MAKERERE UNIVERSITY

COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES (CAES)

17th PRINCIPAL'S QUARTERLY REPORT

APRIL-JUNE, 2018

VISION

To be a leading institution of academic excellence and innovations in Africa

MISSION

To advance training, knowledge generation and service delivery in order to enhance agricultural development, sustainable natural resource utilization and environmental management

Abbreviations

AfDB	African Development Bank
ARUA	African Universities Alliance
CAES	College of Agricultural and Environmental Sciences
DABE	Department of Agricultural and Biosystems engineering
DANRE	Department of Natural Resource Economics
DAP	Department of Agricultural Production
DEIS	Department of Extension and Innovation Studies
DEM	Department of Environmental Management
DEM	Department of Environmental Management
DFTHN	Department of Food Technology and Human Nutrition
DGGCS	Department of Geography, Geo-informatics and Climatic Sciences
DRGT	Directorate of Research and Graduate Training
FBT	Department of Forestry, Biodiversity and Tourism
FTBIC	Food Technology and Business Incubation Centre
MAK	Makerere University
MaRCCI	Makerere University Regional Centre for Crop Improvement
MUARIK	Makerere University Research Institute Kabanyolo
MUBFS	Makerere University Biological Field Station
NBDB	National Biodiversity Data Bank
NEF	Next Einstein Fellowship
NFC	Nyabyeya Forestry College
SAS	School of Agricultural Sciences
SFEGS	School of Forestry, Environmental and Geographical Sciences
SFTNB	School of Food Technology, Nutrition and Bioengineering
USAID	United States Agency for International Development
WSU	Western Sydney University

Foreword

On behalf of the CAES Management, I congratulate all staff and students upon the achievements in this quarter. I am heavily indebted to the management team for the commitment and teamwork in steering this college.

I am glad to report that in our effort to make our training relevant to our clientele, curriculum reviews were undertaken leading to approval of new programmes some of which are already running at both undergraduate and graduate level.

In Research, our World Bank funded project MaRCCI embarked on breeding cowpea and sorghum for not only disease and drought resistance but also for value addition. Our staff implemented low cost rain water harvesting, irrigation and postharvest technologies in Western Uganda that has impacted on small holder farmers' livelihoods. Our own students also came up with a user friendly and affordable technology for testing farm produce for pesticide residues.

The college hosted a number of visitors including over 40 Directors of the USAID Feed the Future Innovation Lab and the first Secretary- General of the African Universities Alliance (ARUA) Prof. Ernest Aryeetey.

The construction of the US $ 1.2 million Post Graduate and Research Laboratories at MUARIK is almost complete. The project is funded by the AfDB - Higher Education, Science and Technology (HEST) project.

In our effort to mobilise resources, we were able to generate funds to supplement government efforts to run the university through writing grant winning proposals and effectively managing the projects.

Management greatly appreciates Government of Uganda for the support in infrastructure development, research and innovation. We also thank our different development partners for the enduring support in various aspects of development-human, infrastructure and research.

Special thanks go to Makerere University top management for the support and conducive environment-without which, it would be impossible to undertake the core activities highlighted. As CAES, we are committed to undertaking our core mandate and strengthening our collaboration as we build for the future.

I thank you.

Prof. Bernard Bashaasha,
PRINCIPAL

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1.0: INTRODUCTION

1.1: College of Agricultural & Environmental Sciences (CAES)

CAES is one of the ten colleges of Makerere University located within the Western part of Makerere University. Its main administrative center is in the Agriculture building located just opposite the University Main Library entrance. CAES has three Schools: School of Agricultural Sciences (SAS), the School of Forestry, Environmental and Geographical Sciences (SFEGS) and the School of Food Technology, Nutrition and Bioengineering (SFTNB).

The college has two institutes that handle research namely Makerere University Agricultural Research Institute Kabanyolo (MUARIK) and Makerere University Biology Field Station (MUBFS). The college has 14 centers serving as a base for knowledge transfer and partnerships. These are complemented by facilities located at Nyabyeya Forest College and Budongo Conservation Field Station that cater for Forestry students.

