



MAKERERE UNIVERSITY

**COLLEGE OF AGRICULTURAL &
ENVIRONMENTAL SCIENCES (CAES)**



**ANNUAL REPORT
2023**



ANNUAL REPORT 2023

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Compiled by: Hasifa Kabejja, Principal Communication Officer, CAES

Editors:

- Prof. Gorettie Nabanoga, Principal, CAES
- Prof. Yazidhi Bamutaze, Deputy Principal, CAES
- Hasifa Kabejja, Principal Communication Officer, CAES
- Dr Tonny Obua, Lecturer, School of Agricultural Sciences

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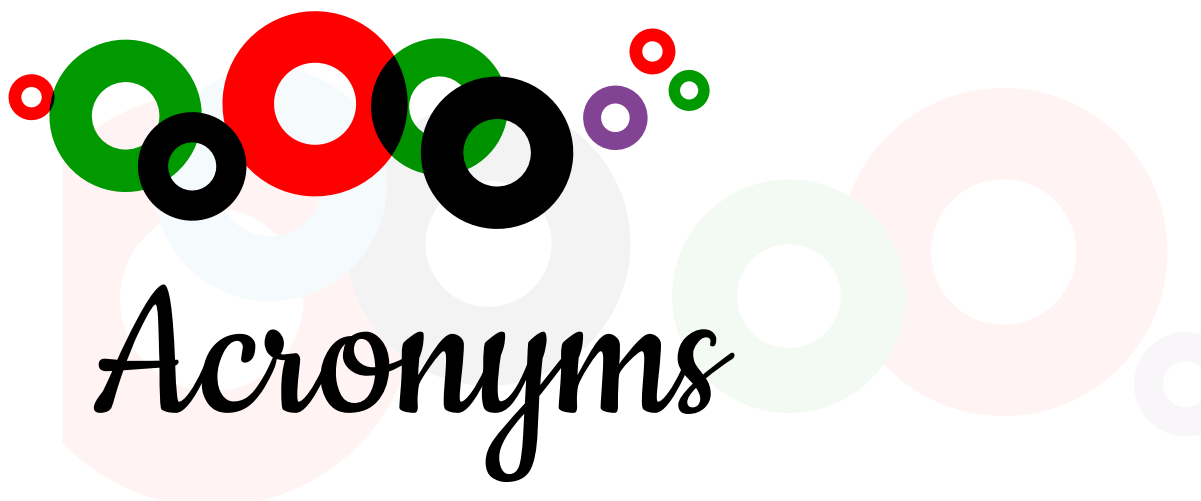
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Acronyms

AfDB	African Development Bank
ARUA	African Universities Alliance
CAES	College of Agricultural and Environmental Sciences
DABE	Department of Agricultural and Bio-Systems Engineering
DANRE	Department of Natural Resource Economics
DAP	Department of Agricultural Production
DEIS	Department of Extension and Innovation Studies
DEM	Department of Environmental Management
DFTHN	Department of Food Technology and Human Nutrition
GGCS	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
NFC	Nyabyeya Forestry College
SAS	School of Agricultural Sciences
SFECS	School of Forestry, Environmental and Geographical Sciences
SFTNB	School of Food Technology, Nutrition and Bioengineering

COLLEGE LEADERSHIP



Prof. Gorettie Nabanoga
Principal, CAES



Prof. Yazidhi Bamutaze
Deputy Principal, CAES

Deans & Directors



Dr. John Baptist Tumuhairwe
» Dean, School of Agricultural Sciences «



Dr. Julia Kigozi
» Dean, School of Food Technology, Nutrition and Bio-engineering «



Dr. Revocatus Twinomuhangi
» Dean, School of Forestry, Environmental and Geographical Sciences «



Dr. Cyrus Ongom Okello
» Director, MUARIK «



Prof. David Tumusiime
» Director Makerere Biological Field Station «

Heads of Department



Dr. Mildred Ochwo Ssemakula
» Head, Department of «
Agricultural Production



Dr. Rosemary Isoto
» Head, Department of «
Agribusiness and Natural
Resource Economics



Dr. Bernard Obaa
» Head Department of «
Extension and Innovation
Studies



Prof. Justine Namaalwa
» Head, Department of «
Environmental
Management



Dr. Lawrence Orikiriza
» Head, Department of «
Forestry, Biodiversity &
Tourism



Dr. Paul Mukwaya
» Head, Department of «
Geography,
Geo-Informatics and
Climatic Sciences



Prof. Mukisa Muzira Ivan
» Head, Department of Food «
Technology & Nutrition



Prof. Isa Kabenge
» Head, Department of «
Agricultural &
Bio-Systems Engineering

Heads of Administrative Units



Ms. Harriet Hawa
» Human Resource «
Officer



Ms. Jofrina Kyohairwe
» College Registrar «



Mr. Tom Vok Elwana
» Team Leader, «
Finance



Mr. Deo Ibanda
» Procurement «
Officer



Ms. Hasifa Kabejja
» Principal Communi- «
cation Officer



Ms. Mariam Kasemiire
» Web Administrator «



VISION

To be a thought leader of knowledge generation for societal transformation and development



MISSION

To produce graduates, research products and knowledge services in the fields of agricultural, food technology and environmental management



VALUES

Accountability, Professionalism, Inclusivity, Integrity, Respect



STRATEGIC GOALS

In pursuit of our mandate, we are guided by the four core goals of Makerere University listed below:

Goal 1 – To transform Makerere into a research-led university, responding to national, regional and global development challenges, as well as contributing to global knowledge generation.

Goal 2 – Innovation in teaching and learning: In her quest to provide the desired human capital, the University is committed to creating the appropriate environment and support to students to meet their academic and professional aspirations. Teaching and learning will be all-inclusive integrating gender and special needs requirements.

Goal 3 – A professionally managed, equitable, inclusive and gender mainstreamed institution

Goal 4 – An engaged University with enhanced partnerships with industry, the community and international institutions.

Message From The Principal



With utmost delight, I am honoured to present the Annual Report of the College of Agricultural and Environmental Sciences (CAES) for the year 2023. As we look back on the accomplishments and obstacles of the past year, I extend my deepest appreciation to each and every one of you who contributed to our collective achievements. It has truly been a year of fulfilment and progress. In 2023, CAES proudly celebrated the graduation of 592 students, of whom 48% were female, at the 74th Graduation Ceremony. Among them were 14 PhD, 94 MSc, 5 Post Graduate Diplomas, and 479 BSc graduates across various disciplines in agricultural and environmental sciences. My sincere congratulations to all the graduates and the dedicated staff who supported them throughout their journey.

Reflecting on the commitments made in 2022 for the year 2023, we have made substantial strides. I am pleased to report that our faculty and students successfully adapted to the blended mode of teaching and learning. We remain steadfast in our dedication to a learner-centered, practical-oriented, and gender-responsive approach, with the goal of nurturing skilled, entrepreneurial, and innovative graduates capable of addressing challenges in the Agricultural and Environmental sectors.

Furthermore, we have revised the curriculum for approximately 15 programs, enriching content to include skills relevant to entrepreneurial green economies. This underscores our commitment to fostering innovation within CAES and equipping our graduates with the tools they need to thrive in dynamic professional landscapes.

Moreover, our college continues to advance knowledge, tackle critical challenges, and make a positive impact on society. Notably, the Makerere University Regional Centre of Excellence for Crop Improvement (MaRCCI) has been elevated to an "African Host Centre (AHU/C) for training high-quality PhDs in Plant Breeding and Biotechnology." This initiative aims to address the human resource gap in highly qualified specialists in these fields across Africa, reaffirming our commitment to excellence and leadership in agricultural education and research. For the reporting year, CAES has registered several achievements as highlighted.

Teaching and Learning for improving learner experiences

The introduction and implementation of the CAES-GRADCARE Management System represents a significant milestone in our efforts to enhance graduate management processes within the College of

Agricultural and Environmental Sciences. This innovative system was meticulously crafted to streamline operations, optimize workflow, and elevate overall efficiency and effectiveness. Its primary objectives include improving supervision mechanisms, reducing lead times, and minimizing costs associated with thesis examination. Moreover, the system empowers stakeholders with invaluable data insights, facilitating informed decision-making across various levels of academic administration.

