

## Preface

The Cartagena Protocol of Biosafety (CPB) is a supplementary instrument to the CBD and the only international instrument that deals exclusively with GMOs. The Protocol in line with the CBD requires Parties to take measures to regulate manage or control the risks associated with the use and release of GMOs/LMOs. During Conference of Parties (COPs) developing countries have persistently called upon agencies such as the Global Environmental Facility (GEF) to support capacity building in order to fulfil their obligations in addressing biodiversity issues and challenges. Some of the specific capacity building needs in biosafety identified by a number of initiatives include: Lack of and need for formulated biotechnology and biosafety policies, relevant to the region's needs; an insufficient capacity for enforcing biosafety, guidelines and regulations; need for training at all levels to address the shortage of human resources; need for more facilities and equipment to carry out monitoring and risk assessment research and need for harmonisation, validation and mutual acceptance of data and on transboundary movement, monitoring and surveillance to ensure compliance with regulations.

The Regional Agricultural, Environmental initiative Network Africa (RAEIN–Africa) Partners in SADC region identified among others the need to build capacity in GM detection (both human and infrastructure). Genetic Modification (GM) detection plays an important role in ensuring GM traceability and segregation; compliance with National regulations in terms of GM labelling; compliance with international regulations for trade; compliance with legislation on the use of GMOs; compliance with international agreements including the CPB and in monitoring. RAEIN-Africa under the Regulatory Innovation: Breaking Biosafety Boundaries in Southern Africa (RIBBB-SA) project of the Innovation for Sustainable development and Poverty reduction: Towards an enabling Environment for System of Innovation in Southern Africa (ISSP-TEESA) programme supported by the DGIS facilitated development of a network for laboratories in the SADC region. This strategy is one of the activities to build biosafety technical skills.

RAEIN –Africa partnered with the University of Free State and Tobacco Research Board of Zimbabwe who developed the project on this initiative. We are therefore pleased to present this report on the first meeting of focal points of the participating laboratories and launch of the Southern Africa Network for GM detection of Laboratories (SANGL).

*RAEIN-Africa Secretariat*

# CONTENT

Preface.....	i
Acronyms.....	iii
Executive Summary.....	iv
1. INTRODUCTION.....	1
2. SETTING THE SCENE.....	1
2.1 Official Opening.....	1
2.2 Background Presentations.....	2
2.2.1 RAEIN-Africa and the GM Detection Laboratory Network.....	2
2.2.2 Introduction to the proposed GM detection Network.....	4
3. COUNTRY PRESENTATIONS ON GM DETECTION LABORATORIES, STATUS, GAPS AND NEEDS.....	5
3.1 Summary of Issues Raised by Country Presentations and Plenary Discussions.....	5
3.2 Summary of Needs and Gaps in terms of GM Detection.....	10
4. REFLECTING AND PLANNING ON GMO LABORATORIES NETWORK.....	11
4.1 Potential Role and Characteristics of the network.....	11
4.2 Needs for the Network.....	11
5. OFFICIAL LAUNCH OF SANGL.....	13

## ACRONYMS

CPB	Cartagena Protocol on Biosafety
ENGL	European Network of GM Detection Laboratories
EU	European Union
GM	Genetic Modification
GMO	Genetically Modified Organisms
HT	Herbicide Tolerance
IR	Insect Tolerance
ISP-TEESA	Sustainable Development and Poverty Reduction: Towards an enabling Environment for Systems of Innovation in Southern Africa
ITEM	Innovative Technologies for Enhancement of production Systems and Management of the environment
PI	Principal Investigator
RAEIN-Africa	Regional African Environmental Initiatives- Africa
RIBBB-SA	Regulatory Innovation: Breaking Biosafety Boundaries in Southern Africa
SADC	Southern Africa Development Community
SANGL	Southern Africa Network for GM Detection Laboratories

## **Executive Summary**

The Southern African Network for GM Detection Laboratories (SANGL) was established in November 2009 and has the participation of GM Detection laboratories from nine countries in the Southern Africa Development Community (SADC) region that are endorsed by the Biosafety Competent Authorities in each country. These are Botswana, Namibia, Malawi, Mozambique, Swaziland, South Africa, Tanzania, Zambia and Zimbabwe. In the Network laboratories are represented individually and they nominate their own participants. The network functions through consensus in terms of policy issues regarding the network which are coordinated by a central reference laboratory (the HUB) with participating laboratories as nodes. The network is operated in partnership with RAEIN-Africa.

