The state of GMO analysis in Africa including regional networks

Chris Viljoen

Basic Needs and Gaps for GM detection in Africa

- No technical support for GM detection
- No mechanism for cooperation between GM detection laboratories
- No guidelines for best practice / minimum criteria
- No mechanism to facilitate training
- No proficiency appraisal of laboratories
- No links with other Networks

Regional GM detection Networks in Africa

- West African informal Network
- East African informal Network
- Southern African Network

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SOUTHERN AFRICAN NETWORK FOR GM DETECTION LABORATORIES

Participating Countries

- Botswana
- Namibia
- Madagascar
- Malawi
- Mozambique
- Swaziland
- South Africa
- Tanzania
- Zambia
- Zimbabwe

17 laboratories

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SANGL Coordination

- **Chris Viljoen (South Africa)**
- **Dahlia Garwe (Zimbabwe)**

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Characteristics of the Network

- **Non-political**
- **Participation is voluntary**
- **Non-prescriptive**
- **Participation is endorsed by the managing authority of the laboratory and the National Biosafety Focal Point**

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Structure of the Network

- **Laboratories are represented equally**
- **The Network consists of a central coordinating reference laboratory (HUB) and participating labs (NODES)**
- **Laboratories nominate a participant in the Network**
- **Decision making is based on consensus**
- **Network is not limited to but operated with logistical support from RAEIN-Africa**

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SANGL Objectives

1. To build and strengthen capacities for GM detection
2. To establish guidelines and harmonised GM detection methods
3. To achieve international recognition in GM detection
4. To compile technical guidance papers on GM detection

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SOUTHERN AFRICAN NETWORK FOR GM DETECTION LABORATORIES

SANGL Objectives cont.

5. To establish links with other international GM detection laboratories and Networks
6. To establish an interactive communication platform for SANGL laboratories
7. To establish inter-laboratory collaboration between SANGL laboratories
8. To mobilise resources to support SANGL activities

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SANGL Activities

- **2009: Workshop to establish SANGL**
- **2010: Training workshop in GM detection**
- **2011: Strategic planning workshop and training in quality management**
- **2012: 1st Proficiency round**

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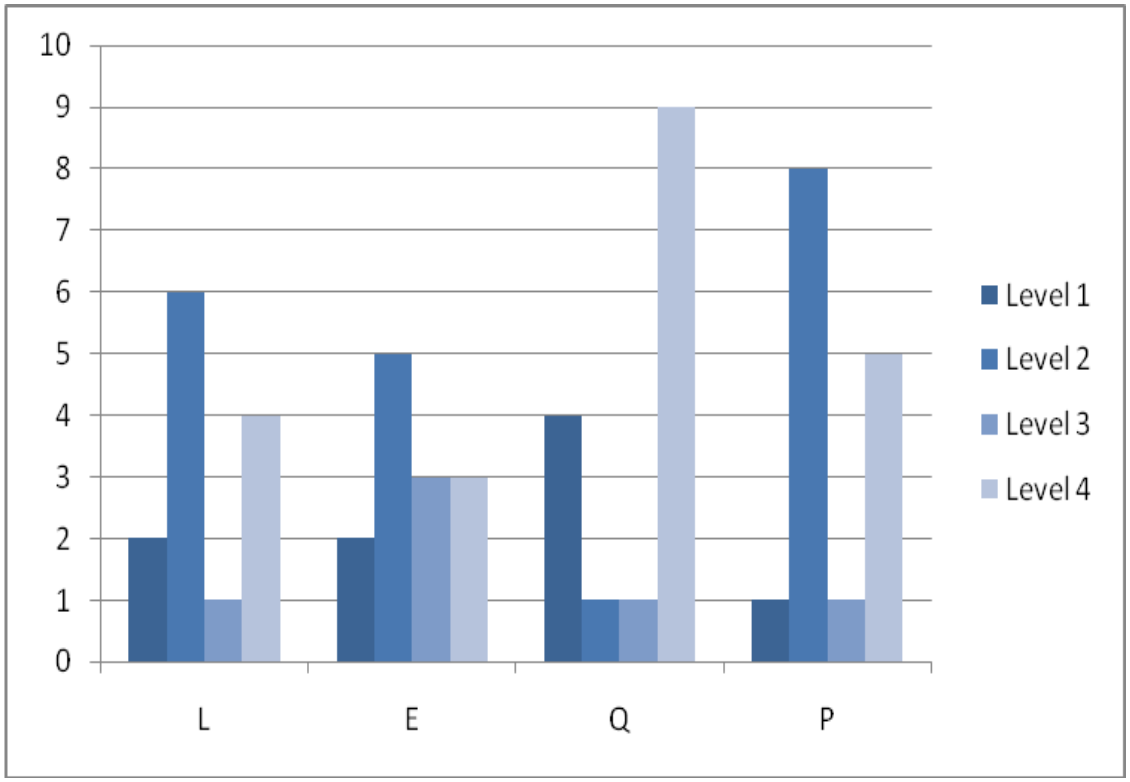
Mapping the status of SANGL laboratories

