FINAL OVERVIEW REPORT ON GM MAIZE IN SOUTH AFRICA FOR THE 2011/2012 SEASON

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EXECUTIVE SUMMARY

The study has a *primary objective* of surveying and analyzing GM (genetically modified) maize production that can serve as a database for stakeholders in the food chain, consumer groups and government departments. It covers relevant regulatory developments and analysis of permits granted for GM maize commodity clearance, field trials, general release, imports and exports, as well as analyses of maize cultivars, GM market shares by traits and hectares planted.

***The survey* is based on collating and analyzing actual maize seed sales data provided on a confidential basis by seed companies, calculating the hectares planted according to seeding regimes, and expressing GM hectares planted in terms of percentages of total area as estimated by the Crop Estimates Committee.**

***Global GM* crop plantings increased by 8% to reach 160 million hectares, grown by 16.7 million farmers in 29 countries. The cumulative area under GM crops over 15 years stands at 1.25 billion hectares. The US remains the global leader, followed by Brazil, Argentina, India, Canada, China, Paraguay, Pakistan, and South Africa in 9th position. Global GM maize planting covers 46.0 million hectares in 16 countries and represents 29% of all maize produced. The strongest growth came from stacked traits.**

***Benefits* brought by GM technology include improved food production efficiency, reduced impact on the environment, economic benefits to farmers, while boosting conservation agricultural practices, but proper management is also required.**

The report includes comments on requirements and draft standards for managing imported GM grain with events not yet approved in SA. DAFF is investigating handling of stacked genes, low level presence and adventitious presence of GM. The 6-year delay on grain imports due to a moratorium on commodity clearance for maize containing unapproved events, had been lifted in August 2011.

The Consumer Protection Act 28 of 2008 has entered into force on 1st April 2011 and its mandatory labeling of GM goods in Section 24 (6) in the Act and relevant regulation 7 is so complex and ambiguous that it presents obstacles in both compliance and enforcement. Such labeling of all goods that are GMOs or contain genetically modified ingredients, and labeling use of GM technology, will impact on agri-businesses and producers, and added costs impacting eventually on consumers. Recently, the Consumer Commissioner in DTI established a task group of officials from DTI, DST, DAFF and DoH to redraft provisions of Regulation 7 so as to make it as practical as possible.

The DST drafted a strategic plan for a South African bio-economy and this was published for comment in July 2012. This expands on and will replace the present biotech strategy.

Maize producers have a choice of 451 white and yellow *cultivars* of which 32% or 144 were GM. Since year 2000, a total of 11.8 million hectares were planted to GM maize that yielded over 40 million MT of grain without any negative impact on humans, animals or the environment

Some 386 *permits* were granted in 2011 for activities on GMOs and maize accounted for 314 or 81%. The included permits for commodity clearance, import, export, trial release for testing to various other uses. GM grain export permits amounted to almost 2.7 million MT, though SAGIS records showed 2.2 million having been exported in 2011. GM maize seed exported totalled 16 750 MT and imports were only 428 MT.

***South Africa* increased its *GM area* from 2.2 to 2.5 million hectares, combined of the three crops: maize (2.142), soybeans (0.424) and cotton (0.014). Total GM maize planted comprised 1.279 million white and 0.863 million yellow, with share of the total planting at 79.4%. Insect resistance trait remained the dominant trait at 43.7% of GM share, while stacked insect resistance and herbicide tolerance maintained a level of 40.64%, and herbicide tolerance alone stood at 15.7%.**

Field trials **are ongoing with drought tolerance and some 12 other new stacked gene combinations incorporating various insect resistance and herbicide tolerance genes.**

Investigations on occurrence of incidence of tolerance or resistance in *stalk borers* to the Bt gene continued and steps are being taken to strengthen compliance with refugia and combining new Bt genes. A new cultivar with two Bt genes, approved in 2010, showed good resistance to stalk borers.

FINAL OVERVIEW AND ANALYSIS REPORT ON GM MAIZE IN SOUTH AFRICA FOR THE 2011/2012 SEASON

1. INTRODUCTION

This survey has been funded by the Maize Trust on an annual application basis since 2006/7 season and continues to grow in issues covered. The objective remains to survey and analyze adoption of genetically modified (GM) maize by producers in South Africa in order to establish an updated database on GM plantings, available to maize industry stakeholders as a source of information. This information enables traders in maize grain and products to convey information to trading partners as may be required by customers, domestically and in other countries, and to comply with the Cartagena Protocol on Biosafety.

The report also covers updates on regulatory developments. These include lifting of the "temporary moratorium" on GM commodity grain imports that may contain genetic modifications ("events") not yet approved in South Africa, final standards for handling imports of such GM commodities, update on laboratories that conduct commercial GMO detection tests (local and regional), monitoring incidence of stalk borer tolerance to Bt, and publishing of regulations, specifically that which dictate mandatory labelling of 'goods' that contain GM ingredients, said regulations supposedly to have been implemented in 2011. All of this impacts on seed companies, producers and grain traders. This now extends to food manufacturers and retailers, impacting on both local and imported 'goods'.

Beneficiaries of this information include the following parties and their clients or colleagues:

AgriSA, GrainSA, grain traders, millers, silo industry, industrial processors, food and animal feed manufacturers and their clients, seed industry, agricultural producers, CEC, SAGIS, SAGL, Department of Agriculture, Forestry and Fisheries, ARC, the GMO

Secretariat, GMO Executive Council and Advisory Committee, and the media.

Data in this report are based on reliable confidential statistics provided by biotechnology seed companies and cover hectares of GM maize planted and percentage of market with a breakdown per trait -- insect resistant (IR) or herbicide tolerant (HT) and stacked genes (IR/HR) -- shown separately for white and yellow maize, as well as historic data since year 2000 in order to highlight trends. An analysis of permits granted during 2007 is also included as maize seed and grain imports and exports that are GM or may contain material of GM origin have trade relevance for the industry. Statistics are primarily based on commercial maize plantings. Additional information on smallholder adoption of GM maize is still being sourced and will be included in the final report.

2. METHODOLOGY AND APPROACH USED IN SURVEY

The survey goes through two stages so that information is refined with latest information available at each stage. Seed companies provide a confidential breakdown of seed sales per GM trait (Bt insect resistance, glyphosate or glufosinate herbicide tolerance, and stacked genes for both traits), per white and yellow maize, and per seed density used (6-8 kg/ha for drier Western and Northern regions, 10-12 kg/ha for Eastern and South-Eastern regions, and 20-25 kg/ha for irrigation farming. Seed is mostly sold on seed count basis in pockets containing 60 000 or 80 000 seeds and, in fact, seed count gives a more accurate picture of area planted to a pocket than mass as one kilo of seed may contain 2 500 to 3 500 seeds, depending upon seed size and shape.

There is no IT software that can compute in one run the variables comprising company seed pockets of 80K seeds, or 60K seed or both types used by a company, separate white and yellow seed, three different seeding rate regimes, three types of traits, and computing rows and columns plus converting totals into percentages. Therefore, all such calculations are done by tedious pocket calculator method. Calculations are checked at least twice. Also, no distinction is made between different herbicide tolerance genes, no distinction between single or stacked Bt genes, and no distinction between two or three

genes in a stack. These trait variables are condensed into three classes: insect resistance (Bt), herbicide tolerance, and stacked insect resistance /herbicide tolerance. Finally, total GM hectares are expressed as percentages of latest CEC estimates of white, yellow and total maize hectares. The three GM trait classes are expressed as percentages of GM white, GM yellow and total GM maize hectares.