1.2: CAES Schools and departments

The School of Agricultural Sciences (SAS) is comprised of three Departments. The departments are: (i) Agricultural Production; (ii) Agribusiness and Natural Resource Economics; and (iii) Extension & Innovation Studies. These departments offer Undergraduate, Masters and PhD degrees in their respective disciplines.

The School of Forestry, Environmental and Geographical Sciences (SFEGS) is composed of three departments (i) the Department of Forestry, Biodiversity and Tourism; (ii) the Department of Environmental Management and (iii) the Department of Geography, Geo Informatics and Climatic Sciences.

The School of Food Technology, Nutrition and Bioengineering (SFTBN) comprises two departments. (i) the Department of Agricultural and Bio systems Engineering and (ii) the Department of Food Technology and Human Nutrition. The SFTNB hosts an e- learning center (Telematics receiving studio) fully furnished with equipment. The SFTNB also hosts the Food Technology and Business incubation Centre (FTBIC).

1.3: Research institutes

1.3.1: Makerere University Agricultural Research Institute Kabanyolo (MUARIK)

MUARIK is a public institution and an arm of Makerere University that interfaces with the National Agricultural research system (NARS). Seated on 650 hectares of land it is being managed as a multi-disciplinary facility for training, research, outreach and production under the CAES. It is located 19 kilometers North-West of Kampala off Gayaza Township on the Kampala-Zirobwe Road. The institute houses the center for Continuing Agricultural Education Centre (CAEC), the undergraduate student hostel and facilities for over 30 graduate students under the regional programmes. The Tissue Culture, Animal Science and the Biotechnology laboratories are also located at MUARIK. Other facilities at MUARIK include CURAD, staff residences, poultry, dairy, and piggery units among others.

1.3.2: The Makerere University Biological Field Station (MUBFS)

MUBFS is located in Kibale National Park in Kibale district. It is mainly involved in research but it is increasingly hosting short international courses in Tropical Biology. Originally, most of the research at MUBFS was primatology but over the years, the research agenda has broadened to include ecological and behavioral research on taxonomy, and socio economic studies. There is adequate dormitory and guest house space for groups ranging between 10 and 60 and catering services. In collaboration with national institutions, the institute provides consultancy services to the government and other organizations in Uganda. Consultancy services include tailor made training in different fields of environment and natural resources, assessment and monitoring of environment and natural resources therein environmental impact assessments and audits, project monitoring and evaluation and facilitation.

1.4: Research Centres

Recognizing the importance of outreach, the college established a fully-fledged outreach facility called the Continuing Agricultural Education Centre (CAEC). Through CAEC, the College operates outreach programs for various stakeholders (farmers, policy makers, students etc). The presence of the CAEC therefore makes the College a key player in development-impact oriented training and research.

Other centres include the Plant Breeding, Biotechnology and Seed systems research center, the Remote Sensing and GIS Laboratory, the Molecular Biology Laboratory and the Water and Wetlands research Laboratory. Others are the National Biodiversity Data Bank (NDBD), the Food Technology and Business Incubation Center (FTBIC), the Makerere University Climate Change research and Innovations (MUCCRI), Centre for Waste Management, Centre for Mountain Resources and Disaster Management, Rangeland Resources Centre and the Agricultural Policy Analysis Centre. All these operate at different capacities.

2.0: TEACHING & LEARNING

2.1: Curriculum Review

2.1.1: Revised and Approved Graduate and Undergraduate Academic Programmes

The University strategy is to continually improve the relevance of programmes offered through curriculum development and review. For the year under review the following programmes were developed and approved by the appropriate institutional and government agencies (see table 3)

Table 1: Revised and Approved Graduate and Undergraduate Academic Programmes

COLLEGE	PROGRAM	STATUS
Graduate Academic Programmes		
CAES	Master of Science in Food Science & Technology	Revised
	Master of Science in Agricultural and Applied Economics	Reviewed
	Master of Science in Environment and Natural Resources	Revised and approved
	Master of Land Use and Regional Development	Revised and approved
	Master of Science in Forestry and Biodiversity Management,	Revised and approved
	Master of Science Agroforestry and Community Development	Revised and approved
	Master of Geographical Sciences	Revised and approved
	Master of Science in Disaster and Risk Management	Revised and approved
Undergraduate Academic Programmes		
	BSc. Water and Irrigation Engineering	Revised and approved
	BSc. Bioprocessing Engineering	Revised and approved
	BSc. Tourism and Hospitality Management	Revised and approved
	Bachelor of Geographical Sciences	Revised and approved
	BSc. in Forestry	Revised and approved

2.1.2: Proposed Programmes

The curriculum review process also identified new Programmes that need to be developed in order to address the current national and global issues in the agricultural sector. The proposed Programmes are listed table 4 below.

