration
Nutritional Values	Nutritional Values	Nutritional Values	Nutritional Values	Maize meal	Wheat flour	Mycotoxin screening kit evaluation
Rheological and baking tests (Wheat)	Rheological and baking tests	Rheological and baking tests (Wheat)	Rheological and baking tests (Wheat)	Grading	Maize meal	Fortification analyses for new Regulations
Amino Acids, Vitamins, Minerals		Mycotoxins	Amino Acids, Vitamins, Minerals	ISO 17025 quality systems	Wheat colour	Elemental Analyses on wheat
Mycotoxins			Mycotoxins	Mycotoxins		Sampling devices evaluation



# SAGL - SCOPE OF TESTING – CROP PROTECTION

<b>5-BATCH ANALYSIS</b>
GC-MS and HPLC Screening
Active Ingredient Concentration – HPLC, GC and/or GC-MS
Impurities – GC-MS
Other Physical and Chemical Tests as required

<b>QUALITY CONTROL</b>
Active Ingredient Concentration – HPLC, GC and/or GC-MS
Other Physical Tests if required

<b>STABILITY TESTING - FORMULATIONS</b>
54 °C – 2 weeks/ Cold storage: 0 °C – 1 week
Active Ingredient Concentration – HPLC, GC and/or GC-MS (before and after storage)
Other Physical Tests as required by FAO, WHO

<b>CONTAMINANTS</b>
Semi-quantitative GC-MS and HPLC Analysis

<b>CONSULTATION AND TRAINING</b>
Inspections of quality control laboratories at manufacturing facilities
Implementation of Quality systems in quality control facilities

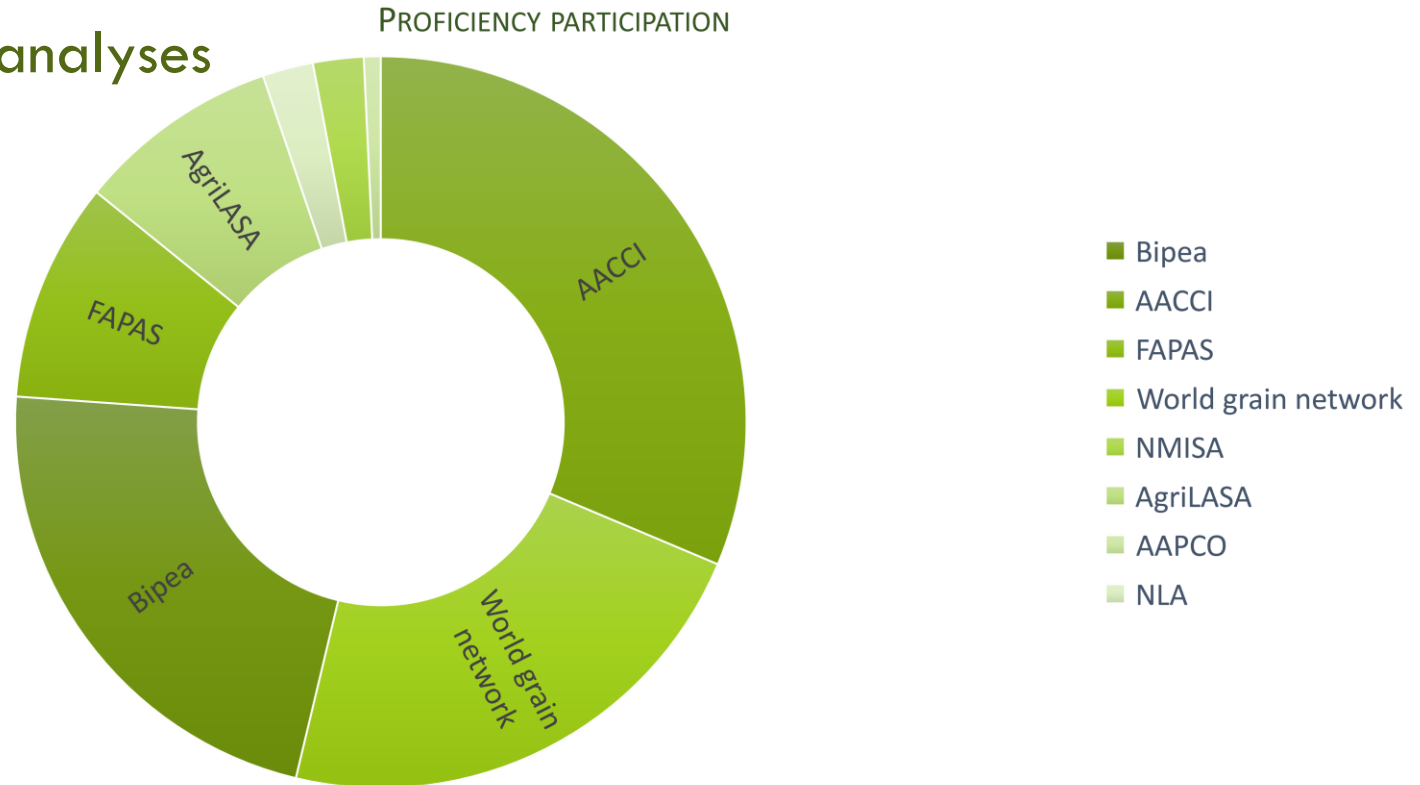
<b>GHS LABELLING</b>
Flammability, Boiling point analysis for classification of flammability