Status Level	Functional level of laboratory (L)	Equipment (E)	Quality Management Documents (Q)	Expertise of personnel (P)
1	Laboratories that can perform PCR based GMO screening and Real-time PCR GMO quantification	• PCR System • Real-Time PCR System • Gel electrophoresis • Gel documentation system • Optional: ELISA Plate reader	Quality system that includes a quality Manual, safety manual and standard operating procedures	Personnel are trained in PCR based GMO screening and GMO quantification
2	Laboratories that can perform PCR based GMO screening	• PCR System • Gel electrophoresis • Gel documentation system • Optional: ELISA plate reader	GMO testing is performed according to validated methods	Personnel are trained in PCR based GMO screening
3	Laboratories that use strip and/or ELISA based testing to detect GMOs	• PCR System or ELISA plate reader	Methods are not validated	Personnel are trained in strip / ELISA testing
4	Laboratories that are not able to apply any form of GMO testing	• No specialized equipment	No methods	Personnel have no training

Summary of functional status of SANGL laboratories



L: Functional level of lab
E: Equipment
Q: Quality management
P: Expertise of personnel

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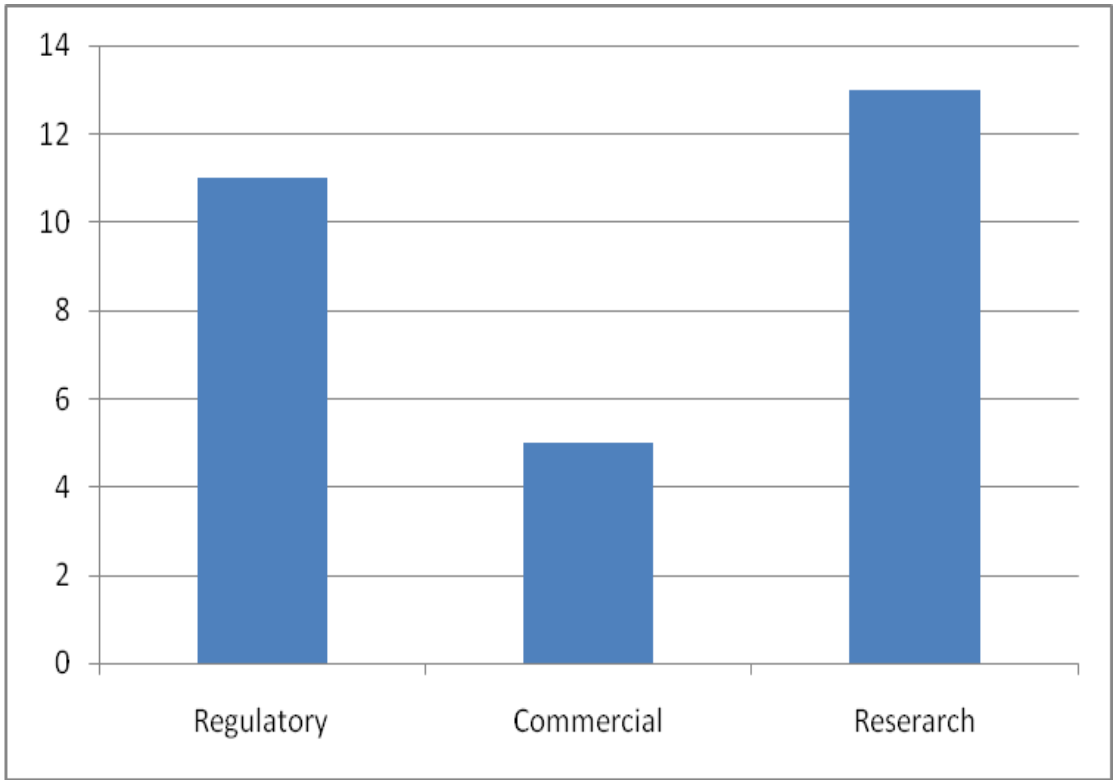
SOUTHERN AFRICAN NETWORK FOR GM DETECTION LABORATORIES