Table 4: Proposed Programmes

Proposed Programme	Duration
BSc. Animal Science and Husbandry	3 Years
BSc. Agricultural Economics	3 Years
Bachelor of Rural Economy and Cooperative Management	3 Years
MSc. Integrated Animal Production Systems	2 Years
MSc. Horticulture	2 Years
MSc. Natural Resource Economics	2 Years

3.0: RESEARCH AND INNOVATIONS

CAES undertakes R &D along the research and development continuum that includes basic, strategic and applied R&D activities in Agriculture, Food technology, nutrition and Environment. Research will also target critical development challenges as well as novel or emergent areas such as climate change, biodiversity conservation and integrated water resources management. The R&D are implemented mainly through postgraduate research activities. This research portfolio is cognizant of the gaps that need to be filled and seeks to intensify investments in critical areas for Uganda and the region.

3.1: Technologies and Innovations developed

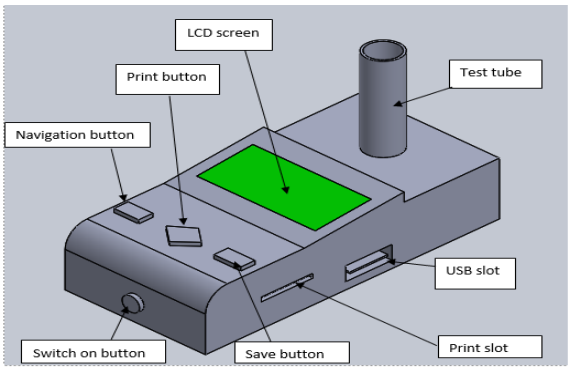
3.1.1: CAES students develops the, "KeBELA BIOSENSOR"

The CAES students have come up with a user friendly and affordable technology dubbed, KeBELA BIOSENSOR" for testing farm produce for pesticide residues. Since access to organic agricultural market demands that produce has to be certified by an accredited certification body, **KeBELA**Technology is seeking to ease and quicken the process by producing an affordable and user-friendly technology, which can be employed by the certification bodies to cut down the cost of certification and hence ease access to the global organic market by farmers.

KeBELA is a handheld device that is designed to detect and quantify levels of pesticide residues in agricultural products. This innovation is led by Ambrose Kamya, a fourth year student pursuing BSc. Agric and mentored by Prof. Fred Kabi. This device is linked to a mobile application that automatically receives the test results using Bluetooth and centralizes all the information thereby making farmers visible in the market space as well as aiding government planning and increasing traceability for export. The use of the mobile App linked to the gadget helps in identifying the farmer physical location by GPS coordinates. The gadget also indicates the farmers' products tested in real time.

We are currently working with NOGAMU to create a data bank of all organic farmers who can be traced by their organic products and physical location. The data bank will be updated by the information collected using the gadget and a highway will be used to deliver the updates to the central location. The exporters and importers of organic products will then be able to access /trace the farmers using the data bank to which NOGAMU will have the key. This will make it easy for the importers and exporters to access farmers without necessarily visiting their farm physically. We have applied for a national patent to Uganda Registration Services bureau (URSB) and have got a file number. However, due to the high regional demand for the technology within the organic sector, we are applying to ARIPO for a regional patent but financial constraints have deterred the process.

Proposed design



CAES Students led by Ambrose Kamya (middle) demonstrating the KeBELA Biosensor during the Campus France Day exhibitions

3.1.2: Implementation of low cost rain water harvesting, irrigation and postharvest value addition technologies to enhance vegetable production and household incomes in Hoima .

The Department of Agricultural and bio systems engineering led by Dr. Joshua Wanyama (PI) implemented a number of technologies among farmer groups in Mid Western Uganda to improve horticultural production and farmers livelihoods under the project titled, "*Promotion of rainwater harvesting and low-head smallholder irrigation systems for sustained market responsive*

vegetable production in mid-western Uganda," funded by the World Bank through NARO Competitive Grants Scheme from 2016-2018.