Research and Innovation for impacting society

In our relentless pursuit of ethical research practices, we are proud to announce the establishment and full operationalization of the **CAES Research Ethics Committee/Institutional Review Board (CAES-REC/IRB)**. This critical initiative underscores our commitment to upholding the highest standards of integrity and transparency in our research endeavors. Our dedication to innovation is exemplified by the introduction of the **MakSol Cooker—a solar-powered marvel** poised to revolutionize cooking practices while significantly reducing carbon footprints within households. This transformative solution not only addresses environmental concerns but also promotes sustainable living on a tangible, everyday level. Furthermore, our research efforts have yielded remarkable breakthroughs in agriculture and food security. Through the development of **bio-fertilizer formulations**, we aim to unlock crop productivity while simultaneously addressing soil nitrogen deficiencies, thereby enhancing household food security and bolstering agricultural sustainability. In tandem with our agricultural innovations, we have successfully bred **resilient Mak Soybean, Cowpea and Sorghum varieties**, capable of withstanding drought, disease, pests, and climate stress while boasting shortened maturity periods. These advancements provide a vital protein source, particularly in regions prone to agricultural challenges, and enable the production of value-added products, contributing to enhanced food security and resilience, further enhancing the agricultural value chain. In our quest for sustainable agricultural practices, we have developed innovative solutions such as the **Soil Test Kit**, facilitating simplified soil management by offering rapid semi-quantitative evaluations of essential elements crucial for optimal plant growth. This tool empowers farmers with actionable insights to optimize crop yields and promote sustainable land stewardship. Additionally, our **Hybrid Refractance Window Drying equipment** represents a game-changer in post-harvest handling, ensuring consistent drying of perishable agricultural produce. By preserving the quality of fruits and vegetables, this technology enhances the value chain, thereby maximizing agricultural productivity and reducing post-harvest losses. Furthermore, our efforts extend beyond crops to encompass livestock management and nutrition. Through the development of **protocols for Banana Tissue Culture and value addition to Sweet Potato-Sorghum enterprises**, we aim to improve agricultural livelihoods and economic resilience among farming communities. Innovative solutions such as **rearing and utilizing blue flies, maggots, and earthworms as alternative protein sources for poultry and fish feeds** demonstrate our commitment to sustainable feed production. These efforts not only diversify protein sources but also promote circular economies by utilizing agricultural by-products effectively. Moreover, our research endeavors have yielded transformative solutions to combat malnutrition and poverty. The development of a **livestock milk booster**, derived from sugarcane industrial waste, addresses nutritional deficiencies while enhancing dairy production, thereby improving livelihoods and food security. Our commitment to research and innovation for societal impact is unwavering. From groundbreaking agricultural technologies to transformative solutions for nutrition and food safety, we remain dedicated to advancing sustainable development and improving livelihoods across communities. Through collaborative efforts and relentless innovation, we strive to create a brighter, more resilient future for all.

Knowledge transfer and Community engagement

Further, we are pleased to highlight several impactful knowledge sharing initiatives undertaken by CAES:

1. **NARO-Makerere Third Joint Scientific Conference:** This year, CAES successfully co-organized the NARO-Makerere Third Joint Scientific Conference, themed **"Innovations for enhancing productivity and agro-industrialization."** The conference aimed to showcase cutting-edge innovations and opportunities crucial for advancing Africa's agro-industrialization agenda.
2. **Summer School on Landscape Ecology:** We proudly hosted the third cohort of the Summer School on Landscape Ecology, focusing on **"Ecological Governance for Socio-ecological Systems of Sub-Saharan Africa."** This initiative aimed to foster sustainable practices and governance frameworks for the region's diverse ecosystems.

3. **International Collaboration in Soybean Research:** CAES facilitated a collaboration between soybean breeders from the USA, Brazil, various African nations, and scientists from CGIAR. This collaboration took place at the Makerere University Centre for Soybean Improvement and Development (MAKCSID) and the Soybean Innovation Lab (SIL) of the University of Illinois, with support from USAID.
4. **Policy Dialogue on Climate Science:** We organized a Policy Dialogue centred on climate science, themed "Climate Change Knowledge Brokering." This event brought together stakeholders from diverse backgrounds, including researchers, policymakers, civil society representatives, government officials, and private sector stakeholders, to foster meaningful discussions and actions on climate change mitigation and adaptation.
5. **Recognition at the 29th Source of the Nile National Agricultural Show:** CAES emerged as the **Best Innovations exhibitor** in the academic institutions category at the prestigious agricultural show. This accomplishment reflects the dedication and excellence of our students and faculty.
6. **Youth and Innovation Expo 2023:** CAES actively participated in the Youth and Innovation Expo 2023, collaborating with Makerere University and UNDP. The expo, themed **"Fostering Innovations for Uganda's Transformation & Development,"** provided a platform to showcase and support innovative solutions for societal progress.
7. **Training Programs for Capacity Building:** Under the Makerere University Research Institute Kabanyolo (MUARIK), CAES conducted training sessions for 546 extension workers from Northern and Eastern Uganda, focusing on improved Extension Service Delivery to enhance agricultural practices and productivity.
8. **Capacity Building in Seed and Agronomic Practices:** Additionally, CAES trained 145 District Agriculture officers, Extension workers, and Local seed business holders from Kalamoja in seed and agronomic production practices, as well as post-harvest handling techniques, to bolster agricultural sustainability and livelihoods in the region.
9. **Soybean Seed Distribution:** In collaboration with Development Initiatives for Northern Uganda (DINU), CAES distributed over 55 metric tons of Soybean foundation seed to various districts, including Karenga, Kabong, Amudat, Nabilatuk, Napak, and Nakapiripirit, contributing to food security and economic empowerment in these communities.

These initiatives underscore CAES's commitment to knowledge transfer, community engagement, and sustainable agricultural development, reflecting our dedication to fostering innovation and driving positive change in Uganda and beyond.

The accomplishments detailed in this report are a testament to the unwavering dedication and collaborative efforts of our esteemed staff, students, and partners. Throughout this reporting year, we have witnessed remarkable growth and achievement among our faculty members, with several individuals being promoted and duly recognized for their outstanding contributions. To all those who have advanced in their professional ranks and those who have been confirmed in their roles, I extend my heartfelt congratulations. Special recognition is also due to Dr. Robert Fungo, whose election as President of the Federation of African Nutrition Societies (FANUS) is a testament to his leadership and expertise in the field. Additionally, I commend the recipients of the Vice Chancellor's Research Excellence Award: Prof. Dorothy Nakimbugwe, Prof. Anthony Egeru, Prof. John H. Muyonga, Prof. Archilleo Natigo Kaaya, and Prof. Ivan Muzira Mukisa. Your dedication to excellence continues to bring honor to our institution. I am pleased to welcome new members to the CAES management team, each bringing invaluable expertise and insight to their respective roles. Dr. Julia Bulya L. Kigozi joins us as Dean of the School of Food Technology, Nutrition and Bioengineering (SFTNB), Dr. Revocatus Twinimuhangi, Dean of School of Forestry, Environmental and Geographical Sciences, while Dr. Bernard Obaa assumes the position of Head of the Department of Extension and Innovation Studies (DIES). Dr. Rosemary Isoto takes on the role of Head of the Department of Agricultural and Natural Resource Economics (DANRE), and Prof. Justine Namaalwa and Prof. Ivan Muzira Mukisa continue their service as Heads of the Department of Environmental Management (DEM) and the Department of Food Technology and Nutrition (FTN), respectively, for their second term. Together, we look forward to further advancing the mission and vision of CAES through our collective efforts and expertise.

Looking ahead, we are presented with a multitude of opportunities to further our impact and achieve even greater heights of excellence. As we embark on the next chapter of our journey, we remain steadfast in our commitment to academic excellence, research innovation, and societal

impact. In the coming year, we will continue to focus on strengthening our academic programs, fostering interdisciplinary and multi-stakeholder collaboration, and expanding our innovative research initiatives to address pressing challenges in agriculture, environmental sustainability, and food security. We will also prioritize initiatives aimed at enhancing diversity, equity, and inclusion within our college community, ensuring that all voices are heard and valued. As we navigate the path ahead, I am confident that together, we will overcome any challenges that may arise and continue to make significant contributions to the advancement of Agricultural and Environmental Sciences. As Winston Churchill stated, **"Success is not final, failure is not fatal: It is the courage to continue that counts"**.

I invite you to explore the pages of this Annual Report to learn more about our achievements, challenges, and aspirations for the future.

I continue to express my gratitude to all members of the CAES community for their dedication, commitment, innovation, and resilience. Together, we will continue to strive for excellence and contribute meaningfully to the advancement of agriculture and environmental stewardship.

