

# SEED ENTERPRISE MANAGEMENT INSTITUTE (SEMIs)



**SEMIs**

GROWING THE  
SEED INDUSTRY

2<sup>ND</sup> YEAR REPORT

College of Agriculture and Veterinary Sciences,  
University of Nairobi



## Executive Summary

The Seed Enterprise management Institute (SEMIs) project was started in February 2010. The project is based at the College of Agriculture and Veterinary Sciences (CAVS), University of Nairobi (UON) and is funded by Alliance for a Green Revolution in Africa (AGRA). It was started as a way of providing much needed capacity, especially with regard to training, to the seed industry in sub-Saharan Africa.

One of the main objectives of SEMIs is to help seed companies in Africa produce more seed. A major challenge for seed companies all over Africa, apart from capital is knowledge-knowledge on how to produce, process, market and maintain quality of seed, and how to go about the intricacies of seed business and make a seed enterprise profitable. The SEMIs short courses on seed production, seed drying, processing and storage, seed marketing, seed business management and seed quality assurance and seed enterprise quality management were designed to furnish seed company personnel with knowledge on these important areas.

In the second year of the project, over 130 seed company personnel from over 40 different seed companies and 14 countries received training on the different aspects of seed in the seed value chain. The second year also saw the entry of two new countries in Liberia and Sierra Leone. Many of the seed companies whose personnel have received training here at SEMIs are small to medium enterprises with some located in very remote areas in their countries. Nevertheless, they are providing high quality seed to African farmers and in the process driving the Green Revolution in Africa

Twenty seven participants from twenty seven seed companies and 13 African countries received training on seed production. Dr. John MacRobert from CIMMYT and Dr. Kiarie Njoroge from CAVS with help from other personnel from CAVS, KARI and KEPHIS, were the main facilitators. For seed processing, drying and storage, a total of 28 seed company personnel from 28 seed companies received training on how to process, dry and store seed. Dr. Yuan Shyy from Iowa State University and Dr. Ayub Gitau from CAVS were the main facilitators.

The course on seed business management had 26 participants from 26 seed companies and 13 African countries. The participants in this course are mainly Chief Executive Officers (CEOs) who make the hard decisions in the seed company and ensuring sustainability and profitability. Aline O'Connor Funk, a consultant with AGRA and the Gates foundation and Professor Evans Aosa from the School of business were the coordinators of the course. Other facilitators were mainly drawn from the School of business, while Dr. Julius Kipng'etich, the director of the Kenya wildlife Service was invited as a guest speaker. Seed marketing had a total of 25 seed company personnel from 25 seed companies and 14 countries. Aline O'Connor Funk and Dr. Justus Munyoki from the school of business, with help from other staff at the school of Business and CAVS, were the coordinators of the course. The last course, seed quality assurance and seed enterprise quality management had a total of 27 seed company personnel from 27 seed companies and 12 African countries. The main facilitators, with help from UoN and KEPHIS staff, and other stakeholders were Dr. Mike Stahr and Dr. Joe Cortes from ISU and Dr. James Muthomi from CAVS.

Apart from training, SEMIs is involved in production of breeders' seed for beans. Currently, the project is producing seed of four bean varieties bred by scientists at UON. This particular project will go a long way in facilitating acquisition of improved bean varieties by small-holder farmers in Kenya.

As the third year of the project get underway beginning February 2012, over 150 seed company personnel from all over Africa are envisaged to be trained in the short courses. We hope to upscale production of breeders' seed of beans to at least 10 tonnes this year. The SEMIs seed laboratory and seed processing unit that is to be put up at the field station at CAVS is expected to be up and running by November 2012. We hope that the seed laboratory and processing unit will provide the crucial experiential training on seed systems that participants need in their seed companies. This, together with the short course trainings will equip the participants with the knowledge they require and put them in good stead to upscale seed production not only in their respective seed companies but in the whole of Africa.

## Table of contents

Executive Summary .....	2
Table of contents .....	4
Introduction.....	6
Activities in 2011.....	9
SEMI's first Year Review and Planning Meeting .....	10
Review of SEMI's short courses .....	34
SEMI's Courses in 2011.....	56
Seed Production Course .....	57
Seed Drying Processing and Storage.....	62
Seed Business management .....	68
Seed Marketing .....	71
Seed Quality Assurance and Seed Enterprise Quality management.....	74
Bean seed production .....	78

## Acronyms

PASS	Program for Africa Seed Systems
AGRA	Alliance for a Green Revolution in Africa
KARI	Kenya Agricultural Research Institute
CIMMYT	International Maize and Wheat Improvement Center
PI	Principal Investigator
STAK	Seed Trade Association of Kenya
KEPHIS	Kenya Plant Health Inspectorate Services
UON	University of Nairobi
KSC	Kenya Seed Company
ISU	Iowa State University
OPV	Open Pollinated Variety
ASIF	African Seed Investment Fund
AOSA	Association of Official Seed Analysts

## Introduction

The seed industry in Africa has experienced tremendous growth within the last decade with many seed companies currently locating all over the continent and doing the business of providing seed to the African farmer. These seed companies, by providing improved seed to small-scale farmers driving the economies of many African countries. Despite this tremendous growth however, many farmers in sub-Saharan Africa still experience challenges in acquisition of improved high yielding seed. The seed is normally not easily available and many are those that have to travel over long distances to get certified seed. Also, in many areas in Africa, certified seed is unaffordable to the farmers forcing the farmers to use their own farmer saved seed. In many other areas also, the seed is totally lacking. While there are many farmers in Africa, who out of ignorance, do not know the benefits of certified seed, others have become disillusioned from the effects of provision of poor quality seed choosing to grow their own saved seed.

Seed is the beginning of plant life and in its very nature, improved high quality seed is a major catalyst for improved crop yields, agricultural development and livelihoods. As most economies within Africa are agricultural based, a major priority for attainment of vision 2030 of food sufficiency is improvement in agricultural productivity. The required agricultural productivity needed to trigger a green revolution in Africa and make African countries food secure and net exporters of food commodities will have to come through provision of improved seed and fertilizers to African farmers. Farmers not only need wide access to improved seed, the seed has to be available when they need it. Owing to many of the challenges African farmers face in acquiring improved seed, utilization of improved seed in many African countries is dismally low. Incentives are needed for those seed companies already in operation to scale up production and for the development of new ones in order to meet the seed demand in the continent.

A major challenge facing seed companies, apart from financial access is seed systems knowledge. This is crucial knowledge that ensures that the seed enterprise is run profitably and sustainably. To fill this crucial gap on seed systems knowledge and improve seed production in Africa, AGRA through the University of Nairobi set up the Seed Enterprise

management Institute (SEMI) whose main objective was to provide capacity in the form of training to the seed industry in sub-Saharan Africa. Collaborators in this noble endeavour include International Maize and Wheat Improvement Center, CIMMYT, Iowa State University (ISU), Kenya Plant Health Inspectorate Services (KEPHIS), Kenya Agricultural Research Institute (KARI), Aline O'Connor Funk, a consultant with AGRA and Gates foundation, seed companies, and other government and private institutions involved in provision of improved seed.

SEMI runs five short courses on seed production, seed drying processing and storage, seed marketing, seed business management and seed quality assurance and seed enterprise quality management for seed company personnel. These courses, developed at the UON with wide consultation with other learning institutions and stakeholders in the seed industry, were designed to impart the most crucial aspects of seed enterprise management over a short period of time.

The seed production course is basically designed for production staff in seed companies and entails all aspects of field seed production. The course outline includes planning and management of seed production, seed production research and certification standards and seed grower contracts and management. Apart from imparting crucial knowledge on seed production for important food crops including maize, sorghum, millet, cassava and beans, the course also includes aspects of field seed regulation that is important for high quality seed production. Connected to seed production is seed drying, processing and storage. This particular course deals with seed processing, including drying, sorting, chemical treatment and warehousing.

The course on seed business management specifically targets chief executive officers (CEOs) who are basically in charge of making the seed business profitable and sustainable. Seed enterprises, unlike other businesses are critical owing to the fact that seed is a living commodity and requires special attention. The seed business course encompasses all aspects of seed business with emphasis on critical thinking in both financial and human capital. Connected to seed business management is seed marketing, another crucial aspect of any seed business. The course entails all aspects of seed marketing including market forecasting to ensure demand is met, analytical skills in seed marketing and seed promotion and farmer awareness campaigns to ensure increased seed demand.

The seed quality assurance and seed enterprise quality management course is intended for Seed Company personnel involved in seed quality maintenance and seed company process management. Apart from learning important aspects on seed health, seed quality, purity, certification and legislation, the course also explores the various ways of general seed enterprise quality management. Process management and analysis, key components of this course ensure that all departments of the seed company are run at the highest standards of quality.



## Activities in 2011



## SEMIs First Year Review and Planning Meeting

The SEMIs first year review and planning meeting took place on January 31<sup>st</sup> and 1<sup>st</sup> February 2011 at the College of Agriculture and Veterinary Sciences, University of Nairobi. The main objective of the meeting was to review activities of SEMIs in the first year of operation and also chart the way forward for the second year. In attendance were SEMIs and University of Nairobi staff led by SEMIs Principal Investigator (PI), Professor Mwang'ombe, AGRA, led by PASS Director, Dr. Joe DeVries, Dr. Rufaro Madakadze and Dr. George Bigiriwa, representatives from ISU including Dr. Joe Cortes and Dr. James Okeno, KEPHIS, KARI, and STAK.

The highlights of the first year of activities included:

- SEMIs inception and planning meeting held on February, 2011 which laid the foundation for the establishment of the SEMIs project at UON.
- Consultative workshop for Curriculum Development which developed the six SEMIs courses
- Consultative meeting for fine tuning of the SEMIs short curricula
- Visit by SEMIs staff to the Training of Trainers (TOT) workshop at ISU
- Delivery of SEMIs courses where over 175 seed company personnel from over 30 seed companies and 20 seed regulation agencies, and 13 African Countries were trained on aspects of seed in the value-chain.
- Development of long term courses on seed science and technology
- Development of SEMIs Website
- Bean seed production

## Session I: Objectives and Expected Outputs of the Review Meeting

### Session Chair: Prof. Florence M. Olubayo

#### Objectives

The first year review meeting had the following objectives:

1. To review Activities of the first year of SEMIs operations
2. To plan for the year 2011 activities

#### Pertinent questions

- Did the short courses training achieve intended objectives?
- What were the challenges encountered in delivering the training?
- How did the participants feel about the training
- Were the courses relevance?
- Was the delivery of the satisfactory and what requires improvement?

#### Pertinent questions on Planning

- What are the strong learning points from the activities of the first year
- What should be taken up and what should be dropped?
- What is the feedback from Participants-more time? More trips?
- What were the weaknesses of the courses



Professor Mwang'ombe, SEMIs PI makes a presentation on SEMIs

#### Expected Outputs

1. Progress made on activities reviewed, experiences shared and way forward for each of the activities agreed.
2. Collaborators views on process, strategy and execution of activities Short Courses, bean planting, long term courses and construction obtained.
3. Dates for SEMIs short courses set.
4. Timelines for the SEMIs long-term term courses set
5. Timelines for the construction of SEMIs seed processing facility and laboratory set.

## 6. Timelines for bean planting activities set

### **Session II: Overview of the Semis First Year (2010) Activities**

#### **Session Chair: Prof. Agnes W. Mwang'ombe**

The project PI, Prof. Mwang'ombe presented the activities and achievements of SEMIs during the first year. Prof. Mwang'ombe explained that SEMIs will empower rural communities through production of quality seed and contribute to food security in Africa. The activities were summarized as follows:

#### **1. SEMIs Partners and their roles**

- i. AGRA – provided funding & Technical support,
- ii. Iowa State University (ISU) – provided Training capacity
- iii. Kenya Agricultural Research Institute (KARI), Kenya Plant Health Inspectorate Services (KEPHIS) and Kenya Seed Company - provided training capacity,
- iv. Consultants (e.g. Aline O'Connor Funk) – provided training capacity support
- v. CIMMYT through John MacRoberts – provided training capacity support
- vi. University of Nairobi – Project leader



#### **2. Inception and planning meeting**

The SEMIs inception and planning meeting was held on 11<sup>th</sup> February, 2010 at the College of Agriculture and Veterinary Sciences, University of Nairobi. The objectives of the meeting were:

- i. To lay foundation for SEMIs
- ii. To fast track SEMIs activities

The following were the outputs of the meeting:

- i. Priority settings for project
- ii. Draft Frameworks of SEMIs curriculum
- iii. Setting of time lines

### **3. Consultative workshop for curriculum development**

The three-day workshop was held from 3<sup>rd</sup> to 6<sup>th</sup> March, 2010 at the Kenya Commercial Bank (KCB) Training Centre and drew participants from the University of Nairobi, Kenya Agricultural Research Institute (KARI) and the Kenya Plant Health Inspectorate Services (KEPHIS). The objective of the workshop was develop curricula for SEMIs short courses. Drafts of the following six SEMIs short courses were developed:

- i. Seed production,
- ii. Seed drying processing and storage
- iii. Seed marketing
- iv. Seed Business management
- v. Seed quality Assurance
- ii. Seed Legislation and Accreditation

### **4. Consultative meeting for fine tuning the SEMIs short course curricula**

The curriculum development meeting was held from 8<sup>th</sup> to 12<sup>th</sup> March 2010 at the College of Agriculture and Veterinary Sciences, University of Nairobi. Participants were the University of Nairobi, AGRA, CIMMYT, Aline O'Connor, KARI and KEPHIS. The objective of the meeting was to consolidate and harmonize the draft SEMIs short course curricula developed at the KCB workshop. The meeting outputs were:

- i. Final drafts of the SEMIs short course curricula for approval by the Faculty
- ii. Day programmes for the courses delivery

### **5. Train-the -trainer visit to ISU by SEMIs Management team**

Four members of the SEMIs management visited Iowa State University (ISU) for three weeks from April 24<sup>th</sup> to May 8<sup>th</sup> 2010. The objectives of the visit were:

- i. Familiarization with an established seed institute
- ii. Learn procedures of an accredited seed laboratory
- iii. Strengthen linkages between SEMIs and ISU

The following were the outputs of the visit:

- i. Fruitful visits to seed science centre, Pioneer Seed Company and Syngenta Seed Company.
- ii. Participation in BIGMAP symposium
- iii. Training on seed conditioning, testing and legislation at the Seed Science Centre of the Iowa State Univeristy.