The project aimed at promoting suitable rainwater harvesting and low-head smallholder irrigation systems for all year round consistent commercial production of traditional and high value vegetables for collective marketing. It also focused on facilitating establishment of formal working linkages between farmers and niche markets (existing traders and consumers) through contract farming.

The project targeted the peri-urban farmers due to their proximity to the markets and has empowered smallholder vegetable farmers to be business-oriented thus, increasing their income and food security in line with Uganda's National Development Plan (2015-2020) and Vision 2040. Rainwater harvesting systems demonstrated included underground water storage tanks (unlined/lined with HDPE Dam liner) and shallow wells. Smallholder irrigation systems demonstrated included overhead sprinkler/drag-hose kit system and drum drip irrigation kit.

3.1.3: Mass domestic rearing of Crickets and Grasshoppers for food and business

The Department of Food Technology and Nutrition in collaboration with the International Centre of Insect Physiology and Ecology (ICIPE) on 5th April, 2018 launched the INSBIZ project (INSect- based agriBIZness for sustainable grasshopper and cricket production and processing for food in Kenya and Uganda). This project is part of the Bio- innovate Africa Phase II Program funded by the Swedish International Development Aid (SIDA) coordinated by Dr. Dorothy

Nakimbugwe (PI). Rearing and processing protocols for grasshoppers and crickets have been developed ready for up scaling.

The project will be co- implemented by a number of partners and collaborators including: Agrarian Systems (U) Ltd., Treasure Industries (K) Ltd., Nutreal (U) Ltd., Uganda National Bureau of Standards (UNBS) and Kenya Bureau of Standards (KEBS). The project aims to contribute to improved food and nutritional security, job creation and income generation and, reduction of the gender gap for the most vulnerable groups (youths and women) in East Africa in general and specifically in Kenya and Uganda through insect rearing and processing.

Mak PI Dr. Dorothy Nakimbugwe shaking hands with Hon Min. Christopher Kibazanga during the project launch

3.1.4: Makerere University's Regional Center for Crop Improvement (MaRCCI) embarks on cowpea and sorghum research for disease, drought and other tolerance

Makerere University's Regional Centre for Crop Improvement (MaRCCI) has initiated two breeding programmes on cowpea and sorghum not only for research but to address the issue of nutritional security and increasing income for farmers. A seven (7) acre cowpea research and demonstration field under MaRCCI has been established at the Makerere Agricultural Research Institute (MUARIK) where most students on cowpea are embedded.

The cowpea research and demonstration site at an early stage at MUARIK

Dr. Dramatri Onziga explained that MaRCCI breeding program is focusing mainly on cow pea and sorghum because they are tolerant to drought and are semi arid crops that can be targeted for Northern Uganda and areas prone to drought.

“We are also feeling the gap in the National Agricultural Research Systems (NARS). We are trying to complement and be part of NARS to make it more collaborations” . He said.

A global collection of 360 different cowpea lines refered to as “a Minicore” and the Multi parent Advanced Generation Intercross (MAGIC) population of 260 cowpea traits and 250 Ugandan collection and crosses are being evaluated on this site.

The cowpea project is addressing the issues of cowpea pests and diseases like thrips and scab, fusarium virus, cerospora, leafspot, bacterial blight, pod borer, pod sucking bugs and others.

“We are evaluating a lot of materials for different traits. We had a global collection of cowpea we refer to as “a Minicore” of 360 different cowpea lines.

We also have the Multi parent Advanced Generation Intercross (MAGIC) population of 260 cowpea traits. The mini core and the MAGIC populations were obtained from University of Riverside Califonia. Some came from IITA, and we also have 250 Ugandan collection and crosses.

“From all those unique crosses, 1000 lines, the one of California are all genetyped (have molecular data) available”, Dr. Patrick Ongom said.

Several similar cowpea experiments are being conducted in Serere, Arua, Ngetta. Another site of 8 acres of cow pea is at Kyentume still at Kabanyolo.