Warmest regards, as "We Build for the Future"



Prof. Gorettie Nabanoga
Principal, CAES

The background of the slide is a black and white photograph of a tropical building with a tiled roof and palm trees. A semi-transparent teal rectangle is overlaid on the right side of the image, containing the text. A solid yellow vertical bar is on the left side of the teal rectangle.

01

INTRODUCTION

01 Introduction

M

Makerere University College of Agricultural and Environmental Sciences (CAES) stands as one of the 10 Constituent Colleges within Makerere University's esteemed portfolio. Born from the amalgamation of the former Faculty of Agriculture, Faculty of Forestry and Nature Conservation, Makerere University Institute of Environment and Natural Resources, and the Department of Geography, CAES embodies a rich legacy of expertise and innovation. Comprising three dynamic schools—School of Agricultural Sciences (SAS), School of Food Technology, Nutrition and Bioengineering (SFTNB), and School of Forestry, Environmental and Geographical Sciences (SFECS)—CAES hosts a total of eight Departments. Additionally, the College boasts of two premier research institutes: Makerere University Agricultural Research Institute Kabanyolo (MUARIK) and Makerere University Biological Field Station (MUBFS). Augmenting its academic prowess, CAES operates 14 specialized centers, further enriched by facilities at Nyabyeya Forest College and Budongo Conservation Field Station, catering specifically for Forestry students. With a dedicated workforce of 400 employees, including 170 Academic staff, 140 of whom hold PhDs—with a commendable 20% representation of female faculty—CAES epitomizes academic excellence. Fostering a vibrant learning environment, CAES offers a diverse array of programs, including 15 undergraduate programs, 19 master's programs, 11 PhD programs, and three postgraduate diplomas, spanning the domains of agriculture, food science, nutrition, forestry, environmental, and geographical sciences. To bolster its academic infrastructure, CAES boasts of eight libraries, 19 research laboratories, six computer laboratories, and a state-of-the-art GIS laboratory. Continuously exceeding benchmarks in innovative teaching, research, and development, CAES remains steadfast in its commitment to advancing Makerere University's strategic agenda, addressing both national and global development imperatives. Evidenced by our prolific output, CAES faculty produced over 200 publications in the last academic year—a testament to our unwavering dedication to scholarly excellence. Moreover, our College maintains an impressive track record of producing a substantial number of PhD graduates, aligning seamlessly with Makerere University's strategic priorities. In essence, CAES epitomizes academic distinction, innovation, and impact, standing as a beacon of excellence within Makerere University and beyond.



02

**TEACHING
& LEARNING**

2.1 University's contribution to Human Capital Development in Science, Technology, Engineering, and Mathematics (STEM)

The College of Agricultural and Environmental Sciences (CAES) embodies a strong commitment to STEM education, aligning both undergraduate and postgraduate programs with a science-oriented approach. With a portfolio of 42 academic programs, meticulously crafted and regularly updated to emphasize practical elements, CAES ensures that 60% of the curriculum, especially at the undergraduate level, comprises hands-on learning experiences. Our goal is to equip graduates with the essential skills to tackle contemporary challenges in agriculture and the environment. At the heart of our STEM-focused education are our key infrastructure assets: laboratories, farms, and field stations. While these resources still fall short of meeting our needs and student numbers, notable improvements have been made, including the recent construction of a state-of-the-art facility at Makerere University

Agricultural Research Institute Kabanyolo (MUARIK), funded by the African Development Bank. This facility, equipped with discipline-specific labs, has significantly enhanced the learning environment, particularly for graduate students. Looking ahead, CAES anticipates further enhancements with the completion of two ongoing building projects: the government-funded facility at the School of Food Technology, Nutrition, and Biosciences (SFTNB), and the World Bank-funded student facility (MaRCCI) at MUARIK. These developments are expected to bolster the learning environment and address existing deficits in equipment. Additionally, CAES remains committed to addressing challenges such as the shortage of technicians in our laboratories to ensure quality training for our students.

2.1.1 Tab 1: Academic programmes offered at CAES

#	SCHOOL	PROGRAMMES (UNDERGRADUATE)	CODE	DURATION
1	School of Agricultural Sciences	Undergraduate		
		Bachelor of Science in Agriculture	AGR	4 Years
		Bachelor of Agricultural and Rural Innovation	BAR	3 Years
		Bachelor of Agricultural and Rural Innovation (External)		4 Years
		Bachelor of Science in Agricultural Land Use & Management (under reconsideration)	BAM	3 Years
		Bachelor of Science in Horticulture	HOT	3 Years
		Bachelor of Agribusiness Management	AGM	3 Years
		Graduate (Masters & PhD)		
		Master of Science in Agricultural Extension and Education		2 Years
		Master of Science in Crop Science		2 Years
		Master of Science in Animal Science		2 Years
		Master of Science in Soil Science		2 Years
		Master of Science in Integrated Watershed Management		2 Years
		Master of Agribusiness Management		2 Years
		Master of Science in Plant Breeding and Seed Systems		2 Years
		Master of Science in Agricultural and Applied Economics		2 Years

2	School of Agricultural Sciences	Ph.D. Plant Breeding and Biotechnology (Coursework & Dissertation)		3 Years	
		Regional PhD program in Agricultural and Applied Economics		3 Years	
		Ph.D. Agricultural and Rural Innovations (Coursework & Dissertation)		3 Years	
	School of Forestry, Environmental & Geographical Sciences	Undergraduate Programmes			
		Bachelor of Science in Forestry	BOF	4 Years	
		Bachelor of Science in Tourism and Hospitality Management	BTH	3 Years	
		Bachelor of Geographical Sciences	BGS	3 Years	
		Bachelor of Science in Meteorology	BMT	3 Years	
		Bachelor of Environmental Science	BVS	3 Years	
		Post graduate Programmes			
		Post Graduate Diploma in Environmental Impact Assessment		1 Year	
		Master of Science in Forestry and Biodiversity Management		2 Years	
		Master of Science in Disaster Risk Management		2 Years	
		Master of Land use and Regional Development Planning		2 Years	
		Master of Science in Agroforestry and Community Development		2 Years	
		Master of Geographical Sciences		2 Years	
		Master of Science in Environment and Natural Resources		2 Years	
		Master of Science in Applied Meteorology		2 Years	
		Master of Science in Climate Change and Sustainable Development			
School of Food Technology, Nutrition & Bioengineering	Undergraduate Programmes				
	Bachelor of Science in Food Science and Technology	FST	4 Years		
	Bachelor of Science in Agricultural Engineering	AGE	4 Years		
	Bachelor of Science in Human Nutrition	HUN	3 Years		
	Bachelor of Science in Water and Irrigation Engineering	BWE	4 Years		
	Bachelor of Science in Bioprocessing Engineering	BBP	4 Years		
	Graduate (Masters)				
	Master of Science in Agricultural Engineering		2 Years		
	Master of Science in Food Science and Technology		2 Years		
	Master of Science in Applied Human Nutrition		2 Years		
	Master of Science in Food Safety and Quality Management		2 Years		
	Doctoral Degrees by research only				
1	PhD degrees tenable at the School of Agricultural Sciences				
2	PhD degrees tenable at the School of Forestry, Environmental & Geographical Sciences				
3	PhD degrees tenable at the School of Food Technology, Nutrition and Bio-Engineering				

2.2 Student enrolment

CAES currently enrolls approximately 3,000 students, with 2,105 students enrolled for the academic year 2023/24. Among them, 24% were graduate students. During the 2023 graduation cycle, CAES conferred degrees upon a total of 592 students, with females accounting for 38% of the graduating cohort, nearing our institutional target of 40%. However, there remains a notable gap at the graduate level, where female graduates comprise only about one-third of the total.