### **6. Implementation of the SEMIS short courses**

The six SEMIs short courses have successfully been implemented during the first year of the project.



**i. Seed Production Short Course**Date: 24<sup>th</sup> -30<sup>th</sup> May, 2010

Coordinator: John MacRobert-CIMMYT

Collaborators: KARI, Leldet Seed Company, Kenya Seed Company and KEPHIS

Participants to Seed Production course

COUNTRY	COMPANY	No. of participants
Mozambique	Semente Perfeita	1
Malawi	Seed Tech, Funwe Farm, ASSMAG	3
Zambia	IDE, Kamano, Kamasika	3
Rwanda	COAMV, RWASECO	2
Uganda	CAII, NARO-ABI, NARO-BEANS, BUWOPA	4
Kenya	Dryland, Leldet	2
Tanzania	Meru Agro, Itente,	2
Ethiopia	Gadisa Gobena	1
Ghana	Alpha Seeds, Antika Enterprise, Savanna, M&B	4
Niger	Alheri, Hadin Kan Jamaa	2
Mali	Nakoshi Enterprise	1
Nigeria	Seed Project, Maslaha, Da-AI Green seeds, Share foundation	4
TOTAL		29

**ii. Seed Drying, Processing and Storage Short Course**Date: 31<sup>st</sup> May- 5<sup>th</sup> June, 2010

Coordinators Allan Gaul (ISU) and Dr. Kiarie Njoroge

Participants: Seed Drying, Processing and Storage

Country	Company	No of participants
Mozambique	Lozane Farms	1
Malawi	Seed Tech, Funwe Farm, ASSMAG	3
Zambia	IDE, Kamano, Kamasika	4
Rwanda	COAMV, RWASECO	2
Uganda	CAII, NARO-ABI, NARO-BEANS, BUWOPA	4
Kenya	Dryland, Leldet	2
Tanzania	Meru Agro, Itente, Tansed	3
Ethiopia	Gadisa Gobena	1

Ghana	Alpha Seeds, Antika Enterprise, Savanna, M&B	4
Niger	Alheri, Hadin Kan Jamaa	2
Mali	Nakoshi Enterprise	1
Nigeria	Seed Project, Maslaha, Da-Al Green seeds, Share foundation	4
TOTAL		31

### iii. Seed Business Management Short Course

Dates: 18<sup>th</sup> -24<sup>th</sup> July, 2010

Target Group: CEOs of seed companies

Collaborators:

Aline O'Connor Funk, a seed specialist and Consultant with AGRA; Business School of the University of Nairobi.

Guest Speakers:

- a) Dr. Julius Kipnge'tich –MD Kenya Wildlife Services
- b) Paul Seward-FIPS
- c) Paul Oketa-ASIF

Participants of the course:

Country	Company	No Of Participants
Mozambique	Lozane Farms, Ikuru, Matuel comercial	3
Malawi	Seed Tech	1
Zambia	IDE, Kamano, Kamasika	3
Rwanda	RWASECO	1
Uganda	CAII, NASECO	2
Kenya	Dryland, Western seed, Olerai	3
Tanzania	Meru Agro, Krisna, Tanseed, Fica	4
Ethiopia	Gadisa Gobena, Anno-Agro, Alemayehu	3
Ghana	Alpha Seeds, Savanna	2
Burkina	Societe Agro-Productions	1
Mali	Faso Kaba, Nakosha	2
Nigeria	Seed Project, Manoma, Da-Al Green seeds, Jirkur	4
		29

### iv. Seed Marketing Short Course

Dates: 25<sup>th</sup>-31<sup>st</sup> July, 2010

Target Group: Seed marketers in seed companies

Collaborators: Aline O'Connor Funk, business school of the University of Nairobi, Kenya Seed Company.

Course participants

COUNTRY	COMPANY	No of participants
Mozambique	Lozane Farms, Semente perfieta, Matuel comercial	3
Malawi	Seed Tech	1
Zambia	IDE, Kamano, Kamasika	3
Rwanda	COAMV, RWASECO	2
Uganda	CAII, NASECO, FICA	3
Kenya	Dryland, Leldet, Western seed, Olerai	2
Tanzania	Meru Agro, Krisna, Tanseed	3
Ethiopia	Gadisa Gobena, Anno-Agro, Alemayehu	3
Ghana	Alpha Seeds, Savanna	2
Burkina	Societe Agro-Productions	1
Mali	Faso Kaba	1
Nigeria	Seed Project, Manoma, Da-Al Green seeds, Jirkur	4
12		28

v. **Seed Quality Assurance Short Course**

Date:20-25 September 2010

Course	Countries	No. Of Seed Companies	No Of Participants
Seed Quality assurance	13	30	30

iv. **Seed Legislation and Accreditation Short Course**

Dates: 26<sup>th</sup> September to 2<sup>nd</sup> October, 2010

Participants: Heads of Seed Regulatory bodies and Seed Trade Associations and Senior Staff dealing with seed issues in the Agricultural Ministries.

Course	Countries	No. Of Organizations	No Of Participants
Seed Legislation and Accreditation	13	20	25



### Summary of SEMIs courses in 2010

Course	Countries	No. Of Seed Companies/ Organizations	No Of Participants
Seed Production	12	29	29
Seed Drying, processing and Storage	12	30	31
Seed Business Management	12	29	29
Seed Marketing	12	28	28
Seed Quality Assurance	13	30	30
Seed Legislation and Accreditation	11	20	25
TOTAL			172

### 7. Progress on Construction Seed laboratory and processing facilities

The primary activities are:

- i. Modification and Design of a Seed Laboratory,
- ii. Modification and Design of a fully fledged seed processing facility for teaching purposes.
- iii. Provide accommodation facilities as outlined in the facility floor plan provided by Semi's Team led by Dr. Yuh - Yuan Shyy of Iowa State University;



Participants follow proceedings closely

The activities completed so far include:

- i. Appointment of the Consultants
- ii. Completion of the architectural drawings. This was done in consultation with ISU.
- iii. Strategic planning meetings with consultants. The consultants visited seed KEPHIS laboratory at Lanet and Kenya Seed Company, Kitale to acquaint themselves with the requirements of the seed laboratory and processing facilities

The on-going and pending activities are:

- i. Submission of construction drawings to the University Council for approval
- ii. Tendering and award of the tenders
- iii. Commencement of the construction

The construction was allocated Ksh.45 million but the cost may be up to Ksh.65 million. The architect will incorporate facilities for people with disabilities and an area to cater for the lecturers. These changes will not have impact on the total cost.

### **8. Development of long-term courses on Seed technology and business**

SEMI has initiated development of the following long-term curricula which are a pre-requisite before SEMIs could be established as a fully fledged institute of the University of Nairobi.

- i. Certificate in seed technology and business
- ii. Diploma in seed technology and business
- iii. Post-graduated diploma in seed technology and business
- iv. Master of Science (MSc.) in seed technology and Business

The draft curricula for the four long-term academic programmes were developed in a consultative workshop held at the CHAK Guesthouse and Conference Centre from 14<sup>th</sup> to 16<sup>th</sup> December 2010. Workshop participants were drawn from the University of Nairobi, Kenya Agricultural Research Institute (KARI) and the Kenya Plant Health Inspectorate Services (KEPHIS).

### **9. Development of the SEMIs Website**

The SEMIs website: [www.semis-africa.org](http://www.semis-africa.org) has been designed and is already operational. The website will serve the following functions:

- i. Sharing information on seed issues, current happenings in the seed industry in Africa
- ii. Staying in touch with SEMIs participants
- iii. Online registration of Students
- iv. Creation of linkages

The website requires improvement on the layout, home page, content and inclusion of brief biographies of people associated with SEMIs. SEMIs would require approval to use partner institution logos.

### **10. Bean planting activities**

The University of Nairobi is working hand in hand with the Kenya Seed Company in bean seed production and over 750kgs of certified, white label seed have been given

to the Kenya Seed Company for planting. Plans are in process to plant up to 13 hectares of basic seed in Naivasha, through contract farmers. The University also has potential to produce bean seed at the University farm in Kibwezi, where irrigation water is abundant and the climate is unfavorable for common bean diseases. Though Kibwezi is too hot for beans, it is possible to successfully produce a crop during cool months from May to August.

### **Session III: Plan for Semis Second Year (2011) Activities**

#### **Session Chair: Dr. Kiarie Njoroge**

#### **1. General schedule of activities in 2011**

<b>Month</b>	<b>Activity</b>
January	<ul style="list-style-type: none"> <li>▪ 1<sup>st</sup> review meeting</li> <li>▪ Zero drafts of the long-term courses</li> </ul>
February	Planting Beans
March	Commence construction of SEMIs facilities
April	Harvest 1 <sup>st</sup> batch beans
May	<ul style="list-style-type: none"> <li>▪ Seed production course</li> <li>▪ Plant 2<sup>nd</sup> lot of bean seed</li> </ul>
June	Seed drying, processing & storage course
July	<ul style="list-style-type: none"> <li>▪ Seed business management course</li> <li>▪ Seed marketing course</li> </ul>
August	Harvest 2 <sup>nd</sup> lot bean seed
September	<ul style="list-style-type: none"> <li>▪ Seed quality assurance course</li> <li>▪ Plant 3<sup>rd</sup> batch bean seed</li> </ul>
October	<ul style="list-style-type: none"> <li>▪ Seed legislation &amp; accreditation course</li> <li>▪ Implement the long-term courses</li> </ul>
November	<ul style="list-style-type: none"> <li>▪ Harvest 3<sup>rd</sup> batch bean seed</li> </ul>
December	Complete SEMIs construction

#### **2. Schedule for short courses**

<b>Course</b>	<b>Delivery dates</b>
Seed production	23rd - 28th May, 2011
Seed drying processing and storage	May 30th -4th June, 2011
Seed Business management	18th - 23rd July, 2011

Seed Marketing	25th – 30th July, 2011
Seed Quality assurance	19th -24th September, 2011
Seed Legislation and Accreditation	September 26th -01 Oct, 2011

### 3. Implementation of the short courses – collaborators, delivery and requirements

Course	Collaborators	In charge
Seed production	UoN, CIMMYT, KEPHIS, KARI, Leldet seed co.	Dr. Kiarie Njoroge; John MacRobert; Dr. D. Ndung'u
Seed drying processing and storage	UoN, ISU, KEPHIS, KARI, Kenya seed co.	Dr. Shyy, Dr. Kiarie Njoroge, Dr. Mbuge,
Seed marketing	UoN (sch of Bus), Aline O'Connor, Kenya seed Co.	Aline O'Connor, Prof. E. Aosa, Dr. Nyikal, Dr. Kiarie Njoroge
Seed Business Management	UoN (Sch. Of Bus.) Aline O'Connor, Kenya seed	Aline O'Connor, Prof. E. Aosa, Dr. Nyikal, Prof. Olubayo
Seed Quality assurance	UoN, ISU, KEPHIS, Kenya Seed, KARI	Mike Stahr, Prof. Olubayo, Dr. J. Muthomi
Seed legislation and Accreditation	UoN, ISU, KEPHIS, Kenya seed co.	Joe Cortes, Dr. J. Muthomi, Dr. Kiarie Njoroge

#### i. Seed production

Facilitators: Dr. John MacRobert, Dr. Kiarie Njoroge; Dr. D. Ndung'u, Dr. Riungu, Dr. E. Sikinyi, Dr. E. Ngugi, Prof. F. Olubayo

Requirements: Production of carry home course materials in addition to presentations, which should include colour photographs. Reading materials such as seed production manuals could be obtained from CGIAR centres, including the CABI crop protection compendium. Hand outs could be bound into manuals

Field plots of both self and cross pollinated crops (only hybrids but no open pollinated varieties) including maize, sorghum, wheat, beans,

cowpeas, sunflower, groundnuts, rice, soybean and millets. Flowering of the crops should be synchronized.

