



**MOUNT KENYA
UNIVERSITY**

ISSUE No. 2 : 2013



RESEARCH AND INNOVATION BULLETIN



RESEARCH AND DEVELOPMENT DIVISION

Vision

To be a leader in addressing community socio-economic needs through research and innovation.

Mission

To provide leadership in research and innovation for social and economic empowerment.

RESEARCH STRATEGIC OBJECTIVES

STRATEGIC OBJECTIVES	
Research	<ul style="list-style-type: none">• Develop and improve the infrastructure for research• Institutionalise research ethics• Encourage and re-energise staff and students to undertake research• Enhance the research capacity of staff and students
Community Outreach	<ul style="list-style-type: none">• Enhance the university's capacity to provide community service• Address development challenges through research and innovation
Enterprise and Innovation	<ul style="list-style-type: none">• Enhance the university's capacity to provide community service• Address development challenges through research and innovation• Promote exploitation of innovations and research findings• Protect Intellectual Property rights
Institutional Linkages	<ul style="list-style-type: none">• Develop and implement a structured system for stakeholders networking, collaborations and partnerships



PREFACE

Key mandates of universities the world over are mainly teaching, research and service provision. In many African countries, including Kenya, research is usually not accorded the priority it deserves. Mount Kenya University recognises the importance of research as a key component of its mission. High quality university education involving training and research not only provides the human capital for socio-economic development but also transforms individuals and societies in ways that reduce poverty and increase global competitiveness. In this regard, the university is increasingly striving to increase the quantity, quality and relevance of research output with a view to creating innovations that will enable the country to effectively transform its low skill-based economy into a knowledge-based economy in line with Vision 2030. The Research and Development Division was established in March 2011 with the following mandate: Research, Institutional Linkages, Enterprise and Innovation, and Community Outreach. The Division has continued to scale the heights of research and innovation by creating a research culture in the university.

The Division promotes knowledge sharing with shareholders for accelerated social and economic development. In 2012, the Division made several strides in the utilisation of its allocated funds by holding workshops, public debates, public lectures and most significantly facilitating members of staff to attend and present paper in national and international conferences.

The Division held proposal development workshops for members of staff where they learnt the various modes of research dissemination. The Division further gave grants to members of staff in an effort to encourage them to undertake research as well as build their capacity.

The Division will continue to positively impact on the lives of the community through research and innovation.

ACKNOWLEDGEMENTS

The Research and Development Division greatly appreciates the support rendered by the university management, university linkages committee, university research committee, school research committee and the departmental research committee in the organising and implementation of all our activities throughout the year. We acknowledge the support given by the following committees and staff, in the execution of all the Research and Development activities.

UNIVERSITY RESEARCH COMMITTEE

- **Deputy Vice-Chancellor, Research and Development** - Chairman
- **Director, Research and Development** - Secretary
- **Registrar, Academic Affairs**
- **Deans of Schools**
- **Chairpersons of School Research Committee**

UNIVERSITY LINKAGES COMMITTEE

- **Deputy Vice-Chancellor, Research and Development** -Chairman
- **Director, Research and Development** -Secretary
- **Registrar, Academic Affairs**
- **Director, Teaching Programme**
- **Director, Quality Assurance**
- **Deans of Schools**

RESEARCH AND DEVELOPMENT DIVISION STAFF

- **Prof. John H. Nderitu** - Deputy Vice-Chancellor, Research and Development
- **Dr. Francis Muregi** - Director, Research and Development
- **Mr Samuel Mathenge** - Graduate Research Assistant
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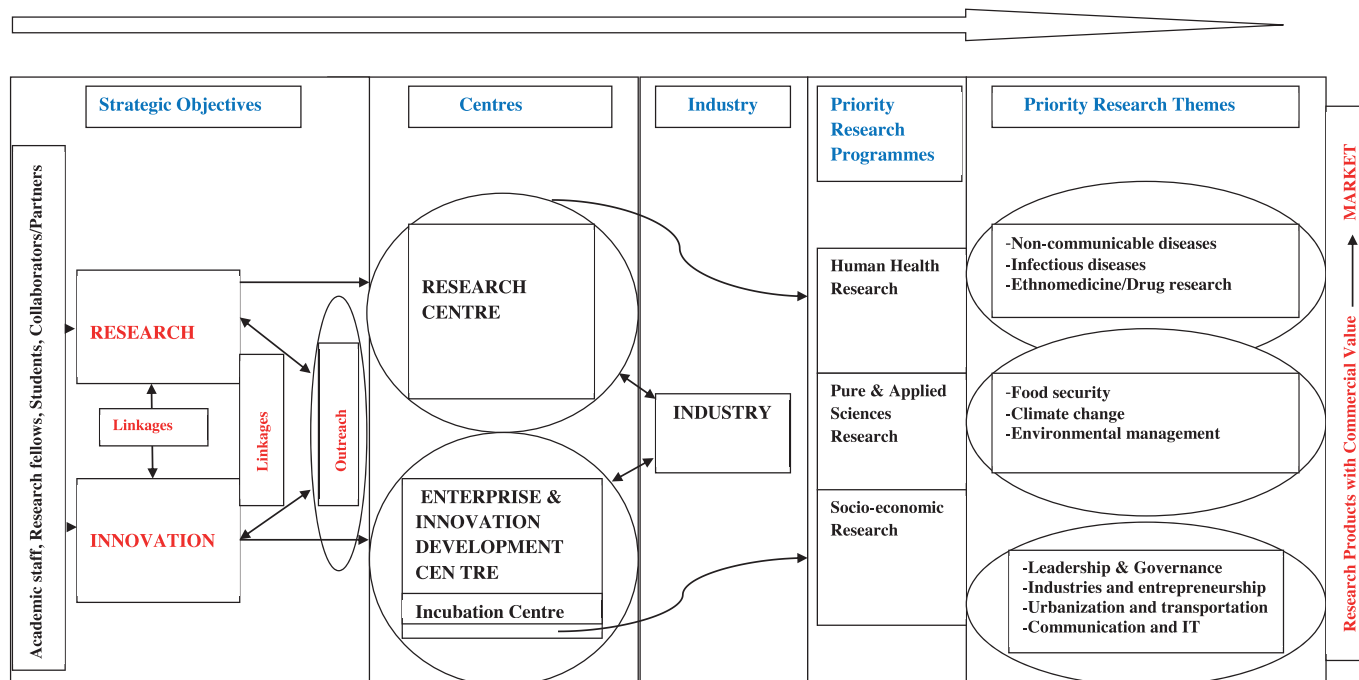


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MKU LAUNCHES RESEARCH AND INNOVATION MODEL AND RESEARCH CENTRE

The Research and Development Division has developed a Research and Innovation Model that will be used to guide it towards achieving its strategic objectives.

Mount Kenya University Research and Innovation Model



MKU BUILDS A RESEARCH CENTRE

In pursuit of the strategic objectives, the Research Division has established a Research Centre with the following objectives:

- i Promote centralized use and management of research equipment and facilities

This will curb wastage and otherwise costly duplication. In many institutions, it is not uncommon to find various departments harbouring similar and otherwise expensive equipment which are rarely used, and the daily man-equipment inter-course is only a few hours. Thus, centralization will maximize on utility while cutting costs for purchasing the equipment/facilities.



- ii Facilitate establishment of research and academic programmes both at undergraduate and postgraduate level

At MKU, there is need to establish in respective schools innovative and practical-driven programs. It should be appreciated that it is practically impossible to stock all student laboratories with prohibitively expensive equipment (eg. DNA sequencers; MS spectrometers), which cost millions of shillings. Thus it is prudent, -as is

the norm the world over, to establish a Research and Equipment Centre where targeted practical skills can be imparted on both undergraduate and postgraduate students. An added advantage is that at the equipment centre, skilled personnel usually handle these equipment, and thus they would have longer useful lives.

iii To establish a critical mass of staff with research culture

The Research facility will serve as a cauldron for staff and students with passion and motivation to conduct research since diverse research skills will be imparted from various fields by seasoned mentors.

**iv Promote team work in research**

The proposed research facility will serve as the converging point for diverse academic/ research fields. We envisage that it will serve as the launching pad for interdisciplinary research teams equipped with skills to competitively apply for research grants nationally and internationally.

v Promote demand-driven research

Whereas individual-based research proposals are encouraged, more than not such research activities are driven not by social and economic but by the narrow interest of the individual. The proposed Centre will serve “focusing and prioritising” hub for research activities of MKU, to ensure they are in tandem with the University’s and national objectives and priorities.



also often activate the needs expressed as the “driving”

vi Generate income for the University

As earlier noted, the proposed Research Centre will lead to development of new undergraduate and postgraduate programs, which may directly generate income to the University. Furthermore, an Equipment centre may offer a “consultation and specialized” services to the public and other universities at a fee, and thus help generate income for MKU.

vii Promote creativity and innovation

It is envisaged that the proposed Centre will serve as Centre of Excellence (CoE) where innovative projects will be promoted and adopted, and cutting-edge research of international calibre will be undertaken. The CoE will thus not only attract local researchers but also international-cadre researchers.

**viii Expedite knowledge and technology transfer**

The Centre will serve as a “mentoring house” where young researchers are imparted with relevant skills through training. It is envisaged that the Centre will serve as one-stop-shop where knowledge transfer will be expedited.

ix Create a platform for collaborative research

One of the responsibilities of the Directorate of Research and Development is to “initiate and maintain local and international collaborative research programmes”. It is impossible to engage collaborators without a sound platform, and it is envisaged that the Centre will provide this.

**The Research Centre houses:**

- » Parasitology lab
- » Microbiology lab
- » Molecular Biology lab
- » Ethnomedicine and Drug research lab

RESEARCH FLAGSHIP PROJECTS

The Research and Development Division in its Research and Innovation Model has identified its key research priority areas as human health research, pure and applied science research and socio-economic research. In human health research, the Division has developed two projects to achieve this priority area:

NATIONAL NON-COMMUNICABLE DISEASES RESEARCH INSTITUTE

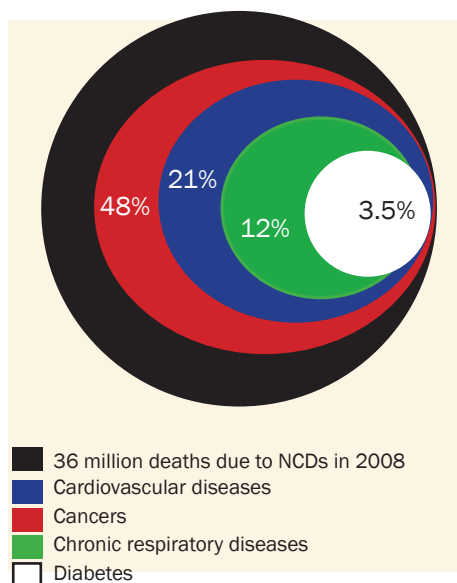
The global burden and threat of Non-Communicable Diseases (NCDs) constitutes one of the major challenges for development in the 21st century. This burden undermines social and economic development in developing countries including Kenya.

Of the total 57 million deaths that occurred globally in 2008, an estimated 36 million deaths were due to NCDs.

There are four categories of NCDs – cardiovascular diseases, cancer, chronic respiratory diseases and diabetes. Of the 57 million deaths, 48% were of cardiovascular diseases, 21% of cancers, 12% of chronic respiratory diseases and 3.5% of diabetes.

These are commonly known as chronic or lifestyle-related diseases. About 80% of all NCDs deaths (29 million) that occurred in 2008 were in low- and middle-income countries, and the probability of dying from a NCD between the ages of 30 and 70 years is highest in sub-Saharan Africa, Eastern Europe and parts of Asia. The four categories of NCDs can be largely prevented or controlled by means of effective interventions that tackle shared risk factors, namely: tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol as well as through early detection and treatment. NCDs affect the developing world and lower-income populations hardest.

Strong evidence links poverty, lack of education and other social determinants to such diseases and their risk factors. A vicious cycle is created by the epidemic, whereby NCDs and their risk factors worsen



poverty, while poverty results in rising rates of such diseases. The prevention of NCDs would reduce poverty, particularly since the majority of expenditure for treatment in low- and middle-income countries is paid privately or from out-of-pocket health-care systems. At the same time, because of the magnitude of the illness, the disabilities and premature deaths they cause and the long-term care required, NCDs reduce productivity and increase health-care costs, thereby weakening national economic development. While the international community has focused on communicable diseases such as HIV/AIDS, malaria and tuberculosis, the four main NCDs are relatively unnoticed in the developing world, and are now becoming a global epidemic. Thus, many lower-income countries will continue to face a substantial burden of communicable diseases, and therefore contend with a "double burden" of disease, further compounding the overall

health and development challenge. Death and disease from NCDs now outstrip communicable diseases in every region except Africa, where the rate of such diseases is quickly rising. By 2030, NCDs are projected to cause nearly five times as many deaths as communicable diseases worldwide, including in low and middle-income countries.

Mount Kenya University reckons that such an arduous task of war against NCDs cannot be left to governments alone, and that the private sector has its role to play. The university therefore proposes the formation of a National Non-Communicable Diseases Research Institute aimed at offering concerted strategies to reduce the morbidity and mortality due to NCDs. The proposed institute, which will be a regional centre of excellence (CoE), will house the Cancer, Diabetes, Chronic Respiratory Diseases and CVD Research Units. The scope of the units will encompass integrated research on disease aetiology, drug development, diagnostic tools, risk reduction, awareness and advocacy, capacity building and technical cooperation, all geared towards control, prevention and management of NCDs. Through the institute, lessons learned in successful control and management strategies for national HIV/AIDS, tuberculosis and malaria programmes in sub-Saharan Africa will be harnessed in the fight against NCDs. It is envisaged that these concerted efforts will ultimately lower the morbidity and mortality rates of NCDs, thus improving the socio-economic status of the Kenyan people and of the region.

NATURAL PRODUCTS INITIATIVE

Kenya has enormous ecological diversity that can be used for medicinal, cosmetics, nutritional, agricultural and industrial purposes, locally and internationally. Though the Kenya Industrial Property Institute (KIPI) has patented several herbal products prescribed by herbal practitioners in the country, most of the products are not reaching the wider market. There is therefore need for the verification, validation, value addition and subsequent marketing of the herbal products in both local and export markets. The overall objective of the programme is to commercialise various patented herbal products in Kenya. The specific

objective of the programme is to verify and validate the patented herbal products through conventional health research. The project will target herbal product classes prioritised in the following order; Herbal lotion; Mouth wash; Anti-fungal; Skin disease extracts; Anti-diarrheal; Food supplement and Immune booster and Insecticides. The project will be implemented within a two-year period at a cost of KSh15 million. The ultimate objective of the programme is to address the health challenges facing the Kenyan people, the region and beyond, through provision of safe and affordable medicines for their socio-economic development.



Market-ready beauty and consumer products derived from nature. The specific objective of the programme is to verify and validate the patented herbal products through conventional health research.

RESEARCH STRATEGIC PLAN AND RESEARCH POLICIES LAUNCHED

The seven-year (2012-2018) Strategic Plan of the Research Division of Mount Kenya University is geared towards guiding the Division's activities in its earnest pursuit of the research mandate bestowed to it. Although the Division is two year old, it has drawn important strategic objectives under the umbrella

themes of Research, Institutional Linkages, Enterprise and Innovation and Community Outreach. Towards realizing these objectives, the Division has formulated several key guidelines and policy documents including the Research Policy, Enterprise and Institutional Linkages Policy, and Intellectual Property Policy.

Furthermore, the Division has continued to establish collaboration with other institutions and industry. Thus, this Strategic Plan document will serve as an overarching framework for achieving not only the Division's goals but also that of the university, and will undoubtedly render a new impetus to MKU in realizing its Vision and Mission. The Strategic Plan also addresses some of the pivotal issues that will drive research and innovation in a manner that all the stakeholders will find prudent. MKU prides itself in being agile and able to respond



Varsity officials amongst them Jane Nyutu (Board of Trustees), Chancellor Prof. Victor Wulsin, VC Prof. Stanley Waudu and Deputy VC-R&D Prof. John Nderitu during the launch of the Strategic Plan.

to emerging issues in the fields of science, technology and innovation. Thus, this Strategic Plan document will be a flexible one aimed at responding in a timely manner to the socio-economic needs of the Kenyan people, the continent and the world at large.

It is therefore envisaged that this Strategic Plan will serve as a clear roadmap for the Research Division as it strives to fulfill its research mandate.



1 RESEARCH

1.1 Research Projects

1.1.1 MKU Don wins Post-Doctoral Research Grant

Dr Samuel Odiwour (pictured) has won a Science, Technology and Innovation Research Grant worth KSh700,000 from the National Council of Science and Technology (NCST). Dr. Odiwour, a lecturer in the Department of Medical Laboratory Sciences, will carry out the research as part of his post-Doctoral studies. The title of his survey is "Socio Epidemiological Survey and Parasite Molecular Diversity



Determination within Re-emergent Rural Cutaneous Leishmaniasis Foci". The NCST Chief Executive Officer, Prof. Shaukat Abdulrazak congratulated Odiwour for the grant.

1.1.2 MKU staff member wins NCST Innovation Grant

Mr Alex Kiragu of the Research and Development Division won an innovation grant for "Thermo Derived Power Supplier". The idea behind energy transformation and conservation led to design and construction of thermo electronic systems which are capable of converting thermal energy into electrical energy directly without using a thermodynamic system. The generated energy is further utilized for intended pur-

pose or for control of these heat generating systems electronically. The designed systems are capable of converting intentionally and an internationally wasted heat from combustion systems such as incinerators, boilers, LPG burners biomass and petroleum driven systems and interestingly control them electronically. NCST awarded him Ksh. 550,000 to undertake the innovation.