# BENCHMARKING

Participation in proficiency schemes, to demonstrate competence, is used to benchmark the laboratory to the international measurement system

The SAGL annually analyse a total of 134 proficiency samples, 116 international and 18 local. These samples represent 630 different analyses



CROP QUALITY SURVEYS ON GRAIN AND OILSEED COMMODITIES

**GRAIN SORGHUM  
SINCE 2018**



**SUNFLOWER SEED  
SINCE 2012**



**MAIZE  
SINCE 1997**



**SOYBEANS  
SINCE 2011**

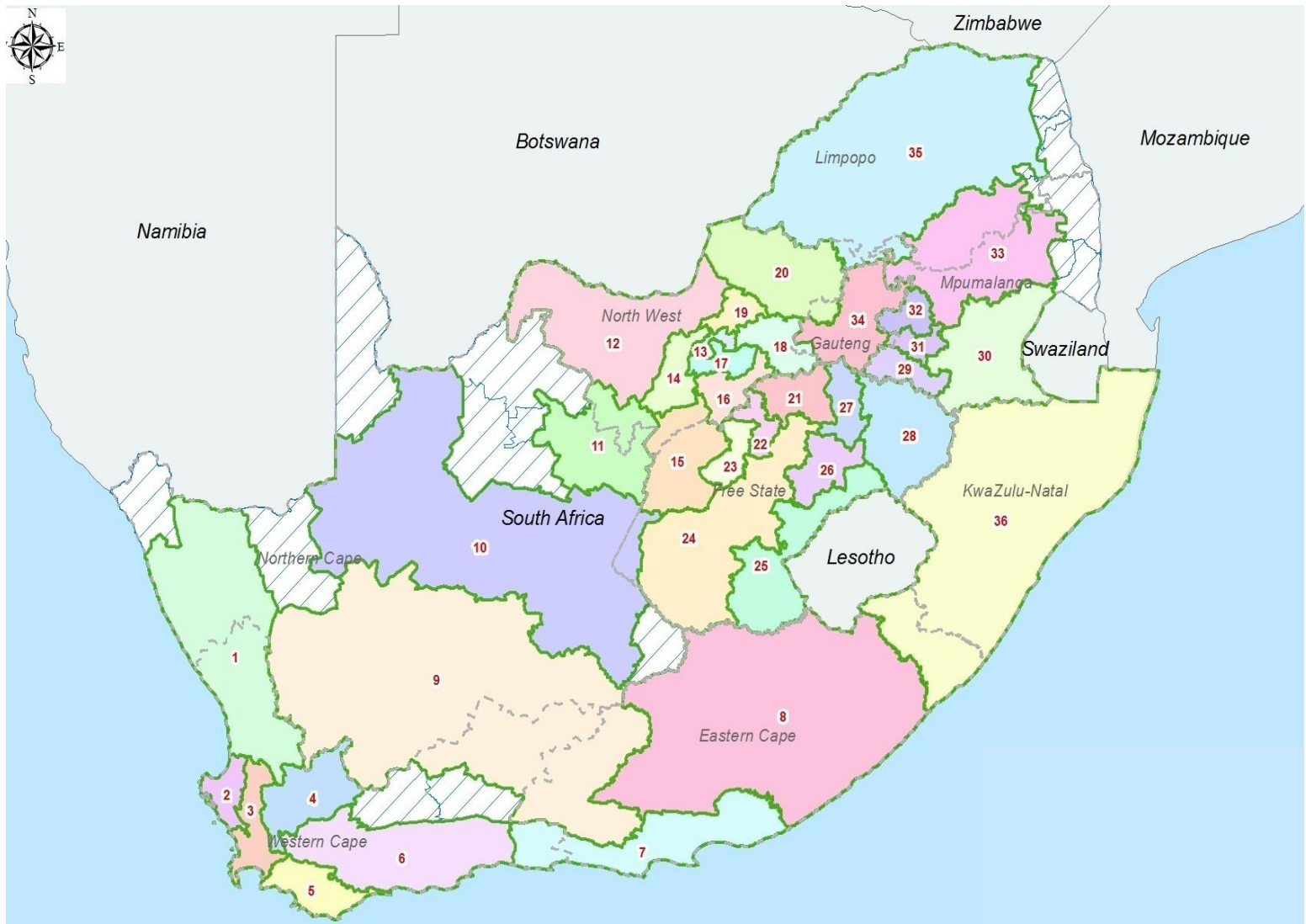


**WHEAT  
SINCE 1997**





REPRESENTATIVE SAMPLING FOR CROP QUALITY SURVEYS



Harvesting



Delivery to the Silo



Sampling at silo



Grading at the silo



Collected per grade/class



Mixed - subsample for testing



SAMPLING

Samples delivered to the laboratory



Laboratory testing



# Maize Crop Quality Survey



Grading according to RSA and USA Grading Regulations

Milling (White Maize only using ROFF Milling)

Milling Index – including Grit Yield (GYA) as indication of milling performance

Whiteness Index

Nutritional parameters: Fat ; Protein ; Starch; Moisture and Fibre

Mycotoxins

# Wheat Crop Quality Survey



Grading - including protein, falling number, hectolitre mass, 100 kernel mass & Screenings

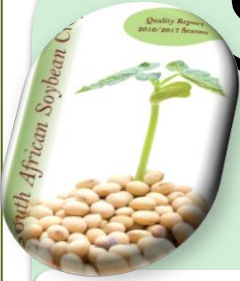
Bühler extraction

Flour colour; Flour protein; Wet and dry gluten; Farinogram; Alveogram; Extensogram; Mixogram; 100 g baking test

Amino Acids

Mycotoxins

Elemental analysis including heavy metals on wheat (Separate project)



# Soybean & Sunflower Crop Quality Survey



Grading

Test Weight

Nutritional parameters: Fat, Protein, Moisture, Ash & Fibre

Fatty Acids (as from 2018/2019 season)

