



The Southern African Grain Laboratory NPC

Quality is our passion



Quality analysis and research activities
at the SAGL with funding from the
Maize Trust

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- ✓ ESTABLISHMENT OF A REFERENCE LABORATORY FOR THE GRAIN INDUSTRY (1997)
- ✓ NATIONAL ANNUAL CROP QUALITY SURVEYS (SINCE 1998)
- ✓ DATA MINING ON SEVERAL YEARS' QUALITY DATA
- ✓ MONITORING OF QUALITY OF IMPORTED MAIZE
- ✓ MYCOTOXIN SURVEYS ON MAIZE (SINCE 2009)
- ✓ COLLABORATIVE RESEARCH STUDIES ON BOUND MYCOTOXINS
- ✓ EVALUATION OF SCREENING KITS FOR MYCOTOXIN TESTING IN NON-LABORATORY ENVIRONMENTS
- ✓ MYCOTOXIN POST-STORAGE SURVEY
- ✓ CADMIUM AND LEAD CONTENT OF SA COMMERCIAL MAIZE
- ✓ DEVELOPMENT OF A NOVEL MAIZE MILLING INDEX CALIBRATION
- ✓ INTERNSHIP PROGRAMMES FOR POST GRADUATE STUDENTS
- ✓ CAPACITY BUILDING – EQUIPMENT AND ATTENDANCE OF INTERNATIONAL CONFERENCES AND TRAINING



The SAGL was established on request of the South African grain industry in 1997 after the marketing control boards for grains and oilseeds dissolved:

Members represented on
SAGL Board of Directors



- SAGL - a Non Profit Company
- an independent,



- ISO 17025 accredited grain testing laboratory

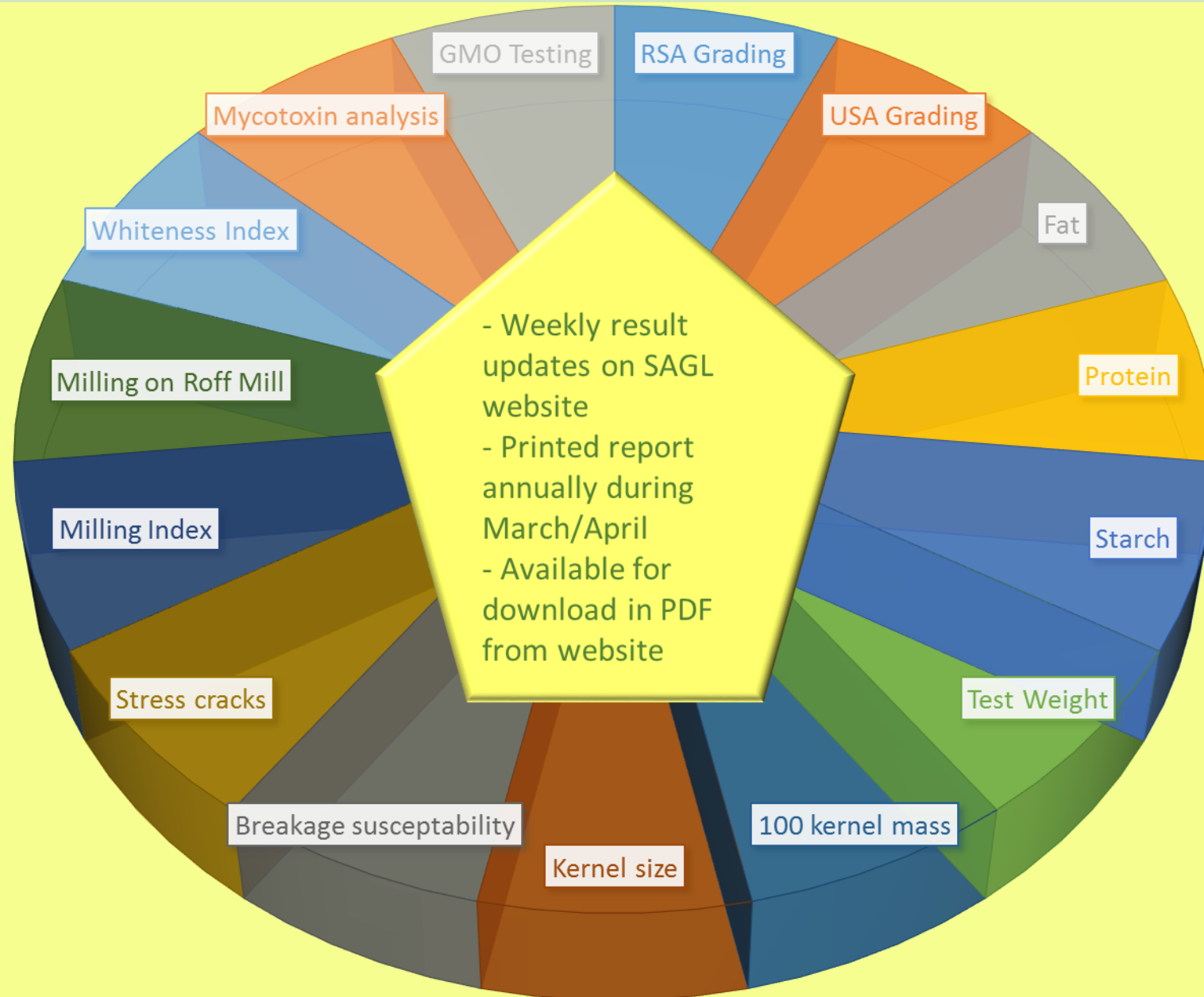


ISO 17025
ACCREDITATION
SINCE 1999

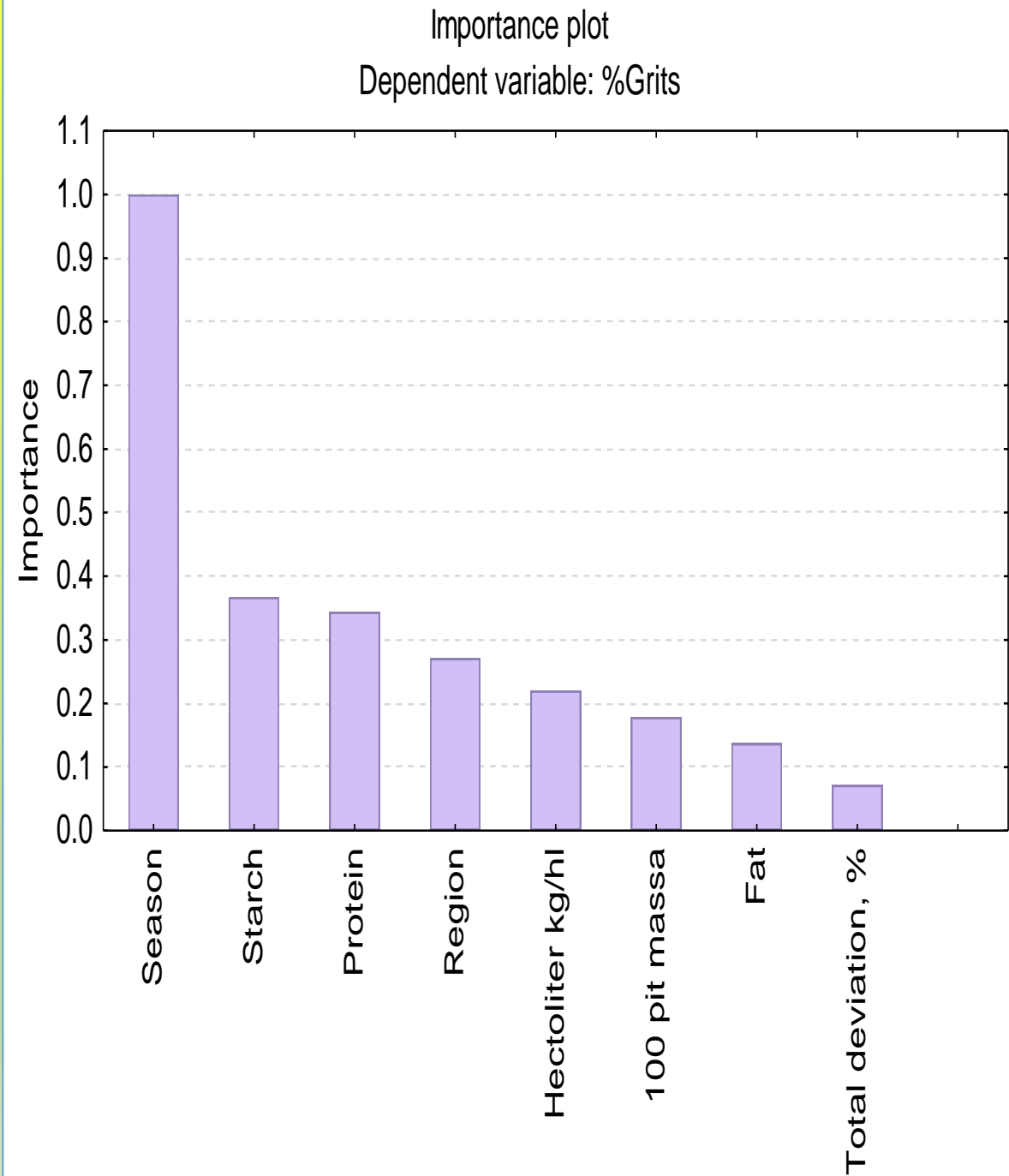
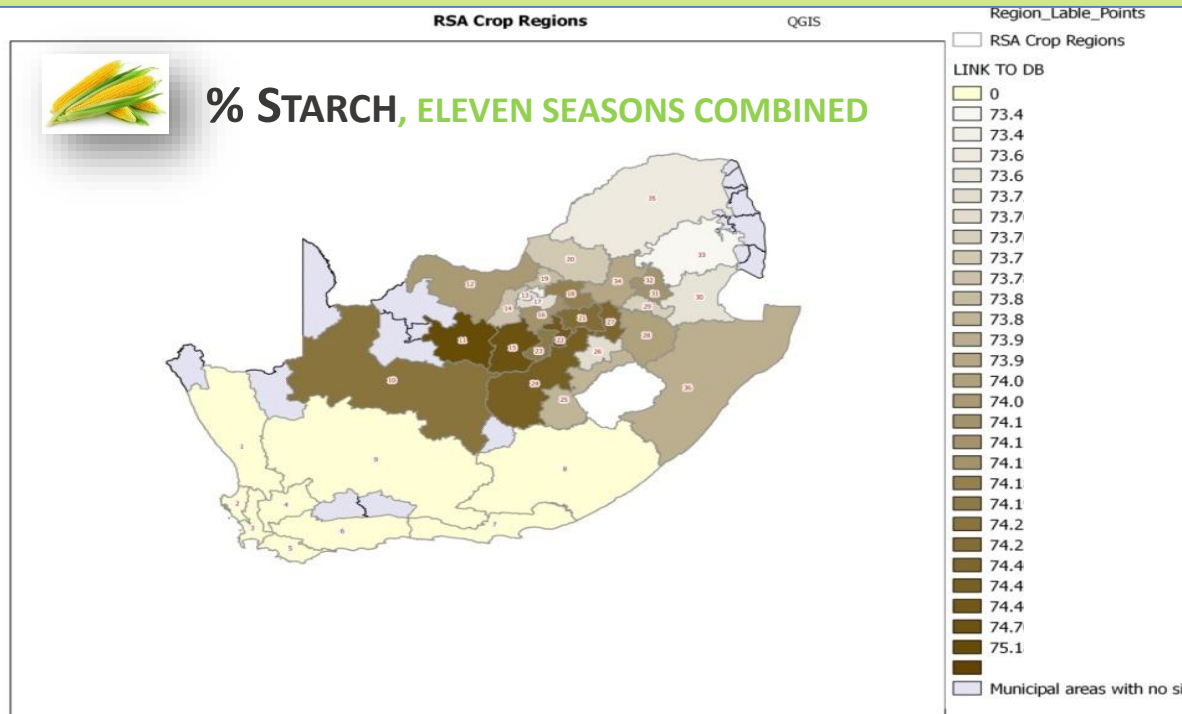