1.1.3 MKU joins promotion of snap bean crop management technologies project for improved livelihoods in Eastern and Central Africa

Snap bean (*Phaseolus vulgaris* L.) is the leading export horticultural crop in Kenya and has recently gained economic importance as an export crop in Tanzania and Uganda. Promotion of the crop in Eastern and Central Africa is thus a strategic entry-point for revitalization of socioeconomic development, especially in rural areas.



However, there is low snap bean productivity in smallholder farms and this is largely attributable to insect pests and diseases, low soil fertility, lack of improved locally adapted varieties and postharvest losses.

In order to address these snap bean production constraints and improve profitability of snap bean in the region, the University of Nairobi (UoN), Selian Agricultural Research Institute (SARI) and National Agricultural Research Organization (NACRRI-NARO) in partnership with AS ARECA have generated and identified promising Integrated Crop Management (ICM) technologies in the last three to four years. These promising technologies have however not been validated for dissemination to the

end users. Therefore, the project intends to validate and accelerate the dissemination of integrated crop management options for the management of snap bean pests, diseases and soil fertility, which will lead to enhanced productivity, improved food and nutrition security, and improved incomes in ECA.

It will validate promising crop management options for snap beans, enhance capacity of snap bean growers and extension service providers and enhance availability of information on integrated management of snap beans. The project will be carried out in Kirinyaga South (Mwea) and Embu districts in Kenya, Siha and Arumeru districts in Northern Kenya, and Mpigi and Wakiso in the Lake Victoria region of

Uganda. The ICM technologies that were developed in the previous snap bean projects will be synthesized and validated on-farm in each of the six sites. Short term training of farmers, extension providers, researchers and other stakeholders on snap bean ICM technologies, recipes, monitoring and evaluation will be carried out and multi-stakeholder innovation platforms established to enhance exchange of information and linkage. Availability of information on snap bean ICM will be enhanced by an elaborate communication plan and knowledge management

strategy, development of an ICM manual and promotional materials, documentation and sharing of lessons learnt in workshops and meetings. Participatory monitoring and evaluation will be used to assess and monitor changes associated with the project. The results of the project activities will be shared through reports, websites, manuals, peer reviewed publications and presentations at scientific

\$130,000

Annual cost of project

conferences. The project is based on participatory action research involving all relevant stakeholders. It is well aligned and complies with the 10 ASARECA/Framework for African Agricultural Productivity Programme (FAAP). The project will be implemented by UoN and MKU (Kenya), Selian Agricultural Research Institute (Tanzania) and National Agricultural Research Organization-National Crops Resources Research Institute (Uganda) at a cost of 130,000 US dollars for one year.

At MKU, the project will be managed by Prof. John Nderitu.

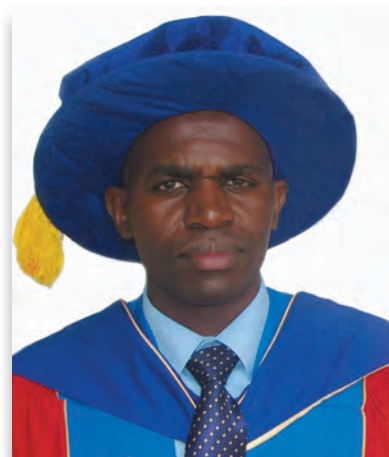
1.1.4 MKU Don wins Third World Academic Science Grant

The global malaria situation is increasingly being exacerbated by the emergence of drug resistance to most of the available antimalarials, necessitating search for novel drugs. A research rational approach of anti-malaria drug design characterized as "covalent biotherapy" involves linking two molecules with individual intrinsic activity into a single agent thus packaging dual-activity into a single hybrid molecule. Current research in this field seems to endorse hybrid molecules as next generation antimalarial toxicity drugs. If it can be demonstrated that the hybrid prodrugs possess good bioavailability and selective toxicity (harm the parasite not the host cell) then it would offer

various advantages including dosage compliance, minimized toxicity ability to design better drugs combinations and cheaper preclinical evaluation while achieving the ultimate artemisinins and quinolines.

This study proposes to synthesize a dual-drug based on their pharmacophoric scaffold followed by antimalarial evaluation of the resultant drug. It is proffered that the next generation of antimalarials may as well be dual drugs.

Mount Kenya University through Dr. Francis Muregi, Director, Research and Development, was awarded USD \$12,000 to conduct the research.



Dr. Francis Muregi, Director, Research and Development

1.1.5 On-Farm Seed Potato Storage Project

In response to a call for competitive grant research proposals by National Science and Technology in 2010, Mount Kenya University, KARI-Tigoni and International Potato Centre (CIP) prepared a joint project proposal which was successfully reviewed and approved for financial support. The project is for 3 years starting from May 2011. The title of the project is "On-farm evaluation and promotion of low-cost seed potato storage technologies in



Kenya". Researchers from Mount Kenya University, KARI, and CIP will collaborate in the seed storage and field evaluation trials to determine

the performance of commonly grown varieties as well as the benefits of prolonged storage compared with the current practice of planting unsprouted freshly harvested seeds. The National Potato Council of Kenya, Ministry of Agriculture (Extension), Mount Kenya University and KARI-Tigoni will conduct the seed storage promotion and advocacy to enhance adoption of the technologies. The project is being implemented in Nyandarua County.

1.1.6 KAPAP Vegetables Project

In response to a call for competitive grant research proposals by the Kenya Agricultural Productivity and Agribusiness Project (KAPAP) in 2010, Mount Kenya University, University of Nairobi, Chuka University college, Bondo University College, Egerton University, Kenya Industrial Research and Development Institute (KIRDI) and National Museums

of Kenya (NMK) prepared a joint research project proposal which was successfully reviewed and approved for financial support. The project will run for three years starting from August 2011. The title of the project is "Enhancing production, value addition and marketing of indigenous vegetables (Cowpeas, spider plant, nightshades, amaranth, pumpkins), French beans and

mushrooms among small holder farmers in Kenya". The project locations are in Siaya County, Homa Bay County, Kilifi County, Nyeri County, Meru County, Kakamega County and Embu County. The main project activities include crop improvement, agronomic practices, value addition, marketing and dissemination of research results.

1.1 Workshops / Seminars

The University management reckons that MKU is expanding, and currently we have more than 10 campuses. Not only are the Campuses organizing their own conferences but also individual Schools are increasing organising the same. The Research and Development Division intends to promote high standards in school and campuses by way of providing researchers a forum for sharing their knowledge, experience and research findings.

1.1.1 Research sensitization forum at campuses

The Research & Development Division held a tour of the campuses in the month of May with the following objectives;

1. Meeting with top management, campus research coordinators and staff to discuss research activities in the campuses.
2. To carry out research need assessment of the campuses.
3. Sensitization of research

policy, intellectual rights policy, research strategic plan and activities carried out by the Research Division.

4. Sensitization on the Vice-Chancellor Research Grant.

The Division toured Nakuru Campus, Kitale Campus, Kakamega Campus, Eldoret Campus, Mombasa Campus, Nairobi Campus and Nkubu

Campus. The Division emphasized on the need for campuses to take an active role in publication of their works, writing manuscripts and book chapters. The campuses were sensitized on the Vice-Chancellors Research Grant and were encouraged to apply for grant to advance their research works. The staff were also informed on support rendered during the publication of their works by the Division.

The following was discussed at the various Campuses:

1 The procedure for applying for funding, funding for publication, need for the campus to introduce an E-Journal to be able to market the journal internationally and the need for an Assistant Director Research & Development at each campus

2 Establishment of research committee at the campus, development of multi disciplinary research proposal, dissemination of research findings and facilitation in the development of proposal

3 Lack of supervisors to mentor students, mentorship rather than supervision, procedure of patenting, formal appointment for the campus coordinators.



Dr. Francis W. Muregi makes a presentation at Eldoret Campus.

4

Kwanza Research Farm, publications by lecturers, campus journal: Journal of Agricultural Information's, plagiarism by students, Postgraduate research training and Conference on Agribusiness and Food Security.

Prof. John H. Nderitu and Dr. Francis Muregi pose for group photo with staff members at Kitale Campus



5

Research activities at campus level, research Committee, Campus Research Coordinator, community based research in the following are; Termites, Chicken or Boda Boda.



Chicken

6

The mandate of lecturers in research, importance of research at the university for both the institution and the lecturers, lack of e-materials, establishment of a research centre as well as a research computer lab, procedure for submitting budgets for Campus Research Seed Money, and campus flagship research programme.



Staff at Mombasa Campus during the tour

7

Mandate of lecturers at the university: Teaching, Research, Community Outreach and Consultancy, web ranking of the university: Based on Research and Publications, workload for the lecturers, paper and poster presentation at conferences, importance of community based research, proposal approval mechanism and team work in research.



Staff Members at Nairobi Campus during the sensitization forum at the campus

8

Mentorship by lecturers to students, nurturing of new ideas by student, patenting of ideas, short courses on research, research methods topics in postgraduate training, research skills enhancement, research Flagship Project on Miraa or Tea.



Prof. John H. Nderitu engages in a discussion with members of staff at Nkubu Campus

1.1.2 Research and Development Division trains staff on Intellectual Property rights

Intellectual property (IP) is always with us. At any given time an average person is surrounded by products that are full of IP, ranging from clothes, sunglasses, footwear, mobile phones, watches, the car we drive to the electronics we use and the artifacts that adorn our homes. What most of

us perhaps don't realize is that intellectual property is everywhere in our world. It is in this backdrop that the Research and Development Division held a 2 day training workshop with an aim of understanding the international intellectual property obligations and norms, expose participants to a

model of protecting and enforcing intellectual property rights and promoting discussion of intellectual property issues in a learning institution and build capacity to staff in order to assist MKU in protecting and enforcing intellectual property rights. The two day training workshop was essential to



Fredrick Otswongo of KIPI, gave a presentation during the training.

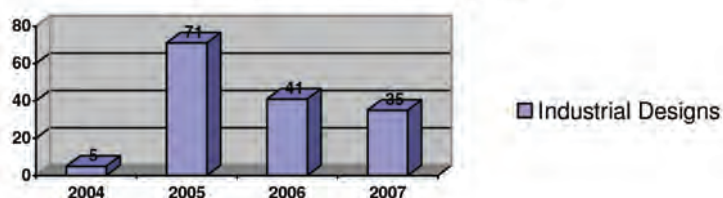
the members of staff since they were able to appreciate intellectual property rights. The training also built capacity of staff in order

to assist Mount Kenya University in protecting and enforcing intellectual property rights in the Institution.

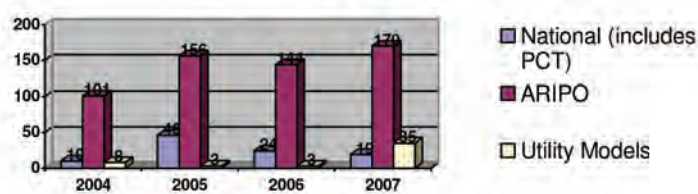


Participants of the forum pose for a group photo

Registered Industrial Designs



Granted Patents and registered Utility Models



SOURCE: Kenya Industrial Property Institute Annual Reports 2004 - 2007

1.1.3 Mount Kenya University launches a herbal products research programme

The urgent need for the discovery and development of new pharmaceuticals for the treatment of cancer, AIDS and infectious diseases, as well as a host of other diseases, demands that all approaches to drug discovery be exploited aggressively, and it is clear that nature has played, and will continue to play, a vital role in the drug discovery process. The global turnover of the medicinal plant industry is impossible to assess with precision although there is evidence that it exceeds billions of dollars. Plants have given the modern world a considerable array of drugs, and in the industrialized countries, 25% of the prescription drugs contain active principles that are still extracted from higher plants. In the area of anti-infectives (anti-bacterial, -fungal, -parasitic, and -viral), close to 70% of drugs are either naturally derived or inspired, while in the cancer treatment, about 78% are in this category. In the developing world, fresh herbs, dried herbs and partially processed herbs are sold in the markets, while in the industrialized world, an array of herbal



preparations impressively formulated are stocked in the pharmacies and supermarkets. Various estimates are made that indicate 70-80% of the populations of the developing world depend partly or entirely on the herbal remedies, and it can safely be assumed that this is at least so for more than half of the world's population. As stated by Berkowitz in 2003 commenting on natural products, "We would not have the top-selling drug class today, the statins; the whole field of angiotensin antagonists and angiotensin-converting enzyme inhibitors; the whole area of immunosuppressives; nor most

of the anticancer and antibacterial drugs. Today, the commonly used antimalarial drugs, the quinoline blood schizontocides and the peroxide antimalarials (artemisinin derivatives) are modeled upon the plant based compounds, quinine and artemisinin, respectively. Mount Kenya University reckons that search for new plant-derived drugs will continue to benefit mankind, since only a fraction of plant species used as therapeutic agents all over the world have hitherto adequately explored. It is in the light of this that the "Natural Product Initiative" geared towards research on herbal products has been initiated.

Following three (3) successful forums on commercialization of patented herbal medicinal products, it was proposed that there be a Herbal Research Programme to test and validate targeted herbal medicinal products. Thus, a workshop

25%

Prescription drugs that contain active principles extracted from higher plants.

was organized towards developing a proposal for that goal. The Research and Development Division held a 2 day consultative forum on 30th and 31st January 2013 to learn various methods of testing and validation of herbal medicine, develop a proposal on herbal medicines products for funding and recommend ways of implementation of the research proposal.

The two day consultative forum was able to develop a research programme which the University is implementing. It is envisaged that this effort will ultimately lead to exciting herbal products in the market that are safe and affordable, to help in solving some of the health challenges facing the people of Kenya, the Region and beyond.



Participants of the forum. RIGHT: Some of the finished, market-ready herbal products.

1.1.4 MKU meets with herbalists

A consultative forum on public-private partnership on validation and commercialization of patented herbal products was held at KIPi. The framework will subject herbal products for verification and validation through conventional research. This will ensure contractual agreements aimed to protect the inventors' intellectual property rights and help their products go global. The programme dubbed "Mount Kenya University Natural Products Initiative" will involve the products from professional herbalists who have patented their products with the Kenya Industrial Property Institute(KIPi) and still pass through a rigorous laboratory tests at Mount Kenya University laboratories and only the products that will qualify for the same will be incorporated into the system. The researchers at Mount Kenya University work with Kenya Medical Research Institute (KEMRI), Pharmacy and Poisons among other relevant regulatory bodies Board and other universities in the country to ensure the products' safety, efficacy as well as ensure dosage requirements and healthy packaging. The consultative forum was aimed at discussing contractual agreements with the herbalists.



MKU Staff member, herbalists and KIPi Officials during the forum.

The MKU Natural Products Initiative will:

-  Involve the products from professional herbalists who have patented their products with the Kenya Industrial Property Institute(KIPi)
-  Open doors for researchers at MKU to work with Kenya Medical Research Institute, Pharmacy and Poisons Board.
-  Ensure the products' safety, efficacy as well as ensure dosage requirements and healthy packaging

1.1.5 Mount Kenya University joins fight against Non-Communicable Diseases

Non-Communicable Diseases (NCDs), such as heart disease, stroke, cancer, chronic respiratory diseases and diabetes, are the leading cause of mortality in the world. This invisible epidemic is an under-appreciated cause of poverty and hinders the economic development of many countries. The burden is growing - the number of people, families and communities afflicted is increasing. NCDs already dispro-



Dr. Catherine Karekezi, Kenya Diabetes Management and Information Centre

portionately affect low- and middle-income countries where nearly 80% of NCD deaths - 29 million - occur. They are the leading causes of death in all regions except Africa, but current projections indicate that by 2020 the largest increases in NCD deaths will occur in Africa. In African nations, deaths from NCDs are projected to exceed the combined deaths of communicable, nutritional diseases, maternal and perinatal deaths as the most common causes of death by 2030. Mount Kenya University reckons that an all-inclusive, comprehensive and integrated action is the best means to aid in the lowering morbidity and mortality due to NCDs. The University therefore organized a three-day forum that brings together a team of experts and stakeholders to help in formulation of MKU NCD Research Programme.

The forum brought together experts from all the NCDs areas which include: Cancer, Cardio-Vascular Diseases, Diabetes and Chronic Respiratory Disease. After the three days workshop held on 10th - 12th October 2012, the Division was able to formulate a programme, which the University is keen to fund.



Dr. Geoffrey Z. Mutuma, Nairobi Cancer Registry

1.1.6 MKU holds Seed Potato Project Planning workshop

The potato (*Solanum tuberosum* L.) an important food security crop in Kenya being second to maize in production and utilization. The crop is grown in most highlands (1800-3000 m above sea level) but seed availability is a major constraint to increased potato production above the current 1 million tonnes.

A socio-economic survey will be done to determine current farmers' practices. This project aims to research and promote low-cost storage technologies by growers of clean seeds. Common local cultivars will be evaluated for prolonged (5-7 months) storage under common ambient naturally air ventilation using diffused light. Promotion of low-cost on-farm storage technologies will be conducted to popularize

seed storage at farm-level in different areas in the country. Researchers from KARI, CIP and Mount Kenya University will collaborate in the seed storage and field evaluation trials to determine the performance of commonly grown varieties as well as the benefits of prolonged storage compared with the current practice of planting un-sprouted freshly harvested seeds.

