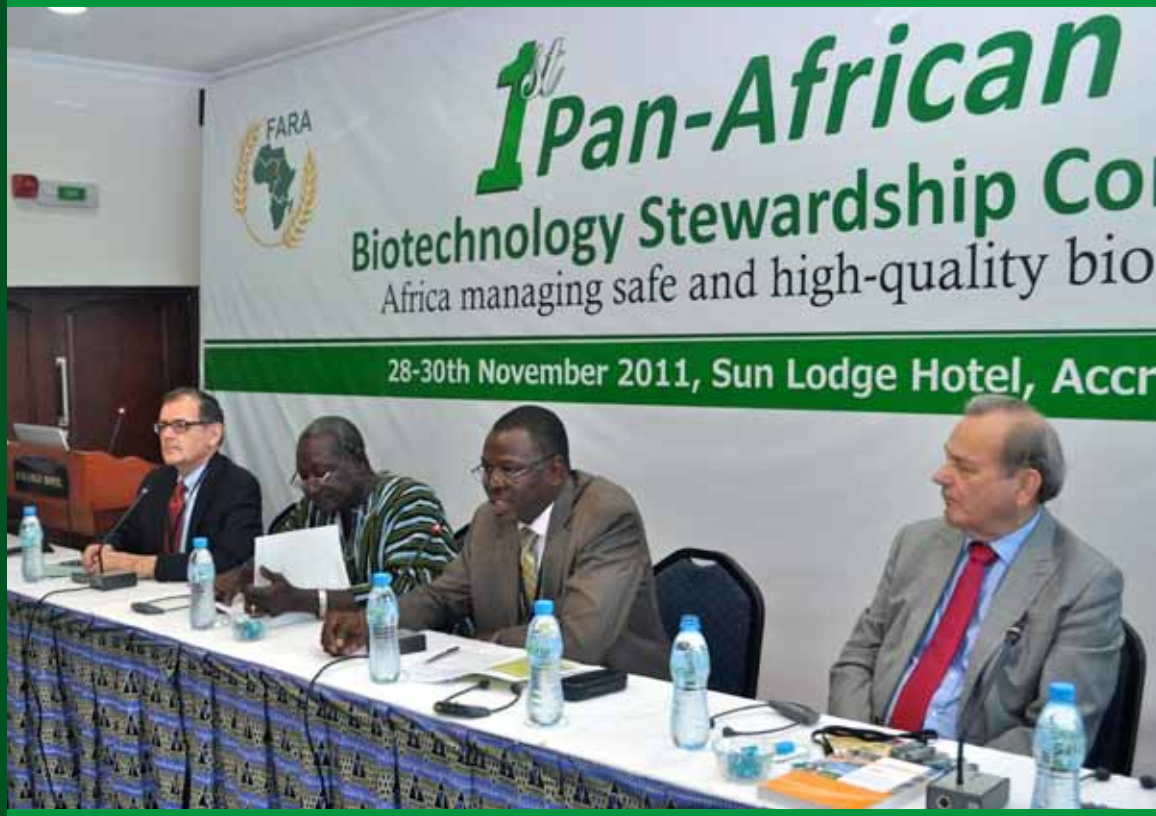
FARA
Forum for Agricultural Research in Africa

S A B I M A

END OF PROJECT REPORT

2009–2012



Acronyms and abbreviations

ABBPP	African Biotechnology and Biosafety Policy Platform
BioERoc	Biotechnology-Ecology Research and Outreach Consortium
Bt	*Bacillus thuringiensis*
CAMA	Consumer Association of Malawi
CEPA	Centre for Environmental Policy and Advocacy
CISANET	Civil Society on Agriculture Network
DARS	Department of Agricultural Research Services
EAD	Environmental Affairs Department
FARA	Forum for Agricultural Research in Africa
FANR	Food, Agriculture and Natural Resources Directorate
FUM	Farmers Union of Malawi
GMO	Genetically Modified Organism
MBC	Malawi Broadcasting Corporation
NASFAM	National Smallholder's Farmers Association of Malawi
NBRC	National Biotechnology Regulatory Committee
RAEIN- Africa	Regional Agricultural and Environmental Initiatives Network- Africa
SABIMA	Safe Biotechnology Management in Subsahara Africa
SADC	Southern Africa Development Community

SABIMA

END OF PROJECT REPORT

2009–2012

Forum for Agricultural Research in Africa
12 Anmeda Street, Roman Ridge,
PMB CT 173, Accra, Ghana
2015

Citation:

FARA, 2015. *SABIMA End of Project Report 2009–2012*. Forum for Agricultural Research in Africa (FARA), Accra, Ghana.

Forum for Agricultural Research in Africa (FARA)
12 Anmeda Street, Roman Ridge
PMB CT 173, Accra, Ghana
Tel: +233 302 772823 / 302 779421
Fax: +233 302 773676
Email: info@fara-africa.org
Website: www.fara-africa.org

ISBN 978-9988-1-4000-4 (print)
ISBN 978-9988-0-4001-2 (pdf)

Images of maps on back cover and inside pages: Wikimedia Commons

Cover photo:
Opening Session, First Pan-African Stewardship Conference. Seated left to right: Dr Marco Ferroni (SFSA), Vespa Suglo (MoFA), Dr Ramadjita Tabo (FARA) and Prof Sir Gordon Conway (Imperial College).

Editing and design: BluePencil Infodesign (www.bluepencil.in)
Printing: Pragati Offset Pvt Ltd (www.pragati.com)

Contents

List of main text tables

Acknowledgements

The project on 'Strengthening the capacity for safe biotechnology management in sub-Sahara Africa' (SABIMA) has been one of the flagship projects in FARA and the first to roll out of the Agricultural Biotechnology and Biosafety Policy Platform (ABBPP) hosted by FARA's Networking Support Function 1/3 that deals with advocacy and policy. The largest component of the SABIMA project addressed building the capacity for management of biotechnology to ensure a quality product. The project, that stretched from 2009–2011, has been a success, judging from the positive reactions of its beneficiaries and the requests for extended coverage, should FARA succeed in finding funding support for a second phase.

The project has been a successful partnership story, thanks first of all to Dr Marco Ferroni, Executive Director of the Syngenta Foundation for Sustainable Agriculture (SFSA),who, after numerous discussions between the both of us and our technical teams, went on to develop and provide funding for the project. It has also been the first of its kind in Africa to deal with biotechnology stewardship and, following success, has become a candidate for SABIMA2.

I wish to express FARA's gratitude to the SFSA for their funding and technical support. In the latter, the collaboration between the SFSA Technical Adviser, Dr Vivienne Anthony, and FARA's Project Coordinator, Prof Walter S. Alhassan. has been exemplary.

The project is grateful for the leadership role of the SROs, namely CORAF/WECARD (a project signatory) and ASARECA (which actively participated in all project meetings). The project focal persons in the participating countries of Burkina Faso, Ghana, Kenya, Malawi, Nigeria and Uganda led implementation in their countries. They stayed on the project for the duration of its three years and showed a keen sense of dedication. The project would not have been successful without this dedication.

My special thanks to the Project Coordinator, Prof Walter Alhassan and Courage Dzormeku, his assistant. The immense cooperation from FARA's Communication team, led by Eric McGaw, and Finance representative, Vesta Nunoo, is greatly appreciated.

We thank all of those who, in diverse ways, made the SABIMA project such a success.

Prof Monty Jones
Executive Director
FARA

Executive summary

Introduction

The project 'Strengthening capacity for safe biotechnology management in sub-Sahara Africa' (SABIMA) was initiated to strengthen Africa's capacity in sound biotechnology management for enhanced food security. Syngenta Foundation for Sustainable Agriculture (SFSA) provided c. USD 1.2 million of funding to FARA (Annex 3), technical assistance and connectivity with stewardship experts in private sector organizations. The target countries were Burkina Faso, Ghana and Nigeria in West Africa, Kenya and Uganda in East Africa and Malawi in Southern Africa. The project duration was July 2009 to March 2012. The prime objectives were biotechnology and biosafety information gathering and dissemination, teaching biotechnology stewardship and awareness creation and advocacy for biotechnology with stewardship. Stewardship capacity building was the main thrust of the project and accounts for its uniqueness in Africa.

Stewardship capacity building and implementation

Within each project country, a focal person and a deputy received training as Train-the-Trainers (ToTs) from Dr Patrick Rudelsheim (Perseus Consulting, Belgium). Thirteen focal persons were certified as ToTs by FARA. These stewardship leaders in turn trained other professionals in their project countries to implement the best practices. The consultant trained the 13 ToTs and the first 103 persons in the various countries and these received certificates of course attendance. During the project, the ToT's trained a total of 1412 persons across their six project countries. The biotechnology stewardship training activities were organized in three modules as follows:

- Module 1, the longest, covered the basic principles of biotechnology stewardship
- Module 2 focussed on communication, event management, stewardship policy formulation and a review of Module 1
- Module 3 provided training in verification and audit procedures.

The year 2009 was committed to project establishment – staff recruitment, management structures, project marketing to partner countries and the start of training. 2010 was the year in which a solid foundation for biotechnology stewardship was built. 2011 was the year of change management in which the stewardship principles learnt were applied in project countries and case studies were generated. Four inter-country peer review visits and reports were completed from the third quarter of 2011 to the first quarter of 2012 (Table 1 and Annexes 1 and 2).

All the training course materials[1] and summary reports from the peer review visits are publicly available on FARA's website (www.fara-africa.org).

FARA and every target country developed a biotechnology stewardship policy to facilitate consistency and alignment of implementation in their countries. Table 2 summarises and quantifies the core components of stewardship policy formation, training and implementation in institutions during SABIMA.

Project expenditure

The budget for the three year programme was USD 1.265 million and the actual amount spent was USD 1.187 million (94% of the budget) (Table 3). A further USD 20,000 was provided in 2011 to FARA to co-sponsor the first Pan-African Stewardship Conference. This conference (which was held to show-case the outputs and learning from SABIMA) was not part of the original project concept but emerged due to the productivity and enthusiasm of the stewardship leaders in the countries and the project co-ordinator at FARA.

Table 1. Matrix of peer review visits

Date of visit	Name of visitor	Country of visit	Institution visited	Subject area of report
12 July 2011	Dr Oumar Traore	Uganda	NARO	Laboratory, greenhouse
14–15 July 2011	Dr Mohammed Ishiyaku	Kenya	KARI	Greenhouse CFT-GM Cassava
8 September 2011	Dr Marian D Quain	Nigeria	NRCRI	Laboratory, greenhouse CFT- Cassava
20–21 March 2012	Dr Weston Mwase	Kenya	KARI	Laboratory, greenhouse, screenhouse, CFT-Cassava

1. http://www.fara-africa.org/our-projects/sabima/course-content/

Table 2. Policy development and stewardship training during SABIMA

Country	Stewardship policy formation (date launched)	Policy adoption (Number of institutes)	Number of stewardship leaders	Number of personnel trained	Stewardship training implementation (number of institutes)		Number of Standard Operation Procedures (SOPs) created
					Best practices implemented	Additional outreach needed	
FARA	23 March 2010	NA	2	4	NA	NA	NA
SROs	CORAF	NA	1	1	NA	NA	NA
Burkina Faso	3 Dec. 2010	1	2	123	1	3	22
Ghana	8 April 2010	2	6	595	4	9	23
Nigeria	22 Nov 2010	3	3	88	3	12	9
Kenya	5 Nov 2011	2	2	188	2	3	12
Uganda	Pending	1	2	280	1	3	9
Malawi	14 April 2011	1	2	236	2	3	1
Total		10	20	1515	13	33	76

Table 3. Project expenditure 2009-2012

Year number	Calendar year	Budget (USD)	Actual expenditure (USD)
1	2009	444 306	168 501
2	2010	394 584	417 871
3	2011	426 706	503 629
4	2012 (1Q extension)	117 000	97 142
Total		12 655 96	11 871 41 (94%)

First Pan-African Stewardship Conference

The conference was sanctioned at a crucial meeting held in March 2011 at the FARA Secretariat in Accra, Ghana between Prof Monty Jones, the Executive Director (ED) of FARA and Dr Marco Ferroni, the ED of SFSA during the SABIMA project review. Noting the satisfactory progress the project had made, the green light was given for holding the first Pan-African Stewardship Conference in Accra, Ghana and the start of concept note development for SABIMA Phase 2; the latter was meant for the consideration of both chief executives. The July 2011 SABIMA project mid-year review by focal persons, the SROs and project management teams from both FARA and the SFSA noted the progress made on the project including preparations towards the holding of the stewardship conference. The SROs, under FARA guidance, developed the

concept note for a SABIMA 2 initially for the consideration of SFSA. This was to be a two-year project covering ten countries.

An eight-member international steering committee comprising Walter S. Alhassan (SABIMA Project Coordinator), Eric McGaw (FARA Communications Expert), Vivienne Anthony (Special Adviser, SFSA), Paul Castle, (SFSA Communications Expert), Laura Johnson (SFSA Technical Assistant), Oumar Niangado (delegate of Syngenta, SFSA, Mali), Marian D. Quain (SABIMA Project Focal Person, Ghana) and Andrew Kiggundu (SABIMA Project Focal Person, Nairobi) constituted in 2010 developed the concept note and programmes for the conference. The First Pan-African Conference on Stewardship in Agricultural Biotechnology was held in Accra, Ghana between 29–30 November 2011. The theme of the conference was "Africa in search of safe and high-quality biotech crops". Highlights of the conference included the keynote address on the topic "Opportunities for biotechnology to contribute to African agricultural revolution, current GM products, prospects for Africa and the need for stewardship" and the presentation of case studies on stewardship by country researchers. The following eight case studies were presented in plenary:

1. *Incorporating stewardship practices into the development of genetically modified banana in Uganda*. Presenter: Dr Andrew Kiggundu, NARO, Uganda.
2. *Ensuring product integrity in transformed bananas through molecular verification*. Presenter: Mrs Saarah Nanyiti, National Agricultural Research Laboratories, Kawanda, Uganda.
3. *No need to panic when office data vanishes: A format for backing up information*. Presenter: Dr Marian Quain, CSIR-Crops Research Institute, Kumasi, Ghana.
4. *Preparations and running mock confirmed field trials*. Presenter: Dr Joyce Malinga, Kenya Agricultural Research Institute (KARI), Njoro, Kenya.
5. *International movement of in-vitro plantlets.* Presenter: Dr Marian Quain, CSIR-Crops Research Institute (CRI), Kumasi, Ghana.
6. *Using stewardship best practice approaches (CCP and SOP) to develop improved scientific practices: tsetse fly mass rearing*. Presenter: Dr Alex Egyir-Yawson, Biotechnology and Nuclear Agriculture Research Institute, Accra, Ghana.
7. *Conducting Bt cotton controlled release field trials with farmers in Burkina Faso*. Presenter: Dr Hamidou Traore and Mr Omer Hema, INERA, Burkina Faso.
8. *Tracking certified seed product integrity from contract production to grower*. Presenter: Mrs Grace Kaudzu, Department of Agricultural Research Services (DARS), Lilongwe, Malawi.

These cases and a further four examples of implementation of stewardship in countries were also presented as posters. A special booklet of these case studies in stewardship has been published on the FARA website[2].

2. www.fara-africa.org/media/uploads/File/sabima/agricultural_biotechnology_in_africa_-_stewardship_case_studies.pdf

The stewardship conference endorsed the call for the extension of the SABIMA Project into many other African countries. Apart from the SABIMA1 six countries, ten more countries, namely, Mali, Senegal and Cameroon for West and Central Africa; Rwanda, Sudan and Tanzania for East Africa and Mozambique, South Africa, Zambia and Zimbabwe for Southern Africa, have been identified for SABIMA2. Thus SABIMA2 will be comprised of the above 16 countries.

The stewardship conference made recommendations on stewardship outreach and implementation, stewardship leadership and SABIMA2 funding possibilities.

A detailed, colourful report emerging from the stewardship conference has been posted on the FARA website[3].

A SABIMA Project close-out meeting held between 1–2 December 2011 endorsed the addition of the 1 January to 31 March 2012 period to finish up the outstanding items on the work plan.

Project achievements

The results of the SABIMA Project thus far include:

- Report on the status of biotechnology and biosafety in sub-Sahara Africa with gaps in capacity needing to be addressed (FARA, 2011)[4].
- Comprehensive database on biotechnology and biosafety whose compilation has begun is on the FARA website[5]. This will fill the gap for such updates on a continuing basis. Data so far gathered has provided an objective basis for the selection of countries to be in a future SABIMA Project i.e. SABIMA2.
- Agricultural biotechnology stewardship policies have been created and communicated in all six participating countries. The policy of NARO in Uganda was awaiting ratification by senior management at the close of the project in November, 2011.
- A large number of persons (1,515) in project countries have received stewardship training in product development and are now involved in implementing the best practices. At least 50 have used these at the confined field trial stage only. Twenty five per cent (25%) of all trainees were women. Stewardship principles have been applied to both GM and non-GM crops as well as livestock/veterinary products. These are guided by the stewardship policy statements developed.
- Twelve African case studies in biotechnology stewardship have been published by FARA.
- The first Pan-African conference on stewardship in agricultural biotechnology. There were 70 participants**.** Sixty people attended from 14 African countries and ten international participants from the USA, UK, Belgium and Switzerland.

3. www.fara-africa.org. Click on 'publication'.
4. www.fara-africa.org/media/uploads/File/sabima/sabima_lowres1.pdf
5. Work is ongoing on this database.

- Institutions' management maintained focal persons on the project for the entire three-year project duration. This allowed for continuity and confidence building of the trained focal persons.
- Growing awareness on the importance of stewardship considerations in biotechnology in sub-Saharan Africa and also recognition of the broader applicability of Hazard Critical Control Point analysis (HACCP) and standard operating procedures (SOPs) to strengthen scientific excellence and safe practices for non-GM programmes in Africa.
- The Ghana Council for Scientific and Industrial Research-Animal Research Institute (CSIR-ARI) won international recognition as one of the best molecular diagnostic laboratories following a test conducted by the International Atomic Energy Agency (IAEA) in Vienna on 11 molecular diagnostic laboratories world- wide. This is the so called Ring Test conducted by the IAEA. CSIR-ARI is a stewardship best practice institute.
- FARA is recognised as the lead institution for agricultural biotechnology stewardship capacity strengthening in Africa. At the Partners and Stakeholders' Meeting on Biosafety Capacity Development in Africa in Entebbe Uganda between 19–20 March 2012, FARA/SFSA was tasked with the expansion of the project on "Strengthening the capacity for safe biotechnology management in sub-Sahara Africa (SABIMA)" that has stewardship as the core objective, to several other African countries. The meeting also endorsed FARA's plan to write the publication on stewardship in public institutions in Africa.

The SABIMA Project has been a success, as judged by the experience reported by countries on stewardship application to research. These are conveyed by the stewardship Case Study reports that have been published. The comprehensive database on biotechnology in Africa to be continuously updated is a unique contribution to planning activities. FARA's own assessment of the project delivery is detailed in Annex 2. The assessment was, in general, positive.

Future outlook

For purposes of safety and quality assurance, all GM crops and livestock products research and development activities should be underpinned by good stewardship practice. Training in stewardship and its application will need to be mainstreamed into product development at all phases of the product cycle. Continuous capacity building and linkage with the private sector biotech companies in quality assurance practices and updates is recommended.

The experience from SABIMA1 in the select African countries needs to be out-scaled to other African countries. This will require donor support. SFSA has a one-year bridge contract during 2012 to support FARA to maximise awareness of the outputs from SABIMA and to seek donor funding to initiate SABIMA2 in 2013.

Introduction

Sub-Saharan Africa faces, despite modest successes in selected countries, food insecurity problems. It is estimated (Bremner, 2012) that 240 million out of about 820 million people in the region are malnourished. A plethora of challenges related to inappropriate policy, increasing populations and consequent diminishing of family holdings, pests and diseases, conflicts, declining soil fertility and climate change phenomena (drought and floods) have all contributed to the challenges facing food security. Africa needs to engage modern farm practices in an appropriate policy framework to face up to the agricultural production challenges. Biotechnology, in combination with improved conventional techniques, has demonstrated the potential to enhance agricultural productivity as evidenced from over 15 years of modern biotechnology crop commercialisation (James, 2011). Despite the evidence of the safety of genetic modification (GM) biotechnology stakeholders are still hesitant about large-scale adoption of the same.

FARA has in place the African Biotechnology Biosafety Policy Platform (ABBPP) to strengthen capacity for the safe use of biotechnology for the benefit of resource-poor farmers in Africa. The ABBPP will create the platform on a continuing basis to strengthen Africa's capacity to safely harness biotechnology for the development of its agriculture.

The project on **"Strengthening capacity for safe biotechnology management in Sub-Sahara Africa (SABIMA)"** is the first of a series of projects to be developed under the ABBPP.

The SABIMA project has been introduced to strengthen Africa's capacity to build biotechnology management for enhanced food security.

The project was funded by the Syngenta Foundation for Sustainable Agriculture (SFSA) to a tune of USD 1,265,596 in addition to technical assistance given by the Foundation. The project came into being on 29 April 2009 with the signing of the contract agreement between FARA and the SFSA. It was expected to end on 31 December 2011. FARA provided overall project management and coordination with the SROs in the following six countries: Burkina Faso, Ghana and Nigeria for West Africa; Kenya and Uganda for East Africa and Malawi for Southern Africa.

The project was designed for coordination at the sub-regional level by the Sub-Regional Research Organizations (SROs), namely, West African Council for Agricultural Research and Development (CORAF/WECARD) for West Africa, Association for the Support of Agricultural Research in Eastern and Central Africa (ASARECA} for East Africa and the Southern African Development Community-Food Agriculture and Natural Resources Directorate (SADC-FANR) for Southern Africa. At start of the project, however, only CORAF/WECARD signed on the project as the SRO that had at least three countries from its sub-region participating in SABIMA. As a rule, the SROs require a minimum of three countries from their mandate region for their participation in a sub-regional project. ASARECA participated in all training sessions and meetings of the project but did not coordinate country activities. SADC-FANR was represented in meetings by Malawi, the only country from its mandate region.

1.1 Project objectives

The purpose of the SABIMA Project was to strengthen Africa's capacity for sound biotechnology management for enhanced food security.

The specific objectives of the project, as stated in the contract document, are:

a) Review the current status of agricultural biotechnology and biosafety in the key countries that are either commercialising or field testing genetically modified organisms in 2010.

b) Identify the capacity building gaps in these countries and the modalities for intervention and implement improvements.

c) FARA to develop policies, procedures and staff capability at both the FARA and the respective SRO levels to provide leadership in stewardship for the safe and effective use of agricultural biotechnology in these countries.

d) To identify, train and mentor stewardship leaders in FARA, the SROs and stewardship champions in each of these countries.

e) FARA, SRO and Countries stewardship leaders are to create an effective, informed network of experts with access to quality information and communication channels for advocacy and promotion of safe practices and agricultural biotechnology utility.

f) Enable FARA to establish itself as a leader in stewardship by creating an integrated programme of interventions with other capacity building organizations, using the best information from industry and the public sector.

Other aspects to be covered by the project relate to:

- Analysis of the state of biotechnology and biosafety in the selected countries and the sub-regions in general.
- Awareness creation in issues of biotechnology and its stewardship and biosafety through a series of risk communication activities.

1.2 Work plan and budget

The project work plan and budget details are presented in Table 4.

Table 4. Work plan and budget

Activity	2009					2010					2011				
	Q1	Q2	Q3	Q4	Budget $	Q1	Q2	Q3	Q4	Budget $	Q1	Q2	Q3	Q4	Budget $
Survey (consultant time, travel, per diem)					23,068					0					0
Stewardship consultants (time, travel. per diem)					75,000					50,000					50,000
Printing and publishing survey report					5000										
Identification of country project leader and Champions in countries, SROs and FARA group for stewardship. Some travel (1 FARA staff)					13,428					7,000					0
Stewardship training* at FARA HQ [three FARA staff, three SROs and six country (Project Coordinators)]					17,360					0					0
In country stewardship training*, six countries, decreased trainees after 2009. 2009 training preceded by mentoring.					65,100					32,000					32,000

Activity	2009					2010					2011				
	Q1	Q2	Q3	Q4	Budget $	Q1	Q2	Q3	Q4	Budget $	Q1	Q2	Q3	Q4	Budget $
Networking country stewardship trainees, SRO trainees and FARA stewardship group-involves exchange of experiences within and across countries; forming pressure groups to lobby governments, etc. Travel to three countries by FARA where necessary.					16,068					16,068					16,068
Advocacy for biotech and biosafety through country champs. (involves FARA support, travel for one staff)					34,836					34,836					34,836
Awareness creation, communicating biotech with stewardship and routine information dissemination on biotech and bio-safety (includes one day workshops/fora).					116,118					207,365					200,473
Support to fill gaps from biotech survey within scope of present study (e.g. kick-starting stalled operations of National Biosafety Committees; biotech information support needs; operationalising collaborative mechanisms among donors in biotech).										15,000					15,000

Activity	2009					2010					2011				
	Q1	Q2	Q3	Q4	Budget $	Q1	Q2	Q3	Q4	Budget $	Q1	Q2	Q3	Q4	Budget $
Monitoring activities in country. Involves correspondence and occasional travel					13,428					13,428					13,428
Project report															
Project coordinator and assistant's time in managing project including work plan development and oversight activities and report writing Draft proposal for next phase of study (areas to receive attention following survey conducted and following the initial three-year project);					64,900					68,837					64,900
Budget totals					**444,306**					**394,584**					**426,706**
Overall activity budget	**$1,265,596**														

*Includes exposure to IP and relevance to biotech industry and research."

1.3 Project management team

In September 2009, the following staff were either nominated or appointed to manage the project:

- Prof Walter S Alhassan — FARA Project coordinator
- Dr Patrick Rudelsheim — Perseus bvp, Belgium. Project Consultant for Stewardship Training
- Dr Marcel Nwalozie — Senegal, Consultant to undertake Status of Biotechnology/Biosafety Survey
- Prof Abdourahame Sangare — CORAF/WECARD SRO focal person
- Dr Charles Mugoya — ASARECA SRO focal person. Subsequently attended meetings and training sessions only
- Dr Vivienne Anthony — SFSA, Basel, Switzerland for Technical Support

Country focal persons:

- Dr Oumar Traore — INERA, Burkina Faso
- Dr Marian-Dorcas Quain — CSIR-Crops Research Institute, Ghana

- Dr Simon Gichuki — KARI, Kenya
- Dr Weston Mwase — Bunda College, University of Malawi, Malawi
- Dr Mohammed Ishiyaku — Institute of Agricultural Research, Ahmadu Bello University, Samaru, Zaria, Nigeria
- Dr Andrew Kiggundu — National Agricultural Research Organization, Entebbe, Uganda

Country focal person assistants/deputies:

- Dr Hamidou Traore — INERA, Burkina Faso
- Dr Ibrahim K Atokple — CSIR-Savanna Agriculture Research Institute, Ghana
- Ms Jane Otando — Ministry of Agric. Headquarters, Kenya
- Dr Yanira Ntupanyama — Environmental Affairs Dept Malawi
- Dr Chiedozie Egesi — National Roots Crops Research Institute, Umudike, Nigeria
- Dr Titus Alcai — NARO, National Crops Resources Research Institute, Namulonge, Uganda

Project Activities (2009–2012)

Project initiation

An important component of the project was the kick-off meeting 29–30 September 2009 involving the focal persons identified for the project from NARS member countries and the SROs. FARA management staff was also represented at the meeting. The purpose of the meeting was to gain a common understanding on the project, and draw country work plans and budgets.

Stewardship training

This was comprised of training the focal persons and their deputies, to constitute the Trainer-of-Trainer (ToT) team started in October 2009. The biotechnology stewardship training activities were arranged in modules starting with Module 1. Module 1, the longest, covered the basic principles of biotechnology stewardship, Module 2 covered communication, event management stewardship policy and the review of Module 1. Module 3 covered verification and audit procedures.

Formal stewardship training by the consultant ended in August 2010 with a total of 103 persons receiving training and FARA certificates. Thirteen of these (12 focal persons and their deputies and the FARA Project Coordinator) were certified as train-the-trainers (Annex 3). FARA's stewardship policy statement provided the template for all project countries to develop their own stewardship policy statements. Certified trainers continued with the in-country training

of various stakeholders in biotechnology stewardship. They also organized various awareness creation workshops on biotechnology, stewardship and biosafety.

A decision was taken at the consultant training close-out meeting in August 2010 for all course material to be put on the FARA website. A French translation of the training modules will be put on the FARA website for free access. A detailed biotechnology database was to be created and put on the FARA website in 2011. This database was to be updated on a continuous basis. A decision was taken to organize the First Pan-African stewardship conference on biotechnology in agriculture in 2011.

At the training close-out workshop held in August 2010, the trainer consultant presented the following impressions on the training:

- Recipients of training were largely regulatory-compliance oriented, i.e., excessive attention is paid to regulatory compliance.
- Many of the elements of good stewardship were in place in the trained institutions and included note taking, archiving, labelling, etc.

Ms Laura Johnson was recruited by SFSA as a Technical Assistant to Dr Vivienne Anthony, SFSA Special Adviser. She assisted the Project Coordinator with biotechnology database compiling for the FARA website and the drafting of stewardship case studies by the country focal persons.

2010 was the year in which a solid foundation for biotechnology stewardship was built. 2011 was the year in which these stewardship principles were applied.

2011, the last year of the project, was a very busy year. There was a critical mid-year review of the project by all focal persons, SROs, FARA project management and representatives of the SFSA on 18 and 19 July 2011 in Nairobi, Kenya. The Nairobi meeting reported on the status of project implementation and was updated on the status of the budget balances for various countries. The meeting received updates on the status of arrangements made for the first pan-African conference on stewardship in agricultural biotechnology. The 18-19 July mid-year review meeting was followed immediately by an SRO-led meeting on July 20 to develop a concept note for SABIMA2 that sought to out-scale the SABIMA1. This followed the acknowledgment by project country partners that SABIMA1 was a success based on the positive impact reported. The meeting developed a concept note for a proposed SABIMA2. The concept note development was further encouraged by positive signals from the meeting of the executives of FARA and SFSA in Accra in March 2011 that called for preparations towards the implementation of Phase 2 of the SABIMA Project and also endorsed the staging of the Pan-African conference on stewardship in agricultural biotechnology in Accra, Ghana. The SRO-led SABIMA2 Concept Note was for a two-year project in ten countries. This was designed mainly for SFSA funding support. The concept note was subsequently outscaled to four years with a plan to submit to donors other than SFSA.

At the project consultant training close-out meeting at the FARA headquarters in August 2010, a proposal was made to hold the First Pan-African stewardship conference on agricultural

biotechnology at the end of the project in 2011 to share country experiences in practising the stewardship principles learned. Preparation for the conference and the subsequent holding of the conference in November 2011 engaged attention of project managers at FARA and country level. The other major activities at country level were the completion of training exercises and various workshops on awareness creation and advocacy for stewardship in biotechnology and biosafety. Focal countries also brought to close efforts for a senior management-endorsed formulated stewardship policy document.

FARA was admitted in August 2011 as an Associate Member of the Excellence Through Stewardship (ETS) crop-based companies committed to good stewardship practices.

The year 2011 started on an upbeat note with the special visit of Dr Marco Ferroni, the Executive Director (ED) of SFSA, to the FARA Secretariat for discussions with Prof Monty Jones, the ED of FARA, on the project's preparedness for the stewardship conference and the way forward for the project after 2011. A special workshop was organized in which select focal persons from Ghana (Dr Marian Quain) and Kenya (Dr Simon Gichuki) made special presentations on SABIMA Project progress in their countries. The countries' achievements were adjudged commendable. Following the presentations the special meeting with the two executives endorsed the holding of the conference in Accra and advised the start of planning towards a SABIMA2 for the consideration of the SFSA and FARA.

1.4 The Pan-African Stewardship Conference

Preparation for the stewardship conference called for the constitution of an international steering committee for the concept note and programme development.

The following constituted the international steering committee for the conference:

1. Walter S. Alhassan- SABIMA Project Coordinator, FARA
2. Eric McGaw- Communications Expert, FARA.
3. Vivienne Anthony- Special Adviser, SFSA
4. Paul Castle- Communications Expert, SFSA
5. Laura Johnson- Technical Assistant, SFSA
6. Oumar Niangado- Delegate of Syngenta, SFSA, Mali
7. Marian D. Quain- SABIMA Project Focal Person, CRI-CSIR, Ghana
8. Andrew Kiggundu- SABIMA Project Focal Person, NARO, Uganda

One of the highlights of the conference was the keynote address by Prof Sir Gordon Conway of the Imperial College, London, on the topic "Opportunities for biotechnology to contribute to African agricultural revolution, current GM products, prospects for Africa and the need for stewardship" and the presentation of case studies on stewardship by country researchers. Eight case studies were selected for plenary presentation (Table 5) and four for poster presentation (Table 6) at the conference, making a total of 12 case studies. The case studies represented the

evidence of the stewardship trainees' understanding and practice of stewardship principles. They were the outcome of critical control point analysis at specific stages in the product cycle and the developments of Standard Operating Procedures (SOPs) to deal with problems identified or take pre-emptive action on problems that could arise.