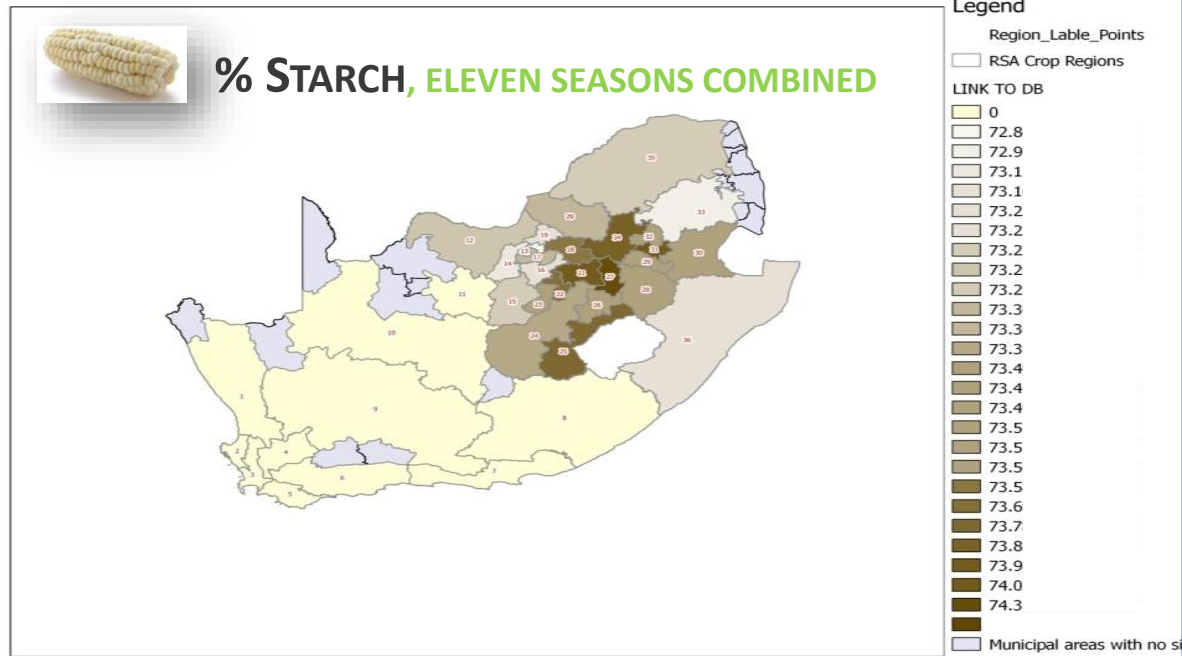
- acting as reference laboratory for the grain and oilseed industries in Southern Africa