The National Potato Council of Kenya, the Ministry of Agriculture (extension), Mount Kenya University and KARI will conduct the seed storage promotion and advocacy to enhance adoption of the technologies. This study will require support for a period of 3 years (6 growing seasons). The potato project is financially supported by National Council for Science and



Participants of the forum pose for a group photograph

Technology (NCST). This workshop was intended to share the project findings from the first year activities, with stakeholders, and map out activities for the second year. The programme was organized in form of presentations, followed by discussions. The workshop was attended by participants from potato industry (researchers, farmers, extension service providers, farmer association and potato council).



1.1.7 Research and Development Division holds Proposal Presentation Seminar

The Research and Development Division held a one day proposal presentation seminar where 25 proposals were presented for funding by the Vice-Chancellor's Research Grant. The seminar aimed at bringing researchers together for peer review of the proposals.



Mr Eliud Situma, School of Social Science gives a presentation



Participants of the seminar. It aimed at bringing researchers together for peer review of the proposals.

1.1.8 Research and Development Division holds Research Flagship Project Workshop

The Research and Development Division organized a two day workshop that brought together representatives from all schools and campuses to chat a way forwards on the Research Flagship projects. The University is keen in setting the agenda for the Division, Schools and Campuses in the area of research.



Francis Kimani, KEMRI moderates group discussions

1.1.9 Research and Development Division holds the quarterly and final Research Progress Report Presentation Seminar

The Research and Development Division which is mandated by the University to coordinate the Vice-Chancellor's Research Grant held a one day seminar in February and September 2012 to receive research progress and final reports.



Dr. Francis Muregi gives opening remarks during the seminar.

1.1.10 Mount Kenya University holds development of Intellectual Property Policy Workshop

In pursuit of its Vision and Mission, Mount Kenya University acknowledges the pivotal role research, innovation and other intellectual activities play in socio-economic development of any society. Thus, the University is continually motivating its employees and collaborators not to adopt a "me-too" approach in research undertakings, but rather to explore novel and innovative strategies. The evidence that MKU is giving research a high priority is embodied in various policy documents including the MKU

Research Policy. Also, the University has underlined the importance of research through funding initiatives such as the recently launched Internal Research Grant termed as the "Vice-Chancellor's Grant" to fund researchers and innovators. The University recognizes that incident to exploration and validation of novel ideas in research, innovation and other intellectual activities, new frontiers of knowledge are birthed. It is thus the University's object to protect the rights of the individual,

the University and any collaborating entity. Thus, the University organized a two day workshop to develop the Intellectual Property Policy to encourage both the discovery and development of new knowledge and creative works, and their subsequent exploitation for the socio-economic development of the Kenyan people and the Region in line with the objectives of Vision 2030 and the Millennium Development Goals.

1.1.11 Mount Kenya University holds Research Strategic Plan Development Workshop

The Research and Development Division developed a seven-year (2012-2018) Strategic Plan geared towards guiding its activities in line with the research mandate bestowed to it. Although the Division is young, it has drawn important strategic objectives under the umbrella themes of Research, Institutional Linkages, Enterprise and Innovation and Community Outreach. Towards realizing

these objectives, the Division has formulated several key guidelines and policy documents including the Research Policy, Enterprise and Institutional Linkages Policy, and Intellectual Property Policy. Furthermore, the Division has continued to establish collaboration with other institutions and industry. Thus, this Strategic Plan document will serve as an overarching framework for

achieving not only the Division's goals but also that of the University, and will undoubtedly render a new impetus to the MKU in realizing its Vision and Mission. The Strategic Plan also addresses some of the pivotal issues that will drive research and innovation in a manner that all the stakeholders will find prudent. MKU prides itself in being agile and able to respond to emerging issues in the

field of science, technology and innovation. Thus, this Strategic Plan document will be a flexible one aimed at responding in a timely manner to the socio-economic needs of the Kenyan people, the continent and the world at large. It is therefore envisaged that this Strategic Plan will serve as a clear road map for the Research Division as it strives to fulfil its research mandate.

1.1.12 Research and Development Division Holds Research Training Workshop

The Research and Development Division has been given the role for research capacity development Research training in the University. In the year 2012, the Division held three (3) seminars in Nkubu Campus, Nakuru Campus and Kakamega Campus. The seminars were attended by Prof. John H. Nderitu and Dr. Francis Muregi as facilitators.



University officials at MKU Nkubu Campus pose for a photo during a past event.



Dr. Francis Muregi, Director, Research and Development gives a presentation at a past forum

1.2 Public Lectures

1.2.1 Dr. Benson Kairu: Prepare for worklife by developing your employability skills

Dr. Benson Kairu made a presentation the employability skills need for students. In his topic, he presented on current state of affairs for a typical university student, national employment levels and trends and the different employability skills. The skills include: Non-technical skills, Soft skills, Self management, People management, Task management, Change management, Add value to employment and enterprises and, For self employed and those employed by others. He further

discussed on the attributes to watch out from an employee which include: Effective communication, Team work, Critical thinking & Problem solving, Initiative and enterprise, Self management, Life long learning, Ethical considerations, Global mindedness, Job searching process: analysis of adverts, cover letters, CV, interviews (employability portfolio).

Students and staff during the public lecture. And INSET: Dr. Kairu during the public lecture



1.2.2 Lucy Kambuni: Concept and Principles of Devolution and the Legal Framework

DEVOLUTION

Devolution is a form of:

Decentralization

Restructuring of authority to achieve co-responsibility between institutions of governance at the central, regional and local levels according to the principles of subsidiary (UNDP definition)

Subsidiary

Decentralizing of functions and provision of services to the extent that is efficient and practicable (Art. 176 (2) of the Constitution of Kenya). A national state organ shall ensure reasonable access of services in all parts of Kenya so far as it is appropriate to do so (Art. 6(3) of the Constitution of Kenya). Art. 260: A state organ means a commission, office, agency or other body established under this constitution

Purest form of devolution: characteristics

- Local units of governance as separate levels of government over which the central authorities exercise little or no direct control
- Local governments with clear and legally recognized geographical boundaries
- Local governments with power to secure resources to perform functions
- Local governments for provision of services and over which the local citizens have influence
- Reciprocal, mutually beneficial and co-ordinate relationships between central and local governments

Delegation - Responsibility for decision-making and service delivery is given by central government to semi-autonomous entities including local authorities, parastatals and non-state actors.

Deconcentration - Very limited delegation of authority in policy, financial and administrative matters without any significant local input

Independence Constitution

A quasi-federal system of government: Regional Governments:

- Seven in number

- Boundaries not changeable by Central Government without the region's consent
- Had a president

- A police contingent under a Regional Commissioner under the command of the Inspector General of Police, an officer of the Central Government

- Own judiciary

- The quasi-federal system was dismantled through numerous constitutional amendments

Erstwhile Governance Structure

A central ordering by Central Government - Delegation of powers to sub-national units; Sub-location, Location, Division, District, Provincial, Local authorities.

Governance Structure under the CoK 2010 1

• Is cited within the framework of a devolved system of government

• Aptly described as co-operative government

• Art 1: sovereignty of the people is:

• Exercised directly or

• Delegated to Parliament and the legislative assemblies in the County Governments (CGs)

• National executive and the executive structures in the CGs

• Judiciary and independent tribunals

• Exercised at national and county level

• Provides for vertical division of power

• Art 6:

• Kenya is divided into 47 counties

• Governments at national and county levels are distinct and interdependent and shall conduct their mutual relations on the basis of consultation and cooperation

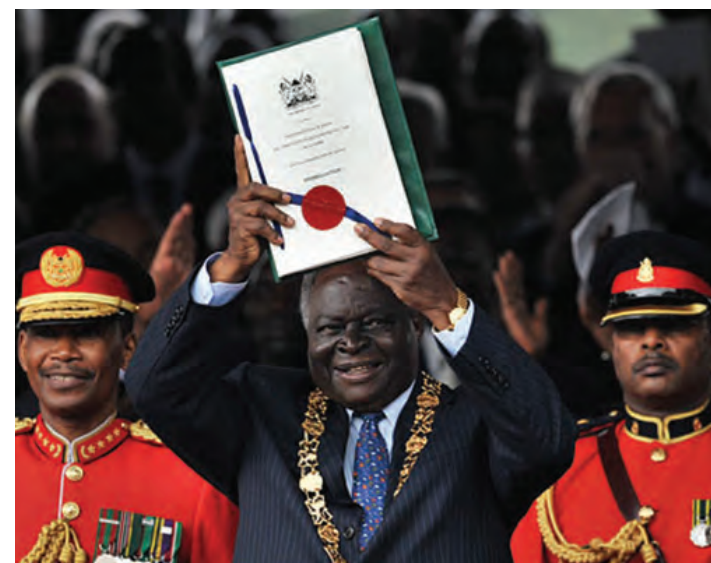
• Art. 175 (principles of devolved government)

- CGs shall be based on democratic principles and the separation of powers

- CGs shall have reliable sources of revenue to enable them to govern and deliver services effectively

• Art. 189 (1) (a) (cooperation between national and county governments): government at either level shall

- Perform its functions and exercise its powers in a manner that respects the functional and institutional integrity of government at the other level and respects the constitutional status and institutions of government at the other level and in the case of the county government, within the county level



Former President Mwai Kibaki holds the new Constitution soon after its promulgation on August 27, 2010 at Uhuru Park, Nairobi.

• Art. 189 (1) (b) & (c)

- Government at either level shall assist, support, consult and as appropriate, implement the legislation of the other level of government

- Liaise with government at the other level for the purpose of exchanging information, coordinating policies and administration and enhancing capacity

- Governments may set up joint committees

- In any dispute between governments ADR mechanisms should first be explored

• Chapter 11 of the CoK 2010

• Objects of devolution (Art. 174)

▫ Promote democratic and accountable exercise of power

- Foster national unity by recognizing diversity
- Give powers of self-governance to the people and enhance participation of the people in decision-making
- Recognize the right of communities to manage their own affairs and to further their development
- Promote social and economic development and the provision of proximate and accessible services
- Ensure equitable sharing of national and local resources throughout Kenya
- Facilitate decentralization of state organs, their functions and services from the capital of Kenya
- Enhance checks and balances and separation of powers

• **Article 190 (3):** Intervention by National Government in CGs where there is failure to execute functions or operate the requisite financial management system

- **Article 192:** Suspension in the event of an emergency arising out of conflict or war or other exceptional circumstances
- Senate exercises oversight in both processes

Functional and Competency Assignment

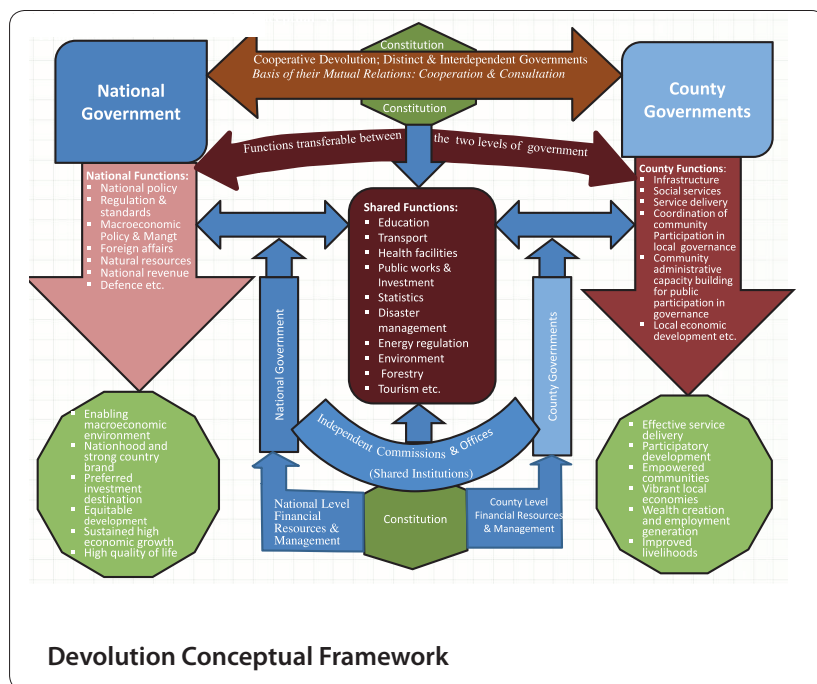
• **Art 186** and the 4th Schedule

- Provide for the constitutional assignment of functions and powers into:
 - exclusive
 - concurrent (conferred on more than one level)
 - residual (not assigned by the Constitution)
- Need to unbundle and analyse the functions in order to avoid poor functional assignment

Lean and Responsible Government

Need for a 'whole of government approach, dedicated joint secretariats, ensure county reach for all services in a coordinated and harmonized manner, Art. 187: Transfer of functions between levels of government for efficient service delivery, Art 201 (d): public money shall be used in a prudent and responsible way

Public Participation



Art. 174: one of the objects of devolution is to give powers of self-governance to the people and to enhance the participation of the people in making decisions affecting them

Art. 175 (c) (principles of devolved government): No more than two thirds of the members of representative bodies in each CG shall be of the same gender

Art. 232: the values and principles of public service include involvement of the people in the process of policy making

Transition to Devolved Governments Act, 2012

The object and purpose of the Act is to: Provide a legal and institutional framework for a coordinated transition to the de-

involved system of government; Provide for the transfer of powers and functions to the national and county governments pursuant to sect. 15 of the 6th Schedule of the Constitution of Kenya 2010; Provide mechanisms for the CIC oversight

Sect. 4- Establishment of the Transition Authority; A chairperson and 8 members and key Principal Secretaries (OP, Devolution, Public Service, Finance, Planning, Justice, AG); Facilitate the analysis and phased transfer of the functions under the 4th Schedule to the national and county governments; Determine resource requirements and coordinate with relevant state organs or public entities; Facilitate development of the budget for county governments during the first phase of the transition period; Prepare and validate an inventory of all existing assets and liabilities of government, public entities and local authorities; Carry out audit of existing human resource of the government and local authorities and assess capacity needs

County Government Bill, 2012

Object and purpose; to give effect to the provisions of Article 200 of the Constitution of Kenya, 2010; to give effect to the objects and principles of devolution; to give effect to Art. 176 (2) on further decentralization; to provide for removal from office of speaker (Art. 178) and, Public participation (Article 196)



Inside Kenya's 11th Parliament, the first one under the New Constitution. One of the Constitution's main tenets is devolution of power from the central Government to Counties.



1.2.3 Madam Audrey Williams: It Is Time For Africa To Rise

The public lecture was aimed at encouraging students and staff members in Africa to continuously believe in Africa and improve the continent.



Madam Audrey Williams from the USA makes a courtesy call to Prof. John Nderitu, Deputy Vice-Chancellor, Research and Development, at his office



Madam Williams gives a lecture to MKU staff and students



Group photo with some of the participants of the public lecture

1.2.4 Dr Juma Mukhwana: Facing the national food security challenge in Kenya: Feeding our people under the new Constitution

Sub-Saharan Africa faces an enormous Food Security Challenge never experienced in human history before, with over 210 million lacking access to food. Researchers and development workers in Africa reckon that food insecurity is a complex problem that can only be tackled properly through a combination of inter-disciplinary, participatory on-farm research, effective extension systems and access to markets. The biggest chal-

lenge facing development workers in the continent is how to increase food production without compromising environmental quality, given the declining food prices and inaccessible markets. Over the past 50 years, agricultural development has emphasized the heavy use of external inputs such as fertilizer, improved seeds, improved livestock breeds, etc., which in some cases, were either totally not suitable for the African conditions or were not affordable. The promotion of sustainable agriculture in sub-Saharan Africa has been one attempt to address these limitations. Additionally, over 10 years have passed since the introduction of participatory community



development approaches. During this period, there has been an incredible spread of participatory methodologies in agriculture development in Africa. Detailed study of several projects

Dr. Juma Mukhwana, PhD, HSC, Director, Sacred Training Institute during the public lecture.



in several countries shows that there has been a lot of success recorded with the use of both Participatory Community Development and Sustainable Agriculture in Sub-Saharan Africa, but there have also been problems, limita-

tions and constraints. The lecture used several case studies to reflect on issues, successes and constraints facing food security in Africa and drew out lessons for Kenya. The lecture covered on the national food security challenges

and innovative ways that can be used to handle the food security challenge. Dr Juma also discussed production challenge, the market challenge, the Green Revolution, Sustaining Our Soil Fertility and Rural Growth Strategy.

1.2.5 Professor Raphael G. Wahome: Promoting excellence in PhD research programmes

The need for quality PhD programme in East Africa led to the formation of a team to chat the way forward on the harmonisation of the PhD programmes in the region. A partnership of University of Nairobi, Makerere University, Sokoine university of Agriculture

and the Faculty of Life Sciences and University of Copenhagen developed guidelines for the PhD programmes in the region. Prof. Wahome who was part of the team gave a lecture at MKU to sensitize members of staff on PhD training programmes.



ABOVE, FROM LEFT: Prof. Raphael Wahome, UoN and Prof John Nderitu, MKU, during the lecture. RIGHT: Prof Wahome making his presentation.