Extensive interviews were held between the authors of the case studies and Ms Laura Johnson to present high quality cases and subsequently, the write-up was scrutinised for quality presentation at the conference and for publication in a volume edited by a committee comprising Ms Laura Johnson, Dr Vivienne Anthony, Prof Walter S. Alhassan and Dr Patrick Rudelsheim. This publication (Johnson et al, 2011) is available on the FARA website.

The First Pan-African Conference on Stewardship in Agricultural Biotechnology was held in Accra, Ghana on 29–30 November 2011. There were 70 participants from 14 African countries and representatives from the USA, UK and Switzerland. The conference theme was "Africa in search of safe and high quality biotech crops". The keynote speaker was Prof Sir Gordon

Table 5. Case studies for plenary and poster presentations

Country and presenter	Case study title
Mrs Sarah Nanyit, National Agricultural Research Laboratories, Kawanda, Uganda	Ensuring product integrity in transformed bananas through molecular verification
Dr Andrew Kiggundu, NARO, Uganda	Incorporating stewardship practices into the development of genetically modified banana in Uganda
Dr Marian D. Quain. CSIR-Crops Research Institute, Kumasi, Ghana	No Need to Panic When Office Data Vanish: Format for Backing Up Information
Dr Joyce Malinga, Kenya Agricultural Research Institute (KARI), Njoro, Kenya	Preparations and Running Mock Confined Field Trials
Dr Marian D. Quain, CSIR-Crops Research Institute (CSIR), Kumasi	International movement of in vitro plantlets
Dr Alexander Egyir-Yawson, Biotechnology and Nuclear Agriculture Research Institute, Accra, Ghana	Using stewardship best practice approaches (CCP and SOP) to develop improved scientific practices: tsetse fly mass rearing
Dr Hamidou Traoré and Mr Omer Héma, INERA, Burkina Faso	Conducting Bt cotton controlled release field trials with farmers in Burkina Faso
Mrs Grace Kaudzu, Department of Agricultural Research Services (DARS), Lilongwe, Malawi	Tracking Certified Seed Product Integrity from Contract Production to Grower

Table 6. Case studies for poster presentations only

Country and Presenter	Case Study Title
Dr Marian D. Quain, CSIR-CRI, Kumasi, Ghana	Screenhouse plant labelling and product integrity
Dr Mohammad Ishiyaku, Institute of Agricultural Research (IAR), Ahmadu Bello University, Samaru, Zaria, Nigeria	Ensuring purity and integrity of Bt cowpea seeds through effective labelling and record keeping
Dr Douglas Miano, NARO, Uganda	Multi-country project cooperation on hardening transgenic tissue culture cassava plantlets
Dr Joel Mutisya, KARI, Kenya	Management of gene flow in transgenic sorghum in contained biosafety greenhouse trials

Table 7. Countries proposed for the SABIMA 2 Project

Region/SRO	SABIMA countries	New countries (Phase 2)
West and Central Africa (CORAF/WECARD)	Burkina Faso Ghana Nigeria	Mali Senegal Cameroon
East Africa (ASARECA)	Kenya Uganda	Rwanda Sudan Tanzania
Southern Africa SADC/FANR (CCARDESA)	Malawi	Mozambique South Africa Zambia Zimbabwe
Total countries	6	10

Conway of the Imperial College, London. Among other things, the Pan-African Stewardship Conference endorsed the SRO concept for a SABIMA2 but called for more country participation in the project. Consequently, there was a further up-scaling of the project countries to 16 (Table 7) with an increase in the indicative budget to USD 5 million.

1.5 Stewardship conference recommendations

Stewardship outreach and implementation

1. **Country participation in SABIMA Phase 2** – Senegal and Mozambique to be fast-tracked into the scaled-up SABIMA programme. Funding to be found for all African countries that meet the entry criteria and wish to participate.
2. **Seed system stewardship** – Stewardship is required for product development processes, especially the seed system. Involvement of seed producers and companies should be sought along with support for SOP generation for seed production and marketing, in liaison with the regulatory authorities.
3. **BecA capacity building** – BecA to be engaged in supporting scale-up of the stewardship outreach programme and to provide training in stewardship during research visits and study tours of biotechnology scientists and students.
4. **Academic curriculum** – Seek involvement of universities. Stewardship modules to be adapted so they can be used as part of academic curricula for biotechnology students.
5. **Case studies** – Disseminate materials of the case studies across Africa and stakeholders to amplify learning and prevent avoidable mistakes.
6. **Critical stewardship language** – Review the language used in stewardship communication to create a set of user-friendly terms applicable for both GM and non-GM products. ISAAA agreed to work with SABIMA in this process.
7. **Standard operating procedures** – SOPs to be peer-validated, shared and harmonised where there are common approaches.

Stewardship leadership

8. **Senior management support** – Find ways to achieve greater involvement and engagement of director generals and their management teams to enable implementation of the key stewardship principles.
9. **Sub-Regional Organizations (SROs)** – To have a greater role in SABIMA 2 and coordinate the capacity building and sharing of stewardship learning and experiences for countries in their regions. The conference participants requested that all African sub-regions be invited to participate.

SABIMA2 funding

10. **Government financial support** – Director Generals to advocate and request national government authorities to include stewardship as a budget line within their annual funding of agricultural research and development organizations and their programmes.
11. **Project integration** – Stewardship budget lines need to be built into existing projects from donors and capacity building and training to be included as core elements to support excellent research and SOP development for all new proposals for funding.
12. **Funding sustainability** – Enable funding sustainability by seeking funds from within African governments and regional organizations as a priority, followed by other donor sources.
13. **Funding for SABIMA2** – FARA to urgently finalise the concept note for SABIMA2 with a cover letter signed by the FARA Executive Director, requesting funding from various donors. The concept note shall be accompanied by letters of support from the SROs and Regional Economic Communities (RECs).

1.6 SABIMA close-out meeting in 2011

This was staged a day after the stewardship conference and involved all the SABIMA Project partners, namely, FARA management, SFSA representatives, SROs, country focal persons and their deputies.

The following was the outcome of the 1–2 December 2011 SABIMA Project close-out meeting (Annex 16) held in Accra, Ghana:

1. The meeting stressed the due dates for submission of technical and financial reports to reflect project closure as on 31 December 2011.
2. The content of the reports was to be according to the workplan and a subsequently circulated checklist. Checklist called for inclusion of trainee database and SOPs developed.
3. Arranged for the translation of the stewardship course modules into French. Dr Niangado of SFSA Mali promised to assist with the exercise.
4. Granted request for countries to finish outstanding tasks over an additional three-period ending on 31 March, 2012.

5. Countries were to retire all monies and receipts to determine the balance that would be available to finance the first quarter of the 2012 activities.
6. No disbursement from project funds would be allowed after 31 March 2012.
7. FARA was to pursue the printing and distribution of case studies and the Stewardship Conference report.
8. FARA was to follow up with donor and African government support for SABIMA2.
9. Focal persons were to source local funding to continue the stewardship practice.

1.7 Final SABIMA small group close-out meeting in 2012

A small group close-out meeting comprising only the focal persons and the project coordinator was held in Nairobi, Kenya for the East and Southern Africa project partners on 22 and 28 March 2012 in Ouagadougou, Burkina Faso for the West African participants of SABIMA. The purpose of the meeting was to mop up the end of project country technical and financial reports, including those of the first quarter of the 2012 activities. Plans for SABIMA2 were also discussed at the meetings.

All countries had successfully trained stakeholders in stewardship principles and provided statistics on the same (Tables 8-10).

Table 8. Stewardship training and implementation database

Country	Stewardship policy formation (date launched)	Policy adoption (number of institutes)	Number of stewardship leaders	Number of personnel trained	Stewardship training implementation (number of institutes)		No. of SOPs written and implemented
					Best practices implemented	Additional outreach needed	
FARA	23 March 2010	NA	2	4	NA	NA	NA
SROs	CORAF	NA	1	1	NA	NA	NA
Burkina Faso	3 Dec. 2010	1	2	123	1	3	22
Ghana	8 April 2010	2	6	595	4	9	23
Nigeria	22 Nov 2010	3	3	88	3	12	9
Kenya	5 Nov 2011	2	2	188	2	3	12
Uganda	Pending	1	2	280	1	3	9
Malawi	14 April 2011	1	2	236	2	3	1
Total		10	20	1515	13	33	76

Table 9. Stewardship trainee database – by gender

Country	Male	Female	Total
Burkina Faso	119	9	123
Ghana	430	165	595
Nigeria	75	13	88
Kenya	145	43	188
Uganda	196	84	280
Malawi	172	64	236
Total	1137	378	1515
%	75	25	100
No. trained by consultant, Dr Patrick Rudelsheim		103	
No. trained by Train-the-Trainers		1412	

Table 10. Stewardship training and awareness building in Ghana and Uganda – by organization.

	Stewardship training				Stewardship awareness building		
	R&D scientists and managers	Seed companies	Farmers	Total	Governmental officials	Civil society	Total
Ghana	263	13	12	288	76	40	116
Uganda	76	27	-	103	105	39	144
Malawi							

All countries, except Uganda, had launched their agricultural biotechnology stewardship policy statements (Table 5 and Annexes 2–9). In the case of Ghana, other institutions within the country had begun launching their stewardship policy statements. All focal persons were implementing stewardship principles through the conduct of Critical Control Point Analysis on the product life cycle and the development of Standard Operating Procedures.

In all countries there was evidence that the SABIMA Project had been a success as evidenced by a stronger political commitment to biotechnology with stewardship, the development of numerous SOPs and the call for more training in stewardship within and across countries.

All countries called for a bridge support to carry on SABIMA activities pending SABIMA2.

Project financial report

The end of project financial report, compiled from the returns of all six project countries and the FARA Secretariat, revealed a total expenditure of USD 1,187,141 out of the project grant of USD 1,266,140 (Table 11). Table 8 also shows a 94% draw down of the grant. This is a satisfactory achievement that supports the successful implementation of the work plan.

1.8 Summary of country reports (Annexes 17–22)

1.8.1 Burkina Faso

The project is hosted by the 'Institut de l'Environnement et de Recherches Agricoles (INERA).

The INERA stewardship policy document was drafted based on that of FARA (Annex 4 and 6). It is particularly focused on seed production, given the mandate of INERA in this sector (the production of foundation seed for Burkina Faso). A seed production manual currently being compiled will incorporate stewardship elements before being distributed to other state agencies.

Stewardship principles are now being implemented as evidenced by 22 Standard Operation Procedures (SOPs) written on the seed sector (cotton, cowpea and Irish potato), laboratory procedures and field trials. Over 120 stakeholders in the seed sector, biotechnology technicians and scientists and regulatory officials have received stewardship training.

Numerous awareness creation workshops on biotechnology, biosafety and stewardship were held targeting school children, seed growers and policy makers.

Biotechnology advocacy led by the SABIMA Project champion for Burkina Faso, Prof. Alasane Sere, prevented an amendment of the Burkina Faso Biosafety Act that would incorporate strict liability clauses.

Most of 2011 was also devoted to developing INERA's case study on "Conducting Bt cotton controlled release field trials with farmers in Burkina Faso". The biotechnology database for the country was also updated for publication on FARA's website.

1.8.2 Ghana

The Ghana chapter of the SABIMA Project was run by a dedicated team of six stewardship trainees and led by the focal person, Dr Marian Quain and her deputy, Dr Atokple. These six persons developed stewardship policy statements (Annex 7) in their institutions, namely, CSIR-CRI, GAEC-BNARI and the Biotechnology Centre, University of Ghana. They also helped to train others in stewardship. About 600 people received stewardship training using the train-the-trainer concept. An active advocacy and awareness creation role played by the group using their "champions" contributed to the passage of the Ghana Biosafety law in 2011.

The country developed five case studies for presentation at the November 2011 Pan-African stewardship conference in Accra, Ghana. The focal people organized stewardship monitoring visits to institutions that had received stewardship training.

Table 11. SABIMA financial report for the period 1 April 2009 to 31 March 2012

Category	Total budget		Expenditure for three years			Extended period	Cumulative for three years and three months	Budget variance	
	Original US$	Revised US$	2009 US$	2010 US$	2011 US$	Jan- Mar 2012US$	US$	Amount US$	% Spent
(Number of FTEs)-50% assumed.									
Project manager	105,000	185,000	44,000	75,566	76,310	18,769	214,645	-29,645	116.02
Assistant project manager	60,000	60,000	5,302	18,166	7,195	2,814	33,477	26,523	55.79
Consultant for survey 25 man days @ $400/day.	10,000	13,000	10,000	0	0	0	10,000	3,000	76.92
Stewardship consultants (time, travel, per diem)	175,000	105,000	22,154	35,553	4,241	0	61,948	43,052	59.00
Country project leaders and support staff incidental cost ($350/month/leader- six leaders)	75,600	56,700	6,300	13,726	34,876	1,776	56,678	22	99.96
Sub Regional Organization SRO incidental cost ($150/month/SRO)-three SROs	16,200	12,150	1,350	900	0	0	2,250	9,900	18.52
Principal country champions allowance -six @ $300/person/month	64,800	48,600	5,400	10,800	18,143	1,471	35,814	12,786	73.69
Sub total (a)	**506,600**	**480,450**	**94,506**	**154,712**	**140,765**	**24,830**	**414,811**	**65,639**	**86.34**
Stationery, local rounds/fuel supplement, internet and phone charges: (b)	13,000	18,500	1,422	6,587	9,963	2,491	20,463	-1,963	110.61
Equipment (@1500/country for yr1)	9,000	0					0	0	
Sub total (b)	**22,000**	**18,500**	**1,422**	**6,587**	**9,963**	**2,491**	**20,463**	**-1,963**	**110.61**
Stewardship training & other knowledge sharing activities including awareness creation, printing, publication & communication	489,591	369,562	21,337	142,834	169,216	50,523	383,910	-14,348	103.88
Travel - for networking, meetings, advocacy, workshops, survey consultant travel	132,350	273,848	27,735	81,679	137,900	10,467	257,781	16,067	94.13
Operational total	**1,150,542**	**1,142,360**	**145,000**	**385,812**	**457,844**	**88,311**	**1,076,966**	**65,394**	**94.28**
FARA administration overhead 10%	115,054	114,236	14,500	32,058	45,784	8,831	101,173	6,539	88.57
Equipment (@1500/country for yr1)		9,000	9,000	0	0	0	9,000	0	100.00
Grand total	**1,265,596**	**1,265,596**	**168,500**	**417,870**	**503,629**	**97,142**	**1,187,139**	**71,934**	**93.80**

In collaboration with the Open Forum on Agricultural Biotechnology (OFAB), awareness creation workshops on biotechnology with stewardship and biosafety were held.

At the close of the project, over 20 Standard Operating Procedures (SOPs) were developed and in the process of being implemented. Ghana developed three stewardship case studies for presentation at the Pan-African biotechnology stewardship conference in Accra (Tables 2 and 3).

In 2010, the Ghana CSIR-Animal Research Institute won an International Atomic Energy Agency (IAEA) award for excellence in molecular laboratory precision work in the IAEA's competitive Ring Test. This achievement was attributed to the stewardship training received.

1.8.3 Kenya

Extensive training of researchers and regulatory officials was conducted in Kenya. Up to 188 professionals received stewardship training. A new initiative in the January-March 2012 project extension period entailed the training of livestock scientists using the same course material as had been utilised for crop scientists. Recombinant vaccine production and diagnostic procedures benefited from the stewardship training. Case studies developed for the Pan-African stewardship conference were used as training material. Twelve (12) SOPs have been developed in the Kenya Agriculture Research Institute (KARI) for laboratory, greenhouse and confined field trials.

KARI received peer review visits from partners in Malawi and Nigeria. Kenya has plans to conduct in-country peer review visits in the post-SABIMA training period.

Challenges faced by Kenya, as indeed all the SABIMA implementing countries, include the lack of national coordination structure for stewardship management and the challenges from small-scale farmer stewardship training and practice (Annex 8).

The way forward for Kenya includes the printing and ring-binding of the SOPs developed.

KARI was ISO 9001:2008 Quality Management System certified in 2011 and this as well as the introduction of the field/laboratory note practice by KARI should strengthen the country's stewardship practice.

1.8.4 Malawi

Stewardship training was given to cover a wide spectrum of stakeholders such as policy makers, scientists, seed growers and the media. Bunda College's senior management received training as well. The Seed Growers that received training included those from Monsanto and PANAAR seed companies. There was greater interaction with media

personnel who benefited in all stewardship training and awareness creation workshops on biotechnology and biosafety. In total, 236 people received stewardship training over SABIMA's duration.

Bunda College, led by its Principal, Prof Moses Kwapata, had a successful launch of its stewardship statement (Annex 10) on 14 April 2011 in Lilongwe, Malawi. The launch provided the platform for advocacy on biotechnology. The launch triggered many positive reactions such as increased public scrutiny of government action/inaction on biotechnology strengthening. This led to the approval of the permit for Bt cotton confined field trials.

Challenges encountered by Malawi in managing the SABIMA Project included the delay in disbursement of funds from the FARA Secretariat, in turn a result of the delay in project notification of transfers for tracking; negative reportage in biotechnology at the start of the project; overwhelming requests by stakeholders for training and the absence of a permit to conduct confined field trials on Bt cotton.

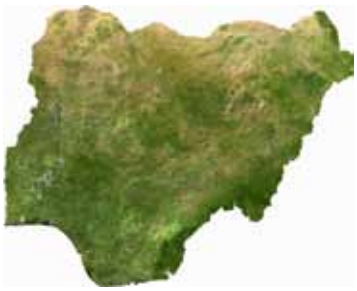
Major challenges have been resolved through the growing positive reportage on GM biotechnology and the granting of the aforementioned permit. Malawi presented a case study on the application of stewardship to conventional seed production by outgrowers.

The future course for Malawi includes the publication of stewardship material, liaising with Monsanto Malawi in Bt cotton field trial work and the extension of stewardship training to many more stakeholders in the country.

1.8.5 Nigeria

Three major research organizations, namely, Sheda Science and Technology Complex, Institute of Agricultural Research (IAR) and the National Root Crops Research Institute, in the country that received training in stewardship have internalised it in their laboratories through the use of SOPs. A total of 88 persons in Nigeria received training in stewardship.

IAR developed and adopted its stewardship policy in November 2010 (Annex 9).



Stewardship training has also been extended to five local seed companies. Through the advocacy role played by the project's champion, Chief Awuoniyi and the National Biotechnology Development Agency (NABDA), the Biosafety Law was passed by both houses of Parliament.

SABIMA explained the importance of stewardship in biotechnology research to the Agricultural Research Council of Nigeria (ARCN). The latter has now stepped up funding of biotechnology research in IAR, Samaru, Zaria by 50% with a promise to increase funding to other research agencies. The ARCN earlier indicated

that it would formally endorse the IAR, Samaru Stewardship Policy document as a template for other research institutions under its mandate for the development of their stewardship policy. This promise had not been fulfilled as at the end of the project's extension into March 2012. The initiative will be followed in SABIMA2.

Numerous public and civil society organizations benefited from awareness creation seminars.

1.8.6 Uganda

Extensive training in stewardship, awareness creation and advocacy were executed. Over 280 people received stewardship training. The Stewardship Policy Statement (Annex 11) institutional adoption arrangements for Uganda were stalled due to NARO top management challenges occasioned by the administrative changes and the subsequent appointment of a new Director-General.

The former Chief Executive called for more in-house review of the policy statement before he could submit to NARO Council for final approval. This is still pending.

Stewardship training covered NARO scientists, technicians, post-graduate students, regulatory officials, university staff and seed associations. A number of biotechnology awareness and advocacy activities, including seeing-is-believing tours, were undertaken. Seed companies and policy makers have been sensitised to GM biotechnology issues.

Peer review visits from a partner focal person (Dr Oumar Traore) from Burkina Faso were undertaken.

Uganda presented two case studies at the Pan-African conference on stewardship in agricultural biotechnology.

Challenges faced by Uganda in the implementation of the SABIMA Project included delays in senior management review of the stewardship policy and competing stewardship periodic training by mega donors targeting the same stakeholders handled by the SABIMA Project.

1.8.7 Additional case-studies from the countries

The International Steering Committee for planning the first Pan-African Stewardship Conference selected case studies for further development and presentation at the conference in plenary or in poster sessions. Twelve case studies that were adjudged by the committee to directly address stewardship issues at the product development cycle were selected. Eight of these were selected for plenary presentation and subsequent poster presentation while four were earmarked for poster presentation alone (Tables 5 and 6). The case studies that were related more directly to regulatory, advocacy for biotechnology and biosafety and awareness creation were identified for publication by sister international organizations whose mandate areas coincided. These case study titles of a more regulatory or awareness creation nature are listed below (Table 12). Such case studies will be edited and published by FARA separately for

biosafety/ biotechnology communication or for use in biotechnology stewardship-biosafety regulatory interface matters as may be appropriate.

1.8.8 Country peer review audits

As part of the training received, country focal persons opted to visit and to review the stewardship practices in project countries of their choice where a biotech product of interest was being developed (Table 13). Each focal person visited one country. To aid the mutual review exercise, a template (see Annex 1) was provided to be filled by each visitor. The filled template served as basis for the discussions following the visit. A signed copy of the filled template was left with the institution visited and a second copy returned to the FARA project coordinator (Annexes 12-15).

The exercise was highly appreciated and served as a learning platform that introduced its participants to what a professional stewardship audit process could look like.

Table 12. Regulatory compliance and awareness creation related case studies

Serial number	Author and institution	Case study title
1	Dr I. D. K. Atokple, Council for Scientific and Industrial Research (CSIR)- Savannah Agricultural Research Institute (SARI), Tamale, Ghana	Coping with the internal resistance to GMO research in CSIR-SARI
2	Peter Wamboga-Mugirya and Arthur M. Makara, Science Foundation for Livelihood and Development (Scifode), Kampala, Uganda	Biotechnology and Biosafety Advocacy Techniques and Experiences, Highlighting SABIMA Public Engagement Efforts
3	Dr Weston Mwase, Bunda College of Agriculture, University of Malawi, Lilongwe, Malawi.	Building public confidence in biotechnology through media-focused seminars.
4	Clet Wandui Masiga, Association for the Support of Agriculture in Eastern and Southern Africa (ASARECA), Entebbe, Uganda	Responding to anti-GMO critics.
5	Abed Kagundu Mathagu, Kenya Plant Health Inspectorate Service (KEPHIS)	Cooperation between regulators and scientists for cassava CFT SOPs: creating ownership and balancing responsibility.
6	Dr Charles Mugoya, ASARECA, Entebbe, Uganda	Experience using stewardship principles in the working process of Uganda National Biosafety Committee
7	Jane Otadoh, Ministry of Agriculture, Nairobi, Kenya.	Mobilization of a Biosafety Consortium as a tool to pave way for GMO environmental release and commercialisation in Kenya.
8	Dr Mohammad Ishiyaku, Institute for Agricultural Research (IAR), Ahmadu Bello University, Zaria, Nigeria.	Managing compliance while conducting Bt cowpea confined field trial (CFT).
9	Dr Charles Waturu Nderito, KARI, Theka, Kenya	Convincing the regulatory authorities in Bt cotton over 5 year process.

Table 13. Peer review visits to monitor compliance with stewardship policies

Date of visit	Name of visitor	Country visited	Institution visited	Subject area of report
12 July 2011	Dr Oumar Traore	Uganda	NARO	Laboratory Greenhouse
14-15 July 2011	Dr Mohammed Ishiyaku	Kenya	KARI	Greenhouse CFT-GM Cassava
8 September 2011	Dr Marian D Quain	Nigeria	NRCRI	Laboratory Greenhouse CFT- Cassava
20-21 March 2012	Dr Weston Mwase	Kenya	KARI	Laboratory Greenhouse Screenhouse CFT-Cassava

1.9 SABIMA Project outputs (Annex 2)

1.9.1 Core achievements

SABIMA I has achieved the following:

- Report published on the status of biotechnology and biosafety in sub-Saharan Africa with gaps in capacity needs to be addressed (http://www.fara-africa.org/our-projects/sabima/publications).
- The beginning of the compilation of a comprehensive database on biotechnology and biosafety on the FARA website. This will fill the gap for updates on a continuing basis. Data so far gathered has provided an objective basis for the selection of countries to be involved in SABIMA2.
- A large number of persons (1,515) in project countries have received stewardship training in product development and at least 50 had practised it at the confined field trial stage. Twenty five per cent (25%) of all trainees were women.
- Stewardship principles have been applied to both GM and non-GM crops.
- A report on case studies in biotechnology stewardship has been published (see http://www.fara-africa.org). Also see Johnson et al. 2011. Organized the first Pan-African conference on stewardship in agricultural biotechnology. See http://www.fara-africa.org/our-projects/sabima/publications/
- Institutions' management maintained focal persons on the project for the entire three-year project duration. This allowed for continuity and confidence building of the trained focal persons.
- Growing awareness of the importance of stewardship considerations in biotechnology in sub-Saharan Africa.

- The Ghana Council for Scientific and Industrial Research-Animal Research Institute (CSIR-ARI) won international recognition in 2010 as one of the best molecular diagnostic laboratories following the Ring test conducted by the International Atomic Energy Agency (IAEA) in Vienna on 11 molecular diagnostic laboratories world-wide. CSIR-ARI had earlier successfully undertaken stewardship training and was applying it routinely including this test.
- FARA is recognised as the lead institution for agricultural biotechnology stewardship capacity strengthening in Africa.

1.9.2 Comparison of outputs with the measures in the SABIMA contract

The SABIMA Project started rather late with the signing of the contract between the SFSA donor and FARA in April 2009 instead of at the beginning of the year. The recruitment of project personnel and the signing of contracts with consultants was executed thereafter and the actual implementation started in September 2009. On the whole, the project delivered satisfactorily on the milestones set out in the contract document with the SFSA donor. In some cases, like the publishing of stewardship case studies and the holding and publishing of the report on the conference, performance was beyond expectation. A detailed assessment of project delivery vis-à-vis the contract with SFSA is presented in Annex 2.

1.10 Major challenges

- Delays in reporting on the project progression from country focal persons. Both the technical and financial reports faced challenges in this respect.
- As far as institutional recognition was concerned, the focal persons did not appear adequately informed.
- Delays experienced in the development and adoption of stewardship policy statements.
- Not all the countries approved applications for the conduct of confined field trials on GM crops though all had the necessary legislative framework.

1.11 Lessons learned

- Implementing countries need to develop a strong network among themselves. A community of practice will encourage sharing of experiences and contribute to project sustainability.
- Greater institutional recognition of project focal persons will encourage mainstreaming of project best practices.
- The task of reporting should be a shared responsibility in the focal institution.
- Need to share the SABIMA Project's planned activities and reports with biotech and biosafety capacity building partners to encourage participation where this will add value.

- Special linkage with biotech companies willing to share their expertise in project management in a public-private sector partnership has been richly rewarding e.g. Monsanto sharing of stewardship experiences, organization of 'seeing is believing' tours for biotech with stakeholders.

Way forward

The call to outscale the SABIMA Project to cover many more African countries and to deepen it in countries that benefited from the project in the first phase needs urgent attention. Hopefully if a donor support is realised in the course of 2012, a SABIMA2 could begin in early 2013 . FARA (with the assistance of SFSA) is to take the preparatory steps through donor contacts to secure funding for SABIMA2.

While funding is being sought, the SABIMA1 countries should undertake activities in stewardship to sustain the momentum they have already built. A way forward is for the countries to update their SOPs for a review by FARA to fill any existing gaps in operation methodologies.

Efforts should be made to complete the peer review visits started under SABIMA1 and the improvements recommended by peers enacted.

As part of the efforts to source funding and the general marketing of SABIMA1, publications emanating from the project should be widely circulated in electronic and print forms.

Finally, there is a need to maintain the community of practice through the effective network of collaborators built during SABIMA1.

Conclusion

Stewardship training and practice in agricultural biotechnology has been the main thrust of the SABIMA Project. Both GM crop safety and the importance of product integrity have been emphasised throughout the product cycle. The stewardship principle has gained ground in the production of crops using modern biotechnology approaches. The concept is of generic application in both GM and non-GM crop production and also for animal transgenic product development such as recombinant vaccines and diagnostics.

For purposes of safety and quality assurance, all GM crops and livestock products research and development activities should be underpinned by good stewardship practice. Training in stewardship and its application will need to be mainstreamed into product development at all phases of the product cycle.

Continuous capacity building and linkage with private sector biotech companies in quality assurance practices and updates is recommended.

FARA has a role in ensuring contact with the community of practice to ensure the dissemination of best practices.

References

Bremner, J. 2012. Population and food security: Africa's challenge (Parts 1and 2) In Population Reference Bureau. www.prb.org/Policy BriefFARA (Forum for Agricultural Research in Africa). 2010. FARA and Biotechnology. FARA Leaflet. http://fara-africa.org.

FARA (Forum for Agricultural Research in Africa). 2011. Status of Biotechnology and Biosasfety in Sub-Saharan Africa: A FARA 2009 Study Report. FARA Secretariat, Accra, Ghana. http://www.fara-Africa.org/media/uploads/library/docs/fara_publications/sabima_lowres1.pdf.FARA

FARA (Forum for Agricultural Research in Africa). 2012. Africa in search of safe and high-quality biotech crops: 1st Pan African Conference on Stewardship of Agricultural Biotechnology. Accra, Ghana. http://www.fara-africa.org/media/uploads/stewardship_conf_report_ver03_whole_book.pdf

James, C. 2011. Global status of commercialized biotech/GM Crops: 2011. ISAAA Brief No.43. ISAAA: Ithaca, NY.

Johnson, L, Anthony, V, Alhassan, WS and Ruedelsheim, P, eds. 2011. Agricultural Biotechnology in Africa: Stewardship Case Studies. Forum for Agricultural Research in Africa (FARA). Accra, Ghana. http://www.fara-Africa.org/media/uploads/library/docs/fara_publications/sabima_casestudies_whole_book2.pdf

James, C. 2011. Global status of commercialized biotech/GM Crops: 2011. ISAAA Brief No.43. ISAAA: Ithaca, NY.

Johnson, L, Anthony, V, Alhassan, WS and Ruedelsheim, P, eds. 2011. Agricultural Biotechnology in Africa: Stewardship Case Studies. Forum for Agricultural Research in Africa (FARA). Accra, Ghana. http://www.fara-Africa.org/media/uploads/library/docs/fara_publications/sabima_casestudies_whole_book2.pdf

Annex 1. Template for the peer review process

FARA	SABIMA Project Stewardship Peer Survey (StePs) Template Version 0.1 Summary

Auditor information

Name	
Organization	
Contact details	

Audited organization

Organization	
Section/department (If applicable):	
Name of contact person	
Contact details	

Audit information

Date(s)		
Location		
Scope	**Laboratory**	**Specify:**
	Greenhouse	**Specify:**
	Screenhouse	**Specify:**
	Confined field trial	**Specify:**
	Seed handling & storage	**Specify:**
	Other	**Specify:**

Note: This is only a first stage audit consistent with the level of stewardship training received and not a comprehensive survey by a trained auditor. The term “auditor” on the sheet is used advisedly.

One “general sheet” should always be included. For each of the indicated areas under scope a filled out form is attached that reflects the findings of the audit. In the case of “Other”, it is suggested that one of the provided sheets be used to direct the questions, adapted to reflect the specifics of the audited facility.

The auditor provides a copy of the completed report to the designated contact person from the audited organization and to the FARA contact person. The contents represent the opinion of the auditor. They are confidential and only serve to assist the audited organization in their efforts for continuous improvement.

Date of completion of the report:

Signature of the auditor:

	**SABIMA Project** **Stewardship Peer Survey (StePs) template** **Version 0.1** **General information**

This sheet needs to be completed for each audit, irrespective of the scope.

For each of the audit topics below, the auditor should confirm that related systems, procedures, and/or work instructions are in place consistent with the biotechnology stewardship objectives.

Has the organization established a **stewardship policy**? Has it been communicated? How does the organization make sure that the policy is put in practice?	
Does the organization have a **stewardship programme** in place that covers all life cycle stages that the organization is involved in?	
Has the organization **assigned people** to take up specific stewardship tasks? How are these assignments formalised? How do people report on achievements?	
Has the organization established a process to **analyse** steps in the activities where product quality, purity, integrity or regulatory compliance may be at risk 'e.g. formal Critical Control Point analysis? Is the process implemented and are there proofs of this implementation?	
How does the organization support **continuous improvement**? When improvements are made, how are they communicated in the organization?	
Has the organization implemented a **quality management** system? If yes, how does it integrate elements of biotechnology stewardship?	