Summary of functional status of SANGL laboratories



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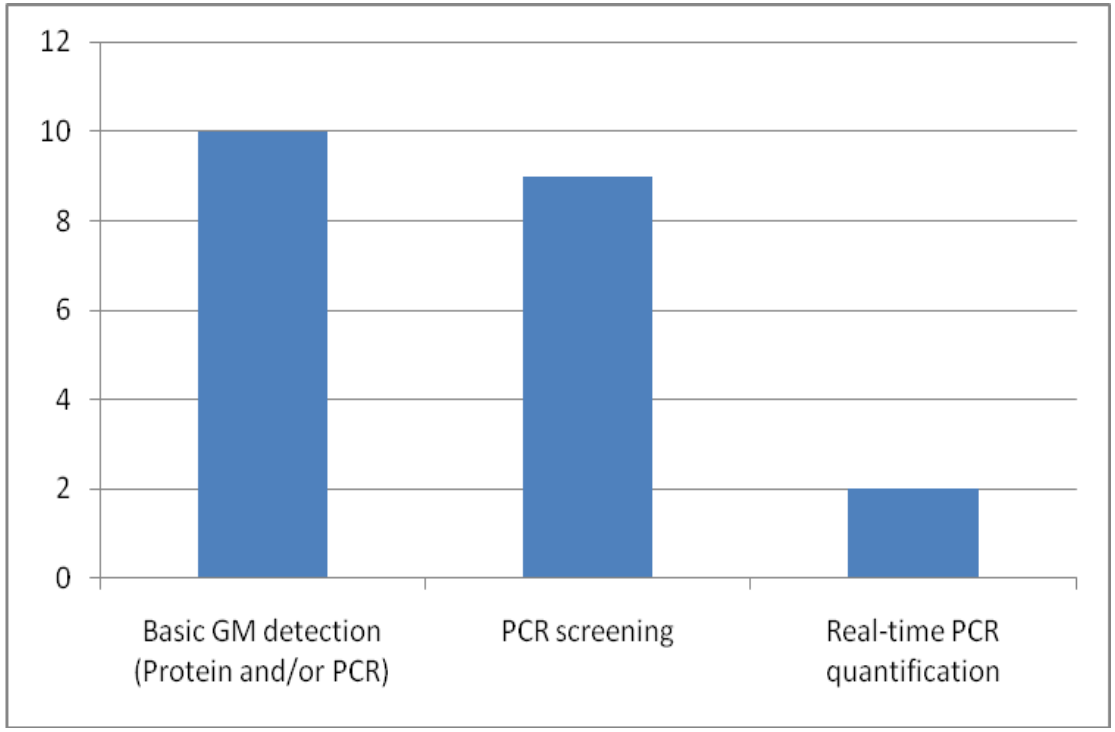
SOUTHERN AFRICAN NETWORK FOR GM DETECTION LABORATORIES