Dr. Baiya gives the lecture

1.2.6 Dr. Evans Baiya: The framework of an innovation centre and how individuals can be incubators

In the face of changing economic conditions, business complexity, and customer expectations, there is a bigger need to develop novel strategies that encourage creativity, innovations, trust, and support by inventors and consumers alike aimed at increasing intellectual capacity of the country and social-economic growth. However, most inventions do not make it to the market. Companies and research institutions have been investigating new models to improve the return of investments

on ideas. The creation of innovation centre and business incubators has been posted as potential methods of increasing success rate of innovation activities as highlighted in this discussion. In this series, Dr. Evans Baiya discussed; Market value creation process, Inventions' valley of death and Innovation Bridge™, Types of innovation centres, Business incubation centres, The commercialization process, and Capitalization of innovations.

1.3 Conferences

"No grand idea was ever born in a conference, but a lot of foolish ideas have died there" - F. Scott Fitzgerald

Conferences are meant to bring the minds of a group of academics presenting and arguing about their work. The Research and Development Division is mandated to coordinate conferences in the University. The Research and Development Division intends to promote high research standards in school and campuses by way of providing researchers a forum for sharing their knowledge, experiences and research findings.

1.3.1 Kitale Campus Conference and Field Day

Mount Kenya University held a three-day agricultural research conference in Kitale Campus. The theme of the conference was: Re-engineering Agribusiness Through Innovation to Achieve Food Security in Line with Vision 2030. The Minister for Environment and Wildlife, who is also the area MP, Dr Noah Wekesa graced the event. The event attracted delegates from Kenya and Europe. More than 60 academic papers were presented and discussed during plenary sessions to be held at the Kitale Sports Club auditorium. The delegates took time off to attend a field day the university had organised for the Kitale-based farmers and the general public. Key stakeholders in agriculture had been invited and allocated demonstration plots at the Kwanza Research Farm to show case their technologies which can promote

food security. Among the stakeholders included: Kenya Seed Company Ltd, Western Seed Company, Ministry of Livestock and Fisheries, East African Seed Company Ltd, KARI, ADC, Osho Chemicals Ltd, Amiran and ICIPE. The delegates visited the farm after their deliberations. The objectives of the conference were: To show-case latest technologies in crop and animal production to farmers in order to promote food security in the country; to promote research activities in areas of crop and animal production; to show-case research results and other experiences in agricultural knowledge innovation systems for development, and to provide a forum for researchers, policy makers, and practitioners from different sectors to discuss issues in agricultural knowledge and innovation systems to farmers in the country.



Vice Chancellor Prof. Stanley Waudo, (in white) is shown around the various agricultural projects at the Kwanza Research Farm.



Participants of the conference in a group photo.



Prof. Stanley Waudo, Vice-Chancellor, who was the Chief Guest gives his remarks during the opening of the Conference.



Prof. Waudo, (seated) launches the 2nd edition of the Nakuru Campus Journal.



Students from a neighbouring secondary school learn about the varieties of hybrid cabbages at the Research Farm.

Abstracts presented during the Kitale conference

1.0 School of Pure And Applied Sciences

THEME: *Promoting Agribusiness and Sustainable Food Production Through Technology*

- 1.1 **Screening for Stem Rust (Ug99) Resistance in Mutant Barley**, *Ivan Obare.*
- 1.2 **Strategic Future Programmes in Information Communication Technologies for Boosting Food Security in Rural Communities: Emerging Technological Options**, *Fidel Castro Oluoch Agai, Mount Kenya University, Kitale Campus.*
- 1.3 **Bioavailability of Heavy Metals in River Sosiani Uasin Gishu County**, *Judith Jepkoech Keny*
- 1.4 **Sustaining Food Security under Growing Water Scarcity**, *Kevin Wamalwa.*
- 1.5 **Bridging Information Gap in Agricultural Production and Food Security in Kenya**, *Alice Masese and Nicodemus Nyandiko, Masinde Muliro University of Science and Technology.*
- 1.6 **Communicating Climate Change: Issues in the Attainment of Kenya Vision 2030**, *Elizabeth Momanyi, Kisii University College.*
- 1.7 **Current status of e-Agriculture and global trends: A Survey conducted in Trans Nzoia County, Kenya**, *Peter Namisiko, Mount Kenya University.*
- 1.8 **Epidemiology of Gastrointestinal Parasites of the Critically Endangered Hirola (*Beatragus hunteri*, Sclater, 1889) in the Hirola-Livestock Interface of Southern Kenya**, *Justin M Njeru Chepkoilel University College.*
- 1.9 **Innovations and Challenges in Farming as a business**, *Caroline Sikulu Ndombi, Moi University*
- 1.10 **Using Information technology to Propagate Modernism in Agri-business**, *Isaac Kiprotich Tonui, Mount Kenya University, Coast Campus.*
- 1.11 **Mobile Money Transfer as a Panacea towards Improvement of Farm Produce Sales to small Scale Farmers in Trans Nzoia District a Study of Women in Kitale Town**, *Mr. Jacob Misiko Neyole, Peter Wanjala Namisiko, Mount Kenya University.*
- 1.12 **Assessing the Utilization of Value Addition as a Reengineering Strategy on Livelihoods of Farmers in Keiyo District, Kenya**, *Kiptarus, E. Nabiswa, F. Kiongera, F. and Ogema, V., Masinde Muliro University of Science & Technology.*
- 1.13 **Enhancing Food Sufficiency in Kenya through Use of Genetically Modified Organisms in Agriculture; Social and Ethical Issues**, *Titus Ayabei, Kenya Seed Company.*
- 1.14 **Sources of resistance to bean rust in French beans grown in Kenya**, *Edith Esther Arunga, Emmy Chepkoech and David Karanja Ngure, Chepkoilel University College.*
- 1.15 **Innovations and Challenges Facing Farmers on Green Maize Harvesting: A Case Study of South Nandi District, Nandi County**, *P. Cheruiyot, Joe Kibo.*
- 1.16 **Soybean Inoculation in Bungoma, Kenya**, *Collins Majengo and Ivan Obare, Chepkoilel University College, Moi University.*
- 1.17 **Dolichos Bean, an Alternative Source of Protein in Kenya**, *Ngure Karanja David, Edith Esther Arunga, Emmy Chepkoech and Kimno Stephen, Chepkoilel University College.*
- 1.18 **An Assessment of Tick-Borne Diseases Constraints to Livestock Production in a Small-holder Livestock Production System: A Case of Njiru District, Kenya**, *D. Mureithi, E. Mukiria, Mount Kenya University.*
- 1.19 **Characterization of Plant Parasitic Nematode (PPN) Pathotypes and Potential Use of Mexican Marigold for their Management in Vegetable Crops**, *Hillary Cheruiyot (Chepkoilel University) and Keter K. Edwin (Kitale Technical Training institute).*
- 1.20 **Sustaining Food Security under Growing Water Scarcity**, *Fridah Mmuchi Kanga.*
- 1.21 **The Role of Fiber Optics in the Kenyan Economy**, *Andrew Omambia, Dickson Gekombe, and Benard Maake.*
- 1.22 **The Role of Mutation Breeding Towards Sustainable Food Security in Kenya**, *Obare Evan and Chepkoech Emmy, Chepkoilel University College.*
- 1.23 **Potentials in Bio-intensive Production of African Indigenous Vegetables for Household Food and Financial Security in Kenya**, *D. S. Ashilenje, J. E. Mlegwa, E. W. Mukhwana, Manor House Agricultural Centre, Mount Kenya University, Kitale Campus.*
- 1.24 **Solar-Powered Irrigation System in Turkana, Kenya**, *Kosgei Elijah Kipyegon and Emily Kirwok.*

- 1.25 **Adoption of Innovations in Agriculture in Kenya: A Case of Trans-Nzoia County**, *Silvester W. Mackton, Fibi W. Nelima, Mount Kenya University.*
- 1.26 **Agriculture as a Business: The Role of Operations Management**, *Christopher O. Maokomba.*
- 1.27 **Doubling Yields in the Face of Water Scarcity, Climate Change and Population Increase Through by Developing Harnessing Rainwater in Kenya**, *Fridah Mmuchi.*
- 1.28 **Assessing the Role of Social Capital in Mixed Farming Systems of North Rift Region**, *Komen J. J. Lusweti N. F, Lusweti. C. M, (KARI Kitale), Omamo E & Muyekho F. N ,(KARI Kakamega), K. N, Kariuki Nelson (Ministry of Livestock - Trans Nzoia).*
- 1.29 **Kimilili District Riverine Eco-System as a Precursor to Food Security**, *Consolata N. Wakwabubi.*
- 1.30 **Mount. Kenya University**, *Werunga R. Kikechi, Masinde Muliro University of Science & Technology.*
- 1.31 **Evaluation of Climate Variability on Food Security, Plant Diseases, Livelihoods and Households' adaptations in Kakamega County**, *Ibrahim O. Baraza.*
- 1.32 **Leadership Strategies and the Management of Agribusiness Entities in Kenya: The Case of the National Cereals and Produce Board**, *Evans Nyamboga Mandere, Mount. Kenya University.*
- 1.33 **Exploring Opportunities of Information and Communication Technologies (ICTs) in Higher Agricultural Education Enrolment in Kenya**, *Estambale, T.N. ; Nderitu, J. H.; Kiarie Njoroge; and Kasina J. M, (University of Nairobi, Mount Kenya University, Kenya Agricultural Institute, NARL).*
- 1.34 **Evaluation of Rice Genotypes for Susceptibility to African White Rice Stem Borer**, *Maliarpha Separatella Ragonot, V.M.Kega (University of Nairobi), J.H.Nderitu (Mount Kenya University), F.Olubayo(University of Nairobi) and M. Kasina (Kenya Agricultural Research Institute-National Agricultural Laboratories).*
- 1.35 **The Consumption of HCFC in Refrigeration and Air Conditioning Systems and Their Impact on Stakeholders and Business when Phased Out**, *Jason M. Wapukha, Janet M. Isoka, Moses M. Kamau (Eldoret Polytechnic), Dr. Peter Okemwa, Chepkoilel University College.*

2.0 School of Business

THEME: *Innovations and Challenges in Farming as a Business*

- 2.1 **Trade Unions; Employee Job Satisfaction in Tea Industry, A Case Study of Nandi County**, *Bureti Philemon, Mount Kenya University, Koech C. Winnie, Mark Leting, Masinde Muliro University of Science and Technology.*
- 2.2 **Microfinance as a catalyst of Agribusiness: A case of Rafode Ltd.**, *Robert Mindila, Martin Erixon Wamalwa, Mount Kenya University, Kitale Campus.*
- 2.3 **Value of Accounting Records in Farming: A Case Study of Trans-Nzoia County, Kenya**, *Wasike E Wanyonyi, Robert Mindila, Simon Nyakwara, Mount Kenya University.*
- 2.4 **Agent Banking and Its Financial Effects on Small Scale Farmers in Kenya: A Case of Trans Nzoia County**, *Sangoro Oscar, Agoro George, Robert Mindila, Mount Kenya University.*
- 2.5 **Alternative Sources of Revenue for County Councils for Sustainable Rural Development: A Case of Wareng County Council**, *Sangoro Oscar, Mount Kenya University, G. Agoro1 & B.K. Nassiuma, Moi University.*
- 2.6 **Impact of micro credit institutions on women empowerment in Homa-Bay County, Kenya**, *Tom O. Mboya, Eldoret Polytechnic, Lucas Onger, Kitale Technical, Philip K. Bii, Moi University.*
- 2.7 **Microfinance as a vehicle for unlocking poverty among the small-scale farmers in Kenya: A survey of Trans Nzoia County**, *R.Mindila (Mount Kenya University), G. Agoro (Moi University), Sangoro Oscar (Mount Kenya University) & Kirwok J.K. Emily (Mount Kenya University).*
- 2.8 **The Efficacy of Modeling Inflation Process on the Consumer Behavior in Kenya**, *O.O. Sangoro (Mount Kenya University), D.O.Otieno (Moi University) & J.S. Mudaki (Moi University).*
- 2.9 **Advertising: A Marketing Strategy in Agribusiness**, *Colleta Maniga, Narok University.*
- 2.10 **Role of Collective Bargaining Agreements In Performance of Organizations**, *Wasike Edward Wanyonyi, Mount Kenya University.*
- 2.11 **Impact of Business cycles on Industry Sectors: A Structural Economic Change in Kenya**, *Tom Nyamache, Ruth Nyambura (Mount Kenya University), P.Y. Mishra, Devi Ahilya. University Indore (MP) India.*
- 2.12 **An Assessment of the Impact of Agricultural Insurance on the Performance of Farmers in Njoro, Nakuru County**, *Peter N. Mbogo, Mount Kenya University.*

3.0 School of Education

THEME: *Agriculture and Education*

- 3.1 **Food Insecurity: It's implication on Girl-Child Education in pastoral areas in West Pokot County, Kenya**, Nyeris Raymond & Morris Cherekes (Mount Kenya University)
- 3.2 **Agriculture and Education**, Thomas Otieno Okungu.
- 3.3 **Agriculture and Curriculum Infusion: The Way Forward In Kenya's Education**, Vundi, Silvia K and Majanga, Eunice N (Masinde Muliro University of Science and Technology).
- 3.4 **The Impact of Educational Investment on Economic Growth in Kenya**, J.S Mudaki, D.O Ojala, O.O Sangoro, J.C Kiptui, Agoro.
- 3.5 **Strategic Leadership: A Determinant of Performance in Academic Institutions**, Onger Lucas (Kitale Technical Training Institute)
- 3.6 **Human Resource Management in the Light of Education Advancement: The Forgotten Factor by the Teachers Service Commission (TSC) of Kenya**, Nanjakululu, K. Benard (Mount Kenya University).
- 3.7 **Gender Disparity in Special Needs Education Profession in Eldoret Municipality, Kenya**, Walingo Janet Mbogani.
- 3.8 **Hidden Hunger among Pre-School Children in Matisi Peri-Urban Location, Trans-Nzoia District, Kenya**, Magaju P. K., Etyang' G. A., Mbagaya G. M., Wafula S.W. (Moi University).
- 3.9 **School Effectiveness: Reflections from Kenya's Context**, Chelimo K.K., Oloibe J. and Kombich, V.
- 3.10 **Impact of Education in Agricultural Sector as a Driving Force to Achieving Vision 2030**, Evans Mongare, Wasau Mathews (Mount Kenya University).
- 3.11 **Role of Education in Improving Agriculture towards Achieving Vision 2030**, Evans Mongare, Wasau Mathew (Mount Kenya University).
- 3.12 **Convergence of Education Based Innovations and Agribusiness to Achieve Food Security in Line With Vision 2030**, Stephen Nyongesa.
- 3.13 **Factors Affecting Quality Assurance in Public Primary Schools in Eldoret Municipality**, Moses M. Kamau, Jason M. Wapukha, Nyabero Charles (Eldoret Polytechnic), Janet M. Isoka (Moi University).
- 3.14 **Reinventing the Management of Schools in the 21st Century: Is It a Reality or A Mirage?**, Esther Chepkorir Bitok, Betty Chepng'etich. Tonui, Jackson K. Too (Moi University).
- 3.15 **Examination Cheating In Kenyan Public Universities: A Case Study of Moi University**, Keter J Stellah, Maru Eunice, Tonui Betty.
- 3.16 **Outreach Marketing Strategies on Students' Choice Satisfaction in Private Universities: A Case of Mount Kenya University**, Zipporah Berut, Emily Kirwork (Mount Kenya University).

4.0 School of Social Sciences

THEME: *Role of Social Sciences in Promoting Agribusiness*

- 4.1 **Impact of Boda Boda Business on Food Security in Kenya**, Joyce Okayo, Nicodemus Nyandiko, and Alice Masese.
- 4.2 **Factors Associated With The Prevalence Of Under-Nutrition In Pre-School Children In Matisi Peri-Urban Location, Trans-Nzoia District, Kenya**, Magaju P. K., Etyang' G. A., Mbagaya G. M., Wafula S.W.
- 4.3 **Baseline Survey on Drug Abuse within Kenya Seed Company**, Ruth Imbuye, Jane Miheso and Daniel Kirwa.
- 4.4 **Language as a Critical Factor to Agricultural Transformation**, Robinson Oduma
- 4.5 **Masinde Muliro University of Science and Technology.**
- 4.6 **Lexical Ambiguity: Homonymy and Polysemy in Ekegusii**, Onchoke S. Aunga, Bichang'a W. Nyaigoti, Mount Kenya University.
- 4.7 **Peace and Conflict: A Boon or Bane to Agribusiness in Trans-Nzoia County, Kenya**, Prof. Achoka J.S.K and Siketi P, Masinde Muliro University of Science & Technology.
- 4.8 **The Role of Communication in the Improvement of Agricultural Productivity in Rural Areas: A Study of Kitale County in North Rift Kenya**, Virginia Mutheu Paul, Mount Kenya University.
- 4.9 **The Role of Social Capital in Promoting Resilience and Adaptation to Climate Change in the Dry Lands of Kenya**, Prof. Gilbert M. Nduru and Karen N. Mungania.