## **ii. Seed drying, processing and storage**

Facilitators: Dr. Shyy, Dr. Mbuge, Prof. M. Okoth, Dr. Ayub Gitau

Requirements: Production of course materials; The training should emphasize more on small and medium sized seed processing machinery.

Field trips: One day field visit to mainly small seed companies (such as dryland seed company, Leldet seed company) and put limited emphasis on the large companies such as Kenya seed Company. The small companies would be more relevant to the capability of the trainees.

Course dates: course dates should be adjusted to coincide with time when the companies are processing seed. This would require consultation with the seed companies before setting the final dates.

## **iii. Seed Business Management**

Facilitators: Aline O'Connor, Prof. E. Aosa, Dr. Nyikal

Requirements: Production of course materials; use of relevant examples related to seed; include computer/ICT.

Field visits - Need for trainees to visit seed companies to understand the management and marketing seed.

## **iv. Seed marketing**

Facilitators: Aline O'Connor, Prof. E. Aosa, Dr. Nyikal

Requirements: Production of course materials and other preparations.

## **v. Seed Quality assurance**

Facilitators: Mike Stahr, Prof. F. Olubayo, Dr. J. Muthomi, Dr. Narla, Mr. Kibet,

Requirements: Production of course materials, hands-on laboratory exercise materials and other preparations. Crops to be tested include maize, sorghum, wheat, beans, cowpeas, sunflower and rice.

Course duration and content - proposed to increase the course to 2 weeks to include components of developing quality control manuals for seed companies. This would combine it with the seed legislation and accreditation course.

Proposed new name of the revised course - Seed Quality Assurance and Seed Enterprise Quality Management.

Field visit - to be done at end of week one; hands-on practicals to be done at CAVS.

#### vi. Seed Legislation and Accreditation

Facilitators: Dr. Joe Cortes, Dr. Adelaide Harris, Dr. J. Muthomi, Dr. Kiarie Njoroge;  
Ms Dora Kilalo

Requirements: Production of course materials, procedures manuals and other preparations:

#### 4. Activity schedule for construction seed processing plant and laboratory

Activity	Expected commence date
Consultants appointment	01/11/10
Scheme design Stage	10/11/10
Scheme Sketch design presentation	22/11/10
Submit to Construction and Maintenance	09/12/10
Consultations and refinement of plans	14/12/10 to 28/1/2011
Presentations to SEMIs team	31/1/2011
Building Committee, Advertise for tender and Tender award	Month of February 2011
Tenders appeal	1/3/2011 to 14/3/2011
Construction commence	3 <sup>rd</sup> Week of March 2011
Completion of construction	December 2011

Procurement will be a continuous process tied up with SEMIs facilities

#### 5. Curriculum development for SEMIs long term courses in Seed technology and business

Activity	Expected date commence
Complete Curriculum Zero Drafts	3 <sup>rd</sup> January, 2011
Approval of curricula by Departmental	13 January, 2011
Approval of the curricula by Faculty Board	Third week January
Approval by College Academic Board	4 <sup>th</sup> week of January 2011
Approval by Board of Post graduate Studies and Deans committee	March, 2011
Approval by Senate	May 2011

## 6. Bean seed production schedule

Activity	Commence date
Planting 1 <sup>st</sup> batch of beans-2.5 ha in Naivasha	February, 2011
Harvest batch 1 of beans	April, 2011
Planting 2 <sup>nd</sup> Batch of beans-2.5 ha. In Naivasha	May, 2011
Harvest 2 <sup>nd</sup> Batch of bean seed	August, 2011
Planting 3 <sup>rd</sup> batch of bean seed	September, 2011
Harvesting 3 <sup>rd</sup> batch of beans.	December, 2011

## Session IV: Discussion and Recommendations on First Year Activities and Plan for 2011

### Session Chair: Prof. Florence M. Olubayo

#### 1. Observations and recommendations on the SEMIs short courses

- i. The participants were excited by the training and they indicated that there is a lot to be done to train in African continent. However, they indicated that duration of the training was too short. Need for follow up of the participants after the course.
- ii. The selection for 2011 participants should be done in a way to ensure that same people do not show up for same course twice.
- iii. Invite people from companies which require improvement in management for increased food security and the training modules should focus on the needs of the seed companies.
- iv. Seed legislation and accreditation course had the least number of applicants and there is need to revise the course to attract more participants.
- v. Participants in the seed marketing and business management courses did not like the accommodation at Methodist and CHAK guesthouses. There is need to make adjustments in the hotel to accommodate to suit preference by the participants. The accommodation selected should have facilities where participants are able to interact in the evenings and with facilities for e-mail for communication. It was recommended that SEMIs explores possibility negotiating with the University for Special exemption to book participants in good private hotels and pay through AGRA.
- vi. Field demonstrations and field trips - participants complained that the different field trips showed the same things. The courses should emphasize more on small seed companies and hands-on practical

exercises. The course facilitators for the 2011 should balance between lectures and field trips to balance time for lectures and practicals. Need to improvise simple techniques of seed health testing like use of blotters in the seed quality course.

- vii. It was agreed that SEMIs should maintain the same 6 short courses offered in the first year. However, it was felt that the seed legislations and accreditation course seems to be an outlier. It was agreed that the seed legislation & accreditation course should be re-organized to fit into the seed quality assurance module and make into a 2 week course. The time allocated for seed quality assurance to be increased to allow adequate time for lectures, hands-on practicals and field trips.
- viii. Seed company financing, accounting and governance should be incorporated in the seed marketing and business management courses. Facilitators from business school may require visiting seed companies so that examples on seed issued are used during delivery of the courses.
- ix. SEMIs should urgently find out the demand for each of the short courses so as to plan for an increased intake - possibility to have 2 intakes per course per year in order to accommodate self-sponsored participants.

## **2. Discussion and recommendations on construction of the Seed processing facility**

- i. Original construction budget was quoted at Ksh.140 million but this has been reduced to ksh.62 Million and it may not be possible to reduce the cost further. However, the allocation by AGRA is Ksh.45 million.
- ii. AGRA may not provide additional funds to the construction work. Therefore, one alternative would be to reduce the facility, for example, have only one class room, one walk-in germinator, do away with the break area, or library, court yard, or parking area. This would reduce the cost to about 45 million.
- iii. Alternative is to allow the process proceed as per the current plan and proceed in phases but have the facility functional only to complete the offices later.
- iv. The Ksh.45 million allocation is for processing plant only and the budget for equipment is separate. Any savings from purchase of equipment could be channelled to completion of the processing plant.
- v. Tendering of the construction should be complete first before tendering for the equipment to avoid the equipment arriving before the plant is ready for installation of machinery.
- vi. Start of construction would require to be cleared through the official tender stages.



- vii. SEMIs would prefer that the construction and commissioning of the seed processing facility is completed before the AGRA project phase is over.

### **3. Discussion and recommendation on Bean seed production**

- i. The University of Nairobi has developed about 8 bean varieties which could be taken up by seed companies. However, this has to be guided by the university of Nairobi intellectual property right policy and must have acquired a white label. The University is working with the Kenya Seed Company.
- ii. The small seed companies would be afraid that once the new varieties are exclusively released to large seed companies such as the Kenya Seed Company, they may never access the materials and therefore, these varieties may not be accessible to small scale farmers.
- iii. It was suggested that SEMIs starts with three bean varieties developed by UoN breeders, multiply them and give to small seed companies at a fee. The funds generated would be re-invested in SEMIs for self-sustainability.
- iv. The newly developed climbing bean varieties are already being released to the small seed companies.
- v. It was noted that although the University of Nairobi has well-trained and experienced researchers, it lacks technicians with skills required in seed production. Therefore, it was suggested that SEMIs should hire or train a technician with hands-on experience in seed production to avoid challenges in certification of the seed produced at the university.
- vi. SEMIs should develop own expertise in seed production for the future sustainability of seed production and processing enterprises. This is possible by consulting SEMIs partners (e.g. ISU, John MacRoberts etc).
- vii. SEMIs should plan to diversify the number of crops for seed production.

### **4. Human resource**

The SEMIs project is in the process of hiring the following staff:

- i. Senior technologist (field)
- ii. Project assistant
- iii. Office assistant
- iv. Driver

The SEMIs staff report to the project management (Prof. Mwang'ombe, Prof. Olubayo and Dr. Kiarie).

The seed unit should be self-sustaining after the project phase and the employment plan should take this into consideration. SEMIs should also charge for all the services rendered and the short courses would also be retained on client demand and at a fee.

### **5. Capacity building for SEMIs staff**

SEMIs will negotiate with AGRA to train staff who will contribute to meeting objectives of the institute. The following were proposed to be earmarked for training at ISU:

- i. Dr. Duncan Mbuge – seed processing
- ii. Dr. David Ndungu – project management
- iii. Postharvest physiologist – *to be identified*

It was also suggested that staff from collaborating institutions (KARI, KEPHIS) be considered if possible.

### **6. Proposed training of AGRA PhD students**

The SEMIs project plan had considered training of AGRA-sponsored PhD students in seed production, seed quality assurance, seed business management and seed marketing. It was agreed that the training should target PhD students in plant breeding.

AGRA will select the candidates to be trained and give feedback on when the training would take place.

### **7. Curricula development for the long-term courses**

It was agreed that the draft curricula in seed technology and business management would be submitted to AGRA for discussion with SEMIs management.

## **Session V: Feed Back from Semis Partners** **Session Chair: Prof. Agnes W. Mwang'ombe**

### **1. AGRA (Joe DeVries, Joseph Bigirwa & Rufaro)**

The AGRA representatives gave the following feedback:

- i. AGRA has launched a green revolution through delivery of seed and their main focus is the small seed companies and small scale farmer.

ii. AGRA is pleased with management of the courses and the project. SEMIs management responded very fast to starting the short courses. PASS has been energized by SEMIs and the Pass grantees showed great desire to learn.



**Professor Olubayo makes a point during the meeting**

iii. Delivery of the course modules was good but it must be kept practical and relevant to seed companies.

A few facilitators were not interesting.

iv. The overall quality of accommodation for the course participants requires improvement so as to be sensitive to the participants' needs. The accommodation venue should have facilities for participants to meet after the lectures in order to enhance networking and learning.

v. Course evaluation should include feedback from partners and facilitators while the pre-course evaluation should be detailed to capture previous experiences of the participants.

vi. Construction of the seed processing facility has taken too much time and there are too many players in the implementation. There is need to bring the construction cost within the allocated budget but pay full attention to quality.

vii. Need to continuously create awareness about SEMIs, for example through the website and international meetings.

viii. Need to improve on communication with the invited, for example through telephone calls to confirm their participation; complete invitations early to avoid problems with obtaining visas.

ix. Dr. David Ndung'u should be given more responsibilities in running SEMIs and the project should hire an administrative assistant to allow time for David to concentrate on the administration of the project.

## **2. Iowa State University (ISU) (Joe Cortes & James Okeno)**

i. All has gone extremely well in managing the courses during the first year and hope that the 2<sup>nd</sup> year will be better.

ii. SEMIs should plan for the future when AGRA will have moved out. SEMIs should take up the courses and run them on their own.

- iii. In addition to the seed companies, there is need to train more for the regulatory agencies, research institutions and private sector in Kenya and the other countries. Capacity is available from KEPHIS and KARI to facilitate the courses.
- iv. A few issues in the seed processing and storage course were too high level and require to be brought to level of participants.
- v. Examples given during the training must be of local crops.
- vi. Field trips should cover different aspects to avoid repetition.
- vii. Testing of the knowledge of participants should include assignments for the participants to do in the evenings in order to test understanding of the subject. The test should avoid multiple choice or yes/No questions.

### **3. Aline O'Connor Funk (Consultant)**

Aline presented the major challenges and key questions to be addressed in the short courses as follows:

- i. The courses met expectations and collaboration with business school was successful.
- ii. There was enthusiastic participation by the participants.
- iii. Improvements have been noted in the operation of seed companies which sent participants to the courses.
- iv. What must be retained – business school lecturers and guest speakers are essential.
- v. The courses require strong IT support.
- vi. The class room set up was good and encouraged discussion.
- vii. Opportunities for improvement – require more hand outs, there were a few week lectures that were off target.
- viii. Opportunities for networking outside the class are necessary at venue of accommodation.
- ix. The timing of field trips was a little late; the trips should come at the middle of the course.

### **4. STAK (Dr. Sikinyi)**

- i. Need also to evaluate the course facilitators.
- ii. The pre-course evaluation should also collect information on the background of the participants.
- iii. The public sector should also be brought on board in the trainings. There are many institutions setting up seed processing facilities and laboratories.

## **Session VI: General discussion**

### **Session Chair: Prof. Agnes W. Mwang'ombe**

The following points were raised during the general discussion:

- i. The first year was very loaded but very successful.
- ii. Need for closer collaboration between school of business and CAVS on issues of agricultural marketing and business management.
- iii. Past SEMIs trainees are very happy with what they learnt; need to upscale the training since many participants are interested in more training.
- iv. Need to include the use of fertilizers.
- v. The African Seed Association is meeting in March in Malawi and this would be a good opportunity for SEMIs to show case its activities through a presentation or a booth.