SCOPE OF ANALYSES INCLUDED IN SURVEYS



DATA MINING – SEVERAL YEARS’ QUALITY DATA



SCOPE OF ANALYSES – SAME AS LOCALLY PRODUCED MAIZE

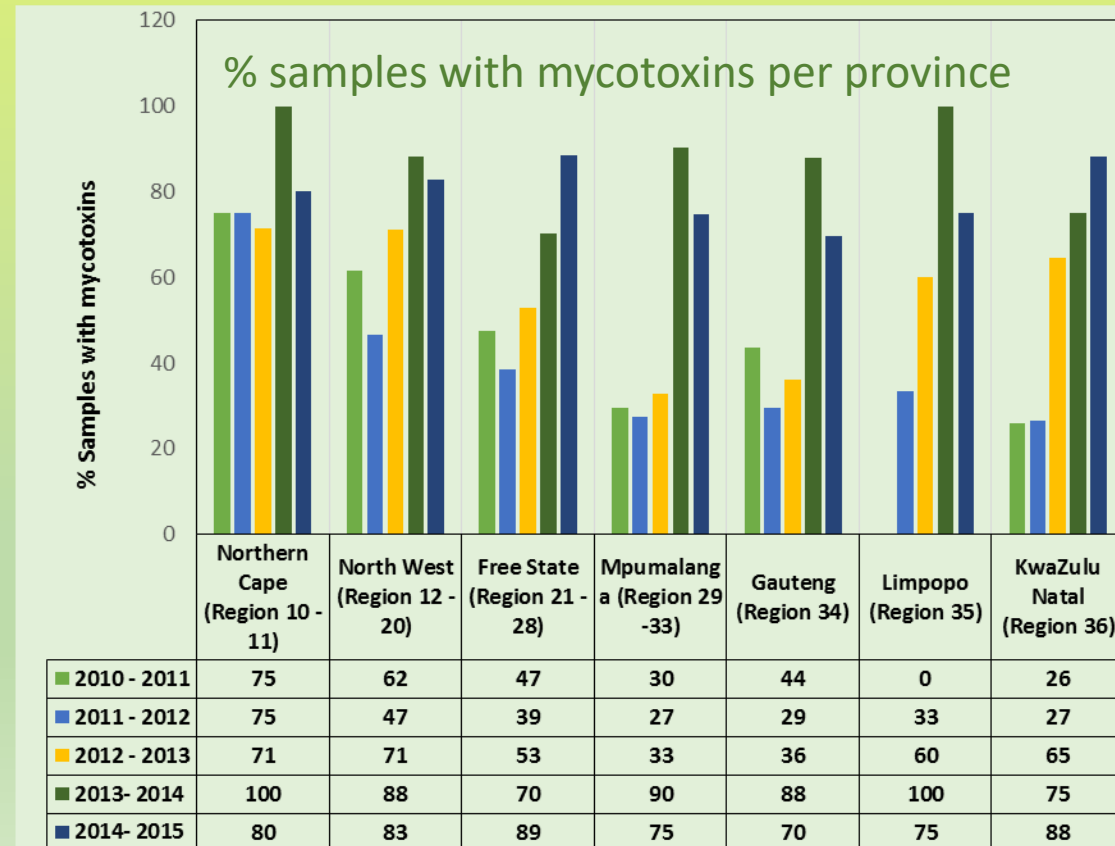


- ✓ Annual surveys – mycotoxins on locally produced maize
- ✓ Assistance from Trust to establish LC-MS/MS capability for multi-mycotoxin testing



- ✓ Funding for annual surveys (using new technique) on crop quality samples since 2009/2010 season
- ✓ Results used for MRL levels published in 2016 (Foodstuffs and Cosmetics Act, 54 of 1972)

Report format: →



- ✓ Post-storage mycotoxin survey (since 2014)
- ✓ Collaborative research – Bound Fumonisin - 2 MTech students (TUT)
- ✓ Evaluation of mycotoxin screening kits against LC-MS/MS technology (2016) for non-laboratory testing