# Grain Sorghum Crop Quality Survey

Grading

Test Weight & Thousand kernel mass

Nutritional parameters: Protein, Moisture, Starch

Image analysis - Sorghum kernel size

Dehulling of grain sorghum for processing applications

Mycotoxins

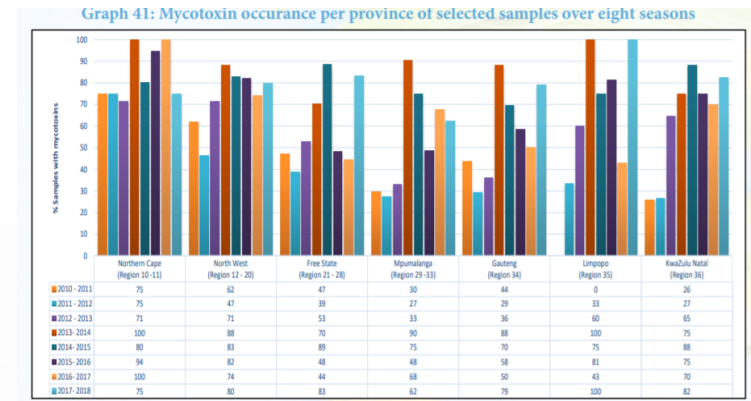
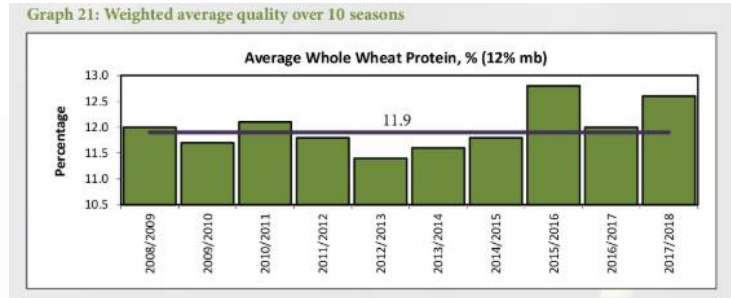
Pesticide Residues

# REPORTING OF RESULTS

- ✓ RESULTS: average, minimum and maximum per region
  - ✓ Comparisons between production areas, regions and seasons in both table and graph formats



- ✓ REPORTS:
  - ✓ hard copy
  - ✓ downloadable in PDF format from the SAGL website
  - ✓ Weekly web updates of Average results per region as it becomes available





## Maize

Crop Quality Reports

Crop Quality Data  
Production Regions  
SA Averages

Imports

SEE MORE



## Sorghum

Crop Quality Reports

Crop Quality Data  
Production Regions  
SA Averages

Imports

SEE MORE



## Soybeans

Crop Quality Reports

Crop Quality Data  
Production Regions  
SA Averages

Imports

SEE MORE



## Sunflower

Crop Quality Reports

Crop Quality Data  
Production Regions  
SA Averages

Imports

SEE MORE



## Wheat

Crop Quality Reports

Crop Quality Data  
Production Regions  
Dominant Cultivars  
SA Averages

Imports

SEE MORE







## Types of Analyses

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We measure so that you know!

Our laboratory contains a:

- Grading and Milling Facility
- Chemistry Lab
- Nutrients and Toxins Lab
- Rheology and Baking Lab

SEE MORE



## SAGL Proficiency Testing Schemes

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SAGL performs various Proficiency Testing Schemes on small scale and international level for maize, wheat, soybean, sunflower and vitamins.

SEE MORE



## SAGL Laboratory Training

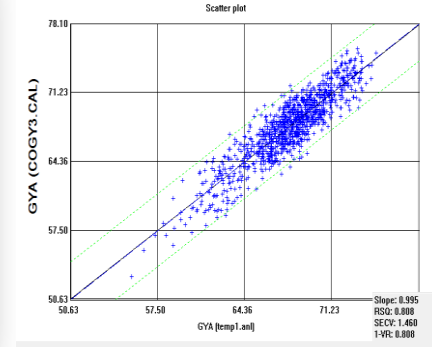
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Want to build your own testing facility? We set the standard in grain testing. Find out more about our training courses.