Mak VC Prof. Barnabas Nawangwe on the visit to the cowpea research and demonstration site at maturity stage at MUARIK

Another research and demonstration field on Sorghum has been established on 5 acres of land at MUARIK where the MAGIC population of sorghum obtained from Perdue University USA and the cold-tolerance populations are under evaluation.

In addition, the program is testing pontential sorghum hybrids for the commercial beer production for industries and other high yielding sorghum lines that can tolerate cold in mountainous areas like Kisoro and Elgon.

"The idea is that we want to see if sorghum adopted to cold can be grown up in cold areas of Uganda like Kisoro, Mt. Elgon area etc. So we are testing lines that can tolerate cold and give high yields.The programme is also testing the pontential of hybrids which are popular in maize targeting the beer industry. " Dr. Dramatri Isaac Onziga explained.

Mak VC Prof. Bernard Nawangwe on the vist to the established sorghum research site at Kabanyolo

The other MaRCCI research component is value addition.

The programme is also looking at value added products from leaves and seeds of cowpea. The cowpea flour can be used for making porridge which is highly nutritious and this is the centre's future prospect. The proramme intends to work with the School of Food Science to see other complements.

The programme is focussing on sorghum as a target for industrial beer production where demand for sorghum as a raw material is high. Besides food, the sorghum can be processed into local bushera for commercial household income.

"Food and beer industry are key priority for food security. We are trying value addition potential for better products and how to combine sorghum and cowpea with other crop products." Dr. Dramatri said.

MSc. student Brunno Awio serving porridge blended with cowpea and sorghum flour to the USAID team that visited the centre recently

3.1.5: MaRCCI digitalizes research data capturing and processing

The other MaRCCI success story is the digitalization of research data capture and processing. The Digital Data capture technology is composed of the barcode scanner, weighing scale and tablet acquired under MaRCCI programme to enhance quality of data capture from the field and fastens the process.

Brunno Awio, an MSc Graduate in Plant Breeding explained that previously, data was captured manually on the paper spread sheet and entered into the computer. This, he said would take a month and then the accuracy and quality would be compromised due to human error. Th Laboratory and field data processing involves taking the inventory of the seed stock for example, weight of every sample so as to track very well and to help researchers to know how the seed is utilized.

With the new technology the process is short and produces accurate results. “We generate data sheets from the computer using programmes like excel, breeding management system. We are able to generate bar codes and data sheets. Barcodes are placed in fields representing specific plots.

Data sheets are uploaded on a tablet and we are able to go with tablets to collect data on disease, pests, yield and yield components. From the field, we transfer data into a computer to analyse.” Awio explained.

Winfred Akech the laboratory technologist in charge of daily operations in the state of the art biotechnology laboratory at MUARIK said, the major focus on cowpea and sorghum breeding program is running molecular and micro biology work.

As a lab technologist, she helps students identify what they can do and when its too much .

“We help them if they need to refer samples to NARO facilities, the US or Nairobi. Inside here, they do molecular characterization of plants, they do marker assisted selection, pathogen identification, multiplication and many others”, Aketch explained.

The bio informatics L ab has high throughput computers to big storage capacity servers giving flexibility to run most of molecular data analyses. The laboratory is also linked to other labs in Nairobi Kenya and Michigan State University and can run experiments locally or send out and analyze data.

3.2: MoU signed/implemented

3.2.1: KOICA IBS Program

The CAES and Chonbuk National University, International Agriculture Development and Cooperation Centre (IADCC) signed an agreement to implement the KOICA Inclusive Business Solutions (IBS) Project. The IADCC is the representative of the consortium of that constitutes Chonbuk National University and the partnerining companies, Eagle Vet, Tech Co. Ltd and Shinhan A-Tech Co. Ltd. This project aims at establishing an agricultural business model linking crop and livestock farming by; strengthening farmers income, reducing poverty, improving agricultural environment in response to climate change, supporting farmers organisation and training farmers on improved agricultural technologies.

3.2.2: MoU with Western Sydney University to promote collaborative Research

The CAES signed a Memorandum of Understanding (MoU) with the Western Sydney University (WSU) to promote collaborative research. The MoU signed on 20th June 2018 is in recognition of the mutual benefits gained through a cooperative program of promoting scholarly activities and international understanding.