The Modus Operandi of the Network is to hold annual network meetings that include workshop trainings on specialist topics in GM detection. In addition communication between network partners will be facilitated through an e-platform which will include technical discussion groups, guidelines, news updates and resource identification. The activities of the network are based on the needs and priorities of participating laboratories. The Network will also be bringing out a bi-annual newsletter.

RAEIN-Africa is fulfilling a custodial role towards the establishing and helping it achieve sustainability. The network envisages establishing new partnerships with other strategic organisations such as Donors, other Laboratory networks and laboratories, standards setting bodies as well as other local/international bodies and institutions.

The aim of the network is to provide technical support for Genetically Modified Organisms (GMO) Testing, establish guidelines for best practice in GM detection, facilitate training in GM Detection and organize proficiency testing between participating laboratories.

The specific objectives of the network are as follows:

- To build and strengthen capacities for GM detection in Southern Africa
- To establish guidelines and harmonised methods for sampling and GM detection in Southern Africa
- To facilitate training in GM detection to help network laboratories achieve minimum standards
- To achieve international recognition in GM detection in all participating laboratories
- To compile technical guidance papers on GM detection issues
- To establish links with other international GM detection laboratories and networks as well as other institutions
- To establish an interactive communication platform for GM detection laboratories in Southern Africa

- To establish inter-laboratory collaboration between GM detection laboratories of the Network
- To mobilise resources to support the activities of the Network

### **Justification for establishing SANGL**

Establishing GM detection laboratories throughout Africa has become an important priority as a result of developments in modern biotechnology and the need to fulfil the requirements of the Cartagena Protocol on Biosafety. GM detection plays an important role in: ensuring GM traceability and segregation; Compliance with National Regulations in terms of GM labelling; compliance with International Regulations for Trade; compliance with legislation on the use of GMOs; compliance with International Agreements including the CPB; and monitoring. The SANGL network was established to address the needs and gaps that exist with regards to GM detection in Southern Africa, which include:

- No technical support for GM detection in Africa
- No mechanism whereby GM detection laboratories can cooperate
- No guidelines for best practice / minimum criteria
- No mechanism to facilitate training
- No proficiency appraisal of laboratories
- Establishes Links with other Laboratories and Networks

### **Proposed activities of SANGL**

The Network aims to build capacity in GM detection through annual specialist workshop which will address specific issues for example, sampling and measurements of uncertainty. The workshops will also serve to strengthen interaction between participating laboratories. In order to strengthen its functioning it is important that the Network establish interaction and collaboration with other GM detection networks such as the European Network of GM Detection laboratories (ENGL) to establish norms and standards on GM Detection.

It is vital that the Network receive continued support in order to maintain the website for purposes of communication between partners as well as other networking activities

# 1. Introduction

The First GM Detection Laboratory Network workshop was held at the Crowne Plaza Hotel, Harare, Zimbabwe from the 24<sup>th</sup> to 26<sup>th</sup> November 2009.

*Workshop objectives:*

The workshop objectives were:

- To draw the baseline for the network's activities,
- To identify the challenges that the participants meet in the identification of GMOs, and
- To identify the needs and gaps in GM detection.

*Programme:*

The workshop programme covered the following sessions:

- a) Background presentations
- b) Country presentations on GM detection laboratories, status, gaps and needs
- c) Reflecting and planning on the GM detection Network
- d) Launch of the Network

## 2. Setting the Scene

### 2.1 Official Opening

The workshop was officially opened by Mr. Andrew Mushita, Chairperson of the RAEIN-Africa Board. In his opening remarks Mr. Mushita welcomed all present to the regional workshop designed to develop comprehensive and regional coherent institutional capacities of laboratories that are competent to detect and verify GM products. This is critical as some Southern African countries have enacted policy and legislative frameworks, to facilitate detection of food imports, minimize any biological contamination, collaborate with national gene-banks, and enhance regional and international trade.