- 4.10 **Role of Social Sciences in Promoting Agri-business**, *Lumayo Fedha Mildred.*
- 4.11 **Language as a Development Catalyst: The Role of Interlanguage in the Learning of Kiswahili in Kenya**, *Karen Nkatha Mungania, Mount Kenya University.*
- 4.12 **Analysis of Hegemonic Identity of Discourse of Masculinities in Kenya**, *David Wafula Lwangale, Emily Chepkoech, Mount Kenya University.*
- 4.13 **Gender Roles and Agribusiness Innovations**, *Jane Udali Alunga and David Wafula Lwangale.*
- 4.14 **The Role of Indigenous Languages in Natural Environment Conservation for Sustainable Agribusiness**, *Musi Philip N., Omare Simon G., Abwire Moses A. Moi University.*

5.0 Cross cutting

THEME: *Climatic Change; Gender; Culture; Politics and Law*

- 5.1 **Impact of Modernization on the Transformation of Culture in Kenya: Prospects and Challenges**, *Prof. Cletus N.Chukwu, Moi University, Mr. Martin Erixon Wamalwa, Mount Kenya University.*
- 5.2 **Involving Women in Providing and Improving Household Food Security in Kenya: Implications for Reducing Hunger and Malnutrition in line with Vision 2030**, *Eunice Kanaga Majanga, Ochieng Pamela and Buhere Pamela, Masinde Muliro University of Science and Technology.*
- 5.3 **The Future of National Parks in Kenya**, *Justin Mugendi, Chepkolel University College*
- 5.4 **Key Roles of Special Libraries in Dissemination of Information: Case study of Kenya Agricultural Research Institute (KARI), Kitale Centre**, *Henry Kenneth Odhiambo, Mount Kenya University.*
- 5.5 **Embracing Talent Management in Organizations for Competitive Advantage**, *Titus Ayabei, Kenya Seed Company.*
- 5.6 **Servant Leadership: The Best Option towards Effective Management**, *Nanjakululu, K. Benard, Mount Kenya University.*
- 5.7 **The Role of Strategic Management in the Jua Kali Sector in Kenya: A Case of Nairobi Jua Kali Sheds**, *Evans Nyamboga Mandere.*
- 5.8 **On Action Review 'Of the Emergency Response in Districts in Northern, North-Eastern, Eastern, Rift Valley and Coast Areas in Kenya**, *Kimathi Kigatiira et al., Mount Kenya University.*
- 5.9 **Pastoralism as a Cultural Aspect Influencing Girl-Child Education in Turkana Community**, *Scholastica Namalwa Nalobile and David Wafula Lwangale.*
- 5.10 **Determinants of Small Scale Horticulture Farmers' Decision to Join Farmer Based Organizations in Nandi County**, *Dominic Kimutai Biwott, Lewis Wakoli Wachilonga and Ruth Tuwei.*
- 5.11 **An Investigation on Aspects of Culture on Achieving Food Security and Community Wellness**, *Jessica M'mbone, Lucy Okumu Onyango.*
- 5.12 **Strategic Options For The Management of Livestock-Based Conflicts In Trans Nzoia County, Kenya**, *Dr. Michael O. Esang'ire, Masinde Muliro University of Science and Technology.*

1.4 Local and international conference attendance

1.4.1 Prof. John H. Nderitu

- Nakuru Campus Conference, Nakuru, 17th - 18th May 2012
- Kitale Campus Conference and Field Day, Kitale, 26th - 28th September 2012

1.4.2 Dr. Francis Muregi

- Nakuru Campus Conference, Nakuru, 17th - 18th May 2012
- 1st Annual International Interdisciplinary Conference held at The Catholic University of Eastern Africa (CUEA), Nairobi, Kenya 26th -30th June 2012

1.4.3 Mr. Peter Waweru

Seminar for Presidents of Universities in Anglophone African Countries & the International Forum on Sino-Africa Higher Education Exchange and Cooperation

Summary of China Seminar for Presidents of Universities in Anglophone African countries

In a nutshell there were 13 seminar presentations. Twelve of the 13 scheduled lectures were successfully presented. These took us through a detailed tour of the history of The People's Republic of China and the painful path that it has taken all the way from the dynastic era to the current enviable level that it has reached with Higher Education (HE). Specifically, the following areas sensitized us to the social, political, economic and cultural revolutions China experienced which prompted their educational reforms which began in the 1980s:

1. China's Actual Condition and Traditional Cultural Rejuvenation
2. An Overview of Education Development
3. Change and Development of Chinese College Enrollment and Employment System
4. Science and Technology in China
5. Personnel Management in Higher Educational Institutions
6. Higher Vocational Education in China
7. Building and Practice of Faculty Teaching and Research: A Case Study of Zhejiang Normal University
8. Reforms and Development of Higher Education in Zhejiang Province
9. Educational Problems in China Today (Not Held)*
10. Financial Systems and Policies of Chinese Higher Education
11. Degree and Post Graduate Education in China
12. Chinese University Training & Systems, Organizations and Challenges
13. Dilemma and Way Out of Chinese Higher Education Reform

Several things were learnt from the lectures and during question and answer sessions. Some include the political and socio-economic conditions China has experienced which led to stages of educational reforms and achievements which we witnessed. The achievements of China in HE are illustrated by the growing number of universities and the correspondingly evident mushrooming of high-tech buildings all over the places we visited, a testimony of China's tech-

nological advancement. We were also humbled by the humility of China's acknowledgement of the challenges that it experienced in the process in its interaction with the world. Its achievements in technology and indeed its overall success are sources of inspiration. We can say without hesitation that its vision 2039 is a dream as good as achieved given such proved ability of efficient planning and unparalleled ability to execute with vision and vigour.



Mr. Peter Waweru, Deputy Vice-Chancellor, Finance Administration and Planning (extreme left) at Anhui University, China.

Field Visits

There were visits and tours to various historical and cultural sites and museums in a number of towns and universities. The participants visited the following: a high school in Jinhua which is affiliated with Zhejiang Normal University, Zhejiang Normal University, Zhejiang Industry Polytechnic in Shaoxing, Anhui University in Hefei, University of Science and Technology in Hefei. In each of these institutions,

the participants were welcomed by heads of the institutions, accompanied by senior members of staff. We need to underscore of the high profile reception and indeed the many opportunities and avenues opened by these institutions of areas of possible future exchanges with different African institutions of higher learning. Participants visited historical sites and museums: African Museum on the Zhejiang

Normal University campus, Shaoxing Buddha prayer and holy site, the silk muse Um in Hangzhou, Anhui Museum in Anhui, Lord Bao Park, and Pearl Tower in Shanghai.

Field visits were also made to local economies where participants observed and interacted with merchants.

Participants enjoyed various modes of transport especially the "Bullet Train".



Mr. Peter Waweru, Deputy Vice-Chancellor, Finance Administration and Planning tours Silk Museum



Mr. Waweru tours Hefei Gongda



Mr. Waweru travels by a bullet train in China

International Forum on Sino-Africa Higher Education and Cooperation

The two-day forum held at Zhejiang Normal University was organized by the Institute of International and Comparative Education together with the Institute of African Studies at the College of International Education at Zhejiang Normal University. The idea of internationalizing Chinese education and indeed the importation of African education into China was appreciated. In fact the visibility and the valorization of Africa was a subject of consistent reference throughout the presentations by the hosts. The seminar was a shouting embodiment of the acknowledge-

ment of the significance of the African continent. We appreciate so much this gesture of mutual respect and pray that it be nurtured to scale even greater heights.



Mr. Peter Waweru, Deputy Vice-Chancellor, Finance Administration and Planning interacts with the Chinese to understand the culture

Group Discussions

There were two Group Discussions. The first Group Discussion featured presentations on Personnel Management and Quality Assurance issues. These presentations laid the basis for group discussions about Higher Education in African countries.



There were two Group Discussions. The first Group Discussion featured presentations on Personnel Management and Quality Assurance issues.

1.4.4 Dr. Jesse Gitaka

1st Annual International Interdisciplinary Conference held at The Catholic University of Eastern Africa (CUEA), Nairobi, Kenya 26th -30th June 2012

1.4.5 Dr. Pamela Ochieng



**4th ANIE conference
held at the University of
Pretoria South Africa, 26
– 28 September 2012**

1.4.7 Dr. Christine Wangia

The 4th International Conference on Medicinal Plants and Herbal Products was held at the Johns Hopkins University Montgomery County Campus, Rockville, Maryland-USA between 6th-8th September 2012. Eleven countries were represented; Kenya, Nigeria, USA, India, Sri Lanka, Japan, Indonesia, Malaysia, Panama, and Canada. The topics which were discussed were; pharmacology, pharmacognosy, pharmacodynamics, phytochemistry and quality control of medicinal plants, conservation approaches, agroforestry, indigenous traditional medicines, biotechnology and molecular biology among others.

Dr Wangia's paper was titled: *Anti-inflammatory triterpenoidsaponins from Dipteracanthusprostratus (syn.Ruelliaaprostrata)*. She highlighted the need for the research on novel anti-inflammatory drugs from plant origin which might more effective, safer, cheaper and easily accessible.



**Dr Wangia presents her paper
at the Johns Hopkins University
Montgomery County Campus**

1.4.9 Mr. Collins Odongo

. Moi University 8th Annual International Conference, held on 4-8 Sep, 2012 focused on "Adaptations to Global Dynamics: Challenges and Opportunities" mounted by Schools of Dentistry, Medicine, Nursing, Public Health, Information Sciences, Engineering, Law and Cross-Cutting

Symposium. Mr Adongo presented a paper entitled "The Kenyan Judiciary at Crossroads: An Assessment of the Law on Enforcement of Choice of Law/Choice of Forum Clauses" at the Law Symposium
• **Kitale Campus** Conference and Field Day, Kitale, 26th – 28th September 2012

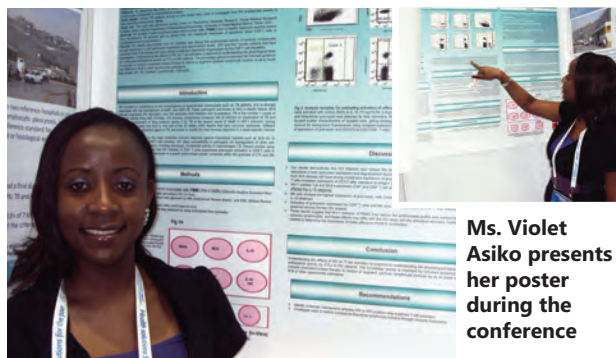
1.4.6 Dr. Edward Kamamia

Dr. Kamamia E. K presented a paper titled *Medicated Lollipops of Paracetamol for Pediatric Patients* in Dubai. This was during a conference held in Dubai. The same paper has since been published in an international peer-reviewed journal: World Journal of Pharmacy and Pharmaceutical Sciences. Other co-authors of the paper are Parushotham Rao, Timothy Maitho and Zakauallah S, Arshiya. SA, Ashok Kumar and Anand C.



1.4.8 Ms. Violet Asiko

• International Conference on Human Immunity to Tuberculosis", and it was held at Emory conference center in Atlanta, Georgia in April 2012



**Ms. Violet
Asiko presents
her poster
during the
conference**

1.4.10 Ms. Josephine Kirimi

• Nakuru Campus Conference, Nakuru, 17th – 18th May 2012
• 1st Annual International Interdisciplinary Conference held at The Catholic University of Eastern Africa (CUEA), Nairobi, Kenya 26th -30th June 2012





1.4.11 International Conference on 50 Years of Kiswahili as a language of liberation, unification and renaissance, Am-biyo Ruth, Mellan Urandu, Sylviah Nyangweso, Omuke Leonida, Gibson Shamalah, Mohamed Zubheir, Burudi Joyce Pepela, Owino Anthony Oloo

The rapid expansion of university education requires that institutions of higher learning reassure stakeholders of the quality of services they offer. In an effort to do this, Mount Kenya University (MKU) has put internal mechanisms in place to ensure quality in service delivery. The University is committed to providing high quality university education that offers intellectual, social, cultural and economic benefit through quality teaching, learning, research, extension, and services. Importantly, MKU always ensures that staff is qualified and competent to conduct the core activities of the institution; education, research and community services, and regularly

conduct self-assessment of core activities of the institution, strengths and weaknesses. Moreover, these mechanisms include efficiency and effectiveness in course delivery and enhancing of conventional academic engagements key among them participation in both local and international academic conferences. MKU truly endeavors to develop a well trained manpower and capacities in all aspects, fields and specialties. As part of fulfillment of its vision in being a role model of excellence in science and technology education and training in Africa, MKU took part in a historic and international academic conference in Dar es Salaam University, Tanza-

nia. In deed it was a great realization of our academic character with emphasis on science, technology and humanities by offering an all rounded education to all persons including moral and professional education to all persons irrespective of religion, race or gender or political affiliation, social or cultural background.

In participating in an international conference the MKU Kakamega Campus has proved that MKU mission in providing a world class teaching, research and innovative extension services for sustainable scientific and technological development is truly achievable and practically realizable.

ACHIEVEMENTS

During the conference in Dar es salaam, we worked hard to realize the following:

ACHIEVEMENTS	IMPACT/REMARKS
Initial Conference Preparations by the lecturers and students including abstract submission for review by the conference organizing panel.	Learning experience for lecturers participating for the first time as well as the students
Acceptance of the abstract after a rigorous vetting and review of the quality of the contents of the abstracts vis a vis the conference theme.	Provided positive publicity for the Institution.
Actual paper preparation for presentation at the conference.	Gave the students the required academic orientation on scholarly engagements.
Non academic preparations including passport acquisition	Gave the students the requisite international exposure.
The actual journey to Dar-es-salaam, Tanzania	Amounted into a realistic geographical exposure to the participants
Conference Paper presentation and participation in the first ever MKU student lecturers integrated conference presentation.	Raised the participates' academic profile by placing the on the international academic map. Provided a forum of Interaction among the MKU participants and their peers from across the globe. Provided an avenue of international academic interaction and networking.



ACHIEVEMENTS	IMPACT/REMARKS
Participated in Exhibitions and Marketing of MKU programmes internationally during the conference organized by TATAKI in Dar-es-salaam, Tanzania.	Targeted and recruited potential MKU applicants hence publicized the institution with immediate response from recruits at Chalinze(Mzee) Himo and at the Oloitoktok Border. Increased interaction opportunities for members and visibility of the MKU.
Launched the Mount Kenya University Kiswahili Association (Chama cha Kiswahili cha Mlima Kenya- CHAKIMKE) .	Increased visibility of the Kiswahili association and making it more relevant to the lives of the students as part of the necessary academic ventures.
Participated in MKU international events such as Conferences, Seminars and marketing ventures.	Increased awareness of MKU programmes, activities and mainstreaming it within international University.
Participated in international Kiswahili Association Networking events organized by TATAKI during the Kiswahili international conference at the university of DAR ES SALAAM.	Increased awareness of MKU and CHAKIMKE which enhanced international Kiswahili linkages of Kiswahili Associations internationally.
MKU was the most highly represented international University with a total of 9 participants and 3 highly enriching academic presentations.	Increased visibility of the University on the international frontier
Embarked on Aggressive Roadside marketing of MKU programmes, Market -to-Market, Centre-to-Centre and literally every stop over including police checks and roadblocks along Kakamega-Nairobi-Oloitoktok-Rombo-Chalinze Korogwe-Kibaha-Dar es salaam highway	Increased awareness of MKU programmes with instant responses notably at Chalinze and Oloitoktok Border.
Successfully commandeering a courtesy call at the Kenyan High Commission in Tanzania and eventually a cocktail at the Ambassadors' residence for a job well done.	Increased visibility of the institution and making it more relevant to the lives of the students and the entire university fraternity regionally and Globally.

Highlights

The following become chief MKU events worth noting at the Conference:

a) Exemplary performance at the conference which attracted a special invitation from the Kenyan High Commission and eventually a well deserved cocktail at the Kenyan Ambassador's official residence at Oyster-bay in Dar es Salaam.

b) Special message to the Chairman, BOT of MKU from the Kenyan Ambassador to Tanzania in recognition of the best performance at the conference.

c) Presentation of awards and a special gift from the Ambassador including a request for a special public lecture at the MKU. Visible, undeniable and overwhelming presence of MKU at the conference (MKU official

van and strategic marketing banners)

d) Participation in large numbers with a total of six students and three members of staff.

e) Presentation of a record three academic pieces of work.

f) The high quality and impressive content of the presentations evoking very impressive debates and high quality academic critic.



Students and Staff who attended Dar es Saalam Conference pose for a photo with the Kenyan Ambassador to Tanzania



MKU student receiving a certificate of participation



Students and Staff with the Kenyan Ambassador to Tanzania in his office

1.5 Training workshops attended

1.5.1 Mr Collins Odongo

- DAAD/KDSA/NCST Research Proposal Workshop 25-27 July 2012, Strathmore University
- 8-10 Aug 2012 Kampala - Africa Regional Forum: Theme: *Building the Foundations of a Successful Future: The Rule of Law and Economic Confidence in Africa*

1.5.2 Ms. Josephine Kiriimi

- DAAD/KDSA/NCST Research Proposal Workshop 25-27 July 2012, JKUAT

1.6 Publications

1.6.1 Fluoroquinolone resistance in mycobacterium tuberculosis strains isolated in Kenya (Ongaya V.A, Githui W.A, Meme H, Juma E)

Ongaya V.A 1, 2, 3, Githui W.A1, Meme H1, Juma E1

1. Centre for Respiratory Diseases Research (CRDR), Kenya Medical Research Institute (KEMRI)
2. Jomo Kenyatta University of Agriculture and Technology (JKUAT)
3. Mount Kenya University

Summary

Background: Fluoroquinolones are key second-line anti-tuberculosis drugs usually used in the treatment of patients with Multi-Drug Resistant Tuberculosis (MDR-TB). Anti-TB fluoroquinolones include ciprofloxacin, moxifloxacin, gatifloxacin (Gat), ofloxacin and levofloxacin. Resistance to one fluoroquinolone usually translates to resistance to the others in the group.