Under the MoU the two universities in future will be undertaking joint activities like organisation of joint academic and scientific activities such as courses conferences, seminars, symposia or lectures. Others include exchange of academic staff for teaching and research activities on top of exchanging PhD/HDR students to undertake study or participate in research programs, in addition to exchange of publications and other information of common interest.

The memorandum which will last for five years subject to renewal on agreement was signed by the Vice chancellor Prof. Barnabas Nawangwe on behalf of Makerere University and the Vice chancellor WSU Prof. Barney Glover and was witnessed by the Directorate of legal affairs Makerere

Prof.Elly Sabiiti is the coordinator who will be responsible for managing the development and conduct of any activities upon which the two institutions agree on.

3.3: Visitors hosted

3.3.1: Over 40 Directors of the USAID Feed the Future Innovation labs visit MaRCCI

On 24th May 2018, over 40 Directors of the USAID Feed the Future Innovation labs visited the Makerere University Regional Centre for Crop Improvement (MaRCCI). The visit to Makerere University and MaRCCI was part of the activities of the five day days visit (21st-25th May 2018) to Makerere University to discuss and assess the progress of the various projects the USAID Feed the Future Innovation Labs is implementing in the various parts of the world. The team was received by the MaRCCI program Director Dr. Richard Edema and his Deputy Prof. Paul Gibson and staff.

A team of the USAID Feed the Future posing for a group photo with MaRCCI staff at Kabanyolo

3.3.2: The first Secretary- General of the African Universities Alliance (ARUA) Prof. Ernest Aryeetey visits MaRCCI

The first Secretary - General of the African Universities Alliance (ARUA) Prof. Ernest Aryeetey on 16th May 2018 visited Makerere University's Regional Centre for Crop Improvement at Kabanyolo.Prof. Eryeetey who is also former Vice Chancellor, University of Ghana was received by the Centre Director Dr. Richard Edema, Deputy Director Prof. Paul Gibson as well as MaRCCI staff and managers of the university farm. As Secretary –General ARUA, Prof. Aryeetey is expected to drive a collaborative initiative formed by research –intensive universities in Africa to strengthen research and post graduate training on the continent. Prof. Eryeeteyhailed MaRCCI's regional training model and collaborative efforts saying, it was in line with ARUA's vision.In his key message, Prof. Eryeetey underscored the need to galvanize thestrength of research -intensive universities to compete in the global knowledge economy through innovation and technology.

Prof. Ereetey interacts with Dr. Richard Edema , Mrs. Martha Muwanguzi and Prof. Paul Gibson on arrival at Kabanyolo.

4.0: KNOWLEGDE TRANSFER AND PARTNERSHIPS

At the national level, several workshops, seminars, demonstrations, exhibitions and conferences involving several stakeholders were successfully held. Our staff and students have engaged in community projects as they put theory into practice and also learn from communities

4.1: The Directorate of Agricultural Extension services through the Agricultural Technology and Agribusiness Advisory Services (ATAAS) project of MAAIF organized a series of refresher training for technical staff from District Local Governments in the areas of agribusiness development, appropriate postharvest technology and safe use of agro-chemicals and fertilizer optimization in modern crop husbandry among others. The main objective of the training was to provide agricultural extension field staff with technical skills and functional knowledge to successfully and sustainably implement project activities in efficient and effective manner. The training was delivered by the staff of CAES under the supervision of the College Principal at the Continuing Agricultural Education Centre (CAEC) coordinated by Dr. Bernard Obaa.

4.2: The stakeholders workshop to mark the end of the project project titled, "*Promotion of Rainwater harvesting and low-head smallholder irrigation systems for sustained market responsive vegetable production in mid-western Uganda*," was held at KonTIK Hotel in Hoima on 22nd May 2018. The project was spearheaded by Dr. Wanyama Joshua from the School of Food Technology Nutrition and Bio engineering funded by the World Bank through NARO Competitive Grants Scheme from 2016-2018. Project collaborators included Agricultural Engineering and Appropriate Technology Research Centre of the National Agricultural Research Organization (AEATREC-NARO) and Hoima District Local Government. The project aimed at promoting suitable rainwater harvesting and low-head smallholder irrigation systems for all year round consistent commercial production of traditional and high value vegetables for collective marketing.