Summary of functional status of SANGL laboratories



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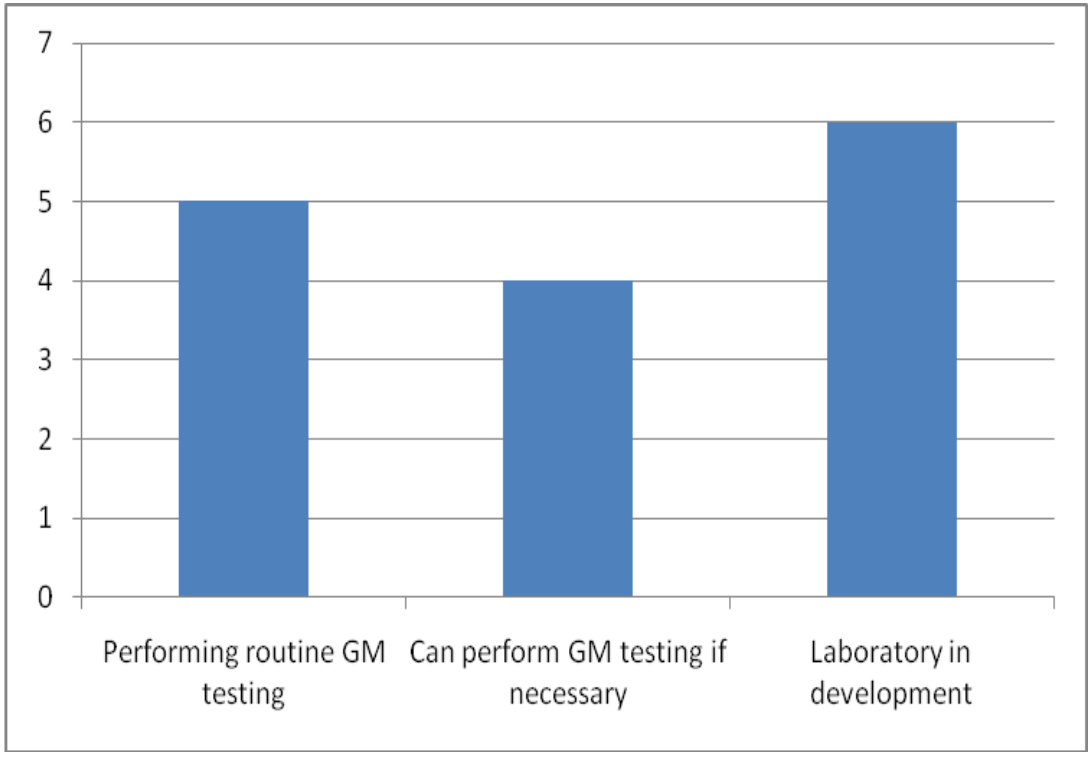
Summary of functional status of SANGL laboratories



