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# SEED ENTERPRISE MANAGEMENT INSTITUTE (SEMIs) Final Report

2010-2014



**Growing the Seed Industry in Africa**

**2010**

### **Executive summary**

The project to establish a Seed Enterprise Management Institute (SEMI), at the University of Nairobi (UON) College of Agriculture and Veterinary Sciences (CAVS) is an initiative funded by Association for a Green Revolution in Africa (AGRA). It is a collaborative project led by UON. Collaborators include Iowa State University (ISU), International Maize and Wheat Improvement Center (CIMMYT), Kenya Seed Company (KSCo), Kenya Plant Health Inspectorate Services (KEPHIS) and other private and public institutions in the seed delivery systems. The role of SEMIs is mainly geared to providing capacity to the seed industry in sub-Saharan Africa mainly through training on seed systems management for seed practitioners.

SEMI officially began operations in February, 2010. A series of meetings were held between AGRA, UON, ISU and other collaborators for implementation of the project. The main focus for SEMI in 2010 was to initiate and administer short courses, on seed in the seed value chain, for seed practitioners in sub-Saharan Africa that have special relevance to the seed industry in Africa, and to initiate construction of a seed processing unit and seed laboratory at CAVS. To this end, several meetings were held in order to come up with suitable curricula that would address the main challenges facing seed practitioners, especially the seed companies, in the production and provision of high quality seed to farmers in sub-Saharan Africa. Six course curricula were developed and passed by the university administration as SEMI short courses on seed production and Management. These are: i) Seed production, II) Seed drying, processing and storage, III) Seed Marketing, IV) Seed Business Management, V) Seed Quality Assurance, and VI) Seed Legislation and Accreditation. In addition, trainers from the University of Nairobi attended a Training of Trainers (TOT) course at ISU in order to familiarize themselves with the operations of an internationally recognized seed institute. The details for the implementation and curriculum development meetings and, the ISU visit are included in this report.

Within this reporting period (February – July 2010), four courses on Seed Production, Seed Drying, Processing and Storage, Seed Business Management and Seed Marketing have been held with great success. Participants to these courses were drawn from 13 sub-Saharan African countries including from West Africa: Ghana, Nigeria, Mali, Niger and Burkina Faso, from Southern Africa: Mozambique, Zambia, Malawi, and from Eastern Africa: Ethiopia, Uganda, Tanzania, Rwanda, and Kenya. In total, 119 participants from over 30 seed companies have benefited from the trainings. The details of these four trainings are included in this report.

On the construction of SEMI seed processing and laboratory facilities, Allan Gaul a seed science specialist from ISU made visits and took measurements of the existing facilities at CAVS to facilitate the preparation of the construction plans for the institute.

## INTRODUCTION

### SEED ENTERPRISE MANAGEMENT INSTITUTE (SEMIS)

The seed Enterprise Management institute (SEMIs) was set up as a way of contributing towards the alleviation of food insecurity in sub-Saharan Africa. Seed represents living genetic material to be exploited and holds the ultimate benefit to be expected from all other farming activities. Acquisition of seed of an improved variety symbolizes the potential to improve agricultural output and very often, access to good seed differentiates between good and poor farmers Africa. Many farmers in sub-Saharan Africa do not have access to high quality seed and many are those that have to travel long distances to get certified seed. Also, in many areas in Africa, certified seed is unaffordable to the farmers or totally lacking. While there are many farmers in Africa, who out of ignorance, do not know the benefits certified seed, others have become disillusioned from the effects of provision of poor quality seed choosing to grow their own saved seed.

SEMIs seeks to address some of these challenges by providing capacity to the seed industry through training of seed company personnel on various aspects of high quality seed production, marketing and management. SEMIs seeks to make the seed system, and specifically the seed companies in Africa more vibrant and responsive to the needs of the farmers. Through the training offered, the seed companies are equipped with knowledge for better management of crucial aspects like seed production and processing in order to upscale production and lower overall production overheads thus making seed more available and affordable. SEMIs also conducts training on seed marketing- a crucially important aspect of any seed business. Company personnel are also trained on good business management to better equip them good managerial skills necessary for running self-sustaining profitable seed businesses. With the realization that only through provision of high quality seed can companies gain the trust of farmers, SEMIs is also offering training on seed quality assurance and seed legislation and accreditation.

Apart from the short course trainings, SEMIs will also establish a fully fledged seed training institute with a seed processing unit at the University of Nairobi. This will serve both as training facility and also as a service provider for seed companies with limited capacity to process seed. Other activities will include production of breeder seed of the University's newly released high yielding bean lines and, seed production, at the University farm in Kibwezi. To enhance information dissemination, SEMIs will also establish a website to serve as a first call on seed issues in sub-Saharan Africa.

**REPORT ON SEMIs INCEPTION AND PLANNING MEETING**

**MEETING DATE: THURSDAY 11TH FEBRUARY 2010**

**MEETING VENUE: COLLEGE OF AGRICULTURE AND VETERINARY  
SCIENCES, UNIVERSITY OF NAIROBI**

## Introduction

A project inception meeting was held in order to lay out the foundation of the SEMIs project. In attendance were officials from AGRA, UoN, and ISU. The main objective of the meeting was to launch and fast track the initiation process of the SEMIs project. Highlights of the meeting included briefs on the project overview, and discussions on the importance of the project. Major outputs of the meeting were priority settings for the project and setting of time lines for SEMIs activities. The priority crops for SEMIs and the course details were also discussed. Dates for commencement of the courses and other important SEMIs activities were also set.

## Meeting Minutes

### In attendance:

	Name	Institution	Title/ Profession	Contact details
1	Joe DeVries	AGRA	Program Director PASS	<a href="mailto:jdevries@agra-alliance.org">jdevries@agra-alliance.org</a>
2	Agnes W. Mwang'ombe	University of Nairobi	Principal, C.A.V.S	<a href="mailto:principal-cavs@uonbi.ac.ke">principal-cavs@uonbi.ac.ke</a>
3	Joe Cortes	Iowa state University	Global Seed Program Leader	<a href="mailto:icortes@iastate.edu">icortes@iastate.edu</a>
4	Florence Olubayo	University of Nairobi	Agricultural Entomologist, Chairman Plant science and Crop protection dept.	<a href="mailto:fmmogi@yahoo.com">fmmogi@yahoo.com</a>
5	James Okeno	Iowa state University	Visiting Scientist, ISU	<a href="mailto:jaketch@iastate.edu">jaketch@iastate.edu</a>
6	George Bigirwa	AGRA	Program officer, SEPA	<a href="mailto:gbgirwa@agra-alliance.org">gbgirwa@agra-alliance.org</a>
7	Rufaro Madakadze	AGRA	Program officer, EACI	<a href="mailto:rmadakadze@agra-alliance.org">rmadakadze@agra-alliance.org</a>
8	John MacRobert	CIMMYT	Seed Systems Specialist	<a href="mailto:j.macrobert@cgiar.org">j.macrobert@cgiar.org</a>
9	Aline O'Connor Funk	Consultant for AGRA	Consultant	<a href="mailto:alineoc@aol.com">alineoc@aol.com</a>
10	David Ndung'u	CIMMYT	Plant Breeder	<a href="mailto:Kamundian@yahoo.com">Kamundian@yahoo.com</a>
11	Tim Waema	University of Nairobi	Computer Scientist	<a href="mailto:waema@uonbi.ac.ke">waema@uonbi.ac.ke</a>

12	Rama D. Narla	University of Nairobi	Plant Pathologist	<a href="mailto:Virup_n@yahoo.com">Virup_n@yahoo.com</a>
13	James W. Muthomi	University of Nairobi	Plant Pathologist	<a href="mailto:James_wanjohi@yahoo.com">James_wanjohi@yahoo.com</a>
Apologies				
	Kiarie Njoroge	University of Nairobi	Plant Breeder/ cropping systems specialist	<a href="mailto:knkabuu@yahoo.com">knkabuu@yahoo.com</a>

### 1. Project overview – By A.W. Mwang’ombe

Presented an overview of the project titled: “Establishment of seed Enterprise management Institute to facilitate capacity building and support quality seed production for increased food security and poverty alleviation”.

Components of the project:

- a) Capacity building for seed merchants and postgraduate students pursuing plant breeding and seed related disciplines.
- b) Establishment of seed training institute (SEMI) at the University of Nairobi with seed processing unit,
- c) Promotion of the production of breeders seeds of newly released high yielding bean lines,
- d) Use a relevant website for SEMIs to facilitate information sharing through the net,
- e) Seed production at Kibwezi field station to support seed out growers, contract services to seed companies for foundation and / or certified seed production(Foreseen for phase II of this program ),

These components will demonstrate to the trainees all key stages in production, processing and marketing of quality seed in practice.

### Overall goal of the Project

Eradication of food insecurity through capacity building of seed actors for improved seed systems to better deliver high quality seeds to small scale farmers at affordable prices.

Specific objectives:

1. To produce seed production and marketing management expertise with competency to run the seed industry in the SSA region.
2. To train seed industry practitioners on the best practices to efficiently produce adequate high quality seed and supply them quickly enough to meet the farmers planting schedules at affordable prices.

3. To enhance production of seed of important varieties by seed industry stakeholders to meet the planting material requirements of the SSA region, using efficient seed production, marketing and distribution channels.
4. To strengthen the capacity of the SSA region to train on seed production and marketing management strategies that target enhanced seed technology diffusion and uptake.
5. To establish a seed processing unit at the University of Nairobi to serve as a capacity building facility as well as support provision to seed industry of improved varieties developed at the University.
6. Develop a regional capacity to facilitate information sharing on seed issues and related disciplines throughout Sub-Saharan Africa.
7. Utilize idle facilities at Kibwezi for seed production of dry land crops and orphaned crops at a late stage (phase II).

#### Training Courses

##### Category1

Seed production and processing

Seed Technology

Breeding and disease/pest management

##### Category2

Seed company management I

Seed company management II

##### Category3

Marketing promotion

Leadership course

##### Category4

MSc and PhD courses

#### Participants

1. Seed company managers requiring a maximum one-week course on entrepreneurship.
2. Seed production technical staff who require realignment on managerial and field operation skills to enhance output.
3. Masters and PhD students to be equipped with seed production and industry.

#### 2. Problems in the seed industry – Aline O'Connor

Presented slides highlighting the problems associate with the seed industry

#### 3. SEMIs project – Joe DeVries

In his remarks, he highlighted the importance of the project as follows:

- i) Modern seed industry is just starting in most countries.
- ii) Set up of SEMIs would be a major investment in seed industry, which is critical for the

development of the agricultural industry.

- iii) The seed industry will benefit from SEMIs and the demand for SEMIs is big since the need for such an institute is felt in many countries, where farmers usually recycle own seed.

The priorities for the project should be:

- i) Start the training courses as soon as possible (probably by April, May or latest by June 2010). The training curriculum should be short term, flexible, and use existing facilities in the in the College of Agriculture and Veterinary Sciences in collaboration with established institutions like KEPHIS and Kenya Seed Company especially for further practical exposure.
- ii) Initiation of hiring process for project staff and procurement of items that do not need to wait for the US seed engineer's visit.
- iii) Start construction of the SEMIs facilities at the University of Nairobi and this should run co-currently with the training courses.
- iv) Include basic courses like agronomy in the curricula and aspects of insect pest spoilage in the seed quality assurance course.

#### 4. Priority crops for SEMIs

The following were agreed to be the priority crops:

Cereals – maize, sorghum and millets, rice

Legumes – beans, cowpeas, pigeon peas, soy beans, ground nuts.

Other crops - indigenous vegetables, sunflower.

#### 5. Training courses

Course	Duration	Course contributors	Responsible person at UoN
Seed production	1 week	John MacRobert, Kiarie Njoroge, James Okeno,	Kiarie Njoroge
Seed drying, processing and storage	1 week	Allan, Florence Olubayo, Duncan Mbuge	Florence Olubayo
Seed quality assurance	1 week	Joe Cortes, Agnes Mwang'ombe, James Okeno, James Muthomi, Rama Narla, Florence Olubayo	Agnes Mwang'ombe/ Rama Narla/ James Muthomi
Seed legislation and accreditation	1 week	Joe Corter, James Muthomi, Njoroge Kiarie	James Muthomi



Seed market and farmer awareness	1 week	Evans Aosa, Aline, J. J. Okello, Florence Olubayo	Florence Olubayo
Seed enterprise development	1 week	J. J. Okello, Kiarie Njoroge, Ailine, Evans Aosa	Njoroge Kiarie

Note that in all these courses, there is a need for ICT integration.

The following was agreed about the training courses:

- i) The curriculum should indicate course title, course description and contact hours. ii) The courses should be practical oriented: 60% practicals and 40% theory.
- iii) Each course should have distinct modules, each module covering 1–2days.
- iv) At the end of each course, trainees will be awarded a certificate bearing logos of the collaborating institutions (AGRA, CIMMYT, University of Nairobi, ISU) and signed by the college Principal. University of Nairobi should explore the possibility where those Trainees who complete all the six courses can be awarded a University of Nairobi certificate signed by the Vice Chancellor. However, if this was found possible, the trainees should in addition have all the pre-requisite qualifications for this level as per UoN regulations.
- v) Qualifications of the trainees will vary from certificate to degree holders.
- vi) To hold a workshop to harmonize the courses. Course conveners and subject matter specialists to be invited to the curriculum development workshop.
- vii) Course Trainers of Trainers (ToTs) to visit Iowa State University to familiarize themselves with the seed production and processing facilities and go through a two weeks training course tailor made for SEMIs project at ISU.
- viii) It is foreseen that SEMIs in line with UoN regulations for an Institute will later develop diploma, postgraduate diploma and MSc. courses and seek approval upto senate level
- ix) Other short courses that may be considered for development include financial management and human resource management.

## 6. Schedule of activities

- a) Curriculum development workshop: 8<sup>th</sup>-12<sup>th</sup> March 2010

Activity	Proposed timing	Responsibility
Seed marketing and farmer awareness/ Seed enterprise development	8th-9th March	Aline, UoN Staff and AGRA
Seed quality assurance/ legislation and accreditation/	Seed 9th March 2010	Joe Cortes, Uon Staff and AGRA

Seed production	10th March	John, UoN Staff and AGRA
Seed drying, processing and storage	11th-12th March	Allan, Duncan Mbuge, project team from UoN and AGRA

b) Training courses

Activity	Proposed timing
Training of Trainers (Agnes Mwang'ombe, Florence Olubayo, Kiarie Njoroge, James Muthomi) at ISU	10 <sup>th</sup> to 24th April 2010
Seed production	3 -7 <sup>th</sup> May 2010
Curriculum development workshop	8 <sup>th</sup> -12 <sup>th</sup> March 2010
Seed drying, processing and storage	10 <sup>th</sup> -14 <sup>th</sup> May 2010
Seed marketing and farmer awareness/ Seed enterprise development	28 <sup>th</sup> June-9 <sup>th</sup> July 2010
Seed quality assurance/ Seed legislation and accreditation	20 <sup>th</sup> September-1 <sup>st</sup> October 2010

c) SEMIs facilities

Activity	Proposed timing	Responsibility
Design of SEMIs facilities: floor plan, specification of equipment. Allan from ISU to come and work together with a local engineer	15-19th March 2010	Allan Gaul, Duncan Mbuge and the Project team from UoN
Installation of equipment at SEMIs facility	October 2010	

**7. Way forward**

- i) Training courses to use crops (beans and maize) already planted at the field station, including the collection plots. Dr. Kiarie to ensure availability of desired crops at right stages of growth for practical training.
- ii) Practicals for seed processing may be done at seed facilities at Kiboko, Katumani, or KEPHIS-Lanet (Nakuru).

- iii) Training to target class sizes of about 30 trainees for each course.
- iv) Postgraduate students sponsored by AGRA to be included during the 2<sup>nd</sup> year of training. However, if funds for this component of the training are availed then the training can be done between July and end of September 2010.
- v) Costing for each course to be done (some seed companies may be willing to sponsor their staff members). Fees paid will go towards sustainability of the institute.
- vi) SEMIs facility to be self-contained with laboratories and offices (seed processing, treatment, ICT), offices and power back up (generator).
- vii) David Ndung'u will be the project officer and he will help to start operationalize the SEMIs plan. To be allocated a temporary office at the field station.
- viii) Contact persons for the project:
  - a. At University of Nairobi – Agnes Mwang'ombe
  - b. At AGRA- George Bigirwa



Participants at the Inception Meeting attentively listen to Professor Mwang'ombe's presentation

**REPORT ON A CONSULTATIVE WORKSHOP FOR CURRICULUM  
DEVELOPMENT OF SEMIs COURSES**

**WORKSHOP DATES: 3RD TO 6TH MAY 2010**

**VENUE: KENYA COMMERCIAL BANK  
TRAINING INSTITUTE, KAREN**

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## Introduction

Emanating from the deliberations of the SEMIs inception meeting, SEMIs held a consultative workshop meeting between the 3<sup>rd</sup> and 6<sup>th</sup> of March in order to develop curricula for SEMIs courses that were to be held later in the year. Curricula developed were to conform to University of Nairobi set guidelines on curriculum development. In attendance were mainly University of Nairobi staff members, while the Kenya Agricultural Research Institute (KARI) and Kenya Plant Health Inspectorate Services (KEPHIS) were represented by Dr. Riungu, the Director of KARI Muguga and Dr. S.K. Sikinyi respectively. Deliberations during the three day workshop mainly focused on inputting the different topics for each of the SEMIs course module frameworks earlier developed by the project partners. The major output of the meeting were six revised drafts of SEMIs curricula, designated as the KCB SEMIs curricula drafts. These revised drafts would at a later date be finalized at a partners workshop scheduled at University of Nairobi Kabete campus.

### In attendance:

Name	Institution	Email	Telephone number
Prof. A.W. Mwang'ombe	UoN	<a href="mailto:mwangombe@kenyaweb.com">mwangombe@kenyaweb.com</a>	0722788895
Dr. Olubayo F.M.	UoN	<a href="mailto:fmmogi@yahoo.com">fmmogi@yahoo.com</a>	0722347659
Dr. Kiarie Njoroge	UoN	<a href="mailto:kiarie.njoroge@uonbi.ac.ke">kiarie.njoroge@uonbi.ac.ke</a>	072443124
Dr. G.N. Chemining'wa	UoN	<a href="mailto:umchemin@hotmail.com">umchemin@hotmail.com</a>	0721723806
Dr. Riungu	KARI Muguga	<a href="mailto:teriungu@yahoo.co.uk">teriungu@yahoo.co.uk</a>	0722224510
Dr. Narla, R.D.	UoN	<a href="mailto:virup_n@yahoo.com">virup_n@yahoo.com</a>	0722745284
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Prof. E. W. Mutitu	UoN	<a href="mailto:mutitu@uonbi.ac.ke">mutitu@uonbi.ac.ke</a>	0722305866
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### **General introduction:**

Overview of the Seed Enterprise Management Institute (SEMI) – Prof. A. W. Mwang'ombe

Acquisition of seed of an improved variety symbolizes the potential to improve agricultural output, and very often, access to good seed differentiates between good and poor farmers in Africa. Research to generate new seeds has not, however, produced much impact in terms of food security in sub-Saharan Africa (SSA) households principally because seed-supply chains have either been lacking or inappropriate. Traditionally, improved seed systems exist to service better-off farmers but this has to change to accommodate all farmers if agriculture has to effectively address the problem of poverty through income generation by the farming communities. To produce the needed change, better resource mobilization is required in SSA so as to promote efficiency in management of the seed industry, both in government and in the private sector.