Top: PI Dr. Joshua Wanyama speaking during the workshop. Bottom: Participants a group photo after the workshop

4.3: Seminars / Public Lecturers/Debates / Panel Discussions

Date	Title	Presenter
Friday, 25 May 2018	Concepts of Sustainable Intensification for Improved Food and Nutritional Security	P.V. Vara Prasad, Kansas State University

5.0: SUPPORT ENVIRONMENT

5.1: Human resources and capacity building

5.1.1: Academic staff qualifications and ranks

The College has a total academic staffing of 204. Of these, 24 are full professors (23 male and 1 female), 29 Associate Professors (23 male and 6 female), 34 Senior Lecturers (26 male and 8 female), 51 Lecturers (36 males and 15 female), 35 Assistant Lecturers (27 males and 8 female) plus 30 part timers.

5.1.2: Appointments / Promotions / Nominations

5.1.2.1: Academic staff promotions

At its 562nd meeting held on 24th March 2018, the Appointments Board made the following decisions.

SN	Name	Post considered	Department	Decision
1	Dr. Jim Ayorekire	Senior Lecturer	FBT	Promoted
2	Dr. Gabriel Karubanga	Lecturer	DEIS	Promoted
3	Dr. Peter Tumutegyereize	Lecturer	ABE	Promoted
4	Prof. Johnny Mugisha	Dean	SAS	Appointed
5	Dr. Alex Tatwangire	Lecturer	FBT	Confirmed in the University Service

5.2: Library/E -Resources

The CAES library provides a number of services for the library users;

1. Electronic access to library resources
2. Textbook lending services
3. Reference services
4. Information Literacy for students and staff
5. Selective dissemination of information
6. Reference Management trainings

Since 2014, the library has obtained number e- resources installed on the institutional server to allow a wider access through the LAN as tabulated below.

Table 2: CAES Library E-Resources

No.	DATABASE	USERNAME	PASSWORD	URL
1.	Research4Life Resources: AGORA (Access to Global Online Research in Agriculture) OARE (Online Access to Research in the Environment) Hinari (Research in Health) ARDI (Access to Research in Development and Innovation)	No username required. *IP restricted. (No need for logins when using Makerere network)*	No password required.	http://login.research4life.org/tacgw/AppPortal/
2.	TEEAL (The Essential Electronic Agricultural Library	No username required.	No password required.	teeal.mak.ac.ug
3.	PROTAbase (Plant Resources Of Tropical Africa database)	No username required.	No password required.	www.prota.org (This is a free source database accessed through the internet)
4.	AgriKnowledge	No username required.	No password required.	www.agriknowledge.org
5.	Makerere Institutional Repository			http://makir.mak.ac.ug
6.	OECD Online Library	makerere-user	makerere-user	www.oecd-ilibrary.org
7.	Forestry compendium	No username required.	No password required.	www.cabi.org/fc/
8.	Crop Protection Compendium	No username required.	No password required.	http://www.cabi.org/cpc/
9.	Animal Health and Production Compendium	No username required.	No password required.	http://www.cabi.org/ahpc/
10.	CAB Abstracts	No username required.	No password required.	https://www.cabdirect.org/
11.	Free Articles	No username required.	No password required.	http://booksc.org
12.	Free E-books	No username required	No password required.	http://b-ok.org
13.	Other Free E-books	No username required	No password required.	pdfdrive.nethttp://b-ok.org/
14.	Others (On Maklib website)	-	-	http://mulib.mak.ac.ug/

6.0: Physical Infrastructure and equipment acquired

6.1: Makerere University Regional Centre for Crop Improvement (MaRCCI) procures first class agricultural equipment worth 1billion

Makerere University's World Bank funded Regional Centre for Crop Improvement (MaRCCI) on Friday June 29th 2018 procured the recent first class agricultural equipment to help students in the tilling of land for crop improvement. The equipment procured at a cost of about sh1bn was received by the Vice Chancellor Prof. Barnabas Nawangwe at the Makerere University Agricultural Research Institute Kabanyolo (MUARIK). The Centre Director Dr. Richard Edema said the equipment worth sh1b include a tractor, a plough, a hauler, a planter ,an automatic fertilizer and insect side application machine and will greatly make mechanization and planting easier for the students. With this first class equipment, students w will be able to open a lot of experimental land for cowpea, sorghum among other crops.