Objective: To determine whether there is fluoroquinolone resistance in Mycobacterium tuberculosis strains isolated in Kenya.

Design: A retrospective descriptive study involving archived strains from previous studies carried out at the Centre for Respiratory Diseases Research (CRDR), Kenya Medical Research Institute (KEMRI) between 2002 and 2007.

Setting: CRDR, KEMRI.

Methods: A total of 216 first-line Drug Susceptibility Testing (DST) pre-tested MTB strains were used including 78 resistant to one or more drugs, and randomly selected 138 susceptible to all four drugs. Of the 78 resistant strains, 25 were MDR-TB. The strains were subjected to drug susceptibility testing to Gat among other second-line drugs.

Results: Of the 216 strains tested, 32 [32/216 (14.8%)] showed resistance to second-line drugs. Of these seven [7/32 (21.9%)] were fully resistant to Gat of which six [6/7 (85.7%)] were mono-resistant strains and one [1/7 (14.3%)] with combined resistance strain to Ethionamide. Four [4/25 (16%)] MDR-TB strains showed mono-resistance to Gat.

Conclusion: Presence of Gat resistance especially in MDR-TB patients may significantly contribute to Extensively Drug Resistance TB, a more difficult to treat strain than MDR-TB. Therefore strict drug adherence among MDRTB patients and proper and appropriate use of fluoroquinolones should be implemented in Kenya.

Key words: Fluoroquinolones, MDR-TB, resistance.

[Afr J Health Sci. 2012; 20:77-81]

1.6.2 Expectations in the 21st century among private universities in Kenya: A case of Mount Kenya University (TOM NYAMACHE, VICTORIA MUNYAO, RUTH NYAMBURA, PHELIX SONGO, MATOKE NYAMBOGA)

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Abstract

This paper highlights information needs and expectations of users of select libraries among Private Universities in Kenya. It describes the information sources used, services and facilities preferred and satisfaction of services offered to them. Selected libraries of private Universities in Kenya are surveyed. The study reveals various information sources and services preferred by users. It

also highlights their satisfaction level and competency of library staff in assisting users in accessing information resources using information communication Technology (ICT) and its associated tools. This research is limited to few selected libraries of private Universities in Kenya. The paper therefore provides library professionals with a thorough understanding of different types of services and facilities users expect from libraries today. It can help in collection of development policy and planning of services for future use.

Keywords: Academic Library, Information, Users, Expectation, Emerging Challenges, expectations.

1.6.3 A review of users adoption of open source software in africa (JOHN KAMAU and SYLVESTER NAMUYE)

John Kamau1 & Sylvester Namuye2

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2. School of Science and Technology, United States International University, Nairobi, Kenya

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Abstract

In the current world, software is increasingly becoming important in the human activity. It is widely recognized that Open Source software (OSS) is freely available to anyone who needs it. However, loyalty of computer users to proprietary operating systems and general office applications seems to be still high especially in developing countries. OSS has a great potential of saving costs for developing economies in Africa and reducing the cost of doing business and automating operations. The software would be very useful especially in the current period of economic hardships being faced by many developing countries. African governments have also not taken the lead in adopting the OSS software and many do not have policies in place regarding it. A review of literature on studies conducted in Africa on OSS in order to establish the level of user adoption, possible barriers to OSS adoption in developing countries in Africa is done in this paper. The findings are of great value to all stakeholders, namely the software developers, policy makers and computer experts in their endeavour to achieve high

user adoption of OSS.

Keywords: open source software, adoption, economically developing countries

1.6.4 Hypoglycemic activity of aqueous and ethyl-acetate leaf and stem bark extracts of *pappea capensis* in alloxan-induced diabetic balb/c mice (KARAU, G.M., E.N.M. NJAGI, A.K. MACHOCHO, L.N. WANGAI and P.N. KAMAU)

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5. Department of Natural Sciences, Mount Kenya University, P. O Box 342-01000, Thika, Kenya

Abstract

The present study was performed to determine the optimal dose of alloxan monohydrate required to induce diabetes in male BALB/c mice and investigate in vivo hypoglycemic activity of aqueous and ethylacetate leaf and stem bark extracts of *Pappea capensis* in alloxanized diabetic BALB/c mice. In addition, the proximate composition of *P. capensis* powder was investigated. The seven groups used in determining the optimal alloxan dose to induce diabetes included the normal mice intraperitoneally administered with a single dose of 0.1ml physiological saline and doses of 50.0, 77.6, 120.4, 186.9, 290.0 and 480 mg/kg body weight in 0.1 mL of physiological saline. Blood glucose levels were determined at 0, 24 and 48 h using a glucometer. The hypoglycemic activity of aqueous and ethylacetate extracts was studied in the normal and diabetic mice orally administered with 0.1ml physiological saline; diabetic mice orally administered with 0.075 mg glibenclamide, 1.25, 2.5 and 5 mg extract all in 0.1ml physiological saline. Blood glucose levels were determined at 0, 2, 4, 6 and 24 h, respectively. The proximate composition of *P. capensis* powder was estimated using standard procedures. Results show that a single dose of alloxan at 186.9 mg/kg body weight administered to 3-5 weeks old mice induced stable diabetes in 48 h; oral administration of ethylacetate leaf and stem bark extracts at 100 and 200 mg/kg body weight induced hypoglycemic activity in a dose independent

manner which was similar to that of glibenclamide at 3 mg/kg body weight from the second to the twenty-fourth hour. Total ash and lipid were higher while the crude protein and carbohydrate were lower in leaves compared to the stem barks. In conclusion, *P. capensis* is a nutritious plant whose ethylacetate extracts possess in vivo hypoglycemic activity.

Keywords: Alloxanized BALB/c mice, diabetes mellitus, ethylacetate extracts, hypoglycemic activity, *Pappea capensis*

1.6.5 High ethionamide resistance in mycobacterium tuberculosis strains isolated in Kenya (ONGAYA V.A, GITHUI W.A, MEME H, KIIYUKIA C, JUMA E.)

Ongaya V.A1, 2, 3, Githui W.A1, Meme H1, Kiiyukia C2, Juma E1

1. Centre for Respiratory Diseases Research (CRDR), Kenya Medical Research Institute (KEMRI)

2. Jomo Kenyatta university of Agriculture and Technology (JKUAT)

3. Mount Kenya University

Summary

Background: Increasing development of tuberculosis (TB) resistance to the currently available drugs including second-line anti-TB drugs that are being used for treatment of Multi-Drug Resistant TB (MDR-TB) patients has frustrated efforts to control TB worldwide. Ethionamide (Eth) is one of the drugs used in the regimen for treatment of these patients.

Objective: To determine level of Ethionamide resistance among second-line anti-tuberculosis drugs in *Mycobacterium tuberculosis* (MTB) strains isolated in Kenya.

Design: A retrospective lab-based study involving archived strains from previous studies carried out at the Centre for Respiratory Diseases Research (CRDR), Kenya Medical Research Institute (KEMRI) from 2002 to 2007.

Setting: Centre for Respiratory Diseases Research (CRDR), Kenya Medical Research Institute (KEMRI).

Methods: A total of 216 MTB strains with pre-determined first-line drug susceptibility testing (DST) results were used including 78 first-line resistant to individual and combined drugs, and 138 susceptible to streptomycin, rifampicin, isoniazid and ethambutol. The strains were subjected to DST to ethionamide among other second-line.

Results: Thirty two [32/216 (14.8%)] strains showed resistance to second-line drugs. Resistance to Eth was the highest [18/32 (56.3%)] including co-resistance with isoniazid [8/18 (44.4%)]. Nine [9/18 (50%)] strains were fully resistant and 9 [9/18 (50%)] were intermediate resistant to Eth.

Conclusion: Unexplainable high levels of Eth resistance is a cause for concern. This will impact negatively on the outcome of management of MDR-TB especially in Kenya where

the use of this drug is almost mandatory. Close monitoring of Eth before initiating individual patient management may be necessary.

Keywords: Ethionamide, Resistant, MDR-TB.

[*Afr J Health Sci.* 2012; 20:37-41]

1.6.6 Changamoto za ki-teknohama katika ufundishaji wa riwaya ya kiswahili katika shule za upili nchini Kenya, OWINO A. O, AMBIYO R. NA MELLAN U.

1.Owino A. O, 2Ambiyo R. na 3Mellan U.

1. Chuo Kikuu cha Mlima Kenya Bewa la KakamegS.L.P. 553-50100 Kakamega, Kenya.

2. Chuo Kikuu cha Mlima Kenya Bewa la KakamegS.L.P. 553-50100 Kakamega, Kenya.

3. Chuo Kikuu cha Mlima Kenya Bewa la KakamegS.L.P. 553-50100 Kakamega, Kenya.

Ikisiri

Utafiti huu ulinua kutathmini changamoto za Ki-TEKNOHAMA katika ufundishaji wa Riwaya ya Kiswahili katika shule za upili Wilayani Kisumu Magharibi. Miongoni mwa madhumuni ya utafiti huu yalikuwa kuchunguza iwapo TEKNOHAMA hutumiwa katika ufundishaji wa Riwaya ya Kiswahili katika shule za upili wilayani Kisumu Magharibi na kueleza changamoto za Ki-TEKNOHAMA katika ufundishaji wa Riwaya ya Kiswahili. Utafiti huu uliongozwa na Mkabala wa Uhakiki Makinifu wa Mta-laa ambao hutumia mwelekeo wa nyanja mbalimbali na kuseta matumizi ya teknolojia kwa kutumia tarakilishi katika ufundishaji na ujifunzaji madhubuti. Sampuli lengwa ya utafiti huu ilishirikisha walimu wote wa Kiswahili wilayani Kisumu Magharibi waliopewa mafunzo na kuhitimu. Mtafiti aliwatumia walimu kutoka shule 23 za upili za umma Wilayani Kisumu Magharibi, Mkoa wa Nyanza walioteuliwa kwa kuzingatia uteuzi wa sampuli wa kinasibu na utabakishaji.

Utafiti huu ulitumia muundo wa usoroveya-elezi katika uchunguzi wa nyanjani. Uchunzaji darasani, usaili na hojaji zilitumika kukusanya data kutoka kwa watafitiwa. Data zilichanganuliwa kwa msaada wa programu ya tarakilishi ya takwimu (SPSS). Kutokana na data iliyochanganuliwa, iligunduliwa kwamba walimu wengi hawakutumia aina mbalimbali za TEKNOHAMA kufundishia riwaya ya Kiswahili hata zilipopatikana. Aidha utafiti huu ulifichua kwamba matumizi ya TEKNOHAMA katika ufundishaji wa riwaya yanakabiliwa na changamoto anuwai; ukosefu wa fedha, matumizi ya TEKNOHAMA kwa shughuli zisizowiana na ufundishaji na ukosefu wa miundo-misingi inayohitajika kuimarisha matumizi ya TEKNOHAMA katika ufundishaji wa riwaya ya Kiswahili. Kutokana na ugunduzi huu, utafiti huu umependekeza vyyo vikuu vifanye mapitio ya kozi ya mbinu za kufundishia ili kuhusisha matumizi ya TEKNOHAMA hivyo basi kuboresha ufundishaji wa walimu wanaofuzu kutoka

vyyo hivi. Utafiti huu pia umependekeza kwamba wizara ya elimu iandae semina, warsha na makongamano ili kuhimiza matumizi ya TEKNOHAMA katika ufundishaji pamoja na kulitengea somo la Kiswahili vipindi zaidi vya kufundishia riwaya ya Kiswahili kwa kuseta TEKNOHAMA katika ufundishaji. Aidha utafiti huu umewapendekeza walimu, wataalamu, watafiti na wachapishaji kuzingatia TEKNOHAMA katika shughuli zao kwa minajili ya kuboresha mchakato wa ufundishaji wa riwaya ya Kiswahili.

1.6.7 Lugha ya Kiswahili na elimu: Changamoto na matarajio, OMUKE. L, SHAMALAH G,ZUBHEIR, M, OWINO, A. O. SYLVIA N. NA CMELLAN U.

1.Omuke. L, Shamalah G,Zubheir, M, Owino, A. O. 2Sylvia N. na 3CMellan U.

1. Chuo Kikuu cha Mlima Kenya Bewa la KakamegS.L.P. 553-50100 Kakamega, Kenya.

2. Chuo Kikuu cha Mlima Kenya Bewa la KakamegS.L.P. 553-50100 Kakamega, Kenya.

3. Chuo Kikuu cha Mlima Kenya Bewa la KakamegS.L.P. 553-50100 Kakamega, Kenya.

Ikisiri

Lugha ya Kiswahili ni lugha yenye asili yake katika pwani ya Kenya. Kiswahili ndiyo lugha kuu na inayoenea kwa kasi mno sio tu katika Afrika Mashariki bali pia katika bara la Afrika na duniani kote. Nchini Tanzania, Kiswahili pamoja na Kiingereza ndiyo lugha rasmi na lugha ya kitaifa nchini Kenya na DRC. Aidha Kiswahili ndiyo lingua franca katika Afrika Mashariki ambayo inatumika na zaidi ya watu milioni 100 pamoja na kutumiwa kama lugha ya kufundishia au kama somo shuleni na hata vyyoni. Hivyo basi lugha ya Kiswahili ina nafasi kubwa katika ufufuaji wa jumuiya ya Afrika mashariki.

Makala haya yanauia kujadili nafasi ya lugha ya Kiswahili katika ufufuaji wa jumuiya ya Afrika Mashariki. Labda maswali tunayojiuliza hapa ni: Je? Kiswahili ina mchango gani katika ufufuaji wa jumuiya ya Afrika Mashariki? Je, jumuiya ya Afrika Mashariki ni tukio la kiutandawazi? Ni sifa gani za Kiswahili zinazoweza kuifanya lugha bora zaidi katika ufufuaji wa jumuiya ya Afrika Mashariki? Ni changamoto zipi zinazoikumba lugha ya Kiswahili katika kuimarisha jumuiya ya Afrika Mashariki? Ni nini mustakabali wa lugha ya Kiswahili katika kuikuza jumuiya ya Afrika Mashariki?

Makala haya yanajaribu kuzua majibu kwa maswali haya kwa kuonyesha umuhimu wa lugha ya Kiswahili katika mawasiliano, ubunaji na usambazaji wa maarifa. Hatimaye makala yanapendekeza hatua muhimu zinazoweza kuchukuliwa na wadau katika kuhakikisha kwamba lugha ya Kiswahili inachukua nafasi yake katika kuendeleza umoja na utangamano katika jumuiya ya Afrika Mashariki katika enzi hii ya kiutandawazi.

1.7 Vice-Chancellor's research grantees

The University through the Research and Development has continuously awarded grants to Academic Staff Members to undertake research that has an impact on the society. The University introduced the Vice-Chancellor's Grant that has awarded 20 academic staff members and their collaborators grants to undertake research in 2012.

LIST OF ALL PROPOSALS BY THE RESEARCH DIVISION

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT
School of Pharmacy	
John Munguti Kisengi	Evaluation of drug use in public and private health facilities in Kenya: A case study of Thika district
Christine Wangia	Evaluation of Analgesic and Anti-Inflammatory Effects of Extracts of Dipteracanthus Prostratus in Rats and Mice
Peter Gachangaga Njihia	Development and validation of a liquid chromatographic method for the simultaneous determination of Amolodipine, Valsartan and Hydrochlorothiazide
Jared Misonge Onyancha	Investigation of Antidepressant Activity of Hypericum Keniense Schweinf (St John Wort)
Edith Wakori	Establishment of the Mount Kenya University Botanical Garden, Thika
School of Health Sciences	
Sussyann Miriti	Dietary diversity, morbidity patterns and nutritional status of children aged 6-23 months in Kibera slum, Nairobi County, Kenya
Betty Makena Gitonga	Factors influencing nutrition status at Mount Kenya University: A case study of Thika Campus, Kiambu County
Esther N. Muriuki	Effects of consumption of sesame on oxidative stress in mice
Department of Nutrition and Dietetics (Ms. Betty Gitonga, Peter Chege, Paul Wanjohi, Sussyann Miriti and Esther Njeri)	Determinant of food security and nutrition status
Jessee Gitaka	Project to characterise current circulating Plasmodium falciparum isolates in Kenya and role of RNA polymerase II C-terminal domain polymorphisms in artemisinin resistance
Jesse Gitaka, Francis Muregi, Leonard Buya, Peter Mwaura, Stanley Kang'ethe, Dr. Obimbo(UON), Dr. Ndegwa(St. Mulumba Hospital), Dr. Mbogo(Thika Level 5 Hospital), Prof. Matili(KEMRI)	A novel technology for diagnosis of typhoid
Jesse Gitaka, Francis Muregi, Leonard Buya, Peter Mwaura, Betty Makena, Grace Ngure and Stanley Kang'ethe	Colleration of intestinal parasites and Tunga penetrans, nutritional status and academic performance: a case study in school children in Kiandutu settlement, Thika and Gitugi location, Murang'a, Kenya.