### **Components of the project**

The project has five components namely:

- (a) establishment of seed training institute (SEMI) at University of Nairobi (UoN) with a seed processing unit,
  - (b) Capacity building for seed merchants and postgraduate students pursuing plant breeding and seed related disciplines
  - (c) Promotion of the production of breeders seeds of newly released high yielding bean lines
  - (d) Use a relevant website for SEMIs to facilitate information sharing through the net (to serve as a first call on seed issues in sub-Saharan Africa
  - (e) seed production at Kibwezi field station to support amongst others seed out grower contract services to seed companies for foundation and or certified seed production (to come in phase II)
- These components will also serve to demonstrate to the trainees who come to SEMIs all key stages in production, processing and marketing of quality seed

## **Goal and objectives**

Overall Goal: Eradication of food insecurity through capacity building of seed actors for improved seed systems to better deliver high quality seeds to small scale farmers at affordable prices.

### **Specific objectives:**

To produce seed production and marketing management expertise with competency to run the seed industry in the SSA region.

To train seed industry practitioners on the best practices to efficiently produce adequate high quality seed and supply them quickly enough to meet the farmers planting schedules at affordable prices.

To enhance production of seed of improved varieties by seed industry stakeholders to meet the planting material requirements of the SSA region, using efficient seed production, marketing and distribution channels.

To strengthen the capacity of the SSA region to train on seed production and marketing management strategies that target enhanced seed technology diffusion and uptake.

To establish a seed processing unit at UoN to serve as a capacity building facility as well as support provision to seed industry of improved varieties developed at UoN.

Develop a regional capacity to facilitate information sharing on seed issues and related disciplines throughout sub-Saharan Africa.

Utilize idle facilities at Kibwezi for seed production of dry land crops and orphaned crops at a later stage (Phase II).

### **SEMI target groups for training:**

1. Seed company managers requiring a maximum one-week course on entrepreneurship. This will be aimed at senior company personnel whose responsibility is to steer the company to profitability through growth, and need to be well versed with topics such as company strategy, marketing, personnel management, equipment, seed storage, use of out growers etc.
2. Seed Production technical staffs that will need realignment on managerial and field operational skills to enhance outputs. Major aspects of seed production including hybrid seed production would be covered.
3. MSc and PhD students to be equipped with seed production and entrepreneurial expertise on managerial and economic aspects of the seed industry.

### Training focus

#### **Category 1:**

- Seed Production & processing: Training on production of the various classes of seed and other associated operations. This will target senior staff that require both theory and hands on training in this area.
- Seed Technology: Will be mainly a quality control training course for senior production managers, with a heavy hands-on field training using actual crops.

- Breeding and Disease/Pest Management: Will incorporate crop breeding and management, data taking and their processing including integrated crop management for various field crops of interest in the region. The course will target breeding program personnel.

**Category 2:**

- Seed Company Management I: Will be entrepreneur training on high level management on all aspects of seed business. It will be mainly for those young seed Companies requiring refined business management start-up skills. The course will last one week.
- Seed Company Management II: Will be a management course covering formulating strategies on technical issues, leadership skills, and decision making for growth and funding options. The course will be at a higher level and will target more mature/senior company managers.

**Category 3:**

- Marketing promotion: This course will be aimed at promoting farmer education on principles and techniques of marketing for effective selling. It will be targeted at any personnel involved in farmer marketing of farm produce including seed.
- Leadership Course: Will be aimed at senior industry managers to sharpen their leadership skills. Focus will be on best leadership practices in global agriculture, and strategic skills in developing efficient teams for the industry. Delivery will incorporate renowned speakers especially from the Industry.

**Category 4:**

- A course will be run for graduate students (MSc & PhD) to sharpen their seed production and management skills and to prepare them manage a seed enterprise successfully.
- This course will have two parts: introductory and advanced. (Details are in the proposal).

Course modules

- Course Module 1: Seed Production
- Course Module 2: Seed Drying, Processing & Storage
- Course Module 3: Seed Quality Control: Testing and Certification
- Course Module 4: Seed Legislation and Accreditation
- Course Module 5: Seed Market and Farmer Awareness
- Course Module 6: Seed Enterprise Development
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Human Capacity building

- Training Current and Future Seed Experts/ Leaders  
Executive Education  
Degree Programs (for future)
- Great Students” – Tremendous diversity



- “Great student experience”: Collaboration with Our Partners  
Issues and challenges

- Space
- Financial sustainability
- Continued recruitment of highest calibre faculty and students
- Continuous improvement in professional education
- Staff development and retention

Foreseen Main activities:

- Establishment of networks of stakeholders for training.
- Assembling of implementation teams/partners.
- Acquisition of facilities and their improvement.
- Seed production and consequent processing and marketing strategy-development as aid to training.
- Establishment of seed processing units at University of Nairobi as a capacity building facility and as a seed dissemination requirement.
- Mobilization of idle facilities at Kibwezi farm as an essential part of training in dry land and orphaned seed crop production later.
- Establishment of a Web-based seed related information sharing center for Sub-Saharan African countries.
- Curriculum and course manual development.
- Actualization of delivery of courses.

### **The objectives and expected outputs of the workshop – Dr. Kiarie Njoroge**

#### **Purpose of management training in SEMIs**

Train and nurture a better appreciation of essential concepts, skills and hands on techniques fundamental to the development, operation and management of an efficient seed programme to service the poor farmers in sub-Saharan Africa.

#### **General Objectives of the workshop**

- i. Develop curricula for six short courses already identified to start off SEMIs.
- ii. Discuss and agree on the way forward for other courses.

#### **Specific Objectives**

1. Develop six short course outlines.
2. Generate the associated course descriptions.
3. Agree on the admission criteria, mode/s of delivery, examinations and awards.
4. List essential facilities and other requirements that must be in place to mount the first course.
5. Discuss, prioritize and suggest way forward for other SEMIs courses, namely: Diploma, BSc. and MSc. on seed science and technology.

**Expected workshop outputs:**

Fair copies of six drafts of the short courses on seed production management. The draft will include the rationale, targets audience, course objectives, admission criteria, mode of delivery, course outlines, course duration, course description and materials required.

The six courses are:

- i. Seed production
- ii. Seed drying, processing and storage
- iii. Seed market and farmer awareness
- iv. Seed enterprise development
- v. Seed quality assurance
- vi. Seed legislation and accreditation.

After the general introduction the business of the meeting commenced.

**Day 1: Issues arising from the meeting:**

It was stressed that the workshop was meant to harmonize the curriculum for SEMIs training workshop. It was important to harmonize what the various experts had proposed as topics in the different modules, harmonize and present them in a manner acceptable to the University for approval.

The initial focus for SEMIs is on food security crops however, there a suggestion that oil crops could be included as case studies so as to broaden SEMIs scope.

There was already a draft of the modules from the experts but it was stressed that there was need to synthesize the material and make it relevant and realistic for the African region

It was also stressed that the document needed to be owned by the university and therefore had to be in a format acceptable and in line with University of Nairobi regulations for curricula.

The workshop was meant to set the stage for the consultative meeting with experts on 8<sup>th</sup>-12<sup>th</sup> March to be held at College of Agriculture and Veterinary Sciences (CAVS), upper Kabete Campus.

In order to further get acquainted with seed management, it was mentioned that there will be a familiarization tour by the project managers to Iowa State University (ISU) who are partners in SEMIs. ISU has a seed science Center which deals with all aspects of seed production. The familiarization tour was scheduled for the 10<sup>th</sup>-23<sup>rd</sup> of April, 2010

Professor Mwang'ombe indicated there was a proposed training of trainers' workshop to be held in Nairobi some time before the commencement of the training in May in order for the resource persons to get well prepared for course delivery.

As SEMIs will be putting up a seed processing unit at the CAVS, Prof. Mwang'ombe indicated there was an engineer from ISU who was meant to come to CAVS for designing of the same.

Prof. Kimani indicated there was need for the workshop participants to travel to Kenya Plant

Health Inspectorate Services (KEPHIS) seed inspection unit at Lanet, Nakuru in order to familiarize with the processes of seed inspection.

Professor Mwang'ombe indicated that the programme could facilitate the trip.

There was suggestion that SEMIs need to have close association with organizations such as KEPHIS and Kenya Seed Company (KSCo) and visits by trainees to these institutions would offer experiential learning.

For seed science and technology KSCo was suggested as having good facilities for the training to get the much needed hands on experience.

Dr. Sikinyi from KEPHIS indicated that KSCo also had a seed processing unit at Ruaraka in Nairobi

It was also suggested that it would be helpful if should be regulated such that all the trainees get to visit Kenya seed Company seed production facilities in Kitale. This is where Kenya seed does most of the seed production for maize and tother cereals.

Kenya Agricultural Research Institute (KARI) Njoro in Nakuru was also suggested a possible visit for students as they have good seed laboratories.

Having agreed on the importance of a reconnaissance trip for the group to Kitale and Nakuru it was decided that some participants from the workshop would travel to these destinations between the 17<sup>th</sup> and 19<sup>th</sup> of March. Expected output for the trip was for the participants to familiarize themselves with the seed production facilities there and decide on how relevant the trip would be for trainees.



Participants at the workshop listen keenly to Dr. Olubayo's presentation

### **Seed Production Module:**

Professor Kimani led the group on discussions on what was important, what was to be deleted from the draft already present what was to be added.

Discussed issues pertaining to this module:

- Regulatory and commercial aspects of seed
- Key words quality, regulatory, knowledge and practical skills.
- It was suggested that indigenous vegetables could also be included in the training.
- However, there was also a suggestion to give more focus to food security crops especially maize and sorghum.
- Managerial capacity to execute seed production processes is required, how to plan seed production, seed grower contracts, price determinations, managing growers and grower training and development, managing seed production small holder farmers
- There was discussion too on the need for assessment and quizzes.
- Can the proposed draft get senate approval if there is no assessment?
- General consensus was that there should be learner assessment and course evaluation. There would be simple review questions at the end of the module to assess the grasp of the module by the trainees and a course evaluation to determine the relevance of the course for trainees and to help on improvement of the training. Simple quizzes, it was suggested would motivate the trainees.
- Recommendation for feasibility of issuing a University of Nairobi certificate for trainees who complete all six modules.
- On certification, there was general consensus that on successful completion of the module, trainees would be awarded a certificate of attendance
- On the issue of admission requirements it was agreed that trainees should have at least a pass or equivalent of Kenya Certificate of Secondary Education (KCSE)

- For some of the courses especially those related to managerial responsibility, experience in seed business or enterprise would be recommended as an added advantage.
- However, there was discussion on whether the requirement would lock out those people from small start-up seed companies who may not even have staff with KCSE certificates.
- It was stressed that this was a skills enhancement course and as many people as possible need to be eligible.
- There was also a suggestion that the current draft seemed overloaded taking into consideration that the courses would be conducted in one week and it was suggested that some topics be knocked off.
- It was agreed the courses would be conducted over one week as trainees cannot afford more time out of their jobs.
- Proposed charges for students for course administration were set for USD 500 in accordance with other institutions.
- On the practicals for students on seed production it was suggested trainees could visit demonstration plots at the university's field station.
- Dr. Kiarie indicated he had already planted some demonstration plots which maybe ready by the time when the first module is being delivered in May.
- These demonstration plots would be used for illustration of seed production techniques including detassling, rouging, irrigation and crop protection.
- Students would also perform germination and other seed testing techniques in the university's laboratory. Also demonstrations in the laboratory of what is breeder's seed, certified seed, what is the white label and how seed packets look.
- On case studies to be carried out, one of the suggestions was that trainees could be asked to review the production department of a seed company in the host country.

- Another case study suggested was for trainees to prepare seed production plans for a model seed company based on certain criteria or to define the production department's personnel structure and budgets.
- Others group projects suggested was for trainees to draw up a contractual agreement for seed growers
- There was suggestion that Information communication technology (ICT) should be included for trainees to familiarize with spreadsheets for data tracking and for maintaining data records.
- For seed production module there was a general feeling that trainees should be given an opportunity to visit with KSC facilities at Kitale.
- On the issue of teaching resources it was suggested that a video of seed production would be appropriate. Other instructions aids would include pamphlets from seed companies and KEPHIS, seed manuals and power point presentations. Some videos could also be shot locally.
- Utilization of seed manual from CIAT as resource material.
- Carry home material for trainees was also stressed as very important.

#### **Seed drying, processing and storage module:**

Issues arising from discussion on this module:

- Overall objective was defined. But emphasis would be on participants to gain practical knowledge on seed processing and the types of practical equipment needed for small and big seed companies.
- Packaging, shelling, abrasion damage, cracked seed are important aspects of seed.
- Issues of post harvest handling were also discussed.
- Also information management came to the fore as an important topic especially in tracking seed batches from points of receiving to packaging.
- Plant layout organization, management and administration were also discussed.

**End of day 1**

## **Day 2: Thursday 4<sup>th</sup> March**

Continuation of seed drying and processing

Prof Aosa from the business school joined the workshop.

Matters discussed:

Proper waste management in seed processing

Waste or by product management?

Seed processing facilities to be set up by SEMIs were also discussed.

Lecture and computer rooms were indicated as important for students and should be considered in the design of the seed processing unit

Other important facilities should include those for accommodation and catering, instructors' offices, library, graduate study rooms and seminar rooms.

The components of a seed processing unit were discussed including cold storage and other processing requirements.

There was a discussion that study and instruction guides including seed laboratory manuals as important information material

### **SEED LEGISLATION AND ACCREDITATION MODULE**

**Facilitator: Dr. Muthomi**

Overall objective of the module was discussed

Issues on seed accreditation and legislation were discussed

The role of KEPHIS in seed legislation and accreditation was discussed at length.

It is important to develop good working relationship with KEPHIS as they are the authorities in seed legislation and accreditation.

Dr. Sikinyi from KEPHIS was available to elucidate the process of legislation and accreditation required for certification of seed.

### **SEED BUSINESS MANAGEMENT MODULE:**

**Facilitator: Dr. Nyikal**

Aline O'conner's input on the module was discussed:

Issues arising:

- The overall objective of the this course is for the trainees to gain exposure and knowledge of sound business practices which will enable them to build healthy, sustainable businesses.
- Fundamental planning, record keeping and analytical skills in seed business are important.
- Describe critical financial elements in running a profitable seed business.

#### **SEED MARKETING AND FARMER AWARENESS MODULE:**

**Facilitator: Dr. Nyikal**

Overall objective:

- To enhance participants knowledge and skills in seed marketing in order to come up with a product that is desirable to farmers
- Strong critical thinking skills were considered important for marketing and farmer awareness
- Illustration of the essential components of a successful marketing strategy, profiling and targeting of farmers and merchant/customer relationships
- Identifying agro-dealers, illustration of the roles and types of promotional media, simulation of realistic marketing
- Suggested practicals for trainees: how to draw a good business plan

**End of Day 2**

**Day 3: 5<sup>th</sup> March 2010**

#### **SEED QUALITY ASSURANCE MODULE**

**Facilitator: Dr. Narla**

- Discussions on the module of seed quality were embarked on. Objectives, specific objectives-provision of skills on field inspection
- To enhance the understanding of seed testing methods and seed certification schemes
- To enhance the understanding of the regulatory process employed by national and international Regulatory bodies.



- Good knowledge on seed quality determination and certification process was considered essential and relevant for the seed industry. Seed health includes aspects of biotechnology
- Certification: To expose participants to the basic concepts necessary for seed certification and its relevance in both national and international seed movement and trade
- To impart trainees with fundamental tools of seed health testing and their significance in the management of seed borne diseases and pests
- To expose participants to the basic concepts of processes involved in seed testing, and seed quality determination

**Discussion on other proposed courses to be offered by the University in line with SEMIs curriculum:**

- The focus should initially be on the certificate focused short courses that the institute will be offering.
- Other courses suggested for later implementation:
  - Diploma (postgraduate)
  - M.Sc. Seed Science and biotechnology
- There is urgent need for focused short courses with a pan-African focus

**Conclusions and Way forward:**

Logistics of field trip to Kenya Seed company seed processing plant in Kitale and KEPHIS seed testing Laboratory in Lanet Nakuru, for workshop attendees were discussed and finalised

On the curriculum the following dates were proposed as tentative:

- The full draft of the curriculum should be at the department level by the 16th of March 2010 for onward transmission
- It should be at the faculty by Friday 19th March, 2010
- At CAB by Wednesday 24th March 2010
- At the Deans Committee -30th March or 6th April, 2010
- At the Senate- Sometimes in April 2010

**On SEMIs short course certification, proposals were:**

1. Certificate of attendance signed by the Principle CAVS, for any single module

attended

2. Certificate of the University of Nairobi for trainees taking all 6 modules
  - a. Examinations
  - b. Duration including attachment and special project
  - c. Entry requirements – C- or equivalent
  - d. Charges- add charges for the special project and attachment.
- There was debate on the way forward for SEMIs and it was felt that for it to get a full institute title, SEMIs need to take seriously the issue of offering diploma (post graduate) and also MSc. degrees plus other seed technology Courses
- To drive this process the following were recommended: - Drs. Muthomi, Kiarie, Olubayo, Mbuge, Narla, Dr. Sikinyi (KEPHIS), Dr. Riungu (Director, KARI Muguga South)
- For the May courses, critical logistical issues on facilitation of the project were discussed:
  - Times on when the demonstration plots for trainees should be planted
  - Other requirements for practicals and the facilities to host the students. Dr. Riungu (KARI Muguga) and Dr. Sikinyi (KEPHIS) were recommended to aid in Identifying demonstrations in KARI or KEPHIS for students to view.

#### **Closing remarks by Prof. Mwang'ombe**

- Vote of thanks to all the attendees
- She stressed that SEMIs was not just a project like any other but a new cause to set up an institute within UoN. The process has to be owned by the university and she was confident the actors would drive the process through.
- Special thanks: KEPHIS, KARI, and Professor Mutitu for taking time out of her busy schedule.
- Professor Mutitu thought the project was very exciting with great potential for tangible results

**End day 3**

**Day 4: 6<sup>th</sup> March 2010**

Cleaning up and harmonization of outputs and drafting of report: Drs. Muthomi, Kiarie, Ambuko, Ndung'u. ICT-Njeri

The Draft curriculum emanating from this workshop was identified as the KCB Curriculum draft.



Professor Mwang'ombe (front row fourth left), with participants at the end of the workshop

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SEED ENTERPRISE MANAGMENT  
INSTITUTE (SEMIs)

Report on a consultative workshop for  
developing a curriculum for SEMIs

8<sup>th</sup> -12<sup>th</sup> March, 2010

Venue: College of Agriculture and Veterinary  
Sciences, Upper Kabete Campus.