2.2.1 Table 2: Student enrolment 2023-2024 Semester One

College/ Programme	Female	Male	Grand Total
College of Agricultural and Environmental Sciences	841	1344	2185
Bachelor of Agribusiness Management	94	132	226
Bachelor of Agricultural and Rural Innovation	118	273	391
Bachelor of Environmental Science	9	14	23
Bachelor of Geographical Sciences	34	35	69
Bachelor of Science in Agricultural Engineering	40	68	108
Bachelor of Science in Agricultural Land Use and Mgt	3	3	6
Bachelor of Science in Agriculture	58	121	179
Bachelor of Science in Bioprocessing Engineering	27	38	65
Bachelor of Science in Food science and Technology	45	66	111
Bachelor of Science in Forestry	65	114	179
Bachelor of Science in Horticulture	1	1	2
Bachelor of Science in Human Nutrition	37	33	70
Bachelor of Science in Meteorology	1	1	2
Bachelor of Science in Tourism and Hospitality Management	96	56	152
Bachelor of Science in Water and Irrigation Engineering	31	60	91
Bachelor of Tourism	1		1
Doctor of Philosophy in Plant Breeding and Biotechnology	4	11	15
Doctor of Philosophy (School of Agricultural Sciences)	1	8	9
Doctor of Philosophy (School of Food Technology, Nutrition and Bio-engineering)	1	2	3
Doctor of Philosophy (School of Forestry, Environmental and Geographical Studies)	1	4	5
Master of Agribusiness Management	10	18	28
Master of Geographical Sciences	4	3	7
Master of Land Use and Regional Development Planning	5	6	11
Master of Science in Integrated Watershed Management	3	4	7
Master of Science in Agricultural and Applied Economics	13	21	34
Master of Science in Agricultural Engineering	3	12	15
Master of Science in Agricultural Extension Education	11	11	22
Master of Science in Agroforestry and Community Development	1	5	6
Master of Science in Animal Science	1	13	14
Master of Science in Applied Human Nutrition	11	8	19
Master of Science in Climate Change and Development	19	32	51
Master of Science in Crop Science	14	21	35
Master of Science in Disaster Risk Management	6	5	11
Master of Science in Environment and Natural Resources	31	69	100
Master of Science in Food Safety and Quality Management	12	13	25
Master of Science in Food Science and Technology	6	7	13
Master of Science in Forestry and Biodiversity Management	2	5	7
Master of Science in Plant Breeding and Seed Systems	5	5	10
Master of Science in Soil Science	2	6	8
Master of Science in Tourism and Hospitality Management	3	4	7
PhD in Agricultural and Applied Economics	5	9	14
PhD in Agriculture and Rural Innovation	5	13	18
Postgraduate Diploma in Environmental Impact Assessment	2	14	16

2.3 Graduation at CAES



Some of PhD graduates



Some of BSc graduates

2.3.1 73rd graduation

CAES conferred degrees and diplomas upon 592 students across various disciplines, comprising 233 female and 359 male graduates. Among them, 14 attained PhDs, with 6 female and 8 male. Additionally, 94 students earned MSc degrees, with 46 female and 48 male, 5 Post Graduate Diplomas with 1 female and 4 male, while 479 students received BSc degrees, including 180 female and 299 male.



Dr. Akongo Graceline Ebong DANRE- SAS
Thesis title "Effects of climate variability on rain-fed rice production: a case study of Northern agro-ecological zone of Uganda".



Dr. Arinaitwe A. Byarugaba-DAP- SAS
Thesis title "Potato Viruses in Uganda and Effectiveness of Extant R Genes to Suppress the Effects of Virus Diseases."



Dr. Kwikiriza Norman DANRE- SAS
Thesis title "Analysis of the governance of global value chains of organic pineapples from Uganda".



Dr. Namugwanya Margaret- DAP- SAS
Thesis title "Agronomic Performance and Adaptive Mechanisms To Drought Conditions for Low Phosphorus Tolerant Common Beans".



Dr. Oketcho Chombo DGGCS- SFECS
Thesis title "Variation in Smallholder Farmers' Perception and Vulnerability to Climate Change in the Kyoga Plains of Uganda".



Dr. Nelson Quartey Amagloh Flora - DFTN- SFTNB
Thesis title "Characterization of Sweet potato as a Functional Food".



Dr. Oweyesigire Brian Britex - DAP- SAS
Thesis title "Pastoralists Adaptation Strategies to Climate Variability and Extremes in the Pastoral Rangelands of Uganda".



Dr. Irene Tamubula DEIS- SAS
Thesis title "Enhancing Acceptance of Video Content through Farmers' Participation in Production of Farmer-Learning Videos in Central Uganda".



Dr. Rugema Semaana Hillary- DEIS- SAS
Thesis title "Assessing The Performance Of Partnerships In Rice Production: The Case Of Luwero And Bugiri Districts, Uganda".



Dr. Ssamula Alexander DAP- SAS
Thesis title "Characterizing Reversion From Virus Infection in Sweet Potato"



Dr. Namubiru L. Leatitiah DFTN- SFTNB
Thesis title "Food Control in Uganda: A Case of the Rice Value Chain".



Dr. Sonnie Rose Kesselly - DFTN- SFTNB
Thesis title "Modification of Cassava and Cowpeas Flour and their Use in Flatbread (Chapatti) Making".



Dr Lule Umar Ssonko DFTN- SFTNB
Thesis title "Encapsulation of Banana Phenolics Using Modified Matooke Starch".

Dr. Modi Jackson V. Lado - DAP- SAS
Thesis title "Relationship of silicon content and plant resistance to rice blast"

2.3.2 Table 4: 73 Graduation statistics

School	Programme	F	M	Total
School of Agricultural Sciences	Undergraduate			
	Bachelor of Science in Agriculture	6	25	31
	Bachelor of Agricultural and Rural Innovation	32	79	111
	Bachelor of Science in Agricultural Land Use & Management	1	17	18
	Bachelor of Science in Horticulture	4	5	9
	Bachelor of Agribusiness Management	32	47	79
	Total	75	173	248
	Postgraduate			
	Master of Science in Agricultural Extension		1	1
	Master of Science in Crop Science	2	4	6
	Master of Science in Integrated Watershed Management	1		1

	Master of Agribusiness Management	4	4	
	Master of Science in Plant Breeding and Seed Systems	6	8	14
	Master of Science in Agricultural and Applied Economics	1		1
	Master of Science in Agricultural Economics	1		1
	Total	11	17	28
	Undergraduate			
School of Forestry, Environmental and Geographical Sciences	Bachelor of Science in Forestry	10	23	33
	Bachelor of Science in Tourism and Hospitality Management	17	11	28
	Bachelor of Geographical Sciences	9	12	21
	Bachelor of Science in Meteorology	12	14	26
	Bachelor of Environmental Science	31	35	66
	Total	79	95	174
	Postgraduate			
	Post Graduate Diploma in Environmental Impact Assessment	1	4	5
	Master of Science in Forestry		1	1
	Master of Science in Disaster and Risk Management	1	2	3
	Master of Landuse and Regional Development Planning	1		1
	Master of Science in Agroforestry	1	1	2
	Master of Science in Geographical Sciences	1	2	3
	Master of Science in Environmental and Natural Resources	20	16	36
	Total	25	26	51
	Undergraduate			
School of Food Technology, Nutrition and Bioengineering	Bachelor of Science in Food Science and Technology	7	9	16
	Bachelor of Science in Agricultural Engineering	3	13	16
	Bachelor of Science in Human Nutrition	16	9	25
	Total	26	31	57
	Postgraduate			
	Master of Science in Agricultural Engineering	3	5	8
	Master of Science in Food Science and Technology	6	2	8
	Master of Science in Applied Human Nutrition	1	1	2

	Master of Science in Food Safety and Quality Management	1	1	2
	Total	11	9	20

2.3.3 Table 5: First Class Degree graduates

No.	Name	Gender	Programme	CGPA
1.	Nakibuule Alicia Isabella	F	BSHN	4.68
2.	Kibaire Abel Kenneth	M	BHOT	4.64
3.	Ayebare Innocent	M	BFOR	4.61
4.	Nabatanzi Teddy	F	BFOR	4.58
5.	Kanakulya Joseph	M	BFOR	4.58
6.	Ewila Jimmy	M	BFOR	4.57
7.	Komugisa Allan	M	BSHN	4.55
8.	Nambogo Anita	F	BSHN	4.55
9.	Akoth Sarah	F	BFST	4.54
10.	Mutaawe Edward Alan	M	BFST	4.51
11.	Adriko Jerry	M	BTHM	4.51
12.	Igambire Obed	M	BGEO	4.50
13.	Nayiga Winnie	F	BHOT	4.50
14.	Rwothongeyo James	M	BAXI	4.49
15.	Ssembatya Ronald	M	BFOR	4.49
16.	Kakuru Julian	F	BEVS	4.47
17.	Kiwumulo Allelua	F	BAGM	4.46
18.	Masaba Shakim	M	BHOT	4.46
19.	Emiu Denis	M	BHOT	4.45
20.	Abaasa Ritah	F	BHOT	4.45
21.	Nampeera Getrude	F	BAGM	4.44
22.	Ainembabazi Bridget	F	BSHN	4.44
23.	Mugumya Denis	M	BSHN	4.43