6.2: Construction of the Post Graduate Research Laboratories at MUARIK almost complete

The construction of the Post Graduate and Research Laboratories at Makerere University Agricultural Research Institute Kabanyolo (MUARIK) is almost complete.. The estimated cost for the new structure is $ 1.2million US Dollars and is part of the USD 29.2 million from the 5 year period (2013-2018) AfDB - Higher Education, Science and Technology (HEST) project. The project took nine (09) months and was almost ready by August 2018.

6.3: An Environmental station (eSTATION) acquired

An Environmental station (eSTATION) - a computer system with a comprehensive remote sensing software developed by the Joint Research Centre of the European Commission was acquired and installed at the School of Forestry, Environmental and Geographical sciences. Its role is to automatically perform computation of environmental indicators from earth observations data routinely distributed by EUMETSAT through EUMET Cast system. It thus addresses issues of data reception in areas with poor internet connectivity. The data dates back to the 1990s till today.

6.4: Procurement for the equipment for the MUARIK Dairy Value Chain

Procurement for the equipment for the MUARIK Dairy Value Chain (capacity of 2000 litres of processed/pasteurized milk) being handle by the Ministry of Education and Sports is in its final stages. The equipment includes: Milk processor, filter, milk pumps, milk cooler, dump tank, De –Aerator, flow meter, milk cans, pastueriser, central panel, plate heater exchange, yoghurt transfer pump, cream separator, homogenizer, fermentisation tank, milk pipes and valves, butter churner, ice cream plan machine for polythene ponches, machine for plastic cups, chilling system, steam boiler, deep freezer, cold room, laboratory and milking machines.

7.0: FINANCIAL RELEASES AND ALLOCATIONS (2017-2018)

7.1: Funds received from the centre

The total budget for the college was UGX. 11,939, 265,026 including staff costs, salaries, allowances and social contributions. However, the ceiling for operations for the academic year 2017/2018 was UGX. 618,532,667 and UGX 1,451,730,208 for scholarships and related costs transferred from the centre and accessed in the IFMS. Information on student numbers was received from heads of departments and based on the fees structure, the expected revenue under normal conditions was computed. The expected revenue was used to set proportions to arrive at funds received per program based on releases as they come in.

7.2: The agreed distribution rates

LEDGERS	**% AGREED**
Principals ledger	35
Deans ledgers	20
Heads of Departments	45
Total	**100**

7.3: Distribution of Transfers received from the centre for operational activities

Summary of the distribution of Transfers received from the centre for operational activities 2017/2018 (shs. 396,361,386)

UNIT	**AMOUNT (UGX)**
Principal's Office	138,708,987
Dean School of Food Technology, Nutrition and Bio engineering	11,360,862
Department of Food Technology and Human Nutrition	16,157,704
Deparment of Agricultural and Biosystems Engineering	9,404,231
Dean, School of Forestry, Environmental and Geographical Sciences	33,983,323
Department of Forestry, Bio Diversity and Tourism	44,586,083
Department of Environmental Management	23,872,374
Department of Geography, Geo informatics and Climatic Sciences	8,004,020
Dean, School of Agricultural Sciences	33,918,093
Department of Agricultural Production	37,980,724
Department of Agribusiness and Natural Resource Economics	15,744,985
Department of Extension and Innovation Studies	22,640,001
TOTAL	**396,361,386**

7.4: Other funds received from the centre (2017/2018) for Scholarship and related costs

Activity	Amount (UGX)
Examination funds for semester I and II	131,560,206
Teaching materials for semester I and II	332,504,906
Internship funds	145,285,000
Recess term	324,714,548
Academic practicals	102,000,000
Central marking	15,530,716
Part time teaching	300,000,000
TOTAL	**1,351,595,376**

7.5: Miscellaneous income generated by units

UNIT	AMOUNT (UGX)
School of Food Technology, Nutrition and Bio engineering	8,650,250
School of Forestry, Environmental and Geographical Sciences	1,200,000
MUARIK	234,000
TOTAL	**10,084,000**

N.B: Miscellaneous income is from the following sources**:**

- Study tours
- Hire of space
- Maintenance of pilot plant
- Vehicle hire

FOR THESE AND MORE

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