Is there a programme to identify **training** needs for individuals, to ensure that this training is provided and to confirm that people have successfully completed it?	
Has the organization established ways to ensure that only authorised people have **access** to materials and facilities?	
Has the organization implemented a system to control **documentation** and to make sure that relevant information is stored in a secured and retrievable way?	
In case of **collaboration** with third parties, how does the organization communicate stewardship principles and make sure that the third party also observes a stewardship approach?	
In what way is the organization prepared for **stewardship issues** and what systems are in place to respond?	
Has the organization an **incident response management** process? Have people been assigned that are accountable for this process? Have training needs been identified?	
Additional auditor comments	

	**SABIMA Project** **Stewardship Peer Survey (StePs) template** **Version 0.1** **Laboratory activities**

This sheet only needs to be completed when the audit includes laboratory activities (mark on summary sheet).

For each of the audit topics below, the auditor should confirm that related systems, procedures and/or work instructions are in place consistent with the biotechnology stewardship objectives.

Specify location of audit	
Short description of status of activity at time of audit	

If the laboratory is equipped with certain features to ensure **containment**, then how are these verified? Is there a process to determine if the features are adequate? Is there a process to take corrective action in case a feature no longer functions?	
Do the procedures for receiving **materials** allow for the recording of critical information and verification?	
If in the same facility both material from biotechnology projects and from **other projects** is stored, how does the organization ensure that these are kept separate?	
If work for **different biotech projects** is performed at the same moment, how does the organization make sure that material of different projects is kept separate?	
If in the same project **different constructs or genetic elements** are handled, how does the organization keep these separate?	
How does the organization verify that **genetic constructs** are as intended?	
How are constructs **stored**? Is there a system to allocate storage space in cold storage?	

How does the organization verify that **plant material** is as stored as intended and free of presence of other biotechnology traits?	
How does the organization verify the identity of **new transformants**? Is there a process to develop traits and/or event specific identification methods?	
How are transformants **stored** in growth cabinets/rooms? Is there a system to ensure that transformants from different projects or from different constructs do not get mixed?	
Is there a process to verify identity of transformants before they are **propagated**? Did the organization implement measures to ensure that transformants are not mixed up during propagation?	
Is there a material **coding system** that allows unique identification of material by different people in the organization?	
Are **codes** indicated on material in a clear way that ensures prolonged recognition?	
Do codes allow **retrieval of information** in a secured system? Is there a process to verify the quality of that information?	
Is the information captured in a way that allows **traceback**?	
Are there processes to address **misidentification** of material (construct, plants or transformants)? Or cases where the identity cannot be confirmed?	
Are there processes to address cases where **commingling** of material has been detected?	
Is there a process to record when material **leaves** the lab (e.g. transfer to greenhouse or to another party)? Is there any verification of identity before material leaves the lab?	
Are there processes for **disposition** of material (construct, plants or transformants)?	
Additional auditor comments	

	**SABIMA Project** **Stewardship Peer Survey (StePs) template** **Version 0.1** **Greenhouse/screenhouse activities**

This sheet only needs to be completed when the audit includes greenhouse and/or screenhouse activities (mark on summary sheet).

For each of the audit topics below, the auditor should confirm that related systems, procedures, and/or work instructions are in place consistent with the biotechnology stewardship objectives.

Specify location of audit	
Short description of status of activity at time of audit	

If the greenhouse/screenhouse is equipped with certain features to ensure **containment**, how are these verified? Is there a process to determine if these features are adequate? Is there a process to take corrective action in case a feature no longer functions?	
Do the procedures for receiving **materials** allow recording of critical information and verification of the same?	
If in the same facility both material from biotechnology projects and from **other projects** are kept, how does the organization ensure that these are kept separate?	
If work for **different biotech projects** is performed at the same moment, how does the organization make sure that material of different projects is kept separate?	
If in the same project **different transformants** are handled, how does the organization keep these separate?	
Is there a system to allocate greenhouse/screenhouse **space** to projects? Is there a system to ensure that transformants from different projects or from different constructs do not get mixed?	

Is there a process to verify identity of plants before they are **propagated**? Did the organization implement measures to ensure that plants are not mixed up during propagation?	
If there is a risk of cross-fertilisation, how does the organization ensure **reproductive isolation** of the experimental plants within the facility? Is there a process for **physical and/or biological containment** within the facility?	
Is there a material **coding system** that allows unique identification of material by different people in the organization?	
Are **codes** indicated on material in a clear way that ensures prolonged recognition?	
Do codes allow **retrieval of information** in a secured system? Is there a process to verify the quality of that information?	
Is the information captured in a way that it allows **traceback**?	
Are there processes to address **misidentification** of plants? Or cases where the identity cannot be confirmed?	
Are there processes to address cases where **commingling** of material has been detected?	
Is there a process to record when material **leaves** the greenhouse/screenhouse (e.g. transfer to storage, to a CFT or to another party)? Is there any verification of the identity before material leaves the greenhouse/screenhouse?	
Are there processes for **disposition** of material?	
Additional auditor comments	

	**SABIMA Project** **Stewardship Peer Survey (StePs) template** **Version 0.1** **Confined field trial**

This sheet only needs to be completed when the audit includes a confined field trial (mark on summary sheet).

For each of the audit topics below, the auditor should confirm that related systems, procedures, and/or work instructions are in place consistent with the biotechnology stewardship objectives.

Specify location of audit	
Short description of status of activity at time of audit	

If the CFT site is equipped with certain features to ensure **confinement**, then how are these verified? Is there a process to determine if these features are adequate? Is there a process to take corrective action in case a feature no longer functions?	
Do the procedures for receiving **materials** allow for recording of critical information and verification of the material?	
If work for **different biotech projects** is performed at the same moment, how does the organization make sure that material of different projects is kept separate?	
If in the same project **different transformants** are handled, how does the organization keep these separate?	
Is there a system to allocate CFT **space** to projects? Is there a system to ensure that transformants from different projects or from different constructs do not get mixed?	
Is there a process to verify identity of plants before they are **planted**? Did the organization implement measures to ensure that plants are not mixed up during planting?	

If there is a risk of cross-fertilisation, how does the organization ensure **reproductive isolation** of the experimental plants within the CFT? Is there a process for **physical and/ or biological containment** within the CFT?	
If during the CFT **tools or equipment** are used, does the organization have a process in place to assess if these can lead to mixing of material? If so, is a process in place to take preventive actions?	
If, during the CFT, material needs to be taken (e.g. **samples** for lab analysis), is a system in place to ensure that the identity of these samples and their origin is captured?	
Is there a material **coding system** that allows unique identification of material by different people in the organization?	
Are **codes** indicated on material in a clear way that ensures prolonged recognition?	
Do codes allow **retrieval of information** in a secured system? Is there a process to verify the quality of that information?	
Is the information captured in a way that it allows **traceback**?	
Are there processes to address **misidentification** of plants? Or cases where the identity cannot be confirmed?	
Are there processes to address cases where **commingling** of material has been detected?	
Is there a process to record when material **leaves** the CFT (e.g. transfer to storage or to another party)? Is there any verification of identity before material leaves the CFT?	
Are there processes for **disposition** of material?	
Additional auditor comments	

Annex 2. SABIMA Project delivery assessment by FARA

The project milestones agreed to in the contract document are assessed by FARA for overall performance in the matrix below.

13 September 2012

1. Current status and information gathering

Activities	Output/deliverable	Timeline/milestones	Measure	Assessment of delivery (FARA Project Coordinator's perspectives)
1.1 Initiation of the project				
Announcement to FARA board and community	Website communication	March 2009	Global transparency and clear messages	*The project had a late start. The project contract agreement between FARA and SFSA was signed in April 2009. All key persons (including project consultants) were in place in September 2009. All project implementing partners came to a common understanding on project planning and delivery in the kick-off meeting in September 2009. Only CORAF/WECARD signed a formal agreement to participate in the project as it was the only SRO with a minimum of three countries participating in the project. ASARECA took part in all training sessions. SRO and NARS Heads pledged full cooperation for project execution and did not only nominate focal persons but ensured that these stayed on the project for its entire duration. The project received good publicity at its initiation in the various project countries.*
Communication with SROs and heads of NARS launching the project and seeking their support and input	Formal communication	March 2009	Support and willingness to partner. Financial considerations agreed upon	
Readiness to rebut negative NGO activities	Position statements on stewardship project	April 2009	Robust positions ready on potential negative arguments from NGOs that can be released if needed within 24 hours	

Activities	Output/deliverable	Timeline/milestones	Measure	Assessment of delivery (FARA Project Coordinator's perspectives)
1.2 Establishing core FARA team and network of consultants and experts				
Establishment of FARA stewardship team with leader identified.	Team finalised and operational	Q2, 2009	Members have allocated and agreed upon time from management and are operational	*The late start of the project affected timelines for delivery. All personnel and agreed upon workplans with project countries were in place. The FARA stewardship team was led by the SABIMA Project Coordinator. Stewardship training started in September 2009.* *The project was announced to its international partners at a partnership meeting in March 2010.*
Recruit Project Assistant	Project Assistant named and assumes duty	Q2, 2009	Working from 1 April 09	
Terms of reference created for recruitment of stewardship consultants to be hired to conduct training	Agreed set of terms and scope outlined for training	Q2, 2009	Easy to read and clear/approved by FARA/SFSA	
External experts/ consultants and target beneficiaries for training named	Training ready to start	Q2, 2009	Consultants agree to provide training and terms of reference signed.	*Dr Patrick Rudelsheim of Perseus, Biosafety and Biotechnology Regulatory Services, Belgium was selected to provide consultancy services. The project contract agreement was signed in August 2009 and training started in September 2009.* *Dr Marcel Nwalozie signed and started contract delivery on the status of biotechnology and biosafety in sub-Sahara Africa in September, 2009.* *All project personnel were identified for project execution in August 2009.* *Country visits started in Q4 2009 to further explain the project to heads of relevant organizations.* *No formal relation was established with CGIAR institutions for stewardship as no evidence was available on such capacity in the CGIAR.* *The preparation arrangement for project take-off was considered a success.*
		April 2009	Training programme content (phase 1) signed off and ready to start	
Information documents and key contacts provided		Q2, 2009	Best documents supplied for consultants and Project Manager to adapt and use.	
Private sector network operational		Q2, 2009-2011	Effective communication channels established and willingness to provide support from private sector organizations obtained	
CGIAR stewardship approach reviewed , Partnership established with FARA	Harmonised approach	July 2009 (timing dependent on readiness of review by CGIAR)	Resolution of any differences, agreed on common approach	

Activities	Output/deliverable	Timeline/milestones	Measure	Assessment of delivery (FARA Project Coordinator's perspectives)
	Regular information flow	2009–2011		
In-country coordinator selection	Coordinators named	Q2, 2009	Individuals are assigned and supported by their management and operational, time allocated and operational	
In-country champions identified	List provided, people on board and motivated	May 2009	Individuals are assigned and supported by their management, time allocated and operational	
Preparatory country visits to introduce projects and identify key partners.	Back-to-office report with list of in-country partners provided.	Q3, 2009	Agreed partners, financial commitment and plan agreed upon for implementation	
1.3 Project monitoring and reporting				
Annual Project plans (overview and at country level)	2009	May 2009 (for all countries) April 2009 (first three countries)	Agreed and operational	*Project workplans agreed to at the September 2009 kick-off meeting were reviewed at the mid-year review meetings with all the participating NARS and SROs.* *Given the adjustment in deliverables due to the late project start off, all the reporting targets were met. There were, however delays in reporting from countries to FARA, especially for financial reporting. Repeated reminders were necessary.* *SFSA was part of most project review meetings and was constantly briefed on the state of deliverables. Release of funding from SFSA met project expectations.*
	2010	December 2009		
	2011	December 2010		
Project progress and status reviews	Status report and meetings as required (together with financial updates)	July 2009 (interim mid year) January 2010 (final 2009) July 2010 (interim mid year) January 2011 (final 2010) July 2011 (interim mid year) January 2012 (final project and financial report)	Status and progress agreed with SFSA and release of funds	

Activities	Output/deliverable	Timeline/milestones	Measure	Assessment of delivery (FARA Project Coordinator's perspectives)
Final project and financial report		January 2012 (final project and financial report)	Project completed, met goals, on time and stayed within budget. Strong partnership and network established on stewardship	*The project deadline for final reporting was extended to March 2012 to allow for additional time for completion of pending tasks by countries.* *In general delays in country reporting in turn delayed collation and submission to SFSA.* *The SABIMA Project delivered on its mandate of stewardship training, information delivery and awareness creation and advocacy. An additional highly visible deliverable was the compilation and publication of stewardship case studies and the holding of the Pan-African conference on stewardship in agricultural biotechnology. There was a general call for upscaling the project in SABIMA2.*
1.4 Review the current status of agricultural biotechnology and biosafety in the key countries that are either commercialising or field testing genetically modified organisms.				
Comprehensive review of current status of biotechnology and biosafety Terms of reference for report to be finalised	Report to include a set of agreed headings (in contract annex)	Q2, 2009	TOR enables comprehensive review	*This task was executed by the end of 2010 and the thoroughly reviewed report published in 2011.*
Consultants identified and commissioned		Q2, 2009-task commis-sioned and started	Preferred that consultants accept contracts that have excellent in-country working knowledge as well as providing if possible international perspective	*The completed biotechnology and biosafety status report is available on the FARA website.*
Comprehensive report completed for review use	Written country and three sub-regional overview reports	May 2009- first draft of interim report produced containing material issues	International standard report with full list of sources used and bibliography	
		Q3, 2009-final report presented	Easy to read and clear	
		October 2009	Published on FARA website	

2. Capacity building

Activities	Output/ deliverable	Timeline/milestones	Measure	Assessment
2.1 Identify the capacity building gaps in key countries and the modalities for intervention and implement improvements				
Terms of reference defined for review of capability assessment	Agreed upon TOR	Q2, 2009	Clear and proportionate for funds available	*The consultancy selection process was expedited. Persons with capability known to FARA and the SFSA were contacted to indicate interest by responding to the terms of reference. Dr Patrick Rudelsheim of Perseus, Belgium was identified for the stewardship training while Dr Marcel Nwalozie of Dakar was identified for the survey on the status of biotechnology and biosafety.*
Identify consultants for review of capabilities	List of suitable consultants	April 2009	Comprehensive list of consultants who could be used and clarity on their availability	
Assessment of know-how, competency and facilities and identifying key stewardship risks and gaps requiring intervention	Report covering recommendations and interventions required	Q3-Q4, 2009	Clear and specific recommendations on what and how interventions should be made	*Key international collaborators were identified in March 2010 to include ABNE, PBS and CropLife. Donor partners included USAID and the Gates Foundation.* *The SABIMA Coordinator participated in the annual stakeholder meetings involving the international partners.*
Review of existing capacity building programmes and their effectiveness	Report on further actions needed	Q2 and Q3, 2009	Report that explains programmes, similarities/overlaps and differences, inter-relationships and issues for this project	
Key people identified in other public and private organizations (e.g. CGIAR, Gates, NEPAD, AfricaBio, Croplife international)	List of players and contact numbers/ email ids	May 2009	Comprehensive and forward looking on initiatives being started e.g. CGIAR	

Activities	Output/ deliverable	Timeline/milestones	Measure	Assessment
Liaison with other capacity building organizations and preparng integrated plan of interventions (interventions involving the NARS and partners)	Phase 1 contacts made Phase 2 Full review of plans	June 2009 Q3-Q4, 2009	Good relationships built and agreement reached on where joint approaches should be used and when to go solo	
Implementation of interventions	Implementation report	Q4 2009; all 2010 and 2011	Substantive correction of actions taken and improvements made by end of project. No inadvertent GM releases by NARS during 2009-2011	
2.2 FARA to develop policies, procedures and staff capability to provide leadership in stewardship for the safe and effective use of agricultural biotechnology in these countries				
Identify stewardship mentor to assist FARA develop stewardship policy.	Internationally competent person appointed to support development of policy and management practices (SOPs)	Policy to be finalised by Q3, 2009		*FARA developed this stewardship policy statement itself in consultation with its NARS and SROs. The policy document was earlier subjected to an intensive in-house review. The FARA document served as a template for the six project countries.*
FARA policy and management practices documents drafted and approved	Clear and owned policy and management practices documents	Policy to be finalised by Q3, 2009 Management practices by September 09	Peer reviewed document produced that is agreed upon with FARA, SROs and NARS. Best practice incorporated from private sector	

Activities	Output/ deliverable	Timeline/milestones	Measure	Assessment
2.3 To identify, train and mentor stewardship leaders in FARA, SRO and stewardship champions in each of the key countries				
Identify trainees in FARA, SROs and project countries and train them.	Twelve trainees trained three FARA, three SRO and identified six more candidates for trainer training.	Q2, 2009	Training well received and individuals committed to next phase	*Sixteen train-the-trainers were certified by FARA. The project consultant trained 103 participants. The train-the-trainers trained 1,412. Total trainees thus numbered 1,515.* *Trainees consisted of scientists, seed grower, regulators, farmer based organizations and the media.*
Draw up and implement training programme	Stewardship plan developed for on-going projects drawn by FARA and six countries	Q2, 2009 Q3-Q4, 2009	Trainees listed; Training records at FARA SRO and country trainees identified; Composition of country trainees: NARS-2; Seed Companies/ Agri-business-2; Farmer-Based Organization (FBO)-2; Country Champion-1. Total per country per year starting from 2010= 7.	
Follow-up on trainee competency and readiness for trainees to do further training of staff (“train the trainer concept”)	Consolidation of training, learning and “certification” given and sign-off of trainees to be assigned as trainers and commence roll-out within the organization	Q2, 2010 Q2-Q4, 2010 Training programme roll-out in countries.	Majority of trainees “pass” certification and given approval to roll-out programme in their organizations Completed on time	*The train-the- trainer concept was a resounding success as 1,412 persons received training from them across the six project countries.*

3. Outreach and advocacy

Activities	Output/deliverable	Timeline/milestones	Measure	Assessment
3.1 FARA, SRO and country stewardship leaders to create an effective, informed network of experts with access to quality information and communication channels for advocacy and promotion of safe practices and agricultural biotechnology utility				
Develop country network of experts in stewardship.	Networks listed	Q3, 2009: Projects listed for application of good stewardship practices in FARA and in countries. Q3, 2009: Network of experts established	Clear operational network established.	*Each country has its network of experts in stewardship who did the training. This varied from six for Ghana to two for Malawi. Following the application of stewardship principles learnt, Standard Operating Procedures (SOPs) were developed for various biotechnology research and development activities.* *Whilst there was a vibrant in-country stewardship partnership, this was not very apparent across project countries. Exchanges on stewardship practices only took place at project review meetings.* *Stewardship information generated from the project was well-packaged and disseminated on the FARA website or good quality colorful printed material produced.* *Material from international sources did not receive such attention. Efforts to make project countries register as members of the Excellence Through Stewardship (ETS) for routine access to quality stewardship material was not successful except for FARA HQ which joined ETS as Associate Member.*
Monitor local and global information on stewardship and package for dissemination.	Packaged stewardship information	Q4, 2009	Stewardship information packaged for dissemination	
Identify channels or modalities for dissemination	Web-based information available on FARA website; radio, print and television engaged for information dissemination	Q4, 2009-2011	In-country training on stewardship advertised	
3.2 Enable FARA to establish itself as a leader in stewardship by creating and implementing an integrated programme of interventions with other capacity building organizations, using the best information from industry and the public sector				
Identify stewardship best practice organizations that are doing external outreach and establish linkage for information sharing. (interventions involving external players, like regulators, seed companies, public, government, etc.)	Best practices information gathered put on FARA website. Activity reports from countries indicating those meeting the criteria for successful stewardship.	Q1, 2011 Q1, 2010	FARA is one of the countries meeting criteria for good stewardship in projects. Good stewardship becomes one of the criteria for continued funding support from FARA.	*All project countries practiced good stewardship principles from case studies published on FARA website. Interaction with external players was evident for Syngenta Company throughout the project but for other players like Monsanto, this was only at the Pan-African stewardship conference organized by FARA.* *FARA, through training given and close monitoring activities ensured good stewardship was practiced at project development by the partner countries. This performance by FARA earned continued funding from the SFSA donor.*

Activities	Output/deliverable	Timeline/milestones	Measure	Assessment
FARA to share the information with countries	Stewardship information put on FARA website.	Q1, 2010	FARA website has information on project stewardship.	
Outreach programme implemented i.e. awareness creation exercises started and continuous.	One hundred and twenty politicians and policy makers trained in risk communication or made aware of biotechnology and biosafety developments each year in each country. Two hundred and forty persons from civil society, media, farmers, NGOs per year receive risk communication training or exposure to biotechnology and biosafety issues in a training workshop	Q4 and throughout 2010, 2011 and 2012	Target numbers for contact and training achieved Actions delivered on time and good feedback received	*Outreach programmes were generally successful from the large numbers of trainees reported. Some of these benefited from awareness creation lectures on biosafety and stewardship in biotechnology.* *The awareness creation exercises contributed immensely to major regulatory approval steps in project countries like Ghana, Malawi and Uganda.* *The SABIMA Project was adjudged a success by its stakeholders. This can be inferred from the general call for project upscaling in a second phase (SABIMA2).*

Annex 3. List of FARA-certified stewardship trainers in agricultural biotechnology.

No	Name	Position	Organization	Address	Email	Country
1.	Dr. Oumar Traore	Focal person (Research scientist)	Institut de l'environnement et de recherches agricoles (INERA)	01 BP 476 Ouagadougou Burkina Faso Cell +22670254651	kourouda@gmail.com	Burkina Faso
2.	Dr Hamidou Traore	Deputy focal person. Research Fellow (weed scientist)	(INERA) Head of Scientific, Technical Information and Communication Unit	04 BP 8645 Ouagadougou 04, Burkina Faso Tél : (00226) 50 34 02 70/ 50 34 71 12 Cell : (00226) 70 25 80 60	htraore@hotmail.com ; hamitraore8@yahoo.com	Burkina Faso
3.	Dr. Ibrahim Atokple	Deputy focal person. (plant breeder)	Council for Scientific and Industrial Research – Savannah Agricultural Research Institute (CSIR- SARI)	P. O. BOX 52 Tamale Ghana Cell : 0249 561 096	idkatople@yahoo.com	Ghana
4.	Dr. Quain Marian	Focal person Research scientist (biotechnologist)	Council for Scientific and Industrial Research–Crop Research Institute (CSIR- CRI)	Phone: 233-51-60396 Cell: 0242 686594/ +44-7585933114	marianquain@hotmail.com	Ghana
5	Prof. Walter S. Alhassan	Project coordinator Biotechnology Policy	Forum for Agricultural Research Africa (FARA)	No. 12 Anmeda Street, Roman Ridge, PMB CT 173, Cantonments, Accra, Ghana. Tel + 233 302 772823/779421 Fax: +233 302 773676, Mobile: 233 20 8146668	walhassan@fara-africa.org	Ghana
6.	Dr. Simon Gichuki	Focal person Head, Biotechnology Centre	Kenyan Agricultural Research Institute KARI - Biotechnology Centre	P.O. Box 57811-00200, Nairobi, Kenya Tel:+254722813687 +254 734 331196	stgichuki@kari.org	Kenya
7	Mrs. Jane Otadoh	Deputy Focal person. (research scientist)	MOA – Biotechnology Branch	Headquarters Kilimo House P.O.Box 30028 Nairobi-Kenya Mobile phone: +254 722 268 427	akinyijao2000@yahoo.com	Kenya
8	Dr. Mwase Weston F.	Focal person. (research scientist)	Bunda College of Agriculture	P.O. Box 219Lilongwe, Malawi Tel: +265 1277 361/ +2651928656 (office) + 265 999 669920 (Mobile) FAX +265 1277364	westmwase@yahoo.co.uk wmwase@bunda.unima.mw	Malawi
9	Ms. Ntuparyana Yanira	Deputy focal person. (research scientist)	Environmental Affairs Department	P.O Box 394 Lilongwe 3, Malawi +265888829964	ytunpanyama@yahoo.co.uk	Malawi

No	Name	Position	Organization	Address	Email	Country
10	Dr. Charles Mugoya	Focal Person (programme manager)	SRO- Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)	ASARECA Agro-biodiversity & Biotechnology Program P.O.Box 765 Entebbe, Uganda Tel: 256 414 322126 Fax: 256 414 322593 Cell Phone: + 256 772 966662	c.mugoya@asareca.org mugoyac@gmail.com;	SRO
11	Mr. Masiga Clet W.	Deputy focal person (research scientist)	SRO- Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)	Agro-biodiversity & Biotechnology Programme Association for Strengthening Agricultural Research In East and Central Africa (ASARECA) P. O. Box 765 Entebbe, Uganda	wmasiga@hotmail.com; c.masiga@asareca.org	SRO
12	Prof. Sangare Abdourahamane	Focal person (biotech and biosafety program manager)	SRO- West and Central African Council for Agricultural Research and Development (CORAF/WECARD)	CORAF/WECARD Executive Secretariat 7, Avenue Bourguiba BP 48, Dakar- RP Sénégal +221773897745	abou.sangare@coraf.org ; abou.sangare@yahoo.fr	SRO
13	Dr. Andrew Kiggundu	Focal person. (research scientist)	National Agriculture Research Organisation (Uganda) NARO - Kawanda	P. O. Box 7065, Kampala, Uganda Tel: +256 41 4566102 or +256 41 4567158 Fax: +256 41 4566381 Cell: +256 77 2516652	akiggundu@kari.go.ug	Uganda
14	Dr Chiedozie Egesi	Deputy focal person. Trial manager	BioCassava Plus Project National Root Crops Research Institute, Umudike	National Root Crops Research Institute (NRCRI), Umudike, Km 8 Ikot Ekpene Road, PMB 7006, Umuahia 440001, Nigeria. Tel. +234 703 496 2100	cegesi@yahoo.com	Nigeria
15	Dr. Mohammed Ishiyaku'	Focal person (plant breeder)	Institute of Agricultural Research (IAR)	Ahmadu Bello University, Samaru, Zaria, Nigeria Cell: +2348051316887	mffaguji@hotmail.com	Nigeria
16	Dr Titus Alcai	Deputy focal person; Research officer (plant virologist)	National Crops Resources Research Institute (NaCRRI), Namulonge	P. O. Box 7084, Kampala, Uganda Cassava Programme Tel: +256 772 970585	talicai@naroug.org talicai@ hotmail.com	Uganda

Annex 4. FARA biotechnology stewardship policy statement

Background

FARA is the AU-NEPAD designated lead institution for the implementation of the Comprehensive Africa Agriculture Development Programme (CAADP) Pillar IV which addresses research, technology dissemination and adoption of technology. FARA fosters global and continental networking and, through the Secretariat, provides networking support functions to sub-regional organizations and through these to the National Agricultural Research Systems (NARS). FARA ensures the delivery of new knowledge and evidence for investing in agricultural research for development. The role that FARA plays at the continental level in promoting agricultural research for development, its critical mass and its role as the technical arm of the AU-NEPAD's Department for Rural Economy and Agriculture, gives it the unique advantage as the lead institution for Pillar IV. The FARA Secretariat co-ordinates and facilitates technical assistance delivered through the SROs to the NARS who are responsible for research technology dissemination and adoption activities.

FARA's vision: Reduced poverty in Africa as a result of sustainable broad-based agricultural growth, particularly of smallholder and pastoral enterprises.

FARA's mission: The creation of broad-based improvements in agricultural productivity, competitiveness and markets by supporting Africa's sub-regional organizations in strengthening capacity for agricultural innovation.

FARA's biotechnology commitment

FARA supports the safe, need-based application of biotechnology to the challenges of agriculture in Africa base on need. In so doing, FARA aspires to establish itself as a leader in biotechnology stewardship by creating and implementing a programme of interventions with other capacity building organizations, using the best information from the industry and the public sector.

In providing support to agricultural biotechnology research, technology dissemination and adoption, FARA is committed to the following stewardship goals:

- Ensuring that products developed and traded are safe to humans, animals and the environment and fully in compliance with national and international regulatory and legal requirements.

- The SROs and all other stakeholders who do business with FARA in biotechnology will be required to apply agreed-upon stewardship principles of transparency, ethics and morality to research, development and dissemination of technologies for adoption.
- FARA will support training that ensures that stewardship principles that cover safety and product quality are applied in the entire product cycle. This will start from gene discovery through product development, seed production, seed marketing, distribution, utilisation and on to product discontinuation. FARA will monitor its partners to ensure that research conducted with its support is in compliance with best stewardship practices for the handling of modern biotechnology products.
- FARA will be a lead institution in the support of training in best practices in stewardship and the provision of web-based information on product stewardship.
- Through support to the SROs, FARA will encourage linkage between the NARS, agri-business, biotech supporting NGOs and other key organizations in biotech development and commercialisation.
- FARA will collaborate with partners to continuously improve and ensure sustainable stewardship management of biotechnology products.

Annex 5. CORAF/WECARD biotechnology policy statement

Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles		West and Central African Council for Agricultural Research and Development

CORAF/WECARD
Biotechnology and biosafety stewardship policy statement

Background

The *Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles*/West and Central African Council for Agricultural Research and Development [CORAF/WECARD] was established in 1987 at the conference for African and French Agronomic Research Directors. In 1995 it widened its coverage to include the English and Portuguese speaking countries of West and Central Africa. It is comprised of 21 member states[7] including Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Cote D'Ivoire, Democratic Republic of Congo, Gabon, the Gambia, Ghana, Guinea, Guinea Bissau, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo. The land area is 11.5 million km^2 and the population is 318 million of which 65% are engaged in agriculture.

CORAF/WECARD *vision*: "A sustainable reduction in poverty and food insecurity in WCA through an increase in agricultural-led economic growth and sustainable improvement of key aspects of the agricultural research system".

CORAF/WECARD *mission*: "Sustainable improvements to the productivity competitiveness, and markets of the agricultural system in West and Central Africa by meeting the key demands of the sub-regional research system as expressed by target group".

CORAF/WECARD *commitment to biotechnology and biosafety*:

CORAF/WECARD supports the safe application of biotechnology for the improvement of West and Central African agricultural productivity and competitiveness.

For that purpose, CORAF/WECARD's Biotechnology and Biosafety Program supervises and supports research and development institutions, as well as other capacity building organizations working in the sub region, to implement activities within the frame of regional projects, which aim at 1) developing biotechnology as a means to increase food productivity and market competitiveness, 2) promoting a regional approach to biosafety and 3) coordinating various efforts in biotechnology and biosafety in West and Central Africa.

The objective of the regional approach to biosafety supported by CORAF/WECARD is to develop a regional framework and regulations as well as common tools for the evaluation and

7. Liberia, Equatorial Guinea and Sao Tome are also likely to become members within the medium-term.

monitoring of the environmental and socioeconomic impacts of the adoption (or lack thereof) of the biotechnology products identified as potential solutions to the agricultural challenges of the region. In pursuing this objective, CORAF/WECARD commits itself to establishing and implementing activities of stewardship for the benefit of the West and Central African countries.

Therefore, CORAF/WECARD will support:

- Regional and national agricultural research and development institutions in ensuring that products developed and traded in the region are safe to humans, animals and the environment;
- Initiatives that enable these institutions to fully comply with national, regional and international regulatory and legal requirements;
- Capacity strengthening activities that allow biosafety administration and technical officers to apply agreed-upon stewardship principles of transparency, ethics and morality to research and development as well as technology dissemination;
- Collaborative efforts leading to the establishment of biotechnology and biosafety technical platforms for conducting constructive biotechnology and biosafety research activities.

Annex 6. Burkina Faso INERA biotechnology policy statement

DECLARATION DE LA POLITIQUE DE L'INERA EN MATIERE DE STEWARDSHIP POUR LA PRODUCTION DE SEMENCES

Contexte

L'Institut de l'Environnement et de Recherches Agricoles (INERA) est une des structures du Centre National de la Recherche Scientifique et Technologique (CNRST), spécialisée en recherches agricoles et environnementales. Il est chargé de la génération des innovations technologiques et des études contribuant à : (i) l'amélioration des productions végétales, animales et forestières; (ii) la promotion de la protection et de la gestion des ressources naturelles; (iii) l'exploitation des brevets et licences. Il contribue à mettre en œuvre les politiques nationales de recherche agricoles et environnementales et à traduire en actes la politique de coopération et les engagements pris par le Burkina Faso en matière de recherches agricoles et environnementales. Il est chargé, en outre :

- d'organiser et de gérer les recherches agricoles et environnementales;
- de contribuer à valoriser les résultats scientifiques et économiques;
- de décentraliser et de régionaliser les recherches agricoles et environnementales dans le but de les rapprocher de leurs utilisateurs et de promouvoir un développement optimal des potentialités agricoles régionales dans un cadre de gestion durable des ressources naturelles;
- de créer et gérer des unités de productions agricoles, animales et forestières.

La vision de l'INERA : Faire progresser et maintenir au plus haut niveau les connaissances scientifiques et technologiques dans les domaines agricole et environnemental.

La mission de l'INERA : Favoriser la gestion durable des ressources naturelles et contribuer à la réduction de la pauvreté par le développement de technologies performantes et répondant aux attentes des différents acteurs du monde rural.

Engagement de l'INERA

En tant qu'acteur majeur de la production agricole et premier maillon de la chaîne de la production de semences, l'INERA est engagé dans la création et l'amélioration variétale répondant aux besoins des utilisateurs aussi bien par voie conventionnelle que par l'utilisation

saine des biotechnologies. Il entend se positionner comme un leader dans la gestion responsable (stewardship) des biotechnologies, notamment dans le domaine de la production de semences de qualité.