This survey used data solicited during November 2011 has been refined and re-assessed in July 2012, while final GM shares of area planted take into account latest CEC estimates of maize plantings. The methodology applied in the survey was again personally discussed with each of the six biotech seed company during the Nampo Show, and involved Pannar, Pioneer Hi-Bred, Monsanto, Link Seed, Agricol, and Klein Karoo Saad. Syngenta licenses their technology to other companies and contributes only on technical issues related to the survey. Seed sales used in the survey were based on final audited sales data for each company. The final CEC estimated area planted came to 2.699 million ha which was more than my November original conservative 2.58 million (the first CEC estimate was, in fact, 2.6 million, subsequently boosted by late plantings).

3. GLOBAL ADOPTION OF GM MAIZE

Annual overviews are compiled by ISAAA (the International Service for the Acquisition of Agri-Biotech Applications), an international non-profit organization with collaborating teams on all continents. These overviews are released by way of international media conferences and published as Briefs. The South African media conference took place on 8 March 2012 in Centurion with guest speaker Prof Klaus Amman, a well-known biotechnology expert from the University of Bern, Switzerland.

Salient points from 2011 global GM/biotech crop planting (C. James, 2011, "Brief 43: Global Status of Commercialized Biotech/GM Crops: 2011", available in executive summary format on www.isaaa.org) are summarized as follows:

- **Global cumulative GM area planted since 1996 reached 1.25 billion ha.**
- **GM crop area increased from 148 million hectares in 2010 to 160 million in 2011, an 8% increase.**
- **These crops were planted by 16.7 million farmers in 29 countries, 90% million being smallholder farmers (7 million in China, 7 million in India).**
- **The USA leads with 69 million ha followed by Brazil 30.3, Argentina 23.7, India 10.6, Canada 10.4, China 3.9, Paraguay 2.8, Pakistan 2.6, South Africa 2.3, and Uruguay 1.3 million ha. The remaining 19 countries (in order of magnitude) are Bolivia, Australia, Philippines, Myanmar, Burkina Faso, Mexico, Spain, Colombia, Chile, Honduras, Portugal, Czech Republic, Poland, Egypt, Slovakia, Romania, Sweden, Costa Rica, and Germany.**
- **Brazil showed the biggest increase with 4.9 million or 20% more ha planted**
- **Developing countries grew 50% of total GM area.**
- **In addition to the 29 countries growing GM crops, another 31 have approved products from biotech crops for import as food and/or feed, and/or for trial planting.**
- **Soybean remained the major GM crop (75.4 million ha), followed by maize (51 million ha), cotton (24.7 million ha) and canola (8.2 million ha).**
- **The major trait was herbicide tolerance at 59% share of total 160 million ha GM, followed by double and triple stacked traits at 42.2 million ha (22%), and insect resistance at 23.9 million ha (21%). GM maize with eight genes stacked for different insect resistance and herbicide tolerance went commercial in US and Canada in 2010.**
- **Stacked gene traits accounted for 25% of global GM crop area**
- **Environmental benefits included savings of 443 million kg of a.i. pesticides and 19 billion kg reduction in CO2 emissions.**
- **New anticipated developments include drought tolerant maize in the US in 2012 and in Africa by 2017, Golden Rice with pro-vitamin A in the Philippines in 2013, then biotech maize and Bt rice in China.**

The major benefits of GM crops can be summarized as increased agricultural production efficiency, reduced impact on the environment, improved economic benefits for farmers, and facilitating crop rotation and conservation agriculture in the case of herbicide tolerant cultivars. The agricultural revolutions in Argentina and Brazil have essentially been driven by these technologies.

Global production of GM maize, grown in 16 countries, increased by 5 million ha to reach 51 million ha (32% of global maize) with the five lead countries US, Brazil, Argentina, South Africa, and Canada, followed by another 11 countries.

The global trends are contained in Annexes A and B

4. *SOUTH AFRICAN REGULATORY SYSTEM*

4.1 *The GMO Act 15/1997 (as amended in 2006)*

Some recent issues can be highlighted as follows:

(a) The 'moratorium' on importing commodity grains that contain or may contain genetic modifications ('events') not yet approved in South Africa had been lifted late in 2011. Maize producing countries USA, Argentina and Brazil all have events not approved in SA. The process of applying for an import permit for commodities seems to be misunderstood by some traders. The first step is for the technology owner to apply to the Registrar, DAFF, for commodity clearance and this requires submitting detailed information on the nature of the genetic event and biosafety assessments, as stipulated in the Cartagena Protocol on Biosafety and its Annexes. Once clearance is granted, the grain importer can apply for a user permit. Local and international requirements can be summarized as follows and some traders may not be familiar with reasons for and procedures to be complied with: The Cartagena Protocol on Biosafety deals with transboundary movement of live

modified organisms (grains, seeds, etc) that pose a risk to the environment and requires advance informed agreement (AIA) from the importing country, the country of export must notify the authority in the importing country before shipping and the authority must acknowledge receipt of notification, this authority has 270 days to advise the country of export on its approval/rejection, but for LMOs intended directly for food, feed or processing a decision must be made within 15 days. Supporting documentation must at least comply with Annex II on details of trader, the LMO species, genetic modification, approved uses of LMO, and a risk assessment report compliant with Annex III on nature of the genetic modification. Required details of the exporter and importer are contained in Annex I of the Protocol. An importing country may provide a simplified procedure to do away with notification and AIA. Details of the Protocol can be obtained on www.cbd.biodiv.org

(b) The GMO Act 15/1997 amended in 2006 contains the key provisions of the Protocol.

(c) South Africa requires that the technology owner must apply for a commodity clearance permit for which all biosafety assessment data must be submitted.

(d) A practical problem exists in that a grain consignment may contain. a range of genetic modifications (events) owned by various technology developers, so that several parties must apply for commodity clearance.

(e) Once clearance is obtained, a grain importing trader can apply for a 'user' permit.

(f) An additional constraint is that the technology owner(s) need to take responsibility for ensuring that the grain traders comply with safety issues such as preventing spillage during loading/offloading and transport, and other uses, as contained in the SANS standards.

(g) It may be that an applicant could use the commodity clearance permit as a step to obtain approval without the intention to facilitate imports, but to expedite approval for GM variety trials and subsequent general release.