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## Introduction

SEMI held a meeting on the 8<sup>th</sup> of March, 2010 as follow up to the meeting held at the Kenya Commercial Bank. The objective of the meeting was to deliberate and consolidate, harmonize and improve on the SEMI curriculum KCB drafts. Expected outputs of the meeting were revised drafts of the SEMI curricula that could be presented to the University of Nairobi Administration for consideration and ratification as University approved Curricula. In attendance at different sessions of the five day meeting were representatives from University of Nairobi, CIMMYT, ISU, AGRA, KARI and KEPHIS.

In attendance:

Name	Institution	Email	Telephone number
Day 1			
Dr. Olubayo F.M.	UoN (CAVS)	<a href="mailto:fmmogi@yahoo.com">fmmogi@yahoo.com</a>	0722347659
Dr. Kiarie Njoroge	UoN (CAVS)	<a href="mailto:kiarie.njoroge@uonbi.ac.ke">kiarie.njoroge@uonbi.ac.ke</a>	072443124
Dr. Justus M. Munyoki	UoN (school of business)	<a href="mailto:jimmunyoki@uonbi.ac.ke">jimmunyoki@uonbi.ac.ke</a>	
Dr. J. W. Muthomi	UoN	<a href="mailto:James_wanjohi@yahoo.com">James_wanjohi@yahoo.com</a>	0722984179
Prof. Evans Aosa	UoN	<a href="mailto:eaosa@uonbi.ac.ke">eaosa@uonbi.ac.ke</a>	0722518872
Dr. Narla, R.D.	UoN	<a href="mailto:virup_n@yahoo.com">virup_n@yahoo.com</a>	0722745284
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Funk			
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Dr. J. W. Muthomi	UoN	<a href="mailto:James_wanjohi@yahoo.com">James_wanjohi@yahoo.com</a>	0722984179

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Dr. Joe Cortes	Iowa State University		
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Charity Venessa Njeri	UoN (ICT Department)	<a href="mailto:charityvanessa@uonbi.ac.ke">charityvanessa@uonbi.ac.ke</a>	0722281835
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Day 5			
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Dr. Duncan Mbuge	UoN	<a href="mailto:dmbuge@yahoo.co.uk">dmbuge@yahoo.co.uk</a>	0736429414

## Proceedings:

### Day 1:

#### Seed enterprise management Module:

##### Facilitator: Aline O'Connor:

- Aline indicated that SEMIs was about utilizing the academic excellence at the University of Nairobi and linking it other expertise so as to make SEMIs relevant and vibrant.
- She stressed that there was extremely great interest in SEMIs from all over sub-Saharan Africa as SEMIs would be different and revolutionary in its scope and operation.
- There was great potential for SEMIs to make tangible impact in the way seed companies produce seed and hence on food security in SSA.
- Aline indicated that already some seed companies in Nigeria for example were ready to send some of their staff for training at SEMIs.
- Many entrepreneurs see the benefit of this form of training and are therefore more than willing to send staff for training.
- The name of the module was changed from Seed enterprise management to Seed business management.

- On the topics of the module, Prof. Evans Aosa was in agreement that the topics were adequate and there was great content in the three units.
- The seed tool box was identified as a very useful resource for the course
- On the course structure, discussion was on various issues including what needed to be done to get the module well administered and the material necessary for the training.
- There was a suggestion that since CIMMYT had on occasion conducted training of a similar nature, they should be contacted for course content. John McRobert to be contacted.
- Aline suggested that to make the training more interesting, there has to be creativity. Interactive games for example were suggested as a way of spicing up module delivery.
- There was suggestion for field visits and lectures on-site in the field.
- Suggested visits were to:
  - A communications centre
  - Seed enterprises
- It was suggested that it was important to bring in experts from different fields as guest lecturers or resource people
- In marketing there is a need to keep track of your goods; therefore there was suggestion that video resources and ICT be utilized in course administration and delivery.
- The business school was identified as a potential source of teaching aids.
- Prof Aosa indicated there was need to utilize business people in town as guest speakers
- This would also make the module more interesting and fun The agreed time for lectures and practicals was 50% for each The 6 days was considered adequate to administer the course
- Aline indicated there was need to instill financial literacy on the trainees in order they can better manage their businesses
- On course evaluation there was general consensus that basic exercises at the end of each module would suffice for assessment of grasp of topic by the trainees
- On certification, it was Prof. Aosa indicated that this was a non-award program as there were no university-set examinations.
- Aline indicate there were a total of 30 students expected for the first intake in May, 2010



- Aline also pointed out that with regard to teaching, Prof. Aosa and the rest of the team to administer the course could rearrange the delivery in any form they deemed fit.
- John McRobert's book and the seed tool box were identified as important resource material
- For ICT, it was indicated that simple ICT applications like Excel spreadsheets were crucial for trainees to be taught. This could be offered for one or two hours
- Suggestions for evening class for those trainees willing to learn more on ICT
- 60% of the trainees might not have ICT knowledge and therefore the component of
- ICT was considered crucial
- With spreadsheets, it was possible to track agro dealers, sales and customers.
- Also there was suggestion that participant willing to learn more on ICT could come a day earlier to familiarize with basics of spreadsheets and other excel software
- Also participants should be made aware of the power of the digital camera.

## **SEED MARKETTING MODULES**

### **Facilitator: Aline O,connor:**

- It was agreed that the module be changed from seed marketing and farmer awareness to Seed marketing.
- Issues of importance of customer awareness were discussed
- Definitions of markets, creating a marketing strategy and execution of the same were considered as essential areas to demonstrate to the trainees
- Issues of inculcating practical skills and critical thinking skills were discussed. The topics were considered adequate and relevant to the seed sector.
- Tool box to be utilized as a good resource for administering the course
- Also John McRobert's book on Seed business management in Africa
- Aline suggested that practical skills in communications were important for the trainees. Videos could be shot from the area to get the challenges of farmers by doing farmer
- interviews

- For curriculum material, handouts for students were considered as essential. D. Ndung'u was to contact John McRobert on the materials that could be relevant for this module.
- Trainees also need take-home material in the form of handouts, power point presentation and pamphlets that are relevant for each module.
- For training materials, the professors or instructors would have to develop their own training material for each of the topics they would be teaching.
- Identification of important websites relevant to each of the modules
- Importance of ICT in marketing
- Trainees to be given time on computers to do simulation for record keeping, marketing, and distribution
- For this module, it was generally felt a field trip was not necessary, however if there was real need for participants to go out into the field, then it was suggested that a visit to a seed company which deals with marketing issues, for example, Simlaw Seeds in Nairobi, could be organized.
- Instead there would be utilization of videos as teaching aids
- There was suggestion of bringing in Agro dealers to talk to the participants. Jennifer in Machakos was suggested as one of the possible agro dealers who could be invited- liaise with George Bigirwa
- Use of photographs for demonstrations
- Ideas were also floated for guest speakers: Paul Seaward-liaise with George Bigirwa, someone from Syngenta

Material for administration of the course-some would be adopted and other material created to cater for the different topics

### **End day 1**

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### **Day 2**

Dr. Kiarie gave a brief of the SEMIs for benefit of the newcomers. Funding for SEMIs is by AGRA

Most of the time was utilized in designing the day to day activities or day plans for the marketing and Seed business management Modules.

Aline noted that there needs to be an understanding by the trainees of financial statements as

most of the small seed companies experience cash flow problems. There needs to be understanding of capital expenses and their management

Issue of good business ethics was also important if companies are to get the confidence they need from the farmers- no counterfeiting

ICT should be incorporated for making cash flow sheets etc

Entrepreneurship and critical thinking are very important

Risk management, seed industry is not very profitable and it's also high risk. Therefore, it was appreciated that most of these companies are mission driven.

### **SEED QUALITY ASSURANCE MODULE:**

**Facilitator: Joe Cortes**

Seed needs to have four important qualities:

- Genetic quality, Physiological quality, Physical quality, and phyto-sanitary quality

The objectives and specific objective of the course were discussed at length. What was important in the KCB version was retained and necessary additions were made.

- For practicals there should be seed analysis. Practical handouts are important.
- Joe Coates indicated that trainees should be able to inspect at least four different field crops.
- KEPHIS is to come in handy on issues of providing inspection fields
- There was emphasis that the training should be hands on
- Duration of six days for course administration was considered adequate
- Saturday was considered a good day for course evaluation and testing and winding up of the course.
- Important course material: crop protection compendium.
- Basics of field based quality assurance mechanisms to ensure high quality genetic purity
- Need for proper identification of diseases
- There was suggestion there could be a field trip to Lanet, Nakuru to visit with KEPHIS

## **SEED DRYING, PROCESSING AND STORAGE MODULE**

Allan Gaul, the coordinator for this module was not present.

**Facilitator: Joe Coates.**

Objectives and specific objective were discussed.

Most of the topics were considered adequate for the module.

Additions and deletions to the module were made on the draft curriculum from the KCB workshop

**End day 2**

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**Day 3- 10<sup>th</sup> March 2010**

**Seed production Module:**

**Facilitator: John McRobert:**

- There would be an initial assessment of the students in form of a small quiz in order for the instructor to learn more on the level of training of the trainees and therefore to adjust appropriately in the form of delivery
- It was suggested that trainees for seed production be exposed to DUS/NPT Tests:
- Training materials were also considered and John's book on seed business management was identified as a good resource.
- ICT was also taken care of and allocated 3 hours. 1 hour for basic spreadsheets and 2 hours for Seed plan
- Most of the curriculum was considered adequate
- More time was allocated to arranging the day plans for this module.
  - For the practicals, it was generally felt that trainees need to visit a seed company in order to the practical experience of seed production. Leldet and Kenya Seed Company were identified as some of the possible seed companies that could be visited.
  - Also a visit to KARI Njoro would be important to see how to manage inbred lines.
  - Course material: field books from CIAT, CIMMYT, ICRISAT, IITA, Leaflets from KARI on seed production.
  - Also included would be viewing of demonstrations at KARI Muguga.

- Small and informal seed delivery systems were to be visited.
- Visit to KEPHIS.

### **End Day 3**

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- Day 4 and 5 were utilized in harmonizing comments, and formatting and cleaning the new document.
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# SEMIS CURRICULA

## Introduction

The final SEMIs course curricula after cleaning up were presented to the department of plant Science and Crop Protection, the faculty of Agriculture and college academic boards for approval. At these levels, the curricula were, with minor changes, approved and passed, and the following are now the official curricula for SEMIs short courses on:

1. SEED PRODUCTION
  2. SEED DRYING, PROCESSING AND STORAGE,
  3. SEED MARKETING
  4. SEED BUSINESS MANAGEMENT
  5. SEED LEGISLATION AND ACCREDITATION
  6. SEED QUALITY ASSURANCE
-

**SEMIs COURSE CURRICULA AS APPROVED BY THE  
COLLEGE OF AGRICULTURE AND VETERINARY  
SCIENCES ACADEMIC BOARD (CAB)**

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**UNIVERSITY OF NAIROBI**  
**COLLEGE OF AGRICULTURE AND VETERINARY SCIENCES**  
**FACULTY OF AGRICULTURE**

**I. REGULATIONS AND SYLLABUS FOR THE SHORT COURSE IN SEED PRODUCTION**

**1. Introduction**

In the Sub-Saharan region of Africa (SSA), agricultural development plans are assuming a positive upturn as a precursor to industrialization. Acquisition of good quality seed of an improved variety symbolizes the potential to improve agricultural output. Therefore a re-examination of the seed-systems is necessary as a starting point towards agricultural rejuvenation in SSA. Although significant progress has been made to generate new improved crop varieties through research, farmers are yet to benefit fully from these achievements. One of the major reasons for this is the lack of trained personnel with practical skills in the production of quality seed for processing and packaging for wide distribution. The seed production training module is intended to provide an introduction to the management of field seed production of hybrid, open- and self-pollinated crops commonly grown in Africa, such as maize, sorghum, beans, cowpeas, groundnuts and rice. The module will enable the trainees to understand the various aspects of seed production from planning, through field management of seed fields, seed-production-research to managing contracted seed growers.

**2. Objectives of the course**

The overall objective of the course is to enhance the participants' practical knowledge and skills for quality seed production and regulatory aspects of seed production in a commercial context.

**The specific objectives are to provide training in:**



- 2.1. Planning of seed production to achieve marketing goals
- 2.2. Management of seed production of field and horticultural crops including maize, vegetables (e.g. kale, indigenous vegetables), small grains, and grain legumes in sub-Saharan Africa.
- 2.3. Regulatory and quality assurance requirements for seed production and marketing.
- 2.4. Managing contract farming.

**3. The trained personnel will have:**

- 3.1. Good understanding of seed production management, regulations of quality assurance to achieve seed production goals.
- 3.2. Analytical and interactive ability to enable sound planning and implementation of seed production enterprise.
- 3.3. Ability to diagnose seed production problems and determine and apply practical solutions
- 3.4. Managerial capacity to design and implement a seed production strategy.

**4. Admission Requirements**

- 4.1 The common regulations governing short courses in the University of Nairobi shall apply.
- 4.2 At least KCSE or equivalent.

**5. Course structure and duration**

The short course in seed production shall be offered on full time basis as follows:

- 5.1 The course shall have six course units of face-to-face lectures, demonstrations, practicals and field visits.
- 5.2 The course shall cover a period of six days.

5.3 Lectures shall constitute 50% while field visits, demonstrations and practicals shall constitute 50% of the course time.

5.4 Practical will include laboratory and field demonstrations, field visits to a national plant protection organization (NPPO), seed companies, contracted seed growers and research institutions.

5.4 Assessment shall be by review quizzes and end of course evaluation.

## 6. Award

At the end of the course the trainees will be awarded a Certificate of participation.

## 7. Course outline

Code	Course Title	Hours
ASP1	Planning and Management of Seed Production	12
ASP2	Seed production research and Certification Standards	12
ASP3	Seed Grower Contracts and Management of Seed growers	11
TOTAL		35

## 8. Course descriptions

### ASP 1: Planning and Management of seed production

Production goals, seed classes (nucleus, breeders, foundation and certified); seed bulking and maintenance; certified seed production, multiplication cycles, synchronizing production with markets, carryover seed, risks, personnel requirements, record keeping; cost management in seed production, processing and handling new and recycled seed (drying, cleaning, grading, treatment, packaging); seed quality control; purity maintenance. The

practical session will consist of laboratory demonstration of various classes of seeds and how they are labeled; seed packaging, and exercises on calculating seed production goals of all seed classes based on future sale targets;

Seed sources; target growing environments; mode of production; land preparation; isolation distances; planting and management of seed crops; harvesting, drying and storing seed crops; quality assurance requirements of hybrid, OPV and SPV seed production.

### **ASP 3: Seed production research and Certification Standards**

Seed and seed systems (formal and informal); mating systems (cross and self pollination, vegetative propagation including grafting and tissue culture); elements of a seed production research program; descriptors, DUS/NPT tests; Relationship with national seed authorities, elements of seed certification; inspection regulations and procedures for seed certification; role of national and international regulatory agencies. The practicals will include field visits to the National seed regulatory agencies, seed companies and research institutions to get hands on experience on different seed production methods, out-grower contracting and certification processes.

### **ASP 4: Seed Grower Contracts and Management of Seed growers**

The role of seed growers; criteria for selecting seed growers, forms of seed grower contracts and incentive schemes; methods of establishing seed producer prices (cost plus comparative pricing); preparing seed production budgets; managing growers, grower training and development. The practical session will be a class exercise to outline a grower training and development scheme; and preparation of a seed production budget for a farmer; Formal and informal seed delivery systems; methods of organizing small-holder farmers to produce crop seed, group dynamics, challenges related to seed production with small-holder farmers and potential practical solutions

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**REGULATIONS AND SYLLABUS FOR THE**

**II. SHORT COURSE IN SEED DRYING, PROCESSING AND STORAGE**

**1. Introduction**

Production is only the first step in the delivery of good quality seed to the farmer. The post-harvest handling processes including drying, processing and storage, are key to the delivery of the seed in good condition. This module is intended to provide a basic introduction to the concepts of seed drying, processing and storage for individuals needing a general understanding of related technology. The module will impart knowledge and skills on the post-harvest technical operations typically utilized to prepare a seed lot for marketing and use. Risks of seed deterioration, mechanical damage and improved seed quality will be emphasized. Methods for evaluating seed cleaning equipment and process output will be reviewed in the context of a typical seed operation for selected seed crops. In addition, record keeping, information management, and plant layout considerations for various seed applications will be introduced, including special concerns for small lot processing.

**2. The objectives of the course**

The overall objective is to equip the participants with practical knowledge of the basic concepts involved in drying, processing and storage operations typically utilized to prepare a seed lot for marketing and use.

**The specific objectives are:**

- 2.1 To enhance knowledge on post-harvest factors affecting seed quality, including seed deterioration and mechanical seed damage
- 2.2 To impart knowledge on principles and practices related to seed processing, handling equipment and safety issues.
- 2.3 To enhance knowledge on by-product and waste management in seed processing
- 2.6 To improve knowledge on record keeping, information management and plant

layout considerations including special concerns for small lot processing.

### **3. Trained personnel will have:**

- 3.1 Good knowledge of the importance of quality issues relevant to seed processing.
- 3.2 Understanding of the concepts and operation of machinery and handling equipment used for seed processing.
- 3.3 Understanding of the relationship between processing operations and other seed production and delivery systems.
- 3.4 Knowledge of the factors that influence the effectiveness of drying, storage and processing operations.

### **4. Admission Requirements**

- 4.1 The common regulations governing short courses in the University of Nairobi shall apply.
- 4.2 At least KCSE or equivalent.

### **5. Course structure and duration**

The short course in seed processing and storage shall be offered on full time basis as follows:

- 5.1 The course shall have six course units of face-to-face lectures, demonstrations, practicals and field visits.
- 5.2 The course shall cover a period of six days.
- 5.3 Lectures shall constitute 60% while field visits, demonstrations and practicals shall constitute 40% of the course time.
- 5.4. Practical will include field visits to a seed company for demonstrations on seed reception, laboratory, storage, drying and processing facilities
- 5.5 Assessment shall be by review quizzes and end-of-course evaluation

### **6. Award:**

At the end of the course the trainees will be awarded a Certificate of Participation

## 7. Course Outline

Code	Course Title	Hours
APS1	Seed Processing Operations	12
APS2	Seed Drying, Storage Management and Safety Considerations	12
APS3	Finished Product and Plant Management	11
TOTAL		35

## 8. Course Description

### APS 1: Seed Processing Operations

Review of techniques in seed processing including material handling, drying, storage, cleaning, treatment and storage; Air-screen cleaning and aspiration; spiral and belt separation; length, width, and thickness Sizing; additional crop specific processes; Fluidized density separation (destoner and gravity separator); optical detection and color separation; seed treatment chemicals and calibration concepts; seed treatment handling and application equipment.