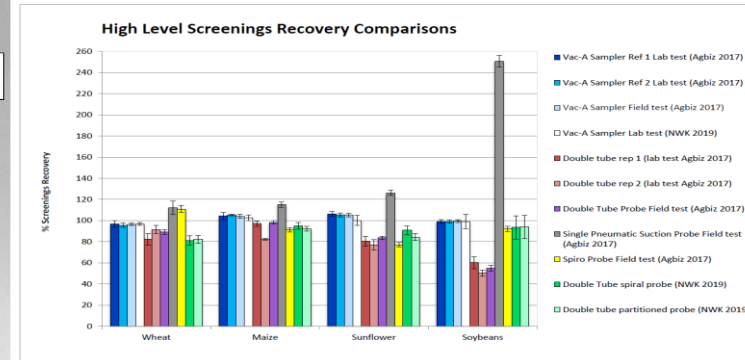
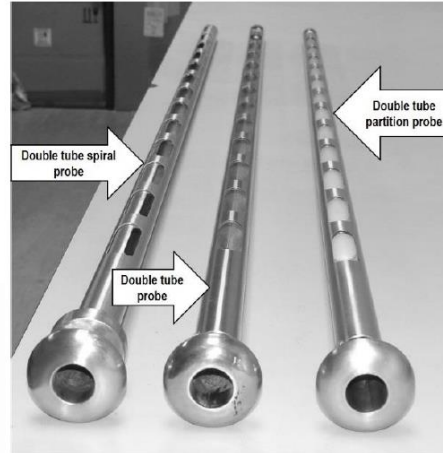
SEE MORE



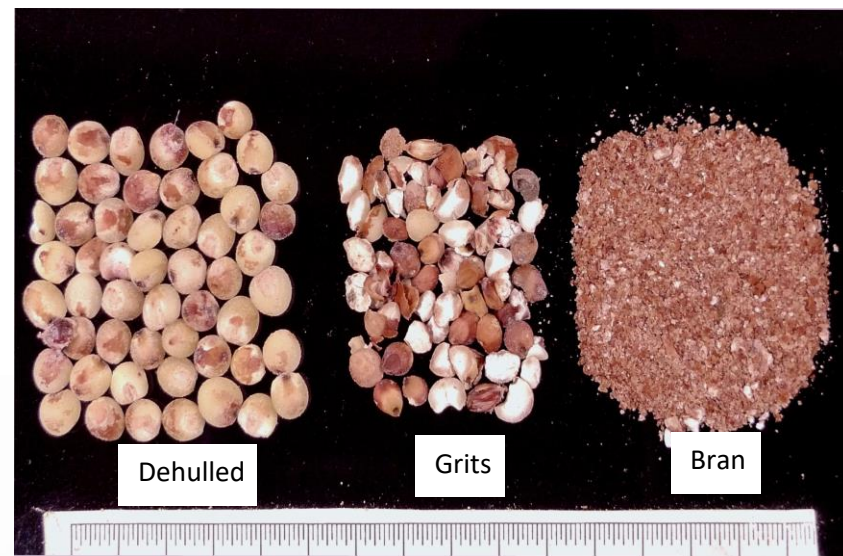
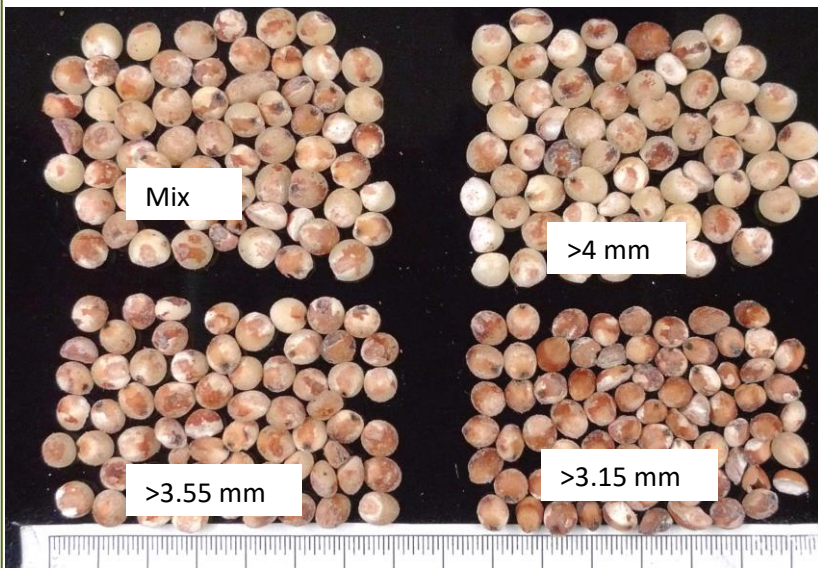
# Development of milling index as a predictor for maize milling performance