2.4 Curriculum Review

In alignment with Makerere's strategic goal 2, which emphasizes innovation in teaching and learning to adapt to evolving landscapes, we have embarked on a mission to reassess our curricula and research endeavors. Our aim is to foster a culture of innovation among both students and faculty, thereby equipping graduates with the competencies needed to thrive in a dynamic global job market and entrepreneurial landscape. We are currently in the process of meticulously reviewing all our curricula to infuse them with intentional innovation. This involves enriching content to encompass skills relevant to entrepreneurial green economies and incorporating learner-centered and gender-responsive delivery methods. As of now, we have revised the curriculum for approximately 15 programs, with ongoing approval procedures underway

2.5 Innovations in teaching and learning

1. All Curricula reviewed to be Innovation-Intentional, learner-centered, with emphasis of practical elements and gender-responsive.
2. Online curricula development, supported by IODEL
3. Blended teaching approaches and Innovative teaching included in delivery mode
4. Staff retooled on use of online and learner-centered delivery mode
5. A critical mass of staff trained in the Human Centered Design Thinking approaches and Mindset change
6. Increased student and staff practical engagements at MUARIK

2.5.1 Launch of CAES Graduate Management System –CAES GRADCARE

The College of Agricultural and Environmental Sciences (CAES) has developed an innovative online system, known as the CAES GRADCARE Management System, accessible at <http://gradcare.caes.mak.ac.ug/>. This system is designed to streamline graduate management processes, fostering efficiency and effectiveness within our academic operations. The CAES GRADCARE Management System aims to optimize workflow by enhancing supervision, reducing lead time and costs associated with thesis examination, and providing valuable data for informed decision-making. Moreover, it serves as a comprehensive repository for graduate research, facilitating easier access and

utilization of scholarly outputs. By implementing this system, CAES endeavors to alleviate bottlenecks in the production pipeline of graduate students and significantly contribute to Makerere University's research-led agenda outlined in the 2020-2030 Strategic Plan. The official launch of the CAES GRADCARE Management System took place at the College premises on 17th October 2023, officiated by Makerere University's Deputy Vice Chancellor in charge of Academic Affairs, represented by Prof. Edward Bbaale, Director of the Directorate of Research and Graduate Training (DRGT).



Director of DRGT, Prof. Edward Bbaale (2nd Right), launches the CAES GRADCARE Management System on behalf of the DVCAA on October 17, 2023. Joining him are Dr. Cyprian Misinde, Director of Quality Assurance (Right); Prof. Gorettie Nabanoga, Principal of CAES (Second Left); and Prof. Yazhidi Bamutaze, Deputy Principal (Left).

2.6 Academic trainings/practical exposure of students

2.6.1 Mak Students Trained in Water Quality Management

On May 19, 2023, the Makerere University Department of Agricultural and Bio-systems Engineering, within the College of Agricultural and Environmental Sciences (CAES), commemorated the successful conclusion of the 2022 Hilton Foundation Water Quality Testing Fellowship. Held at the Conference Hall of the School of Food Science and Technology, the ceremony was honored by the presence of Makerere University's Deputy Vice Chancellor in charge of Academic Affairs, Prof. Umar Kakumba, who presented certificates to the inaugural cohort of trainees. The Water Quality Testing program, a collaborative effort between the Department of Agricultural and Bio-systems Engineering

and the Aquaya Institute, funded by the Conrad Hilton Foundation, aims to bolster the ranks of water quality professionals. Launched in 2022 and slated for completion in 2025, the program seeks to enhance expertise in assessing water quality. In its pilot year, the program admitted student fellows from five programs: BSc. Agricultural Engineering (12), BSc. Bioprocessing Engineering (3), BSc. Water and Irrigation Engineering (7), BSc. Civil Engineering (5), and MSc. Agricultural Engineering (3). Following a rigorous selection process, 30 candidates were chosen out of 68 applicants to participate in the program, laying a strong foundation for future cohorts.



Left: Prof. Umar Kakumba (DVCAA) and Prof. Gorette Nabanoga (Principal of CAES) inspecting students' projects. Right: Prof. Nabanoga with the trainees during the closing ceremony.

2.6.2 2023 Agrostudies Apprenticeship Programme



The Honorary Consul of Israel in Uganda, Mrs. Ishta K. Muganga flagged off the students on 7th September 2023.

A total of 50 students were chosen to take part in the Agrostudies Apprenticeship program in Israel, with 37 selected from

Makerere University and 13 from Busitema University. Developed with support and oversight from the Israeli Ministry of Foreign Affairs and Ministry of Agriculture, the Agrostudies program is dedicated to enhancing capacity through hands-on and professional knowledge exchange in agriculture. It aims to advance global food security by offering participants a dynamic educational platform that fosters creativity and practical skills. In Uganda, the program was initiated in 2013 and institutionalized in 2021. Led by Makerere University's Department of Agricultural Production, within CAES, the program has benefited approximately 2,000 students over the years.

2.6.3 3rd Summer School on Landscape Ecology

In July 2023, Makerere University hosted the third cohort of its Summer School on Landscape Ecology, spanning Kampala and Mbale Districts under the theme **"Ecological Governance for Socio-ecological Systems of Sub-Saharan Africa."** The event drew participants from Uganda, Kenya, Tanzania, Burkina Faso, Nigeria, Ethiopia, South Africa, Ghana, Senegal, and Mali. The overarching theme of the Summer School Series is **"Implementing Landscape Ecology for Enhanced Sustainability and Societal Equity in Sub-Saharan Africa's Social-Ecological Systems."**

The objectives of the summer school series were:

1. Providing insights into recent conceptual, theoretical, and technological advancements in landscape ecology that contribute to the UN Global Development Agenda 2030 and the African Union Agenda 2063.
2. Cultivating a network of knowledgeable, skilled, and multidisciplinary scientists capable of addressing complex challenges.
3. Facilitating meaningful exchanges between science, practice, and policy to promote ecological sustainability and thriving livelihoods amidst growing stressors.
4. Promoting networking, collaboration, and partnership between regions (north-south and south-south) to foster knowledge creation and scholarly endeavors.



Left: Prof. Yazidhi Bamutaze, Deputy Principal of CAES, Makerere University, and one of the Coordinators of the Summer Schools, warmly welcomes participants to the 2023 Summer School. Right: Participants engage with their facilitators during the 2023 Summer School session held at Royal Suites Hotel in Kampala.

2.7 Professorial lecturers

2.7.1 Prof. John H. Muyonga Inaugural Professorial Lecture



Left: Prof. John H. Muyonga delivers his Professorial Inaugural Lecture. Right: Prof. John H. Muyonga (Seated Center) is joined by his parents and wife, Dr. Faith Muyonga (Extreme Right), along with Vice Chancellor Prof. Barnabas Nawangwe (Standing Third from Left). Standing from Left to Right are: Prof. David Bakibinga, Chairperson of the Professorial Inaugural Lectures Organizing Committee; Prof. Henry Alinaitwe, DVCFA; Prof. Umar Kakumba, DVCAA; Prof. Yazidhi Bamutaze, Ag. Principal CAES; and Prof. Muyonga's daughter and son.

Prof. John H. Muyonga delivered his Professorial Inaugural Lecture on June 23, 2023, at the Yusuf Lule Central Teaching Facility, Makerere University. The lecture, themed **"Circular Bioeconomy: Applications to the Agri-food Sector,"** was attended by the University's top management, led by Vice Chancellor Prof. Barnabas Nawangwe, as well as academics and administrators from all 10

Colleges of Makerere. Also in attendance were members of Prof. Muyonga's family. With 26 years of service at Makerere University, Prof. Muyonga has played a pivotal role in enhancing research capacity, particularly in previously under-researched foods such as grain amaranth, jackfruit, pumpkins, *Solanum anguivi* (Katukuma), and Nile perch, among others.