### APS 2: Seed Drying, Storage Management and Safety Considerations

Seed and equilibrium moisture relationships, aeration and temperature control; seed drying principles and moisture management; seed storage: principles, methods, and controls and pest management; Environmental concerns; safety consideration; automation and control.

### APS 3: Finished Product and Plant Management

Packaging and palletizing equipment; plant-level sampling and testing for quality control and process improvement; plant layout considerations; record keeping and information management; maintenance and cost management

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### **III. REGULATIONS AND SYLLABUS FOR THE SHORT COURSE IN SEED BUSINESS MANAGEMENT**

#### **Introduction**

A seed enterprise, like any other business must be properly managed to realize the required benefits to the investor and to customers. Sound quality management entails following sound business practices that permit sustainable and viable businesses that are financially sound and produce benefits to society. Many well-financed and designed seed enterprises have collapsed in sub-Saharan Africa due to lack of good business management. Therefore, there is a need to train entrepreneurs in business management skills that are critical to the success of their businesses. Seed business management training encompasses all aspects of business from planning to marketing with emphasis on the value of critical thinking in both financial and human capital. Of special importance is the need for team building to ensure the various stakeholders in the value chain carry out their responsibilities efficiently. This course has been designed to allow the participants to acquire financial skills, understand the seed-markets and the value of critical thinking that will enable them to compete effectively.

#### **Objectives of the course:**

The overall objective of the course is to expose participants to knowledge of sound business practices which will enable them to build healthy and sustainable seed enterprises.

#### **The specific objectives are:**

To learn how to develop and implement a clear marketing strategy which responds to their own specific market and competitive situations;

To develop essential critical thinking skills which will enable them to solve business management problems as they arise;

To gain strong exposure to the critical financial skills needed to run and grow a business; To Build and motivate a strong team to assist in running and expanding a seed business To plan how to develop and implement a clear strategy

**Trained personnel will have:**

- Strong critical thinking skills in general, financial, and human resources management in seed business
- Fundamental seed business planning, record-keeping, and analysis skills
- Knowledge in building and managing teams to carry out the essential seed business responsibilities
- Strong working knowledge of the critical success factors for a seed enterprise, and how to achieve them.

**Admission requirements**

- The common regulations governing short courses in the University of Nairobi shall apply
- At least Kenya Certificate of Secondary Education (KCSE) or equivalent

**Course structure and duration**

- The short course in seed business management shall be offered on full time basis as follows:
- The course shall have three course units of face-to-face lectures, guest speakers in motivational and business management issues, group discussions and presentations
- The course shall cover a period of six days.
- Lectures shall constitute 60% and guest speakers, assignments and presentations shall constitute 40% of the course time
- Assessment shall be by quizzes and end-of-course evaluation.

**Award**

- On successful completion of the course the participants will be awarded a Certificate of Participation.



## Course Outline

Code	Course Title	Hours
ABM 1	General Seed Business Management	12
ABM 2	Managing People in Seed Production	12
ABM 3	Financial Management in Seed Production	11
TOTAL		35

## Course Description

### ABM 1: General Seed Business Management

Seed enterprise overview: strategy development, goal setting, situation analysis and market assessment; self-inventory (strengths and weaknesses), segment focus (geography, product and customer type), competitive advantage, key strategic initiatives and execution, timing; the annual business cycle; habits of strong seed company managers; avoiding dangerous management distractions; types of capital & checklists; critical thinking approaches; elements of a good partnership; trust and ethics in the seed business; successful product planning; avoiding quality and product problems;

### AMB 2: Managing people in Seed Production

Identifying the skills required by a seed enterprise; organizational design; job description; coaching/mentoring and delegating; performance assessment; incentive approaches; training and employee development; dealing with problem employees, practical session will involve motivational talks on the need for critical thinking in business management and relevant ICT applications (Excel spreadsheets; record cards; customer records maintenance, marketing process tracking)

### ABM 3: Financial Management in Seed Production

Overview of financial functions in a seed enterprise; financial statement overview: income statement, balance sheet, cash flow statement; key financial framework for managers; the most common profitability problems; management accounting; essential numbers you must

know about your business; financial planning and forecasting; making investment decisions; practical sessions will involve speeches by authority guest speakers in the areas of business management, and discussions on individual home country situations, challenges and solution

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**IV. REGULATIONS AND SYLLABUS FOR THE SHORT COURSE IN SEED BUSINESS  
MANAGEMENT**

**Introduction**

A seed enterprise, like any other business must be properly managed to realize the required benefits to the investor and to customers. Sound quality management entails following sound business practices that permit sustainable and viable businesses that are financially sound and produce benefits to society. Many well-financed and designed seed enterprises have collapsed in sub-Saharan Africa due to lack of good business management. Therefore, there is a need to train entrepreneurs in business management skills that are critical to the success of their businesses. Seed business management training encompasses all aspects of business from planning to marketing with emphasis on the value of critical thinking in both financial and human capital. Of special importance is the need for team building to ensure the various stakeholders in the value chain carry out their responsibilities efficiently. This course has been designed to allow the participants to acquire financial skills, understand the seed-markets and the value of critical thinking that will enable them to compete effectively.

**Objectives of the course:**

The overall objective of the course is to expose participants to knowledge of sound business practices which will enable them to build healthy and sustainable seed enterprises.

**The specific objectives are:**

To learn how to develop and implement a clear marketing strategy which responds to their own specific market and competitive situations;

To develop essential critical thinking skills which will enable them to solve business management problems as they arise;

To gain strong exposure to the critical financial skills needed to run and grow a business;

To Build and motivate a strong team to assist in running and expanding a seed business

To plan how to develop and implement a clear strategy

**Trained personnel will have:**

Strong critical thinking skills in general, financial, and human resources management in seed business

Fundamental seed business planning, record-keeping, and analysis skills

Knowledge in building and managing teams to carry out the essential seed business responsibilities

Strong working knowledge of the critical success factors for a seed enterprise, and how to achieve them

**Admission requirements**

The common regulations governing short courses in the University of Nairobi shall apply

At least Kenya Certificate of Secondary Education (KCSE) or equivalent

**Course structure and duration**

The short course in seed business management shall be offered on full time basis as follows:

The course shall have three course units of face-to-face lectures, guest speakers in motivational and business management issues, group discussions and presentations

The course shall cover a period of six days.

Lectures shall constitute 60% and guest speakers, assignments and presentations shall constitute 40% of the course time

Assessment shall be by quizzes and end-of-course evaluation.

### **Award**

On successful completion of the course the participants will be awarded a Certificate of Participation.

### **Course Outline**

Code	Course Title	Hours
ABM 1	General Seed Business Management	12
ABM 2	Managing People in Seed Production	12
ABM 3	Financial Management in Seed Production	11
TOTAL		35

### **Course Description**

#### **ABM 1: General Seed Business Management**

Seed enterprise overview: strategy development, goal setting, situation analysis and market assessment; self-inventory (strengths and weaknesses), segment focus (geography, product and customer type), competitive advantage, key strategic initiatives and execution, timing; the annual business cycle; habits of strong seed company managers; avoiding dangerous management distractions; types of capital & checklists; critical thinking approaches;

elements of a good partnership; trust and ethics in the seed business; successful product planning; avoiding quality and product problems;

### **AMB 2: Managing people in Seed Production**

Identifying the skills required by a seed enterprise; organizational design; job description; coaching/mentoring and delegating; performance assessment; incentive approaches; training and employee development; dealing with problem employees, practical session will involve motivational talks on the need for critical thinking in business management and relevant ICT applications (Excel spreadsheets; record cards; customer records maintenance, marketing process tracking)

### **ABM 3: Financial Management in Seed Production**

Overview of financial functions in a seed enterprise; financial statement overview: income statement, balance sheet, cash flow statement; key financial framework for managers; the most common profitability problems; management accounting; essential numbers you must know about your business; financial planning and forecasting; making investment decisions; practical sessions will involve speeches by authority guest speakers in the areas of business management, and discussions on individual home country situations, challenges and solution

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**V. REGULATIONS AND SYLLABUS FOR THE SHORT COURSE IN SEED LEGISLATION AND ACCREDITATION**

**1. Introduction**

The seed systems in sub-Saharan Africa have to be responsive to the needs of the farmers and the industry must be dynamic enough to bring about the required changes that will make the agricultural sector grow within the existing legal frameworks. Knowledge on the rules and regulations governing the seed industry, both in government and private sector is a necessity for the sector practitioners. This module is designed to provide the participants with an understanding of the seed legislation, the enforcement necessary, and its impact on the growth of the seed industry, and its benefits to farmers and to agriculture in general. This will be accompanied by a discussion of the law and regulation components as well as the regional agreements within the African continent that facilitate seed trade. It will also include the development and establishment of accreditation schemes, including the designated authority requirements and the quality system of the seed enterprise. The procedures necessary to establish the scheme will be discussed on the basis of process management (a tool frequently used to develop quality systems for institutions worldwide). Free movement and trade in seed within SSA is a necessary prerequisite for achievement of a vibrant and responsive seed system that will improve agricultural production.

**2. Objective of the course:**

The overall objective is to equip participants with knowledge to understand and apply the legislation and accreditation/authorization requirements in local, regional and international seed industry.

**The specific objectives are:**

- 2.1. To enhance knowledge of the existing laws, regulations and the bodies that ensure their enforcement in seed industry systems.
- 2.2. To enhance understanding of the seed accreditation procedures.
- 2.3. To strengthen the understanding of the standard operating procedures in the seed quality management system.

**3. Trained personnel will have**

- 3.1. Understanding of the impact of seed legislation and its enforcement on the seed industry.
- 3.2. Knowledge on national, regional and international laws, regulations and agreements that facilitate seed production and trade.
- 3.3. Understanding of development and establishment of accreditation schemes, including the designated authority requirements and the quality system of the seed enterprise.
- 3.4. Understanding of the procedures involved in seed quality systems and standards worldwide

**4. Admission Requirements**

- 4.1 The common regulations governing short courses in the University of Nairobi shall apply.
- 4.2 Holders of at least KCSE or equivalent.

**5. Course structure and duration**

The short course in seed legislation and accreditation shall be offered on full time basis as follows:



- 5.1 The course shall have four course units of face-to-face lectures, demonstrations, group discussions and field visits. .
- 5.2. The course shall cover a period of six days.
- 5.3. Lectures shall constitute 60% while field visits and demonstrations shall constitute 40% of the course time..
- 5.4. Practical will include field visits to a national plant protection organization (NPPO) for demonstration on seed legislation and accreditation processes
- 5.5. Course assessment shall be by simple review quizzes and course evaluation at the end of the course.

**6. Award**

At the course the trainees will be awarded a Certificate of Participation

**7. Course Outline**

Code	Course Title	Hours
ALA1	Seed legislation	12
ALA2	Seed Accreditation Bodies and their functions	11
ALA3	Procedures in Seed Accreditation	12
Total		35

**8 Course Descriptions**

**ALA 1: Seed Legislation**

Introduction to seed legislation; national legislation in seed production and distribution; regional and international agreements to facilitate seed trade; Seed certification, variety

release, seed imports and exports; laws governing breeders rights (plant variety protection ); ISTA rules; biosafety regulations; Registration of seed related institutions

### **ALA 2: Seed Accreditation Bodies and their functions**

Principles of accreditation/authorization; accreditation bodies (NPPOs, NSAs, (National Seed Authority), ISTA, ISO, OECD, WTO, AOSA (Association of official seed analysts); components of accreditation)

### **ALA 3: Procedures in Seed Accreditation**

Introduction to process management; process analysis and flowcharting; documentation structure and writing; quality standards and their management; Operational and support procedures (procedure for labs, termination, suspension); accreditation for individuals, seed companies, and seed laboratories ; Operational and support procedures for producers, processors and marketing agents; monitoring and evaluation of the implementation procedures

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**VI. REGULATIONS AND SYLLABUS FOR THE SHORT COURSE IN SEED QUALITY ASSURANCE**

**1. Introduction**

Quality assurance of seed is important due to different reasons. Proper maintenance of varieties with improved traits such as high nutritional value, high yielding capacity, and tolerance to biotic and abiotic stresses is necessary in passing the benefits of the bred traits to the grower. Unanticipated seed quality problems may occur when seed is multiplied in alternative locations (or when lines are crossed to make hybrids). Due to adverse environmental changes during crop growth and seed formation, seed becomes vulnerable to pathogen attack and the effects may not be easily noticeable. Therefore it is important to maintain acceptable standards when multiplying seed of improved varieties. Proper maintenance of seed quality is essential to ensure that the seeds remain viable and produce vigorous plants. Hence, there is need for continuous testing using the appropriate and approved procedures both in the laboratory and field for quality assurance. The purpose of this course is to enhance knowledge and to develop skills in testing the seed for its quality through different nationally and internationally accepted procedures for the detection of multiple factors contaminating the seed. The students trained will be able to carry out laboratory evaluations and help in quarantine and regulatory agencies and private industry. They also will be trained to implement these tools to detect contaminated seed lots before they are allowed into production systems.

**2. The objectives of the course:**

The overall objective is to enhance participants' practical knowledge and skills on seed testing, quality assurance and certification procedures.

**The specific objectives**

- 2.1 To impart skills on seed fields inspection for maintenance of genetic purity.
- 2.2 To enhance skills of seed testing methods for evaluation of physical and physiological quality.

- 2.3 To improve the knowledge on phytosanitary quality through the identification of weeds, insects and pathogens.
- 2.4 To improve knowledge on national and international regulations governing the seed industry.
- 2.5 To enhance skills on field and laboratory seed data collection and management.

**3. The trained personnel will have:**

- 3.1. Good knowledge on seed quality determination and certification process
- 3.2. Ability to recognize various quality problems associated with seed
- 3.3. Hands-on skills on seed testing methods (purity, health, vigour, viability).
- 3.4. Ability to maintain records using ICT, interpret and communicate seed quality information.

**4. Admission Requirements**

- 4.1 The common regulations governing short courses in the University of Nairobi shall apply.
- 4.2 At least KCSE or equivalent.

**5. Course structure and duration**

The short course in seed quality assurance shall be offered on full time basis as follows:

- 5.1 The course shall have six course units of face-to-face lectures, demonstrations, practicals and field visits.
- 5.2 The course shall cover a period of six days.
- 5.3 Lectures shall constitute 40% while field visits, demonstrations, group discussions and practicals shall constitute 60% of the course time.
- 5.4 Practical will include field visits to a national plant protection organization (NPPO) and research institutions for demonstration on seed health testing procedures, field and laboratory inspection procedures and other specialized testing procedures.
- 5.4 Assessment shall be by quizzes and end of course evaluation.

## 6. Award:

At the end of the course the trainees will be awarded a Certificate of Participation

## 7. Course Outline

Code	Course Title	Hours
AQA1	Basic Concepts of Seed Quality Assurance	11
AQA2	Routine and Specialized Seed Health testing	14
AQA3	Seed Certification Procedures	10
TOTAL		35

## 8. Course Description

### AQA 1: Basic concepts of seed quality assurance

Seed quality; importance, testing and certification; factors affecting seed quality; general overview of a seed laboratory; representative sampling procedures; identification of field and storage diseases and pests; varietal purity; seed treatment; purity maintenance; information management

### AQA 2: Routine and Specialized Seed Health Testing

Purity test; noxious weed determination; moisture test; standard germination test; seed deterioration determination; vigor testing; other testing methods (TZ, bleach test, fast green, electrical conductivity); Seed pests and seed-borne diseases identification and their importance; diagnostic methods: routine testing methods (visual, wash, plate, blotter); biochemical-based testing methods; protein-based testing methods including ELISA; molecular-based diagnostic testing methods including PCR; data collection and management through ICT application.

### AQA 3: Seed Certification Procedures

National, regional and international certification procedures; field and laboratory certification standards; methods field inspections of selected crops; seed labeling, field standards, field inspection methodology.

# Training of Trainers Workshop

Venue: Iowa state University, Ames, USA

Date: 24<sup>th</sup> April -8<sup>th</sup> May, 2010

## **Introduction**

A team from SEMIs from the University of Nairobi including Professor Mwang'ombe, the principal investigator of SEMIs; Dr. Olubayo, Chairman, department of plant science and crop protection, Dr. Kiarie and Dr. Muthomi attended the Train the Trainer Workshop (TOT) held at the Seed Science Centre at Iowa State University between the dates of 24<sup>th</sup> April and 8<sup>th</sup> May, 2010. Iowa State is one of the main collaborators in SEMIs and apart from providing resource persons for the courses, they will also be extensively involved in the construction of the seed processing unit at CAVS.

## **Objectives of the Visit**

The main objectives of the visit to the workshop were for the SEMIs team to:

- familiarize themselves with facilities and operations of an established seed institute
- learn set-up and common procedures of an accredited seed laboratory
- strengthen linkages between SEMIs and the seed Science Center and explore other areas of collaboration between university of Nairobi and IOWA state University

The methods of training at the workshop included discussions, presentations, tour studies, laboratory demonstrations and symposium attendance.

## **Outputs:**

- Among the places visited were the seed science Center at Iowa State University, USDA plant introduction Center and Pioneer and Syngenta Seed Companies.
- During the two week-long tour, the SEMIs team interacted and held important and fruitful discussions with principal personalities involved in seed Science. Among those the SEMIs team met included Manjit Misra, the Director of the Seed Science Center, the Deans of the college of Agriculture and life Science and, College of Veterinary Medicine, Wendy Wintersteen and Scott Hurd respectively, Del Koch, the executive Director of Committee of Agricultural Development (CAD), and other personnel from ISU, the seed science Center and United States Department of Agriculture (USDA).
- The SEMIs team also had the opportunity to participate in the BIGMAP symposium whose theme was –Food, Feed and Fuel for the World: Seed Biotechnology. This Symposium was held at the Gateway Hotel and Conference Center, at Iowa, Ames. Among presentations made were “Seed enterprise Development Challenges in Africa”

by Joseph DeVries of AGRA and the director of Programme for Africa's Seed Systems (PASS).

- At the seed Science Center, the SEMIs team underwent training on seed conditioning, seed testing and legislation and process management. They also toured the seed processing facilities where they acquainted themselves with the different seed processing equipment. The study tours took the team to Pioneer Dupont Seed Company in Des Moines and Syngenta Seed Company. These are among the top ten seed companies in the world. Among the places they toured were the seed quality department and the diagnostics laboratory at pioneer and the entomology and DNA (Marker) laboratory at Syngenta. The SEMIs team also visited the USDA plant introduction Center.
- Other discussions centered on SEMIs facilities requirements and the architectural map of the SEMIs facilities and the seed testing and seed health laboratories



SEMIs Team with James Aketch (extreme left) and Allan Gaul (extreme right) from ISU at pioneer seed company in Dupont.