School of Law	
Collins Odongo	Land law and land-use patterns in Kenya's new constitution and the national land policy: the dilemma of implementation
School of Pure and Applied Sciences	
Mulei Fredrick Mwange	Design of High Yield (In Quantity & Quality) Charcoal Kiln
Francis W. Muregi	Chemical synthesis and antimalarial evaluation of hybrid drugs using artemisins and quinolines pharmacophores as scaffolds
Peter M. Mithamo	Modified egg incubator
School of Education	
Margaret Njoki Muihia	A critical analysis of Athol Fugard's social vision in four selected plays
School of Social Sciences	
Lokapel D. Elim	The dynamics of governance and ethics as coping strategies in the Northern corridor of Kenya
David Kihara Kung'u	Mchango wa Kiswahili na lugha zingine katika Sheng ya matatu
Eliud K. Situma	Nurturing Peace through Kenyan Media
School of Business and Public Management	
Emma Anyika	Financial Sector Performance Enhancer

1.8 Research collaboration

The Research and Development has encouraged members of staff undertake collaborative projects with members of staff within the University and from different institutions. The Division spearheaded the development of 10 collaborative proposal for different institutions for research grants.

Prof. John H. Nderitu, Deputy Vice-Chancellor, Research and Development attracted a Ksh. 1.2 million grant for a joint research project between Uganda, Kenya and Rwanda.

2 INNOVATION

Innovation refers to a new or original or improved product or process. It is the development of new customers value through solutions that meet new needs, inarticulate needs, or old customer and market needs in new ways. Thus, it is through innovation that different or more effective products, processes, services, technologies, or ideas are made available to meet the needs of the society. Innovation differs from invention in that innovation refers to the use of a better and, as a result, novel idea or method, whereas invention refers more directly to the creation of the idea or method itself. Innovation differs from improvement in that innovation refers to the notion of doing something different rather than doing the same thing better.

Ultimately, innovation confers to the society comfort, convenience, and efficiency in everyday life. The traditionally recognized source of innovation is manufacturer innovation, where an agent (person or business) innovates in order to sell the innovation. However, end-user innovation where an agent develops an innovation for their own use because existing products do not meet their needs is being recognized as the most important and critical. The famous robotics Engineer Joseph F. Engelberger asserts that the drivers of innovation process include:

- A recognized need/potential market needs
- Competent people with relevant technology, and
- Financial support

Mount Kenya University reckons

that formal research and development (R&D) process has yielded great innovations, and that Kenya can not achieve the Vision 2030 without investing in research and development. Thus, the University has developed an innovative research model. In addition, University has established a Innovation and Incubation Centre.

Mount Kenya University continues to lead in innovation, and some its innovators has worn awards for their unparalleled works.

In recognition of the fact that innovation is a laborious process, the University board of Trustees has established the Chairman Innovation Award that will recognize outstanding innovators as an incentive and a gesture of appreciation for their altruism.

2.1 Mount Kenya University awards innovators

In 2012, Mount Kenya University awarded the following for their outstanding innovations:



Daniel Macharia



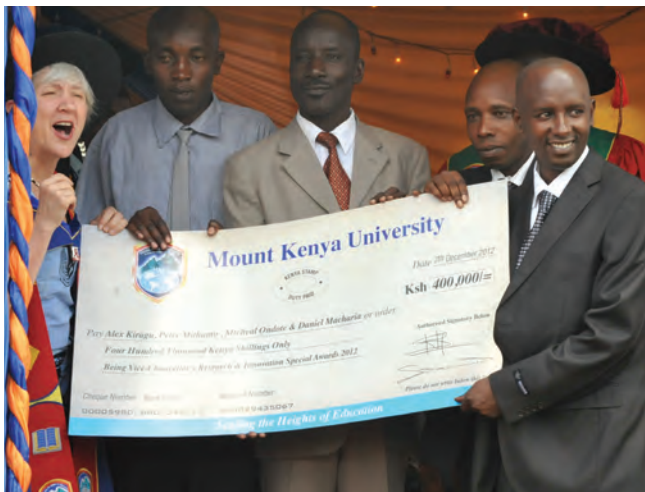
Alex Kiragu



Michael Odote



Peter Mithamo



ABOVE: Chancellor Prof. Victoria Wulsin presents a dummy cheque to the creative quartet during the 4th Graduation Ceremony held on 7th December, 2012. **RIGHT:** The innovators hold their certificates aloft.

2.2 ALEX KIRAGU: Hygienic Handwash Unit

Mr Alex Kiragu was born in 1984. He had his primary and secondary education in Muranga. He joined Kenya College of Accountancy in 2003 and studied a professional course in Cisco Certified Computer Networking Associates. He joined Thika Institute of Technology, the precursor of Mount Kenya University in August 2006 to study diploma in Medical Engineering. He has worked as a Biomedical Engineer technologist in St Francis Community Hospital, Ruaraka Nema Hospital and Labtech Electronics.



Mr Kiragu has used his knowledge and skills he garnered from MKU to design and construct;

1. Automatic fire extinguisher system
2. Variable height cloth line
3. The Hygienic hand wash unit

In recognition of his efforts to provide solutions to challenged facing our society, Alex Kiragu has to date attracted three innovation grants from National Council of Science and Technology (NCST).

His latest innovation, Hygiene Hand Wash unit, has received great interest due to the nature of the problem it is addressing.

According to WHO, Diarrhoeal diseases are the second leading cause of death in children under five, killing 1.5 million children every year and globally although the diseases are both preventable and treatable. The Diarrhoea diseases are mainly caused by poor hygiene. As a way of sensitizing the public, the world marks the Global Hand Wash day on October 15th every year with great emphasis on proper hygiene

which is important in ensuring good health. As a way of playing a role in reducing the spread of these diseases, Mr. Alex Kiragu designed and constructed HHU which is mechanical-foot operated water valve in order to eliminate the problems of poor hygiene and wastage of water during the important activity of hand washing. This foot operated water dispenser is also movable/mobile. This dispenser has proved to be useful in rural schools, hospitals and hotels among other places especially where there is no access to electricity since the system does not require electricity to operate. It is important to note that the product is patented.

In recognition to Mr. Kiragu's talent, the University has engaged him as a full time member of staff. MKU now wishes to recognize his innovation which will go a long way to facilitate good sanitation within our society especially to school going children and in achieving Millennium Development Goals.



Mr Kiragu with his foot-operated, hand washing unit.

The unit is portable too, making it ideal for outdoor events, and for use in areas that have limited water distribution, for examples hospitals.

Press the pedal using your foot.

Water flows from the taps.

2.3 Peter Mithamo: Modified Egg Incubator

Peter Mithamo was born in 1976. He had his primary and secondary school education in Nanyuki. He later joined the then Kenya Polytechnic in 1993 where he studied Electrical Engineering (Electronics Option) attaining a Higher National Diploma. Mr. Mithamo also has qualifications in Computer Engineering from Kenya Christian Industrial Training Institute and a Diploma in Refrigeration and air conditioning. He has previously worked as an Electronics and Computer Technician at the Kenya Breweries and as a consulting Engineer.

Mr. Mithamo has used his knowledge and skills to design and construct;

1. A radio frequency generator.
2. A low power desk lamp.
3. A thermostatically automated zoo capacity brooder

system.

4. A solar powered modified egg incubator with 80% efficiency.

The modified egg incubator that can use both A/C and D/C current and incorporates a candling system that determines the hatchability of the eggs during the incubation process. It is important to note that some components of the incubator are already patented. He has started up scaling the production of the incubators targeting small scale poultry farmers, and some of his products are in the market.

The innovation will go a long way in addressing food security challenges in our region. Mr. Mithamo is currently working at Mount Kenya University where he shares his knowledge and skills with students and staff.



Peter Mithamo feeds the one-day chicks hatched at his incubator. INSET: The Modified Egg Incubator.

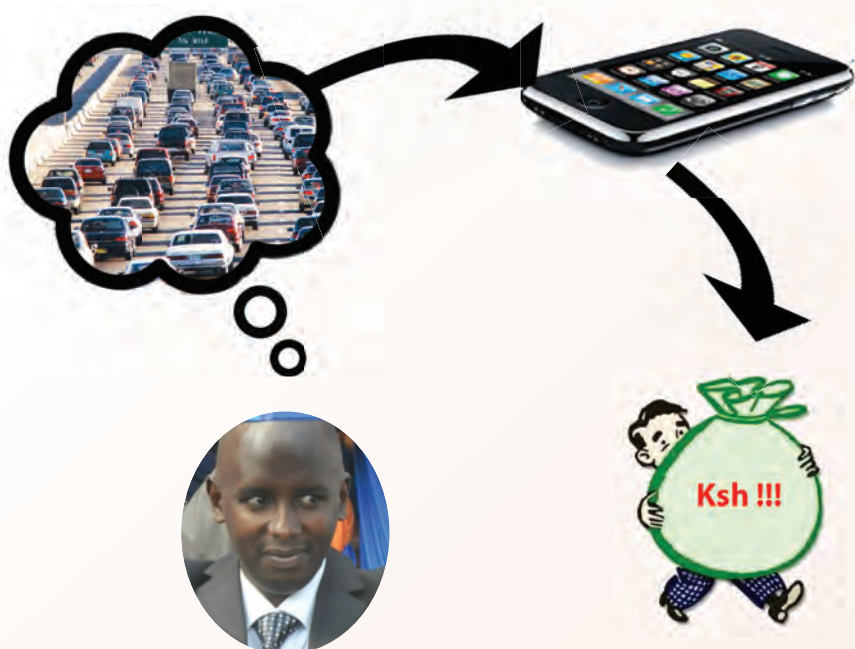
2.3 DANIEL MACHARIA: M-Traffic

Daniel Macharia was born in 1979 in Kiambu County. After completing O-level education at Senior Chief Koinange High School, he joined a computer school where he became enthusiastic on how a computer can perform so many tasks. In 2004 he started an informal computer training centre in Nairobi's Eastlands, registered formally

in 2007 as East Africa Institute of Certified Studies. He joined MKU in 2012 to study Bachelor of Business Management (Entrepreneurship Option) to sharpen and improve his innovation skills.

In 2011, after observing that most job seekers undergo a tedious process of locating available vacancies, he came up with a centralized

database with all available jobs posted online. The same year, Mr Macharia also developed an ICT solar lantern which can provide lighting, charge mobile phone and has an FM radio. This creation made it all the way to the finals of the Jitihada Business Plan Competition. In 2012 Mr Macharia also participated in Kenya ICT Board Digital Village Competition dubbed 'Pasha Centres'. He came tops and received KSh2.5 Million from the Ministry of Information and Communication to set up a Digital Village at Starehe Constituency. Last year, Mr Macharia developed a Mobile Traffic Enforcement System that enables traffic police officers to legally file for traffic offences, and check motor vehicle or driver traffic offence records using a mobile phone. Traffic offenders can also pay fines for offences using any the mobile money transfer platform, M-Pesa. Members of the public can use M-traffic to report traffic offences, and traffic police officers involved in corruption. Mr Macharia already holds a patent for this creation which will go a long way in stemming the frequent road accidents in Kenya. M-traffic has a potential to save lives, curbs corruption, and save time.



2.4 MICHAEL ODOTTE: Herbalist

Mr Michael Odote hails from South Nyanza where he was born 49 years ago. Though a trained Pharmaceutical Technologist, Mr Odote appreciates that about 80% of sub-Saharan Africa population relies on natural products for their primary health care needs. Mr. Odotte established a local herbal research based Centre, "The Sungu Africa Herbal Research Centre", which brought together herbalists from South Nyanza to share

knowledge and experiences. He has developed a herbal product which is an immune booster which has the brand name "Sunguprot". The product will go along way in alleviating the suffering of immune-compromised people including cancer, HIV/AIDs patients and convalescing people.

In 2008, NCST gave him a grant to validate the product. He is currently seconded to KIRDI to incubate the manufacturing and up scaling of

this product. It is important to note that the product has been patented.



3 UNIVERSITY LINKAGES

3.1 MKU partners with University of Cincinnati, USA



Mount Kenya University has signed a collaboration agreement with the University of Cincinnati, USA. This agreement will see mutually-beneficial partnerships between the two institutions.

MKU Chancellor, Prof. Victoria Wulsin said during the 4th Graduation Ceremony on December 7, 2012, that the agreement will see collaboration in research and training, faculty and student exchange, preparation of joint proposals for external funding, joint programs of consulting and evaluation, joint sponsorship of conferences, joint publication, and exchange of materials, articles and other publications.

"Of great interest to the students is the opportunity to interact with your contemporaries from the University of Cincinnati, through a student exchange programme. It will see some of you go to study at the University of Cincinnati, while we also host some students from this university," said Prof. Wulsin. The Chancellor further explained that this inter-university agreement will help internationalise Mount Kenya University's programmes, and

enhance the students' exposure to international platforms. "It will also put the students on a global pedestal, whereby they will have a chance to engage with some of the most brilliant minds in the US. We recognize the fact that for Mount Kenya University to be globally competitive, it has to be an active part of the global village. This partnership with the University of Cincinnati is one way. Research has shown that international exchanges between universities have a potential to strengthen economies and societies around the world.

Mount Kenya University is once again at the forefront of setting the pace," said Mr Asman Kama, Assistant Minister for Higher Education, Science and Technology, who was the chief guest during the graduation. "This is commendable."

The partnership will run for five years, with potential for renewal.

3.2 Geothermal Development Corporation and Mount Kenya University partnership

Mount Kenya University has partnered with Geothermal Development Company (GDC) to enhance research linkages between the two institutions. GDC Chief Executive Officer Silas Simiyu said the linkage epitomises the quest for government bodies to promote quality education that is the bedrock of skills acquisition and job creation. "This partnership, will add value to us through exchange of innovative ideas as well as shape the students' careers in their different specialities," said

Dr. Simiyu. Prof. Tom Nyamache, principal, MKU Nakuru Campus, said the provision of quality education across the globe relies on both public and private bodies that seek to identify and tap latent talent. Under the partnership, students taking Science programmes at MKU will have easy access to industrial attachment at GDC. Prof. Nyamache lauded GDC for its sustained efforts in energy production, and employment creation in the country. "We are proud of GDC and your

general contribution in the country's energy development and employment creation. Your presence in the region is great and we hope this partnership will see massive development of this area."

Dr. Francis Njunge, a member of the MKU council said, "We invite GDC to come on board and help our students in capacity building and training in key areas of science and research." MKU supported the Menengai Geothermal-Half Marathon with a Ksh250,000 donation.

3.3 Mount Kenya University and Institute of Primate Research to jointly train and conduct research

The university's School of Health Sciences, has entered into a collaboration with the Institute of Primate Research (IPR) to offer Master of Science Degree in Medical Laboratory Sciences (MSc-MLS). The MSc-MLS programme will be implemented as a two year Master's Degree program that will engage students both in theoretical and practical research training. This program shall be implemented jointly by both MKU and IPR, however, lessons, practicals and research projects shall be supported by IPR who are investing in a new training centre at its premises in Karen that will host the students and program support staff.

IPR is an internationally renowned research facility operating as a semi-autonomous directorate of the National Museums of Kenya. The Institute is a research leader especially in Biomedical Sciences, and the only one of its kind in Africa with proven capacities to develop and utilize animal models for medical research, generate scientific innovations and undertake capacity building in cutting-edge scientific research. The students will also benefit from the breadth of well trained scientists who are experts in the biomedical fields of immunology, parasitology, microbiology, biochemistry, molecular biology, virology and laboratory animal sciences.

The World Health Organization (WHO) recognizes IPR as a collaborating centre for biomedical research and human reproduction. In addition, the institute is registered with the USA National Institutes of Health-Office of Laboratory Animal Welfare (NIH-OLAW) and has recently become an Associate



Vice-Chancellor, Prof. Stanley Waudo and Managing Director, National Museums of Kenya hand-over the signed MOUs.

Partner of the EU Primate Network (EUPRIM-Net). The proposed MKU-IPR partnership will benefit from these linkages both locally and internationally resulting in a well informed and competitive MSc-MLS programme. The newly developed IPR-MKU MSc-MLS programme is designed to equip students with the basics of research methodology; ability to design projects in the medical sciences and to carry out experiments based on important health questions; ability to synthesise, analyse and report findings competently; an appreciation of the challenges posed by common, emerging and re-emerging diseases; think broadly on how to solve medical problems in key areas of specialization as presented in medical laboratories; acquire and operate essential laboratory equipment; acquire good laboratory practices for proper laboratory management in research and hospital set-ups; ensure health and safety in medical laboratories; communicate with peers and other professionals in the health

industry and be able to disseminate the acquired knowledge to others through presentations and publications. The IPR-MKU MSc-MLS programme has also taken into consideration the regional market demands for medical lab experts, as well as the emerging trends in medical lab practice.



MKU and IPR Staff members during the signing of the MOU

3.4 Ministry of Information staff to train at MKU

Staff at the Ministry of Information who wish to upgrade their academic qualifications can now join Mount Kenya University. This follows the signing of a memorandum of understanding between the ministry and the university.

According to the MoU, the two institutions will share synergies in communication, film and research.

The university students will have access to Kenya Film Services library and studios where they will hold practical lessons. Initially, the Film programmes will be mounted at the Nairobi Campus before being rolled out to other campuses in Kenya and Rwanda.

Under the MoU, the Department of Film Services, which is under the Ministry of Information, will also offer industrial



The Vice-Chancellor, Prof Stanley Waudu (left) and Information Permanent Secretary, Dr Bitange Ndemo sign an MoU

attachment to Mount Kenya University students. The university staff and students shall also enjoy access to sound and film equipment as well as the archive.

Speaking after signing the MoU at his office, the Information Permanent Secretary, Dr Bitange Ndemo said the Ministry staff can now upgrade their credentials to stand a chance to compete favourably for promotions and new appointments. The PS added that it had become a government policy that at least 40 per cent of TV content must be local. "This means our people will have an opportunity to create wealth through high quality productions," said the PS. Dr Ndemo hailed the partnership and expressed hope the training will fill the void in film skills in Kenya.