- **(b) It seems that the standards (SANS 10385) for managing co-existence of conventional and GM maize have not yet been ratified by the DAFF. This means that a formal system for producing non-GM grain (below 1% GM content) is not in place, leaving such production to contractual agreements between producers, silo owners, traders and end buyers.**

- **The draft Plant Breeders' Rights Act has followed a course of several consultations with plant breeding stakeholders. The final text will go to parliamentarians as a draft Bill.**

- **Several matters in the GMO Act (revised) remain a cause for concern: several departments have been changed or merged in 2010 so that the composition of the Council does not comply with the Act; decision making by the GMO Executive Council is on consensus by all departments represented, not on majority vote as stated in the 1997 Act ; text refers to avoidance of risk (a scientific impossibility); and the Department of Environmental Affairs persisting in making no mention of environmental benefits of GM crops in their communications, but focuses solely on potential risks and negative impacts – a situation that places a question mark on the required balanced approach.**

  - **The GMO Executive Council is still in the process of examining modalities for assessing stacked genes, and isolation distances between GM and non-GM fields. Also under discussion, are low level presence (LLP) of unapproved genetic events in grain and food products, and adventitious presence (AP) of approved GM in non-GM products (unavoidable presence/co-mixing) and what standards should be set. It is not clear to what extent LLP and AP at this stage involve discussions with stakeholders and following of international progress in this regard.**

4.2 ***Other departmental legislation***

- **The DST has drafted a concept strategy for South Africa's Bio-Economy and the document is available for comments/inputs.**

- **The Consumer Protection Act 28/2008 requires mandatory labelling of 'goods' that contain genetically modified ingredients or components, whether such goods were produced locally or imported. Regulation 7 in the regulations contains several sub-regulations for compliance but these have been drafted in such an ambiguous way so as to leave industry sectors somewhat confused on what and how to label. The Act entered into force on April 2011 and labelling regulations had to meet the deadline of 1 October, which very few parties have yet complied with. The Act and its regulations provide the platform for the National Consumer Tribunal to handle all consumer complaints. Consumer complaints will be handled free of charge except that requests to provide substantiating evidence will be for the cost of the complainant where such evidence involves expenses. Any damage done to the supplier of goods in terms of recalls from the market or to its reputation will not be handled by the Tribunal but must be taken to civil courts. It has now become clear that uncertainties will end up in courts to sort it out. At the time of writing, the CPA Commissioner has set up a task team that includes representatives from DAFF, DoH, DTI, and DST to investigate the labelling issue. Informal information indicated that Regulation 7 on labelling is being re-written and the final draft will be made public for comments/inputs. A copy of my presentation made by invitation to the National Consumer Tribunal is contained in Annex C. A brief overview is contained in SAGrain of March 2012, pages 66-67 ('Praktiese Implikasies van GMO Regulasies').**

5. STATUS OF SOUTH AFRICAN GM MAIZE

5.1 *The permit system*

Approvals under the GMO Act are based on issuing of permits. The latest list includes the following activities:

Registration of facilities, trial release into the environment, commodity clearance, contained use, general release, import for contained use, import for general release or commodity clearance, import for trial release into the environment, import for contained

use or use as food, feed or processing, export for intentional release into the environment, commodity use for food, feed or processing, time extension for GMO activities. In addition, these applications have to be accompanied by an affidavit. For exports, a GMO lab test certificate is required and a letter from importing country that it will accept the consignment. Only two labs are recognized by the Department of Agriculture (DAFF) for testing samples and issuing a GM certificate: University of the Free State and Incotec-Proteios.

Granting of a permit for any GMO activity does not mean that the activity will be executed in the month or year or in quantity approved. This implies that GMO permits and SAGIS data on grain imports/exports will not be similar. Key statistics are as follows:

- **Some 386 permits were granted for the year 2011**
- **Maize permits accounted for 314 or 81% of total**
- **Commodity maize clearance permits were 19**
- **Commodity clearance permits for soya beans were 3, one for Bt rice, and a possible incorrect entry included cotton.**
- **GM maize commodity export permits amounted to 73**
- **Quantity of grain for GM maize commodity exports came to 2.6496 million MT**
- **SAGIS data refer to just over 2.19 million MT for all maize exported in 2011**
- **Maize seed exports for planting involved 12 permits for 16 570 MT in total**
- **GM maize seed import permits were 6 for 428 MT**
- **Permits of GM cotton seed exported for planting totalled 6 362 MT**
- **GM cotton seed import single permit was for 729 MT**
- **The above GM seed data show a significant trade balance in SA's favour**
- **Some 720 MT of commodity GM soya beans exports were recorded**
- **GM soya beans seed imported for planting amounted to 556 MT.**
- **Other permit approvals covered vaccines, sugarcane, ornithogalum, soya beans, cotton and maize for trials, seed increase or use as foundation seed for hybrid production**

5.2 ***GM maize cultivars on the official Variety List.***

The official list, dated November 2011, contains the designations of 451 cultivars of which 144 or 31.9% are GM hybrids, 251 or 55.6% are conventional hybrids, 23 or 5.1% are high-lysine hybrids, 30 are open-pollinated conventional varieties, and 3 or 0.7% are open-pollinated high-lysine varieties.

Of the total 144 GM hybrids, 68 or 47,2% have the single insect resistant Bt trait, 42 or 29.2% have the single herbicide tolerant trait, and 34 or 23.6% have the stacked genes for both traits.

The breakdown for the 53 white GM hybrids is 25 or 47% Bt trait, 17 or 32% are herbicide tolerant, and 11 or 21% have the stacked gene traits. The 91 yellow GM hybrids are 43 or 47% Bt, 25 or 28% herbicide tolerant, and 23 or 25% have stacked genes for both traits.

The conclusion is that maize producers have a wide range to choose from between yellow, white, conventional, GM, conventional high-lysine, hybrids, and OPVs.

5.3 ***Intellectual property rights***

Modern biotech cultivars are protected by plant breeders' rights in terms of the Plant Breeders' Rights Act (15/1976 as amended in 2006); patent rights under the Patents Act but only for specific claims such as novel gene constructs, vectors, promotors, bacterial phages (plasmids) as carriers for the novel genes, and other claims; and trademarks under the Trade Marks Act. Breeders' rights exclusive protection under the UPOV Convention 1991 has been extended from 15 to 20 years for plant varieties and from 20 to 25 years for fruit and forestry trees. A new Plant Breeders Right's Act is presently near completion as a draft Bill. The Convention in Article 15(2) provides for farmers to retain harvested material for re-use for planting on his own farm to produce another crop (the

farmer's privilege exemption), subject to not violating the breeder's basic rights – a rather vague exemption that member states have to define for themselves. Patent rights protection ends after 20 years but trademarks continue as long as the owner pays annual duties.

Commercial breeders of maize hybrids and OPVs are increasingly making use of contract law to reduce alienation of their proprietary cultivars. By purchasing a bag of seed, the buyer agrees to the restraint that he/she will not use the seed for further multiplication, selection or breeding. This restraint over-rides the UPOV 'breeders' privilege' of the freedom to use PBR-protected varieties for breeding which is qualified by the principle of essentially derived varieties (minimal differences from the original variety), the repetitive use of a protected variety and 'safeguarding the legitimate interests of the breeder'. Contract law in the case of GM varieties is especially important as the technology owner is compelled to maintain responsibility (and liability) for and stewardship over the technology product, apart from submitting an annual report to the DAFF on issues like compulsory planting of refuge areas to conventional seed, possible development of tolerance to insects or weeds. The owner cannot comply with these requirements if he has no contact with knowledge of parties who are using his varieties for breeding or planting. The contentious issue of what happens to stewardship and liability when patents expire, is presently being debated globally.

Some 70 or 53% of the 132 conventional white maize hybrids are protected under PBR, while 38 of the 53 white GM hybrids or 72% have PBR. In the case of yellow conventional hybrids, 41 or 34% of the 118 hybrids have PBR and 74 or 81% of the 91 GM hybrids have PBR. It can be assumed that all GM cultivars have patent rights on the unique genetic modification(s). Six of the 27 white OPVs and one of the 3 yellow OPVs enjoy PBR protection. None of the high-lysine hybrids or OPVs has PBR.

The seed industry and producer organizations have had several meetings to reach a compromise on farm-saved seed practices with winter cereals and other self-pollinated crops present problems for both producers and seed breeders.

