SANGL

SOUTHERN AFRICAN NETWORK FOR GM DETECTION LABORATORIES

GMO Detection Training of Trainers Workshop

Free State Univerity,
Bloemfontrien, South Africa
27-30 September 2010

CONTENT

ACRONYMS

DNA	Deoxyribonucleic acid
GM	Genetically Modified
GMO	Genetically Modified Organism
RAEIN-Africa	Regional Agricultural and Environmental Initiatives Network -Africa
PCR	Polymerase Chain Reaction
SANGL	Southern African Network for GM Detection Laboratories

1. Background

The Southern African Network for GM Detection Laboratories (SANGL) was launched in Harare, Zimbabwe in November 2009 with the aim of providing technical support for Genetically Modified Organism (GMO) Testing, establishing guidelines for best practice in GMO testing, organizing proficiency testing between participating laboratories and also facilitating training in GMO Detection. Participating laboratories were endorsed by the Biosafety Competent Authorities of their respective countries. In fulfillment of one the network objectives, which is to build competency in testing for GMOs in the Southern African Region, the Regional Agricultural and Environmental Initiatives Network -Africa (RAEIN-Africa), in collaboration with the University of Free State and the Tobacco Research Board held the first "Training of Trainers workshop" in GMO detection from 27 to 30 September 2010 at the University of the Free State, Bloemfontein South Africa.

Objective of the Workshop

The objective of the workshop was to train trainers in qualitative and quantitative GMO detection and participants were expected to share the gained knowledge and expertise with others in their respective countries.

Trainers

The trainers for the workshop were Prof C. Viljoen, Ms G. Marx (University of the Free State, South Africa) and Dr D. Garwe (Tobacco Research Board, Zimbabwe).

2. Opening of the Training Workshop

2.1 Welcome Remarks

Professor Chris Viljoen started proceedings by welcoming all participants to Bloemfontein and to the Free State University in particular. He expressed the hope that all had travelled safely from their respective countries and had found the accommodation provided of a high standard. The participants then introduced themselves and expressed their expectations from the workshop given below:

Participants Expectations:

- Learn more on the practical aspects of GMO detection
- Sampling for GMO detection
- Use of the Real-Time Polymerase Chain Reaction (PCR)

- Quantification of GM content and Challenges
- Learn how to control Contamination
- Progress on the Network Website and support structures
- Information on Accreditation

2.2 Opening Remarks

The Acting Regional Director for RAEIN- Africa, Dr. Phumzile Dlamini welcomed all to South Africa and conveyed greetings from Mrs Doreen Shumba-Mnyulwa, the Regional Director. In her opening statement, the Acting Regional Director of RAEIN- Africa, Dr Phumzile Dlamini, informed the meeting that the launch of the Network in Harare was considered only the beginning and that there were hopes that the Network would be able to mobilize the necessary resources for its continued existence. She expressed the hope that the workshop participants would consider how Network functions could be maintained in the future and how the Network could garner the active support of most countries in the region. She also encouraged participants to discuss how to market SANGL not only regionally but also internationally. Dr Dlamini informed the meeting that a RAEIN-Africa delegation would be attending the fifth Conference of Parties serving as the Meeting of Parties and that this platform would be utilized to market the Network.

3. Training Programme

The training covered the following topics:

i. General introduction to GMOs and GM detection
ii. Introduction to sampling
iii. Introduction to extraction and purification
iv. Introduction to PCR based GM detection
v. Introduction to Qualitative real-time PCR
vi. Introduction to PCR test performance Criteria

Introductory presentations to each exercise were followed by hands-on practical sessions on GM detection and plenary sessions for clarifications on each exercise, discussion of results and sharing of experiences on GM detection (Annex 3 page 3)

4.0 Issues Arising From the Training Workshop

During plenary sessions some of the issues which generated a lot of discussion were sampling from large quantities, practical threshold limits for GMO content, the role of GMO detection in the regulatory system and accreditation of laboratories:

- On **sampling** prior to GM detection, participants were advised that laboratory personnel working in GM detection should ideally not also be responsible for sampling as this may introduce bias.