### List of Participants: SEMIs First Year Review Meeting

Name	Institution	Designation
Prof. A. W. Mwang'ombe	University of Nairobi	Principal CAVS and PI SEMIs project
Prof. Florence Olubayo	University of Nairobi	Chair, Department of Plant Science and Crop protection & project implementing team
Dr. Kiarie Njoroge	University of Nairobi	Senior lecturer and Manager Field Station & project implementing team
Dr. Joe DeVries	AGRA	Director PASS
Dr. George Bigirwa	AGRA	Senior Programme officer-PASS
Dr. Rufaro Madakadze	AGRA	Programme officer PASS
Aline O'Connor Funk	AGRA	Consultant
Dr. Joe Cortes	Iowa State University (ISU)	Leader, Global seed programme, Seed Science Centre
Dr. James Okeno	Iowa State University (ISU)	Visiting Scientist, Seed Science Centre
Professor Evans Aosa	University of Nairobi	Associate Dean and professor, Strategic Management, School of business
Dr. Raymond Musyoki	University of Nairobi	Lecturer, School of Business
Ms. Hellen Karu	University of Nairobi	Construction and Maintenance department
Dr. Teresio Riungu	Kenya Agricultural Research Institute (KARI)	Centre Director, KARI Muguga South
Dr. Evans Sikinyi	STAK	Director, STAK
Mr. William Munyao	Kenya Plant Health Inspectorate Services	Plant Inspector, Quality

	(KEPHIS)	control
Dr. James Muthomi	University of Nairobi	Senior Lecturer, Department of Plant Science and Crop protection
Dr. Duncan Mbuge	University of Nairobi	Lecturer, Department of Environmental and Biosystems Engineering
D.K. Ndung'u	University of Nairobi	Project Manager SEMIs
<b>APOLOGIES</b>		
John MacRoberts	CIMMYT	

**PROGRAMME of the SEMIs First Year Review Meeting**

<b>TIME</b>	<b>ACTIVITY</b>	<b>FACILITATORS</b>
<b>Day One: Monday 31<sup>st</sup> January 2011</b>		
9.00 – 9.30am	Arrival and Registration	Ndung’u David, Irene Githongo
9.30 – 9.45am	Opening session	Prof. A. W. Mwang’ombe
9.45-10.00am	Meeting objectives and expectations	Prof. Florence Olubayo
10.00-10.30am	Health Break	Ndung’u David/ Irene Githongo
10.30-11.30am	Review of first year of activities for SEMIs at CAVS	Prof. A. W. Mwang’ombe
11.30 -11.45am	Presentation from ISU	ISU team
11.45am-12.00 pm	Presentation from Consultant	Aline O’Connor Funk
12.00-12.15pm	Presentation from CIMMYT	Dr. John MacRobert
12.15-12.30pm	Comments from AGRA	AGRA team
12.30-1.00pm	Comments from stake holders- KEPHIS, KARI	Mr. Kibet, Dr. Riungu
1.00-2.00pm	Lunch Break	Ndung’u David/Irene Githongo
2.00-3.00pm	General discussion on presentations	Professor F. Olubayo
3.00-3.15pm	SEMIs seed processing facilities construction update	Professor A. W. Mwang’ombe/Dr. S. Masu
3.15-4.00	Discussions on SEMIs seed processing facilities	Dr. Kiarie Njoroge
4.00-4.30pm	Health Break	Ndung’u David/Irene Githongo
<b>Day Two: Tuesday 01 February 2011</b>		
9.00-9.30 am	Planned activities for 2011	Prof. A. W. Mwang’ombe
9.30am-10.00am	Discussions on planned activities	Prof. F. Olubayo



<b>10.00-10.30am</b>	<b>Health Break</b>	Ndung'u David/Irene Githongo
10.30am-1.00 pm	Continuation of general discussions on planned activities	Professor F. Olubayo
<b>1.00-2.00pm</b>	<b>Lunch Break</b>	
2.00-2.15pm	Overview from AGRA	AGRA team
2.15-2.30pm	Overview from ISU	ISU team
2.30-2.45pm	Overview form consultant	Aline O'Connor Funk
2.45-3.00pm	Overview from CIMMYT	John MacRobert
3.00-3.30pm	General discussion	Prof. Olubayo
3.00-3.45pm	Closing remarks from AGRA	Joe DeVries
3.45-4.00pm	Closing remarks-UoN	Prof. A. W. Mwang'ombe
4.00-4.30pm	Health break	
	End of SEMIs 1 <sup>st</sup> year review meeting	
7.00pm-9.00pm	Dinner hosted by Professor A.W. Mwang'ombe	Prof. Florence Olubayo/Ndung'u David/Irene Githongo

**Secretariat:**

1. Rapporteur: Dr James Muthomi
2. logistics: Dr. David K. Ndung'u
3. Secretary - Ms. Irene Githongo,

## Review of SEMIs short courses

One of the recommendations that came out of the 1<sup>st</sup> year review and planning meeting was that the six SEMIs courses needed revision in order to incorporate what the participants in the first year had recommended. A workshop to review the SEMIs courses with the main objective of aligning the courses with needs of the seed Industry was therefore organized and held between 28<sup>th</sup> March and 1<sup>st</sup> April, 2011 at the KCB leadership Centre Karen. Participants to the workshop included UON staff from both CAVS and the School of business, and collaborators and stakeholders including ISU, KARI, KEPHIS and KSC.

Important highlights of the meeting:

- Revised number of courses:
  - Seed legislation and Accreditation was merged with Seed quality assurance. This was a sentiment that had been expressed at the 1<sup>st</sup> year review and planning meeting.
- Revised SEMIs course syllabuses
- Revised programmes
  - Participants requested for more practical sessions and hands on experience which was incorporated into the programmes.

## **OPENING REMARKS**

The Opening remarks session, chaired by Prof. Florence Olubayo, began with prayers. Prof. Olubayo introduced Dr. Shyy who is a seed engineer from Iowa State University and then other participants made self introductions. The Principal, College of Agriculture and Veterinary Sciences (CAVS), Prof. Agnes Mwang'ombe and the Dean, Faculty of Agriculture made opening remarks.

### **Opening remarks - Dean Faculty of agriculture**

The Dean of Faculty of Agriculture Prof. Solomon Shibairo noted that:

- Good quality seed is essential for achievement of food security. Most farmers in Kenya and Sub-Saharan Africa as a whole use uncertified seed for most crops. Maize is the only crop for which most farmers in Kenya used certified seed. The lack of certified seed leads to poor crop yields.
- The first batch of SEMIS graduates was happy about delivery of the short courses. There is need to build on the good start by continuously improving the curricula and their delivery.
- The Faculty was grateful to AGRA for supporting the SEMIs project and Iowa State University for collaborating with the University of Nairobi on the project.
- Participants in the workshop should aim to produce revised curricula that will produce quality practitioners in the seed industry.

### **Opening remarks-Principal College of Agriculture and Veterinary Sciences**

The Principal (CAVS) Prof. Agnes Mwang'ombe welcomed participants to the SEMIS short courses curriculum review workshop. The Principal urged the participants to pay attention to the comments of the consultants, collaborators, participants and stakeholders in order to enrich the courses and improve on their delivery. The Principal emphasized the following issues:

- Review content for relevance and efficacy
- Organize practicals and field visits that provide adequate experiential learning
- Delivery component of the programme: From next year (2012), Kenyan team should move from covering 1/3 of the course units to covering 2/3 of the course units. This will ensure ownership and sustainability of the programme.

- Understudy component did not work out well last year because most local lecturers were not sitting in the presentations by the consultants they were twinned with. This should change this year as the local team prepares to take responsibility for most of the training from 2012.
- There is need to deliver the programme very well so that we can lobby for continued support from AGRA. All concerned in the implementation to play their roles effectively.
- Last minute substitution of lecturers should be avoided at all costs because it interferes with the smooth flow of the programme
- Dates for the courses to be circulated early enough by the Project Manager
- Motivational speakers to be identified and informed early for meaningful interaction with the students
- Evening assignments should be factored in the courses to ensure that the students get the most out of the programmes
- One of the challenges is that AGRA does the selections of participants on our behalf and last year we got to know the selected persons too close



Workshop in progress at KCB conferencing Centre Karen

to commencement of the training. In addition, last minute substitutions by AGRA made it difficult to prepare for the participants. It is hoped that AGRA can finalize the list of participants two weeks before the start of the programme and share it with trainers for them to understand the background of the participants and therefore prepare accordingly.

- Appreciated the presence and participation of SEMIs collaborators - Iowa State University, Kenya Agricultural Research Institute, KEPHIS and University of Nairobi's Business school
- Thanked all participants and wished them good deliberations

## **WORKSHOP OBJECTIVES AND EXPECTATIONS (Presented by Dr. Kiarie Njoroge)**

The following were the workshop Objectives:

1. To review the course content for the SEMIs courses (Seed Business Management, Seed Marketing, Seed Production, Seed Drying, Processing and Storage, Seed Quality assurance)
2. Merge Seed Quality assurance with Seed Legislation and Accreditation

The areas to look during this review included:

- Topics: Which to retain or expunge? What are the topics to be added?
- Practicals: balance between theory and Practicals
- Field Trips/excursions: which are the most appropriate and relevant trips? Where and When? What is the duration (contact the companies well in advance)?
- Discussion Groups: opportunities for participants to cross-share
- Crops: Increase the scope to cover various crops grown all over Africa
- After Class Assignments/Group Projects: each group to do a Class **presentation**
- Course Programmes: scheduling and timetables (e.g. plant demonstration plots); University of Nairobi taking up more trainer responsibility in 2011. There is need to identify local counterparts for each course and train them on full handling of the course.

## **PRESENTATION ON SEMIs PROJECT BY THE PRINCIPAL INVESTIGATOR (Prof. Agnes Mwang'ombe)**

An overview and up-date of progress of the SEMIs project was made by Prof. Olubayo on behalf of Prof. Mwang'ombe. The following points were covered in the presentation:

- Main focus of SEMIs is capacity building on seed issues in Africa for improved food security and economic empowerment
- The project is implemented through a partnership comprising: UON leading the project, AGRA (providing funding), ISU, KEPHIS, Kenya Seed company, KARI, CIMMYT and a consultant (Aline O'Conner Funk)

- Project inception meeting was held in February 2010
- 1<sup>st</sup> workshop was held on 3-6<sup>th</sup> march 2010 to develop the curricula. The following six short courses were developed then: Seed production, Seed drying, processing and storage, Seed marketing, Seed Business management, Seed quality Assurance and Seed Legislation and Accreditation
- All 6 SEMIs short courses were delivered in 2010. Seed company personnel (172 against a target of 60) drawn from diverse companies in the region were trained
- There is a lot of interest in the courses; in case of increased applications, SEMIs may mount additional training in 2011.
- Participants had a positive assessment of the courses. The comments of the participants will be reviewed in this workshop with a view of incorporating them in the curricula and also using them to improve course delivery
- A seed pilot plant will be built at the University of Nairobi (Field Station).
- Tenders for the construction of the seed pilot plant had been awarded
- The pilot plant will be a teaching facility that will continue to operate past the project phase
- SEMIs website ([www.semis-africa.org](http://www.semis-africa.org)) had been established. SEMIs will be a 1<sup>st</sup> stop shop for anybody looking for information on seed. It will provide a forum for sharing information on seed issues and current happenings in the seed industry in Africa. It will be a good tool for staying in touch with SEMIs participants and on-line registration of Students

## RESPONSE TO COMMENTS BY CONSULTANTS, TRAINEES, COLLABORATORS AND STAKEHOLDERS:

Consultants, collaborators and stakeholders met in 31<sup>st</sup> January 2011 and 1<sup>st</sup> February 2011 to review the progress of the SEMIs programmes. During the annual meeting, specific comments and recommendations were made on the training and the

curricula that had been implemented during the first year. This necessitated the review of the curricula before implementation of the next trainings in 2011. At the beginning of the workshop, a summary of the training programme was presented followed by a systematic and exhaustive review of the comments made by consultants and collaborators. The



**Dr. Shyy from ISU makes a presentation at the workshop**

The response by the curriculum review workshop participants is summarized below:

### 1. Preparation before the courses

- Guidelines for facilitators will be developed and given to facilitators in advance. The guidelines will include:
  - A list of good teaching practices (what is expected e.g. time keeping) will be developed and shared with facilitators
  - Before the start of the course, participants, coordinator and facilitators will agree on the norms to be observed. Coordination team will meet before commencement of the course
- Course materials should be produced before the course starts. This will include:
  - references,
  - course outlines
  - develop own manual
  - lecture notes (power point presentations)