## Evaluation of sampling devices for grain and oilseeds

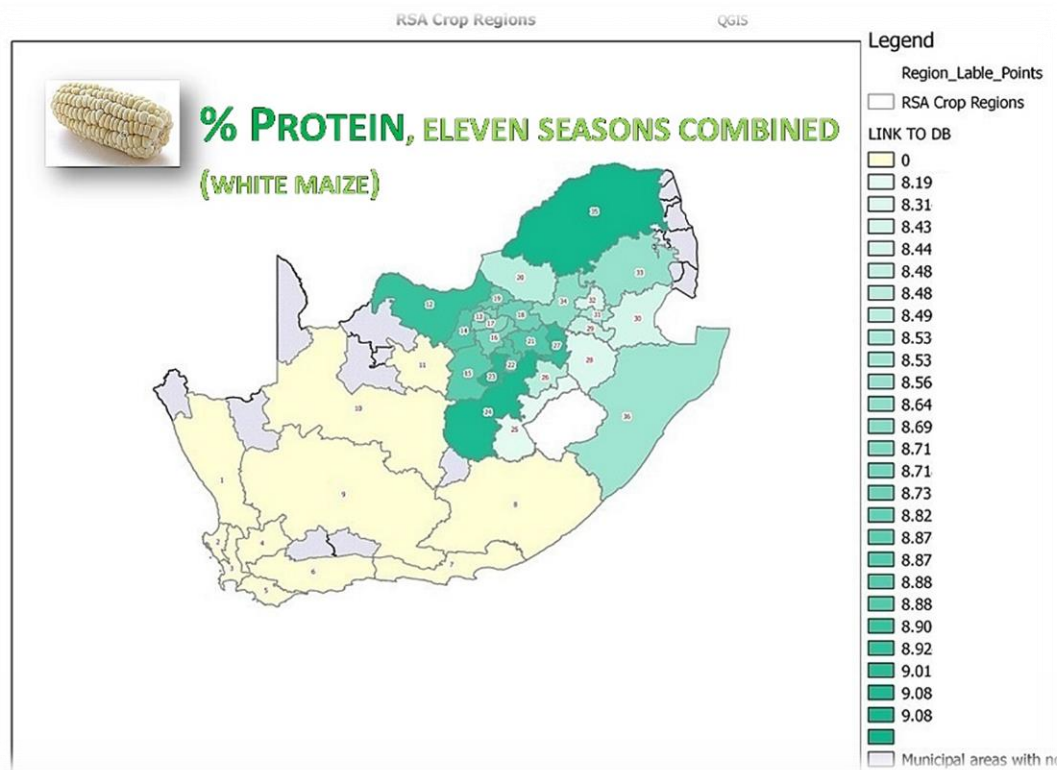


# Dehulling of grain sorghum for processing applications



Data Mining of crop quality data over several seasons and production regions

**EXAMPLE OF REPORT FORMAT**



We measure so that you know!

Since 1997



Thank you for being part of our journey!



For more information  
please visit our website and contact us!

[www.sagl.co.za](http://www.sagl.co.za)