- Participants were informed that there is no system in the world that can detect all GMOs

- **Sample preparation**: Proper homogenization of the sample was a critical step in order to reduce particle size and therefore increase chances of detecting genetic modification. Dilution of samples after extraction ameliorated inhibition

- It was acknowledged that sometimes **extraction of good quality Deoxyribonucleic acid** (DNA) from treated seed samples could be difficult and dilution of the isolated DNA could be used to make it more amplifiable

- Regarding interpretation of bands on gels, participants it was explained that the brightness of a band on a gel after conventional PCR had no bearing on the initial amount of GM material in the sample.

- Laboratory waste disposal was discussed as well as the use of gloves, pipettes tips and gels etc in the laboratory.

- Regarding practical **threshold limits for GMO content**. It was pointed that if a GMO is illegal in a particular country, then the tolerance level would be zero unless specific provision was made for tolerance levels of illegal GMOs.

- Regarding the role of **GM detection in the regulatory system**, participants were informed that this has no bearing on the safety of GMOs, since the latter is a regulatory issue that required risk assessment. However, it was also noted that GM detection should play a supportive role in the regulatory system in monitoring for illegal GMOs that have not undergone risk assessment. Professor Viljoen emphasised that GM detection laboratories should take a neutral stand towards GMOs and not be drawn into debates on the merits or other consideration thereof. It was also noted that it was important to maintain confidentiality when working with client samples.

- On the **accreditation** of SANGL members by registered Accreditation Bodies, participants were informed that this was voluntary. However, SANGL laboratories were encouraged to ensure that results obtained are credible. As a result, GM

detection laboratories should have the following minimum documentation including a quality manual, a safety manual and standard operating procedures. Each laboratory was encouraged to develop its own manuals based on laboratory capacity. The Coordinators of the Network pledged to assist any of the member labs going through the processes of accreditation.

- It was suggested that SANGL could consider establishing **proficiency testing** among its members as well as introduce some form of accreditation.

- Regarding the **future of SANGL**, member laboratories were asked to make the relevant different government departments with a potential interest in SANGL including, Science, Technology, Agriculture and Environment, aware of SANGL to facilitate discussion on the future of SANGL with Southern African Development Community countries.

5. SANGL Activity/Meeting for 2011

The next SANGL activity a workshop on proficiency testing for laboratories was scheduled for the end of second quarter (i.e. end of June 2011)

6. Workshop Evaluation

Participants were requested to evaluate the workshop (Annex 2). Most participants (over 88%) either agreed or strongly agreed that the materials were presented in an organised and easily understood manner and also that the sessions increased the knowledge and understanding of the subject. However, the Introduction to quantitative real time PCR session was less understood by about 18% of the participants. In terms of general organisation, 35% of the participants expressed dissatisfaction with the transport arrangements in Bloemfontein and another 53% were not entirely happy with the tea and lunches provided.

Participants also suggested that the workshop should have been for a longer period and that practical sessions should have been done in smaller groups. It was also suggested that training workshops should be held in each participating country in order for all participants to fully benefit and increase numbers of trained human resources. However, the general sentiment was that the workshop was well organised and that participants gained knowledge on GM detections.

7. Closing Remarks

Prof Viljoen thanked everyone for active participation and sharing of experiences. He said he was privileged to have a dedicated support team who made the arrangements for the training possible. He noted that it was a momentous occasion considering how far the Network had come. He pointed out that SANGL is not a donor agency but consists of the Network members and that the success of the Network depended on their contributions. Members were also encouraged to make their governments aware of the existence of SANGL so that the Network could achieve greater prominence, especially in discussions on future sustainability. In conclusion Prof Viljoen commended Dr. Garwe, Co-coordinator and the RAEIN-Africa Secretariat for good collaboration and support.

Dr Garwe thanked Prof Viljoen and his team for all the hard work that had gone into putting together the workshop that ensured its success. She also thanked the participants for their full participation during the workshop and encouraged Network members to continue communicating with the coordinators and each other in order to ensure the growth of SANGL

Dr Diana Earnshaw, speaking on behalf of the participants, thanked RAEIN-Africa for the funding which made the training possible. She acknowledged that the labs were all at various levels in GM detection implementation but pointed out that the manner in which the workshop had been conducted made it easy to achieve the objectives. She encouraged all participants to help SANGL grow and noted that there were two laboratories (at Free State University, and the Tobacco Research Board) that could be used for support. Lastly she thanked the coordinators for the training.