## IMPLEMENTATION OF APPROVED SEMIS COURSE CURRICULA

### Introduction

The SEMIs courses began a little out of schedule due to unavoidable circumstances. The first course on seed production, initially intended to start on the 3<sup>rd</sup> of the May, 2010, finally kicked off on the 27<sup>th</sup> of May, 2010. The next course on seed drying processing and Storage was held back to back with the seed processing course between May 31 and 05<sup>th</sup> June, 2010. Another two courses on Seed business Management and Seed Marketing were held between 19<sup>th</sup> and 31<sup>st</sup> July, 2010. Most of the participants came from seed companies. In total, 119 participants from approximately 30 seed companies from 13 sub-Saharan African countries were trained in the four courses. The lead resource person for the seed production course was Dr. John McRobert, from CIMMYT, a seed specialist and trainer in seed production and the author of "Seed business management In Africa". KEPHIS, KARI and Kenya Seed Company also provided resource persons for the courses. In the seed drying, processing and storage course, Alan Gaul from ISU was the lead resource person. In both these two courses the lead resource persons were complemented by staff from CAVS among them Dr. Kiaria Njoroge, Dr. Kahi Ngugi, Dr. Florence Olubayo, Dr. Duncan Mbuge among many others. For the seed Marketing and seed business management courses, the lead resource person was Aline O' Connor Funk, a seed specialist and a consultant for AGRA. For these two courses, CAVS cooperated with the University of Nairobi's School of Business to deliver the courses. Professor Evans Aosa and Dr. Justus Munyoki from the School of Business coordinated the seed Business Management and Seed Marketing courses respectively. Overall, the courses have been a great success with participants taking back to their seed companies and countries knowledge and important experiences on diverse aspect of seed Production, seed processing, seed marketing and business management.

# SEMIs SEED PRODUCTION COURSE

Course dates: May, 24-29, 2010

Venue: University of Nairobi, College of  
Agriculture and Veterinary Sciences

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## Introduction

SEMLs held its first course on seed production between 24<sup>th</sup> and 29<sup>th</sup> May, 2010. Thirty one participants drawn from 12 countries representing 29 seed companies attended the course. John McRobert, a maize seed systems specialist, working for CIMMYT Harare, was the lead coordinator for the course. John is the author of a newly published book on seed business management-“Seed Business Management in Africa” and an authority in seed production. Other resource persons included staff from University of Nairobi, including Dr. Kiarie, a plant breeder, Dr. Olubayo, the chair of the plant science and Crop protection department at the University of Nairobi, among others. Other resource persons were from KEPHIS and KARI.

## Participation by Country and Company

COUNTRY	Number of seed companies	COMPANY/Institution by Name	Number of participants
Mozambique	1	Semente Perfeita	1
Malawi	3	Seed Tech, Funwe Farm, ASSMAG	3
Zambia	3	IDE, Kamano, Kamasika	4
Rwanda	2	COAMV, RWASECO	2
Uganda	4	CAII, NARO-ABI, NARO-BEANS, BUWOPA	4
Kenya	2	Dryland, Leldet	2
Tanzania	2	Meru Agro, Itente	3
Ethiopia	1	Gadisa Gobena	1
Ghana	4	Alpha Seeds, Antika Enterprise, Savanna, M&B	4
Niger	2	Alheri, Hadin Kan Jamaa	2
Mali	1	Nakoshi Enterprise	1
Nigeria	4	Seed Project, Maslaha, Da-Al Green seeds, Share foundation	4
TOTAL	29		31

Most of the seed companies represented in this training are small seed enterprises, most with not more than 20 staff members. Many are located in extremely remote areas trying to ensure high quality seed gets to farmers at the appropriate times and price. The lead coordinator for the seed production course was John McRobert who works for the International Maize and Wheat Improvement Center (CIMMYT). John is the author of a recent published book-“Seed Business Management in Africa”.

### Seed Production programme

TIME	Topics	INSTRUCTOR	COMMENTS
<b>DAY 1: Monday, 24/05/2010</b>			
Session title: Planning Seed Production			
8 -9am	Introduction and starter quiz	Dr. John McRobert, Dr. Kiarie	
9-10am	Seed production planning and management	John McRobert	Broad overview, synchronizing production and markets, multiplication cycles, contracting farmers
10-10.30 am	Break		
10.30-11.30 am	Seed classes and their production requirements	Mr Munyao (KEPHIS) & Dr. Kiarie	Seed class characteristics, maintenance of purity, labeling
11.30 am - 1.00 pm	Classroom exercise on seed production planning	John McRobert	Calculating production goals based on sales targets, seed yields and seeding rates
1 - 2pm	Lunch break		
2 -3pm	Introduction to basic Excel, SeedPlan spreadsheet	ICT-Njeri/ John McRobert	
3.00-4.00pm	Quality Assurance	Mr. Kinyanjui (KEPHIS)	
4.00 -4.15pm	Tea		
4.00 – 5.00pm	Structuring and managing a seed production department	John McRobert	Human resource requirements and management, logistics, warehousing, grower relations
<b>Day 2: Tuesday, 25/05/2010</b>			
<b>Seed Production management</b>			
8 -9am	Seed sources, target growing environments and land preparation	Drs. Kiarie/ Riungu	
9-10am	Isolation distances, planting and management	Drs. Kiarie/ Riungu	

	of seed crops		
10-10.30 am	Break		
10.30-12.0 am	Harvesting, drying and storing seed; quality assurance requirements for seed production, Pest management	Dr. Mbuge, Dr. Olubayo, Dr. Muthomi	<ul style="list-style-type: none"> <li>Harvesting, drying and storage-Dr. Mbuge.</li> <li>Quality assurance-KEPHIS</li> <li>Disease and insect management-Drs. Olubayo, Dr. Muthomi. NB: One hour for crop protection</li> </ul>
12.00-1.00 pm	Laboratory Demonstrations on common diseases and Pests	Professor Mwang'ombe, Dr. Olubayo, Dr. Muthomi	Laboratory demonstrations of diseased plant parts and different insect pests in botany Lab
1 - 2pm	Lunch break		
<b>Seed Production Research</b>			
2 -3pm	Types of seed systems, mating systems.	Dr. Riungu (KARI)	
3.00-4.00pm	Vegetative propagation, tissue culture, visit to tissue culture laboratory	Dr. Ngugi (UoN)	
4.00 – 5.00pm	Importance of seed production research, variety descriptors, DUS, maintenance	John McRobert, Patrick Maluku (KEPHIS), Ndung'u	
<b>Day 3: Wednesday, 26/05/2010</b>			
<b>Seed Grower Contracts and price determination</b>			
8 -9am	Seed growers (Role of seed growers, criteria of selecting seed growers, establishment of relationship with seed growers)	John McRobert / Robert Musyoki (KSCo)	
9-10am	Grower contracts and training (forms of seed grower contracts, incentive schemes, training & development of growers)	John McRobert/ Robert Musyoki (KSCo)	
10-10.15 am	Break		
10.15-11.15 am	Seed production costs & budgets	John McRobert	

<b>Managing seed production with small-holder farmers</b>			
11.15am - 12.15 pm	Formal & informal seed delivery systems, challenges related to seed production & potential practical solutions	KARI /UoN Dr. Ragwa, -Dr. Kiari, Prof. Mwang'ombe	
12.15-1.15	Methods of organizing small holder farmers, group dynamics,	UoN/ NGO- Professor Mwang'ombe	
1.15 – 2.15pm	Lunch break		
<b>Certification Standards and their implementation</b>			
2.15 -3.15pm	Elements of seed certification & relationship with national seed authorities,	KEPHIS	
3.15-4.15pm	Inspection regulations & procedures for seed certification,	KEPHIS	
4.15 – 5.15pm	Role of national & international regulatory agencies	KEPHIS	
5.15 -6.00 pm	Demonstrations of seed production	Kiarie / David Ndung'u	Field Station
<b>Day 4: Thursday, 27/05/2010</b>			
<b>Field trips</b>			
5.30-6.00am	Breakfast		
6am -8am	Travel to Nakuru	UoN-Dr. Kiarie and Ndung'u for logistics	
8.30am- 1.00pm	Field visit to Leldet seed production company (small grains, legumes)	UoN-Ndung'u to liaise with Jenny of Leldet	
1-2.00pm	Lunch break		
2.00-5.00pm	Visit to contract seed growers	UoN-Dr. Kiarie, Ndung'u for logistics	
Overnight at Nakuru			
<b>Day 5: Friday, 28/05/2010</b>			
8.00-1.00 pm	Visit to KEPHIS Lanet DUS & NPT		
1.00-2.00 pm	Lunch break		
Overnight at Nakuru –Merica Hotel			
<b>Day 6: Saturday, 29/05/2010</b>			
6.30-7.30am	Breakfast at Merica hotel		
8.00-10.00am	Travel to Nairobi	UoN-Dr. Kiarie,	

		Ndung'u for logistics	
11.00am-12.00pm	Quiz at UoN	UoN-Course administrators	Course administrators
10.00-11.00	General discussion	UoN-Dr. John McRobert, Dr. Kiarie	
11.00am-12.00pm	Award of certificates	UoN-Principal CAVS/AGRA	
6.00pm-10.00pm	Closing dinner	Dr. Olubayo	

The week-long course consisted of formal lectures at the University of Nairobi, college of Agriculture and Veterinary Sciences campus and visits to the seed industry. Lecture topics included seed production planning, seed systems, seed grower contracting, seed production budgets, seed quality and certification among many others. SEMIs lectures are based on a concept of learning through practice. "The training at SEMIs is about experiential learning", says the SEMIs team leader Professor Mwang'ombe, the Principal of the College of Agriculture and Veterinary Sciences. Over 50% of the training at the SEMIs courses is practical learning, where participants were able to go out in the field and practice important seed production functions like proper planting, detassling, line maintenance, pollinations among others. In the classroom, participants were able to plan for seed production using seed production programmes like "seed plan" on computers. Participants were also able to visit an upcoming small seed company, Leldet, based in the rift Valley where they were able to relate with one of their own, and share experiences and challenges they face on many different aspects of seed production.

Seed Quality is an important aspect for any seed system as it ensures that farmers get the right kind of seed for planting. One of the best recognized Seed quality assurance institutions in Africa is the Kenya Plant Health and Inspection Services, KEPHIS. Participants visited the KEPHIS laboratory at Nakuru, Njoro, where they were taken through the process of seed quality legislation and all other seed quality maintenance issues in seed production.

Course evaluation was done through course quizzes where participants were tested on topics learned. On successful completion of the course, participants were awarded with a certificate of participation.



Seed production lectures at CAVS



Laboratory practical sessions at CAVS botany

Laboratory.



Seed Maize detassling at Leldet farm



Visit to the KEPHIS laboratory Lanet Nakuru

“We from Ghana would never have known what happens here at KEPHIS had we not attended the SEMIs course” so says Joseph Bapule, one of the participants at the SEMIs course on seed production. This was a befitting close to the course and it surely provided a lot of knowledge on seed production issues.



Seed production discussions in the field at Leldet seed company



Professor Mwang'ombe presenting a certificate to Mutinta Muleya from Zambia



# **SEED DRYING, PROCESSING AND STORAGE COURSE**

**COURSE DATES: MAY, 31- 05 JUNE, 2010**

**VENUE: UNIVERSITY OF NAIROBI, COLLEGE OF  
AGRICULTURE AND VETERINARY SCIENCES**

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## Introduction

The SEMIs short course on seed drying, processing and storage was held between the 31<sup>st</sup> of May, 2010 and the 05<sup>th</sup> of June, 2010 at the University of Nairobi, College of Agriculture and Veterinary Sciences (CAVS). The lead resource person for this course was Alan Gaul from Iowa state university. Other resource persons were from the CAVS and from the Engineering department of the University. Resource persons were also drawn from KEPHIS and the Kenya Seed Company. In total there were 31 participants from over 13 sub-Saharan African countries representing over 31 seed companies. Countries represented included among others Mozambique, Nigeria, Mali, Niger, Rwanda, Uganda, Tanzania and Zambia.

COUNTRY	Number of seed companies	COMPANY/Institution by Name	No of participants
Mozambique	1	Lozane Farms	1
Malawi	3	Seed Tech, Funwe Farm, ASSMAG	3
Zambia	3	IDE, Kamano, Kamasika	4
Rwanda	2	COAMV, RWASECO	2
Uganda	4	CAII, NARO-ABI, NARO-BEANS, BUWOPA	4
Kenya	2	Dryland, Leldet	2
Tanzania	3	Meru Agro, Itente, Tanseed	3
Ethiopia	1	Gadisa Gobena	1
Ghana	4	Alpha Seeds, Antika Enterprise, Savanna, M&B	4
Niger	2	Alheri, Hadin Kan Jamaa	2
Mali	1	Nakoshi Enterprise	1
Nigeria	4	Seed Project, Maslaha, Da-Al Green seeds, Share foundation	4
<b>TOTAL</b>	<b>30</b>		<b>31</b>

Participants got to learn about the different machinery used in processing of seed and how they could modify them to fit to their diverse and distinctive needs. Alan was complemented by University of Nairobi lecturers, and experts from the seed industry who were able to share their experiences and challenges in the seed industry in general.

The training courses at SEMIs concentrate on experiential learning. Therefore, participants also got to visit Kenya seed Company, the largest seed company in East and Central Africa, where they got to learn all the steps involved in seed processing, right from seed reception, drying, cleaning, sorting to packaging of the final product for market.

#### Seed Drying, processing and Storage programme

TIME	Course unit	SESSION TITLE	INSTRUCTOR	COMMENTS
<b>Day 1: Monday, 31/06/2010</b>				
<b>Overview and harvest related operations</b>				
8.00-8.30 am		<ul style="list-style-type: none"> <li>▪ Introduction and starter quiz</li> </ul>	Allan Gaul/Dr. Mbuge	
8.30-10.00 am		<ul style="list-style-type: none"> <li>▪ Basic concepts and techniques in seed conditioning</li> </ul>	Alan Gaul	
10.00-10.15am		Coffee/Tea Health break		
10.15-12.00 pm		<ul style="list-style-type: none"> <li>▪ Pre-cleaning and seed surface modification operations</li> <li>▪ seed handling</li> </ul>	Alan Gaul  Practical	
<b>Seed drying and storage management (3 hour time allocation)</b>				
12.00 -1.00 pm		<ul style="list-style-type: none"> <li>▪ Seed and equilibrium moisture relationships</li> <li>▪ Aeration and temperature control</li> </ul>	Prof Okoth	
1.00-2.00 pm		Lunch Break		
2.00-3.00 pm		<ul style="list-style-type: none"> <li>▪ Seed drying principles and moisture management</li> </ul>	Dr. Gitau	
3.00-4.00 pm		<ul style="list-style-type: none"> <li>▪ Seed storage: principles, methods and controls,</li> </ul>	Dr. Mutai	
<b>Cleaning, sorting, and primary separation (3 hour time allocation)</b>				
4.00-5.00pm		<ul style="list-style-type: none"> <li>▪ Air-screen cleaning and aspiration</li> </ul>	Alan Gaul	
<b>Day 2: Tuesday, 10/06/2010</b>				

8.00-10.00 am		<ul style="list-style-type: none"> <li>▪ Spiral and belt separation</li> <li>▪ length, width, and thickness sizing</li> <li>▪ additional crop specific processes</li> </ul>	Alan Gaul/Dr. Mbuge	
10.00-10.15am		Coffee/Tea Health Break		
<b>Secondary separation and seed treatment</b>				
10.15am-12.00pm		Fluidized density separation (destoner and gravity separator)	Alan Gaul	
12.00-1.00 pm		<ul style="list-style-type: none"> <li>▪ Optical detection and color separation</li> </ul>	Alan Gaul	
1.00-2.00pm		Lunch Break		
2.00-3.30pm		<ul style="list-style-type: none"> <li>▪ seed treatment chemicals and calibration concepts</li> <li>▪ seed treatment handling and application equipment</li> </ul>	Alan Gaul	
<b>Finished product and plant management (3 hour time allocation)</b>				
3.30-4.30pm		<ul style="list-style-type: none"> <li>▪ Packaging and palletizing processes and equipment</li> </ul>	Dr. Gitau	
4.30-4.45pm		Tea/Coffee Health Break		
4.45-5.45pm		<ul style="list-style-type: none"> <li>▪ plant layout considerations</li> </ul>	Prof Okoth	
<b>Day 3: Wednesday,02/06/2010</b>				
8.00-9.00pm		<ul style="list-style-type: none"> <li>▪ plant-level sampling, testing for quality control and process improvement</li> </ul>	KEPHIS	
9.00-10.00 am		Information, communication technology (ICT)	Charity Njeri/Alan Gaul	Data management (Excel spreadsheets)

10.00-10.15am		Coffee/Tea health Break		
10.15-12.00pm		Plant and equipment maintenance	Alan Gaul	
12.00-1.00pm		Cost management	Prof Okoth	Operational costs
1.00-2.00pm		Lunch Break		
<b>Environmental considerations, by-product management, safety &amp; instrumentation</b>				
2.00-3.00pm		<ul style="list-style-type: none"> <li>▪ Byproduct management</li> <li>▪ Waste management</li> </ul>	Prof Okoth	
3.00-4.00pm		Safety management	Engineer Mutua	Safety management of workers. Occupational Health and safety advisory
4.00-4.15pm		Tea Break		
4.15-5.15pm		<ul style="list-style-type: none"> <li>▪ Instrumentation and control</li> </ul>	Prof Okoth/ Dr. Mbuge	
5.15-6.15pm		Practical session	Dr Mbuge/Mr. Wanguhu/Mr. Mwachoni/Mr. Mathenge.	Session at the processing lab at the department of Environmental and biosystems engineering (EBE)
<b>Day 4: Thursday, 03/06/2010 (Field trip to Kitale)</b>				
7.00-3pm		Travel to Kitale		
<b>Day 5: Friday, 04/06/2010 (Field Trip to seed Industry)</b>				
8.00-9.00am		<ul style="list-style-type: none"> <li>▪ Managing harvesting Receiving the harvest at point of processing</li> <li>▪ Record keeping and information management</li> </ul>	Kenya seed/Dr. Mbuge	<ul style="list-style-type: none"> <li>▪ Arranging, receiving and documentin g harvest from out</li> </ul>

				growers
9.00-10.00am		<ul style="list-style-type: none"> <li>▪ Pest management</li> </ul>	Kenya seed	Management of pests at Kenya Seed Company
10.00-10.15am		Tea/Coffee Health Break		
10.15am-12.15pm		Visit Kenya Seed (Elgon downs farm)		
12.15-1.30		Lunch and Travel to Seed Dryers		
1.30-3.30pm		Visit to Kenya seed (dryers)		
3.30-7.30		Travel to Nakuru		
<b>Day 6: Saturday, 05/06/2010 (Field Trip to Seed Industry)</b>				
7.00-9.00am-		Travel from Nakuru to Nairobi		
10.00-11.00		Course Quiz		
11.00-12.00pm		Discussion and course evaluation by participants		
6.00pm-10.00pm		Closing ceremony and award of Certificates		AGRA and Principal, CAVS



Allan Gaul explains a point to the participants at the seed laboratory at CAVS



Mr Wanguhu from the seed laboratory at CAVS demonstrates how seed cleaning is done using machines



Visit to Kenya Seed Company.