The university is putting final touches on a film/video studio at its Nairobi Campus located at MKU Towers, Moi Avenue which will be used to supplement practical skills training.

3.5 Kigali Campus to use Gicumbi District facilities to train students



The Chancellor Prof Victoria Wulsin and His Worship the Mayor Mvuyekure Alexandre of Gicumbi sign MoU as other varsity officials look on.

Mount Kenya University has signed a memorandum of understanding with Gicumbi District of Rwanda. The university will provide undergraduate and postgraduate degree programmes by establishing branch offices in the district. Prof Musa Nyakora, the Kigali Campus Principal signed on behalf of Mount Kenya University while His Worship the Mayor Mvuyekure Alexandre, Gicumbi signed on behalf of Gicumbi District. The main mechanisms of

collaboration will include: Training, use of hospital facilities and other facilities at the District of Gicumbi by MKU; capacity building, assisting in developing professional programmes in accounting and finance, human resources, resource mobilization, strategic planning and implementation. The signing ceremony was held on September 2, 2012 and was witnessed by the Chancellor, Prof Victoria Wulsin who was making her maiden visit to the campus



MKU Kigali Campus, Kicukiro Centre. MKU will provide undergraduate and postgraduate degree programmes in Gicumbi District of Rwanda.

3.6 Mount Kenya University partners with Ministry of Health

Mount Kenya University signed a memorandum of understanding (MoU) with the Ministry of Health. The MoU allows Mount Kenya University to use Thika Level 5 Hospital for teaching, research, clinical and public health practice. This MoU is a significant move by the university to consolidate capacity as it prepares to launch a full-fledged medical school.

The School of Health Sciences will offer medical-related degrees such as MBCH, Bachelor of Medicine and Surgery, among others. The MoU also provides access to the academic staff and students of Mount Kenya University to the diagnostic, outpatient, inpatient and other facilities of the hospital for purposes of teaching, research, and clinical services. On the other hand, eligible staff of Thika Level 5 Hospital in addition to fulfilling their employment duties in the hospital will be free to

render services to the university. Visiting staff and students of other institutions that have collaborative agreements with Mount Kenya University will be free to use the hospital for training, research and clinical practice, in such a manner that is consistent with the letter and spirit of this Memorandum. Among other issues, the two institutions shall jointly work together in the following;

- Hold joint workshops and seminars to enhance the collaboration of innovations equally if any.

It is the plan of Mount Kenya



Prof Anyang Nyong'o, then Medical Services Minister, signs the MoU as Mount Kenya University Chancellor, Prof Victoria Wells Wulsin, and other varsity officials look on.

University to construct a multimillion teaching and referral hospital in Thika as it seeks to stamp its authority in medical and research training in the region. The university has identified strategic partners with whom it will work closely to share synergies in mounting top of the range medical programmes

3.7 Ivey Aqua EPZ Ltd and MKU partnership

Brief history of the Company

Ivey Aqua EPZ Ltd was established 17 years ago and specializes in eye and ear drops. The company's products have been exported to South Africa and Middle East countries. The company is in the process of increasing their capacity to reach a wider market. The company has a capital base of Ksh1.3 billion and is now seeking FDA certification to be able to increase their market share.

- The Company will offer attachment as well as associate faculty to train MKU students. In addition, the company will enhance research capacity of both institutions by giving MKU practical problems to research on.



ABOVE: The team makes a brief tour of the company. RIGHT: Dr. Shah from IVEA AQUA



3.8 MKU visits Kirdi Incubation Centre

Mr Wako, Head of Incubation highlighted that:

- KIRDI had established incubation centres under various Research and Development divisions which include; Food processing, Engineering, Leather and ICT
- The incubation centre houses innovators who are improving on their innovation.

- The institute has adopted two methods of incubation and requested the tour to tour the Leather and ICT incubation centres.

The DVC R&D, Prof. John Nderitu thanked the company for giving Mount Kenya University a chance to interact with KIRDI and learn from them since MKU was in the process of establishing an incubation centre. He highlighted the objectives of the visit which was to discuss the following;

- Infrastructure and human resource requirements of an

incubation centre

- Operationalisation of an incubation centre

- Incubation centre – Industry linkage

The team toured the Leather Development Centre where the team noted the following;

- The centre uses a model known as Common Manufacturing Approach where;

- » The innovators process their leather in the centre at a fee

- » The innovators are trained on leather process so as to open their own small scale leather process factories

- » The innovators are trained on how to make products from the processed leather

- » The centre has laid a lot of emphasis on the processing of leather at the centre since the amount of capital required to buy machine for leather processing is too much.

- » The innovators bring leather at the factory and have to be engaged in the processing of their leather.

- » The centre also does extension services to small scale leather processors to train them on leather processing.

The team also toured the ICT incubation centre where the following was learnt;

- **The centre has two rooms;**

- » Work station

- » Training room

- The centre is mostly interested in software developers

- The centre offers the followings support skills;

- » Technical skills – They assist incubates in technical support in the course of software development

- » Business skills – They are trained on business related issues which include marketing and managerial courses.

- The centre runs a one year programme which is divided into two;

- » 3 Months Training – Trained on business related issues and business technology training

- » 9 Months of software development

- The centre has had at had success stories which include;

- » Establishment of companies by former incubates

- » Development of good software's

- » Establishment of a Virtual shopping mall by an incubate

- The centre works closely with the industry for example some incubates are given the specific softwares to develop for the industry. The team was able to meet an incubate who has done a software development for G4S security company and is currently developing a mobile game application for Nokia mobile phones.



Fredrick Musieba from KIRDI makes a presentation during the forum

The team held a discuss with the Head of Incubation where the following was discussed;

- KIRDI has had an incubation centres since 2006 but they started being fully operational since 2009 where they have had one batch leaving in June 2011.
- KIRDI has used two approaches in the establishment of an incubation centre;
 - » Common Manufacturing Approach - They have innovators manufacture their products in a common place since there is availability of machines.
 - » Incubation of idea or technology - They nurture ideas into products, they offer support services to the innovators such as technical support and working space
- Incubates are trained regularly to improve on their skills on processing of a products. Training is both technical and business skills.
- Networking among incubates is the most important aspect of any incubation centre since the incubates are able to interact between themselves. KIRDI incubates have been able to form an association which has been given funds by an NGO known as KADET.
- KIRDI advertises for incubations opportunity where interested applicants apply for the programme by filling a form.
- KIRDI considers the following in their admission of innovators;
 - » Technical qualification
 - » Area of interest (Products that the innovators would like to develop or has developed but would like to add value on the product)

Challenges

- » Institutional culture - Since KIRDI was a research institute, innovation and incubation is a new concept that has not been fully embraced.
- » Funding - The government allocates very little money for incubation thus it's a major challenge
- » Payment - Incubatees are expected to pay some fees for over head cost which at times they are unable to raise.
- » The innovators once they have products in the market, they don't want to move out of the incubation centre thus creating a problem for others who might want to come in.
- » Lack of capital for incubates
- » The cost of putting an innovative product into the market is too much since it includes a lot of marketing
- » Issues of Intellectual property rights have not been handled.
- » The linking of incubation - industry - market is not

highly focused since the institute is only interested in product development.

Monitoring and Evaluation System

The following parameters are used to check on the progress of the innovators;

- » The revenue generated by the innovators
- » The products developed and are in the market by the innovators
- » The employees that the innovators has employed
- » Networking ability of the innovators
- The challenge of misreporting by the innovators since they don't want to leave the incubation centre.
- At the point of leaving the incubation centre, the incubate go through an interview to ascertain there preparedness to venture into the market

Lessons learnt from KIRDI

1. The relationship between researchers and incubatees takes a long time to be established
2. It is important to outsource for Business Development Services to train incubatees so that they can get relevant current information from the business world
3. The incubation centre should be self sustaining. However, the incubatees at KIRDI, are not able to pay the required fee. Funding for the incubation centre is a challenge
4. It is important that incubatees form a group for exchange of ideas
5. Incubatees can have start-up companies that want to have additional products
6. Application for prospective incubatees who have a product, formal concept advertised in the website and mass media. This is done quarterly
7. A group of 20 - 25 incubatees are normally admitted in the incubation centre per session which ranges from one to two years
8. Monitoring and evaluation of incubatees is done through a report by a panel, evaluating incubatees and interview

3.9 World Bank Review team tours Mount Kenya University to review KAPAP-funded project

In response to a call for competitive grant research proposals by the Kenya Agricultural Productivity and Agribusiness Project (KAPAP) in 2010, Mount Kenya University (MKU), University of Nairobi, Chuka University college, Bondo University College, Egerton University, Kenya Industrial Research and Development Institute (KIRDI) and National Museums of Kenya (NMK) prepared

a joint research project proposal which was successfully reviewed and approved for financial support. The project will run for three years starting from August 2011. The administrator of the grant was to be MKU. The grant although given by KAPAP, the grant was given by World Bank. The project entitled "Enhancing production, value addition and marketing of indigenous vegetables (Cowpeas, spider plant, nightshades, amaranth, pumpkins), French beans and mushrooms among small holder farmers in Kenya". The project locations are in Siaya County, Homa Bay County, Kilifi County, Nyeri County, Meru County, Kakamega County and Embu

County. The main project activities include crop improvement, agronomic practices, value addition, marketing and dissemination of research results.

A tour was conducted by a team from the World Bank who were accompanied by representatives from KAPAP, Ministry of Agriculture, Ministry of Livestock, and Ministry of Fisheries among other organizations and institutions on 31st October 2012. The purpose of the tour was in line with the bank's mandate to undertake a review of its projects with an aim of checking their impacts on the grantees and the community at large.



World Bank team that toured Thika Main Campus to review the KAPAP project

3.10 Kenya Vehicle Manufacturer tours Mount Kenya University

A team from Kenya Vehicle Manufacturers led by Mr. David Percival, Managing Director and Mr. Ralph Hruschka, Operations Manager, toured Mount Kenya University Main Campus with an aim of seeking collaborations between the two institutions.



Mr David Percival, Managing Director and Mr Ralph Hruschka, Operations Manager during the tour

3.11 Twelve KDF Engineers Brigade Commanders make courtesy visit at MKU

A team from the 12 Engineers brigade led by the Deputy Brigade Commanders toured Mount Kenya University on Wednesday 29th February 2012 to seek collaboration with the University. Col. David Kwendo: Deputy Brigade Commander gave a brief history of the brigade: 12 Engineers brigade has been in existence for the past 20 years whose mandate is to do construction works which include; roads, dams, schools, water drilling and buildings. The brigade is expected to facilitate educations of various officers, put up a school in the brigade as well as take part in the deployment in

Somali.

The Deputy Brigade Commander highlighted the following: the key pillar of Vision 2030 is security of the nation which is enhanced by the military, the military plays a key role in conservation of the environment through Re-forestation programme, the military is highly focused on conservation of energy, the military staff is in need of training thus the need for collaboration, the military hold sports days where the university can participate in the event and CSR – there is need to collaborate in the CSR activities so as to increase the impact.

Group discussion

Mr Mulei highlighted the need of engineers in the realization of Vision 2030 and industrialization. He noted that MKU has market driven courses. He recommended the following:

- There is need to collaborate with the Brigade to be able to motivate students through public lectures by the army
- There need to build capacity for students and staff.



Prof. P. Chegge, Deputy Vice-Chancellor, Academic Affairs receives a gift from Col. David Kwendo, Deputy Brigade Commander and his team.

3.12 MKU / EPZA round table discussion

On the 17th August 2012, a round table discussion was held in furtherance of the objectives of the EPZA-MKU MOU. We had Mr. Jonathan Chifallu, the Public Relations Executive of EPZA representing his organisation. From MKU we had students and staff from the schools of Business and Law in attendance. The discussion centered on how to improve the investor environment for both locals and foreigners within the country in general and the EPZA in particular. Mr. Chifallu took the participants through the objectives of EPZA, its structure, current successes, turnover, and the challenges facing EPZA. The discussion centred largely on the possibilities of local's involvement in EPZA both as investors and in other capacities. Students were eager to learn that they can visit EPZA

on a tour, do their attachments/internships there and, and where possible, eventually get absorbed. Staff expressed an interest to participate in upgrading skills of the employees within EPZA and the wider Kitengela area. It was observed that the School of Business (Nairobi Campus) had already forwarded a list of about 30 students who desire to get a place for attachment to EPZA related industries, and that this was receiving consideration.

This round table meeting was a follow-up on the discussion meeting of the EPZA-MKU steering committee. Other areas of follow-up include: Visit to EPZA by the marketing department to showcase what the University does. This may lead to setting up possibilities of teaching some business related courses in Athi River/Kitengela area.

3.13. MKU visits Karen Hospital

A team from Mount Kenya University lead by Prof. Kimathi Kigatiira, Principal Nairobi Campus visited Karen Hospital with an aim of discussing possible collaborations with the University. The team held discussions with Dr. Betty Gikonyo, CEO, Karen Hospital, where they agreed there was need for Karen Hospital to work with MKU in health-related studies.

3.14 Kenyatta University-Mount Kenya University partnership on national-wide research recommendations at community level

Kenya is currently experiencing a very high demand for education where all professionals are advancing their education to Masters and Doctorate levels. Consequently, a lot of research is being conducted annually by the numerous candidates who are graduating at Masters and Doctorate levels at Kenyan Universities. In deed all these researchers generate

very relevant recommendations based on their studies. Unfortunately, most of these recommendations never get implemented due to lack of appropriate policies, capacity and structures. A lot of effort and resources are thus wasted in the long run. Through partnerships amongst universities and other funding organizations, it is possible to establish an

interface between the researchers and the community where research recommendations shall be fully utilized and be of value to the communities as described herein. Kenyatta University and Mount Kenya University is geared towards development of an MOU to realize this objective.

4 UNIVERSITY IN THE LIMELIGHT

DATE	PUBLICATION	TITLE
Saturday, march 24, 2012	<i>Saturday Nation</i>	University forms company to market beauty products
Tuesday, April 3, 2012	<i>The People</i>	Journal Launch: School of Law
Wednesday, April 4, 2012	<i>The People</i>	Potato Council
Thursday, April 12, 2012	<i>Daily Nation</i>	Sh5m project to boost potato yield launched
Friday, April 13, 2012	<i>The People</i>	Scholarly publishing in Africa 'still low'
Saturday, April 14, 2012	<i>Taifa Leo</i>	Kinara wa utafiti chuoni awashauri
Tuesday, April 17, 2012	<i>Daily Nation</i>	Researcher seek to boost patoto output
Tuesday, 24th April, 2012	<i>Daily Nation</i>	New research claims to increase potato yields in Kenya
April 23 – 29 2012	<i>The EastAfrican</i>	Players oppose gov't seed potato imports
Thursday, August 30, 2012	<i>The Star</i>	Public hospital staff overstretched – Nyong'o
November 2012	<i>Nairobi Business Monthly</i>	Private university sets up health centre to fight cancer
November 2012	<i>Business Journal Africa</i>	Mt. Kenya University on a move to combat Non-Communicable Diseases
Tuesday, November 13, 2012	<i>Standard Newspaper</i>	MKU builds disease research centre
Thursday, November 29, 2012	<i>The Star</i>	Researcher seeks more innovations
Wednesday, November 28, 2012	<i>Standard Newspaper</i>	Innovators told to seek potential funders

5 RESEARCH AND DEVELOPMENT DIVISION STAFF MEETINGS ATTENDANCE

5.1 Prof. John H. Nderitu, Deputy Vice-Chancellor, Research and Development



- Technical Review Planning Workshop: KARI/McGill Food Security Research Project, Garden Hotel, Machakos, 27th - 29th February 2012
- UON-USAID Agro-Biotech Outreach and Awareness Workshop, Sarova Panafric, Nairobi, 11th May 2012
- Nkubu Research Workshop, Nkubu Campus, 13th - 14th July 2012
- APA Programme Development Meeting - 9th APA Conference, Nairobi, 27th August 2012
- APA Main Meeting, Nairobi, 7th September 2012
- MKU/IPR MOU Signing, Karen, 21st September 2012
- Postgraduate forum, Utalii Hotel, Nairobi, 6th October 2012
- APA Meeting, Nairobi, 16th October 2012
- Postgraduate Taskforce Workshop, Sportsview Hotel, Kasarani, 18th - 20th October 2012



5.2 Dr. Francis Muregi, Director, Research and Development

- WHO/TDR Proposal writing workshop, Ghana, October, 2012
- Launch of EPZA/ Equity
- NCST Innovation Week; April, 2012
- Post Graduate Taskforce Workshop, Sportsview Hotel, Kasarani, 18th-20th Oct, 2012
- Psychotherapy Association Annual General Meeting, Blue Post Hotel, June, 2012
- Nkubu Research Workshop, Nkubu Campus, July 13-14, 2012
- ACP Economic Zone Convention, 2012, Sarova Whitesands, May 23-25, 2012
- Research-to-Policy CNAR Meeting, Windsor Hotel, Nairobi, June 22, 2012

5.3 Samuel Mathenge, Graduate Research Assistant

- MKU/KU consultative Meeting, Kenyatta University, 16th

January 2012

- Field Work in Embu and Mwea, 10th - 11th May 2012
- Postgraduate Taskforce Workshop, Sportsview Hotel, Kasarani, 18th - 20th October 2012
- MKU/IPR MOU Signing, Karen, 21st September 2012





NOTES

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