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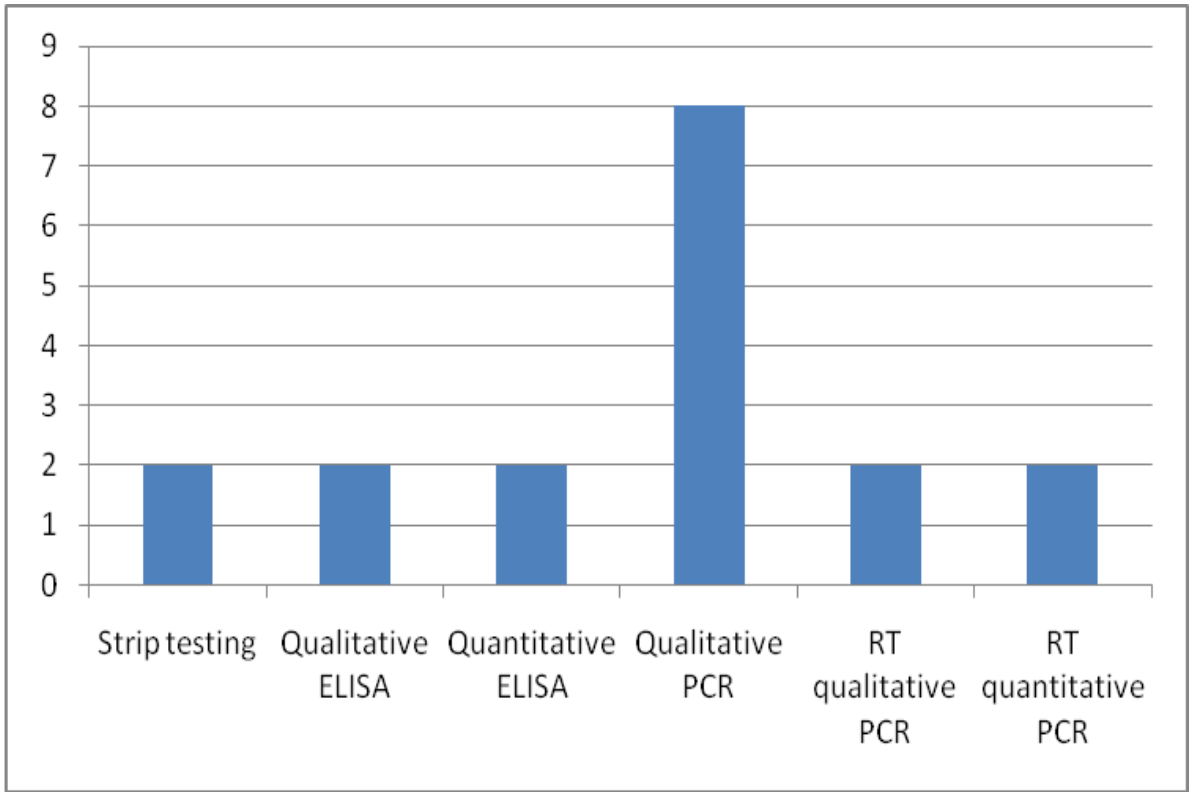
Summary of functional status of SANGL laboratories