Mr. Mushita further informed the participants that at the SADC regional level, such competencies are essential to deter any unjustified imports and exports of GMOs that are deemed undesirable for use. Competency in GM detection is fundamental, especially in terms of creating bridges between the disparate, but increasingly connected issues and processes related to international trade policy making and sustainable development. It was therefore, important to develop technical capacities that devote the entire focus and expertise towards incorporating GM detection, and promoting sustainable development outcomes that are based

on sound science. This was critical for creating the requisite confidence by all those involved in trade negotiations and economic development within the SADC region.

He stressed that this aspect was significant in the face of the current process of globalization of the economies, Regional Free Trade Agreements and the GMO thresholds that are established by such economic blocks as the EU. In addition, the aspects of scientific knowledge, capacity to know what one is trading on, is equals to power, control of the markets, awareness of the risks, and maximization of benefits. These elements can only be attainable if we build and develop the requisite technical capacities to provide us with an edge on the global markets. This is fundamental in the face of humankind's inventive capacity or response to their industry's interests, promotion of further intensification and industrialization approaches to farming as the way forward, for enhancing agriculture and trade. Mr. Mushita, acknowledged that, our economies were not as robust as those of developed countries and as such, regional strategic planning and capacity building provides us with the only cost effective but necessary competitive edge. The formation and actualization of such a regional GM detection mechanism had to be driven by needs, economic orientation, and vibrant technical capacity for the region. The process of forming the regional network facility should have as a precursor, the needs assessment process that is undertaken in an inclusive and participatory manner, and this should take into account the regional socio-economic interests.

He assured the participants that RAIEN-AFRICA will play its supportive role as before to enhance scientific and technical capacities in the SADC region. He further added that the lead institutions, Free State University of South Africa and the Tobacco Research Board of Zimbabwe have world renowned laboratories hence have all what it takes to facilitate our regional network and learning processes.

## ***2.2 Background Presentations***

### **2.2.1 RAEIN-Africa and the GM Detection Laboratory Network**

Ms. Shumba–Mnyulwa, the Regional Director of RAEIN-Africa gave an overview on the Regional Agriculture, Environment Initiative Network Africa (RAEIN-Africa) and outlined the main focus of the Innovation for Sustainable development and Poverty reduction: Towards an enabling Environment for Systems of Innovation in Southern Africa (ISP-TEESA) Programme. Ms. Shumba–Mnyulwa, in her presentation explained that RAEIN-Africa mission is “to enhance capacity of stakeholders to undertake research, formulate policies; apply scientific and technological innovations that are people centred and gender sensitive through inclusive and participatory processes for sustainable development”.

The RAEIN-Africa is a Southern African Network that facilitates and promotes science, technology, policy and society interface for sustainable livelihoods using innovation systems approaches. Its main focus areas are sustainable management of the environment and agricultural production systems. RAEIN-Africa facilitate establishment of innovation platforms at national and regional levels on the focus issues. The network also provides evidence based voices to the voiceless in policy making processes. Overall the network facilitates information sharing, knowledge generation, technology generation and evidence based policy and governance lobbying and advocacy on issues to do with sustainable development in the focus areas.

The RAEIN-Africa network achieves its objectives through multi-stakeholder groups of partners who represents public research and development institutions, academic research and development institutions, policy making and regulatory bodies, civil society, farmer representative organizations, consumer organizations and the users of both the technologies and information. The network has active contact institutions (nodes) in nine SADC countries (Botswana, Malawi, Mozambique, Namibia, Swaziland, South Africa (Limpopo Province), Tanzania, Zambia and Zimbabwe) and links to the other five SADC countries through science and technology authorities.