- exercises / take home assignments
- down loadable materials - to be placed on the SEMIs website & link to other websites
- Handouts should be given out to learners before the lecture. This will be helpful for the learners to write extra notes (particularly students who have little background in English language e.g. French speaking participants).
- Facilitators to prepare lectures and handouts preferably one week in advance
- There is need to plan for guest speakers and invite them in good time, preferably a month in advance. Ad hoc invitations which do not allow the speakers enough time to organize their diaries and presentations should be avoided.
- Facilitators of modules should identify potential guest speakers and communicate to the project management unit to invite the speakers. The Facilitators should be informed to do this one month in advance.
- In future it may be necessary to consider translating materials into French (The coordination team to consult UON's Language Department; also, to consider asking for help from AGRA)
- A small fact sheet with information on learners will be prepared and given to the instructors. It will contain the following information:
  - Class lists- who is in class
  - What are the overall businesses

## **2. Information on facilitators and participants**

- Biographies of the key instructors should be given at the start of each course unit. Facilitators will be requested to submit 1 page short biographies containing the following information:
  - Name, title, contact information
  - Educational background (major qualification);
  - Career experience in Africa- indicate highlights;



- Professional competencies;
- Publications – areas and types
- any other useful information
- Participants will be requested to put in a 1 page write up on area of interest, challenges and expectations. This will be included in the course application form. The 1 page brief will be in two parts (company and person) and will contain the following information
  - Name, title, contact information
  - Education background
  - Position in the company; how long they have been in seed business
  - Profile of company
  - Major activities/core
  - Major achievements, constraints and expectations
  - Any other useful information

### **3. Course delivery**

- The participants at the review meeting were happy with consultant's verdict that the programme had an excellent start.
- Business school facilitators were commended for being dependable collaborators.
- Effective collaboration between coordinators and the instructors is critical for successful implementation of the training programmes.
- All other programmes should follow the good collaboration model between coordinator and instructors that was well demonstrated in the Seed Business Management.
- To ensure effective delivery of the programmes, will require good communication, joint prior planning & meetings between coordinators and the instructors. It was recommended that that Prof. Aosa be consulted on how he coordinated the Seed business management so that all the short courses can adopt his approach

- Instructors were advised to give relevant examples with more focus on small, emerging and medium seed enterprises
- Facilitators should confine themselves to allocated time for smooth delivery of the training programmes.
- It was observed that the Seed Company toolbox by Aline O'Connor Funk is a relevant and very useful hand book and all instructors were encouraged to use it
- Seed business management in Africa by John MacRobert is also a useful reference material
- It was noted that instructors need to embrace good teaching practices. The teaching method should be collaborative, participatory and interactive. Active student participation during the lectures should be encouraged.
- To avoid cases of facilitators being unprepared - informing the facilitators on topics to handle in good time.
- There is need to set the overall context during the first teaching session. The main elements of this will be:
  - Overview of the course in lecture 1
  - Objectives of the course
  - Outline of activities (e.g. lectures, trips, references)
- There is need to enhance use of audio-visual aids (e.g. video) for effective delivery. Instructors were encouraged to incorporate more videos in the courses.
- The content delivered should be relevant and appropriate for the level of participants who are of different academic levels. It should dwell on practical issues and be less academic. Topics like commercial paper and corporate bonds in finance should not be covered.
- Hands-on, practical exercises are critical for all the courses
- End of course quiz will use more of group work and individual assignments instead of multiple choice or yes/No questions
- Use of videos for illustrations and provide multiple options from simple to complex

- There is need to use examples of local and diverse crops
- IT support is critical especially for demonstrating Excel spread sheets. Efforts will be made to avail a computer for each participant (project team to liase with ICT department). We should also consider diverse competencies of the participants. Availability of internet facilities at accommodation venue will be important.
- Each lecture should be less than 1.5 hours

#### **4. Displays during the course**

- The participants will be asked to bring a long samples of innovations (packaging, marketing/ promotion materials e.g. videos, brochures, photographs, leaflets, linkages) which will be used during the training.
- Local participants will be requested to bring samples (packaging, seed displays etc)
- A poster session in which some of these innovations will be displayed will be scheduled in the time table e.g. poster session during tea break.

#### **5. Field trips**

- Field trips are important and should be there for each course. The following points were noted as key to a successful field:
  - Field trips should be scheduled and time tabled
  - The seed company should be notified in advance
  - Host company should be briefed on the expectations, time to be spent there and background on kind of participants
- Visits should be well planned and coordinated to ensure effective exposure for participants (timely attendance)
- Field trips and demonstrations should be organized in a way that avoids redundancies

## **6. Participants' accommodation, transport and meals**

- Arrangements will be made to provide more suitable accommodation for the participants
- Pay particular attention when handling CEOs – explore option of holding the course at the hotel where participants are accommodated until SEMIs facility is ready since the seed business management course has no practicals (this would solve transport, lunch and class room problems)
- Food preferences should be included in the application form
- Food served by the Golf Club was not enough for all participants – prior arrangements should be made to ensure that all the participants are served with all items in the lunch menu.
- Need to use reliable transport service from hotel to campus & during field trips
- Class room space is too squeezed
- Most participants were not happy with transport. It was agreed that only reputable and reliable transport companies should be used to avoid delays and inconveniences.

## **7. Communication and information sharing**

- There is need to capture participants addresses for purposes of maintaining links between SEMIs alumni and resource persons
- It was suggested that a small newsletter that captures major seed related events (including seed trade and science) in Africa be developed. This could be shared African wide and may help in linking SEMIs to seed companies and organizations such as STAK and AFSTA. The Newsletter may provide advertisement space to these companies and organization. The companies may become a source of support to the programme in future Seed business module
- There should be a quality management system: course evaluation forms to be given out to participants at the beginning for each unit to facilitate meaningful evaluation

- Group exercises should be planned and implemented in 2011 (an opportunity to interact and share experiences) and these should be in the timetable
- There is a need to keep to the published schedule to ensure predictability and smooth flow of ideas. Abrupt switching of courses should be avoided
- There is need to keep all in the loop by sharing information
- There is need to follow up the participants on completion. This can be done through goodwill greetings by E-mail and a short electronic newsletter
- There is need to maintain contacts with the companies for which SEMIs has trained
- There is need for new participants and new companies to participate in 2011 programmes. Record of previous participants should be maintained.
- Cross-learning among participants is important and participants should therefore be encouraged to share their innovations
- There is need for feedback from partners & facilitators through an annual review meeting
- A tool to obtain information on what went right, what went wrong & lessons learnt?

## **8. Future improvement of the courses**

- Local participants should be encouraged to bring in packaged seed
- There is need to include evaluation of facilitators in course evaluation as a quality management tool
- It was noted that the duration of the training programmes cannot be extended as suggested by some participants
- There is need to target participants from companies in need of improvement in management and tailor training modules accordingly.
- It was noted that research component of seed science, technology and business should be strengthened. For example, it was recommended that a baseline study be conducted to:
  - Understand what the 30 small companies that SEMIs has trained for are doing, crops they, constraints they face (e.g. pests and

diseases) and opportunities available. An MSc/PhD student in Agricultural Economics could pursue this.

- SEMIs Alumni could be used to follow up
- There is need to develop technologies suitable for the small enterprises
- The demand for the courses should be established by conducting a baseline study. Preliminary study could be done through simple questionnaires which will be sent to past SEMIs alumni. Also consider getting information on total applicants in 2010 using AGRA data base. Aline O'Connor and Joseph Cortes who have a lot of experience in seed business in Africa can also be a good source of information
- Pre-course evaluation-specific for each course- to be developed and should cover participants knowledge, background, interest & weaknesses

## COMMENTS OF SPECIFIC COURSE MODULES

### 1. Comments specific to Seed drying and processing course

Noted/agreed:

- In case there is no equipment for practicals, use of videos and slides is encouraged. This will allow participants to appreciate the types of equipment used in seed drying and processing; There is also need to explore possibilities of using partners' equipment
- Other machinery used in e.g. fertilizer application and irrigation to be handled in the seed production course.
- Training visits to the industry to be organized when relevant operations are taking place
- Explore the option of visiting small scale companies e.g. East African seed company in Nairobi (vegetable and cereal seed processing), KARI-Katumani (seed production and processing machinery, including manually operated one), and Dryland Seed Company. This is important because participants need to be exposed to different scales of operation – small, medium and large scale

- Guest speaker lecture could be combined with field visits where the guest speaker gives a talk at the visited company
- Practicals will be held at the processing laboratory in Environmental and Biosystems Engineering (EBE) Department. ISU consultant's visit to coincide with the course and also advance visit
- Instructors ideally should visit the companies to be visited before commencement of the course to familiarize themselves & help in organizing the field trip
- Regarding seed packaging, show different types of packaging (cans, aluminium, paper) plus their advantages & disadvantages; regulations on requirements for packaging including harmonization of rules (KEPHIS)
- Put less emphasis on maize and include small and large seeded cereals, vegetables, legumes in the examples provided and exercises
- Include the following in the curriculum:
  - Certified seed Processor: Processor who meets the standards for processing certified seeds (APS1)
  - Temperature, RH%, and drying rate consideration for maintaining seed quality and reducing heat damage -APS2
  - Operator and environmental safety. -APS2
- The final assignment will be a written description of a seed processing plant of the participant's own design. This design involves block drawing and asks participant to design a seed processing line according to a given set of criteria for producing quality seed. Participants working with same crop will be assembled in a group, and each group will present their seed plant design to the class.
- Organize health break and lunch at Katumani during the Field Trip on Friday

## **2. Comments specific to Seed Production course**

- Need to include the following in order to capture national, regional and global situation
  - Seed classes- include east African, other system AOSCA plus others

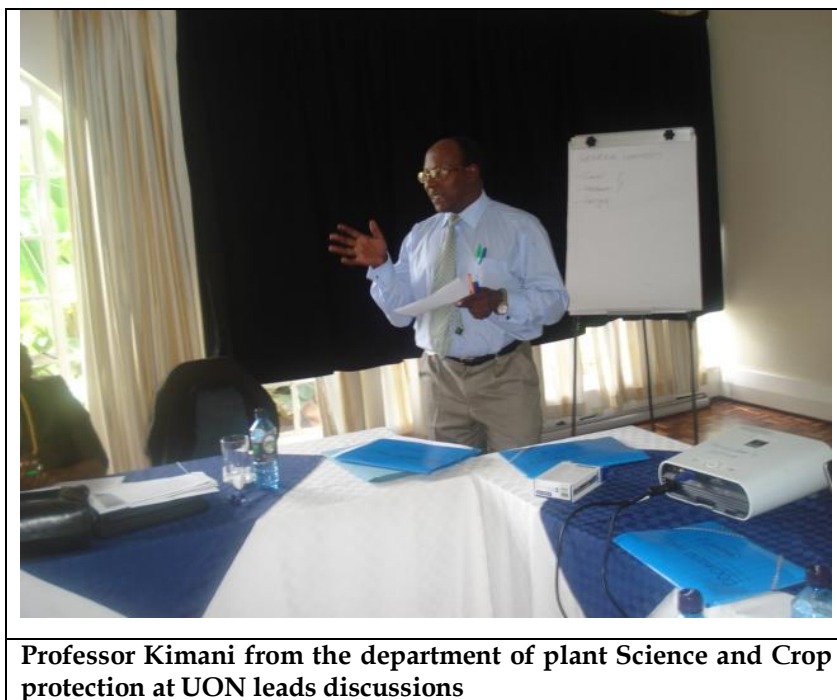
- Regulatory agencies-international, regional and national
- Need to collect and display seeds of diverse species and strains with a small write up on each- Dr. Kiarie and Dr. Ndung'u to spearhead the effort. The seeds to be sourced from Genebank, KARI-Katumani and KARI-Njoro
- May be helpful to plant a collection containing strips of different crops at various stages of growth at the Field station
- Proper timing of crops at the field station is important
- Practicals on planting and agronomic crop husbandry to expose to simple practical skills
- Pests & diseases should be given more prominence. Highlight key diseases and pests that are important in seed production and certification system e.g. halo blight; storage diseases & pests. Look at the countries involved and cover the major diseases and pests that affect seed quality. Refer to field identification handbooks for pests and diseases e.g. for beans and maize.
- The course description too loaded and therefore was reduced the teaching materials by highlighting only the key elements
- Consider participatory or community seed production in the delivery
- Include more practice and exercises for participants e.g. calculation of seed, irrigation & fertilizer rates; planning for seed production
- Use examples of various crops grown in the countries where participants come from.
- Implementation of the course should coincide with the time most crops are at the right stage, e.g. between in July to October
- Emphasis different systems of production, ratio of male: female, hybrids; ear-to-row, single plant selection and backcrosses
- Include asexually propagated materials (not part of the funded project document) - future phase
- There is need to visiting contract growers
- Production planning should be simplified to suit small practitioners
- Need to include - Hybrid development, GMO, IPM, breeding, field layouts, fertilizer, mechanization, soil & water conservation



- Give examples from diverse countries; avoid too many examples from Kenya

### 3. Comments specific to Seed Business Management

- It was recommended that the facilitators from business school should visit seed companies to familiarize themselves with unique seed business aspects. The following are the possible companies to be visited by facilitators from business school: Leldet, Western seed, Dryland Seed Company and KARI seed Unit. The SEMIs graduates will participate during the visits. The proposed dates for the visit by facilitators are 10<sup>th</sup> – 15<sup>th</sup> April 2011.