Kenya Seed Company commands a majority stake in production of seed throughout East and Central Africa

After the training the participants attended the closing and certificate award ceremony at popular restaurant in Nairobi. The ceremony was graced by the PASS Programme director, Dr. Joseph DeVries and personalities from CAVS and Kenya Seed Company. Dr. DeVries congratulated both the participants and the resource persons for their hard work in ensuring that the course was a success. Participants appreciated the role of SEMIs and were grateful to AGRA for their vision on the necessity of such an institute for the development of the seed industry in Africa. 'We have to continue communicating as only then can we get to share ideas on what is happening in different areas of the world. The information we have learned here on seed quality should be easily accessible', so says William Zem-mui Nambie from a small seed company in Ghana. This goes to show just how important the SEMIs courses are in bridging the information gap.

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# SEED BUSINESS MANAGEMENT COURSE

COURSE DATES: 19TH -24TH JULY, 2010

**VENUE: UNIVERSITY OF NAIROBI, COLLEGE OF  
AGRICULTURE AND VETERINARY SCIENCES**

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## Introduction

SEMIs held the seed business management course for seed practitioners between 18<sup>th</sup> and 25<sup>th</sup> July, 2010. The Course attended mainly by Seed Company Chief Executive Officers (CEOs) from seed companies operating in many sub-Saharan African countries. Being a business oriented course CAVS collaborated with the University of Nairobi's School of business which provided the resource persons for the training. Aline O'Connor Funk a seed specialist and a consultant with AGRA, was the lead resource person for this course. Aline has wide experience in running successful seed companies having owned a seed company of her own at one time. In total there were 29 participants from 12 sub-Saharan African Countries representing 29 seed companies.

**Table1. Country and company representation for SEMIs seed Business management course**

COUNTRY	Number of seed companies represented	Companies by Name	Number of Participants
Mozambique	3	Lozane Farms, Matuel Comercial, Ikuru	3
Malawi	1	Seed Tech	1
Zambia	3	IDE, Kamano, Kamasika	3
Uganda	3	CAII, Naseco, Fica	3
Kenya	3	Dryland, Western Seed, Olerai	4
Tanzania	3	Meru Agro, Krishna seeds, Tanseed	3
Ethiopia	3	Anno Agro-Industry, Gadisa Gobena, Alemayehu	3
Ghana	2	Alpha Seeds, Savanna Seeds	2
Burkina Faso	1	Societe Agro-Productions	1
Nigeria	4	Seed Project, Da-Al Green Seeds, Jirkur Seed, Manoma seed	4
Mali	2	Faso Kaba, Nakosha	1
Rwanda	1	Rwaseco	1
12	29		29

Participants got training on such far reaching topics like business strategy, financial statements, Managerial skills, culture and ethics in business, human resource needs among others. The seed company tool box, a compilation of necessary tools” any seed company needs in order to run a successful seed enterprise, authored by Aline O’Connor Funk, was a most useful resource for the training. The Coordinator of the course was Professor Evans Aosa from the School of business.

**Table 2: Seed business Management Programme. Coordinator: Professor Aosa.**

TIME	SESSION TITLE	INSTRUCTOR	COMMENTS
<b>Monday</b>			
8.30-9.00am	Brief on SEMIs plus self introductions	Prof Mwang’ombe	
9.00-9.30 am	Course Introduction Objectives, Norms, Expectations	Prof. Aosa, Aline O’Connor Funk, Ms. Florence Muindi, Dr. Aduda	
9.00-10.00am	Introductory Quiz		Introductory quiz
10.00-10.15am	Tea/Coffee Health Break		
<b>ABM 1: General Seed Business Management</b>			
10.15-11.30am	Strategy – Why you need it	Prof. E. Aosa	
11.30-1.00pm	Strategic Management	Prof. E. Aosa	
1 pm- 2pm	Lunch		
2.00pm-4.00pm	- Managerial skills - Video	Ms. Aline O’Connor Funk	
4.00-4.15pm	Tea/Coffee health Break		
4.15-6.00pm	Key success factors in Seed Business	Aline O’Connor Funk	
<b>Day 2: Tuesday</b>			
8.00am-9.00am	Business Failure	Mr. J. Maalu	
9.00-10.00am	Culture and Ethics	Mr. J. Maalu	

10.00-10.30am	Tea/Coffee Health Break		
11.30-1.00pm	Critical Thinking	Ms. Aline O'Connor Funk	
1.00-2.00pm	Lunch Break		
2.00-4.00pm	Managing Operations	Mr. L. Mulwa	
4.00-4.15 pm	Coffee/Tea Health break		
4.15-5.30pm	Motivational Speaker	Mr. J. Kipngetich	Director, Kenya Wildlife Service
Day 3: Wednesday			
8.00-10.00am	Planning for HR Needs , Job Analysis	Ms. F. Muindi	
10.00am-10.15am	Coffee/Tea Health Break		
10.15-11.30	Recruitment and Selection	Ms. Muindi	
11.30-1.00pm	Training and Development	Ms. F. Muindi	
1.00-2.00pm	Lunch Break		
2.00-4.00pm	Performance Management and Team building	Ms. Aline O'Connor Funk	
4.00-4.15pm	Coffee/Tea Health break		
4.15-5.30pm	ICT skills	Ms. Aline O'Connor Funk and Charity Njeri	Basics on Excel spreadsheets
Day 4: Thursday			
8.00-9.00am	Financial Functions	Dr. J. Aduda	
9.00-10.00am	Financial Functions (contd.)	Dr. J. Aduda	

10.00-10.15	Tea/Coffee Health Break		
10.15-11.30am	Financial Statements	Mr. H. Ondigo	
11.30-1.00pm	Financial Statements (contd.)	Nr. H. Ondigo	
1.00pm-2.00pm	Lunch Break		
2.00-3.00pm	Profitability Indicators	Mr. H. Ondigo	
3.00-4.00pm	Common Profitability & Cash-flow Problems	Mr. H. Ondigo	
4.00-4.15pm	Coffee/Tea Health Break		
4.15-5.30	Guest Lecture	Paul Seaward	Farmer Input Promotion Services (FIPS)
Day 5: Friday			
8.00-10.00am	Financial Planning & Working Capital Management	Dr. J. Aduda	
10.00-10.15	Coffee/Tea Health Break		
10.15-1.00pm	Investment Decisions	Dr. J. Aduda	
1.00-2.00	Lunch Break		
2.00-4.00	Budgets & Cost Management	Dr. J. Aduda	
4.00-4.30	Health Break		
4.30-6.00 pm	Guest lecture	Patrick Oketa	African Seed Investment Fund (ASIF)
Day 6: Saturday			
8.00-9.00am	Course Quiz	Course administrators	
9.00am-10.00	Course Evaluation and discussions	Ms. Aline O'connor Funk, Prof. E. Aosa	
6.00pm-10.00pm	Closing Ceremony and award of certificates	Dr. Florence Olubayo	University of Nairobi/AGRA



Paul Seaward (standing) delivering a lecture to the participants.



Ms. Aline O'Connor Funk (rear ground) and professor Aosa (standing) deliver a joint presentation on governance.

Participants were accommodated at the Christian Health Association of Kenya (CHAK) guest house which is close to the college of Agriculture and Veterinary Sciences (CAVS), where lectures were conducted.

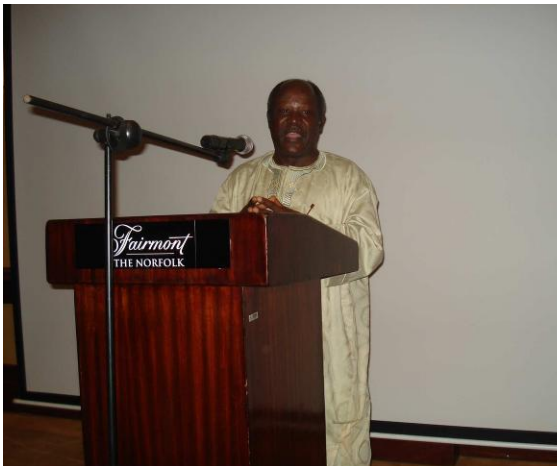


From Left, Farhun Yusuf (Western seed company), Beatrice Mukabaranga (Rwaseco, Rwanda), Tom Baligye (Uganda), Mrs Maimouna Coulibali (Mali), and Miss. Antwi Dakwa (Ghana) enjoy a meal at the guest house)



From Left: Goodluck Minja (FICA seeds, Tanzania), Apullah Adingtingah (Savanna seeds, Ghana) and Abel Lisboa (Ikuru, Mozambique)

After an intense week of training, participants were invited for the closing ceremony on Saturday 24th, July, 2010. The certification and closing ceremony was graced by the president of AGRA Dr. Namanga Ngongi, PASS Director, Dr. Joseph DeVries, the Principal of College of Agriculture and Veterinary Sciences, professor Agnes Mwang'ombe, SEPA programme officer, Dr. George Bigirwa, Programme officer for EACCI, Dr. Rufaro Madakadze, the deans of faculty of Agriculture, and Veterinary Sciences, Professor Shibairo and Dr. Njenga respectively and other personalities from CAVS. The school of business was represented by Professor Evans Aosa and Florence Muindi.



Dr. Namanga Ngongi, President of AGRA delivering a speech to the participants and guests at the award and closing ceremony for the seed business course.



Joseph DeVries the programme Director for Programme for Africa's Seed Systems (PASS) at the closing ceremony.

In his speech to the guests at the ceremony, Dr. Namanaga congratulated both the participants and the resource persons for their diligence and hard work. "I am pleased to see SEMIs growing in bounds and providing the very necessary capacity needed in the seed companies. This is major step in the fight against food insecurity" said Dr. Namanga Ngongi.

"We are excited with the pace at which this project has taken off and I want to thank Professor Mwang'ombe and her team for the excellent work done" said Dr. Joseph DeVries. Speaker after speaker commended the programme indicating that SEMIs was a noble idea whose time had really come. There is need for African seed entrepreneurs to get trained and/or retrained on aspects of seed right from production, to marketing. SEMIs is offering the necessary training to equip seed

practitioners from all over Africa with the necessary tools for them to run profitable, sustainable seed businesses to serve farmers from all over the continent.

Bakir Lozane, one of the participants and the CEO of lozane farms, a seed enterprise operating in northern part of Mozambique and dealing with a variety of crops from maize, sorghum, cowpeas, and soyabeans, stated that, “ SEMIs is the car that will accelerate the Green revolution in Africa”.

Asked about what he had learned, another participant of the course, Mr. Apullah Adingtingah, from Savannah seeds Ghana, said the following- “I am taking back teamwork, and delegation of power- delegation of power is important in any seed company as it ensures efficiency and high productivity of people. I am also taking home elements of public relations taught here which are crucially important in the management of a successful seed enterprise”.

“I am now going to manage a seed company, before we were just producing and selling seed-now we are going to start managing a seed company”, says Iwan Gwadabe, the CEO of seed Project from Nigeria.

“The course was wonderful- all the topics were useful, should we use them properly, it will improve our companies. The lectures were excellent and this is the best method for transferring knowledge to the seed companies-it will definitely usher in the green revolution”, said Mr. Mazeko Mulele from Kamasika seeds, a seed enterprise based in Zambia. Kamasika actually began as a cooperative of many seed growers, but is now, with the funding from AGRA, producing various types of seeds for the rural farmers in Zambia.

Mme Maimouna Coulibaly, from Faso Kaba Seed Company, a small but rapidly growing seed company based in Mali, and providing seeds of various crops to the rural poor in Mali was one of the participants for the seed business course. Mme Coulibaly is one of the winners of the much acclaimed and prestigious International African Business Award for 2010. This award is for persons who in one way or another are contributing to the progression and growth of African business in Africa. She and her husband manage the company based in rural Mali. With the help of AGRA, they are providing seed of superior varieties to poor farmers in the Mali and making a great difference in the lives of these farmers. Many congrats to Mme Coulibaly and Faso Kaba as she strives, in her own small way, to make the green revolution in Africa a reality. SEMIs will endeavour to keep providing the capacity needed to drive the seed businesses in Africa so that Mme Coulibaly and others are able to scale greater heights in the fight against food insecurity in Africa.



Mme Coulibaly delivers a speech to the guests at the closing ceremony



Mrs. Yogo Simone from Burkina Faso receives her certificate from Professor Aosa of the School of Business.



Seed Business course Participants with Joe DeVries, (extreme left), Professor Mwang'ombe (second left), Professor Aosa, (third right and Aline O'Connor Funk (Second row standing, seventh right)



# **SEED MARKETING COURSE**

**COURSE DATES: 26TH -31ST JULY, 2010**

**VENUE: UNIVERSITY OF NAIROBI, COLLEGE OF  
AGRICULTURE AND VETERINARY SCIENCES**

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## Introduction

The SEMIs course on seed marketing was held between the 25<sup>th</sup> and 31<sup>st</sup> July, 2010 at the college of Agriculture and Veterinary Sciences. The course was for seed company personnel involved in the marketing of improved seed. As in the case of seed business management course, CAVS worked together with the school of business to make the course a success. The coordinator of the course was Dr. Munyoki from the school of business with help from Aline O'Connor Funk, a seed specialist and a consultant with AGRA. In total there were 28 participants from 28 seed companies operating in 12 African countries.

**Table 1. Country and company representation at SEMIs seed marketing course**

COUNTRY	Number of seed companies represented	Companies by Name	Number of Participants
Mozambique	3	Lozane Farms, Matuel Comercial, Semente Perfeita	3
Malawi	1	Seed Tech	1
Zambia	3	IDE, Kamano, Kamasika	3
Uganda	3	CAII, Naseco, Fica	3
Kenya	4	Dryland, Leldet, Western Seed, Olerai	4
Tanzania	3	Meru Agro, Krishna seeds, Tanseed	3
Ethiopia	3	Anno Agro-Industry, Gadisa Gobena, Alemaheyu Makonnen	3
Ghana	2	Alpha Seeds, Savanna Seeds	2
Burkina Faso	1	Societe Agro-Productions	1
Nigeria	4	Seed Project, Da-Al Green Seeds, Jirkur Seed, Manoma seed	4
Mali	1	Faso Kaba	1
11	28		28

Topics for the course were diverse and tried, within the short time of the course to touch on the essential and practical basics of seed marketing.

TIME	SESSION TITLE	INSTRUCTOR	COMMENTS
Day 1: Monday, 26 <sup>th</sup> July 2010			
8.30-9.00am	Brief on SEMIs plus self introductions of Participants	Prof Mwang'ombe/Dr. Olubayo	
9.00-9.30am	Course introduction , Objectives, Norms and expectations	Dr. Justus Munyoki/Dr. Nyikal	
9.30-10.00am	Introductory Quiz	Dr. Justus Munyoki, Dr. Nyikal	Introductory quiz
10.00-10.30am	Tea/Coffee Health Break		
ABM 1: Introduction to Marketing and Marketing Definition			
10.30-11.30	Definitions of marketing; marketing concepts	Dr. Nyikal	
11.30-1.00pm	Approaches in the analysis of marketing	Dr. Justus Munyoki	
1 pm- 2pm	Lunch		
2.00-3.00pm	Commodity, functional and institutional approaches to Marketing	Mrs. Mary Kinoti	
3.00-4.00pm	Market segmentation, profiling and targeting customers	Mrs. Mary Kinoti	
4.00-4.15pm	Tea/Coffee health Break		
4.15-6.00pm	Key issues to understand about customers	Aline O'Connor Funk	
Day 2: Tuesday, 27 <sup>th</sup> July, 2010			
8.00am-9.00am	Key characteristics of firms that attract and/or retain	Aline O'Connor Funk	

	customers.	
9.00-10.30am	Culture and ethics in Marketing	Mrs. Mary Kinoti
10.30-11.00am	Tea/Coffee Health Break	
ASM 2: Developing a marketing strategy		
11.00-1.00pm	Marketing strategies: goals and market analysis	Dr. Raymond Musyoka
1.00-2.00pm	Lunch Break	
2.00-4.00pm	Pricing mechanisms in marketing	Dr. Raymond Musyoka
4.00-4.30 pm	Coffee/Tea Health break	
4.30-6.00pm	Real world marketing simulation and Video on resource on Corruption	Aline O'Connor Funk
Day 3: Wednesday, 28 <sup>th</sup> July, 2010		
8.00-10.00am	Promotional strategies; enhancing competitiveness	Dr. Munyoki
10.00am-10.15am	Coffee/Tea Health Break	
10.15-11.30	Distribution strategy and planning	Dr. Munyoki
11.30-1.00pm	Marketing and distribution calendars and video resource on Delegation	Aline O'Connor Funk
1.00-2.00pm	Lunch Break	
2.00-4.00pm	Elements of a successful sales collection process Customer feedback and results measurements	Dr. Nyikal
4.00-4.30pm	Coffee/Tea Health break	
4.30-5.30pm	Leadership Video resource	Aline O'Connor Funk
Day 4. Thursday, 29 <sup>th</sup> July, 2010		

8.00-10.00am	Marketing process and tracking.	Prof Francis Kibera	
10.00-10.30am	Tea/Coffee Health Break		
ASM 3: Marketing strategy execution and measurement			
10.30-11.30am	The need for customer information	Dr. Raymond Musyoka	
11.30am-1.00pm	Competitor analysis, and strategy execution	Dr. Munyoki	
1.00pm-2.00pm	Lunch Break		
2.00-4.00pm	Retail management	Dr. Raymond Musyoka	
4.00-4.30pm	Tea/Coffee health break		
4.30-6.00pm	Guest speaker	Mr. Mbugua Gecaga-Consultant	Dr. Munyoki/David Ndung'u
Day 5, Friday 30 <sup>th</sup> July, 2010			
8.00-10 am	Choosing agro-dealers	Ms. Catherine Ngahu	
10.00-10.30am	Coffee/Tea Health Break		
10.30-11.30am	Value of visual references and promotional activities	Ms. Catherine Ngahu	
11.30-1.00 am	Brand Management	Tom Mutugu	
1.00-2.00	Lunch Break		
2.00-4.00pm	Excel spreadsheets for marketing plus vital sales tracking tools	Charity Njeri	Excel spreadsheet basics for customer/sales
4.30-6.00pm	Guest speaker	Kenya seed company	David Ndung'u

Day 6 Saturday 03 <sup>rd</sup> July, 2010			
8.00-9.00am	Course Quiz	Course administrators	Dr. Nyikal, Dr. Munyoki, David Ndung'u
9.00am-10.00	Course Evaluation and discussions	Dr. Munyoki, Dr. Nyikal	
11.00am-12.00pm	Visit to the Kenya Seed Simlaw store on Kijabe street Nairobi	Dr. Munyoki/David Ndung'u	
6.00pm-10.00pm	Closing Ceremony and award of certificates	Dr. Olubayo	University of Nairobi/AGRA

Important topics on competitor analysis provided overviews on the different types of competitions in seed business and how to deal with each one of them. However, according to Aline O'Connor Funk, "your biggest competitor is not other seed companies but saved seed" she told the participants, highlighting the threat posed by farmers' previous season "saved" seed. Many farmers in Africa today still plant seed saved from the previous season resulting in much lower yields and increased disease incidences. Other important topics included pricing mechanisms and the importance of making one's product in to a brand. The lectures were interspersed with exercises and case studies to give the participants the practical experiences- a major objective of the SEMIs courses. Included in the one week course were two guest speakers-a marketing consultant in the real estate business and a marketing representative from the Kenya seed Company.