En adoptant la démarche du stewardship, l'INERA s'engage à la satisfaction des points suivants:

- Garantir la qualité des semences développées et produites dans le respect des règles et des exigences dictées par les réglementations nationale, régionale et internationale.
- Promouvoir l'adoption de la démarche du stewardship par l'ensemble des parties impliquées dans la production de semences afin de garantir la qualité du produit tout au long de la chaîne.
- Contribuer à la formation de toutes les parties prenantes afin que les principes du stewardship, garantissant la qualité des semences au sens large, soient appliqués par tous et à toutes les étapes du processus de production et de distribution. Ces étapes concerneront en particulier : les semences initiales, les semences de pré-base (G0, G1, G2 et G3), les semences de base (G4) et les semences certifiées R1 et R2.
- Contribuer à faire respecter les réglementations nationales sur la gestion et l'utilisation des semences issues des biotechnologies modernes par les parties prenantes du secteur semencier.
- Assumer son rôle d'institution leader dans la mise en œuvre et la dissémination des bonnes pratiques en stewardship de la production de semences.

Annex 7. Ghana CSIR-Crops Research Institute biotechnology stewardship policy statement

CSIR-Crops Research Institute & CSIR-Savanna Agriculture Research Institute biotechnology stewardship policy statement

The Council for Scientific and Industrial Research Ghana is the governing body which oversees scientific research in Ghana, made up of 13 institutions. CSIR – Crops Research Institute (CRI) the Savanna Agriculture Research Institute (SARI) are two of these institutes. Their mission is to ensure high and sustainable crop productivity and food security through development and dissemination of environmentally sound technologies. The research mandate covers 15 food and five industrial crops in Ghana.

The research **objectives** of the institutions are to:

- Develop improved crop varieties that are high yielding and resistant/tolerant to important biotic and abiotic stresses and have good quality characteristics.
- Develop improved production technologies for sustainable production.
- Assist in achieving food security and self sufficiency in industrial raw material production.
- Play a leading role in the diversification of agricultural production in Ghana.

To ensure the achievement of these objectives, collaborative networks with all relevant national institutions, National Agriculture Research Centres in the sub-region, regional organizations and CGIAR centres.

As steward in the institutes of the Council, it is our **policy** and commitment:

- That we practice stewardship principles that are safe and ensure product quality, as applied over the entire product cycle. This will start from gene discovery through product development, seed production, seed marketing, distribution, utilisation and on to product discontinuation.
- To ensure safe research in the development of better food and industrial crops for humans, animals and the environment.
- As we develop and release new biotechnology crops, we will dedicate ourselves to ensuring quality control and responsible management of our products from inception, through to their use and discontinuation.
- To fully comply with applicable national, regional and international regulatory requirements.
- Prior to release, we will subject our biotechnology products to evaluation by regulatory agencies along the value chain and as such make available reliable tools for identification of events.
- To pass on stewardship ideals to all stakeholders along the value chain.

Annex 8. KARI biotechnology stewardship policy statement

KENYA Agricultural Research Institute stewardship policy statement

The main function of KARI is to conduct research that develops new or improved products and technologies, which add value to existing ones and are of significant benefit to the end-user, primarily the Kenyan farmer and agribusiness entrepreneur.

KARI's vision: KARI envisions a vibrant, commercially-oriented and competitive agricultural sector propelled by science, technology and innovation.

KARI's mission: To contribute to increased productivity, commercialisation and competitiveness of the agricultural sector through generation and promotion of knowledge, information and technologies that respond to clients' demands and opportunities.

KARI's commitment to stewardship: KARI supports the need-based, safe application of biotechnology to the challenges faced by the agriculture sector in Kenya. In so doing, KARI aspires to establish itself as a leader in biotechnology stewardship by creating and implementing a programme of interventions with other capacity building organizations, using the best information from industry sources and the public sector.

In the process of agricultural biotechnology research and development, technology dissemination and adoption, KARI is committed to the following stewardship goals:

- Ensuring that products developed and traded are safe for humans, animals and the environment and fully in compliance with national and international regulatory and legal requirements.
- The partners, collaborators and all other stakeholders who do business with KARI in biotechnology will be required to apply agreed-upon stewardship principles of transparency, ethics and morality to research and development and dissemination of technologies for adoption.
- KARI will conduct and support training that ensures that stewardship principles that cover safety and product quality are applied over the entire product cycle. This will start from gene discovery through product development, seed production, seed marketing, distribution, utilisation and on to product discontinuation.
- KARI will monitor its partners and collaborators to ensure that research conducted with its collaboration is in compliance with best stewardship practices for the handling of modern biotechnology products.

- KARI will be a lead institution in the conduct and support of training in best practices in stewardship and the provision of web-based information on product stewardship.
- KARI will encourage linkages with other NARS, IARCs, ROs, SROs, agri-business, biotech supporting NGOs and other key organizations in biotech development and commercialisation.
- KARI will collaborate with partners to continuously improve and ensure sustainable stewardship management of biotechnology products.

Signed _____

Director, KARI

Annex 9. Nigeria IAR biotechnology stewardship policy statement

Institute for Agricultural Research (IAR), Samaru-Zaria, Nigeria

Background

The Institute for Agricultural Research (IAR), Samaru was established in 1924 as the research division of the Department of Agriculture for the then northern provinces of Nigeria. IAR was formally transferred by law to the newly established Ahmadu Bello University (ABU) on 14 October 1962. Since its establishment, IAR has been the bed-rock of crop research and improvement in the savanna region of Nigeria. It has the national mandate for the genetic improvement of cowpea, cotton, groundnut, maize, sorghum, sunflower, castor, artemisia and jatropa. IAR researches potential means of improvement of the farming system of north-western Nigeria. The Institute seeks to achieve its goals through collaboration with local and international partners.

Mission : To generate, disseminate and impart improved agricultural technologies for enhanced crop production and utilisation to achieve national self-reliance in food and industrial raw materials and have surplus for export.

Vision : The Institute is poised to serve as centre of excellence for sustainable, affordable, efficient, and easily adoptable technologies to enhance farm productivity and product utilisation in Nigeria.

IAR's policy statement

In realisation of the immense benefits of biotechnology in food security and economic development, IAR is committed to the safe and responsible application of biotechnology to the challenges of agricultural production and utilisation related to its research mandate. In so doing, IAR is poised to serve as centre of excellence for sustainable, affordable, efficient, and easily adoptable technologies to enhance farm productivity and product utilisation in Nigeria.

To achieve these, as a policy IAR is committed to the following stewardship policies:

- In development and release for commercialisation of biotechnology products observe safety and quality standards in full compliance with national and international regulatory and legal requirements.

- Apply stewardship principles of transparency, ethics, morality, maintaining integrity, responsible and safe management of research and development as well as dissemination of technologies for adoption.
- IAR pays close attention to the opinions of its stakeholders as such encourages participatory evaluation of biotechnology products in the cause of development and deployment with stakeholders.
- Require Agricultural Development Projects (ADPs) State Ministries of Agriculture (MOAs), Local Governments (LGAs) and all other stakeholders who do business with the Institute in biotechnology, to apply agreed-upon stewardship principles of transparency, ethics, morality and maintenance of product integrity to research and development and dissemination of technologies for adoption.
- Create an enabling environment for its staff to strengthen their capacity for research and development as well as stewardship of biotechnology products through collaboration with world renowned centres of excellence-sustainability.
- Ensure best communication practice amongst institute teams and other stakeholders for implementation of biotechnology stewardship policy.

Annex 10. Malawi Bunda College Biotechnology Stewardship Policy Statement

University of Malawi
Bunda College of Agriculture
Biotechnology stewardship policy statement

Background

Bunda College of Agriculture, a constituent college of the University of Malawi, is a leading tertiary training institution in agriculture, environmental sciences and development studies in Malawi and the southern African region.

The vision of the college is to be an autonomous world class university with widening access to university education, providing high quality training. The mission of the College is to advance and promote knowledge, skills, self-reliance and sound character for (i) sustainable food production and utilisation, (ii) improving income, food security and nutrition, and (iii) conservation and management of biodiversity, the environment and natural resources through the provision of information services, teaching and training, research, outreach, consultancy and sound management in response to national needs.

Role of biotechnology

Bunda College of Agriculture recognises the important role modern biotechnology plays in enhancing agricultural productivity the world over. With advancement in Genetic Modification (GM) technologies and the increase in market acceptance and availability of GM products, many countries are embracing biotechnology to increase yields, improve shelf life and nutritional values of foods.

Regulation of agricultural biotechnology

Regulation is designed to address both potential harm and liability and also provides assurance that a product is safe for intended use. Regulation also provides assurance that appropriate safety standards have been met in bringing a product to market. As a leading tertiary training institution in agriculture, environmental sciences and rural development, Bunda College strives to take the lead in the biotechnology stewardship.

General policy

Bunda College will contribute to the Malawi government's priorities of increased agricultural production, food security through nutrition, through training and the generation of technologies that are safe and ethically acceptable for human, animals and the environment. To achieve this, Bunda College strives to:

- Be a lead institution in the provision of training in best practices in biotechnology stewardship.
- Apply biotechnology that promotes sustainable agricultural productivity and value addition to safe agricultural products.
- Abide by national biotechnology and biosafety standards for ethics in biotechnology research and outreach activities.
- Promptly communicate and in a broad and transparent manner with stakeholders developments in biotechnology activities by Bunda College and stewardship implementation procedures.
- Ensure that any biotechnology product developed by the institution is safe for use by humans, animals and the environment and fully in compliance with national and international regulatory and legal requirements.
- Follow generally accepted best seed quality practices designed to prevent adventitious presence of unauthorised products and minimise unintended incidence/presence of contaminants.
- Provide training in applications of biotechnology that promise to improve the quality of life of Malawians through increased crop and livestock production while avoiding applications that carry risks outweighing potential benefits.
- Support biotechnologies that will enhance conservation of biological diversity and safeguard the country's rich genetic biodiversity resource.
- Train seed producers, regulators, policy makers, legislators, food value chain stakeholders, technology providers, academicians, researchers and farmers on how to correctly and safely work with biotechnology crops, particularly genetically modified organisms (GMOs) and Living Modified Organisms (LMOs)
- Advance public awareness and understanding about biotechnology and its applications and engage stakeholders in a stimulating and productive dialogue with the government, members of the public and private sector.
- Seek dialogue with agriculturalists, consumers, legislators, and other groups who share an interest in bioethical issues and help in addressing ethical dilemmas through provision of scientific basis of each product.
- Collaborate with other training, research and development partners in the country and the region to continuously improve and ensure sustainable stewardship management of biotechnology products.

Annex 11. Uganda NARO biotechnology stewardship policy statement

The National Agricultural Research Organisation

Stewardship policy statement

The vision: A farmer-responsive research system that generates and disseminates problem-solving, profitable and environmentally sound technologies, knowledge and information on a sustainable basis.

The mission: The generation, adoption and dissemination of appropriate and demand-driven technologies, knowledge and information through an effective, efficient, sustainable, decentralised and well co-ordinated agricultural research system.

The goal: To enhance the contribution of agricultural research to sustainable agricultural productivity, economic growth, food security and poverty eradication through generation and dissemination of appropriate technologies, knowledge and information".

The objective: The objective of NARO is to coordinate and oversee all aspects of agricultural research in Uganda.

The functions: Provide strategic direction for publicly funded agricultural research in Uganda and act as a forum for agricultural researchers in Uganda.

- Coordinate and oversee, in collaboration with the Uganda National Council for Science and Technology and other lead agencies, the development, consolidation and implementation of agricultural research policy and national research strategies, plans and budgets relating to publicly funded agricultural research;
- Set national priorities and harmonise research activities of the national agricultural research system, constituent institutions and public agricultural research institutes, civil society organizations, private sectors and farmer organizations and promote delivery of quality and efficient agricultural research services;
- Advise and coordinate formulation of policy and legislative proposals, research standards, codes of ethics, conduct and practice and guidelines for delivery of agricultural research services;
- Provide guidelines, guidance and ensure delivery of quality agricultural research by service providers.

Stewardship policy statements

- NARO believes that the new science of biotechnology has a very important role to play in improving agricultural productivity and development in Uganda.
- Carry out high quality research in modern biotechnology and deliver products previously impossible to generate through conventional means.
- Develop novel products using biotechnology tools offering increased productivity and market access.
- Build capacity (infrastructure and human skills) for safe agricultural biotechnology research and development.
- Identification of new and valuable opportunities in biotechnology.
- Create public awareness concerning the opportunities and benefits offered by biotechnology.
- Develop excellence in all aspects of agricultural biotechnology in Uganda.
- Make efforts to ensure responsible management at every level of biotechnological research and development.
- Prioritise safety to humans, animals and the environment in the development and use of biotechnology.
- Ensure that stewardship practices are in place for every biotechnology research and development project and adherence to them is periodically reviewed by the Institutional Biosafety Committee (IBC).
- Ensure that before a biotech product can be developed, field tested and introduced into the market, all necessary approvals from the various government agencies are obtained.

Annex 12. Ghana stewardship peer audit survey report

FARA	**SABIMA Project** **Stewardship Peer Survey (StePs) template** **Version 0.1** **Summary**

Auditor information

Name	Dr Marian D Quain
Organization	Council for Scientific and Industrial Research-Crops Research Institute
Contact details	Box 3785, Kumasi, Ghana 233-242686594 marianquain@hotmail.com

Audited organization

Organization	National Root Crop Research Institute (NRCRI), Umudike, Nigeria
Section/Department (If applicable):	Biotechnology Program
Name contact person	Dr Chiedozie Egesi
Contact details	NRCRI, Km 8 Ikot Ekpene Road PMB 7006, Umuahia 440001, Nigeria. cegesi@yahoo.com

Audit information

Date(s)	8 September, 2011	
Location	NRCRI, Umudike, Nigeria	
Scope	Laboratory	Specify: Tissue Culture, Molecular Biology and ß-carotene analysis laboratory
	Greenhouse	Specify:
	Screenhouse	Specify: Level "2" screenhouse
	Confined Field Trial	Specify: Cassava Confined Field Trail (CFT)
	Seed handling & storage	Specify: Tissue Culture Laboratory
	Other	Specify:

Note: This is only a first stage audit consistent with the level of stewardship training received and not a comprehensive survey conducted by a trained auditor. The term "auditor" on the sheet is used advisedly.

One "general sheet" should always be included. For each of the indicated areas a filled out form is attached that reflects the findings of the audit. In the case of "Other", it is suggested

that one of the provided sheets is used to direct the questions, adapted to reflect the specifics of the audited facility.

The auditor provides a copy of this completed report to the contact person of the audited organization and to the FARA contact person. The contents represent the opinion of the auditor. They are confidential and only serve to assist the audited organization in their effort for continuous improvement.

Date of completion of the report: 10 September 2011

Signature of the auditor:

FARA	**SABIMA Project** **Stewardship Peer Survey (StePs) template** **Version 0.1** **General information** **Marian D. Quain**

This sheet needs to be completed for each audit, irrespective of the scope.

For each of the audit topics below, the auditor should confirm that related systems, procedures and/or work instructions are in place consistent with the biotechnology stewardship objectives.

Has the organization established a **stewardship policy**? Has it been communicated? How does the organization make sure that the policy is put in practice?	Yet to be developed.
Does the organization have a **stewardship programme** in place that covers all life cycle stages that the organization is involved in?	The Biosafety Research Network was set up as a result of existing projects associated with GM cassava. These projects put in place a system to cover all the life cycle stages of their research activities, to which SABIMA also contributed.
Has the organization **assigned people** to take up specific stewardship tasks? How are these assignments formalised? How do people report on achievements?	Yes. Specific persons are assigned specific stewardship tasks in the laboratories and CFT. There is documentation of persons responsible for specific tasks at the various stages. A biosafety officer monitors activities and also conducts bi-weekly visits to facilities. There is a monthly system where reports are submitted to collaborators and the project PI.
Has the organization established a process to **analyse** steps in the activities where product quality, purity, integrity or regulatory compliance may be at risk e.g. formal Critical Control Point analysis? Is the process implemented and are there proofs of this implementation?	Yes, through the monthly reporting and visits by the Institutional Biosafety Officer who is also the Chairman of the Institutional Biosafety Committee. There is also a catalogue of how incidentsthat might implicate product quality, purity, integrity or regulatory compliance should be reported. There exist incidence response plans at the various laboratories and the CFT. All the involved staff have been equipped with cell phones, computers and internet access to facilitate communication. Incidence response forms also exist.

How does the organization support **continuous improvement**? When improvements are made, how are they communicated in the organization?	The organization conducts internal workshops for staff, explores training workshops for staff to participate in and the knowledge thus acquired is shared through CDs and email. Research collaborators and stakeholders also facilitate continuous upgrade, and through monitoring their reports, the management is able to find out if knowledge gained is adequately applied.
Has the organization implemented a **quality management** system? If yes, how does it integrate elements of biotechnology stewardship?	Yes it is available and the organization ensures compliance with the assistance of the Biosafety Officer. Regulation and compliance are taken seriously, and trained staff ensure product safety, integrity, quality and sustainability, containment, and confinement.
Is there a programme to identify **training** needs for individuals, to ensure that this training is provided and to confirm that people have successfully completed the required training?	As part of the projects, the required training is given to the staff and their output is monitored. Profile analysis is also conducted to ensure training needs are met. The staff have had the opportunity to participate in training programmes in Nigeria, Uganda, the USA and South Africa.
Has the organization established ways to ensure that only authorised people have **access** to materials and facilities?	Yes there is limited access to facilities. Access to facilities hosting GMOs is only allowed to authorised entrants. The various facilities have signing in and out books and the keys are handled by specific persons. There are log books to monitor movement of GMOs.
Has the organization implemented a system to control **documentation** and to make sure that relevant information is stored in a secure and retrievable way?	Yes. All documentation is hand-written and later entered into two different computers. The reports are shared with collaborators in the USA through email. Also, information on the projects is automatically saved to “ARM 8”, a facility with collaborators in the USA.
In case of **collaboration** with third parties, how does the organization communicate stewardship principles and make sure that the third party also observes a stewardship approach?	Presently, the only third party is the courier service which transports GMOs. To ensure compliance with stewardship principles, the packages are labelled in accordance with regulatory requirements and the courier service is kept informed.
In what way is the organization prepared for **stewardship issues** and what systems are in place to respond?	Being involved in two projects, the staff at the biotechnology programme have been well trained in stewardship issues.
Does the organization have an **incident response management** process? Have people been assigned that are accountable for this process? Have training needs been identified?	Yes. All the staff, including security, are equipped with phones and response forms to tackle incidents. Through assessment of incidents, training needs are identified. There are comprehensive response plans in place.
Additional auditor comments	**Through the two projects on cassava (high beta carotene cassava and high iron cassava). The biotechnology programme at NRCRI Umudike has been proven to have adequate stewardship principles in place to facilitate the handling of transgenic crops, ensuring product integrity.**

Annex 13. Nigeria stewardship peer audit survey report

FARA	**SABIMA Project** **Stewardship Peer Survey (StePs) template** **Version 0.1** **Summary**

Auditor information

Name	Dr Mohammad F Ishiyaku
Organization	Institute For Agricultural Research (IAR), Nigeria
Contact details	Department of Plant Science, Institute for Agricultural Research, PMB 1044, Zaria, Kaduna State, Nigeria, Mobile: +2348051316887; email: mffaguji@hotmail.com

Audited organization

Organization	Kenya Agricultural Research Institute (KARI), Nairobi
Section/Department (If applicable):	Biotechnology Centre
Name contact person	Dr Simon Gichuki
Contact details	Biotechnology Centre P.O Box 57811, 00200-Nairobi, Kenya Tel:+254204444137/144 Fax:+254204444144 Mobile:+254722813687 Email: stgichuki@kari.org , stgichu@yahoo.co.uk

Audit information

Date(s)	14 and 15 July 2011	
Location		
Scope	□ Laboratory	Specify:
	□ Greenhouse	Specify: Process of Receiving Cassava Seedlings and handling for Transportation to CFT Site
	□ Screenhouse	Specify:
	□ Confined Field Trial	Specify:Field management, data collection and destruction
	□ Seed handling and storage	Specify:
	□ Other	Specify:

Note: This is only a first stage audit consistent with the level of stewardship training received and not a comprehensive survey conducted by a trained auditor. The term “auditor” on the sheet is used advisedly.

One “general sheet” should always be included. For each of the indicated areas under consideration a filled out form is attached that reflects the findings of the audit. In the case of

"Other", it is suggested that one of the provided sheets is used to direct the questions, adapted to reflect the specifics of the audited facility.

The auditor provides a copy of the completed report to the contact person in the audited organization and to the FARA contact person. The contents represent the opinion of the auditor. They are confidential and only serve to assist the audited organization in their efforts towards continuous improvement.

Date of completion of the report:

Signature of the auditor:

FARA	**SABIMA Project** **Stewardship Peer Survey (StePs) template** **Version 0.1** **General information** **Mohammed Ishiyaku**

This sheet needs to be completed for each audit, irrespective of the scope.

For each of the audit topics below, the auditor should confirm that related systems, procedures and/or work instructions are in place consistent with the biotechnology stewardship objectives.

Has the organization established a **stewardship policy**? Has it been communicated? How does the organization make sure that the policy is put in practice?	A stewardship policy has been established and is in the process of being communicated to all stakeholders.
Does the organization have a **stewardship programme** in place that covers all life cycle stages that the organization is involved in?	There is a stewardship programme covering the first two life cycle stages only–Gene Discovery and Plant Development. In future stewardship programmes will be developed to cover more downstream technology development, transfer and product discontinuation.
Has the organization **assigned people** to take up specific stewardship tasks? How are these assignments formalized? How do people report on achievements?	So far stewardship tasks have been project based. Project leaders must formally apply stewardship principles in their specific projects. There is no evidence of formalisation beyond that.
Has the organization established a process to **analyse** steps in the activities where product quality, purity, integrity or regulatory compliance may be at risk, e.g., formal Critical Control Point analysis? Is the process implemented and are there proofs of this implementation?	There was ample evidence of CCP analysis in the activities examined. An incident of label missing was traced back successfully.
How does the organization support **continuous improvement**? When improvements are made, how are they communicated in the organization?	The leadership has indicated a process of review of procedures and improves upon them whenever a more effective procedure is identified.

Has the organization implemented a **quality management** system? If yes, how does it integrate elements of biotechnology stewardship?	There are standard labelling and laboratory operating procedures. The same sort of stringent rules apply to the appointment of staff.
Is there a programme to identify **training** needs for individuals, to ensure that this training is provided and to confirm that people have successfully completed the required training?	Not examined.
Has the organization established ways to ensure that only authorised people have **access** to materials and facilities?	Yes. There are bold warning signs restricting entrance into facilities to only those authorised.
Has the organization implemented a system to control **documentation** and to make sure that relevant information is stored in a secure and retrievable way?	There are back-ups for documents in both hard and electronic forms. These are stored in secured lockers and computers.
In case of **collaboration** with third parties, how does the organization communicate stewardship principles and make sure that the third party also observes a stewardship approach?	The measures are listed in the stewardship policy document.
In what way is the organization prepared for **stewardship issues** and what systems are in place to respond?	A group is responsible for attending to stewardship issues headed by the programme leader.
Has the organization an **incident response management** process? Have people been assigned that are accountable for this process? Have training needs been identified?	A formal group has been constituted to manage any potential incidents. It was not clear whether this group has handled any issues yet.
Additional auditor comments	**The group has been meticulous in ensuring the quality of their research.**

Annex 14. Malawi stewardship peer audit survey report

FARA	**SABIMA Project** **Stewardship Peer Survey (StePs) template** **Version 0.1** **Summary**

Auditor information

Name	Weston Mwase
Organization	University of Malawi, Bunda College
Contact details	Department of Forestry & Horticulture, P.O. Box 219, Lilongwe, Malawi Tel +265999669920 Email: westmwase@yahoo.co.uk

Audited organization

Organization	Kenya Agricultural Research Institute (KARI)
Section/Department (If applicable):	Biotechnology Centre
Name contact person	Dr Simon Gichuki
Contact details	KARI, P.O. Box 57811-00200, Nairobi, Kenya Tel+ 2544444137/144 Mobile +254722813687

Audit information

Date(s)	20 to 21 March 2012	
Location		
Scope	□√ Laboratory	Specify: KARI Biotechnology Centre
	□√ Greenhouse	Specify: KARI Biotechnology Centre
	□√Screenhouse	Specify: KARI, Kakamega
	□√ Confined Field Trial	Specify: Alupe, Busia BC+ Cassava & VIRCA Cassava
	□ Seed handling and storage	Specify: Not applicable
	□ Other	Specify: Not applicable

Note: This is only a first stage audit consistent with the level of stewardship training received and not a comprehensive survey conducted by a trained auditor. The term "auditor" on the sheet is used advisedly.

One "general sheet" should always be included. For each of the indicated areas under consideration a filled out form is attached that reflects the findings of the audit. In the case of "Other", it is suggested that one of the provided sheets is used to direct the questions, adapted to reflect the specifics of the audited facility.

The auditor provides a copy of the completed report to the contact person in the audited organization and to the FARA contact person. The contents represent the opinion of the auditor. They are confidential and only serve to assist the audited organization in their efforts towards continuous improvement.

Date of completion of the report: 19 April 2012

Signature of the auditor: 

FARA	**SABIMA Project** **Stewardship Peer Survey (StePs) template** **Version 0.1** **General information** **Weston Mwase**

This sheet needs to be completed for each audit, irrespective of the scope.

For each of the audit topics below, the auditor should confirm that related systems, procedures and/or work instructions are in place consistent with the biotechnology stewardship objectives.

Has the organization established a **stewardship policy**? Has it been communicated? How does the organization make sure that the policy is put in practice?	A stewardship policy is not yet in place.
Does the organization have a **stewardship programme** in place that covers all life cycle stages that the organization is involved in?	Yes, a programme is in place. This is in the form of Standard Operating Procedures (SOPs) to take pre-emptive action on what could go wrong at various points of product development known as Critical Control Points (CCPs)
Has the organization **assigned people** to take up specific stewardship tasks? How are these assignments formalised? How do people report on achievements?	Specific team members assigned specific stewardship tasks. For each member there is a line of reporting. Regular meetings are held where reports are received.
Has the organization established a process to **analyse** steps in the activities where product quality, purity, integrity or regulatory compliance may be at risk, e.g. formal Critical Control Point analysis? Is the process implemented and are there proofs of this implementation?	Steps are in place for product quality and formal Critical Control Point analysis. All procedures are in place for separating GMOs from non-GMOs.
How does the organization support **continuous improvement**? When improvements are made, how are they communicated in the organization?	Continuous improvement is an ideal, as well evidenced by the existence of a stringent quality control policy.

Has the organization implemented a **quality management** system? If yes, how does it integrate elements of biotechnology stewardship?	A quality management system is in place. Champions responsible for following up on maintenance of quality management have also been identified.
Is there a programme to identify **training** needs for individuals, to ensure that this training is provided and to confirm that people have successfully completed the required training?	Training needs have been identified in each section and appropriate training is allocated by superiors.
Has the organization established ways to ensure that only authorised people have **access** to materials and facilities?	Yes. Each lab has a list of working staff and line of command. Rules are inscribed on each door in the laboratories and screen-houses.
Has the organization implemented a system to control **documentation** and to make sure that relevant information is stored in a secure and retrievable way?	Laboratory and inventory books are in place. In addition some information is stored in computers.
In case of **collaboration** with third parties, how does the organization communicate stewardship principles and make sure that the third party also observes a stewardship approach?	
In what way is the organization prepared for **stewardship issues** and what systems are in place to respond?	The organization aims at quality improvement and procedures are followed to ensure compliance with quality policy.
Does the organization have an **incident response management** process? Have people been assigned that are accountable for this process? Have training needs been identified?	The organization has an incident response management process in place. Training needs have been identified.
Additional auditor comments	Overall good practice is followed by different departments at KARI. There is quality policy in place. However, much improvement is required in the animal biotechnology laboratories in terms of record keeping, labelling and documentation.

Annex 15. Burkina Faso stewardship peer audit survey report

FARA	**SABIMA Project** **Stewardship Peer Survey (StePs) template** **Version 0.1** **Summary**

Auditor information

Name	Dr Traore Oumar
Organization	Institut de l'Environnement et de Recherches Agricoles (INERA)
Contact details	Plant virus and biotechnology laboratory, CREAF Kamboinsé, 01 P.O. Box 476 Ouagadougou 01 Burkina Faso; Tel: +226 70 25 46 51; kourouda@gmail.com

Audited organization

Organization	National Agricultural Research Organization
Section/department (If applicable):	National Agricultural Research Laboratories Institute National crops resources research institute/Biosciences
Name of contact person	Dr Andrew Kiggundu
Contact details	National Agricultural Biotechnology Centre, National Agricultural Research Laboratories Institute, Kawanda P. O. Box 7065, Kampala, Uganda Tel: +256 41 4566102 or +256 41 4567158 Fax: +256 41 4566381 Cell: +256 77 2516652

Audit information

Date(s)	22 July 2011	
Location	Kawanda and Namulonge	
Scope	Laboratory	Specify: 1) Biosciences (Namulonge)
	Greenhouse	Specify: Biosafety level II greenhouse (Kawanda)
	Screenhouse	Specify:Biosafety level II screenhouse (Namulonge)
	Confined Field Trial	Specify: 1) Evaluation of GM banana for Xanthomonas wilt resistance (Kawanda) 2) Evaluation of GM banana plants for enhanced iron and pro vitamin A contents (Kawanda) 3) GM cassava plants (Namulonge)
	Seed handling and storage	Specify:
	Other	Specify:

Note: This is only a first stage audit consistent with the level of stewardship training received and not a comprehensive survey conducted by a trained auditor. The term “auditor” on the sheet is used advisedly.

One “general sheet” should always be included. For each of the indicated areas under consideration a filled out form is attached that reflects the findings of the audit. In the case of “Other”, it is suggested that one of the provided sheets is used to direct the questions, adapted to reflect the specifics of the audited facility.

The auditor provides a copy of the completed report to the contact person in the audited organization and to the FARA contact person. The contents represent the opinion of the auditor. They are confidential and only serve to assist the audited organization in their efforts towards continuous improvement.

Date of completion of the report:

Signature of the auditor:

Annex 16. 2011 SABIMA Close-out meeting minutes

SABIMA Close-out meeting
1-2 December 2011 – Accra, Ghana
Action and reporting minutes

Chairman: Charles Mugoya
Rapporteur: Laura Johnson
General support: Courage Dzormeku

1. Opening – Charles Mugoya

2. SFSA Statement – Viv Anthony

- On behalf of Marco Ferroni and SFSA, Viv Anthony thanked the focal persons and Professor Walter Alhassan for all they had done at the stewardship conference – especially lauding their openness, active participation and shared learning from the project challenges.
- SABIMA, it was said, had evolved to deliver outputs far beyond what was expected at the project conception stage. Highlights have included the scale of implementation in-country, building the network/community of practice, the publication of a book of case studies, peer-audit reviews and the first pan-African conference on stewardship.
- Ms Anthony emphasised the need to complete the work programme by the end of December 2011, consolidate learning and contribute to planning SABIMA2. She explained that the scale-up required for SABIMA2 to be a success was a major undertaking and required substantial funds. SFSA would be supporting Walter Alhassan/FARA in seeking the funds necessary for this goal, including the provision of advocacy with donors and technical support as required.

3. Consultant statement – Patrick Rudelsheim

- Patrick Rudelsheim highlighted the community of practice created by all focal persons. He stated that their willingness to share and learn was unique in his training experience.

4. Rationale, methodology and expected output – Walter Alhassan

- SABIMA final country technical reports are due from focal persons by 15 January 2011. Each country report should cover the items on the checklist provided by Walter Alhassan at the meeting on 17 November 2011 (Appendix 5) for all activities completed from 1 January – 31 December 2012.

It should also contain the following quantitative elements:

1. Number and list of SOPs developed at each institution.
2. Number of trained personnel and their institutions (using the template to be provided).

Action: All focal persons – 15 January 2012

- Financial reports on use of funds from 1 January – 31 December 2011 are required by 15 February 2012.

Action: All focal persons – 15 February 2012

- FARA to provide to SFSA the final SABIMA technical report covering the full term of the project from 2009-2011, including details for the period from 1 January – 31 December 2011, by 31 January 2012.

Action: Walter Alhassan and FARA – 31 January 2012

- FARA to provide to SFSA the final SABIMA financial report on use of project funds during the full term of the project from 2009-2011 and covering details from 1 January by 31 March 2011 to SFSA.

Action: Walter Alhassan and FARA – 31 March 2012

5. SABIMA coordinator report – Walter Alhassan

- Walter Alhassan reviewed the attempted, accomplished and pending activities for 2011. Pending or incomplete actions highlighted were:
  - Lack of uptake of mentoring offer from FARA for specific country issues.
  - Translation of course modules into French.
  - Bilateral networking between focal persons and with international organizations.
  - Completion of peer review visits between countries.
  - Report on financial expenditure from 3Q 2011.
  - Final concept note and obtaining funding for SABIMA 2.