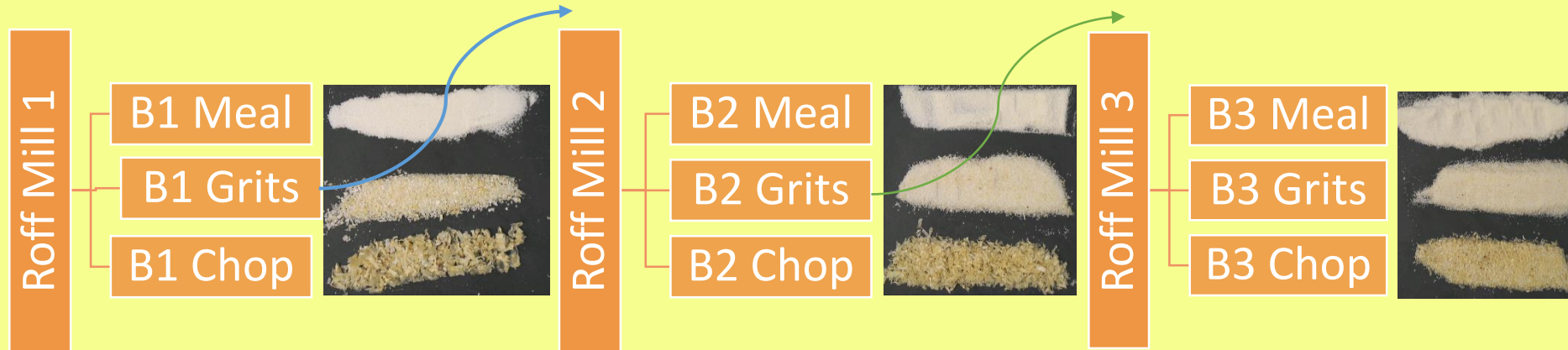


- ✓ Cadmium and Lead content in SA Commercial Maize
- ✓ Between 2003 and 2008

hydrogen 1 H 1.0079																	helium 2 He 4.0026				
lithium 3 Li 6.941	beryllium 4 Be 9.0122															boron 5 B 10.811	carbon 6 C 12.011	nitrogen 7 N 14.007	oxygen 8 O 15.999	fluorine 9 F 18.998	neon 10 Ne 20.180
sodium 11 Na 22.990	magnesium 12 Mg 24.305															aluminum 13 Al 26.982	silicon 14 Si 28.086	phosphorus 15 P 30.974	sulfur 16 S 32.065	chlorine 17 Cl 35.453	argon 18 Ar 39.948
potassium 19 K 39.098	calcium 20 Ca 40.078	scandium 21 Sc 44.956	titanium 22 Ti 47.867	vanadium 23 V 50.942	chromium 24 Cr 51.996	manganese 25 Mn 54.938	iron 26 Fe 55.845	cobalt 27 Co 58.933	nickel 28 Ni 58.693	copper 29 Cu 63.546	zinc 30 Zn 65.39	gallium 31 Ga 69.723	germanium 32 Ge 72.64	arsenic 33 As 74.922	selenium 34 Se 78.96	bromine 35 Br 79.904	krypton 36 Kr 83.80				
rubidium 37 Rb 85.468	strontium 38 Sr 87.62	yttrium 39 Y 88.906	zirconium 40 Zr 91.224	niobium 41 Nb 92.906	molybdenum 42 Mo 95.94	technetium 43 Tc [98]	ruthenium 44 Ru 101.07	rhodium 45 Rh 102.91	palladium 46 Pd 106.42	silver 47 Ag 107.87	cadmium 48 Cd 112.41	indium 49 In 114.82	tin 50 Sn 118.71	antimony 51 Sb 121.76	tellurium 52 Te 127.60	iodine 53 I 126.90	xenon 54 Xe 131.29				
cesium 55 Cs 132.91	barium 56 Ba 137.33	* 57-70	lutetium 71 Lu 174.97	hafnium 72 Hf 178.49	tantalum 73 Ta 180.95	tungsten 74 W 183.84	rhenium 75 Re 186.21	osmium 76 Os 190.23	iridium 77 Ir 192.22	platinum 78 Pt 195.08	gold 79 Au 196.97	mercury 80 Hg 200.59	thallium 81 Tl 204.38	lead 82 Pb 207.2	bismuth 83 Bi 208.98	polonium 84 Po [209]	astatine 85 At [210]	radon 86 Rn [222]			
francium 87 Fr [223]	radium 88 Ra [226]	* 89-102	lawrencium 103 Lr [262]	rutherfordium 104 Rf [261]	dubnium 105 Db [262]	seaborgium 106 Sg [266]	bohrium 107 Bh [264]	hassium 108 Hs [265]	meitnerium 109 Mt [268]	unnilium 110 Uun [271]	ununium 111 Uuu [272]	unbibium 112 Uub [277]	unseptadium 114 Uuq [289]								

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LABORATORY SCALE MAIZE MILL



Total extraction: (B1 Meal + B2 Meal + B3 Meal + B3 Grits) as a % of Whole maize

Each meal has different levels of starch, protein and fibre as well as different particle size, colour and cooking/eating quality