2.8 Academic appointments

2.8.1 Dr Julia Kigozi appointed Dean, School of Food Technology, Nutrition and Bioengineering (SFTNB)



Dr. Julia Kigozi, a Lecturer specializing in Food Process Engineering within the Department of Agricultural and Biosystems Engineering, was appointed as the new **Dean of SFTNB**, succeeding Dr. Abel Atukwase

2.8.2 Dr Revocatus Twinomuhangi, Dean, School of Forestry, Environmental & Geographical Sciences (SFECS)



Dr. Twinomuhangi, a Senior Lecturer in the Department of Geography, Geo-Informatics, and Climatic Sciences at Makerere University, was appointed as the **Dean of SFECS** for a four-year term, effective from July 1, 2023. Additionally, Dr. Twinomuhangi serves as the Coordinator of the Makerere University Centre for Climate Change Research and Innovations (MUCCRI), a unit within the College of Agricultural and Environmental Sciences.

2.8.3 Dr Bernard Obaa appointed Acting Head, Department of Extension and Innovation Studies (DIES)



Dr. Bernard Obaa was appointed Acting Head DIES within the College of Agricultural and Environmental Sciences (CAES) by the Makerere University Council. He succeeds Prof. Nelson Turyahabwe, who held the position for four years starting from November 2, 2019. Dr. Obaa, a Senior Lecturer in the Department of Extension and Innovation Studies at CAES, holds a PhD in Rural Sociology (with a focus on Food Systems, Agriculture, Environment, Social Change, and Development) from Iowa State University, USA, and an MSc in Agricultural Extension and Education from Makerere University.



03

RESEARCH & INNOVATIONS

3. Research and Innovations

In alignment with Makerere's strategic goal 1 of becoming a research-led university that addresses national, regional, and global development challenges, we are actively fostering an innovation-driven culture at CAES. Recognizing our potential to generate innovative research projects and products, we acknowledge the current gap in commercializing these outputs due to the absence of institutionalized support systems for innovators and innovations. To tackle this issue, we are engaging students, faculty, industry, and external stakeholders using the Human-Centered Design (HCD) approach. This allows us to understand barriers, develop courses that nurture young entrepreneurs, bridge research with industry, and foster innovations. We have identified new practices to enhance faculty and students' success as innovators within CAES. Moreover, we have established and fully operationalized a Research Ethics Committee. By fostering synergies and strategically

3.1 Table 7: Research centres and institutes

NO.	NAME OF RESEARCH INSTITUTE/CENTRE	PURPOSE	LEGAL STATUS COLLEGE CENTRE/COMPANY
1	Makerere University Agricultural Research Institute (MUARIK)	<ul style="list-style-type: none"> A multi-disciplinary facility for training, research, outreach and production Interface with the National Agricultural research system (NARS) Currently has several farm enterprises 	College Centre in Wakiso
2	The Makerere University Biological Field Station (MUBFS)	<ul style="list-style-type: none"> Conduct research and host short international courses in tropical biology, ecological and behavioral research on taxonomy, and socio-economic studies 	College Centre in Kabarole and Kamwenge districts
3	The Food Technology and Business Incubation Centre (FTBIC)	<ul style="list-style-type: none"> Conduct research in agro-processing and value addition, Train students, staff and the general community in entrepreneurship, Nurture research ideas into Business enterprises and commercial products, carry out skills training (short courses) using the installed equipment for potential entrepreneurs in food value addition. 	College Centre on main campus
4	Makerere University Regional Centre for Crop Improvement (MaRCCI)	<ul style="list-style-type: none"> Expand, strengthen and transform the PhD Plant Breeding programme following the pattern of the highly successful MSc in Plant Breeding and Seed Systems Provide the nations of Eastern and Southern Africa (ESA) with industry-ready plant breeders who are equipped to use cutting edge science to develop and deliver new varieties of food crops 	College Centre at MUARIK

5	Makerere University Centre of Excellence in Waste Management	<ul style="list-style-type: none"> • To become a centre of innovative research and technology development utilizing bio waste (agricultural/ organic wastes) in enhancing sustainable agricultural production and a healthy environment • Optimize and promote compositing of biodegradable waste for improved agricultural production • Develop livestock feed protocols based on market crop waste • Develop biogas technologies for use by small scale households • Offer training, knowledge sharing and advisory services in waste management and create linkages with the private sector in technology development • Promote the adoption and diffusion of viable waste utilization technologies and products • Promote regional and international research collaborations and linkages and create community awareness and training through linkages 	College Centre at MUARIK
6	Makerere University Centre for Climate Change Research and Innovations (MUCCRI)	<ul style="list-style-type: none"> • Promote awareness on climate change • Conduct research on climate change science, climate change mitigation and adaptation in all sectors and disseminate the generated information • Generate and disseminate innovations for climate change mitigation and adaptation in agricultural sciences and natural resources sectors • Advocate and influence climate change and development policy to enable Uganda address climate change challenges 	College Centre on main campus
7	The Makerere University Centre for Soybean Improvement and Development (MakCSID)	<ul style="list-style-type: none"> • Develop superior soybean genotypes with high yield, broad adaptation, and traits most desired by end-users. • Enhance availability and access of the improved soybean varieties through a sustainable seed delivery mechanism. • Develop new soybean products for human food, animal feeds, and industrial uses. • Establish agro-business initiatives using soybean as base. • Improve awareness for increased adoption of soybean technologies for farmers and other end-users. • Equip students with hands-on skills that are relevant to plant 	College Centre at MUARIK

		breeding, seed systems and value addition.	
8	The National Biodiversity Data Bank (NBDB) – Uganda	<ul style="list-style-type: none"> • Avail data and information regarding the country's biodiversity to aid in research, conservation and informing the decision making process • Act as a central repository for biodiversity information within Uganda, • Monitor the national biological resources • Provide consultancy services to the government and other organizations in Uganda in different fields of environment and natural resources, assessment and monitoring of environment and natural resources. 	College Centre on main campus
9	Uganda Forestry Resources and Institutions Centre (UFRIC), Makerere University	<ul style="list-style-type: none"> • Promote sustainable management of global commons including forests. • Address global challenging questions such as the impact of institutions on forest sustainability, • Collect forest inventory and socio-economic data from several parts of the globe through its Collaborating Research Centres (CRCs) • Monitor forest resources and institutions 	College Centre on main campus
10	Continuing Agricultural Education Centre (CAEC)	<ul style="list-style-type: none"> • Operate outreach programmes for various stakeholders • Host refresher and specialized short courses to meet the demands as they arise in agriculture and environment 	College Centre at MUARIK
11	A consortium for Enhancing University Responsiveness to Agribusiness Development (CURAD)	<ul style="list-style-type: none"> • Promote entrepreneurship by students and graduates of Makerere University in business incubation especially those working with agribusiness or farming 	Company at MUARIK
12	Centre for Mountain Resources and Disaster Management	<ul style="list-style-type: none"> • Develop a specialized course focused on Highland and mountain resource management. • Lead, execute, and coordinate initiatives related to mountains and sustainable development in Uganda and globally. • Drive research and outreach efforts, organize local and international conferences, thereby facilitating the documentation and dissemination of knowledge on mountain ecosystems. 	College Centre on main Campus
13	Agricultural Policy Research Centre	<ul style="list-style-type: none"> • Handles interface with the policy processes 	College Centre anchored in DANRE, main Campus

14	Makerere University Tissue Culture Laboratory (MAKTCLAB)	<ul style="list-style-type: none"> Contributes to food security, income generation and livelihood improvement through commercializing quality tissue culture planting material in Uganda. The Laboratory affords quick production of clones identical to the source plant in large numbers that are often free from pests and diseases 	College Centre at MUARIK
15	Centre for Environment and Development	<ul style="list-style-type: none"> Deals with issues at the interface of the Environment and development objectives 	Co-hosted with COBAMS. The Director is from COBAMS

3.2 Research grants

3.2.1 Table 8: Ongoing Research projects supported by Development Partners

No.	Project title	Principal Investigator	Amount	Funder	Timeframe
1.	ARUA Water Centre of Excellence	Prof. Isa Kabenge	USD250,000	Rhodes University and ARUA-UKRI GCRF Partnership Programme	2019-2024
2.	Combating Arthropod Pests for better Health, Food and Climate Resilience	Dr Rosemary Isoto Emegu Co-PI	USD22,211	ICIPE	2019-2023
3.	Implementation of Annual Agriculture and Market Support Household surveys in the framework of WFP CSP UG 01	Prof. Bernard Bashaasha	USD100,000	WFP	2020-2024
4.	Improving Pig Productivity and Incomes through an Environmentally Sustainable and Gender Inclusive Integrated Intervention Package (More Pork Project),	Dr Donald Kugonza Rugira		International Livestock Research Institute (ILRI) - CRP001113	
5.	Genetic Characterization of Cattle Populations for Optimized Performance in African Ecosystems (OPTIBOV)	Dr Donald Kugonza Rugira		European Union (EU) & Ministry of Science, Technology & Innovation (MoSTI) - LEAP-AGRI-326	