Action: Oumar Niangado to support FARA with the French translation documentation – 10 January 2012

Action: All focal persons to either finalise dates for peer-review visits or complete their audit reports or FARA – 18 December 2011

6. SABIMA finance manager report – Vesta Nunoo

- 68% of total budget funds had been spent in September 2009–September 2011.
- Reporting of expenses remained a major challenge throughout SABIMA's duration. A key learning has been the need to involve from the outset the country institution financial officers in each of the countries. Also, the focal persons should develop a close partnership with their financial officers reporting on SABIMA. This is to enable timely reporting of the

expenses and to ensure that expenses track closely the in-country work plans. This will be made a pre-condition for project planning for SABIMA2.

- All country financial reports must be sent to Vesta with all hard copy supporting documents by 15 February 2012. This was emphasised as critical to meeting the reporting deadline to SFSA.

Action: All focal persons – 15 February 2012

- Vesta Nunoo estimated that c. $150,000–$180,000 in project funds would remain unspent at the end of the project as of 31 December 2011. Focal persons drew attention to the fact that they would not be able to fully complete their programme of stewardship implementation activities by the end of December 2011, e.g. follow-up checks with trainees and completion of SOP writing. They requested authorisation to continue their work plans during 1Q 2012 and for monies to be released to enable activity completion by end March 2012. It was agreed that each focal person would review in detail their proposed work programmes on the second day of the close-out meeting.
- This review took place and a total cost estimate of c. $70,000 USD was identified as required to complete the programme successfully in all six countries. The follow-up actions agreed upon were:

Action: All focal persons to provide detailed expense reports from June to December 2011 with all receipts in order to determine with Vesta Nunoo remaining funds available for completion of the programme – urgent and to be completed a.s.a.p, latest 12 December 2011

Action: Viv Anthony to discuss developments with Marco Ferroni to establish if the expected remaining funds could be used during 1Q 2012 to complete the work activities

Action: Focal persons to revise their work plan list to reflect the feedback given by FARA/SFSA during the planning discussion. Each focal person to formally estimate the costs required and review these plans with their institutional financial reporting officer, so that budget-related requests are aligned with the financial reports being provided – urgent and to be completed a.s.a.p, by 12 December 2011 latest

Action: Walter Alhassan and Vesta Nunoo to review the additional activities required by HQ during 1Q 2012. A total budget reconciliation for the additional funds being requested by countries and HQ to be prepared and discussed with Viv Anthony for approval – urgent and to be completed a.s.a.p, by 15 December 2011

Action: Walter Alhassan, Vesta Nunoo and Viv Anthony to finalise the projected out-turn in March 2012 and discuss the enabling actions needed for work to continue in 1Q 2012, such as legal and accounting requirements, completion of a "transition" report, etc – urgent and to be completed a.s.a.p, by 15 December 2011

7. Country reports (2011) and work plans for January to March 2012

Ghana- Marian Quain

- **Progress report highlights**
  - Awareness creation workshop (23 August) – 65 participants from civil society, farmers, journalists and chiefs.
  - Stewardship training for researchers, lecturers, regulators and seed industry (24 August) – 79 participants.
  - Ghana has seven certified train-the-trainer stewards.
  - Two stewards have submitted CFT applications since the bill passed into law in June 2011.
- **Focus for additional work**
  - December 2011- January 2012.
  - Certified trained stewards carry out monitoring and evaluation of participants who had received training at stewardship awareness workshops and check for progress with implementation.
  - Launching stewardship policies.
- Requested USD 9,000 in additional funds, as all of her budget had been spent.

Action: Marian Quain to consider publishing her experiences of implementing stewardship principles in Ghana by April 2012

Kenya- Simon Gichuki

- **Progress report highlights**
  - Module One training being held at three venues in January, May and September (48 people trained: PIs, CFT managers, KEPHIS and NBA regulators, seed traders associations, Egerton University, Ministry of Agriculture and Livestock Development).
  - Module Two training at three venues in July, August, October (25 people trained).
  - CCPs completed for cotton, cassava, maize and sorghum and SOPs for lab, containment and CFTs for VIRCA, BC and WEMA.
  - Launching lab and field notebook procedures.
  - Policy launch planned for February/March 2012.
  - CIMMYT and JKUAT showing interest in policy development.
  - Monitoring and evaluation reviews at KARI centres conducted in October, and more planned in December.
  - Range of advocacy work done and planned with OFAB and as part of BioAWARE.
  - Peer audit review visit by Mohammad Ishiyaku in July.
  - Peer audit visit being planned to Ghana or Malawi.

- **Focus for additional work:**
  - Running Module Two and Three, training for university scientists and technicians. Module training (verification and auditing programme) to target potential reviewers in universities and research institutions.
  - Completion of audit reviews in KARI and universities.
  - Print and compile a binder of SOPs for all purposes (lab, greenhouse and CFTs).
  - Launching stewardship policy.
  - Documentation of stewardship activities in Kenya.
  - Peer review visit to Ghana or Nigeria.
  - M&E visit by SRO in conjunction with one of the pre-audit visits.
  - Update and publish Kenyan biotechnology database for FARA and prepare final reports.
- Requested USD 16,100 in additional funds.

Malawi- Weston Mwase

- **Progress report highlights**
  - Successful media launch of policy at high profile meeting on 14 April 2011.
  - Stewardship training of 95 people over eight sessions: scientists (22), seed producers (16), media (45) and farmer representatives (12).
  - Contributed to turning point and government approval of Bt cotton testing on 29 August 2011.
  - Key note speaker at Farmers Union biotechnology conference.
  - SOPs being drafted for tissue culture lab, greenhouse handling and CFT.
  - Bunda College recognised as core information hub.
- **Focus for additional work**
  - Additional stewardship training needed for tissue culture lab and field technicians and completion of CCPs and SOPs.
  - Stewardship advocacy for institution management.
  - Update of biotechnology database.
  - Publish paper on implementation of stewardship and biotech perspectives in Malawi.
- Lower priority was assigned to the proposal for awareness creation with policy makers and this was recommended to be part of SABIMA2.
- SABIMA funds should not be used to finance a field trial for a commercial company.
- Requested USD 18,100 of funds (c. USD 11,000 was on account) but this should be adjusted down and re-estimated to include only priority activities and not support for the CFT or associated training with seed producers that directly relates to commercialisation of Bt cotton.

Action: Confined field trial and/or mock trial costs and associated stewardship requirements for staff and seed producers should be discussed and agreed upon with Monsanto – Weston Mwase

Nigeria- Mohammad Ishiyaku

- **Progress report highlights**
  - Policy document completed and consultation in progress with IAR management. Adoption being sought by all Agricultural Research Institutes in Nigeria.
  - Training Modules One and Two (2009) – 27 participants. Policy makers (15) and research and biosafety (12).
  - Stewardship training for seed producers planned 19–20 December (six companies).
  - Range of over ten SOPs developed by stewards: e.g. CFTs for Bt cowpea, Biocassava plus, rice transformation, marker assisted selection for Striga, seed certification, harvesting and storage of Bt cowpea.
  - Monitoring and evaluation visits have been done to most trained stewards.
  - Awareness creation at public seminar at Zaria (114 students) and for Bt cowpea in Abuja (170 participants).
  - Peer review visit to KARI in July 2011.

Action: Mohammed Ishiyaku to complete peer review visit report urgently – by 1 January 2011

- **Focus for additional work**
  - Training in stewardship in CCPs and SOPs for farmer groups for production of certified seed and root crop planting materials.
  - Monitoring and evaluation visits to trained stewards to support implementation and problem solving.
  - Sharing and developing more SOPs by researchers.
  - Launching stewardship policy (February).
  - Updating biotechnology database.
- Requested USD 20,675 additional funds. Budget reconciliation was required as some 2011 funds remained unspent.

Uganda- Andrew Kiggundu

- **Progress report highlights**
  - Policy drafted. Greater consultation requested by DG. NARO wide workshop planned 20–21 December. Stewardship has been incorporated into NARO biotech strategy.
  - Stewardship trained in-country 50.
  - Module One and Two: 14 staff from five institutes (NARO IBC members, Makerere University, research institutes/CFT applicants).

- Module Three and institutional implementation: CCP and SOPs – 17 staff from five institutions.
- SOPs created for over eight major activities including: CFTs for cassava, banana, maize, cotton and greenhouse handling for sweet potato.

- **Focus for additional work**
  - Completion of stewardship training at NARO and universities.
  - Publish stewardship policy and materials.
  - Monitoring and evaluation of participants from previous training and their progress on implementation.
  - Module Three training on verification and audits of processes and SOPs.
  - Completion of peer-review audit visit.
  - Updating database.
  - Final reporting on SABIMA.
- Requested USD 14,000 additional funds. Budget reconciliation was required as some 2011 funds remained unspent.

Action: Patrick Rudelsheim and Viv Anthony to provide editorial input to Ugandan stewardship publication and sign-off by Walter Alhassan

Burkina Faso- Hamidou Traore

- **Progress report highlights**
  - In-country training – 85 people from scientists (25), University of Ouagadougou (2), national biosafety personnel (4), National Union of Seed Producers (10), cotton and other seed producers (30) and seed health inspectors (14).
  - INERA-certified seed production manual compiled.
  - HACCP analysis and most SOPs for seed production drafted.
  - Stewardship policy adopted.
  - Awareness creation: 15 MPs, 152 seed producers (cotton, cowpea, sorghum), 6000 school pupils (to target farming families), and regional agricultural directors.
  - Peer review audit in Uganda.
  - Biotechnology database updated.
- **Focus for additional work**
  - Training more scientists and technicians at Kamboinsé research station.
  - Completion of SOPs at Kamboinsé.
  - Development and launch of stewardship policies by other institutions.
  - Completion of CCP analysis and SOPs by cotton programme, Bt cowpea and ABS programme. Share learning between scientists and staff.
  - Translation of stewardship training documents into French.

- Updating of biotechnology database.
- Completion of CCPs and SOPs for tissue culture lab and CFT for cotton and Bt cowpea projects.
- Publish paper on implementation of stewardship and biotech perspectives in Malawi.

- Unsure of funds required – suggestion of USD 8,000.

Action: Financing of stewardship training for commercial seed producers of Bt cotton to be reviewed and supported by Monsanto – Oumar and Hamidou Traore

Action: Oumar Niangado to provide support to Hamidou Traore for the French translation, and Patrick Rudelsheim to be final editor – by 12 January 2012

8. Observations and remarks –Patrick Rudelsheim

- Patrick Rudelsheim recommended creation of a Stewardship Information and Training Platform for SABIMA including:
  - Biotechnology database
  - Stewardship training modules
  - Reference SOPs and verifications
  - Publications on case studies including country overviews on implementation experiences
  - Presentations and posters of case studies

Action: Walter Alhassan to discuss how this could be achieved using FARA website with Eric McGaw and FARA management team – 31 January 2012

Action: Walter Alhassan to consider compiling a cross-country case study on the outcomes from the peer review visits and key learning points – 31 February 2012/on completion of reports from focal persons

9. Way forward – Walter Alhassan

Completion of SABIMA

- Walter Alhassan reiterated the need for all country technical and financial report contributions to be sent as soon as possible, and the need for urgency for the financial returns to be able to progress with the recommended in-country plans.

Action: All focal persons – urgent attention

Action: Viv Anthony to alert Walter Alhassan as soon as feedback from Marco Ferroni on the proposed activity continuation to 31 March 2012 – a.s.a.p

Action: Walter Alhassan and Viv Anthony to provide a debriefing on close-out meeting outcomes to their respective DGs – a.s.a.p

Stewardship conference

- It was agreed that the conference, case studies and posters had been a success for all concerned parties.
- Rapid production of the conference report was advocated and for the case study publication to be distributed as soon as possible to all participants.

Action: Walter Alhassan to track arrival of the hard-copy case study book and sent it with conference report to all participants - by 10 December (or on arrival of case study book)

- Recommendations made by participants at the final conference session, chaired by Charles Mugoya were discussed (Appendix 3).

Action: Walter Alhassan and Charles Mugoya to review and finalise the draft so that it is suitable for inclusion in the final conference report – by 5 December 2011

SABIMA2

- SABIMA 2 progression was discussed and the following key points and actions were agreed upon:
  - Continuity in terms of themes should be aimed at for SABIMA2 and seeking sources of funding was considered urgent.
  - Follow-up with potential donors at the stewardship conference to be done as soon as possible by Walter Alhassan.
  - Essential to have letters of support from each SRO and country DG to accompany the concept note to potential donors. Inputs from ASARECA, CADESA and CORAF were highlighted.
  - COMESA to be approached to help support this endeavour.
  - Potential donors included African Development Bank, government of Norway and Denmark and CIDA. The Gates Foundation had been approached but they declined indicating their support as it does not cover this type of capacity building.
  - Concept note to be revised by Walter Alhassan and sent to SROs for their inputs and support.

Action: Walter Alhassan and Charles Mugoya to review and finalise concept note, conference report and request for support to donors – a.s.a.p.

Action: Focal persons to approach their DG's to seek letters of support for SABIMA2 – a.s.a.p

Action: Walter Alhassan and Charles Mugoya to review list of potential donors and determine how/who should make contact. Walter Alhassan to discuss the donor request plan with Viv Anthony and request strategic support from SFSA/Marco Ferroni where this can add value – a.s.a.p

- Focal persons to discuss currently funded GMO projects with their donors and seek specific budget lines for annual project-related stewardship activities. All new funding proposals to include stewardship as a specific activity requiring funding allocation.

Action: Focal persons to liaise with individual project donors and raise awareness on need for stewardship activities - January/ project planning cycle

- Continued efforts to be made to gain support from DGs to request inclusion of a budget line for stewardship activities in the annual budgets from national governments.
- Charles Mugoya suggested that priority to be given to approaching donors within Africa and that it would be difficult to get budget support from governments. Achieving contributions in-kind may be more feasible than cash.
- A request was made for more female focal persons to be appointed as part of SABIMA2.
- Integration of stewardship principles and training into biotechnology university curriculums - it was agreed this needed to be approached on an individual country/ university-by-university basis as the appropriate approaches varied widely.

- The meeting was concluded by Charles Mugoya, Viv Anthony and Walter Alhassan expressing their thanks to all participants for their involvement and commitment to stewardship, completion of SABIMA work and reporting, and utilising current success and contacts at the conference to enable SABIMA2. Networking amongst the team and building on the community of practice was encouraged to continue.

Annex 16.1

Country stewardship implementation plans December 2011–March 2012

Kenya – Simon Gichuki

Work plan and budget – January to March 2012

Activity	Due date			Budget (USD)
	January 2012	February 2012	March 2012	
Module 2 – Stewardship workshop – advanced stewardship - university scientists and technicians.	X			2,400
Module 3 – Stewardship workshop – verification and auditing. Potential stewardship auditors indentified in research institutions and universities.	X			3,600
Verification and auditing in GM labs, greenhouses and fields – KARI and universities.	X	X		3,600
Printing, compilation and launching of SOP binders for lab, greenhouses and CFTs.	X			1,500
Launching of stewardship policy.		X		1,500
Documentation of stewardship activities in Kenya.			X	2,500
Peer review visit, i.e., Ghana or Nigeria	X			-
M&E visit by SRO.		X		1,000
Update and publication of Kenya Biotechnology and Biosafety Database.			X	-
Preparation of final reports.			X	-
				16,100

Ghana – Marion Quain

Ghana work plan - outstanding

Activity	Date	Amount (USD)
Certified Trained Stewards carry out monitoring and evaluation of participants of stewardship awareness creation workshops	December 2011-January 2012	3,400
Champions launch stewardship policies (join OFAB meeting)	January 2012	3,000
Country project leaders and support staff incidental cost ($350/month/leader) for September, October, November and December 2011	Outstanding payments	1,400
Principal country champions allowance for September, October, November and December 2011 $300/person/month	Outstanding payments	1,200
Total		**9,000**

Malawi – Weston Mwase

Updated Bunda SABIMA work plan

	Year	2011				2012				Budget (USD)
1	ACTIVITY/QUARTER	1	2	3	4	1	2	3	4	
2	Stewardship Training of tissue culture lab and field technicians				X					3,700
3	Update Biotechnology database				X					700
4	Hands on Stewardship CFT (incinerator, fencing, planting)				X	X	X	X		Not available
5	Completion of SOPs and CCPs for Tissue Culture lab & CFT				X					2,000
6	Stewardship to Seed Producers					X				3,000
7	Stewardship advocacy to Institution management					X				2,000
8	Awareness creation to Policy makers					X				6,000
9	Draft & publish paper Stewardship & biotech perspectives in Malawi					X				700
										18,100

Nigeria - Mohammed Ishiyaku

Proposed activities and budget for SABIMA Nigeria - transitional period

	Year				Budget
	Activity	January	February	March	(USD)
1	Training on stewardship for seed producers on development of SOPs and CCP for the seed industry.				
	Training in stewardship for farmer groups on development of SOPs and CCP for production-certified seeds.	XXXXXX			9500
	Training in stewardship for root crop farmers on development of SOPs and CCP for production of planting Materials.		XXXXXX		9875
2	Monitoring visits to trained stewards for problem solving.	XXXX	XXXX	XXXXX	950
3	Update of biotech database in Nigeria.	XXXXXXXXX			350
4	**Total**				**20675**

Uganda – Andrew Kiggundu

NARO SABIMA Project supplementary budget and 2012 activities

Activity	January	February	March	Budget (USD)
NARO-wide workshop	*			-
Awareness in Parliament	*			-
Finalise and publish policy, other stewardship materials		*		1,500
Stewardship training (NARO and universities)	*	*		4,500
Training and awareness of farmer group leaders and seed companies		*		3,500
In country Module 3 training - audits for SOPs	*			1,500
M&E	*		*	3,000
SABIMA country peer audits		*		
Database update		*		-
Reporting	*		*	-
Total				**14,000**

Burkina Faso - Hamidou Traore

SABIMA in-country activities, December 2011-March 2012

	2011	2012			Budget
Activities	Dec	Jan	Feb	March	(USD)
1. Training more scientists and technicians working in the main laboratories at Kamboinsé research station in stewardship principles					2,000
2. Completion of SOPs by main laboratories in Kamboinsé research station					1,000
3. Completion of CCP analysis and SOPs by the Cotton Program and managers of Bt cowpea and ABS projects					1,000
4. Development and launch of stewardship policies by other institutions					3,000
5. Translation of stewardship training documents into French					1,000
6. Training cotton companies' staff in stewardship principles					Not available
Total					**8,000**

Annex 16.2 SABIMA fund status summary

Component	Amount in US$	Amount in US$
Receipts:		
Total grant amount		**1'266'140.00**
Funds received from SFSA :		
First transfer (50% of 2009 budget)	222'132.00	
Second transfer (balance of 2009 revised budget)	87'276.00	
Third transfer (50% of 2010 budget)	250'378.00	
Fourth transfer (50% of 2010 budget)	250'378.00	
Fifth transfer (50% of 2011 budget)	227'913.00	
		1'038'077.00
Balance due on grant		**228'063.00**

Income and expenditure

Funds received to date 1st Oct 2011(ref ic)		**1'038'077.00**
Expenditure reported to date 1 Oct 2011:		
Expenditure 2009	168'500.00	
Expenditure 2010	417'869.00	
Expenditure Jan- Sept 2011	281'431.00	
		867'800.00
Balance on funds received		170'277.00
Funds with countries not yet reported		136'241.00
Amount with FARA as of 1st Oct 2011		**34'036.00**
Expected tentative expenditure at the end of 2011:		
Actual 2009 - Sept 2011	867'800.00	
Budget Oct- Dec (Inc SABIMA conference and stewardship consultant O/s fees)	100'000.00	
Funds with countries	136'241.00	
Tentative expenditure	1'104'041.00	
Amount received to date	1'038'077.00	
Amount to be prefinanced by FARA in line with agreement	**65'964.00**	

Tentative fund balanced after 2011

Expected fund balance:		
Grant amount (project budget)	1'266'140.00	
less:		
Expected expenditure at end of project (2009–Dec2 011)	1'104'041.00	
Tentative fund balance (Project total budget less expected exp)		**162'099.00**
less		
Extra funds required by countries (ref: close-up meeting decisions)		70'000.00
Funds to be used to run the project before SABIMA2		92'099.00

Annex 16.3
Recommendations from conference final session 5[8]

Participation and outreach

Country participation – Senegal to be included in the upscaled SABIMA programme and, along with Mozambique and other new programme countries, fast-tracked into the programme and funding found for all African countries that meet the entry criteria and wish to participate.

Seed system stewardship – Stewardship is required for product development processes and especially in the seed system. Involvement of seed producers and companies should be sought and support for SOP generation for seed production and marketing, in liaison with the regulatory authorities.

BECA capacity building – BECA to support the stewardship outreach programme and provide training in stewardship during research visits and study tours of biotechnology scientists and students.

Academic curriculum – Seek university participation. Stewardship modules to be adapted for use so they can be used as part of academic curriculum for biotechnology students.

Case studies – create broad dissemination of the materials across Africa and stakeholders to amplify learning and prevent avoidable mistakes.

Critical stewardship language – create a set of terms for communication purposes that are applicable for GMOs and non-GMOs to avoid creating unnecessary concern amongst the public and stakeholders such as putting emphasis on product integrity and avoidance of the term "contamination".

Standard operating procedures - SOPs to be validated, shared and harmonised where there are common approaches.

Stewardship leadership

Senior management support – Find ways to achieve greater involvement and engagement of DGs and their management teams to enable implementation of the key stewardship principles.

SROs – To have a greater role in SABIMA2 and co-ordinate the capacity building and sharing of stewardship learning and experiences for countries in their regions. A request was made for all African sub-regions to be invited to participate.

8. This is the revised version by W Alhassan following the action in the minutes to edit the first recommendation

SABIMA2 funding

Government financial support – DGs to advocate and request national government authorities to include stewardship as a budget line within their annual funding of agricultural research and development organizations, institutes and their programmes.

Project integration – Stewardship budget lines need to be built into existing projects from donors and capacity building and training to be included as a core element to support excellent research and SOP development for all new proposals for funding.

Funding sustainability – A core focus on seeking funds from within African governments and regional organizations as a priority, followed by other donor sources.

Annex 16.4

SABIMA Project close-out meeting

Venue: Sunlodge Hotel, Accra, Ghana

Chairman: Charles Mugoya
Rapporteur: Laura Johnson
General support: Courage Dzormeku

Time	Activity	Responsible entity
	Day 1: Thursday, December 01, 2011	
09:00	Registration	Participants
09:30	Welcome/opening statement	Chairman
09:40	Statement by SFSA	Vivienne Anthony
09:50	Statement by Consultant	Patrick Rudelsheim
09:40	Rationale, methodology and expected output	Walter S. Alhassan
10:00	Report of the SABIMA Coordinator	Walter S. Alhassan
10:20	Discussion	
10:30	Report of the SABIMA Finance Manager	Vesta Nunoo
10:50	Discussion	
11:00	**Coffee/Tea /Cocoa break**	
11:15	Presentation of country activity reports/checklist-achievements, challenges, lessons	Ghana- Marian Quain
11:40	Discussion	
11:50	Presentation of country activity reports/checklist-achievements, challenges, lessons	Kenya- Simon Gichuki
12:15	Discussion	
12:25	Presentation of country activity reports/checklist-achievements, challenges, lessons	Malawi- Weston Mwase
12:50	Discussion	
13:00	**Lunch**	
14:15	Presentation of country activity reports/checklist-achievements, challenges, lessons	Nigeria- Mohammad Ishiyaku
14:40	Discussion	
14:50	Presentation of country activity reports/checklist-achievements, challenges, lessons	Uganda- Andrew Kiggundu
15:15	Discussion	
15:25	Presentation of country activity reports/checklist-achievements, challenges, lessons	Burkina Faso- Oumar Traore/Hamidou Traore
15:50	Discussion	
	Day 2 Friday December 2, 2011	
09:00	General observations/remarks	Vivienne Anthony
09:15	General observations/remarks	Patrick Rudelsheim
09:30	Way forward	Walter Alhassan
09:50	Discussion	Vivienne coordinating
10:00	Any other matters	
10:10	**Chairman's summary and closure**	**Charles Mugoya**
10:30	**Coffee break/departure**	

Annex 16.5

SABIMA
Checklist of measures for 2011 work and completion of project

Stewardship policy

- Policy finalised and officially approved by leading research institutions in each country.
- Policy operational and communicated to all research staff, appropriate government agencies and stakeholders.
- Research institute management teams review their process and formation of biotech policy and points of learning are communicated to FARA.

Responsibility: Focal persons.

Implementation of stewardship practices in home countries

- Stewardship training completed with all staff operational on biotechnology projects in plant science research and development institutes in countries using focal points/train the trainer concepts Modules 1 and 2 (numbers of staff trained reported to FARA).
- Follow-up is done by focal persons with trainees that are operational on biotechnology projects to ensure training has been understood and is being implemented within their home organizations.
- HACCP analysis done by each research group and risk reduction measures put in place.
- Standard operating procedures documented and accessible to all staff involved in biotechnology projects. SOPs reviewed vs. checklist provided by FARA and gaps in operational methodologies filled.
- Pre-audits completed in each country and improvements identified by focal persons are enacted before end 2011.

Responsibility: focal persons

Stewardship case studies and outreach

- Case study write ups from each country are completed and published as a FARA/SFSA publication for broad dissemination to African research organizations, government officials and stakeholders. Also to the international private sector technology suppliers and donors and for awareness building in the seed industry in Africa to build confidence in Africa's R&D capability. It was launched during the the Stewardship conference in November 2011 in Accra, Ghana.

Responsibility: focal persons.

Biotechnology database

- Each country focal person provides high quality, up-to-date information for the database for external publication.
- Biotechnology database platform is completed and launched in 3Q 2011 and support is gained for its ongoing maintenance.

Responsibility: focal persons

Stewardship conference and sustainability

- Stewardship conference creates impact and has positive media reporting.
- Case study publication launched at the conference gains media attention and sets a new standard in Africa.
- Financial support is secured from African donors to continue capacity building in stewardship beyond SABIMA and where possible stewardship is included as a budget line in NARs operations.

Responsibility: FARA Secretariat/SABIMA Project Coordinator

Outreach and awareness building of stewardship principles

- Training and awareness creation of biotechnology stewardship principles extended to government officials, media, commercial seed production and distribution organizations for confidence building in Africa's R&D capability to safely manage new technology introduction – positive reporting and media from training and awareness sessions.

Responsibility: focal persons

Project reporting and completion

- Project and financial reports completed and delivered to SFSA according to the 2011 contract schedule :

  Project technical and progress reports:

  - Mid year project progress report – 31 July 2011
  - Final project report – 31 January 2012

  Financial reports:

  - Quarterly financial project reports – 31 April, 31 July and 31 October 2011
  - Final financial project report – 31 March 2012

Responsibility: FARA Secretariat and focal persons

Annex 17. Burkina Faso Project-end technical report

Technical report for Burkina Faso
2011
By Oumar and Hamidou Traore

1. Introduction

The SABIMA project in Burkina Faso began in November 2009. The project is hosted by the Institut de l'Environnement et de Recherches Agricoles (INERA). The main activities conducted in 2010 were stewardship training and drafting stewardship documents for INERA. The focal person and his deputy were trained under the train-the-trainers concept. Subsequently several activities were conducted in 2011. Here, we report on the project achievements in 2011.

2. Approval of INERA stewardship policy document

The INERA stewardship policy document was drafted based on that of FARA. It is particularly focused on seed production given the mandate of INERA in this sector. Under the newly adopted seed law (which mainly follows that of ECOWAS country members), INERA is solely responsible for production of foundation seeds. However, INERA is also producing certified seeds to supplement seed production from associations of growers which are not yet properly organized. A seed production manual has been adopted and will include stewardship aspects before communication to other government agencies and stakeholders.

The INERA stewardship policy draft was submitted to the management staff and key scientists and amendments were done during a workshop. The final document was then approved by the INERA director, thus paving the way for implementation of stewardship within the institution.

3. Implementation of stewardship practices

Implementation of stewardship practices at INERA has begun. Critical control point (CCP) analysis for the whole seed production process has been done. Several standard operating procedures (SOPs) have been elaborated upon at laboratory and field levels. Following stewardship policy document approval, INERA personnel, especially those operating on biotechnology projects in plant science, have been trained in stewardship.

The main stakeholders involved in seed production (technicians, seed producers, seed health inspectors, farmers, etc.) and biosafety regulation agents were also trained. In total, 128 people were trained but unfortunately only nine were women. This could be explained by the low level of female scientists or low visibility of female farmers. Stewardship training of stakeholders and key INERA personnel has been the main activity conducted during the second half-year in 2011. Following this training, an SOP format for INERA was designed and will serve as a template

Table 1. List of SOPs (Standard operating procedure)

Standard operating procedure
1. Detection of Bt proteins in cotton seed stocks using immunostrips
2. Detection of Bt genes in cotton seed stocks by PCR
3. Verification of identity of GMO experimental materials
4. GMO — seed storage
5. Transport of GMOs between experimental sites
6. Destruction of laboratory or greenhouse-based experimental GMOs
7. Destruction of field-grown experimental GMO plants
8. In vitro propagation of potato seed tubers
9. Plant DNA extraction and purification
10. RNA extraction and purification
11. Agarose and polyacrylamide gel handling
12. Plant virus detection by PCR and RT-PCR
13. Detection of plant pathogens by enzyme-linked immunosorbent assay
14. Greenhouse experiments – screening for resistance to viruses
15. Production of Bt cotton foundation seeds
16. Production of cotton certified seed stocks
17. Itinerary for seed quality assessment
18. Testing seed germination rate
19. Itinerary for Bt cotton production
20. Testing virus X and Y in potato seed tuber
21. Testing cowpea seed contamination rate by cowpea aphid-borne mosaic virus
22. Management of laboratory waste

for all SOPs within the institution. Around 20 SOPs have been completed (see Table 1) and submitted to the head of the crop research department for review.

4. Awareness creation activities

Four main groups of people were targeted for awareness. First, in relation to the National Biosecurity Agency (ANB), key aspects of agricultural biotechnology and its safe management practices were presented to high school pupils in life sciences. This target group is part of the younger generation involved in field work with their parents during the rainy season holidays. Being aware of key aspects of biotechnology might encourage these candidates to embrace studies in this field and to be more responsible in their decisions and beliefs regarding biotech products. Following discussions at the SABIMA 2011 mid-year meeting in Kenya, this group is no longer being targeted.

A second target group was composed of seed producers and agricultural extension workers in charge of guiding farmers' organizations. Priority was given to seed producers working with the three biotech crops (cotton, sorghum and cowpea) of the country but seed producers of non-GM crops also attended the workshops. Discussions were focused on stewardship practices in relation to seed production (integrity preservation, maintenance of quality, compliance with

regulation, etc.). They were also extended to general aspects of GM crops i.e. safety, cost, benefits, controversy, etc.

Awareness creation activities were also directed to policy makers. Heads of agricultural divisions in nine provinces of the southwest region of Burkina Faso were reached. They are involved in devising agricultural policies in the Ministry of Agriculture and in implementing these policies at the province level. A broader group of policy makers is composed of the members of the Economic and Social Council (CES), a body which is in charge of identifying key sectors for social and economic development to be submitted to the government. Their first ordinary session of 2011 was held between 29 March-19 April and the theme was "*Socio-economical challenges of developing biotechnologies in Burkina Faso: the case of genetically modified organisms*". INERA was invited to deliver a lecture on the subject including the safe management aspects. The session was attended by more than 300 people including community leaders, scientists, the confederation of farmers' associations and the general public. The general feeling from training and awareness creation sessions is that many people still ignore modern biotechnology, leading to confusion between biotechnology and GM technology. This project was a good effort towards enlightening people, including scientists.

5. Advocacy activities

Some advocacy activities were done parallel to awareness creation. These activities involve the heads of agricultural divisions in the southwest region provinces and the members of the Economic and Social Council. Members of the council were particularly interested in the advantages and disadvantages of GMOs taking into account all management procedures. Although their decisions are not directly implemented, they are given serious attention from both government and parliament members.

Another advocacy activity was carried out by Professor Alassane Séré, the SABIMA project champion. ANB in collaboration with the Ministry of Environment intended to introduce some modifications to the biosafety law. These modifications were meant to extend liability to biotech product developers and anybody or any organization getting money from the business in the case of harm. With such modifications, even INERA could not continue its activities on GM crops. The draft document was transferred to the Parliament for adoption but it was blocked at that level following Prof. Séré's intervention.

6. Participation to the biosafety law review

Since 2010, the National Biosafety Agency (ANB) has been willing to review the biosafety law adopted in 2006. Following Nagoya-Kuala Lampur additional agreement on Liability and Redress to the Cartagena Protocol on Biosafety, ANB has re-launched the Burkina biosafety law revision. We participated in the debate as resource persons in order to stick as much as possible to considerations relevant to biosafety regulations. The process is still in progress.