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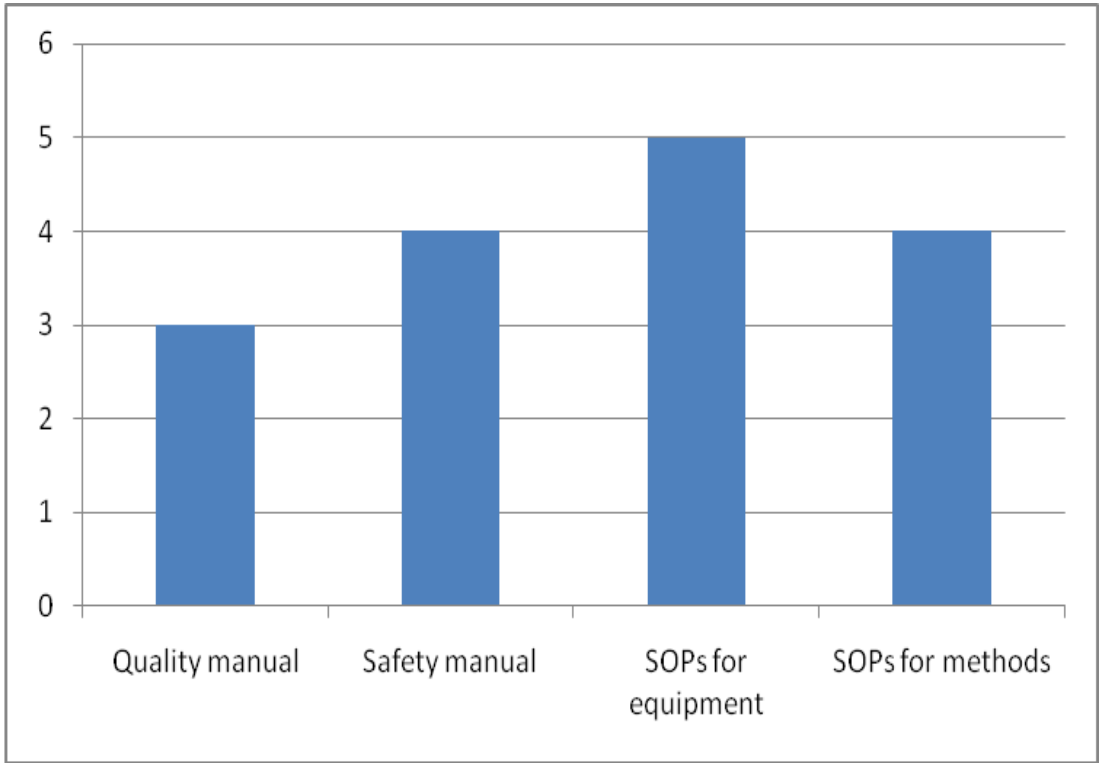
Summary of functional status of SANGL laboratories



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Conclusions

- SANGL laboratories are at different levels of progress
- Challenge: To provide different levels of support
- There is a continued need to support the development of expertise in GM detection

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Challenges

- **Mobilise resources to continue to maintain SANGL**
- **Mobilise resources to support SANGL activities**

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Training Workshop in GM Detection

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International Workshop of GMO-analysis networking
8 – 9 April 2013
JRC Ispra (VA) Italy

Regional meetings – Region **AFRICA**

Discussion point:

1. Forthcoming regional technical challenges for GMO analysis

Outcome of the meeting:

- **Different laboratories are at different levels in terms of capability, infrastructure and expertise**
- **Need for regional capacity building in GM detection**
- **Need for infrastructure development in some countries**
- **Lack of commercial product support and access to equipment and reagents in some countries**
- **Lack of a mandate to perform GM detection in terms of regulatory frameworks in some countries**

International Workshop of GMO-analysis networking
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Regional meetings – Region

Discussion point:

2. Regional needs to meet these challenges

Outcome of the meeting:

- **Infrastructure development where necessary**
- **Capacity building:**
  - **GM detection**
  - **Lab management and quality management**
- **Need to develop regional Networks to support GM detection capacity building initiatives**

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Regional meetings – Region

Discussion point:

3. Road map / Prioritisation of necessary actions

Outcome of the meeting:

- **Actions that need to be prioritized at regional level:**
  - **Political awareness development**
  - **Mapping of labs involved in GM detection in terms of capacity, infrastructure, expertise and capacity building needs**
  - **Developing regional networks through capacity building**

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Regional meetings – Region

Discussion point:

4. Next steps at regional level / training needs that JRC could help to meet

Outcome of the meeting:

- **Continue with "Train the trainer" approach**
- **Training depending on level of expertise of the lab:**
  - **Sampling, DNA extraction, GM detection, GM quantification, data management, lab management and quality management**
- **Follow-up training with proficiency trials targeted to the level that would be relevant to that region/group of labs**

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Regional meetings – Region

Discussion point:

5. Identification of up to 3 regional representative(s) as contact person(s)

Outcome of the meeting: (4 regions identified)

- **West Africa: Ousmane Koita (Mali)**
- **East Africa: Joyce Malinga (Kenya)**
- **Southern Africa: Chris Viljoen (South Africa)**
- **Central Africa: Roger Darmam (Cameroon)**

- **African Union as cc in communication**