Mrs. Mary Kinoti from the school of business presenting a lecture on culture and ethics in marketing



The seed marketing course was very interactive and engaging for the participants with different views being expressed.



Participants listen keenly to a Kenya seed company official at the Kenya seed retail shop in Nairobi.



Posters and fliers from Kenya seed-important marketing tools for any seed company.

After a particularly exciting, interactive and informative week, participants were awarded certificates at the closing ceremony. In attendance were the SEPA programme officer Dr. George Bigirwa, Professor Agnes Mwang'ombe, the team leader of SEMIs, Dr. Florence Olubayo, the chair of department of Plant Science and crop protection, the Dean of the faculty of Agriculture, professor Shibairo among others.

"I am delighted to see the tremendous progress SEMIs has made over the short period since its inception. SEMIs began as an idea between me and Joe Devries as we were travelling around the country. I must admit that we did not expect it to grow with the rapidity currently being experienced and I must commend the team from the University of Nairobi for having taken up the idea so gallantly and bringing it to its current position right now" says Dr. George Bigirwa, the program manager for SEPA at AGRA.

Professor Mwang'ombe congratulated the participants urging them to implement what they had learned once they get back to their seed companies in their home countries. Roberta Musa, a marketing representative from Kamano seeds in Zambia, thanked the organisers of the course indicating there was a lot to be done on the basis of what they had learned during the one week course.



Professor Mwang'ombe receives a gift from Apullah Adingtingah, from Ghana on behalf of the participants as appreciation for the good work by University of Nairobi



Mr. Ekuka Edong from Fica seeds Uganda receives his certificate from the dean of the Faculty of Veterinary Sciences.

The seed marketing course had unprecedented number of women participants-seven in total. This is the highest number of women in all the four courses SEMIs has conducted. Maybe this was an indication of the important role women play in the world of marketing.



Female participants of the seed marketing course with Professor Mwang'ombe, Dr. Florence Olubayo, Aline O'Connor Funk and Dr. Rose Nyikal



Nancy Mohamed from Jirkur Seeds, Nigeria making a presentation during the course





SEMIs Seed Marketing Course Participants, 2010

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## **SEED PROCESSING UNIT AND SEED LABORATORY**

SEMI has embarked on plans for the construction of the seed processing unit and the seed laboratory. Alan Gaul, during his visit at CAVS did the measurements of the area on which the seed processing unit will be located. By the time of writing this report, SEMI was awaiting the detailed architectural plan for the seed processing unit from ISU. Apart from serving as a learning facility, the seed processing unit will also be available to seed companies in the area for utilization in seed processing. Many small seed companies both here in Kenya and around Africa are challenged in terms of good processing facilities. This unit will be a benefit these small seed companies and help in the dissemination of high quality seed to farmers.

## Executive Summary

The Seed Enterprise management Institute (SEMI) 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.

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## 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



## SEMI's First Year Review and Planning Meeting

The SEMI's 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 SEMI's in the first year of operation and also chart the way forward for the second year. In attendance were SEMI's and University of Nairobi staff led by SEMI's 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:

- SEMI's inception and planning meeting held on February, 2011 which laid the foundation for the establishment of the SEMI's project at UON.
- Consultative workshop for Curriculum Development which developed the six SEMI's courses
- Consultative meeting for fine tuning of the SEMI's short curricula
- Visit by SEMI's staff to the Training of Trainers (TOT) workshop at ISU
- Delivery of SEMI's 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 SEMI's 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



**Dr. Joe DeVries, Director PASS, highlights Objectives of AGRA**

#### **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	CAIL, 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-Al 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, Tanseed	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	CAIL, 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

Month	Activity
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

Course	Delivery dates
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 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 emphasis 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 explore 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.
- 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.



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

- 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 (KEPHIS)	Plant Inspector, Quality 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 liaise 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 Seed legislation	Prof. P. M. Kimani
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	2

		Enterprises	
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, Ildet Seed Company, Migotiyo plantations and Rift Valley institute of science and technology. Ildet 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 Ildet seed company explaining to participants about seed packaging



Jenny explains the working of a seed planter at Ildet 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

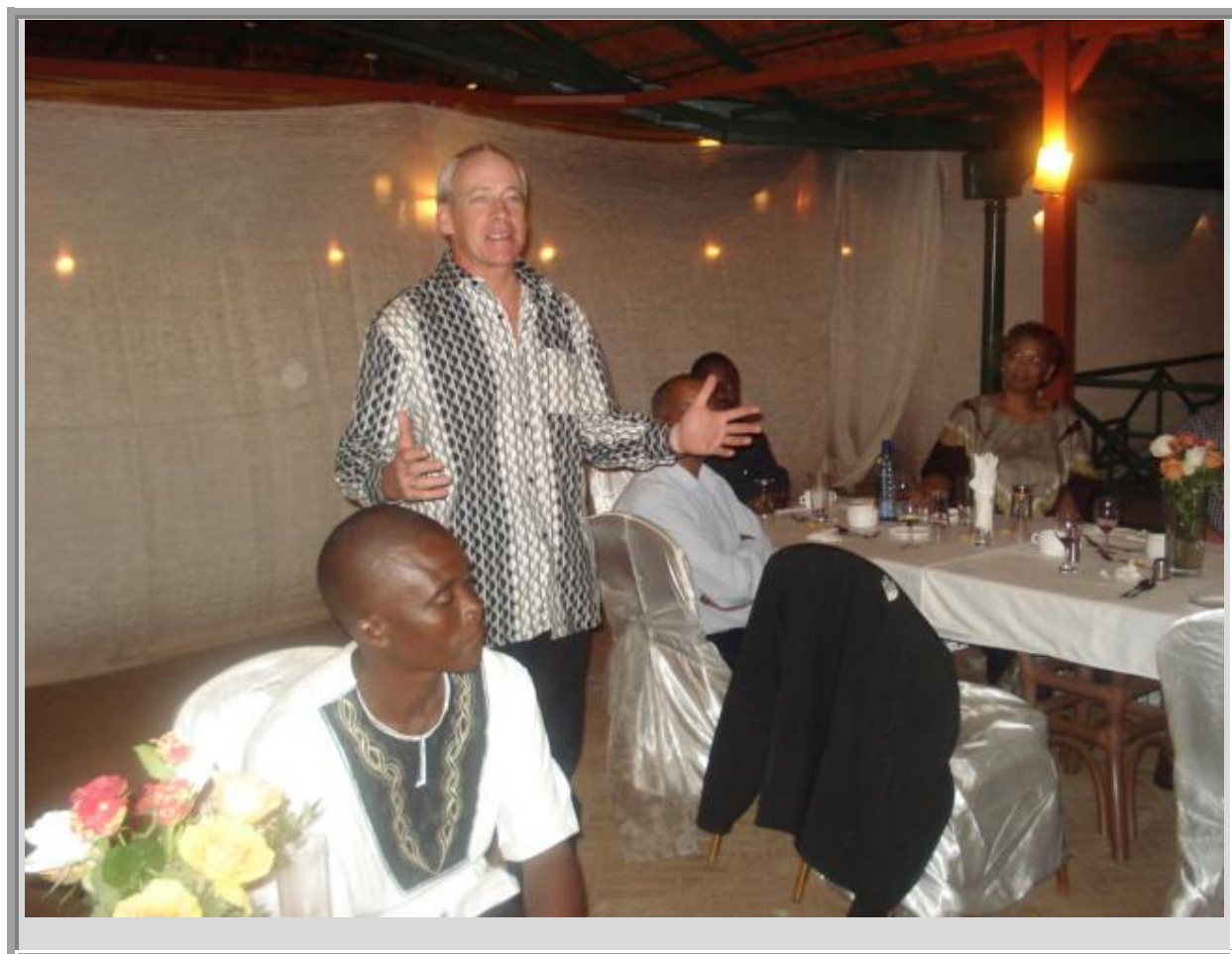
of the large scale farms in the rift valley of Kenya that produces seed for major seed companies including Kenya Seed Company and Monsanto.



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



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
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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'etich 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.

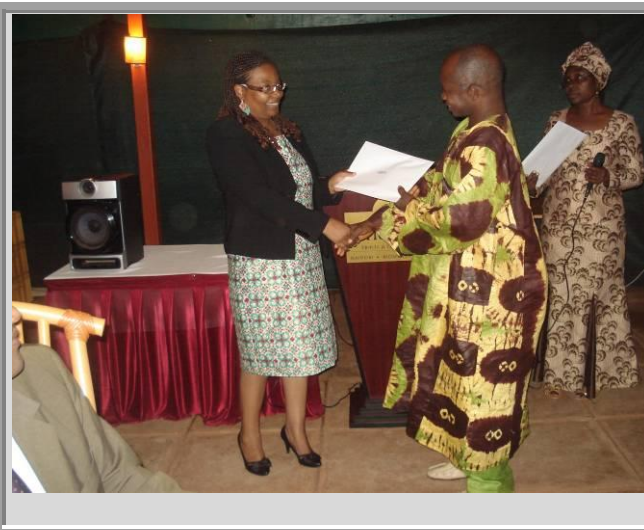


Participants engage Simlaw seed staff in discussions on marketing strategies.



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



Mr. Tom Mutugu from the school of business presents Maiga Soumeila from Nakoshi seed

seed company from Sierra Leone

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 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

2012

## 3<sup>rd</sup> Year Report

### Executive Summary

The Seed Enterprise management Institute (SEMIs) project was started in February 2010. This collaborative project brings together private and public institutions involved in the seed value chain, is based at the College of Agriculture and Veterinary Sciences (CAVS), University of Nairobi (UON) 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. Collaborators include University of Nairobi, Iowa State University, International Maize and Wheat Improvement Center (CIMMYT), Kenya Agricultural Research Institute (KARI), Kenya Plant Health Inspectorate Institute (KEPHIS), Private and Public Seed companies and international Consultants.

The main objective of SEMIs is to help seed companies in Africa produce more seed through provision of training on crucial aspects of seed in the seed value chain. Throughout much of Africa, seed companies face major challenges on basics of seed production, processing, quality assurance and general seed enterprise management. SEMIs provides training on all these major issues through provision of short courses at the University of Nairobi on Seed production, Seed Drying Processing and Storage, Seed Business management and seed quality assurance and Seed Enterprise Quality Management. These courses are delivered by experts in the different fields with the intention that the acquired knowledge will be utilized in not only upscaling production but also quality of the seed produced for farmers.

In the third year of the project, over 140 seed company personnel from over 40 different seed companies and 17 countries received training at SEMIs..

the seed production course, where all the basics of field seed production are taught had 30 participants and was held between 21<sup>st</sup> and 27<sup>th</sup> May, 2012 The main facilitators in were Dr. John MacRobert from CIMMYT and Dr. Kiarie Njoroge from CAVS. Other facilitators were from KARI, KEPHIS and CAVS. The seed drying processing and storage course was held back to back with the seed production between 28<sup>th</sup> and 27<sup>th</sup> May 2012. The main facilitator, as in the previous year was Dr. Yuan Shyy from Iowa state. He was helped by Dr. Ayub Gitau from CAVS. Other facilitators included Dr. Ragwa from KARI Katumani and lecturers from the Department of Environmental and Biosystems engineering of the University of Nairobi.

The course on seed business management had 29 participants from 26 seed companies and 18 African countries. The participants in this course are mainly Chief Executive Officers (CEOs) who make the hard decisions in the seed company ensuring seed company 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. Dr Julius Kipng'etich, the director of the Kenya wildlife Service was invited as a guest speaker as in previous courses in the last two years. . The Seed marketing had a total of 30 seed company personnel from 24 seed companies and three universities, Haramaya, West Africa Centre for Crop improvement (WACCI) and African Centre for Crop Improvement (ACCI). Seventeen African countries were represented.. 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.

Seed quality assurance and seed enterprise quality management course was held between 16 and 30<sup>th</sup> of September, 2012. a total of 29 participants from 25 seed companies and 15 African countries. Two participants from the AGRA West African office in Accra also attended the course in order to familiarize themselves with the training that the seed companies, for which they are in charge, go through. They paid tribute to the exemplary training that the seed company personnel were going through. The main facilitators, with help from UoN and KEPHIS staff, and other stakeholders were Dr. Joe Cortes from ISU, KEPHA Ogada from KEPHIS and Dr. James Muthomi from CAVS. Dr. Mike Stahr, from ISU, who is normally in charge of the seed quality aspects of this course, did not attend due to sickness.

Apart from training, SEMIs is involved in production of breeders' seed for beans. Currently, the project is engaged in production of six bean varieties including, Kenya wonder, Super Rosecocco, Kabete super, Miezi mbili, Kenya sugar bean and Kenya Red Kidney bean varieties. These varieties, developed by UON breeders have been licenced to seed companies and specifically Kenya seed company. SEMIs is providing foundation seed for these varieties to the seed companies for further multiplication to certified seed. One of the major hurdles in upscaling seed production for seed companies is the lack of foundation seed and this project is therefore helping increase food production and security in the country.

Although, this was initially meant to be the project, all indications are that AGRA will provide further funding for the continuation of the project for another three years. A decision based on the positive feedback from seed companies on the benefits of the training. We at SEMIs look forward to continuing providing this crucial capacity for the seed companies with the goal of having a vibrant and competitive seed sector in Africa that is responsive to the needs of African farmers.

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## 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 (SEMIs) 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.

SEMIs 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.

## SEMI's Activities in 2012

## SEMIs Second Year Review and Planning Meeting

The SEMIs second year review and planning meeting took place on 1<sup>st</sup> and 2<sup>nd</sup> of February, 2012 at the College of Agriculture and Veterinary Sciences, University of Nairobi. The main objective of the meeting was to review SEMIs activities in the second year of operations and to chart the way forward for the third 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 second year of activities included:

- Review of SEMIs activities in 2011-Professor Mwang'ombe
- The principal PI of the SEMIs project gave a breakdown of the SEMIs activities in 2012. This report is available at the SEMIs office office and Website.
- The principal also presented the plan for the 2012.
- Overall, the project commended for the good work was accomplishing

Group photo of participants of the Review meeting

- Other areas discussed include the SEMIs courses and execution, foundation seed production and SEMIs construction.
- Dates for the SEMIs courses were firmed up and areas needing improvement with regard to delivery and suitability were also discussed.



Participants at the 2<sup>nd</sup> SEMIs Review Meeting

### **SEMIs Curriculum Review Meeting**

Every year SEMIs holds a curriculum review meeting, where stakeholders in the SEMIs project are invited to input and review the SEMIs curricula. The main objective of the the meeting is mainly to appraise the curriculum and incorporate changing trends of the seed industry in order to make the curricula relevant to the seed industry. This meeting was held between the 19<sup>th</sup> and 21<sup>st</sup> of March 2012 at the Kenya School of monetary studies. In attendance was the SEMIs PI and Principal of CAVS, professor Mwang'ombe, the Dean of Faculty of Agriculture Prof. Shibairo, other UON/CAVS lecturers and stakeholders form KARI and KEPHIS. Iowa state was represented by Dr. James Okeno.

Outputs from the workshop included:

updated curricula of all the courses five courses

Updated day plans/programmes for all the five courses.



Participants for the meeting at Kenya School of Monetary Studies Nairobi

### **African Seed Trade Association congress**

SEMIs participated in the African Seed Trade association (AFSTA) congress that was held between 5<sup>th</sup> and 8<sup>th</sup> of March, 2012. SEMIs was represented by Dr. Kiarie Njoroge and Dr. D. K. Ndung'u who show-cased SEMIs at the meeting. Being a meeting of seed companies, and seed experts from all over Africa, SEMIs was well placed with in attending the congress. The SEMIs team received overwhelming interest from many seed companies who would like to have their staff trained at the Short courses.

At the meeting, Seed experts discussed a wide range of topics ranging from effects of

climate change on seed trade to business trends and statistics in seed in Africa. The congress was officially opened by his Excellency the President of Zanzibar Dr. Ali Mohamed Shein.



H.E. Dr. Ali Mohamed Shein, the President of Zanzibar after visiting the SEMIS Stand at the AFSTA congress in Zanzibar

The AFSTA congress provides a platform for stakeholders in the seed industry to meet, exchange ideas and trade. AFSTA which was officially inaugurated in 2000 is hosted in Nairobi Kenya. The association serves as a regional representative body for the seed industry and also serves to promote the development of private seed enterprises



Dr. Kiarie Njoroge at the SEMIs stand.

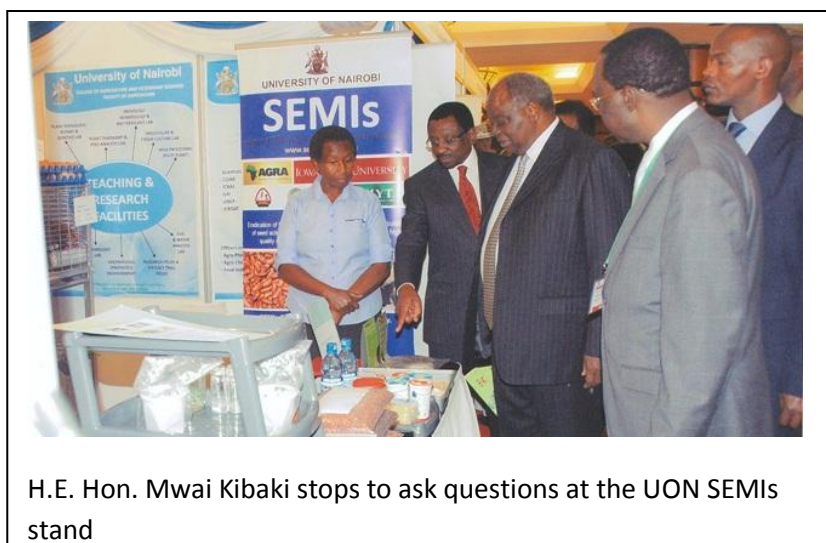
### Kenya transformation day-22<sup>nd</sup> August 2012

The Kenya Agricultural transformation day brought together agricultural stakeholders in government, private sector and agricultural experts in Nairobi. The forum was sponsored by AGRA and had among the experts, AGRA president, Jane Karuku. The forum was also attended by the prime minister who emphasised government’s commitment towards agricultural self sufficiency.

The SEMIs team was led by the PI, Professor Mwang’ombe and Professor Olubayo.

### Third Agricultural Sector Development Forum-October 16

SEMIs under the Banner of the University of Nairobi was showcased at the 3<sup>rd</sup> Agricultural Sector Development forum that was held at the Safari Park hotel in Nairobi. His excellency the president of Kenya, Hon Mwai Kibaki officially opened the one week forum on 16 October, 2012. While highlighting the importance of the Agriculture to the country,



H.E. Hon. Mwai Kibaki stops to ask questions at the UON SEMIs stand

the President urged the youth to be more involved in agriculture as only then can the sector move rapidly towards vision 2030 Goals.