7. Other activities

Activities for 2011 also included working on the case study and updating the biotechnology dataset for Burkina Faso. The case study revolved around the following theme: "*Conducting Bt cotton controlled release field trials with farmers in Burkina Faso*". Information for updating the database has been provided to FARA upon agreement of INERA and its partner Monsanto for publication.

The SABIMA project coordinator, Prof. Walter Alhassan made a monitoring visit to Burkina Faso in early October. This visit gave opportunity to review the whole project activities and to visit Bt cotton seed production fields as well as farmers' Bt cotton versus conventional cotton fields in the western part of the country.

8. Conclusions and perspectives

The SABIMA Project introduced stewardship which was completely new to all people that have been involved in project activities. Although much more is to be done, the project gave INERA laboratories an opportunity to implement good management practices and broadened INERA's vision with regard to all stakeholders involved in agricultural biotechnology. Activities to be continued during the first quarter in 2012 will focus on completion of SOPs, training, and development of stewardship policies by other stakeholders (Table 2).

Table 2. SABIMA in-country activities, January-March 2012, Burkina Faso

Activities	2012			Budget US$
	Jan	Feb	March	
1. Training more scientists and technicians working in the main laboratories at Kamboinsé research station on stewardship principles				2,000
2. Completion of SOPs by main laboratories in Kamboinsé research station				1,000
3. Completion of CCP analysis and SOPs by the cotton programme and managers of Bt cowpea and ABS projects				1,000
4. Development and launch of stewardship policies by other institutions				3,000
5. Translation of stewardship training documents into French				1,000
Total				**8,000**

Annex 18. Ghana Project-end technical report

Council for Scientific and Industrial Research—Crops Research Institute, Ghana

SABIMA 2011 Annual report

Period of reporting: 1 January – 31 December 2011
Name of focal person: Dr. Marian D. Quain
Date of report: 15 January, 2012

I. General introduction:

SABIMA Ghana led by Dr. Marian D. Quain with Deputy Dr. I.D.K. Atokple has a total of six stewards drawn from research organizations, university and policy sectors in Ghana. The team focusing on strengthening capacity for safe biotechnology management in Sub-Saharan Africa is very determined to achieve the project objectives. The adhoc team of champions of the Ghana project is led by the CSIR Director General with assistance from the CSIR – CRI Director.

The period of reporting saw the team conduct advocacy and awareness creation activities led by project champions. These particular activities triggered the biosafety bill, receiving attention from parliamentary select committees and the bill was subsequently passed into law on 21 June 2011. The various stewards at their organizations also carried out activities to implement stewardship principles towards auditing and verification. Three of the stewards contributed towards the development of five case studies to be presented at the upcoming conference in November 2011. The Ghana team carried out biotechnology awareness creation and stewardship training, led by the focal person, from the 23–25 August 2011. The focal person and a representative of the deputy focal person also participated in a workshop organized by the US and Brazilian embassies. Monitoring and evaluation was also conducted by the project coordinator with the focal person where all the stewards were visited. Presently, all the stewards have a schedule to visit all organizations that participated in the stewardship awareness creation workshop.

II. Project objectives

The project objectives for the year 2011 as in the 2011 workplan (Appendix 1) were:

a. Project Champion to carry out advocacy activities on biotechnology and biosafety with ministers and members of Parliament.

b. Stewards to train staff at the organizational levels to adapt stewardship principles and policy.

c. Project team to plan and organize awareness creation and stewardship workshops to reach various target groups. To ensure that participants of the various workshops adapt stewardship principles.

d. Stewards to identify incidents that could serve as case studies for publication.

III. Project activities

The project activities for this period as stipulated in the 2011 workplan (Appendix 1) were:

a. Project Champion to meet with sector minister and together plan meetings with parliamentary select committees responsible for biotechnology and biosafety issues in Ghana and also, carry out biotechnology and biosafety advocacy activities.

b. Stewards carry out on the job training of staff at the organizational levels to adapt stewardship principles and policy.

c. Participation in Marco –Monty Post-Zurich dialogue on SABIMA Project by focal person on 18 March 2011.

d. Champions assisted in the identification and preparation of letters to invite participants to our various biotechnology and biosafety awareness creation workshops.

e. Plan the organization of awareness creation and stewardship workshops.

f. Three Stewards prepare five case studies for publication.

g. Participation in U.S. and Brazil International Biotechnology Conference, at La Palm Royal Beach Hotel, 20–21 September, 2011.

h. Monitoring and evaluation visits.

i. Stewards and champion participation in OFAB Ghana chapter activities.

As at the end of the project the following SOPs had been developed:

1. Standard Operating Procedures for **general use of the biotechnology laboratory**
2. Standard Operating Procedures for **standardisation of laboratory equipment**
3. Standard Operating Procedures for **using the pH meter**
4. Standard Operating Procedures for **distillation point**
5. Standard Operating Procedures for **sampling procedure samples for DNA extraction on-station**
6. Standard Operating Procedures for **sampling procedure samples for DNA extraction off-station**
7. Standard Operating Procedures for **labeling DNA extracts**
8. Standard Operating Procedures for **preparing DNA for export**
9. Standard Operating Procedures for **receiving tissue culture materials**
10. Standard Operating Procedures for **initiating cultures**
11. Standard Operating Procedures for **sub-culturing**
12. Standard Operating Procedures for **acclimatising cultures in screen house or greenhouse**
13. Standard Operating Procedures for **preparing stock solutions**
14. Standard Operating Procedures for **using autoclaves**
15. Standard Operating Procedures for **using the laminar flow hood**
16. Standard Operating Procedures for **using the fume hood**

17. Standard Operating Procedures for **cleaning of glassware**
18. Standard Operating Procedures for **handling contaminated cultures**
19. Standard Operating Procedures for **disposal of laboratory waste**
20. Standard Operating Procedures for **agarose gel preparation**
21. Standard Operating Procedures for **gel electrophoresis**
22. Standard Operating Procedures for **using the gel capture for analysis**
23. Standard Operating Procedures for **polyacrylamide gel preparation (PAGE)**

Activity details

In January, a letter was sent to the office of the Minister of Environment, Science and Technology by the CSIR Director General, to invite her to help organize a biotechnology and biosafety awareness creation workshop for Members of Parliament. This was done on 22 January 2011. The meeting attracted the AU-NEPAD and our Project SRO as well as media attention. The report on the meeting has already been submitted to the project coordinating office (Appendix 2). At the end of the meeting, the MPs agreed to hold a follow-up meeting to consider the biosafety bill. This was done on 7 February 2011. It was conducted by the project champions, the National Biosafety Committee and the Ministry of Environment Science and Technology with financial support from AAFT, AU-NEPAD and the CSIR-Ghana. Since at this particular meeting, the MPs, could not complete going through the various clauses, another meeting was organized and sponsored by the sector minister of Environment, Science and Technology and a copy of the meeting report is attached (Appendix 3). The bill thus went through the various stages in parliament and has since been passed into law.

The focal person impressed on the various stewards the need to develop biotechnology stewardship policy for discussion with management for adoption at their various organizations. Attached is a brief report from the steward at the University of Ghana, Legon (Appendix 4) as well as a draft policy statement (Appendix 5), receiving attention from management. Stewards were invited by the focal person for a meeting with Laura Johnson for the development of case studies to be presented at the upcoming conference. The Ghana group came up with five case studies.

In July 2011, the stewards reviewed invitation letters to be sent out to workshop participants (Appendix 6a), also, the programme was sent around to all stewards and invited speakers to put in their comments. A letter of invitation was also sent to AU-NEPAD for them to sponsor a resource person to participate in the meetings (Appendix 6b). An invitation was sent to Prof. Abou Sangare (Appendix 6c) the SRO representative for the project; however he indicated his inability to participate due to other engagements with CORAF/WECARD. With assistance of the project champions, invitations were sent to the sector Ministers of Environment, Science and Technology for their participation.

The Biotechnology Awareness Creation Workshop for General Public (which had the theme strengthening capacity for safe biotechnology management in Sub-Saharan Africa) was held

on 23 August. The venue was the CSIR-STEPRI Accra. The meeting started at 9 a.m., however participants from outside Accra arrived on 22 August. The biotechnology awareness creation workshop had traditional rulers from the Ghana national house of chiefs participating. The CSIR- CRI Director (Champion) delivered the welcome address. The sector minister, represented by her deputy, gave the keynote address and he indicated his delight to see the traditional leaders. The programme for the workshop was as indicated in Appendix 3. The AU-NEPAD sponsored Mr. Samuel Timpo to participate as a resource person. Prof. Walter Alhassan, the Project Coordinator also made a presentation as stipulated in the programme (Appendix 7). It is worth mentioning that Dr. Yaa Difie Osei, a lecturer from the University of Ghana, Legon and also a Member of the National Biosafety committee presented a lecture on biotechnology. The acting chairman of the National Biosafety committee in the person of Prof. Bosompem also made a presentation on biosafety in Ghana. There were 66 participants at the meeting and the list of participants is attached in Appendix 8. A photograph gallery of the meeting on 23 August is in Appendix 9. The addresses and presentations made by invited guest and resource persons at the meeting are also in Appendix 10.

The two-day (24 and 25 August 2011) Stewardship Awareness Creation workshop for NARs, Universities and MDAs also had the theme strengthening capacity for safe biotechnology management in Sub-Saharan Africa. Participants for the meeting, who reside outside Accra, arrived on 23 August 2011. The venue was the CSIR-STEPRI Accra, and the meeting started at 9 a.m. each day. On 24 August, the CSIR-CRI Director (a Champion) gave the welcome address for the meeting. The workshop keynote address was delivered by a representative of the CSIR Director General in the person of Dr Essegbey. Prof. Walter Alhassan gave a presentation as indicated in the programme for the meeting (Appendix 11). The total number of participants was 75 and they were drawn from the universities, ministries, research organizations and, other relevant organizations all over the country. The participants were very enthusiastic in their evaluation as presented in Appendix 12. The various speeches, presentations, and feedback from participants during discussion sessions are in Appendix 13 and Appendix 14 is the photograph gallery for the two-day workshop. Participants were presented with a certificate of participation (Appendix 15) and a CD containing all the presentations made at the meeting. The final session in the way forward (Appendix 16) for the project committed all present to ensure proper stewardship. The attached handouts (Appendix 17) were also given to participants. The press release by Ghana News Agency (GNA) following the workshop is below.

“The Ghana chapter of Open Forum for Agriculture Biotechnology (OFAB) was launched on 18 August 2011 and the first monthly meeting was held on 30 August 2011. The institution of OFAB Ghana Chapter by ISAAA was found necessary because of the impact SABIMA had made. I participated as the SABIMA focal person and it is noteworthy to mention that the SABIMA Chief Champion (Dr. A.B. Salifu) is the main contact person and two of the stewards (Elizabeth Y. Parkes and Rodney Owusu-Darko) are members of the monthly meeting organizing committee”.

Annex 19. Nigeria Institute of Agricultural Research, Samaru, Technical Report

Institute for Agricultural Research (IAR), Samaru, Nigeria
Focal person: Dr Mohammad F Ishiyaku
SABIMA Project report: December 2009 to December 2011-Nigeria

1. Project take-off

The Project was flagged off with the participation of the Country Focal Person (CFP) and Deputy Country Focal Person (DCFP) in a regional meeting for CFPs at FARA headquarters at Accra in October 2009. During the meeting, Project activities were mapped out and implementation modalities were discussed and agreed upon jointly with the Project Coordination team. Following is the run-down of project activities executed in Nigeria from November 2009 to December 2011.

2. Stewardship training

Training in stewardship of biotechnology products was held for in-country stewards in Nigeria. The training was held in November 2009 at the New Chelsea Hotel, Abuja and was conducted by the Project Consultant, Dr Patrick Rudelsheim. Fifteen persons participated in the training which touched on Module 1 of the principles of stewardship. Participants included leading scientists involved in biotechnology research, biosafety regulators, agricultural quarantine, Agricultural Seed Council as well as the Agricultural Research Council of Nigeria. The training was an eye-opener to many of the participants including experienced scientists.

Training for Module 2 was delivered by the Project Consultant. However, a supplementary re-training was offered to the CFP at Accra in November 2010. Module III training was conducted by the consultant at the FARA headquarters. The in-country stewards were trained by the CFP in Modules II and III at Kaduna in December 2010. The DCFP was trained by the CFP in Zaria just before Christmas in all the modules. The trainings emphasised the life cycle themes and the developments of SOPs after Critical Control Points were identified in the respective themes.

Of the fifteen or so stewards who received the three modules of stewardship training all of them have introduced a stewardship programme into their institutions and have developed SOPs for different procedures in their research work as follows.

a) Dr Afolabi (SHETSCO Lab Abuja). Trained five scientists and 11 students on stewardship-SOPs developed for the extraction of medicinal compounds, genetic transformation of rice, rapid micro propagation of gum Arabic.

b) Dr Ishiyaku (CFP/SG Ado IAR Zaria). Trained 14 scientists and nine PG students and one communicator in stewardship-SOPs for Molecular Marker Selection of Striga resistant cowpea genotype, SOP for Confine Field Trial of Bt cowpea.

c) Dr Egesi (DCFP). Trained using BioCassava Plus resources 14 persons, scientists and technicians. Developed SOP for greenhouse management of BioCassava Plus, SOP for CFT of BioCassava Plus and SOP for shipment of BioCassava.

Stewardship training was extended to personnel of six seed companies. These staff are involved in production and marketing of seeds. These are i) Premier seeds, ii) Alheri seeds, iii) Maslaha seeds, iv) seed project, v) IAR integrated links and vi) Yarrutu. A total of 18 participants participated in the training. The training covered all three modules with special emphasis on CCP Analysis and development of SOPs. The training was held in December 2011 at Kaduna.

3. Development and institutionalisation of stewardship policy in IAR

Following the training there was a move to institutionalise this quality assurance mechanism by developing a stewardship policy for IAR. The policy, which is tailored to be similar to FARA's, requires even collaborators such as the ADPs to recognise and apply stewardship principles in the management of biotechnology products. The policy document has been adopted by the management. The Director of the institute was excited about this issue, emphasising that this will go a long way in allaying some of the fears people have about quality control in biotech research and development. However, the final adoption of the document is expected to be made by ARCN, the supervisory body of IAR in January 2012 .

4. Advocacy

The in-country Champion, Chief Awoniyi, had actively advocated the passage of the Biosafety Bill. His efforts in conjunction with that of the personnel of the National Biotechnology Development Agency centred on members of the upper house in the country. The Biosafety Bill has since September 2011 been passed by the two houses and is awaiting the assent of the President.

Advocacy visits were paid to the National Agricultural Seed Council (NASC), the Agricultural Research Council (ARCN) and the National Advance Laboratory at SHETSCO. The Project advocated the institutionalisation of stewardship in biotechnology among the Agricultural Research Institutes through the ARCN. During these interactions the leadership of ARCN sought clarification on several technical issues concerning biotechnology R&D. Consequently, the ARCN has granted the establishment a biotechnology research programme at IAR with about 50% increase in budgetary allocation to biotechnology research activities and some improvement in funding in other institutes under ARCN. The effort of the project in NASC and SHETSCO is primarily to garner support for their scientists to entrench stewardship principles in their day-to-day research work.

5. Awareness creation

i. State policy makers

The Project hosted programme managers of eight State Agricultural Development Program (ADP) and the respective Permanent Secretaries in a one day sensitisation workshop/round table discussion on biotechnology in agriculture. The workshop was held on 21 February 2011 at Kaduna. During the workshop, presentations were made on modern agricultural biotechnology and its potential economic benefit to Nigerian farmers. It was followed up by another presentation on stewardship of biotechnology products. The interaction successfully cleared remaining misconceptions in the minds of these important grass-root bureaucrats. Twenty-two persons attended the workshop.

ii. Civil society activists and farmers

The workshop held 3–4 July 2011 at the Access Hotel, Kaduna catered to farmers and civil society activists drawn from the North-West zone of Nigeria. The states in this region are Kano, Kebbi, Zamfara, Kaduna, Sokoto, Jigawa and Katsina. Presentations on the benefits of biotechnology product development process were made to provoke questions from the participants. It was made interactive and near informal. At the end of the workshop participants admitted that they been misinformed about biotechnology prior to their participation.

iii. University community

The CFP made a presentation to the members of the Ahmadu Bello University community and the surrounding town on the economic benefits of biotechnology. The presentation was aimed at involving the community members in the biotechnology debate to raise their awareness. It was learned during the seminar that many scientists who could potentially misguide other non-scientists know little about biotechnology. The question and answer session particularly was appreciated by those who attended the seminar. The stewardship section though short raised many peoples' confidence in quality control measures. The seminar was attended by around 105 people.

iv. Open forum for agricultural biotechnology

The CFP and the DCFP both made three different presentations on the development and testing of transgenic cassava with enhanced micro-nutrients and Vitamin A content as well as Maruca resistant Bt cowpea in Abuja at the Open Forum for Agricultural Biotechnology (OFAB). The Forum was largely attended by journalists, farmers, students and policy-makers. It is usually attended by about 70 people.

6. Monitoring visits to stewards

Follow-up visits were paid to all trained stewards except the steward in Agricultural Quarantine Services. Visits revealed that lessons learnt from the stewardship training are slowly but

correctly being put to use. The stewards have requested support to expand training within their institutions. Some complaints of developing the SOP documents were also noted. Where possible, the Project Coordinator appealed to heads of institutions to provide support for the stewards to implement what they learned in their day-to-day activities. On a few occasions the CFP communicated with the stewards over phone or email to know their progress and challenges.

7. Peer audit visit

The CFP visited the Kakamega Laboratory of Kenya Agricultural Research Institute (KARI) and the Aluppe Station to audit the process and procedures of the receipt of shipment, transport, planting as well as the conduct of the Virus Resistant Cassava for Africa (VICA) and the BioCassava Plus Projects. The visit gave me the chance to put into practice the audit process of the stewardship principles. I realised the need for meticulous record keeping as means for effecting control. The visit took place in July 2011.

8. Participation in conference

A case study titled "Ensuring purity and integrity of Bt cowpea seeds through effective labeling and record keeping" was developed by the CFP and submitted to the 1st Pan-African Stewardship of Agricultural Biotechnology Conference at Sunlodge Hotel, Accra, 28-30 November 2011. Both the CFP and the DCFP attended the conference.

9. Facilities and equipment

The Project acquired a laptop computer to facilitate its work.

10. Lessons learnt

- Stewards and other trainees are very interested in practicing stewardship.
- Institutionalisation of stewardship may require additional non-stewardship training e.g. in molecular biology.
- Awareness creation increases buy-in from colleagues and management.
- Training more scientists and technicians will have synergistic benefit for the development of high quality biotech products.
- To sustain this important tool of quality assurance stewardship training must be extended to students in universities.

Annex 20. KARI Technical Report

Kenya Agricultural Reserach Institute (KARI)
Strengthening capacity for safe biotechnology management in sub-Saharan Africa (SABIMA)
Project report – January to March 2012
By: Simon T. Gichuki and Jane Otadoh

Project

In Kenya the project has been implemented by the Kenya Agricultural Research Institute (KARI). Dr Simon Gichuki serves as the country focal person assisted by Ms. Jane Otadoh from the Ministry of Agriculture as deputy focal person. Since 2009 the project has implemented various activities in Kenya including collection of a biotechnology database as well as conducting training and promotion of stewardship of biotechnology products.

This report builds on previous submissions and covers project activities in Kenya from January to March 2012.

Stewardship training

During the reporting period two stewardship training activities were carried out.

Stewardship training for livestock biotechnology scientists

This training was conducted from 16 to 17 January 2012 at the Agricultural Information Resource Centre, Nairobi. The training was organized in response to demand by KARI management and livestock biotechnology scientists who felt that SABIMA had focused too strongly on crop biotechnology. The main area of focus was in the livestock biotechnology products, particularly in the development of recombinant vaccines and novel diagnostic tests. A total of 14 people were trained from the two key livestock research centres in Kenya i.e Biotechnology Centre in Nairobi and the National Vaccine Research Centre in Muguga. During the training important lessons were shared between the trainers and the participants particularly on the unique nature of livestock biotechnology products and their interaction with crops biotechnology.

Table 1- Participants of stewardship training for livestock biotechnology scientists

Training date	Recipient institutions	Number trained		
16 to 17 January 2012	KARI – Biotech	7	2	9
	KARI – VRC	4	1	5

Stewardship training for university scientists and regulators

This training was conducted from 12–14 March 2012 at the Sportsview Hotel in Nairobi. The training was specifically organized to target the university scientists and technologists involved in biotechnology. However, other participants were included due to demand from regulators and other major biotechnology projects in the country. To be able to give the participants a complete stewardship outlook, the presentations were reorganized to combine Modules 1, 2 and 3 into one session spanning three days. In addition to the facilitation by the country focal person one of the SABIMA-trained stewards participated as a facilitator. Participants were also able to review a case study presented by another fully trained SABIMA steward on introduction and testing of transgenic cassava in Kenya. Participants also practiced carrying out CCP analysis for GMO banana and maize.

Table 2- Participants of stewardship training for university scientists and regulators

List of participants		No. of participants		
No.	Name	Male	Femalae	total
1	KARI –Thika		1	1
2	Moi University	1		1
3	National Biosafety Authority	2	1	3
4	KARI Biotechnology Centre		2	2
5	KARI Headquarters	1		1
6	University of Nairobi - CEBIB	2		2
7	Ministry of Agriculture		1	1
8	KEPHIS	1	2	3
9	KARI Kakamega	1		1
10	KARI Kitale	1		1
11	KARI Embu	1		1
12	University of Nairobi- CAVS	1	1	2
13	Jomo Kenyatta University of Agriculture and Technology	1		1
14	KARI Njoro		1	1
15	Genebank of Kenya	1		

Stewardship activities

Development of Standard Operating Procedures (SOPs).

New project teams started to look at Critical Control Points (CCPs) particularly for laboratory, greenhouse and confined field trials of transgenic banana and maize. Three breeders from the Improved Maize for African Soils (IMAS) project and a team working on banana biotechnology carried out HACCP analysis and are now starting to develop SOPs. During this period KARI was ISO 9001:2008 quality management systems certified.

Use of field/laboratory notebooks

KARI has launched a stewardship compliant field/laboratory notebook. Each page of the notebook is serialised, making it a permanent record of the activities and data recorded therein. Supervisors and PIs are expected to regularly monitor the notebooks and initialise the dates of inspection. This will enhance M&E of project activities and allocation of IP resulting from KARI innovations. It will also be easier to identify stewardship of various projects and make future plans. Scientists and technicians continue to be sensitised to the use of these tools.

Stewardship policy

Efforts were made to develop draft model stewardship policies for universities (Annex 1) and regulatory bodies (Annex 2). All participants to the stewardship training promised to pursue adoption of these policies by their institutions.

Draft University Biotechnology stewardship policy

University of Nairobi is a government university established by an act of parliament in 1956 initially as a College of the University of London. It is a centre of academic excellence in training and research at undergraduate, graduate and professional levels in areas key to economic development. In so doing the university is committed to ensuring safe training, research, technology transfer and adoption.

The university management continuously reviews its biosafety stewardship programme for continuous improvement and compliance to national and international biosafety regulations.

Vision: To continuously develop biotechnology products in a safe, transparent and accountable manner while complying with scientific ethics and biosafety regulations.

Mission: To steer safe biotechnology development, transfer and adoption.

Commitment: The university is committed to:

- the development of man power for biosafety management.
- the development, production, transfer and adoption of biotechnology products.
- the safe use of biotechnological innovations.
- collaborating with other universities, research institutions, regional and international research organizations, and government ministries in promoting research and innovation in biotechnology.

Verification and audit visits to CFT sites at Kiboko and Alupe

The SABIMA team leader, deputy and trained SABIMA stewards continued visiting the CFT sites on various occasions to conduct compliance audits. Any issues were discussed by the trial management teams.

Peer audit visit

Dr. Weston Mwase, the SABIMA focal person for Malawi and PI for the transgenic cotton in Malawi made a peer audit visit of KARI Biotechnology facilities and trials from 19–21 March 2012. Dr Mwase was able to visit the Biotechnology Centre in Nairobi as well as the VIRCA and BC+ CFTs in Alupe, western Kenya. He was able to meet the PIs, the site managers, technicians and other support staff for the projects. During the visits Dr. Mwase shared his experiences with the project teams and made suggestions on where stewardship improvements could be made.

Monitoring and evaluation

Kenya hosted the SABIMA final close-out meeting for activities in Kenya, Malawi and Uganda.

Challenges following end of the project

The following challenges are expected in implementation of stewardship in Kenya following the end of the SABIMA project:

- Lack of a national coordination structure to coordinate stewardship activities in the country.
- Challenge of introducing stewardship activities at the regional centres which involve higher travel and accommodation costs for the trainers and the trainees.
- It has been noticed that stewardship is necessary for both biotechnology and ordinary products. Training should therefore not only address the crop biotechnology products but also animal biotechnology products like recombinant vaccines and novel disease diagnostics. Additionally, stewardship training sessions should start with a background on biotechnology and relate it to the extension service and the seed industry.
- Retention of personnel trained in stewardship in the institutions and projects is a big challenge.
- Lack of funds to implement verification and auditing activities. The country focal person and other trained stewards have limited control over stewardship/regulatory compliance.
- Unclear procedures and requirements for joining Excellence Through Stewardship (ETS) for the various Biotechnology institutions in Kenya.
- Review of SOPs for different projects. While it was recognised that some SOPs are generic, each project has specific activities which need specific SOPs. Similarly at different stages of product development the activities will change and new sets of SOPs will be required.
- Accessing adequate support from the institutional management – eg. personnel, finances, policies, goodwill etc.
- Carrying out stewardship of GM products after commercial release in small scale farms.

Way forward post SABIMA Project

With the closing of the SABIMA project, KARI will strive to continue stewardship activities. Additionally, KARI will liaise with her collaborators to initiate stewardship in all joint activities. KARI centres will continue with verification and auditing in GM labs, greenhouses and fields. Peer-review stewardship audit across the collaborating institutions will be encouraged. These forums will also be used as platforms for joint proposal development to support stewardship activities for these institutions and their various collaborators and partners. Efforts will be made to source funds for printing, compilation and launching of SOP binders for labs, greenhouses and CFTs. The launching of Stewardship Policy in KARI will be a high priority activity once the policy has been approved by the board of management. In the meantime posters of the draft policy will be prominently displayed in biotechnology centres in KARI. KARI will also take responsibility for updating the Kenya biotechnology database created by FARA and link it up with KARI's biotechnology web page.

Acknowledgements

We wish to thank the Forum for Agriculture Research in Africa (FARA) for ably managing the SABIMA Project, in particular Prof. Walter Alhassan and his team including Vesta and Courage for successfully coordinating the work. We also wish to thank Dr. Patrick Rüdelsheim of Perseus BVBA who introduced and trained us in the concepts of stewardship for biotechnology products. Our sincere gratitude goes to the Sygenta Foundation for Sustainable Agriculture who provided the funding that made this work possible. We also wish to thank the management and staff of KARI and the Ministry of Agriculture for support and providing an enabling environment to complete this work.

Annex 20.1 Draft Regulatory Institute Biotechnology policy

National Biosafety Authority

Vision: A world class biosafety agency

Mission: To ensure safe development, transfer, handling and use of genetically modified organisms

Core values: In the implementation of its mandate, the Authority will be guided by the following core values:

a) Integrity;

b) Professionalism;

c) Transparency;

d) Accountability.

Biotechnology Stewardship Policy Statement

The National Biosafety Authority management is committed to offering a biosafety regulatory framework and stewardship programme that is fair, consistent, transparent, efficient and scientifically-based to ensure safety of human and animal health as well as the health of the environment. The management is committed to continually improving its services and enhancing customer satisfaction through maintaining an effective quality management system based on the ISO 9001:2008. This policy will be reviewed periodically as need arises.

Figure 1. Stewardship training for university scientists and regulators at Sportsview Hotel, Nairobi, Kenya, 12 to 14 March 2012

Figure 2. Participants of stewardship training, Nairobi, Kenya

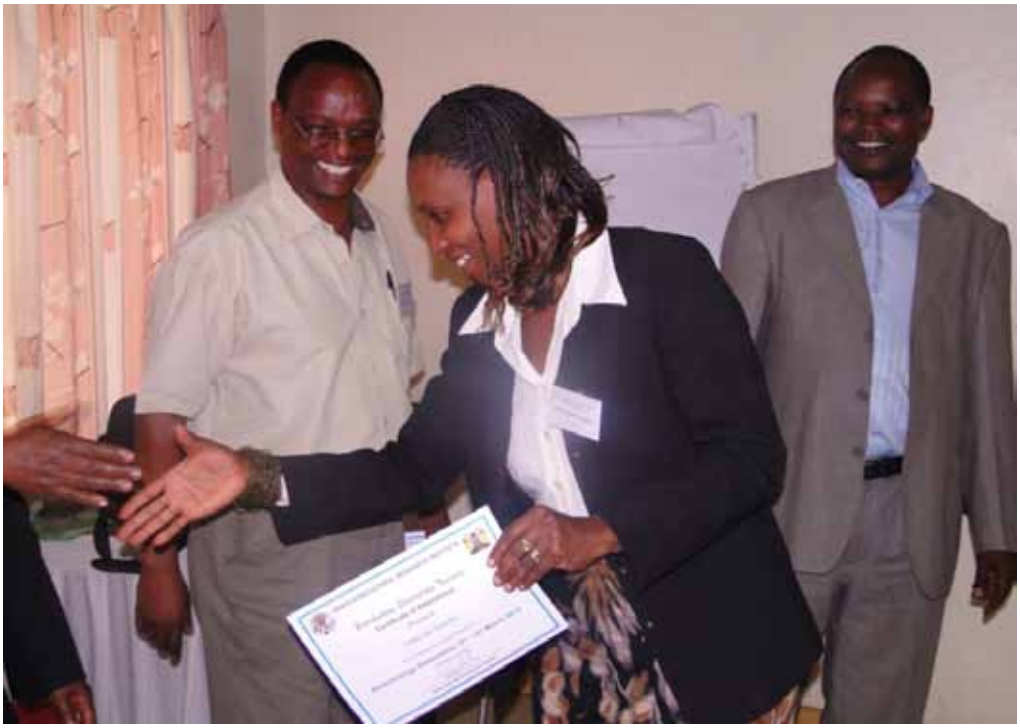


Figure 3. SABIMA project trainee receives certificate of stewardship training from the focal person and training facilitator.

Annex 20.2. Malawi Bunda College technical report

Safe biotechnology management in sub-Saharan Africa (SABIMA) Project
Bunda College technical report
February 2012

Acknowledgements

The project activities have been made possible by the Forum for Agricultural Research in Africa (FARA) Safe Biotechnology Management in sub-Saharan Africa (SABIMA) Project with funding from the SYNGENTA Foundations for Sustainable Agriculture. The National Contact Person wishes to acknowledge the logistical support provided by Bunda College Management and the permission to take time off to engage in the project activities. Members of the staff at FARA Secretariat, especially Prof Walter Alhassan, Vesta Nuno and Courage Dzormeku are acknowledged for constant reminders and guidelines on reporting of project activities. I would like to acknowledge Deputy National Contact Person Dr Yanira Ntupanyama for constant support on all stewardship activities. Bunda College as an implementing institution would like to thank its collaborating partners: Department of Environmental Affairs, Farmers' Union of Malawi, Ministry of Agriculture and Food Security, Centre for Environmental Policy and Advocacy (CEPA), Malawi Environmental and Agriculture Forum for Journalists and Biotechnology-Ecology Research and Outreach Consortium for allowing their staff to participate in stewardship training and biotechnology awareness. Members of the press, especially from the Malawi Broadcasting Corporation, Zodiak Broadcasting Corporation, Transvaal Radio Station, FM 101 Power and the Daily Times and Nation newspapers are acknowledged for media coverage of the project activities.

1.0 Introduction

Ensuring quality control and responsible management of biotechnology has been central to developing and commercialising new biotech crop varieties. Stewardship makes good business sense - careful attention to the safety of products and their market impact is essential for high value products in any industry. In agricultural biotechnology, meticulous production methods are a business requirement so the seeds sold will yield harvests with the desired characteristics and ensure environmental sustainability. The Safe Biotechnology Management in sub-Saharan Africa (SABIMA) project has been running in Malawi for three years now (since 2009).

The total budget for Malawi was $82,355 which was to be disbursed in three tranches. So far the college has received of $64,868.00 and has used $68,526.12 with an over expenditure of $3,658.12 to be reimbursed by FARA.

Objectives of the SABIMA Project

1. Review the current status of agricultural biotechnology and biosafety in the key countries that are either commercialising or field testing genetically modified organisms.
2. Identify the capacity building gaps in these countries and the modalities for intervention and implement improvements.
3. FARA to develop policies, procedures and staff capability to provide leadership in stewardship both at FARA and the respective countries for the safe and effective use of agricultural biotechnology.
4. To identify, train and mentor stewardship leaders in FARA, the three regions and stewardship champions in each of the six countries.