Recently, the SA Reserve Bank published a regulation that puts intellectual property rights, registered or unregistered, in the domain of assets for which SARB approval has to be applied for when IP is sold, moved or exported to offshore parties. I have obtained details from patent lawyers, the essence of which is that the regulation had been published without consultation with affected parties and that it is unconstitutional as only Parliament can make regulations. Details on this issue can be provided upon request

5.4. ***GM maize approved for commodity release***

The maize commodity clearance events approved in 2011 as per designated identifiers are as follows:

MIR604
Bt11 x GA21
Bt11 x MIR604
MIR604 x GA21
Bt11 x MIR604 x GA21
Bt11 x MIR162 x MIR604 x GA21
Bt11 x MIR162 x GA21
Bt11 x MIR162 x TC1507 x GA21
TC1507 x NK603
51922
NK603 x 59122
TC1507 x 59122
TC1507 x 50122 x NK603
MON863
MON863 x MON810
MON863 x MON810 x NK603
MON8817
MON8817 x MON810
MON89034 x TC1507 x MON8817 x MON8817 x 59122

Commodity clearance approvals from 2001 to 2004 comprise

- **2001: Bt176 insect resistance**
- **2001: T25 herbicide tolerance**
- **2002: Bt 11 insect resistance, herbicide tolerance**

- **2002: GA21 herbicide tolerance**
- **2002; NK603 herbicide tolerance**
- **2002: TC1507 insect resistance, herbicide tolerance**
- **2003: MON810 x GA21 insect resistance, herbicide tolerance**
- **2004: MON810 x NK603 insect resistance, herbicide tolerance**

The official list above seems to miss MON 810 approved in 1997.

The backlog of commodity clearances approved in 2011 is as follows:

GMO ACTIVITIES APPROVED UNDER THE GENETICALLY MODIFIED ORGANISMS ACT, 1997
Type of approval: Commodity Clearance
(Excludes events that have obtained general release clearance before commodity clearance)

Use of the event: Importation for use as food or feed **Event**	**Crop**	**Trait**	**Company**	**Year approved**
CV127	Soybean	Herbicide tolerant	BASF	2012
DAS-40278-9	Maize	Herbicide tolerant	Dow AgroSciences	2012
MON89034 x TC1507 x NK603	Maize	Insect resistant Herbicide tolerant	Dow AgroSciences / Monsanto	2012
MIR604	Maize	Insect resistant	Syngenta	2011
BT11 x GA21	Maize	Insect resistant Herbicide tolerant	Syngenta	2011
BT11 x MIR604	Maize	Insect resistant Herbicide tolerant	Syngenta	2011
MIR604 x GA21	Maize	Insect resistant Herbicide tolerant	Syngenta	2011
BT11 x MIR604 x GA21	Maize	Insect resistant Herbicide tolerant	Syngenta	2011
BT11 x	Maize	Insect resistant	Syngenta	2011

MIR162 x MIR604 x GA21		Herbicide tolerant		
BT11 x MIR162 x GA21	Maize	Insect resistant Herbicide tolerant	Syngenta	2011
BT11 x MIR162 x TC1507 x GA21	Maize	Insect resistant Herbicide tolerant	Syngenta	2011
TC1507 x NK603	Maize	Insect resistant Herbicide tolerant	Pioneer	2011
59122	Maize	Insect resistant	Pioneer	2011

NK603 x 59122	Maize	Insect resistant Herbicide tolerant	Pioneer

356043	Soybean	Herbicide tolerant	Pioneer	2011
305423	Soybean	Higher oleic acid content Herbicide tolerant	Pioneer	2011
305423 x 40-3-2	Soybean	Higher oleic acid content Herbicide tolerant	Pioneer	2011
TC1507 x 59122	Maize	Insect resistant Herbicide tolerant	DowAgroScience	2011
TC1507 x 59122 x NK603	Maize	Insect resistant Herbicide tolerant	DowAgroScience	2011
LLRice62	Rice	Herbicide tolerant	Bayer	2011
LLCotton25	Cotton	Herbicide tolerant	Bayer	2011
MON863	Maize	Insect resistant	Monsanto	2011
MON863 x MON810	Maize	Insect resistant	Monsanto	2011
MON863 x MON810 x NK603	Maize	Insect resistant Herbicide tolerant	Monsanto	2011
MON88017	Maize	Insect resistant	Monsanto	2011
MON88017 x MON810	Maize	Insect resistant	Monsanto	2011

MON89034 x TC1507 x MON88017 x 59122	Maize	Insect resistant Herbicide tolerant	DowAgroScience& Monsanto	2011

5.5 *Maize genetic events approved for general commercial release*

The list of approved events for conditional general commercial release does not imply that all such GM cultivars are presently being planted. It takes time to incorporate the genetic modification into locally adapted cultivars and build up seed supplies.

- **1997: Mon810 insect resistance**
- **2002: NK603 herbicide tolerance**
- **2002: Bt11 insect resistance plus herbicide tolerance**
- **2007: MON810 x NK603 insect resistance, herbicide tolerance**
- **2010: MON89034 two stacked Bt genes for insect resistance**
- **2010: MON89034 x NK603 stacked insect resistance, herbicide tolerance**
- **2010: GA21 herbicide tolerance**
- **2010: Bt11 x GA21, insect resistance, for herbicide tolerance**

5.6 *Approved maize field trials with new GM combinations*

New insect resistance genes and herbicide tolerance genes or existing genes put into new hybrid combinations, and various stacked combinations of these novel genes will serve to counteract development of target insect resistance and weed tolerance to herbicides, and also enable the producer to apply biotech management with various GM traits combined in cultivars relevant for his specific farm situations. Field trials approved during 2011 include various stacked traits for insect resistance and herbicide tolerance and are as follows:

MON87460 = DT
PHP37050 = IR+HT
59122 = IR
TC1507 = IR

TC1507xMON810 = IR
TC1505 x NK603 = IR=HT
TC1507xMON810xNK603 = IR+HT
PHP36826 = IR
PHP36827 = IR
PHP37046 = IR
PHP37047 = IR
TC1507x59122xMON810xNK603 = IR+HT
TC1507x59122xNK603 = IR+HT

DT = drought tolerance, IR = insect resistance, HT = herbicide tolerance

5.7 *Commercial status of GM maize planting in 2011/12 season*

This final report, based on final seed sales by grain type, planting regimes, and GM traits showed a significant increase in GM maize area and market share compared to the first estimates made in November 2011. While increased GM hectares were expected with increased total area planted to maize, the increased market share was not in line with first estimates. The apparent anomaly was examined by:

- **Re-examining all computations**
- **Comparing volumes of seed sales for 2010 and 2011 plantings**
- **Comparing bags of seed sold in 2010 and 2011**
- **Finally, examining CEC final data on areas planted by region**

The outcome was (a) that computations were in order, (b) that increased GM seed sales almost followed increased total area planted that had increased by 13.8% from the first CEC estimate of 2.6 mill ha in February to the present 2.699 mill ha, and (c) that the biggest increases in areas occurred in the western regions: North-West by 18.6%, Free State by 17.2%, and Limpopo by 35%. The main boost in hectares came from North-West and Free State.

Thus the increased seed sales followed increased area planted, but increased GM market share came from more GM seed sold with more areas planted in NW and FS. One pocket of seed planted in the

FS covers 32% more hectares than when planted in Eastern areas and 2.7 times more than planted under irrigation.

Shares of insect resistance, herbicide tolerance and both traits stacked by hectares planted as percentage of total GM area were very close to first estimates.