**Professor Kimani from the department of plant Science and Crop protection at UON leads discussions**

- There is need to incorporate Seed Company financing, accounting governance and policy in seed business course.
- Facilitators are required to cover all aspects in the syllabus
- Avoid over-teaching e.g. in accounting & financial management
- ICT component, cash flow statements and spreadsheets to be emphasized
- Need for someone to understudy the consultant (Aline O'Connor Funk)
- May be useful to identify someone to assist Ms. Muindi on HR issues
- Ownership, Governance and policy topics to be covered

- Problem employees and labour management are already in the current curriculum.
- Company ownership, governance and policy have been inserted in AMB1
- ICT applications in seed business inserted
- At least one motivation speaker for seed business mgt & marketing
- The curriculum does not include corporate bonds and commercial paper and so the facilitators should not cover them
- Use of practical examples and case studies that participants can relate to
- The course should have a field visits

#### **4. Comments specific to Seed Marketing**

- Topics like how to handle problem employees and conflict resolution should be captured in the curriculum and during delivery
- Governance issues need to be incorporated into the revised curriculum
- Instructors of strategy and entrepreneurship are encouraged to maintain their good standard of delivery
- Instructors in the marketing module (applies to other modules) should:
  - Understand the profile of the audience
  - Encourage participatory/interactive learning to be emphasized
  - Use visual aids (good versus bad promotional/communication tools and materials e.g. logos, brochures, packaging; participants to come with own materials and those they like for discussion)
  - Pass around good marketing materials

Noted/agreed:

- There is a lot of interest in marketing but is not possible to extend the duration of the course
- Use of Flow charting is encouraged – diagrammatic representation of the processes, including use of pictures should be encouraged
- Mention of the role of phytosanitary issues, seed quality & GMOs in seed marketing
- Enhanced student-to-student interaction

## 5. Comments specific to seed quality assurance

- Seed legislation and accreditation course to be reorganized and integrated into seed quality assurance module to form one module
- There is need to improve testing techniques. Simple kits for small enterprises to be emphasized because most participants are from start-up/small companies which do not use sophisticated equipment
- There is need for networking with accredited laboratories to conduct tests for small enterprises

Noted/Agreed:

- The time for the course has been increased from 5 to 7 days
- Regarding molecular biology, facilitators are to mention the use of DNA finger printing in variety identification & protection (especially for inbred lines)
- More IT issues to be captured e.g. tracking of samples in seed quality testing (ISU - Dr. Shyy), use of mobile telephones to obtain information on varieties (KEPHIS) and regional variety catalogue
- Make the course more basic - cut down on very advanced aspects by just creating awareness of them
- Field inspection - include a practical on inspection. Self-inspection could be demonstrated during visits to contract farmers since participants from countries where there are no inspectors and such practicals would improve their skills.
- Include how to assist farmers to maintain quality of farm saved seed
- Public-private linkages to be included e.g. licensing of private companies, maintenance of varieties, agreements with private companies to produce seed and self inspection in seed grower companies.
- GMO technology to mentioned during the lecture e.g. inspection of GMOs and regulation
- Mention the quality aspects during production e.g. during certification - isolation/ out crossing

- Demonstrate isolation distances during field visits
- Lectures & practicals at the same location - separate lectures & practical venues

## **WORKSHOP OUTPUTS**

The following were the outputs of the workshop:

1. Proceedings (report) of the workshop
2. Revised time tables for the revised 5 short courses
3. Revised syllabus for the 5 short courses

## **WAY FORWARD**

1. Finalize allocations of courses
2. Revise the content of the programmes in tandem with the day plan topics
3. Consider to revise the course codes
4. Circulate a first draft to all participants for input
5. Consider the implications of the revisions for the Diploma, PGD and Masters curricula
6. Placement of courses (consider August-October especially Seed production and seed drying & processing due to cropping seasons plus teaching duties)

## **CONCLUDING REMARKS - PROF. OLUBAYO**

The workshop ended with a prayer. Prof. Olubayo thanked all participants for their invaluable contribution. She thanked Dr. Shyy and representatives of KARI and KEPHIS for their strong support. She also thanked Prof. Kimani for facilitating during the workshop.

## LIST OF PARTICIPANTS

	<b>Name</b>	<b>Specialization</b>	<b>Institution</b>
1	Prof. A. W. Mwang'ombe	Principal-CAVS & PI-SEMIs, Plant pathologist	University of Nairobi, CAVS
2	Prof. F. M. Olubayo	Agricultural Entomologist	University of Nairobi, CAVS
3	Dr. Kiaria Njoroge	Plant Breeder	University of Nairobi, CAVS
4	Prof. P. M. Kimani	Plant Breeder	University of Nairobi, CAVS
6	Prof. E. W. Mutitu	Plant Pathologist	University of Nairobi, CAVS
8	Dr. Rose Nyikal	Agricultural Economist	University of Nairobi, CAVS
10	Dr. G. N. Chemining'wa	Agronomist	University of Nairobi, CAVS
11	Prof. S. I. Shibairo	Agronomist/ Plant Physiologist	University of Nairobi, CAVS
12	Dr. Duncan Mbuge	Agricultural Engineer	University of Nairobi, CAVS
13	Prof. M. Okoth	Agricultural Engineer	University of Nairobi, CAVS
14	Dr. Ayub Gitau	Agricultural Engineer	University of Nairobi, CAVS
15	Dr. Teresio Riungu	Plant Breeder	Kenya Agricultural Research Institute (KARI), Muguga
16	Dr. Lawrence Ragwa	Plant Breeder/ KARI Seed Unit	Kenya Agricultural Research Institute (KARI)
17	Dr. James Muthomi	Plant Pathologist	University of Nairobi, CAVS
18	Mr. James Muthee	Plant Phytosanitary Inspector	Kenya Plant Health Inspectorate Service (KEPHIS)
19	Dr. David Ndung'u	Plant Breeder	Manager, SEMIs, CAVS
20	Dr. Yuh-Yuan Shyy	Sr. Engineer/Seed scientist	Iowa State University (ISU)
21	Ms. Irene Githongo	Senior Secretary	University of Nairobi, CAVS
22	Ms. Charity Gichuru	Secretary	University of Nairobi, CAVS
23	MS Faith Kavisa	ICT	University of Nairobi, CAVS
24	Mr. Robert Tole	Driver	University of Nairobi, CAVS

## WORKSHOP PROGRAMME

TIME	ACTIVITY	FACILITATOR
<b>Day One: Monday 28th March 2011</b>		
8.00 – 8.30am	Registration	Irene Githongo, Charity Gichuru
8.30 – 8.40am	Welcoming Remarks	Prof. F. M. Olubayo
8.40-9.00am	Overview of the SEMIs project	Prof. A.W. Mwang'ombe
9.00-9.20	Workshop objectives and expectations and Overview of SEMIs Short-term Curricula	Dr. Kiarie Njoroge
9.20-10.30	Review of content for seed Business Management	Prof. P. M. Kimani
<b>10.30-11.00</b>	<b>Health Break</b>	
11.00-1.00pm	Contd. Review course content for Business Management	Prof. P. M. Kimani
<b>1.00-2.00pm</b>	<b>Lunch Break</b>	
2.00-4.00pm	Review course content for Seed marketing	Prof. P. M. Kimani
<b>4.00-4.30pm</b>	<b>Health Break</b>	
4.30-5.30pm	Review of course content for Seed marketing	Prof. P. M. Kimani
<b>Day Two: Tuesday 29th March 2011</b>		
8.00 – 10.30am	Review course content for seed production	Dr. Kiarie
<b>10.30-11.00am</b>	<b>Health Break</b>	
11.00am-12.00pm	Cont. Review of course content for seed production	Dr. Kiarie
12.00-1.00pm	Review course content for Seed drying, processing and Storage	Dr. Yuh-Yuan Shyy
<b>1.00-2.00pm</b>	<b>Lunch Break</b>	
2.00-4.00pm	Review of Course content for seed drying, processing and storage	Dr. Yuh-Yuan Shyy
<b>4.00-4.30pm</b>	<b>Health Break</b>	
<b>Day Three: Wednesday 30th March 2011</b>		
8.00 – 10.30am	Review course content for seed Quality Assurance	Prof. Olubayo, Dr. Muthomi
<b>10.30-11.00am</b>	<b>Health Break</b>	
11.00am-12pm	Cont. Review course content for Seed quality assurance	Prof. Olubayo, Dr. Muthomi
12.00-1.00pm	Merge seed quality assurance with Seed Legislation	Prof. P. M. Kimani
<b>1.00-2.00pm</b>	<b>Lunch Break</b>	
2.00-3.00pm	Merging seed quality assurance with	Prof. P. M. Kimani

	Seed legislation	
3.00-3.50pm	Workshop Wrap up-conclusions and way forward	Prof. Olubayo
3.50-4.00pm	Vote of Thanks and Close of workshop	Prof. Mwang'ombe/ Prof. Olubayo
<b>4.00-4.30pm</b>	<b>Health Break</b>	
<b>Day Four: Thursday 31<sup>st</sup> March 2011</b>		
8.00-10.30 am	Harmonization of workshop outputs and report Writing	Prof. Olubayo, Dr. Kiarie, Dr. Muthomi, Dr. Cheminingwa, Dr. Ndung'u
<b>10.30-11.00am</b>	<b>Health Break</b>	
11.00-1.00pm	Harmonization of workshop outputs and report Writing	Prof. Olubayo, Dr. Kiarie, Dr. Muthomi, Dr. Cheminingwa, Dr. Ndung'u
<b>1.00-2.00pm</b>	<b>Lunch</b>	
2.00-4.00pm	Harmonization of workshop outputs and report Writing	Prof. Olubayo, Dr. Kiarie, Dr. Muthomi, Dr. Cheminingwa, Dr. Ndung'u
<b>4.00-4.30pm</b>	<b>Tea</b>	
<b>Day Five: Friday 1<sup>st</sup> April 2011</b>		
8.00am-1.00pm	Harmonization of workshop outputs and report writing	Prof. Olubayo, Dr. Kiarie, Dr. Muthomi, Dr. Cheminingwa, Dr. Ndung'u
<b>1.00pm-2.00pm</b>	<b>Lunch</b>	
<b>Departure</b>		

**Secretariat:**

- Rapporteurs – Dr. James Muthomi, Dr. George Chemining'wa
- Logistics – Dr. David Ndung'u
- Secretary – Ms. Irene Githongo, Ms. Charity Gichuru
- Driver – Mr. Robert Tole

# SEMIs Courses in 2011

**Seed production**



**Seed drying processing  
and Storage**



**Seed marketing**



**Seed Business  
Management**



**Seed Quality Assurance  
and Seed Enterprise  
Quality Management**





## Seed Production Course

*“This course is the catalyst for a green revolution”-Joe DeVries, PASS Director*

The seed production course was held between the dates of 23<sup>rd</sup> to 28<sup>th</sup> May, 2011. Dr. John MacRobert was the main facilitator with help from Dr. Kiarie Njoroge of CAVS and other UON of lecturers. Dr. MacRobert who works with CIMMYT has a great wealth of experience working with seed companies from all over Africa and is the author of the book *Seed Business in Africa* which is produced by CIMMYT. Other facilitators included Dr. Riungu and Dr. M’Ragwa, the director KARI Muguga and head of the KARI seed unit respectively, Mr. William Munyao, Patrick Maluku and Kinyanjui from KEPHIS Nairobi and Nakuru.

In total 27 participants from 27 seed companies and 13 African countries attended the training. From East Africa, there were representatives from Ethiopia, Uganda, Tanzania, Rwanda and Kenya, West Africa was represented by Ghana, Nigeria, Mali, Niger and new entrants Liberia and Sierra Leone.

### Countries and Seed Companies represented in Seed production course in 2011

Country	No. of Seed companies	Seed companies	Number of Participants
Ethiopia	4	Avallo, Hadia, Oromia, Nile	4
Uganda	3	Pearl, Fica, Naseco	3
Tanzania	5	IFFA, Aminata, Northern Seed, AgriSeeds Technologies	5
Malawi	1	CPM Agriseeds	1
Zambia	1	Indigenous Seed	1
Mozambique	1	Semente De Nampula	1
Rwanda	1	Win Win Agritech	1
Ghana	2	CLSD-Ghana, Isakuf Enterprises	2
Liberia	2	Arjay Farms, Brac Liberia	2

Mali	1	Baddar	1
Niger	3	Husaa, Halal, Gamonzen	3
Nigeria	2	Seeds project, Manoma	2
Sierra Leone	1	Yeava Enterprises	1

Most of the participants were from the production departments of their respective seed companies. All aspects of seed production from seed classes to planning seed production, management of out growers, to seed production budgets, field inspection, and national performance and DUS trials were taught.



Dr. John MacRobert delivering formal lectures at CAVS

Professor Okoth (standing) from CAVS taking participants through aspects of seed drying and processing

Apart from the formal class lectures, the SEMIs courses are structured in order to give participants as much hands on experience as possible.