In-country project activities

Biotechnology awareness for media

There was an outcry from media personnel that there is an increased negative reporting on issues of biotechnology and this was attributed to reduced access to information. Scientists were blamed for not communicating with the media. Apart from conducting Biotechnology Stewardship training for scientists, policy makers and seed producers, Bunda continued offering awareness creation opportunities to the media on communication of biotechnology issues. So far 44 media personnel have been trained. The workshop for media personnel aimed at creating awareness on dissemination of accurate, appropriate and objective information pertaining to biotechnology and providing general understanding of stewardship in biotechnology and risk communication. In 2011 the media training were conducted on 5 April and on 5 July in Lilongwe and Blantyre respectively. The training attracted journalists from government-funded and private media houses, namely Malawi Broadcasting Corporation (MBC TV and Radio), Daily Times, The Nation, Transvaal Radio, FM 101 Station, Radio Islam, Adventist Radio, Radio Maria, Radio Alinafe, MIJ FM among others (Appendix). During the period of April to August, newspapers and radio stations provided more information on biotechnology and stewardship and there were programmes dedicated to biotechnology development in Malawi. This period is when visibility of FARA and Syngenta Foundations for Sustainable Agriculture was improved as the public knew more about the existence and role of the two organizations.

Launch of biotechnology stewardship policy statement

The Bunda College Biotechnology Task Force comprising of the principal professor Moses Kwapata, Dr James Bokosi, Dr Moses Maliro, Dr Joyce Njoloma, Dr Kingdom Kwapata and the SABIMA national contact person Weston Mwase formulated the Bunda biotechnology stewardship policy statement. The team had several meetings in January and February 2011 and drafted the Bunda Biotechnology Stewardship Policy statement which got a blessing from University management and officially launched on 14 April 2011. The launch was attended by 46 participants from different organizations (Appendix). The objectives of launching the statement were:

1. To update the participants on biotechnology activities the College is conducting and underscore its commitment to stewardship principles and practices on biotechnology products.
2. To provide an opportunity to the participants to debate critical issues surrounding Genetically Modified Organisms, including stewardship, risk assessment and liability redress.
3. To bring awareness to participants on CCP in the conducting of confined field trials.

Training of seed producers

Even though Genetically Modified Crops are not yet ready on the fields it is envisaged that soon most seed producers will be handling them. The college organized biotechnology stewardship training for seed producers on 1 July 2011 and trained sixteen (16) producers. The seed producers were drawn from Monsanto Limited, Seed Co Ltd, PANNAR Seed Company, Bunda College Farm, Representative of Seed Traders Association of Malawi, Farmers Union of Malawi, and National Association of Small Holders Farmers in Malawi (NASFAM). The seed producers were also provided with general training on seed product development and ethics and marketing to improve confidence seed buyers as well as reducing the incidence of liability cases.

Aftermath of launch

After the official launch of the Bunda biotechnology stewardship policy statement and several awareness programmes that followed on radio stations, print media and television, a series of events unfolded. This was the turning point for Malawi on issues of biotechnology as more organizations had become aware of what biotechnology can contribute and the associated or perceived risks. By then Bunda had submitted its application for CFT of GMO cotton to the Registrar of Biosafety in 2009 and by April 2011 there was no response. At this both Minister of Agriculture and Food Security and Minister of Environment were invited. The conference was attended by over 180 delegates including farmers, international seed producers, GMO cotton farmers from Burkina Faso, GMO maize farmers from South Africa and scientists. The participants signed a communiqué on 11 July where they demanded that the Government of Malawi give biotechnology a chance (Appendix). At this conference the FARA SABIMA national contact person Weston Mwase was one of the three keynote speakers. He gave a talk on the status of biotechnology in Malawi.

Participation in the 1st Pan-African Biotechnology Stewardship Conference

By virtue of being a member of the SABIMA Project, Bunda College participated in the 1st Pan-African Biotechnology Stewardship Conference that was held in Accra from 28 to 30 November 2011. A case study that was developed by a trainer of the SABIMA Project from Malawi, Mrs Grace Kaudzu, was presented during the conference. The title of the presentation was "*Tracking certified seed product integrity from production to grower*". The national contact person was appointed to facilitate the presentation of the case studies whose chairperson was Dr. Lomana of INERA in Burkina Faso.

Capacity building for staff and stakeholders

Verdict of application for CFT for Bunda

With the heightened interest in GMOs and biotechnology in Malawi and demand from farmers through the Farmers Union of Malawi, the National Biotechnology Regulatory Committee (NBRC) held several meetings to provide feedback on the application Bunda had submitted for the CFT of GMO cotton. Several meetings were held where they finally indicated that the committee had no capacity to assess the application and sought the assistance of a team of international experts to assist them in reviewing the application. The international expert accompanied local experts on visits to Bunda and undertook site visits and interviews with the biotechnology task force team members at Bunda. After a series of meetings Bunda and Malawi made history by having an official approval for confined field trail of GMO cotton granted on 19 August 2011. This is largely attributed to the activities of SABIMA Project in bringing awareness to farmers, policy makers, scientists, media on biotechnology and its benefits and perceived risks. A meeting was then held on 4 November 2011 where several representatives from the government and NGOs including media, scientists, seed producers, agricultural and environmental experts were briefed on the progress of SABIMA Project and the status of application for the CFT for Bunda (Appendix 3).

Training for Bunda College technicians

Realising that some technicians for Bunda College will be involved in handling GMOs, the SABIMA Project organized a one-day training workshop for selected technicians regardless of whether they worked in the laboratory or the field. The workshop was held on 15 December at Lilongwe Hotel and was attended by 38 technicians, six of whom were ladies and 32 men (Appendix 5). The topics that were covered included biotechnology stewardship, risk communication and development of SOPs for different areas including handling of GMO seed, transport of imported GMO seed, acclimatisation of plant propagules, and disposal of GMO plant residues among others.

Training for Bunda College management

The work of the SABIMA Project team in Malawi would be incomplete without the management receiving training. A one-day training session was organized for deans of faculties, heads of departments and professors of Bunda College to appraise them of the activities of the SABIMA project. The training was done on 5 January 2012 and in total twenty three (23) participants attended including the top management (Appendix 6). Topics that were discussed at the training included biotechnology principles, stewardship principles, risk communication and support of biotechnology projects by the management of institutions. It was learnt at this training that the workshop should have come much earlier as some members of the management would not participate fully in different circles. Members who attended the training pleaded with top management that in the event SABIMA2 is successful then college management should be the first group to be retooled on the activities of SABIMA so that they are able to provide support after being well informed.

Challenges and achievements of the Project

The project activities have faced some challenges that have affected implementation of most project activities.

i. Delay in disbursement of funds and non communication on transferred funds result in delay of stewardship training activities.

ii. Conflict of interest where some members derailed activities through misinforming media and other stakeholders on risks of biotechnology.

iii. Increased demand for training in biotechnology stewardship, biotechnology awareness from different stakeholders requiring more resources.

iv. Absence of CFTs for trainee to have practical aspects on handling of GMO produce.

v. Stewardship principles concentrating on conventional seed production and tissue culture techniques.

vi. Misinformation on the part of media regarding biotechnology and perceived risks.

vii. Increased number of people interested in acquiring information on biotechnology and biosafety, leading to an increase in resources required for training.

vii. Conflict on where to apply biotechnology stewardship; for example, CFT to be supported by Monsanto should not have received support from the SABIMA Project yet it is the first project in Malawi that will bring GMOs.

Despite the challenges faced there are some achievements that are worth mentioning.

i. There is an improved understanding of issues surrounding biotechnology and participants are beginning to appreciate how biotechnology can contribute to food security, health and economy of the country.

ii. Media personnel are reporting positively on biotechnology and more articles are being featured in the newspapers, radio and television.

iii. There is an increased dialogue and awareness of biotechnology activities that Bunda College is involved in, specifically the envisaged CFT for GMO cotton. Stakeholders are able to acquire information when required.

iv. Increased collaboration on biotechnology issues between Bunda College and other stakeholders such as Farmers' Union of Malawi, Southern African Traders Trust, USAID.

v. Increased synergy of the FARA SABIMA project activities with Regional Agricultural and Environmental Initiatives Network Africa (RAEIN Africa) creating a multiplier effect on awareness creation for participants involved.

vi. Members of the biotechnology task force at Bunda are involved in other biotechnology projects in the region.

Planned activities and way forward

i. Conduct peer audit visits to Kenya Agricultural Research Institute (KARI) in Nairobi and produce learning lessons for Malawi Biotechnology.

ii. Finalise development of SOPs and the database, which is being finalised by a graduate student.

iii. Finalise manuscript on biotechnology stewardship activities in Malawi and send for publication.

iv. Develop project proposal to continue stewardship activities on the CFT for cotton.

v. Liase with Monsanto Malawi on how the SABIMA activities can be sustained for better performance of the CFT.

Recommendations

- Stewardship training should be extended to cover all other stakeholders likely to handle GM crops and beyond to other agricultural products.
- To improve understanding, the course material should be simplified and reduce use of technical jargon.
- The educational system should include curriculum on biotechnology stewardship and risk communication.
- The Malawi National Biotechnology Regulatory Committee and other regulators in the food industry should receive training in biotechnology stewardship.
- Future funding in biotechnology stewardship should consider capacity building in hands-on transformation and polymerase chain reaction among other biotechnology skills.

Annex 21.1: Participants at the launch of Bunda biotechnology stewardship policy statement 14 April 2011, Lilongwe Hotel

No.	Name	Address
1.	Prof. M.B. Kwapata	Bunda College P.O. Box 219, LILONGWE Cell: 0999 237 378 E-mail: bcaprincipal@bunda.unima.mw
2.	Prof Walter S. Alhassan Animal Science; Biotechnology	FARA Hg PMB CT 173, ACCRA, Ghana Tel: 233-20-814-6668 E-mail-walhassan@fara-africa.org
3.	Ms Laura Johnson Biotechnology	Sygenta Foundation 4588 Coach Road Col. Oh 43220, USA E-mail: LDJ3@cornell.edu
4	Dr Mackson Banda Plant Breeding	Department of Agricultural Research Services DARS Headquarters, PO. Box 30779, LILONGWE 3 Tel: 01 707 363 Fax 01 707 378 Cell: 0999 969 304 E-mail: macksonbanda2010@gmail.com
5	Dr Ibrahim RM Benesi Plant Breeding	Department of Agricultural Research Services Chitedze Agriculture Research Cassava Breeding, P.O. Box 158, LILONGWE Tel:01 707 360 Cell: 0999 474 456 E-mail: ibenesi@sdnp.org.mw
6.	Mrs Stella Gama Forestry Resources Biodiversity	Department of Forestry P.O. Box 30048, LILONGWE 3 Cell: 0999 441 766 E-mail: stellagama@ifmslp.org
7.	Ms Elita Majawa Education Science	Lilongwe Girls Secondary School P.O. Box 86, LILONGWE Cell: 0888 302 020 E-mail: patrickaudzu@gmail.com
8.	Mrs Grace Kaudzu Tissue Culture, Seed multiplication	DARS– Seed certification, Chitedze Research Station P.O. Box 158, LILONGWE Tel: 01 707 087 Fax: 01 707 041 Cell: 0999 350 512 E-mail: gkaudzu@gmail.com
9.	Dr Moses Maliro Plant Breeding and Biotechnology	Bunda College P.O. Box 219, LILONGWE Cell: 0999 112 540 Fax: 01 277 364 E-mail: mmaliro@hotmail.com

No.	Name	Address
10.	Dr James Bokosi Plant Genetics / Biotechnology	Bunda College P.O. Box 219, LILONGWE Cell: 0881969274 E-mail: jmbokosi@yahoo.com
11.	Dr Eric Chilembwe Horticulture	Bunda College P.O. Box 219, LILONGWE Cell: 0888 843 594 E-mail: echilembwe@yahoo.com
12.	Mr John Kapito Consumer Education	Consumer Association of MalAwi (CAMA) P.O. Box 5992, LIMBE Cell: 0999 367 766 E-mail: jonkaps@gmail.com
13.	Ms Caroline Theka Environmental Scientist	Environmental Affairs Department Acting Biosafety Registrar P/B 394, LILONGWE 3 Te: 01 775 062 Fax: 01 773 379 Cell: 0888 689 122 E-mail: caroltheka@yahoo.com
14.	Mrs Catherine Chaweza	National Commission for Science &Technology P/B B 303, LILONGWE Cell: 0888 873 318 E-mail: katechaweza@gmail.com
15.	Mr Thomson J Sanudi Biology and Biotechnology	Bunda College P.O. Box 219, LILONGWE Cell: 088 1 944 086 E-mail: tsanudi@bunda.unima.mw
16.	Mrs Esnat Nyirenda Plant Breeder	Chitedze Agriculture Research P.O. Box 158, LILONGWE Cell: 0999 104 624 E-mail: nyirendaesnart@yahoo.com
17.	Mr Mphamba Wayera Kumwenda Horticulturist/ Plant Curator	National Herbarium and Botanic Gardens Conservation of Natural Resources P.O. Box 30766, LILONGWE 3 Tel : 01 775 143 Cell: 0888 202 314 E-mail: mwkumwenda@yahoo.com
18.	Ms Sara Mandoloma Horticulturist	Bunda College P.O. Box 219, LILONGWE Cell: 0999 571 350/0888 971 350 E-mail: saramandoloma@yahoo.co.uk
19.	Mr Paul S.C. Chimimba	MONSANTO Malawi Limited, Seed business P.O. Box 30050, LILONGWE 3 Cell: 0999 964 004/01 713 547 E-mail: paul.chimimba@mosanto.com

No.	Name	Address
20.	Mr Edson Musopole Food security policy analysis	CISANET P.O. Box 3127, LILONGWE Fax: 01 775 540/0999 226 091 E-mail: edson.musopole@gmail.com
21.	Mr Blackson Jeke Horticulture	Bunda College P.O. Box 219, LILONGWE Cell: 099 2 838 428 E-mail: b_jeke@ymail.com
22.	Ms Jacinta Nyaika Horticulture / Biotechnology	Bunda College P.O. Box 219, LILONGWE Cell: 0888 634 515 E-mail: jnyaika@gmail.com
23.	Mr Michael Benjala Soil Health	Bunda College P.O. Box 219, LILONGWE Cell: 099 5 676 855 Email: michaelbenjala@yahoo.com
24.	Mr Mshawa D. Tembo Biologist	National Commission for Science and Technology Research Servicing in Natural Resources P/B B303, LILONGWE 3 Tel: 01 771 550 Fax: 01 772 431/ 0999 492 813 E-mail: dzikotembo@yahoo.com
25.	Saulosi Kachitsa MSc Student – Horticulture	Bunda College P.O. Box 219, LILONGWE Cell: 0999 353 379 E-mail: kachitsasaulosi@yahoo.com skachitsa@bunda.unima.mw
26.	Rosemary Mzembe MSc student	Bunda College P.O. Box 219, LILONGWE Cel: 099 5 309 505 E-mail: rmzembe@bunda.unima.mw rmunkhondia@yahoo.com
27.	Mr Montigomarley Phimba Journalist	Malawi Broadcasting Corporation P.O. Box 162, LILONGWE Cel: 0888 522 501/ 01 726 665 E-mail: montphimba1@yahoo.com
28.	Ms Sibongile Zimba MSc student	Bunda College P.O. Box 219, LILONGWE Cel: 0999 044 484 E-mail: sibozim@yahoo.co.uk
29.	Mr Chiyembekezo Kapatamoyo Journalist	Malawi Broadcasting Station P.O. Box 162, LILONGWE Cel: 0888 864 840/ 0999 864 840 Tel: 01 726 665 E-mail: chiyembekezok@yahoo.co.uk

No.	Name	Address
30.	Ms Fazilla Tembo Journalist	African Press Agency P/B 217, LILONGWE Cel: 0999 948 667 E-mail: fazilatembo@yahoo.co.uk
31	Mr Dickson Kashoti Journalist	Daily Times P.O. Box 273, LILONGWE Cel: 0999 601 344 E-mail: dicksonkashoti@yahoo.com
32.	Ms Angella Banda Journalist	Radio Islam P.O. Box 2, Likuni Cel: 0999 465 652 E-mail: angella.banda70@gmail.com
33.	Mrs Eunice Ndhlovu Journalist	Malawi Broadcasting Station P.O. Box 162, LILONGWE Cell: 0999 957 231 E-mail: eunicendhlovu@gmail.com
34.	Mr Christopher Jimu Journalist	The Nation P/Bag B419, LILONGWE Cel: 0999 246 828 E-mail: chris2000rubber@yahoo.com
35.	Mr Isaac Kambwiri Journalist	Capital Radio Private Bag 437, LILONGWE 3 Cel: 0888 688 380 E-mail: isaackambwiri@yahoo.com
36.	Mr Vincent Khonje	Star FM Radio P.O. Box 815,LILONGWE Tel: 01 972 077/ 099 947 168 E-mail: vinkhonje@yahoo.com
37.	Mr Moses Majiga	Zodiak Broadcasting Station, P/B 312,LILONGWE Tel: 01 206 966/ 099 3 605 151 E-mail: mosesmajiga@yahoo.com
38.	Mr George Kalungwe Reporter	Zodiak Broadcasting Station P/B 312, LILONGWE Tel: 01 762 724/ 0888 596 637 E-mail: georgekalungwe@yahoo.com
39.	Mr Joseph Mwanoka	Zodiak Broadcasting Station P/Bag 312, LILONGWE Cel: 0999 556 608/ 0888 363 138 E-mail: mwanoka@yahoo.com
40.	Ms Jacquelin Nhlema	TransWorld Radio P.O. Box 52, LILONGWE Tel: 01 751 870/ 0999 199 754/0888 324 011 E-mail:juhlema@twrmw.org
41.	Mr Kingsley Jassi	Financial Times P.O. Box 1782, LILONGWE Cel: 0999 173 172 E-mail: kingjasi@yahoo.com

No.	Name	Address
42.	Mr Nathan Majawa	FM 101, P.O. Box 30585, LILONGWE Tel: 01 841 387/ 0999 101 732 E-mail: nathanmajawa@yahoo.co.uk
43	Mr Thomson Chipangula	Tel: 01 759 101/ 099 5 497 900 E-mail: chipangula101@yahoo.com
44.	Mr Slyvester Namiwa	MIJ FM, P.O. Box 30165, Chichiri BLANTYRE 3 Cel: 0999 210 125 E-mail: snamiwa@yahoo.com
45.	Mr Charles Vintula	MBC, P.O. Box 162, LILONGWE, Cel: 0888 851 007/01 726 665 E-mail: cvintulla@yahoo.com
46.	Mr Felix Washoni	MBC – TV, P.O. Box 162, LILONGWE, Tel: 776 422 Cel: 0999 955 721

Plate 1 : Participants at the official launch of the Bunda biotechnology stewardship policy statement, Sunbird Lilongwe Hotel, Malawi 14 April 2011

Annex 21.2: Lists of participants

Plant biotechnology awareness creation for the media held at Grace Bandawe Conference Centre in Blantyre on Tuesday, 5 July 2011.

No.	Name	Media house	Contact details
1.	Henry Somanje Radio Producer	SDA Radio Malawi	P.O. Box 951, BLANTYRE Cell: 0999 321 578 E-mail: heinzsomanje@yahoo.com
2.	Abdul Aziz Onile	Radio Islam	P.O. Box 5400 LIMBE Cell: 0999 762 556/0881 695 757 E-mail: a.onile@yahoo.com
3.	Ms Sellina khonje	MBC - Radio	National Coordinator Environmental Reporting MBC, P.O. Box 30133 BLANTYRE Cell: 099 1 555 113/01 871 353 E-mail: sellina@journalist.com
4.	Ronald Amos	MBC	Environmental Journalism P.O. Box 301333 BLANTYRE 3 Cell: 0999 229 574 E-mail: kingford17@live.com
5.	Ms Karen Price	Malawi Environmental Endowment Trust (MEET)	Adindo House 3 Joachim, Chissano Road, P.O. Box 3053 BLANTYRE Cell: 099 3 742 254/01 820 303 Fax: 01 820 378 E-mail: Karen@naturetrust.mw
6.	Emmanuel Muwamba	Nation Publications	Environmental Journalist P.O. Box 30408, BLANTYRE 3 Tel: 01 612 646/ 0888 894 162 E-mail: emuwamba@gmail.com
7.	Aubrey Kusakala	MIJ FM	P.O. Box 30165, Chichiri, BLANTYRE 3 Cell: 0999 194 860/ 01 606 383 Fax: 01 875 649 E-mail: aubreykusakala@yahoo.com
8.	Terence Mwamlima	Capital FM	P/B 437, BLANTYRE 3 Cell: 0992 618 263 E-mail: terencejournalist@yahoo.com
9.	Mrs Grace Khombe	Zodiak Broadcasting Station	P.O. Box 2322, BLANTYRE Tel: 01 839 927/ 0888 199 721 E-mail: gracenyenyezi@yahoo.com awekhombe@gmail.com

No.	Name	Media house	Contact details
10.	Simeon Shumba	FM 101 Power	P.O. Box 761, BLANTYRE Tel: 01 942 101/ 0999 421 784 E-mail: simeonshumba@yahoo.com
11.	Charles Mpaka	Blantyre Newspapers Ltd	P/B 39,BLANTYRE Cell: 0888 754 649 Fax: 01 871 663 E-mail: mpakacg@yahoo.com
12.	Kondwani Kamiyala	Nation Publications Ltd	P.O. Box 30408, BLANTYRE 3 Tel: 01 611 978 E-mail: kkamiyala@mwnation.com
13.	Mr Watopaso Mzungu Junior	Blantyre Newspapers Ltd	P/B 39, BLANTYRE Tel: 01 601 290 Fax: 01 871 233 E-mail: mzungumaranatha@gmail.com
14.	Taonga Botolo	AFJ - TV	P.O. Box 1910, BLANTYRE Cell: 0999 671 900/0888 971 900 E-mail: botolo85@gmail.com
15.	Christopher Sande	Radio Maria	P.O. Box 408,MANGOCHI Tel: 01 599 603/01 599 691 Cell: 0999 316 753 E-mail: csande2@yahoo.com
16.	Moses Michael Phiri	The Nation	P.O. Box 30408,Chichiri, BLANTYRE 3 Tel: 01 611 909/ 0999 230 522 E-mail: mosephiri@yahoo.co.uk
17.	Claude Simwaka	Nation Publications Ltd	P.O. Box 30408 BLANTYRE 3, Cell: 0888 203 934 E-mail: csimwaka@mwnation.com
18.	Edith Mkwaila	Joy Radio	P.O. Box 30482, CHICHIRI, BLANTYRE 3 Cell: 0888 346 425 E-mail: mkwailae@yahoo.com
19.	Daniel Manduwa	Bunda College	P.O. Box 219, LILONGWE Cell: 0999 078 000 E-mail: danielmanduwa@gmail.com
20.	Kingsley Mawaya	TV Malawi	P/B 268, BLANTYRE Cell: 0999 947 069/0888 595 200
21.	D Malisawo		P.O. Box 30244, BLANTYRE Cell: 0888 894 683 E-mail: murakhamalisawo@yahoo.com
22.	Matthews Malata	MBC - TV	Environment P.O. Box 30133, CHICHIRI,BLANTYRE 3 Cell: 0999 646 114 E-mail: malatamathews@yahoo.com
23.	Dr George Phiri	CEPA	P.O. Box 1057,BLANTYRE Cell: 099 5 611 748 E-mail: george@cepa.org.mw

No.	Name	Media house	Contact details
24.	Prof James Bokosi	Bunda College	P.O. Box 219, LILONGWE Cell: E-mail: jmbokosi@yahoo.com
25.	Dr Weston Mwase	Bunda College	P.O. Box 219, LILONGWE Cell: 0999 669 920 E-mail: westmwase@yahoo.co.uk
26.	Mr Kingsley Nangoza	Bunda College	P.O. Box 219, LILONGWE Cell: 0888 378 654 Email:kingslynangoza@yahoo.com
27.	Brenda Jere	Bunda College	Bunda College, P.O. Box 219,LILONGWE Cell: 0999 898 763 E-mail: b.nyajere@yahoo.com
28.	Mr Thomas Sanudi	Bunda College	P.O. Box 219, LILONGWE Cell: 088 1 944 086 E-mail: tsanudi@bunda.unima.mw

Biotechnology stewardship for media, Grace Bandawe in Blantyre

Participants in SABIMA biotechnology briefing of GMO trial, 4 November 2011

List of technicians for biotechnology stewardship workshop held at Sunbird Lilongwe Hotel 15 December 2011

No.	Name	Department	Contact details
1.	Daniel Manduwa Horticulture agronomy	Forestry & Horticulture	P.O. Box 219, LILONGWE Cell: E-mail:
2.	Mrs Yolice Tembo Entomologist	Crop & Soil Sciences	P.O. Box 219,
3.	Brian Chimzinga		
4.	Mr Boyd Zulu Forestry Technician	Forestry & Horticulture	
5.	Mr Goodson Dawa Field technician	Forestry & Horticulture	Cell:
6.	Mr Stanford Chidewa Horticulture Technician	Forestry & Horticulture	E-mail:
7.	Mr Ashani Matambo CFT Technician	Forestry & Horticulture	P.O. Box 219,
8.	Mrs Loveness Sande Agroforestry	Forestry & Horticulture	
9.	Mr Mc Welson Kafulatira Mushroom Technician	Forestry & Horticulture	
10.	Sinoya Chilasa Plant Pathologist	Crop & Soil Sciences	Cell:
11.	Mr Emmanuel Mbewe Soil Technician	Crop & Soil Sciences	E-mail:
12.	Mr Charles Zembeni Plant Breeding Technician	Crop & Soil Sciences	P.O. Box 219,
13.	Mr Willie Namaona Irrigation Technician	Agric Engineering Sciences	
14.	Mr Mtambo Land Surveying Technician	Agric Engineering Sciences	
15.	Mr Chiputula Crop Processing Technician	Agric Engineering Sciences	Cell:
16.	Mr K. Nyirenda Farm Mechanisation	Agric Engineering Sciences	E-mail:

Annex 22. Uganda NARO technical report

Uganda NARO
SABIMA report January to December 2011; January to March 2012

Introduction:

The Forum for Agricultural Research in Africa (FARA) and The Syngenta Foundation for Sustainable Agriculture (SFSA) have signed an agreement to strengthen the capacity for safe biotechnology management in Sub-Saharan Africa (SABIMA). The project allows FARA through Sub-Regional Organizations (SROs) to provide, among other things, biotechnology stewardship training and policy development to National Agricultural Research Systems (NARS).

Work plan for 2011

Below are the agreed-upon activities discussed at the end-of-year meeting in 2010:

1. **Stewardship policy development**

- Policy finalised and officially approved by leading research institutions in each country.
- Policy operational and communicated to all research staff, appropriate government agencies and stakeholders

2. **Implementation of stewardship practices in home countries**

- Stewardship training completed with all staff operational on biotechnology projects in plant science research and development institutes in countries using focal points/train the trainer concepts Modules 1 and 2 (number of staff trained reported to FARA).
- Follow-up done by focal persons with trainees that are operational on biotechnology projects to ensure training has been understood and enacted within their home organizations.
- HACCP analysis done by each research group and risk reduction measures put in place through appropriate SOPs.
- Standard operating procedures documented and accessible to all staff involved in biotechnology projects. SOPs reviewed against checklist provided by FARA and gaps in operational methodologies filled.
- Pre-audits completed in each country and improvements identified by focal persons enacted before end of 2011.

3. **Stewardship case studies and outreach**

- Case study write ups from each country

4. **Advocacy and awareness creation of biotechnology stewardship: main players**
- Policy makers
- Universities
- Seed companies
5. **Networking and monitoring visits**

Stewardship policy development

During the monitoring visits made by Prof. Walter Alhasan and Ms. Laura Johnson, we were able to visit the Director General of NARO to discuss the process of the policy. He was aware of the documents earlier presented to him but the team continued to brief him about the need for a policy that would allow stewardship to become entrenched into the NARO R&D process.

The DG stated that he wanted a little more consultative process in which more stockholders would be involved. This is especially important because NARO is an apex body that should take care of agricultural research in other institutions like universities and the private sector. To this end, the project planned a series of workshops to combine stewardship training and biotechnology research awareness in NARO and they review policy statements before recommendations are submitted to NARO council. this were to include :

1. NARO IBC, Principal investigators and regulatory bodies stewardship training workshop
2. Biotechnology technicians training (Modules 1 and 2)
3. NARO-wide biotechnology awareness and stewardship workshop
4. Makerere University (agriculture, biological science and veterinary community) biotechnology awareness and stewardship workshop
5. Mbarara, Mountains of the Moon, Gulu and Busitema Universities biotechnology awareness and stewardship workshop
6. Parliamentarians one-day workshop
7. Farmers' leaders and seed company awareness of biotechnology and aspects of stewardship
8. Monitoring and internal audit of institutions participating in training on their efforts to implement

Stewardship training module 1, 2 and 3 for IBC, new PIs and technicians conducted from 29 June to 1 July 2011

As outlined above, the activities were designed to combine awareness and training as well as proposed policy review. The objective is that the policy will be developed in a more consultative process that is easier for the council to accept. While at the same time participants were engaged in practicing the CCP and SOP development through breakout groups that allowed for the appreciation of maintaining and ensuring product integrity. Table 1 has the list of participants and Table 2 the programme of the training.

This training targeted the institutional biosafety committee and new PIs and research teams both from within NARO and Makerere University.

Figure 1. Members of the NARO IBC undertaking a stewardship training visit to Kasese. Inspecting the fence on the cotton CFT and listening to the cotton CFT PI Dr. Thomas Areke.

Table 1: List of participants

SABIMA Project IBC and CFT PI stewardship training Modules 1 and 2
29 June - 1 July 2011
Day 1 and 2 at the Biotechnology Centre. Kawanda
Day 3 at cotton and maize CFT sites and Ruwenzori Hotel, Kasese

No	Names	Email address	Institute / programme
1.	Mr. Waswa Mulumba	curator@infocom.co.ug	PCRC
2.	Ms. Ruth Mbabazi	mbabazi@yahoo.co.uk	UNCST
3.	Dr. Josephine Namaganda	jnamaganda@kari.go.ug	NaCRRI
4.	Dr. Geoffrey Arinaitwe	garinaitwe@kari.go.ug	NARL
5.	Mr. Gordon Twesiime		NARO Engineer
6.	Dr. Mildred Ochwo Ssemakula	m.ochwo@agric.mak.ac.ug	Makeree University
7.	Annet Margaret Nakayima		NaCRRI
8.	Oboth Christopher		NaCRRI
9.	Patrick Wetala		NaCRRI
10.	Robert Anguzu	ranguzu@hotmail.com	NaCRRI
11.	Isabirye Moses		NaCRRI
12.	Otim Micheal Hilary		NaCRRI
13.	Adur Stella		NaCRRI
14.	Mr. David Kalule Okello	okalule@hotmail.com	NaSARRI
15.	Dr. Phinehas Tukamuhabwa		Makerere University
16.	Mr. Moses Biruma		NaSARRI
17.	Dr. Epieru G	epierugeorge@yahoo.com	NaSARRI
18.	Mr. Elobu Pius	piuselobu@live.com	NaSARRI
19.	Dr. Andrew Kiggundu	akiggundu@kari.go.ug	NARL
20.	Dr. Yona Baguma	bgmyn@yahoo.co.uk	NaCRRI
21.	Dr. Charles Mugoya	c.mugoya@asareca.org	ASARECA
22.	Mr. Clet Masiga	c.masiga@asareca.org	ASARECA
23.	Dr. Titus Alicai	talicai@hotmail.com	NaCRRI
24.	Ms. Namugambe Norah (Secretarial)	biotech.narl@kari.go.ug	NARL

Table 2: Programme of the workshop

Time	Topic	Presenter
Day 1: 29 June 2011		
8.15-8.45 am	Registration	Scifode/NARL
8.45-9.00 am	Introduction of participants	Arthur Makara
9.00-9.15 am	Workshop expectations	Arthur Makara
9.15-9.30 am	Welcome and opening remarks	Director, NARL
9:30-10.00 am	**Tea break**	
10.00-10.30 am	Understanding the science of biotechnology: What potential does it hold to improve productivity in Ugandan staple crops?	Dr. Yona Baguma, NaCRRI
10.30-11.00 pm	Status of GM crops research and development in Uganda: Does it hold promise?	Clet Masiga
11:00-11:30 pm	National biotechnology biosafety regulatory framework and the process of the proposed bill – how will we commercialise?	Arthur Makara
11:30-1:30 pm	Introduction to stewardship (modules 1 and 2)	Andrew Kiggundu
1:30-2:30 pm	**Lunch break**	
	Stewardship session	
2:30-3:00 pm	Principles of stewardship, policy and plans (module 2)	Titus Alicai
3:00-3:30 pm	Ensuring product integrity: Introduction	Andrew Kiggundu
3:30-4:00 pm	**Coffee break**	
4:00-4:30 pm	Critical control points and SOPs	Andrew Kiggundu
4:30 pm	Introduction to group work on CCP	Andrew Kiggundu
5:00 pm	End of Day I	
Day 2: 30 June 2011		
9:00-11:00 am	Group work on CCP analysis Grp – I (CFTs) Grp – II (GMO development process) Grp – III (Breeding and seed production)	Titus facilitate group I Andrew facilitate group II Clet facilitates group III
11:00-12:00 pm	Plenary discussion	All
12:00-1:00 pm	Test and workshop evaluation	All
1:00-2:00 pm	**Lunch**	
2:00 pm	Travel from Kawanda to Kasese	All
Day 3: 1 July 2011		
9:00-12:00 noon	Visit CFT sites of cotton and WEMA, review of CFT setup and process to understand biosafety and product integrity process	All
12:00-1:00 pm	Discussion, conclusions and adjournment (from field)	All
1:00-2:00 pm	Lunch	All
2:00 pm	Travel back to Kampala	All

One very important aspect that emerged from this training was the realisation of the importance of stewardship at all levels of Ag-biotech development and commercialisation. Members were keen to ensure they incorporate these values in biotech efforts. Finally most of the lab based scientists were keen to implement the Critical Control Point analysis system in-order to make sure that the products they produce are pure and the process in compliance with all regulations. The proposed way forward is that the SABIMA team continue to train technicians in other institutions and assist participants in setting up their SOPs. Sometime

during the year the country focal person and ASARECA will undertake monitoring visits to review implementation and supplement FARA's peer audit with a local institutional audit done by stewardship champions.