Results of the survey are summarized as follows:

- **GM white area of 1.279289 mill. ha was 78.8% of total white maize area of 1.636200 ha**
- **GM yellow area of 863 277 ha was 81.2% of total yellow area of 1.063000 mill ha**
- **Combined GM area of 2.14566 mill ha amounted to a 79.4% share of total maize planting of 2.699200 mill ha.**
- **White GM maize comprised 45.9% single insect resistance trait, 10.7% single herbicide tolerance trait, and 43.4% stacked for both traits**
- **Yellow GM maize comprised 40.4% single insect resistance trait, 23.7 single herbicide tolerance trait, and 36.5% stacked for both traits.**
- **Combined GM maize constituted 43.7% single insect resistance, 15.7% single herbicide tolerance, and 40.6% stacked traits.**

The trait breakdown was according to expectations. The higher use of herbicide tolerance in yellow may be attributed to more persistent weeds in Eastern areas, compared to the West where white maize is predominant.

Figure 1 for GM maize adoption trend and Figure 2 for traits trend are shown on page 23 and 24.

Tables 1, 2 and 3 on data are contained on pages 24 and 25.

Fig 1: Trends in South African hectares planted with GM maize

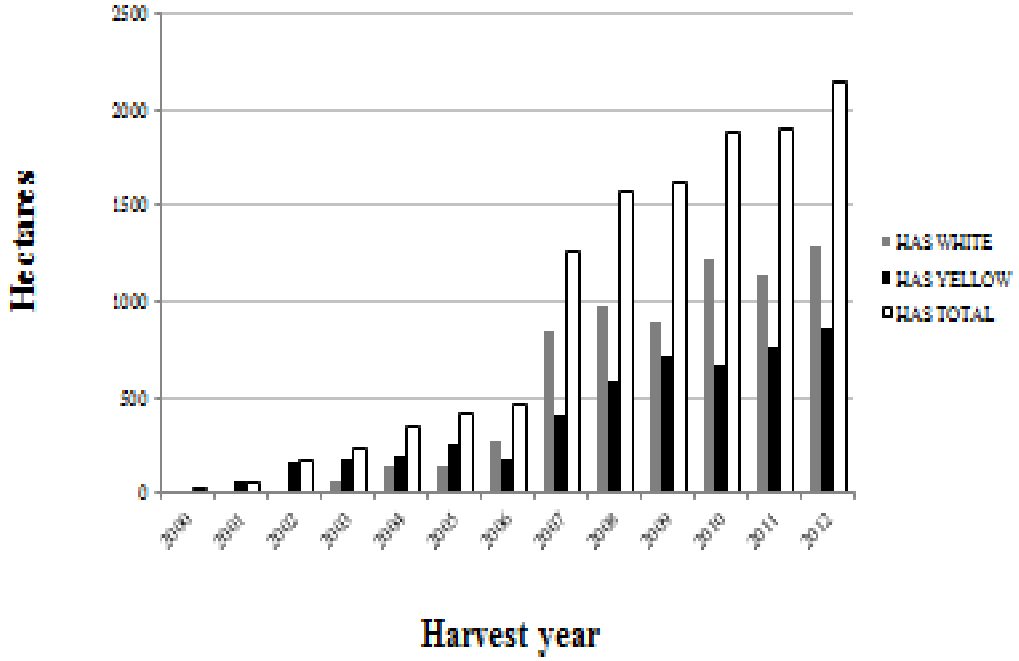

Fig 2: Trends by traits share of South African GM maize

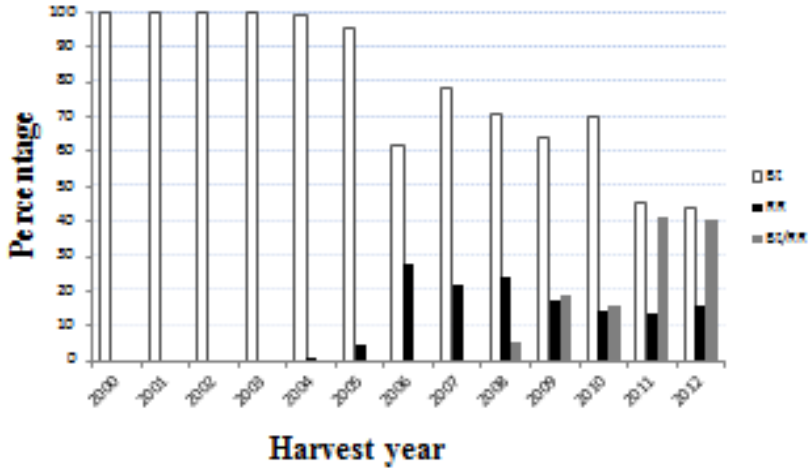

TABLE 1: AREA PLANTED TO GM WHITE MAIZE
2000-2012 HARVEST YEARS BY TRAITS (HECTARES x 1000)

YEAR	Bt	HT	Bt + HT	TOTAL
2000	0	0	0	0
2001	0	0	0	0
2002	6	0	0	6
2003	60	0	0	60
2004	144	0	0	144
2005	142	5	0	147
2006	221	60	0	281
2007	712	139	0	851
2008	696	218	61	975
2009	660	160	226	1046
2010	984	117	111	12
2011	497	99	411	1008
2012	588	137	554	1279
TOTAL	4710	935	1363	7008

TABLE 2: AREA PLANTED TO YELLOW MAIZE
2000-2012 HARVEST YEARS BY TRAITS (HECTARES X 1000)

YEAR	Bt	HT	Bt + HT	TOTAL
2000	3	0	0	3
2001	59	0	0	59
2002	160	0	0	160
2003	176	0	0	176
2004	197	0	0	197
2005	249	14	0	263
2006	107	68	0	175
2007	391	137	0	528
2008	406	159	23	588
2009	376	159	107	642
2010	326	153	187	666
2011	288	149	260	666
2012	349	199	315	863
TOTAL	3087	1038	1440	5017

TABLE 3: TOTAL AREA PLANTED TO GM MAIZE
2000-2012 HARVEST YEARS BY TRAITS (HECTARES x 1000)

YEAR	Bt	HT	Bt + HT/RR	TOTAL
2000	3	0	0	3
2001	59	0	0	59
2002	166	0	0	166
2003	236	0	0	236
2004	341	0	0	341
2005	391	19	0	410
2006	328	128	0	456
2007	1103	276	0	1379
2008	1102	377	84	1563
2009	1036	319	333	1688
2010	1305	245	340	1890
2011	785	248	671	1704
2012*	936	337	869	1873
TOTAL	7791	1974	2297	12062

Note: Bt = insect resistance; HT = herbicide resistance, Bt + HT = stacked traits

5.8 *Smallholder farmer adoption of GM maize*

The sale of GM maize seed (2 kg or 5kg pockets) to subsistence farmers has declined substantially. However, GM maize farmers who have become smallholder, commercial farmers are considered part of normal seed sales and are not shown on return forms as a separate entity. This matter will be investigated further in future.

5.9 *Incidence of potential stalk borer resistance to Bt maize*

Monitoring of continued outbreaks of potential insect resistance has been assigned to GM seed companies who are required to submit an annual report to DAFF. In addition, several monitoring and impact studies are being conducted by North West University in association with ARC and others. The first stacked Bt genes with added herbicide tolerance had been approved in 2010 for commercial release while a range of other cultivars with various stacked combinations is in the second year of field trials. Plots tested at ARC-GCI have shown that the two Bt genes provide good resistance to stalk borer. Also in approved company field trials, are hybrids with stacked genes for tolerance to different herbicides and insects. The objective is to have these stacked technologies approved and introduced before potential weed tolerance or stalk borer tolerance appears, so as to offer producers new options for weed management and targeted insect pest management.