Mr. Mamoutou Diarra from Baddar seed company in Mali identifying diseases pathogens of beans in the laboratory

Mr. Shangali from the Northern seed company discusses with Mr. Aura from UON

From evaluations of participants, it has generally emerged that field excursions where the participants visit other seed company and stakeholders out there in the field are extremely important. Participants in the seed production course therefore had opportunity to visit KEPHIS offices in Nakuru, leldet Seed Company, Migotiyo plantations and Rift Valley institute of science and technology. Leldet Seed Company is one of the pioneers for small seed packs whereby seed is packed in small affordable seed packets. One of the main challenges of seed acquisition in Africa is cost of seed. Normally, seed is packed in two kilo packets meaning that many small scale farmers who do not have the money to buy a two kilogram pack are unable to purchase improved seed.



Jenny leakey of Leldet seed company explaining to participants about seed packaging

Jenny explains the working of a seed planter at Leldet seed company

Outgrowers are an essential component of the seed value chain producing seed for seed companies which do not have the capacity to do their own production. Migotiyo farm is one of the large scale farms in the rift valley of Kenya that produces seed for major seed companies including Kenya Seed Company and Monsanto.

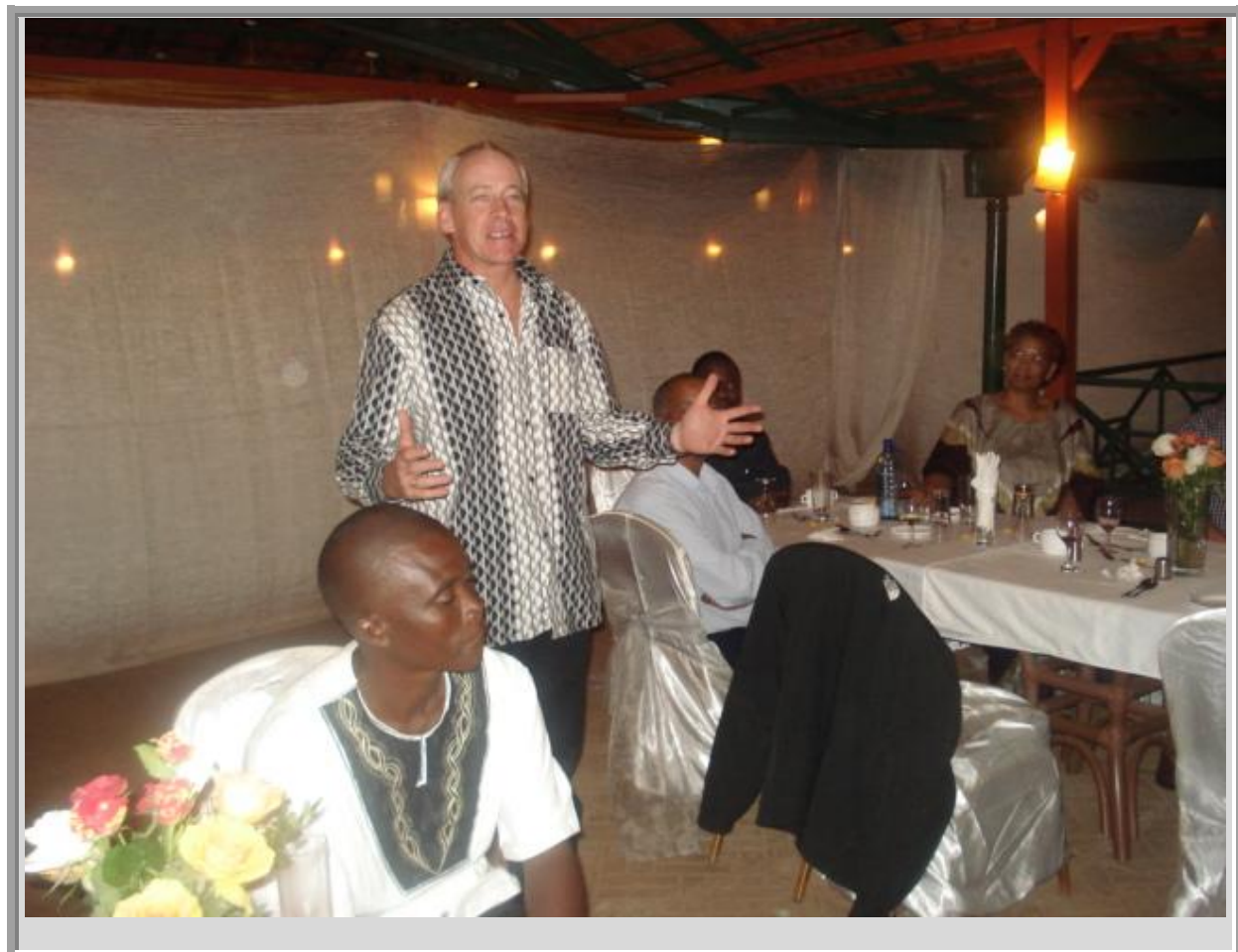


Seed production at Migotiyo farm in Nakuru district

Participants take notes on planting of male and female rows in seed production



The certification ceremony was attended by among others representatives of AGRA led by Dr. Joe DeVries, Professor Mwang'ombe, the deans of the faculties of Veterinary medicine and Agriculture, professors Munene Njenga and Solomon Shibairo, respectively, Dr. Yuan Shyy from ISU and staff from CAVS and SEMIs.



Dr. Joe DeVries, PASS Director addresses participants at the closing and Certification ceremony

In his speech, Dr. DeVries said that PASS strategy was to improve access of improved seed for farmers all over the continent. "I am very excited about the seed production course as it is the gets off the ground PASS's strategy of getting improved seed to the African farmer. He said that he was happy to see many seed companies coming up all over the continent. Towards this end he noted that the greatest strategy PASS had adopted was putting the private seed sector first. "As I move across Africa, I see African farmers have changed their strategy to improved seed", he said. He urged the seed companies to make sure that they have at least one or two hybrid varieties they are producing. "Only through the use of Hybrid seed can Africa change from a importer to a net exporter of food", he further explained.



Professor Mwang'ombe, the PI for SEMIs and Principal CAVS presents a certificate of participation to Mr. Osei Koffour from Isakuf Enterprises Ghana



The Dean, veterinary Medicine, presents a certificate of participation to Marilia Chemaite from Semente De Nampula seed company from Mozambique

## Seed Drying Processing and Storage

*Many seed companies in Africa lack the capital to invest in high tech seed processing facilities, however, by adopting simple practical methods and pragmatism, seed can still be processed cheaply and to highest quality needed.*

The seed drying processing and storage course was held between May 30<sup>th</sup> and 4<sup>th</sup> June, 2012. Dr. Yuan Shyy from ISU and Dr. Kiarie Njoroge from CAVS were the main facilitators of the course. Other facilitators were mainly drawn from CAVS and included Dr. Ayub Gitau, the chairman of the Environmental and Biosystems Engineering (EBE), professor Micheal Okoth, the Chairman of Food Science, Nutrition and Technology, among others.

In total there were 28 participants from 28 seed companies from 13 countries.

Country	No. of Seed companies	Seed companies	Number of Participants
Ethiopia	4	Avallo, Hadia, Oromia, Nile	4
Uganda	3	Pearl, Fica, Naseco	3
Tanzania	5	IFFA, Aminata, Northern Seed, AgriSeeds Technologies, Itente	5
Malawi	1	CPM Agriseeds	1
Zambia	1	Indigenous Seed	1
Mozambique	1	Semente De Nampula	1
Rwanda	1	Win Win Agritech	1
Ghana	2	CLSD-Ghana, Isakuf Enterprises	2
Liberia	2	Arjay Farms, Brac Liberia	2
Mali	1	Baddar	1
Niger	3	Husaa, Halal, Gamonzen	3
Nigeria	2	Seeds project, Manoma	2
Sierra Leone	2	Yeava Enterprises, Abhajar	2

Participants got lessons on all the different types of seed processing equipment needed for high quality seed processing. However, Dr. Shyy, presented practical cheap alternatives for seed processing for those seed companies that are financial constrained.



Dr. Yaun Shyy from ISU goes through the technical aspects of seed processing



Practical training at the seed laboratory at CAVS

Training at SEMIs also greatly encourages interaction and sharing of experiences and ideas between the seed company personnel. This we believe gives the participants different perspectives of seed enterprise management from different countries. Many important linkages are being developed between the seed companies all over the continent through this kind of engagement.



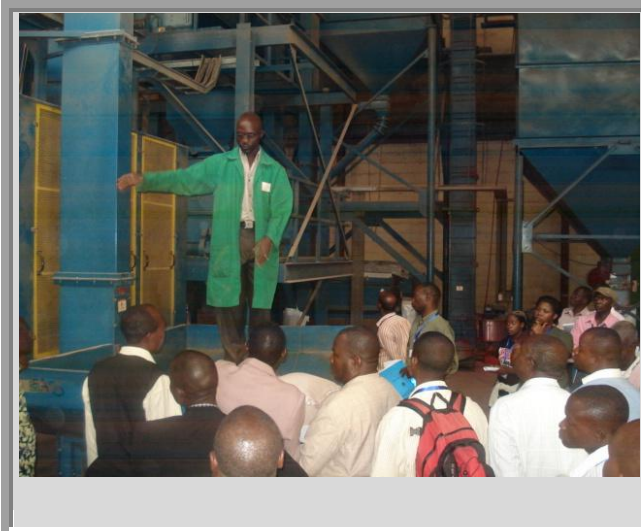
Djibo Abdul Karim from Gamonzen ranch seed company from Niger explains to other participants how they process seed in their seed company



Alson Shangali from Northern Seed company discusses how his company processes tomato seeds



In order for participants to see actual seed processing in the field, the group visited East African Seed Company based in Nairobi and Dryland Seed Company located in Machakos. Dryland seed, just like the seed companies attending the training is a beneficiary of the AGRA funding. They have recently acquired a modern seed processing unit to help in processing of their seed.



A technician at East African seed company explains the steps seed goes through during processing



Alson Shangali from Northern Seed company discusses how his company processes tomato seeds

Dry Land Seed Company is one of the beneficiaries of the AGRA funding. The company is located in machakos district, one of the marginal districts of Kenya. With the support they have received from AGRA they have been able to rent a warehouse in which they have located their new seed processing equipment and where they store their seed.





Mr. Ngila Kimotho (third left) welcomes SEMIs seed processing participants at his warehouse in Machakos

In order for seed companies to expand farmer awareness has to be at the forefront of the companies' policies. Part of the product promotion strategy of Dryland Seeds Company is use of demonstration plots at Agricultural meetings where they plant their varieties for farmers to see. The seed processing participants visited demonstration plots planted by Dryland Seed Company at the Agricultural show of Kenya (ASK) ground in Machakos and were able to appreciate the potential of demonstrations.



Participants view demonstration plots by Dryland seed company at ASK Machakos



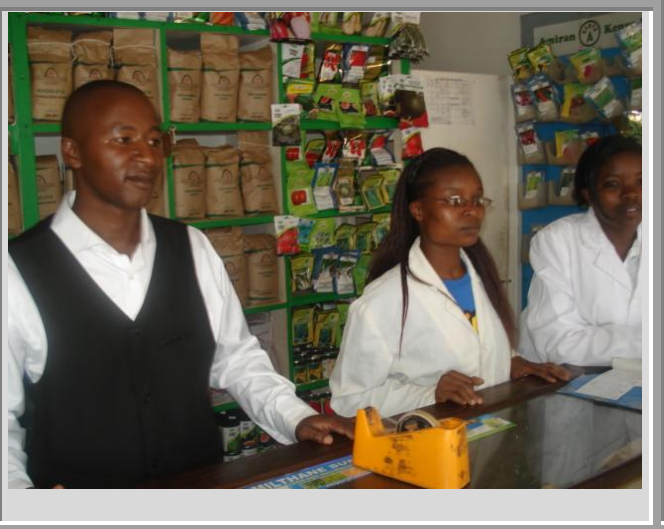
One of the Dryland's maize hybrid demonstration plots

Dryland Seed Company produces seed of maize, sorghum, cowpea, beans, green grams and pigeon peas. For maize, the company has a hybrid and OPVS. In collaboration with KARI, the company continues its acquisition of more hybrids to boost its varietal portfolio.

Apart from production, marketing is a crucial department for any seed company. Dryland seed company has established an agro-dealer outlet to market and sell its seed products. The Agro-dealer outlet also sells other agricultural inputs like fertilizers and crop protection products.



Dryland’s seed company Agro-dealer outlet in Machakos District



Dryland seed company employees at the Agro-dealer outlet

The seed processing group also had opportunity to visit the KARI seed unit at KARI Katumani station. The KARI seed unit at Katumani research station mainly deals with production of orphan crops including pigeon peas, beans, and sorghum. The seed unit has a modern processing unit for which they offer processing facilities to small seed companies like Dryland Seed Company.



The KARI seed unit at Katumani Research station Machakos



Simple seed treatment equipment at KARI seed unit





Dr. Shyy explains the workings of the modern seed processing equipment at KARI seed unit



Packaged seed ready for delivery to farmers in the district

After an intensive one week of lectures and field excursions the seed processing came to an end with a certification and closing ceremony attended by among others, professor Mwang'ombe, PASS director, Dr. Joe DeVries, George Bigirwa, senior programme officer, PASS, Dr. Rufaro Madakadze, programme officer PASS, Dr. Shyy and Dr. James Okeno from ISU and staff from CAVS.