Stewardship training of technical staff and PhD students in the area of biotechnology research was held at the Ankrah Foundation, Mukono, 29 September to 1 October 2011

Summary

The workshop was attended by technical staff involved in GMO research, tissue culture, molecular biology and breeding from four NARO institutes which included the National Agricultural Research Laboratories (NARL), National Crops Resources Research Institute (NaCCRI), National Fisheries Resources Research Institute (NaFIRRI) and the National Livestock Resources Research Institute (NaLIRRI) for stewardship training and awareness creation. The training aimed at informing technicians about the status of biotechnology products in the world and the region, Uganda's biosafety framework from containment to confinement, and also stewardship training in modules 1 and 2. The participants initially introduced themselves and their occupation and then the presentations started. The participant organizations included Science Foundation for Livelihood and Development (SCIFORD) and ASARECA.

Objectives

The objectives of the workshop were;

- Informing technicians of the status of biotechnology products in the world and the region.
- Informing participants of Uganda's biosafety framework: from containment to confinement.
- Stewardship training in modules 1 and 2.

Highlights from the keynote presentations

During the workshop, keynote presentations were made, including:

- Dr. Andrew Kiggundu (head, National Agricultural Biotechnology Centre) on NARO remarks and the status of biotechnology in Uganda, Module I part I and II (Introduction to stewardship in biotechnology), Module 1 part II and III (Policies, processes and procedures), stewardship training module 1 part IV (stewardship in an organization), stewardship training module 1 part IV (Critical points and SOPs), Module II part II(Incidence response) and stewardship training module II part V(Verification and audit).
- Dr. Charles F Mugoya (ASARECA) on the status of biotechnology in the world and the region.
- Mr. Arthur Makara (Scifode) on Uganda's biosafety framework: from containment to confinement.
- Mr. Clet Masiga Wandui(ASARECA) on Module II part I (Infrastructure and equipment) and Module II part III (Awareness, training and communication).

NARO remarks and the status of biotechnology in Uganda

The chairman informed participants about the change of programme because resource persons from ASARECA had a meeting. After the introduction, Dr. Andrew (chairman) explained the SABIMA Project to the technicians. He said that they receive funding from the Syngenta Foundation. He explained to the technicians that the stewardship course was designed along the "train the trainer model" so that they can become experts and train other people. He laid to rest rumours about GMOs and explained the labelling process of the same.

After the presentations he stated that stewardship needs safeguarding.

SOPs need to be established not only in biotechnology but everywhere in science. They are used for:

- Training
- Recording experience
- Consistency
- Documentation
- Reference

Options to improve the agricultural sector

- Plant breeding
- Indigenous knowledge
- Organic farming
- Variety selection
- Sustainable resource management

Public interest in biotech crops

- High price — the prices will be reduced
- Climate change and sustainability
- Contribute to global food security and to the alleviation of poverty and hunger

An exercise was given and participants were divided into two groups i.e. Group 1 and Group 2. They presented their work as follows:

Table 3 List of participants

No.	Names	Email address	Institute / programme
1	Atim Margaret	atimmargie@yahoo.com	IITA/NARO
2	Tazuba Anthony Fredrick	tafhadson@gmail.com	NARL
3	Agnes Alajo	agnesalajo@yahoo.com	NaCRRI
4	Mr. Egadu George William	egadug@gmail.com	NaLIRRI
5	Mr. Patrick Emudong	patrick_emudong@yahoo.com	NaLIRRI

No.	Names	Email address	Institute / programme
6	Mr. Kayiwa Stephen	kayiwastephen@yahoo.com	NaLIRRI
7	Sebulime Francis	Sebulimefrancis@yahoo.com	NARL/IITA
8	Bakaze Elyeza	ebakaze@kari.go.ug	NARL/IITA
9	Mr. Opio Samuel Morris	sammorrisopio@gmail.com	NARL
10	Mr. Ssekatawa Kenneth	kssekatawa2000@yahoo.co.uk	NARL
11	Mr. Ssekiwoko Fred	fssekiwoko@kari.go.ug	NARL
12	Mr. Abel Sefasi	abelsefasi@yahoo.co.uk	NaCRRI
13	Dr. Andrew Kiggundu	akiggundu@kari.go.ug	NARO
14	Mr.Okurut Asher Wilson	okurutasherwilson@yahoo.com	NaCRRI
15	Dr. Charles Mugoya	c.mugoya@asareca.org	ASARECA
16	Mr. Clet Wandui Masiga	c.masiga@asareca.org	ASARECA
17	Mr. Arthur Makara	makaraarthur@yahoo.co.uk	SCIFODE
18	Dr. Titus Alicai	talicai@hotmail.com	NaCRRI
19	Ms.Namugambe Norah	biotech.narl@kari.go.ug	NARL
20	Nsega Monica	mnsega99@yahoo.com	NaFIRRI
21	Mr.Ondhoro Constantine Chobet	angels_onguard@yahoo.com	NaFIRRI
22	Mrs. Basiita Rose Komugisha	komrose@yahoo.com	NaFIRRI
23	Ms. Runyararo Rukarwa J	rrukarwa@yahoo.com	NaCRRI

Figure 2. Technician participants in the module 1 and 2 training workshop. Dr. Charles Mugoya giving a lecture and participants celebrating completion of the course with a cake.

Biotechnology awareness and training for seed companies

National Agricultural Research Laboratories (NARLs) in collaboration with the Uganda Seed Trade Association(USTA) and the African Seed Trade Association (AFSTA) facilitated a biotechnology awareness and stewardship training workshop, including a seeing-is-believing visit to allow seed companies and media houses to observe the current work on GMO production and how it can be picked up for business.

The visit was conducted on 3 February 2012 at the NARLs in Kawanda-Wakiso District. In addition to the seed company staff, stakeholders and journalists, the NARO researchers who facilitated the process, together with Dr. Mugoya Charles from ASARECA, were also present. The objectives of the visit were:

i. To sensitise and educate USTA members on the status of GMO production and legislation around the world, with specific reference to Africa.
ii. To sensitise the participants to the stewardship of biotechnology products.
iii. To sensitise the seed sector about the status of biotech development and regulation in Uganda.
iv. To introduce the participants to the practical aspects of GMO production and handling.

It is believed that five years from the meeting's date, seed companies will be producing GMO seed and therefore there is a need to sensitise them to understand and accept these products. It was also noted that the seed companies were particularly interested in knowing what is going on with GMOs in order to enable them prepare for the future.

Status of GMO production and legislation around the world with specific reference to Africa Seed is a very important aspect of agriculture. Seed companies have neglected vegetative seed production which is important for food security and which will be the first and main outcome of GM in Uganda. It was noted that ASARECA provides support to seed companies to carry out vegetative seed production.

The global challenge is that the population is increasing by the day; the world population is expected to be 6.5 - 8 billion by 2025. This implies increase in food prices with the ever changing climate. The consumption of bio-fuels also implies increased competition with crops for land and water resources. With the advent of GM crops all this can be overcome.

Currently 29 countries are growing GM crops from the 2010 statistics; of which 19 are less developed countries and 10 are developed countries. The total number of farmers growing GM crops is 15.4 million on 148 million ha of land. The GM crops most popular around the world are banana, cotton, cassava and maize. In Uganda the crops under trial are banana, cotton, cassava and maize. Our Kenyan neighbours are carrying out trials on sweet potatoes; countries like Burkina Faso, Egypt and South Africa are already growing GM crops. The adoption of biotech crops is on the rise in Africa and the world over. Therefore there is need for policies and legislations to regulate the production and handling of these crops and products. Dr. Mugoya informed the participants that currently Uganda has biotech/biosafety policies but has not enacted legislation.

Issues arising

There is need to educate the seed companies and the public about the biotech/biosafety legislation in Uganda because of the global and commercial importance of GM crops. Parliamentarians are illiterate when it comes to the technology, making the whole process difficult. It is also difficult to get consensus from all the farmers. The Uganda biotechnology consortium works with the parliament to see that the law is passed.

Seed companies should work very closely with the scientists to increase their knowledge on GMO issues, and then pass on this information to the farmers who are key stakeholders.

It was brought to the knowledge of the participants that organic agriculture and GM technology have a lot in common as GM is the highest form of organic agriculture, both working on the same principle of limited chemical use, producing crops naturally and feeding the population.

It was noted that sensitisation of society about the attributes, benefits and biosafety measures for GM production is very important and should be encouraged.

Biotechnology stewardship

Stewardship is not a regulatory issue but is our responsibility as stakeholders. The presentation was made by Dr. Kiggundu, the coordinator of the NARLs-Kawanda biotechnology department.

Issues arising

- It was noted that taking stewardship into consideration can save companies from various mistakes and losses that they would have otherwise incurred.
- Need to update the seed companies and the public about the biotech/biosafety legislation in Uganda.
- Seed companies should work very closely with scientists to increase their knowledge about GMO issues.
- NARO, UNCST should always invite seed companies to strategic meetings.
- The participants were pleased to note that all the issues of human, animal and environmental safety were taken care of during the development of GMO products.
- It was noted that the seed companies have to ensure reliability of the seed, hence the need to strengthen stewardship practices.
- Companies are worried about liability and redress provisions in Cartagena protocol.

Figure 3. Members of Uganda seed growers and traders association participating in a biotechnology awareness and stewardship workshop at Kawanda.

Table 4 List of participants

No.	Name	Organization/company	Position/designation	Email address
1.	Ms. Sylvia N. Kyeyune	Mt. Elgon Seed Company	General manager	mtelgon@mtelgonseed.co.ug
2.	Mr. Mayanja Ali	Grow More Seeds and Chemicals	Agronomist	mayanjaali@yahoo.com
3.	Mr. Biribonwa Charles	USTA	Accounts assistant	Biribonwacharles@yahoo.com
4.	Mr. Mubangizi Emmanuel	FICA Ltd.	Research & development officer	mubangizie@yahoo.co.uk/ ficauganda@gmail.com
5.	Mr. Wassajja Patrick	Farmer's media	Journalist	Wasajjapatrick@yahoo.co.uk
6.	Mr. Mugisha Johnson	East African Seed (U) Ltd	Quality controller/seed production officer	Info.ug@easeed.com
7.	Ms. Petride Babirye Mudoola	New Vision/ Vision voice	Journalist	bpetmud@gmail.com
8.	Mr. Chemutai Job Alunga	USTA	Executive secretary	chemujob@yahoo.com ugandaseedtrade@yahoo.com
9.	Mr. Talengera David	NARL-Kawanda/NARO	Research scientist	talengera@kari.go.ug
10.	Dr. Charles Mugoya	ASARECA	Programme manager, Agrobbbbiodiversity/ Biotechnology	c.mugoya@asareca.org
11.	Dr. Andrew Kiggundu	NARL-Kawanda/NARO	Head, Biotech department NARL-Kawanda	akiggundu@kari,go.ug
12.	Mr. Patil G.S	East African Seed (U) Ltd	Product development manager	gspatil@easeed.com
13.	Mr. Dramadri Joseph	Pearl Seeds Ltd	General manager	pearlseedltd@gmail.com
14.	Mr. Paul Kirungi	Capital Radio/Beat FM	Journalist	pkirungi@capitalfm-ug.com
15.	Mr. Okello Michael	Mt. Elgon Seed Co.Ltd	Sales and marketing officer	amokello@yahoo.com
16.	Mr. Kasirye Moses	VEDCO Luweero	Farmer	Kmose2008@yahoo.com
17.	Mr. Narayanappa Mohan Kumar	Grow more seeds	Manager	growmoreseeds@gmail.com

No.	Name	Organization/company	Position/designation	Email address
18.	Mr. Gabosya Cyril	Grow more seeds	Seed grower	
19.	Mr. Byamukama Evelyn	Bukedde F.M	Journalist	byamukeve@yahoo.com
20.	Mr. Adriku Ronald Rogers	Masindi Seed Company	Field officer	adikuronaldrogers@rocketmail.com
21.	Ms. Wanyama Winnie	Masindi Seed Company	Crop production/Quality control/ marketing officer	wanyamabirungi@gmail.com
22.	Mr. Narcis Tumushabe	FICA Ltd	C.E.O	narcis2005@gmail.com
23.	Mr. Ssali Tom	NARL	Research assistant	tssali@yahoo.co.uk
24.	Mr. Masagazi Cliff-Richard	Pearl Seeds Ltd.	Managing director	pearlseedltd@gmail.com/ cllirima@yahoo.com
25.	Mr. Sseremba Godfrey	NASECO(1996) Ltd.	Product development officer	gsseremba@gmail.com
26.	Mr. Lutwama Jacob	NARO	Research scientist	jalutwam@gmail.com

Advocacy and biotechnology awareness by members of the ninth Parliament held at Raider Hotel on 4 January 2012

Overall objective

- To sensitise parliamentarians on progress made in biotechnology both in Uganda and globally and the urgency of the need to enact the national biotechnology and biosafety law.

Specific objectives

- To enlighten the new parliamentarians on the science of biotechnology.
- To mobilise and create a sense of urgency amongst the parliamentarians on the need to table, debate and enact the national biotechnology and biosafety act.
- To initiate a process of close interaction and open discussion between the legislators of the ninth Parliament and scientists.
- Conducting a seeing-is-believing tour of Kawanda and Namulonge.

Issues arising

- Parliamentarians are illiterate about the technology, making the whole process difficult.
- Need to show good home-grown technologies such as the virus resistant cassava and BXW banana.

Biotechnology awareness (academia and student engagement) and stewardship in biotechnology training module I at Makerere University on 5 October 2011 and 15–16 December 2011

Makerere University is Uganda's largest and most acclaimed university. However, there is a lot of ignorance at this University on the subject of biotechnology and genetic engineering. A lot of attacks and counter attacks on the subject of genetic engineering and GE products on the

Members of Uganda's 9th parliament participating in a SABIMA biotechnology awareness and stewardship workshop at Raider Hotel, 4 January 2012

University intranet have been reported on several occasions. Similarly, some Professors have written very anti-biotech articles in the print media, spreading negative sentiments against biotechnology. At different fora, both university professors and other lecturers as well as students have expressed desire for more open debate and more information on the subject of biotechnology and genetic engineering so that they can disseminate information from a more informed point of view. It as therefore imperative that under the SABIMA Project, a half-day open public forum be conducted at Makerere University in collaboration with the College of Natural Sciences.

The objectives of the workshop were:

1. To open up debate on the subject of biotechnology and GE amongst academia and studentship at Makerere University.
2. To freely share information, enhance understanding on the subject of biotechnology and GE amongst the University lecturers and students.
3. To open up channels of information access and continued dialogue.

Expected outcomes

- Enhanced understanding of the subject of biotechnology and GE amongst academia and studentship at Makerere University.
- Possible enhanced collaboration on information access and sharing amongst different players and academia.

Table 5: Programme for the awareness workshop:

Time	Activity	Entity responsible
2:00 pm	Arrival of participants	
2:20 pm	Opening remarks	Principal, College of Natural Sciences
2:20-3:30 pm	Presentation on biotechnology and genetic engineering developments in Uganda and globally	Invited speaker
2:30-3:30 pm	Discussions and debate	All
3:30-4:00 pm	Conclusions, communiqué and way forward	Rapporteur and chairperson
4:00-4:15	Closing remarks	TBD
4:15 pm	Departure	

- Issues arising
  - Increase awareness to the general public.
  - Increase availability of national guidelines for containment and confinement.
  - Academic staff to increase their participation in national GMO dialogues.
  - Stewardship should be included for technician training and included in the new BSc. In Biotechnology curriculum.

Table 6: Participants

Name	Sex	Department/institute	Email address
Prof. Hannington Oryem-Origa	M	Botany	horyem-origa@botany.mak.ac.ug
Dr. John Tabuti	M	Environment	jtabuti@botany.mak.ac.ug
Dr. Maud Kamatenesi-Mugisha	F	Botany	mkamatenesi@botany.mak.ac.ug
Dr. Moses Osiru	M	Crop Science	m.osiru@ruforum.org
Dr. Mukasa Setumba	M	Crop Science	sbmukasa@agric.mak.ac.ug
Dr. Richard Edema	M	Crop Science	redema12@yahoo.com
Prof. G. W. Lubega	M	Vet Medicine	glubega@imul.com
Prof. Patrick Rubaihayo	M	Crop Science	prubaihayo@gmail.com
Dr. Nyakaana Silver	M	Botany	snyakana@gmail.com
Dr. John Enyaru	M	Vet Medicine	jenyaru@sci.mak.ac.ug
Dr. Ejobi	M	Biochemistry	ifejolu@yahoo.com
Dr. Geoffrey Tusiime	M	Crop Science	gtusiime@agric.mak.ac.ug
Dr. Paul Nampala	M		nampalap@yahoo.co.uk
Dr. Robinah Ssonko	F	Crop Science	gessonko@yahoo.com
Dr Jeninah Karungi	F	Crop Science	karungi@yahoo.co.uk
Dr Jennifer Bisikwa	F	Vet MB	bisikwa@gmail.com
Dr James Ssebuliba	M	Crop Science	jsebuliba@gmail.com
Dr. Mildred Ssemakula	F	Crop Science	mknossemakula@yahoo.com
Dr. Patrick Masembe	M	Zoology	cmasembe@zoology.mak.ac.ug
Dr. Tukamuhabwa Phinehas	M	Crop Science	p.tuka@agric.mak.ac.ug
Dr. Arthur Tugume	M	Botany	aktugume@botany.mak.ac.ug
Dr. Ann Nanteza	F	Vet Medicine	nantezaa@vetmed.mak.ac.ug

Name	Sex	Department/institute	Email address
Dr Anne Kazibwe	F	Vet Medicine	anne.Kazibwe@gmail.com
Dr Pius Alibu	M	Zoology	palibu@yahho.com
Dr Clare Mugasa	F	Zoology	mugaza@vetmed.mak.ac.ug
Dr Yona Baguma	M	NaCRRI	bgmyn@yahoo.co.uk
Dr Andrew Kiggundu	M	NARL	akiggundu@kari.go.ug
Dr Charles Mugoya	M	ASARECA	c.mugoya@asareca.org
Dr Titus Alicai	M	NaCRRI	talicai@hotmail.com
Mr Arthur Makara	M	SciFODE	makaraarthur@yahoo.co.uk
Ms Namugambe Norah (Secretarial)	F	NARL	norahnamugambe@yahoo.com

Peer audit visits

A peer audit visit was conducted by Oumar Traore from INERA, Burkina Faso to NARO in Uganda.

Figure 4 . Dr. Oumar Traore standing at the Banana Bacterial Wilt CFT at Kawanda Uganda during his stewardship peer audit visit.

Internal audits to stewardship trainees:

These audits were conducted by the focal person, Dr. Titus Alicai and Dr. Charles Mugoya in order to follow up on the development of SOPs by the previous project trainees and establish their status and challenges.

- **Central region (15–17 December 2011)**
  - NARL
    - General laboratory access and equipment use SOPs
    - Banana transformation SOPs
    - Greenhouse access and use SOPs
    - CFT SOPs for banana
  - NaCRRI
    - Screen house access and use SOPs
    - CFT SOPs for cassava
    - Cassava transformation SOPs
    - Sweet potato transformation SOPs
- **Western Uganda (28–30 December 2011)**
  - KARZARDI
    - Tissue Culture laboratory
    - Screen house transfer and handling of plants and seed potato (aeroponics system and pot system)

- WEMA
    - CFT SOPs in very good shape
    - Challenges caused by changing rainfall patterns
- Cotton Bt/HT
    - Challenges arising from:
        - Storage of cotton, transport to ginning centre across the country
        - Data handling

- **Eastern region (8 – 9 January 2012)**
    - NaSARRI
        - Cotton CFT SOPs
        - Challenges with storage of harvested cotton and ginning – to involve UNCST
    - NaLIRRI
        - Molecular biology laboratory SOP – not present
        - Production of sterile tsetse flies – radiation
        - Waste disposal SOPs and proper structures missing
        - Compliance with GLP needs improvement

NARO-wide biotechnology awareness and stewardship workshop

This workshop has not yet been conducted, although the funds for it have been committed and all service providers paid (as indicated in the financial report). The final date has now been fixed for the 4 May 2012. Policy statements will be reviewed and adopted for approval by NARO management.

Challenges

Some of the most important challenges to this project were:

- NARO management review process which took too long.
- Competing activities in the busy biotechnology centre including management of numerous projects and general administration.
- Mega donor projects doing separate stewardship training for specific project staff.
- It was hard to attract some staff to important training, including PIs and senior staff.

Table 6: SABIMA Project trainee database for 2009-2011
Focal person: Andrew Kiggundu Country: Uganda Report Date: 29 February 2012

S. No.	Training topic	Training date	Recipient institutions	Number trained			Remarks
				Male	Female	Total	
1	Stewardship in biotechnology training workshop for senior staff and directors of institutes	21 – 22 Jan 2010	NARO, ASARECA, SCIFODE, UNCST, MAAIF	11	1	12	First stewardship training and introductory workshop for SABIMA in Uganda Highly appreciated by directors of institutes involved in biotechnology and recommended more such training be done by as many staff as possible.
2	NARO biotechnology policy development meeting	16 June 2010	NaLIRRI, NARL, NaCRRI, ASARECA, SCIFODE	5	2	7	One-day meeting of selected participants to develop policy statements for NARO and incorporate them into an ongoing overall strategy development process. Report was presented to GD, NARO.
3	Biotechnology stewardship training modules 1 and 2	5 to 6 July 2010	NaSARRI, NARL, NaCRRI	21	4	25	Training of senior staff involved in biotechnology at NARO. Recommendations to include technical staff as they are critical in research work.
4	Biotechnology awareness and experience-sharing workshop for civil society	25 January 2011	NAPE, Bakusekamajja women farmers group, UNFFE, Filcom Associates, UJCC, The New Vision Newspaper, Ministry of Tourism, Trade and Industry , NaCRRI-NARO, Scifode, NARL-NARO, Association of Uganda Professional Women in Agriculture and Environment (AUPWAE), Buganda Kingdom, Minister of State for Agriculture, Program for Biosafety Systems., Caritas Uganda., Buganda Kingdom, Minister of Agriculture & Environment., Ministry of Water and Environment., NOGAMU, NBC-UNCST, GreenWatch, Uganda National Farmers' Federation., Daily Monitor, NEMA, AFIEGO, VEDCO, Makerere University	25	12	37	Many anti-GM civil society representatives were converted. Several promised to spread the knowledge around and encourage other members to participate in future trainings or even to visit the research institutions. The differences between hybrid and GM seed were clearly understood due to the participation of a farmer seed production groups.

S. No.	Training topic	Training date	Recipient institutions	Number trained			Remarks
				Male	Female	Total	
5	Policy- and decision makers 'Travelling and seeing-is-believing workshop' on biotechnology and biosafety, from Kampala to Kawanda and to Kasese	9 and 10 February 2011	Ministry of Tourism, Trade and Industry, Office of the Prime Minister, Parliament of Uganda, Minister of Agriculture, Buganda Kingdom, Ministry of Justice and Constitutional Affairs, Office of the Solicitor General, Ministry of Agriculture, Animal Industry and Fisheries, Uganda Broadcasting Corporation, TV, Science Foundation for Livelihoods and Development, National Agricultural Research Laboratories, National Crops Resources Research Institute, Ministry of Water and Environment, NARO-Secretariat, Entebbe , Cabinet Secretariat, Office of the President, Daily Monitor Newspaper, National Chemotherapeutics Research Laboratory, Program for Biosafety Systems, Ministry of Finance, Planning and Economic Development, Uganda Broadcasting Corporation, New Vision Newspaper, OBR, Kasese, Mubuku Irrigation and Settlement Scheme, Obusinga bwa Rwenzururu (Cultural institution), District Agriculture Officer Kasese Local Government, NAADS Coordinator, Kasese, Cotton CFT Manager, Kasese.	23	16	39	Participants from different ministries visited the water efficient maize, Bt cotton and herbicide tolerant cotton trials in Kasese. We see a great opportunity for these technical people who were able to bring back information to the ministries and rejuvenate the stuck process towards the enactment of the biotechnology bill. NARO and other stake holders were invited to the prime minister's office twice to make a presentation. This then caused the bill to move from cabinet to the solicitor general for drafting.
6	NARO-FARA SABIMA biotechnology stewardship Module 3-(verification and audit) visit	12 and 13 July 2011	NaCRRI, NARL	13	5	18	Two institutes, NARL and NACRRI, benefited from the audit conducted by Patrick Rudelshiem and Walter Alhasan. Laboratories and screen/green houses facilities improved their compliance to good practices and use of SOPs.
7	Biotechnology stewardship training for technicians	29 September –1 October 2011	IITA, NARL, NaLIRRI, NaFIRRI, NARL, NaCRRI, SCIFODE	17	6	23	

S. No.	Training topic	Training date	Recipient institutions	Number trained			Remarks
				Male	Female	Total	
8	Stewardship training and CFT field visit by NARO IBC and New CFT PIs	28 June – 1 July 2011	NaSARRI, Makerere University, NARO	7	2	9	New PIs for the sweet potato and groundnut CFT projects received the introductory module 1 and 2 training. Their participation in future module II was recommended. Three IBC members including the NARO engineer were also trained to appreciate the stewardship principles and why the IBC can play an important role in their adoption within NARO.
9	Stewardship training modules 1 and 2 and general biotechnology in Uganda awareness creation	15 to 16 December 2011	Makerere University Faculties of Science, Agriculture and Veterinary Medicine	17	8	25	Recommendations included: Increase awareness among staff and reduce uninformed debate. University not developing GM products but can use stewardship principles in general research and teaching. Include stewardship in the biotechnology curriculum.
10	Advocacy and biotechnology awareness by members of the ninth Parliament	14 Jan 2012	Ninth Parliament and parliamentary staff of the Science and technology, Trade, and Agriculture subcommittees	35	23	68	Numerous questions about GMOs in general. General lack of knowledge among the new parliamentarians. Need for more training and awareness creation. Seeing-is-believing workshop to be conducted in partnership with NaCRRI.

S. No.	Training topic	Training date	Recipient institutions	Number trained			Remarks
				Male	Female	Total	
11	Stewardship of biotechnology products, awareness creation of biotechnology in Uganda. Development of GMO regulations in Uganda.	Feb 2012	NASECO (1996) Ltd, A K Oils & Fats (U) Ltd, East African Seeds, Capital Radio, USTA, New Vision Newspaper, Pearl Seed Ltd, Grow More Seeds Ltd, Farmers Media, Mount Elgon Seed Co. Ltd, Victoria Seeds, Masindi Seed Co. Ltd, FICA Seeds	22	5	27	Trainees suggested that Contract Seed farmers to attend similar training to be invited by companied in the next session. There was a demand for simplifying of course in biotech for ease understanding including use of vernacular language if possible. Several seed companies were concerned about the liability provisions that may become part of the law, that this may seriously affect their adoption of the GM seed.
	TOTAL			**196**	**84**	**290**	

About FARA

The Forum for Agricultural Research in Africa (FARA) is the apex continental organization responsible for coordinating and advocating for agricultural research-for-development. (AR4D). It serves as the entry point for agricultural research initiatives designed to have a continental reach or a sub-continental reach spanning more than one sub-region.

FARA serves as the technical arm of the African Union Commission (AUC) on matters concerning agricultural science, technology and innovation. FARA has provided a continental forum for stakeholders in AR4D to shape the vision and agenda for the sub-sector and to mobilise themselves to respond to key continent-wide development frameworks, notably the Comprehensive Africa Agriculture Development Programme (CAADP).

FARA's vision: Reduced poverty in Africa as a result of sustainable broad-based agricultural growth and improved livelihoods, particularly of smallholder and pastoral enterprises.

FARA's mission: Creation of broad-based improvements in agricultural productivity, competitiveness and markets by continental-level strengthening of capacity for agricultural innovation.

FARA's value proposition: Strengthening Africa's capacity for innovation and transformation by visioning its strategic direction, integrating its capacities for change and creating an enabling policy environment for implementation.

FARA's strategic direction is derived from and aligned to the Science Agenda for Agriculture in Africa (S3A), which is, in turn, designed to support the realisation of the CAADP vision. FARA's programme is organized around three **strategic priorities**, namely:

- **Visioning Africa's agricultural transformation** with foresight, strategic analysis and partnerships to enable Africa to determine the future of its agriculture, with proactive approaches to exploit opportunities in agribusiness, trade and markets, taking the best advantage of emerging sciences, technologies and risk mitigation and using the combined strengths of public and private stakeholders.
- **Integrating capacities for change** by making the different actors aware of each other's capacities and contributions, connecting institutions and matching capacity supply to demand to create consolidated, high-capacity and effective African agricultural innovation systems that can use relative institutional collaborative advantages to mutual benefit while also strengthening their own human and institutional capacities.
- **Enabling environment for implementation**, initially through evidence-based advocacy, communication and widespread stakeholder awareness and engagement and to generate enabling policies, and then ensure that they get the stakeholder support required for the sustainable implementation of programmes for African agricultural innovation

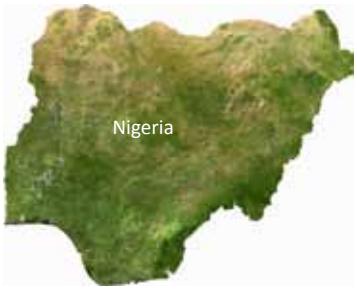
Key to this is the delivery of three important results, which respond to the strategic priorities expressed by FARA's clients. These are:

Key Result 1: Stakeholders empowered to determine how the sector should be transformed and undertake collective actions in a gender-sensitive manner

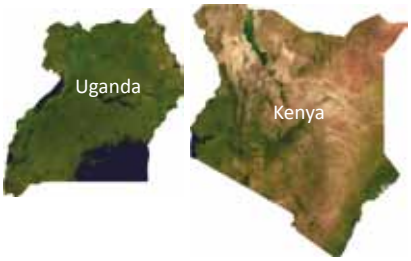
Key Result 2: Strengthened and integrated continental capacity that responds to stakeholder demands within the agricultural innovation system in a gender-sensitive manner

Key Result 3: Enabling environment for increased AR4D investment and implementation of agricultural innovation systems in a gender-sensitive manner

FARA's development partners are the African Development Bank (AfDB), Bill and Melinda Gates Foundation, BMZ (The Federal Ministry for Economic Cooperation and Development), the Canadian International Development Agency (CIDA)/ Department of Foreign Affairs, Trade and Development (DFATD), the Danish International Development Agency (DANIDA), the Department for International Development (DFID), the European Commission (EC), The Consultative Group in International Agricultural Research (CGIAR), the Governments of the Netherlands, Nigeria and Italy, the Norwegian Agency for Development Cooperation (NORAD), Australian Centre for International Agricultural Research (ACIAR) and UT Bank (Ghana). The World Bank.



The project 'Strengthening capacity for safe biotechnology management in sub-Sahara Africa' (SABIMA) was initiated to strengthen Africa's capacity in sound biotechnology management for enhanced food security. The target countries were Burkina Faso, Ghana and Nigeria in West Africa, Kenya and Uganda in East Africa and Malawi in Southern Africa. The project duration was July 2009 to March 2012. The prime objectives were biotechnology and biosafety information gathering and dissemination, teaching biotechnology stewardship and awareness creation and advocacy for biotechnology with stewardship. Stewardship capacity building was the main thrust of the project and accounts for its uniqueness in Africa.



FARA
Forum for Agricultural Research in Africa

Forum for Agricultural Research in Africa
12 Anmeda Street, Roman Ridge
PMB CT 173, Accra, Ghana
Telephone: +233 302 772823 / 302 779421
Fax: +233 302 773676 / Email: info@faraafrica.org
www.faraafrica.org