6. UPDATE ON BIOTECHNOLOGY AND BIOSAFETY IN AFRICA

African states have been slow to draft required biosafety frameworks, establish administrative infrastructure and human resources to implement requirements of the Protocol. At this stage most key states have draft systems or approved frameworks but this

does not imply that their status is functional to manage transboundary movement of commodity consignments that contain GM content. Likewise, progress has been slow with the COMESA initiative to harmonize trade in GM commodities. The next countries to adopt GM crops will be Mozambique, Malawi, Kenya, Uganda, and Tanzania where GM field trials are underway. Personal contact has been made with several key government officials and organizations and it is planned to collate information that will be collected later this year for inclusion in the next interim report.

7. MEDIA COVERAGE

The March 2012 media conference on global status of GM crops, including an overview of the SA status, received widespread coverage on TV, radio, printed media, and websites. This event benefited from the presentation by the keynote speaker Prof. Klaus Ammann, emeritus professor, University of Bern, Switzerland, and director of the Bern Botanical Gardens. Support by the Maize Trust was acknowledged in all media interactions. A complete media report will be included in the final report.

8. ANNEXURES

A. **ISAAA global overview**
B. **ISAAA global overview**
C. **Copy of presentation on compulsory labelling of GM ingredients and GMOs in "goods" in Regulation 7 of the Consumer Protection Act 28/2008.**
D. **Lombard report on media coverage**

END >>

Report submitted by

Wynand J. van der Walt,
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Pretoria, 15 September2012

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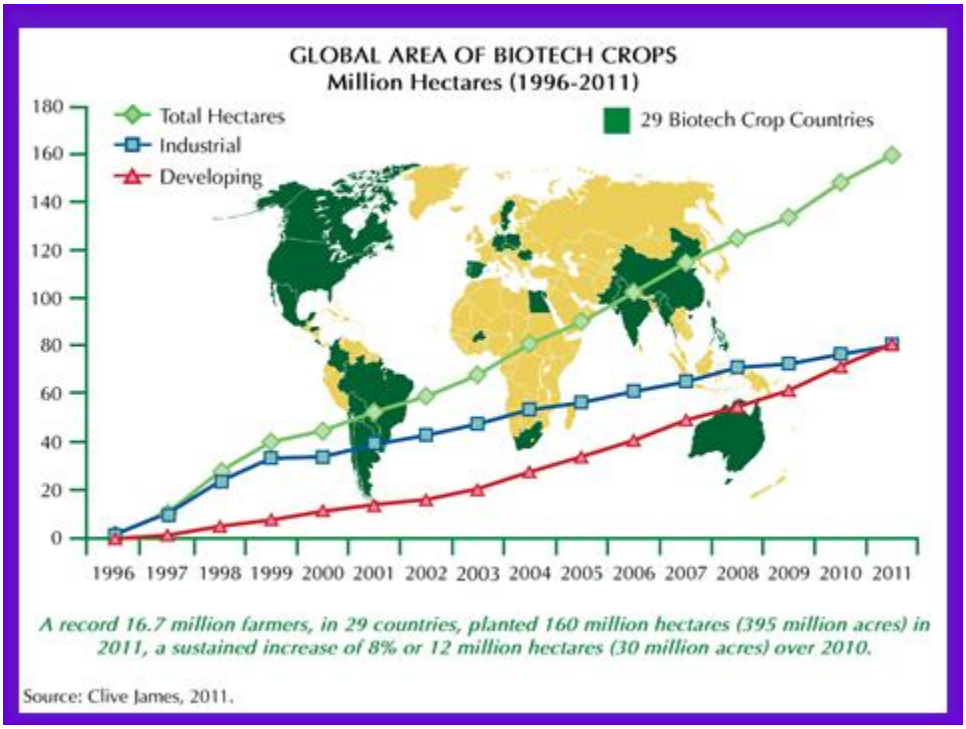
ANNEX A AND B

ISAAA GLOBAL REVIEW



Biotech Crop Countries and Mega-Countries, 2011

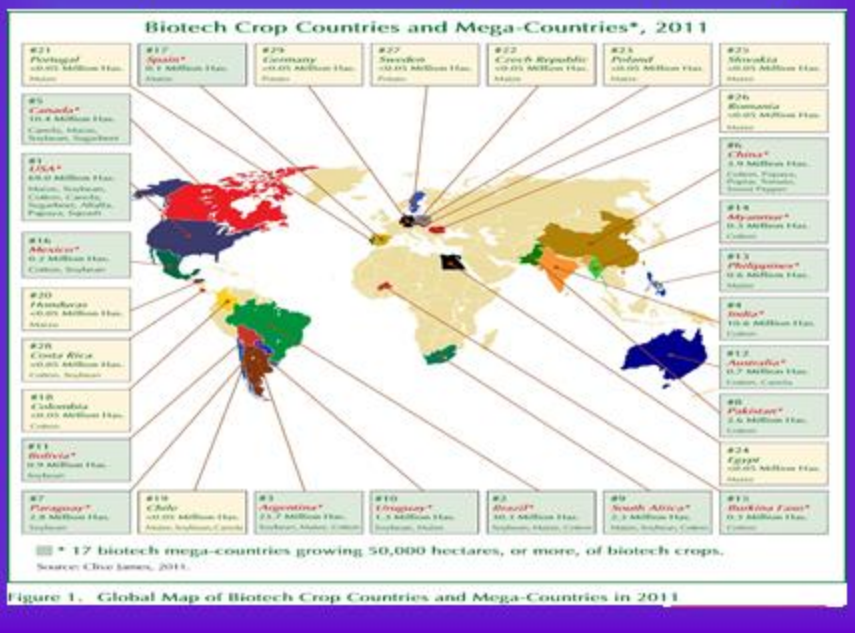


Figure 1. Global Map of Biotech Crop Countries and Mega-Countries in 2011

ANNEX. C

PRESENTATION TO THE NATIONAL CONSUMER TRIBUNAL: INTERPRETATION, COMPLIANCE AND ENFORCEMENT OF SECTION 24(6) IN THE CONSUMER PROTECTION ACT AND REGULATION 7 ON COMPULSORY LABELLING OF GMO/GM "GOODS"

Tribunal Board meeting, DaVinci Hotel, Sandton, 17 November 2011

Wynand J. van der Walt, PhD

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INTRODUCTION

Madam Chair, it is indeed a privilege to address the Tribunal members and staff today. The focal issue of modern biotechnologies is considered by some as a contentious one, which it need not be. Many technologies used to be contentious but are now accepted as part of everyday life by the majority of civil society: pasturized milk, blood transfusions, irradiated foods, heart transplants, etc.

I consider the meeting today as an opportunity for interaction so we can learn from one another. No one has all the answers and, in fact, no one has all the questions. We can use this event to strive for common understanding and for a common ground.

The common ground includes

- **That the Consumer Protection Act, if properly understood and enforced, will serve to protect the consumer against many**

unacceptable practices, including fraudulent labelling and unsubstantiated information,

- **That most modern legislation is complicated and needs to be communicated to civil society in an understandable language,**
- **That modern biotechnology is here to stay and should be managed and regulated in a fair and appropriate manner,**
- **That there is no free lunch: legislation, compliance and enforcement all carry costs that eventually end up at the consumer and tax payer level.**

The statement by Baron Otto von Bismarck some 150 years ago comes to mind:

" The less the average citizen knows about how laws and sausages are made, the better he will sleep at night".