6.	Participatory Pathways to Sustainable Intensification (PASUSI)	Dr John Baptist Tumuhairwe	USD228,000	EU/Government of Uganda under LEAP-agri-consortium	2019-2023
7.	ANTENNA: Norwegian-African network for training a new generation of entomologists in DNA-based molecular methods	Dr Gerald Eilu - Partner	USD700,000	SIU/DIKU (Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education)	2019-2023
8.	Unlocking the Potential of Smallholders for Urban Food System Resilience in Uganda. A joint Project between the Department of Geography, Geoinformatics and Climatic Sciences – Makerere University and the Department of Human Geography, Lund University, Sweden	Dr Frank Mugagga	\$130,000	SIDA under Phase II of AgriFoSe2030 Programme	2021-2023
9.	Capacity Building for Socially Just and Sustainable Energy Transitions. A joint Project between the Department of Geography, Geoinformatics and Climatic Sciences – Makerere University, NTNU - Norway, University of Juba - South Sudan and University of Nairobi - Kenya	Dr Frank Mugagga Co-PI	NOK20M	Funded by NORAD under NORHED II Programme (Energy Sub programme)	2021 – 2026

10.	Explaining inclusive lower-level urbanization in Tanzania and Uganda. The project is jointly implemented with the Department of Human Geography, Lund University - Sweden, University of Dar es Salaam, Tanzania; University of Ghana and Internationell Centrum för Lokal Demokrati, Sweden	Dr Frank Mugagga Co-PI	\$120,000	Funded by SIDA, Sweden	2021-2023
11.	Partnership for Training Scientists in Crop Improvement for Food Security in Africa – SCIFSA	Dr. Odong Thomas	Eur 1,398,975	European Union	2018 -2023
12.	Improving Essential Oil Feed-stocks and High-value Products from Mentha Spp to benefit Local Uganda Economies (MENUE)	Dr. Ivan Mukisa Muzira	£ 79,099	Cardiff University from BBSRC-GCRF-IBBE UKRI	2020 - 2023
13.	Foodland	Dr. Isa Kabenge	Eur 6 999 086.75	European Commission	2020 - 2024
14.	Locally-driven Co-development of Plant-based Value Chains Towards More Sustainable African Food System with Healthier Diets and Export Potential - InnoFood Africa	Assoc. Prof. Yusuf Byaruhanga	Eur 280000	European Commission	2020 –2025
15.	Evaluation of the Strategic Intervention for Animal Genetic Improvement Project (SAGIP)	Prof. Johnny Mugisha	UGX 534,980,000	National Animal Genetic Resource and Data Bank of Uganda	2020 –2023
16.	Achieving the SDGs in East African Drylands: drylands transform	Dr Denis Mpairwe	USD 97,969.08		
17.	Improving Essential Oil Feedstocks and High-Value Products from Mentha SPP to Benefit Local Uganda Economies (MENUE)	Dr. Ivan Mukisa Muzira	USD108,088.51	Cardiff University from BBSRC - GCRF - IBBE UKRI	

18.	Sustainable Off grid Solutions for Pharmacies & Hospitals in Africa – SoPHIA Project	Dr. Nicholas Kiggundu	EUR421,187.5	European Climate, Infrastructure and Environment Executive Agency (CINEA)	2021 –2025
19.	Participatory analysis of the conventional-agroecological intensification continuum for increased productivity and sustainability in the coffee-banana systems of the Mt Elgon region of Uganda -	Dr Jeninah Karungi		A research grant to Makerere university from SIDA via AgriFoSe 2030 (Agriculture for Food Security 2030) programme coordinated by the Swedish University of Agriculture (SLU Global).	
20	DESIRA (Development Smart Innovation through Research in Agriculture)	Prof. Samuel Kyamanywa	EUR30,000	EU (France)	2022 –2025
21.	CAES - MATS	Dr. Rosemary Isoto Emegu	EUR30,000	EU (Netherlands)	2022- 2023
22.	Refugee insect production for food and feed (REfiPRO)	Dr. Dorothy Nakimbugwe	EUR136,285.25	IMPACT DESIGNS Denmark	2022 –2026
23.	PRACTICE	Dr. Nicholas Kiggundu	EUR510587.10	EUROPEAN RESEARCH EXECUTIVE AGENCY - Germany	2022 -2023
24.	LOCUST 4 INDUSTRY	Dr. Dorothy Nakimbugwe	UGX63,100,000	National Research Fund - Uganda	2022 - 2025
25.	Production scaleup and commercialization of the makerere smart solar-electric cooker: maksol cooker	Dr. Peter Tumutegyeize	UGX175,000,000	Science, Technology, and Innovation Secretariat-Office of the President – Government of Uganda	2022 - 2023

3.2.2 Table 9: Mak-RIF Round5 grant recipients from CAES

RIF Round 5 grant recipients			
No.	Project title	PI	Department
1.	Development of a smart handheld soil moisture and nutrient sensor with an integrated fertilizer rate calculator for improved nutrient use efficiencies in farmers' fields in Uganda	Dr Emmanuel Opolot	Department of Agricultural Production
2.	The Implication of Oil Exploration, Extraction, and Processing Industry on Agriculture and Livelihoods of Smallholder farmers in Uganda: The Case of the Albertine Region in Uganda	Dr Isaac Onziga Dramadri	Department of Agricultural Production
3.	Prioritisation of agricultural value chains for improvement of Uganda's trade competitiveness	Dr Florence Lwiza	Department of Agribusiness and Natural Resource Economics
4.	Access to food in urban areas and its implications for the health system	Dr Sarah Akello	Department of Extension and Innovation Studies
5.	Design and Development of an Autonomous Precision Seed Rover: A Robotic Planter for Precision Farming (Seed Rover)	Dr Wanyama Joshua	Department of Agricultural and Bio-systems Engineering
6.	Exploring agritourism development as a unique product to enhance tourism sector competitiveness and product diversification in Uganda	Dr Francis Mugizi	Department of Forestry, Biodiversity and Tourism
7.	Enhancing Disaster Preparedness and Risk Management at the Local Government Level in Uganda: A Comprehensive Research and Capacity-Building Initiative.	Henry Galiwango	Department of Extension and Innovation Studies
8.	Investigating Listeria monocytogenes Exposure among Pregnant Women of High Socio-Economic Status in Uganda: Food Sources and Safe Practices	Dr Aguttu Goretti	Department of Agribusiness and Natural Resource Economics
9.	Developing a community-based sweetpotato seed system for increased productivity in Uganda.	Dr Wasswa Peter	Department of Agricultural Production
10.	Developing a Competitive Local Chicken Value Chain in Teso Sub region	Zainah Nampijja	Department of Agricultural Production
Commercialization grants			
	Project title	PI	Department
1.	Towards Scaling and Commercialization of a Hybrid Solar Dyer: profiling critical stakeholders and exploring market prospects	Dr Ahamada Zziwa	Department of Agricultural & Bio systems Engineering
2	Scaling up and commercialization of the sensor-based smart irrigation kit	Dr Wanyama Joshua	Department of Agricultural and Bio-systems Engineering.

3.3 Research and Innovations that contribute to the National Development Plan

Throughout the years, CAES faculty have generated pioneering research and innovations, significantly enhancing Makerere University's ranking and standing. In 2023 alone, our faculty contributed over 200 publications, further solidifying our commitment to scholarly excellence.

3.3.1 Several research outputs and innovations generated have potential to contribute to National Development and these include: -

- 3.3.1.1 Innovations in 2023

i) Solar-powered Cooker (MakSol Cooker) a cutting-edge solar-powered cooking solution developed to revolutionize cooking practices while reducing carbon footprints in households. Makerere University launched the Solar-powered Cooker developed by researchers from the Department of Agricultural and Biosystems Engineering at the College of Agricultural and Environmental Sciences (CAES) in collaboration with Intellsys (U) Ltd on 14th June 2023. The cooker is an

output of a research project titled, "Development, Production Scale-up and Commercialization of an Electric Solar Cooker (MakSol Cooker) to reduce the Cooking Carbon Foot-Print in Households". The project was supported by the Government of Uganda through the Makerere University Research and Innovations Fund (Mak-RIF) and the Science, Technology and Innovation Secretariat-Office of the President.



ii) Tailor-made pasteurizer and Fruit Pulper adapted according to end-user operational capacity, financial resources and available energy source to support agro-processors.