The forum which brought together over 1,200 participants from government and private sector and farmers, provided a great opportunity for SEMIs to showcase its activities. Dr. Ndung'u, SEMIs project manager represented SEMIs at forum.



Participation of SEMIs in Agricultural Fora is important to spread the seed message

### **African Green Revolution Forum (AGRF) 2012: Arusha, Tanzania, 26-28 September, 2012.**

The African Green Revolution Forum (AGRF) conference was held in Arusha Tanzania between 26-28 September, 2012. This forum, sponsored by AGRA brought together global leaders for discussions on how to sustain agriculture growth and food security in Africa. the high ranking meeting came right on the heels of G8 summit meeting where leaders committed themselves to development of public-Private sector partnerships to alleviate hunger and food insecurity.

The forum, which was hosted by H.E. Jakaya Kikwete, provided a forum for stakeholders in Agriculture, to meet and exchange ideas on how best to tackle the issues of food insecurity in Africa. SEMIs was represented by SEMIs PI, professor A. Mwang'ombe, Professor Florence Olubayo-SEMIs management, and Rosebenna Cheron, a field technician in charge of the Bean project at SEMIs.



**SEMI's 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 dates of 21<sup>st</sup> and 26<sup>th</sup> May, 2012. As in the previous courses, Dr. John MacRobert was the main facilitator with help from Dr. Kiarie Njoroge of CAVS and other UON of lecturers. John has vast experience in the seed industry and has extensively worked on providing capacity for the seed industry in Africa. He is author of the much acclaimed book, “Seed Business Management in Africa”. This book delves deeply into the whole issue of how to go about seed business in Africa and provides a vision and strategy of seed enterprise. It provides useful information on production, marketing and finance and is an invaluable asset for seed companies.. Dr. MacRobert works with International Maize and Wheat Improvement Center (CIMMYT) and is based in Zimbabwe. 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 30 participants from 27 seed companies and 13 African countries attended the training. As one of the objectives of the SEMIs project is to train both Phd and MSc. Students in seed enterprise, among the participants were two Phd students from West Africa Center for crop improvement and three masters students from Makerere and Kwame Nkurumah University of Science and technology. 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.

The Production course involved four days of formal lectures at CAVS followed by two days of field excursions, where the participants travelled to Nakuru to visit the KEPHIS laboratory in Nakuru and Leldet seed company. On the second day the participants visited KARI Njoro where they were learnt of the Wheat rust programme at KARI Njoro.

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

No. of Countries	No. of Seed companies/ Institutions	Students	Total Number of Participants
19	20	2 Phd 3 Msc	30

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



Lectures at KARI Njoro in the Wheat rust Programme

Over 50% of the training is experiential where participants normally involve themselves with actual field work. The field work has come to be one of the strong points of this programme.



Visit to KEPHIS in Nakuru for Variety testing



Dr. Kiarie Njoroge from SEMIs with Participants at KEPHIS Nakuru

After a week of intense class, laboratory and field training the participants were awarded certificates of participation at a formal ceremony hosted by the Principal of the college at the Jacaranda hotel in Nairobi. In attendance were the Principal of the college and SEMIs PI, Prof. Mwang'ombe, Dr. Onsando from KEPHIS while AGRA was represented by Dr. Rufaro Madakadze. Others included the dean of the faculty of Agriculture Prof. Solomon Shibairo and SEMIs and UoN staff.



Dr. Onsando from KEPHIS presents a certificate of participation to one of the participants from KIPATO seed company based in Tanzania



Dr. Madakadze, right, presents a certificate to Dr. Amade Muitia from Mozambique, a Phd Graduate from ACCI South Africa.

## 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 28<sup>th</sup> and 2<sup>nd</sup> June, 2012. Dr. Yuan Shyy from ISU and Dr. Kiarie Njoroge from CAVS were the main facilitators of the course. Other facilitators were 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 31 participants from 23 seed companies. The course also had Phd and Msc students from WACCI, ACCI, Makerere and Kwame Nkurumah University of Science and technology. The Food and Agricultural Organization sponsored two participants from Sierra leone engaged in the seed multiplication project

Countries	No. of Seed companies	Universities/ Institutions	No of Students	No of Seed company Personnel
14	24	4	7	23

Dr. Yuan Shyy, a seed expert from ISU took participants through aspects of all the different types of seed processing equipment needed for high quality seed processing.



There were four days of class and laboratory training and two day of field trip. In the field trip the participants travelled to Machakos County and visited, Kenya seed company seed processing factory in the outskirts of Nairobi, BrazAfrica, a seed equipment merchant, Kenya Agricultural Research Institute (KARI) Katumani, and Dryland seed company Ltd. Dryland Seed Company, as with most of the companies that attend the SEMIs courses is one of the seed company being supported by the AGRA



Participants at Brazafri, a seed company that sells seed processing equipment



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

Participants learnt the really practical issues of seed processing on the large and small-scale level.



Seed Packaging at Simlaw Seed company in Nairobi

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.



Learning to use a moisture meter at BrazAfrica

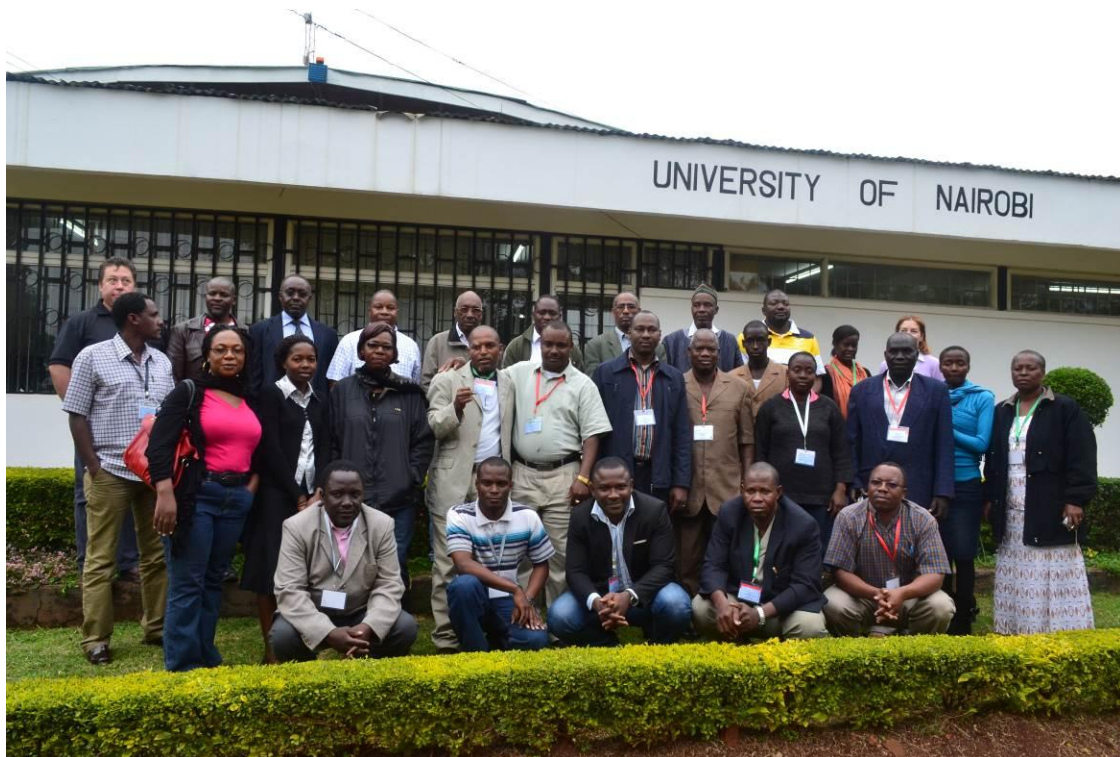
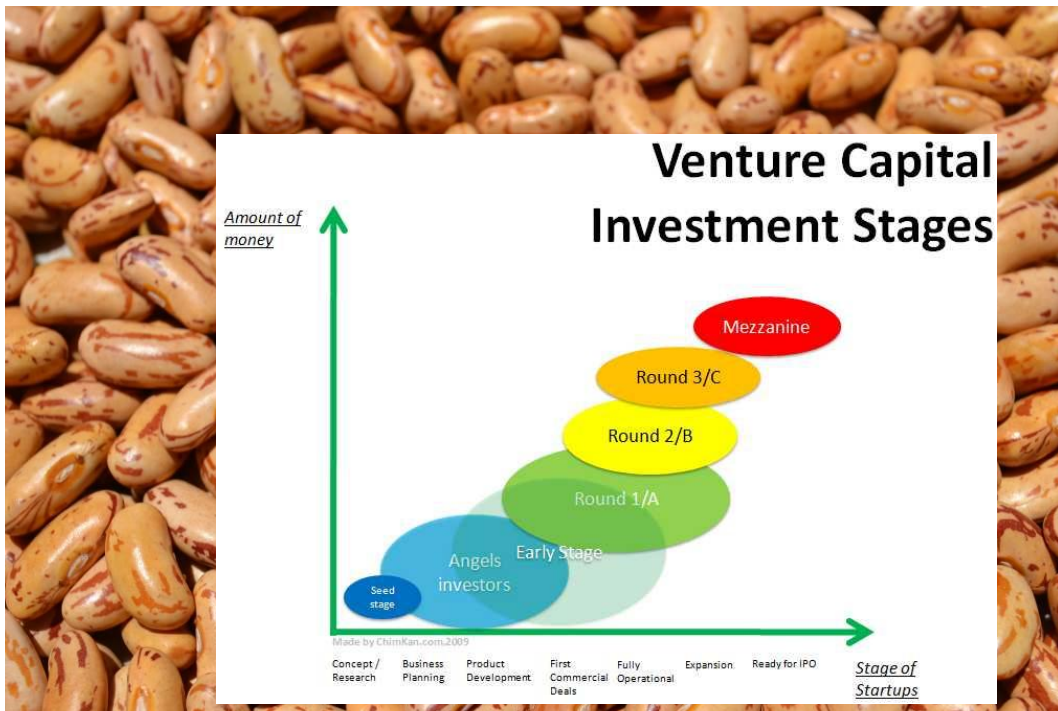


Visit to Dryland seed company





## SEMI's Seed Business Management course 2012



Seed Business course participants-2012

### Seed Business Management

Seed business management course was held between 16<sup>th</sup> and 21<sup>st</sup> July 2012. 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.

Being a business oriented course, it was deemed necessary to bring on board expertise from the School of business. Prof Aosa, the Associate Dean, Graduate business studies at the school of business holds a Phd in strategic management and facilitates the seed business Course, while Dr. Justus Munyoki, whose area of specialization is strategic management, technology transfer and new product development, facilitates the seed marketing course. They are helped by other UON lecturers and guest speakers.



**Prof. Evans Aosa from the School of Business at the Seed Business course in 2012**

This year also witnessed the facilitation from Dilip Gokhale a consultant with AGRA who together with Aline O'Connor Funk, were the main consultants for both the business Management and seed marketing courses. Dilip, Gokhale is consultant with AGRA and has long term experience within the seed industry having worked at one time as a senior advisor to the Syngenta foundation for sustainable agriculture. Dilip also brought on board seed experience from India, which boasts of a very mature seed sector.



**Dilip Gokhale during the SEMIs seed business training**

In total, there were 22 seed company practitioners, three PhD and two MSc. Students. The PhD students were from West Africa Centre for Crop Improvement (WACCI) based at the University of Ghana and Africa Centre for Crop Improvement (ACCI) based at the University of KwaZulu Natal in South Africa. The MSC students were from Haramaya University in Ethiopia. Most of the seed company participants were Chief executive officers (CEOs) of their seed companies.

Country	No. of Seed companies/Institutions	Seed companies/Institutions	Number of Participants
Nigeria	1	WACCI	1
Cameroon	1	WACCI	1
Ethiopia	1	Haramaya University	2
Uganda	1	Victoria	1
Tanzania	2	Suba Agro, Kipato	2
Malawi	3	Panthochi Seed, Peacock Seed Company, ACCI	3

Zambia	1	Stewards Globe Ltd	1
Mozambique	3	NzaraPeya, Morais Comercial, Dengo Comercial	3
Rwanda	1	APC	1
Ghana	3	Heritage Seeds, Josma, Meridian	3
Liberia	1	Greenstar	1
Niger	1	Halal	1
Sierra Leone	2	Seed Multiplication Project	2
South Sudan	2	Green Belt, Century	2
Zimbabwe	1	Mukushi Agrodealers(PVT)	1
Burkina Faso	1	<a href="#">EPC-SAC</a>	1
Guinea	1	Guinee-Semence	1
Mali	2	BADDAR, MaliPaysans	

The Seed Business course is designed for seed company executives (CEOs) and senior management personnel in seed companies. Topics include 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, an ICT session where participants learn how to make the best use of excel spreadsheets and important management tools.



Participants engage during a break out session

As is normally the case for the seed business group, a guest speaker from either the private or public sector is invited. This year the guest speaker Dr. Julius Kipng'etich from the Kenya Wildlife services (KWS) who spoke at length on important aspects that any entrepreneur needs in order to succeed. Dr. Kipng'etich is credited with turning around the KWS into one of the best managed parastatals and the most profitable.



Dr. Kipg'etich delivering a talk to participants

### Visit to the Seed Industry

SEMIs strives to make the seed courses as much experiential as possible. Therefore, and to break monotony of class, the seed business class travelled to Machakos County where they visited Dryland Seed company which has benefited from AGRA support. Dryland seed company has also benefitted from the training at SEMIs. Currently, the seed company is one of the seed company that has shown tremendous improvement in seed production resulting from the AGRA support and from SEMIs training.



The CEO, Dry land Seed Company (2nd left) discusses with Participants at Dryland Seed Company

The company through AGRA support has recently acquired a seed processing unit and is now able to process its own seed.

Apart from, the seed company, Dryland also runs an agro-dealer shop which serves as an outlet for its seeds.

### SEMs seed marketing course 2012

The SEMs seed marketing course 2012 was held between the dates of 23-28 July, 2012. In total there 30 participants from over 17 African Countries



### Seed marketing participants 2012

The Main facilitators of the course was Aline O'Connor and Dilip Gokhale with aid from the University of Nairobi, School of Business.

Participants also got a chance visit the Kenya seed company Simlaw seed outlet shop in Nairobi.





Ms. Mary Kinoti from the school of business delivering a topic on seed marketing

## Seed Quality Assurance and seed Enterprise Quality Management 2012

The Seed quality assurance and seed Enterprise Quality Management course was held between 17 and 29 September, 2012. In total there were 28 participants from 17 African Countries. The course consists of two weeks of lectures and laboratory practicals at CAVS and field visits to the seed industry. Participants visited the KEPHIS seed laboratory in Nakuru County in the heart of the rift Valley of Kenya.



Participants during seed quality assurance practical sessions at CAVS

In total there were 29 participants from 27 seed companies and 15 African countries.

### **SEMIs construction**

Considerable progress has been made on SEMIs construction of the seed processing unit at CAVS. This seed processing unit, once complete will process seed for the University and also for seed companies that don't have processing facilities.

### **Breeder Seed production**

SEMIs is also actively engaged in breeder seed production both at the Kibwezi farm and at the college of Agriculture and Veterinary Sciences (CAVS) fields at the college.



Climber beans bred at UON that SEMIs is involved in breeder seed production

Class seed	Variety	Location	Quantity
Breeder Seed	new Roseocco	Isiolo	5354
	Kenya Early	Isiolo	1437
	New Roseccoco	Naivasha	?
	<b>Total Breeder seed</b>		<b>6791</b>
Basic seed	Kenya Mavuno	Kutus	54
	Kenya Mavuno	Kerogoya	154
	Kenya Mavuno	Naivasha (karongo)	585

	Meizi Mbili	Naivasha	1399
	Kenya Safi	Naivasha	738
	Kenya Tamu	Bungoma	?
	<b>Total Basic Seed</b>		<b>2930</b>

Breeder seed produced by UON in 2011.

SEMIs is working together with the University to produce breeder seed of improved bean varieties bred here at CAVS.

2013

### Executive Summary

In 2013, only two SEMIs courses, Seed Business Management and Seed Marketing were offered owing to the fact that SEMIs was transitioning from Phase I to Phase II. Aline O'Connor and Dilip Gokhale, Prof. Evans Aosa and Dr. Justus Munyoki, both from the University of Nairobi, School of business, were the main facilitators of the two courses. For both courses, 52 participants from 34 seed companies and 12 countries were trained.

On SEMIs infrastructure, the SEMIs seed processing unit is now 90% complete and SEMIs is the process of importing a seed processing unit from China. This is expected to be operational by the end of 2014.

Seed production also continued both at the Kibwezi field farm and at the fields at the college.

## Seed Business Management Course-2013

The seed Business course, 2013 was held between 15 and 21 July, 2013. In total 25 seed practitioners from 10 countries and 25 seed companies were trained. The main facilitator for the course was Aline O'Connor from Agri-Experience and Prof. Evan Aosa of the University of Nairobi's School of business. The course which is mainly for seed company CEOs involved mainly lectures on seed business management at the college. Participants, however also visited Dryland Seed Company, one of the seed companies from Kenya, supported by AGRA.



Seed Business facilitators-from Left-Aline O'Connor, Prof. Evans Aosa and Dilip Gokhale



Aline O'Connor taking the participants through one of the Seed business course topics



Participants visit to Dryland Seed company in Machakos

### Seed Marketing course-2013

The SEMIs seed marketing course was held between 22 and 28 July, 2013. The main facilitators for the course were Aline O'Connor from Agri-experience, Dilip Gokhale and Dr. Justus Munyoki from the University of Nairobi School of Business. The course mainly concentrated on seed marketing aspects for seed companies. Participants also visited the Kenya seed company, Simlaw seed outlet shop in the middle of Nairobi city. In total there were 27 seed company marketers from 27 seed companies and 11 African countries.



Seed company Practitioner with AGRA president, Jane Karuku (Centre), PASS Director, Joe DeVries, Prof. Mwang'ombe, and other University staff.



2014

## Summary

In 2014, two courses, seed production and seed drying processing and storage have already been held. The main facilitator for the seed production was Prof. Kiarie Njoroge of CAVS, helped by KARI and KEPHIS staff. Apart from the seed production courses at CAVS, the participants also travelled to KEPHIS Nakuru seed quality assurance centre and also visited a seed grower in Nakuru county in the rift Valley.

The Main facilitator for the seed processing course was Dr. Yuan Shyy from Iowa state University and Staff from agricultural engineering at CAVS. the participants travelled to Dryland seed company in Machakos county to familiarize themselves with processing activities at the company.

The SEMIs seed processing facility is complete and SEMIs is in the processing of importing the seed processing unit. Breeder seed production is also still going on at the University farm and at Kibwezi



Participants of seed processing course visiting KARI Seed unit in Machakos