70% Extraction

3,9 mil tons of white maize processed for human consumption

70% Maize meal extraction @ R7000/ton

R 19 507 262 600

30% Chop @ R3500/ton

R 4 180 127 700

75% Extraction

3,9 mil tons of white maize processed for human consumption

75% Maize meal extraction @ R7000/ton

R 20 900 638 500

25% Chop @ R3500/ton

R 3 483 439 750

Calculations based on SAGIS figures

R 696 687 950 per annum

INTERNSHIP STUDENTS



2010



2013



2015



2016

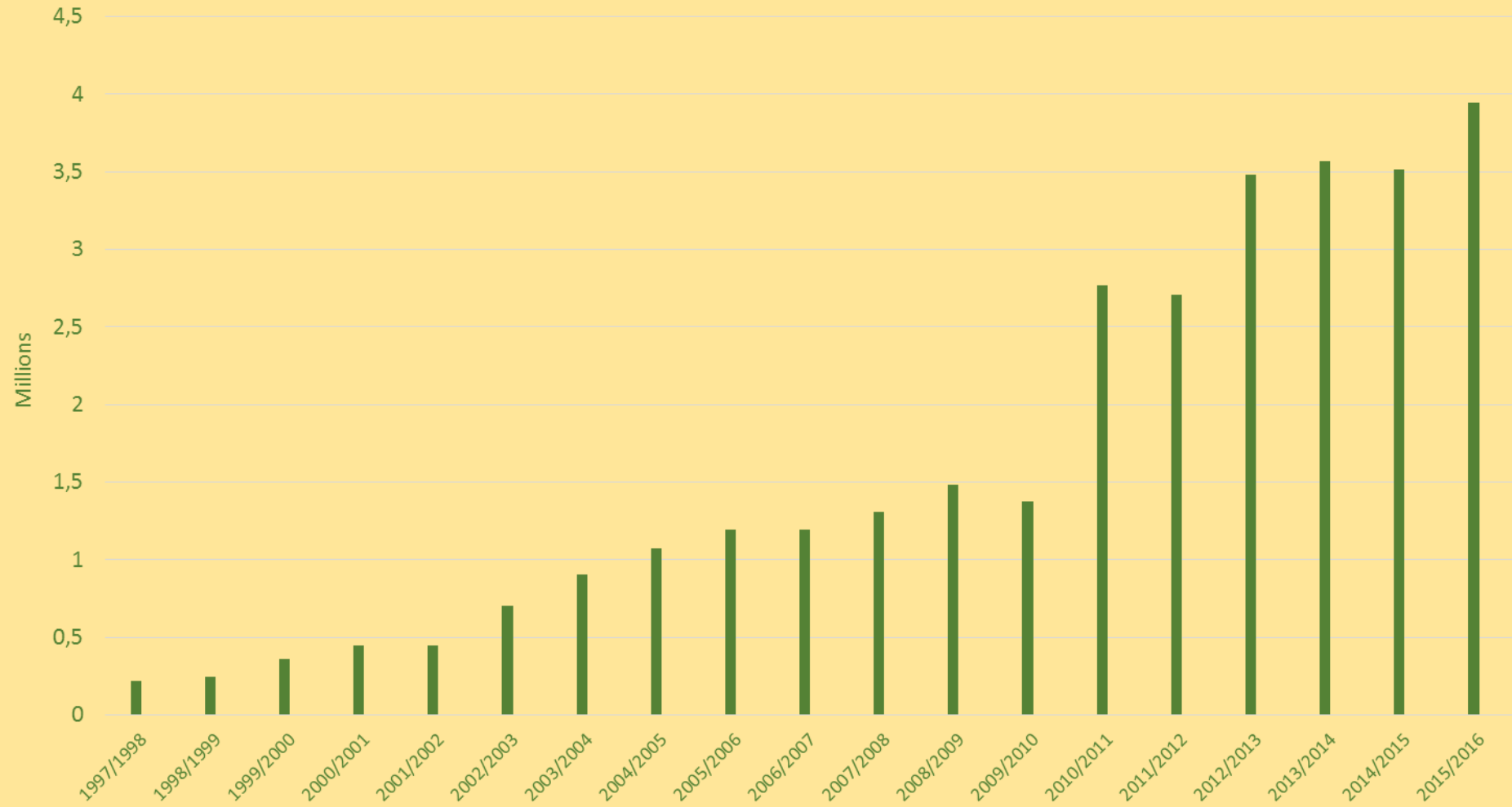


2016



MAIZE TRUST FUNDED PROJECTS

TRUST PROJECTS SINCE 1997



**WITH GRATITUDE TO THE MAIZE
TRUST FOR FINANCIAL SUPPORT
SINCE 1997 TO ENABLE THE SAGL
TO CREATE THE REQUIRED CAPACITY
IN SUPPORT OF A COMPETITIVE
MAIZE INDUSTRY IN SOUTH AFRICA**