On the ISP-TEESA Programme Ms. Shumba–Mnyulwa informed the meeting that the programme has two projects namely a) Regulatory Innovation: Breaking Biosafety Boundaries in Southern Africa (RIBBB-SA) and b) Innovative Technologies for Enhancement of production systems and management of the environment (ITEM). In addition the programme will support cross cutting issues. She explained that RAEIN-Africa activities fall under the following:

- Capacity building
- Influencing Research Agenda Setting processes
- Generation of new knowledge for informed decision making processes
- Development of client needs responsive technologies
- Empowerment of the voiceless through awareness creation
- Lobbying and advocacy on key national, regional and international topical issues
- Technology development

Ms. Shumba–Mnyulwa shared the various approved country and regional projects under Biosafety Socio-economic, Climate Change studies, Biofuel studies, Biosafety Technical skills development and Innovation system Competence skills development. She pointed out that the GM Detection Laboratory Network is one of the Regional projects under Biosafety technical skills development. In concluding her presentation she informed the meeting that documentation of learning and sharing the needs and gaps in GM detection in Southern Africa is a priority throughout the programme and reminded the participants that all research and development activities should lead to some type of policy brief and scientific publication.



### **2.2.2 Introduction to the Proposed GM Detection Network**

Professor Viljoen, the Principal Investigator (PI) from the GMO Testing Facility at the University of the Free State, began his presentation by giving an overview of the global status of the GM Crops. He highlighted the world distribution, GM crop type, current GM traits and events per crop type. Professor Viljoen explained that GM detection was a challenge because the amount of GM events and the production thereof increases each year. This makes GM detection a challenge in order to set up an effective detection system. He informed the meeting that the common GM traits were herbicide tolerance (HT), insect resistance (IR) and stacked genes (HT and IR) and outlined the number of events for crops of interest in the region: cotton (16 events), maize (41 events), and canola (8 events) and soya bean (6 events)

Professor Viljoen informed the participants the reasons why there was need for GM detection and sited the following:

- GMO producers need testing for traceability to assure purity and segregation in breeding
- The food and feed industry want to be assured of segregation of products to comply with National regulations and compliance with international regulations for trade
- Competent Authorities require testing to ascertain compliance with legislation, and international Agreements and for monitoring. He cited the following basic needs and gaps in GM detection in Africa that there are no technical support for GM detection, guidelines for best practice (Minimum criteria) and mechanisms whereby GM detection laboratories can cooperate

In addition, Professor Viljoen noted that there was currently no mechanism in Southern Africa to facilitate training in GM detection. He stressed that the Network should have the following characteristics:

- Non-political
- Participation should be voluntary
- Non-prescriptive
- Participation should be endorsed by the managing authority of the laboratory and National Focal Point
- Provide Technical support for GMO testing
- Establish Guidelines for best practices in GMO testing
- Facilitate training in GM detection
- Organize Proficiency testing between Participating Laboratories

### **3. Summary of needs and gaps in terms of GM detection**

With regard to specific needs and gaps as relates to GM detection the following were prioritised:

***Equipment:***

- Inadequate equipment
- Maintenance and calibration of equipment
- Procurement of equipment:
  - Lack of after sale service
  - Lack of contact with suppliers
  - The required specifications and performance of equipment used in GM detection

***Consumables:***

- Expertise in budgeting and cost recovery
- Expertise in reagent handling and storage
- Procurement of reagents:
  - Access to suppliers
  - Specifications and performance of reagents

***Human resources:***

- Expertise in GM detection methods including sampling
- Expertise in using and maintaining equipment
- Expertise in quality control and quality management including laboratory management and proficiency testing

***Technical issues:***

- Standard operating procedures for GM detection methods
- Quality management including method validation and accreditation
- Sampling
- Collaboration and information exchange
- Training in GM detection
- Access to information

## **4.0 Reflecting and Planning on the GMO Laboratory Network**

### **4.1 *Potential Role and Characteristics of the Network***

On potential role and characteristics of the Network, the meeting in their deliberations came up with the following:

#### **i) Enabling environment:**

- Policy issues
  - Thresholds for the adventitious presence of GM
- The need for public awareness
- Importance of having functional National Biosafety Frameworks
- Information exchange
- Networking between GM detection expertise in Africa and other networks
- The need for setting goals and priorities for the laboratory by countries

#### **ii) Potential Role of the Network:**

The following were suggested as potential role of the Network:

- Help with equipment and reagent procurement
- Development of standards for GM detection within the region
- Opportunities for research in collaboration with other institutions funding and training

#### **iii) Characteristics of the Network:**

- Non-Political
- Participation should be voluntary
- Non-Prescriptive
- Participation should be endorsed by the Managing Authority of the Laboratory and National Biosafety Focal Point
- Provide Technical Support for GMO Testing
- Establish Guidelines for Best Practice in GMO Testing
- Facilitate Training in GM Detection
- Organize Proficiency Testing between Participating Laboratories

### **4.2 *Needs for the Network:***

#### **a) Expectations of the network by participants:**

- Representation
- Terms of reference
- Harmonisation and standardisation
- Unity of purpose

- Info & expertise sharing
- Mentorship & Technical guidance
- Bulk procurement
- Establishing functionality – proficiency testing
- Technical back-stopping
- Technical contributions to international discussions
- Resource mobilization
- Partnerships, collaboration and exchange among laboratories

**b) Objectives of the Network:**

- To build and strengthen capacities for GM detection in Southern Africa
- To establish guidelines and harmonised methods for sampling and GM detection in Southern Africa
- To facilitate training in GM detection to help network laboratories achieve minimum standards
- To achieve international recognition in GM detection in all participating laboratories
- To compile technical guidance papers on GM detection issues
- To establish links with other international GM detection laboratories and networks as well as other institutions
- To establish an interactive communication platform for GM detection laboratories in Southern Africa
- To establish inter-laboratory collaboration between GM detection laboratories of the Network
- To mobilise resources to support the activities of the Network

**c) Stakeholder mapping:**

- Network partners:
  - Active participating laboratories are the stakeholders
- Potential partners
  - Donors
  - Other laboratory networks and laboratories
  - Standards setting bodies
  - Other local/international bodies and institutions

**d) Structure of the network:**

- Laboratories must be represented equally
- Central coordinating reference laboratory (the HUB) and participating laboratories (NODES)
- Laboratories nominate a participant (and an alternative) to participate in the Network

- Consensus on policy issues regarding the Network (priorities, funding, impartiality, participation, info sharing)
- Network is operated in partnership with RAEIN-Africa

**e) Modus Operandi:**

- Annual Network meetings
- An established e-platform (technical discussion groups, guidelines, news updates, resources identification)
- Annual reports, quarterly/bi-annual Network newsletter

The participants set the following priorities for the GM detection network:

- Establishment of a website – blog site
- Information circulation – links to protocols guidelines
- Active communication – information sharing between the labs
- Training – technical competence in each lab
- Guidelines on protocols
- Proficiency testing (in 2011)
- Strategic planning for post 2011

**Name of the Network:**

After deliberation, the participants agreed on naming the Network as the Southern African Network of GM Detection Laboratories (SANGL).

## **5. Official launch of the South African Network of GM Detection Laboratories (SANGL)**

On the evening of the second day of the workshop RAEIN-Africa Secretariat held a cocktail at which the SANGL was launched by the Zimbabwe Science and Technology Minister Professor Heneri Dzinotywei. Top scientists, policy-makers and other development activists from SADC countries and members of the diplomatic call based in Harare attended the launch.

Professor Dzinotywei in his speech hailed RAEIN-Africa, Prof Chris Viljoen of the University of the Free State and Dr. Garwe of the Tobacco Research Board of Zimbabwe for spearheading efforts to establish the Southern African Network for GM Detection Laboratories. He said, “Co-operation, exchange of information and knowledge sharing was critical for researchers here in the SADC region. This is the kind of thing we should be doing. It requires us to take initiatives to advance these aspects pertaining to the areas of our

specialisation”. He further urged scientists to be proactive and advance key research findings to the SADC desk on science and technology and should take the Network seriously. Look at themselves as advisors, and not wait for anybody to tell them what to do.

Professor Viljoen, the Principal Investigator leading SANGL, in his vote of thanks said African scientists must now arise and take their rightful place in the global community in terms of GM detection. He further added that we need to develop our own mechanisms to validate GM detection methods and that Africa must not be a follower but also become a leader in GM detection.