The average South African citizen knows rather little about law making and modern biotechnology, but perhaps more about sausages.

The products from modern biotechnology are part of life in every country in the world: human health products such as vaccines, insulin and others being produced in genetically modified (GM) microbes, production of industrial goods, unique enzymes in food processing , and, of course, GM plants.

One should not forget that the DST foresight programme identified three drivers of future economies: ITC, nanotechnologies and materials, and modern biotechnology. The latter culminated in the National Strategy on Biotechnology.

Let us get back to the labelling of GMO/GM goods and consumer rights. First, consumer rights.

CONSUMER RIGHTS

Since the Regulation 7 and also the polarized public debates on modern biotechnology, seem to focus on agriculture and food/feed from GM plants only, it is considered useful to take cognisance of

The Consumer Manifesto on Food, approved in 1996 by Consumer International:

- ***The right to enough food at all times (variety of foods, availability, choice, affordability)***
- ***The right to safe food (hygienic practices and quality)***
- ***The right to be informed about food (right to factual information)***
- ***The right to consumer education on food (information in plain, understandable language, consumers to acquire knowledge and skills)***
- ***The right to a sustainable supply of food in a friendly environment (physical environment, quality of life)***
- ***The right to be heard on food issues (advocacy in policies, implementation, monitoring, transparent decision making)***
- ***The right to redress about food issues (complaint handling, fair settlement). (Ref. 2)***

Especially important is the third right: right to information = evidence-based, factual information.

THE ACT, SECTION 24(6)

This subsection provides the Scope for labelling and specifically refers to genetically modified ingredients or components of prescribed goods.

"Section 24(6): Any person who produces, supplies, imports or packages any prescribed goods must display on, or in association with the packaging of those goods, a notice in the prescribed manner and form that discloses the presence of any genetically modified ingredients or components of those goods in accordance with applicable regulations".

THE REGULATION 7

It is quite clear that various requirements set in subregulations will have different implications for different sectors in the food/feed chain, as well as for the range of different commercial products

produced by each individual manufacturer. This is only one part of the complexities.

Regulation 7: Product labeling and trade descriptions: genetically modified organisms.

7(1): In this regulation a "genetically modified organism" means a genetically modified organism as defined in section 1 of the Genetically Modified Organisms Act, 1997 (Act no. 15 of 1997), and "genetic modification" has a corresponding meaning.
7(2): This regulation applies to goods approved for commercialization by the Executive Council for GMOs established by section 3 of the GMO Act, 1997.

Interpretation: Section 24(6) of the Act makes no mention of GMO labelling. The GMO Executive Council that functions as official decision making body in terms of the GMO Act 15/1997 as amended in 2006, deals only with GMOs that are live genetically modified organisms (seeds, raw grains, bulbs, tubers, microbes, live vaccines) and not directly with their ingredients or components. Current commercially approved GMOs are maize, soya beans and cotton. Apart from the fact that Section 24(6) does not mandate GMO labelling, certain products will fall outside of this requirement, such as milled maize as its products are not GMOs.

7(3): For purposes of section 24(6) of the Act, and subject to subregulation (4) and (6), this regulation applies to all goods referred to in subregulation (2) which contain at least 5 percent of genetically modified organisms, irrespective of whether such making or manufacturing occurred in the Republic or elsewhere, and to marketing material in respect of such goods.

Interpretation: (a) As under 7(2) this subregulation that refers to 5% GMOs does not apply to goods, ingredients or components that are not GMOs; (b) setting a 5% threshold would require sophisticated, expensive diagnostic equipment for detecting and quantifying novel DNA and/or novel protein.

7(4): Any good or ingredient or component to which subregulation (3) applies may not be produced, supplied, imported or packaged unless a

notice meeting the requirements of section 22 of the Act is applied to such goods or marketing material, as the case may be, in a conspicuous and easily legible manner and size stating, without change, that the good or component "contains genetically modified organisms".

Interpretation: As explained under 7(2) and (3) the labelling requirement of a good or component (ingredient omitted in subregulation line 5) "contains genetically modified organisms" does not apply to non-GMOs. It does apply to seeds, raw grain, etc.

7(5): If goods listed or contemplated in subregulation (2) are intentionally and directly produced using genetic modification processes, the goods or marketing material, as the case may be, must be labeled, meeting the requirements of section 22 of the Act, without change, must be labeled "Produced using genetic modification".

Interpretation: Firstly, Section 24(6) of the Act specifically states the scope for labelling as "any goods that contain genetically modified ingredients or components". It makes no provision for labelling the nature of the method of production or manufacturing of the good.

Secondly, Section 22 to which subregulation7(5) refers, deals not with what should be labelled but how the good should be labelled, as for compliance with Codex standards.

Therefore, on both counts, subregulation7 (5) clearly falls outside the defined scope of Section 24(6).

7(6): A notice meeting the requirements of section 22 of the Act, must state that a good or ingredient or component contains genetic modified organisms unless such good or ingredient or component contains less than one percent genetically modified organisms.

Interpretation: Again, as explained in response to subregulations 7(2), 7(3) and 7(4), subregulation 7(6) does not apply to non- GMOs

7(7) Notwithstanding the provisions of subregulation (6) a notice meeting the requirements of section 22 of the Act may state that the level of genetically modified organisms contained in the good or ingredient or

component to which subregulation (2) applies is less than 5 percent.

Interpretation: As explained in response to subregulations 7(2), 7(3), 7(4) and 7(6), subregulation 7(6) does not apply non- GMOs

7(8): If it is scientifically impractical or not feasible to test goods contemplated in subregulation (2) for the presence of genetically modified organisms or ingredients, a notice meeting the requirements of section 22 of the Act must be applied to such goods or marketing material, as the case may be, in a conspicuous and easily legible manner and size, stating "May contain genetically modified ingredients".

Interpretation: This option may be the only practical and least costly for many industry sectors in the food/feed chain, for example:

- ***Milling facilities receive raw or semi-processed grain products (goods) with a statement that it is or contains genetically modified contents, at present without indication of percentages as the GMO content varies between batches and within batches.***
- ***Raw grain is a commingled commodity from many farmers, varieties and storage facilities and the grain is not homogeneous so that GMO content varies from zero to over 5% to 80% or more.***
- ***Milling and processing are a continuous flow process and the process cannot be stopped to take samples and, in any case, each sample may give a different GMO level result due to its heterogeneous nature which could potentially lead to different labels. It is a scientific fact that different samples give different test results and this is the cause of over 80% of disputes. A test result only states what is in a sample and that serves as indication of what is in a consignment, batch or good. The second cause in disparate results comes from technical uncertainties along the steps in analysis, a major one being the degree of perfection in extracting the DNA.***
- ***There are only two DNA detection laboratories in South Africa acknowledged by the Department of Agriculture, Forestry and Fisheries whose test certificates are accepted for permit purposes. An investigation has shown that the best lab can handle up to 30 samples per working day. This translates to a maximum of 10 000 per year. Considering the potential numbers of maize, soya beans and cotton-derived samples, batches and goods that run into thousands per day, it is clear that comprehensive quantitative***

testing for compliance will quickly run into a problem, apart from massive delays and costs.