Professor Mwang'ombe, Principal CAVS and SEMIs PI presents a certificate of participation to Merilia Chaimite from Mozambique



Dr. George Bigirwa (left) presents a certificate to Lilian Kinubi from Itente seed company from Tanzania

## Seed Business management

Seed business management course was held between 18<sup>th</sup> and 23<sup>rd</sup> July 2011. This course as with the seed marketing one is jointly facilitated by CAVS and the University of Nairobi business school. The main facilitator was Aline O'Connor Funk, a consultant with the Gates foundation and AGRA, and Professor Evans Aosa of the school of business. Aline has vast experience in managing seed companies, having been an owner of a seed company in the USA, and also having worked with many seed companies in the USA and in Africa. She is currently working with the Gates foundation and AGRA providing consultancy and Business development services to seed companies all over Africa. Aline is also the author of African Seed company toolbox a valuable companion for any seed company manager. Professor Aosa is the associate dean at the school of business and professor in strategic management. Other facilitators were mainly drawn from the school of business.

In total, 26 participants from 26 seed companies and 13 African countries attended the course. of this, approximately 20 participants were CEOs of seed companies while the rest were senior management staff.

Country	No. of Seed companies	Seed companies	Number of Participants
Ethiopia	3	Hadia, Avallo, Nile	3
Uganda	1	Pearl	1
Tanzania	5	IFFA, Aminata, Northern Seed, AgriSeeds Technologies, Itente	5
Malawi	2	CPM Agriseeds, Funwe Farm	2
Zambia	1	Indigenous Seed Company	1
Mozambique	1	Semente De Nampula	1
Rwanda	1	Win Win Agritech	1
Ghana	3	CLSD-Ghana, Isakuf Entepries, M&B seeds	3
Liberia	2	Arjay Farms, Brac Liberia	2
Niger	3	Husaa, Gamonzen, Alheri	3
Sierra Leone	2	Yeava Enterprises, Abhajar	2
Kenya	1	Kenya seed company	1
Burkina Faso	1	Nafaso seed company	1

The course is designed for seed company executives (CEOs) and senior management personnel in seed companies. Topics include among others strategy and strategic management presented by Professor Aosa, managerial skills, key success factors for seed companies, critical thinking and financial management. In order to acquaint the managers with information technology, there was an ICT session where participants were taught how to use excel spreadsheets and other important business management tools.



Ms. Aline O'Connor Funk making a presentation to the seed business management group | Professor Aosa (standing) presents a lecture on strategy and strategic management

SEMI's invited Dr. Julius Kipng'etich as a guest speaker for the seed business course. Dr. Kipng'etich is the director of Kenya Wildlife Services (KWS) which is mandated to preserve Kenya's worldwide acclaimed wildlife. Dr. Kipng'tich has been the driving force in management of the KWS and he presented the simple qualities of successful business managers. SEMI's was highly honoured to have Dr. Kipng'etich share his experiences with the participants. Dr. Joe DeVries also took time to attend some of the lectures at the UoN



Dr. Julius Kipng'etich (standing) discusses a point with participants | Dr. Joe DeVries from AGRA in discussions with the seed business management group



The group also had opportunity to meet with potential financiers in Root Capital and African Seed Investment Fund (ASIF). Root capital provides finance for communities and conservation while ASIF is an AGRA initiative that provides funding for African agricultural development. In addition to the formal lectures at the University, the group also visited an agro-dealer outlet 30 kilometres out of Nairobi in Limuru, a high agricultural potential district in the Kenya highlands.

The closing ceremony was attended by among others, Dr. Joe DeVries, Professor Agnes Mwang'ombe, the dean faculty of veterinary medicine, Professor Munene Njenga and Professor Shibairo, the dean of the faculty of agriculture. Participants were awarded certificates of participation.



Professor Njenga Munene addresses the participants



From Right: Dr. Aduda, (School of business), Alson Shangali (Northern Seed), Professors Mwang'ombe and Olubayo (CAVS)

## Seed Marketing

The seed marketing course took place between 25<sup>th</sup> and 30<sup>th</sup> of July 2011. This course is run in collaboration with the University of Nairobi Business School. The coordinator of the Course is Aline O'Connor Funk, a consultant with AGRA and the Gates foundation helped by Dr. Justus Munyoki from the school of business. Aline has wide experience working with seed companies in the USA and currently works with AGRA providing consultancy services to seed companies all over Africa. Other trainers were mainly drawn from the school of business.

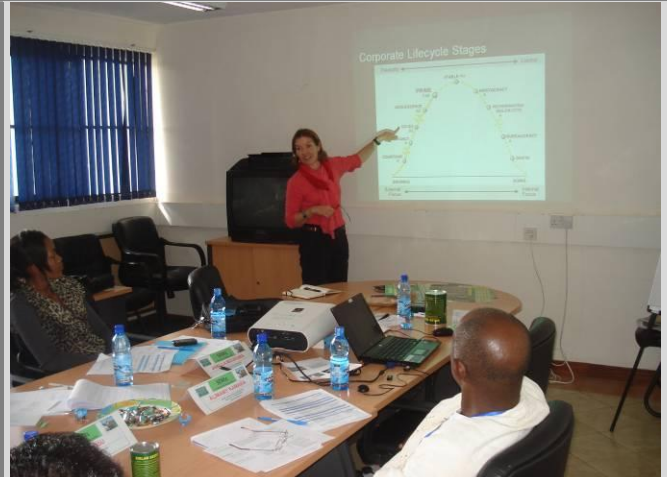
A total of 25 participants from 25 seed companies attended and 14 countries attended the training.

Country	No. of Seed companies	Seed companies	Number of Participants
Ethiopia	3	Hadia, Oromia, Nile	3
Uganda	1	Pearl	1
Tanzania	5	IFFA, Aminata, Northern Seed, AgriSeeds Technologies, Itente	5
Malawi	1	CPM Agriseeds	1
Zambia	1	Indigenous Seed Company	1
Mozambique	1	Semente De Nampula	1
Rwanda	1	Win Win Agritech	1
Ghana	3	CLSD-Ghana, Isakuf Enterprises, M&B seeds	3
Liberia	2	Arjay Farms, Brac Liberia	2
Mali	1	Nakoshi-SARL	1
Niger	2	Husaa, Gamonzen	2
Sierra Leone	2	Yeava Enterprises, Abhajar	2
Kenya	1	Kenya seed company	1
Burkina Faso	1	Nafaso seed company	1

Topics taught included marketing concepts, market segmentation, culture and ethics in marketing, Customers, promotional strategies among many others. Besides the formal lectures in class the participants had opportunity to experience firsthand seed marketing in the real world by visiting the Simlaw seed company. Simlaw Seed Company is a subsidiary of the Kenya seed company, Kenya's largest seed company that commands over 80% market share of the seed market in Kenya.



Dr. Munyoki from the School of business demonstrates to the participants the essence of branding in marketing



Ms Aline O'Connor Funk goes through the aspects of seed marketing with the participants

A most important aspect of SEMIs courses is the experiential training that the farmers undergo. To this end, SEMIs engages with the seed industry to avail guest speakers from the seed industry. During the SEMIs course on seed marketing, Jenny Leakey the CEO of Leldet seed company and George Otieno from Wakala Seed Company gave lectures on various aspects of marketing. Leldet Seed Company from the rift Valley has pioneered with the much success the strategy of seed marketing using small seed packs.



Jenny Leakey demonstrates seed marketing using small seed packs



Video sessions at SEMI have proved to be an effective technique of getting the message through to the participants

During the visit to the seed industry, the group visited Simlaw Seed Company in Nairobi where participants experienced firsthand effective seed marketing techniques that the company utilizes to maintain lead market share.





Participants engage Simlaw seed staff in discussions on marketing strategies.



Visit to the ultra modern seed selling store that Simlaw seed company is developing

The seed marketing, after one week of lectures and visits to the seed industry, came to a close on 30<sup>th</sup> July, 2011. As usual, a closing ceremony dinner was held to award participants with well deserved certificates of participation. Dr. Joe DeVries, Aline O'Connor Funk, Professor Agnes Mwang'ombe among others attended the ceremony where all the participants were awarded certificates of participation.



Dr. Rufaro Madakadze from AGRA presents a certificate to Mr. Alimamy Kamara of Abhajar seed company from Sierra Leone



Mr. Tom Mutugu from the school of business presents Maiga Soumeila from Nakoshi seed company from Mali with a certificate

## Seed Quality Assurance and Seed Enterprise Quality management

The seed quality assurance and seed enterprise quality management course was held between September 18 and 1<sup>st</sup> October 2011. Unlike all other courses this particular course was held over a period of 2 weeks. This was mainly because the course was a merger of the previous seed quality assurance and seed legislation and Accreditation courses that were held last in 2010. During the 1<sup>st</sup> review and planning meeting it was strongly felt that in order to better serve the seed companies, the courses on seed quality assurance and seed legislation needed to be merged into one and the course run over period of two weeks.

A total of 27 participants from 27 seed companies and 12 African countries attended the training. Three new seed companies, FAGRI, from Burkina Faso, Brac, from Sierra Leone and Faida seeds from Kenya, were included in the training.

Country	No. of Seed companies	Seed companies	Number of Participants
Ethiopia	3	Hadia, Avallo, Oromia	3
Uganda	1	Pearl	1
Tanzania	3	Aminata, Northern Seed, Itente	3
Malawi	2	CPM Agriseeds, Funwe Farm	2
Zambia	1	Indigenous Seed Company	1
Rwanda	1	Win Win Agritech	1
Ghana	2	CLSD-Ghana, Isakuf Enterprises	3
Liberia	2	Arjay Farms, Brac Liberia	2
Niger	4	Husaa, Gamonzen, Alheri, Halal	4
Sierra Leone	3	Yeava Enterprises, Abhajar, Brac Sierra Leone	3
Kenya	2	Kenya seed company, Faida seeds company	2
Burkina Faso	2	Nafaso, FAGRI	2

The coordinators of the course were Dr. Joe Cortes and Dr. Mike Stahr from ISU helped by Dr. James Muthomi of CAVS. Dr. Joe Cortes is the leader of the Global seed Program at ISU, while Dr. Mike Stahr is the seed laboratory manager at the seed Science Centre in ISU and the current Association of Official Seed Analysts (AOSA) president. Other facilitators were from CAVS and KEPHIS.

During the first three days, the participants learnt among other topics, aspects of process management, analysis and flowcharting, documentation structure, quality manual

guidelines. Basically, process management is the system of procedures that a seed company needs to ensure high quality performance in all departments of the seed company. Dr. Joe Cortes was the main facilitator for process management. Seed quality assurance was taught by Dr. Mike Stahr whose expertise lies in germination, vigor of large seeds and trait testing. Topics that for seed quality assurance, among others included, national, regional and international certification procedures and standards, laboratory certification standards, field inspections, seed laboratory tests and seed purity tests.



Dr. Joe Cortes explains aspects of Process management Poster session during tea break

Participants were requested to bring posters and packaging material they use for exchange of ideas on the same. For process management, participants were required to come up with quality seed company manuals for each of their seed companies.



Dr. George Bigirwa of AGRA fields questions during computer session. Mr. Kibet of KEPHIS of KEPHIS presents the topics on certification procedures

Participants also got to travel to Nakuru where they visited KEPHIS seed testing laboratory at Lanet. Here they got hands on experience on how to perform routine tests of germination, vigor, moisture, conductivity, purity and seed health tests.





Participants perform Germination tests at KEPHIS Lanet



David Nellon (Arjay Farm Liberia) and Sani Magagi (Halal, Niger) perform seed purity tests

The group also had an opportunity to attend the Agricultural society of Kenya (ASK) show at the Jamuhuri grounds in Kenya. The ASK show in Nairobi is the largest Agricultural show in Kenya. Participants got practical experience on different aspects of Kenyan agriculture and interacted with stakeholders in the industry.



Dr. Sikinyi from STAK making a presentation to the participants



Visit to the Kenya seed company Stand at the ASK show in Nairobi

The seed quality assurance and seed enterprise quality management course came to an end after two weeks of intense learning on many aspects of seed quality. A certificate award and closing dinner was hosted by SEMIs.



Dr. Mike Stahr from ISU addressing the participants at the closing ceremony



Dr. Kiarie Njoroge presents a certificate of participation to Njeri Muange of Northern seed company Tanzania



## Bean seed production

Apart from the training, one of the objectives of the SEMIs project was to produce breeder seed for the seed industry. Towards this end the SEMIs has been planted over 3 acres of beans and produced over 750 Kg of been seed that was inspected and passed by KEPHIS. This seed will be sold to seed Kenya Seed Company who have a memorandum of agreement with the University for CAVS to produce breeders seed for KSC.

During the short season in November, SEMIs planted approximately 5 acres of four varieties of bean seed. This crop is currently being and at least 2 tonnes of clean breeders' seed is expected to be availed to the seed companies for further multiplication.



Kenya Red Kidney bean variety planted at CAVS