- ***Relevant to the aforegoing, one should realize that a commercial continuous flow maize mill produces up to 30 000 containers (bags, pockets, cans) of various different products per day, making sampling and testing of each container a mission impossible. Many other food/feed production facilities will have similar constraints***
- ***In short, a "may contain" label represents the most practical, most truthful option at the least cost for the manufacturer, and will facilitate compliance monitoring in the most practical and least costly one for the Consumer Commission and its inspectors or contracted agents. Furthermore, globally, as in South Africa, food prices are increasing as commodity grain prices rise and additional costs will inevitably end up at consumer level; a sensitive consequence in terms of survival of the poor and a cause for political unrest.***
- ***Finally, despite the unacceptable inclusion of mandatory "process" labelling argued under subregulation 7(5), a "may contain" is a simple statement more readily understandable by most consumers and, by implication, is indicative that the plant origin of the raw material made use of genetic modification in on-farm production, and removes the possible use of two different labels on a good (7.5 and 7.8).***

7(9): This regulation does not amend or repeal or detract from any other regulation applying to product labeling or trade description of genetically modified organisms under or in terms of any other legislation, nor does any such legislation detract from or prejudice this regulation.

Interpretation: There seems to be ambiguous interpretation of this subregulation: (a) that the Act and Regulations take precedence over all other existing labelling on GMO/GM labelling or (b) that suppliers of goods can still use some existing labelling that do not conflict with those under the Act, such as "genetically enhanced through biotechnology", The Department of Health has specific labelling regulations, mandatory and voluntary, for GMOs, while the Department of Agriculture, Forestry and Fisheries in terms of the GMO Act has mandatory identification of GMOs on labels.

7(10): This regulation will come into effect six months after commencement of the Act.

Note: It has already entered into force.

FINAL COMMENTS

1. **Regulation 7 provides several options for labelling GMO or GM ingredients or components in goods. However, its extent appears to go well beyond the scope and mandate defined in Section 24(6) in the Act. Moreover, the ambiguous use of different technical terms such as GMOs, ingredients and components has created confusion in the food/feed industry. How much more confusion can we expect from inspectors who have to monitor compliance when they are not experts either in biotechnology or in the way food/feed factories operate?**
2. **It has been predicted that the Tribunal will have to cope with an avalanche of complaints on Regulation 7. Its main mission should be to separate frivolous and malicious complaints and allegations from ones that have substance. Will they act against dissemination of fraudulent information on modern biotechnology?**
3. **I wish to encourage closer interaction between the Tribunal and parties affected by this labelling issue, including DST, DoH and DAFF. We are all consumers and an us-versus-them scenario will be a counter-productive situation.**

Madam Chair, I thank the Tribunal for this opportunity to have addressed you and I hope that some degree of the complexities involved in compliance and in enforcement has been highlighted.

ANNEX D: HANS LOMBARD MEDIA COVERAGE REPORT

ISAAA 2011 REPORT: SOUTH AFRICA - MEDIA CONFERENCE held on 8 March 2012

UPDATED REPORT – PRINT AND ELECTRONIC MEDIA COVERAGE as at 20 JUNE 2012

Printed Articles – Title ***(Original in Afrikaans)***	**Publication Name**	**Publication Date**	**Circulation**	**Readership**
SA GM crop area hits record	Business Report - Cape Times - Mercury - Pretoria News - The Star	8 March 2012	245 784	910 000
SA GM crop area goes up	New Age	9 March 2012	40 000	unconfirmed
GM crops gaining ground in SA ***(GM gewasse wen vinnig veld in SA)***	Sake 24 - Beeld - Burger Cape Town - Burger Port Elizabeth - Volksblad	9 March 2012	156 860	741 000
SA biotech adoption grows	Farmer's Weekly	23 March 2012	14 100	36 200
Biotech crops increase by 100 000 ha	Poultry Bulletin	March 2012	3 100	unconfirmed
More GM crops being planted ***(Al hoe meer GM geplant)***	Landbouweekblad	6 April 2012	37 400	92 000

- Report was run nationally and internationally by REUTERS and SAPA (South African Press Agency).

ISAAA 2011 REPORT: SOUTH AFRICA - MEDIA CONFERENCE held on 8 March 2012

UPDATED REPORT – PRINT AND ELECTRONIC MEDIA COVERAGE as at 20 JUNE 2012

ADDITIONAL MEDIA CLIPPINGS RECEIVED BETWEEN 18 APRIL AND 20 JUNE 2012

Printed Articles – Title ***(Original in Afrikaans)***	**Publication Name**	**Publication Date**	**Circulation**	**Readership**
SA and global status of commercialised biotech/GM crops	Farmer's Magazine (Botswana)	March/April 2012	10 000	unconfirmed
Biotechnology in SA growing by leaps and bounds ***(Biotegnologie in SA groei met rasse skrede)***	SA Co-op	April/May 2012	16 300	unconfirmed
Status of commercialised biotech GM crops ***(Status van gekommersialiseerde biotek-GM- gewasse)***	Afgriland	May/June 2012	13 000	38 400

ISAAA 2011 REPORT: SOUTH AFRICA - MEDIA CONFERENCE held on 8 March 2012

UPDATED REPORT – PRINT AND ELECTRONIC MEDIA COVERAGE as at 20 JUNE 2012

Electronic Media - WEB SITE	Daily Unique Viewers
SHARENET ONLINE – FINANCIAL/BUSINESS http://www.sharenet.co.za/news/SAfrica_GM_crop_area_hit_record_in_2011_report/a7a61338f9c542633978c4231b026a4b	4 800
PE HERALD – REGIONAL DAILY NEWSPAPER http://www.peherald.com/news/article/5232	1 300
BusinessLIVE – FINANCIAL/BUSINESS http://www.businesslive.co.za/southafrica/sa_markets/2012/03/08/biotech-crops-in-sa-up-by-100000ha-in-2011	1 400
IOL ONLINE – NATIONAL NEWS SITE www.iol.co.za/scitech/science/news/sa-s-biotech-crops-on-the-increase-1.1252779 www.iol.co.za/business/business-news/sa-gm-area-hits-record-1.1251943	33 000
PROAGRI - NATIONAL AGRICULTURAL SITE http://www.proagri.co.za/nuus/jongste/Biotegnologie-bre-uit-in-SA.html	not available
AGRI BUSINESS CHAMBER – INDUSTRY SITE http://www.agbiz.co.za/LinkClick.aspx?fileticket=QhNPE%2bZRASc%3d&tabid=390&utm_source=Newsletter%2C+2012-03-15&utm_campaign=ABC+Newsletter&utm_medium=email	not available
CROPLIFE – CROP AND RELATED INDUSTRY SITE (MEMBER ACCESS)	member access

Electronic Media RADIO STATION	Interview	Date	Daily Listenership
RADIO PRETORIA	7 minute interview Dr W vd Walt	March 2012	Listeners 66 000
TALK RADIO 702	4 minute interview Dr W vd Walt	March 2012	Listeners 672 000
Electronic Media TELEVISION STATION	Interview	Date	Daily Viewership
AGRI TV – national agricultural television programme	Two interviews Prof Klaus Ammann	March 2012	Viewers 1 020 000

Report details also broadcast via the various regional radio stations of the South African Broadcasting Corporation.

SUMMARY: PRINT sccm 610circ 536 544; readers min 1.-million m adv R503 408;
RADIO/TV min 3-million; adv R200 000
EXCLUDES internet exposure

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20 June 2012