The batch pasteurizer was designed and constructed based on simple technology with simple components to ensure good operating characteristics including: safety, ease of maintenance and cleaning, retention of nutritional quality, easy handling, quick

assembly, easy repair and maintenance. Important aspects considered for design included temperature, pressure, size/volume of pasteurization tank and the heating system used. The product to be pasteurized is heated indirectly to avoid deterioration in product quality. The batch pasteurizer is available in 150L, 200L, 300L and 500L capacity. The project was led by Dr Julia Kigozi, Dean, School of Food Technology, Nutrition and Bio-engineering and supported by FTBIC and the CAES Innovation Scholars Programme (CAESISIP).

iii) Transformation of Municipal waste into industrial raw materials

Due to the high rates of urbanization, municipal waste generation in cities in Uganda is anticipated to grow at a rate higher than 40% by 2050. Using Black Soldier Fly Larvae (BSFL) as a bio-waste management technology for efficient municipal trash conversion, Makerere University researchers and students led by Prof. Fred Kabi from the Department of Agricultural Production at CAES, working with Ento Organic Farm Uganda Ltd in Gayaza transform farm and municipal waste into useful products beyond food, feed and fertilizers. The team extracts liquids from the larvae and using basic science, transforms the liquids into soap and bio-diesel.



Some of the soaps made from liquids extracted from BSF



Left: Prof. Kabi showcasing his project at the National Agricultural Show in Jinja in August 2023. Right: A CAES student providing details on transforming municipal waste into industrial raw materials at the Show.

iv) State of the art water testing equipment

This is implemented by the Department of Agricultural and Bio-systems Engineering at CAES, and funded by the Conrad N. Hilton Foundation under the Hilton Water Quality Testing Fellowship, Uganda. This initiative strengthens the water and sanitation sector in sub-Saharan Africa by developing skilled professionals.



v) Soil water and nutrients sensing machine

There are currently limited innovations that inform the farmer on the status of moisture content of the soil before, during and after irrigation leading to wastage of water, nutrients and reduced crop yields. This calls for development of technologies showing crop type, development stage, quantity of water and nutrients to supply, and the irrigation window period linked to stress duration. Through a project titled: 'Soil Moisture Sensing for improved Water Use Efficiencies and Crop productivity among micro-scale irrigation systems in Uganda', soil moisture sensors for

timely monitoring of soil moisture content were installed at MUARIK, the project area. The objectives of the project were to introduce a system of IoT and soil moisture monitoring using sensors in irrigation scheduling, management and monitoring for increased water use efficiency and crop productivity. The project was funded by Government of Uganda through the National Research and Innovation Programme, and led by Dr Opolot Emmanuel from the Department of Agricultural Production at CAES.



Dr Opolot Emmanuel (L) during the installation of soil moisture sensors at MUARIK for timely monitoring of soil moisture content

vi) Bio-pesticides for environmental sustainability

3.3.1.2 CAES Students' Innovations

The School of Food Technology, Nutrition and Bio-Engineering (SFTNB) engages its students in the production of various products as a way of developing their graduate profile and improving their entrepreneurial skills. Working in groups under the supervision of their lecturers, the students have developed various products including probiotic juice, mukene enriched peanut paste, tomato ketchup, crisps, jackfruit seed cookies, yoghurts, orange, pineapple, lemon and ginger flavoured jam, ice

cream, and water. The students are pursuing various programmes at CAES including; Bachelor of Science in Food Science and Technology, Bachelor of Science in Agricultural Engineering, Bachelor of Science in Human Nutrition, Bachelor of Science in Water and Irrigation Engineering, and Bachelor of Science in Bioprocessing Engineering.

Some of the products made by the students showcased at an exhibition held in April 2024;





3.3.1.3 Some of the innovations generated over the years that have contributed to national development

- i) Makerere University Centre for Soybean Improvement and Development (MAKCSID) has developed a total of six improved soybean varieties Maksoy 1N, Maksoy 2N, Maksoy 3N, Maksoy 4N, Maksoy 5N and Maksoy 6N. These varieties are high yielding and resistant to the major pests and diseases especially soybean rust disease. Impact studies showed that Maksoy varieties were the most widely planted and accounted for 93% of soybean grown by Ugandan farmers; leading to increased productivity and incomes. All the earlier varieties which were wiped away by the soybean rust disease are not recommended for production because they can't yield without application of chemicals to control the rust.



The Principal of CAES showcasing various soybean varieties to members of the Makerere University Council during their visit in 2023.

- ii) Cow peas and sorghum varieties that are disease, pest, and climate stress tolerant and their value-added products under the Makerere University Regional Centre for Crop Improvement (MaRCCI)



- iii) **The bio-fertilizer formulations** to unlock crop productivity for improved household food security -solves the soil nitrogen deficiencies problem by producing bio-fertilizers containing legume nodule bacteria that fixes nitrogen and makes it available to the crops.



- iv) **The Makerere University Soil Test Kit** for rapid soil assessment, improved soil management, crop yields and incomes among farmers – Provides easy and rapid semi quantitative evaluations of the cardinal elements that influence plant growth = soil pH, organic matter, Nitrogen, Phosphorus and Potassium.



- v) **Hybrid Refractance Window Drying equipment** uses refractance Window Drying Technology (RWDT) for production of high quality bio-products -ensure consistent drying of large volumes of perishable agricultural produce such as pineapples, mangoes, jackfruit, carrots,& moringa vegetables and herbs
https://youtu.be/tWJ9EVkjfro?si=M3TZcFpq_ZOj8_4d



- vi) **Production and promotion of protocols for Banana Tissue Culture** for quick multiplication and disease control to improve yields



vii) **Value addition on sweet potato-sorghum enterprises** to improve the economic value of potato and sorghum enterprises for improved livelihoods of value chain actors.

viii) – **Alternative source of protein for poultry and fish feeds through rearing blue flies, maggots and earthworms** to supplement silver fish.



ix) **A livestock milk booster**- produced from sugarcane industrial wastes to mitigate malnutrition, extreme hunger and poverty through improved milk production, nutrition and improved daily cash flow among farmers.



x) **A three wheeled multipurpose farmers' tractor, MV Mulimi**- Able to thresh maize, pump water from a depth of 7m to a height of 33m, plough gardens, transport 20 adults and their goods over a reasonable distance, as well as charge a mobile phone



xi) Development and automation of a spray drier for egg powder production for use in bakery industries of Uganda

xii) The KeBERA ICT based solution to detect inorganic contaminants as well as mycotoxins in food.

xiii) Introduced 24 new sweet potato varieties on the Ugandan Market.

xiv) Defined lactic acid bacteria and yeast starter cultures and improvement of safety of traditionally fermented dairy products (Bongo from Uganda)

xv) Development of protein enriched products using insect protein for Ugandan consumers and particularly communities in the refugee camps

A close-up photograph of a person's hands, with dark skin, writing on a black tablet. The person is wearing a light-colored, short-sleeved shirt. The background is blurred, showing papers and a desk. A green horizontal bar with a yellow vertical stripe on the left is positioned over the right side of the image, containing the number '04' in white.

04

**RESEARCH
& ETHICS COMMITTEE
(CAES-REC)**

4. Research and Ethics Committee (CAES-REC)

4.1 Introduction

The College of Agricultural and Environmental Sciences (CAES) Research Ethics Committee/Institutional Review Board (CAES-REC/IRB) operates from Makerere University's main campus. Housed within the Department of Forestry at the School of Forestry, Environmental, and Geographical Sciences (SFECS), the CAES-REC plays a pivotal role. Tasked with evaluating and sanctioning research proposals, it meticulously monitors progress across various agricultural and environmental science domains. By upholding ethical standards, the REC fortifies the credibility of research endeavors, ensuring robust outputs and outcomes. This report delves into its inaugural year's (2023) performance.

4.2 Establishment of CAES-REC

CAES is one of Makerere University's colleges that actively conducts research in diverse fields, some of which involve humans as research participants. As the volume of research involving human research participants at the college increased, CAES management spearheaded the establishment of CAES-REC in late 2022. This pivotal body was tasked with two primary functions: (i) rigorously reviewing and approving research applications to ensure alignment with national research ethics guidelines, and (ii) diligently monitoring approved projects to guarantee ongoing compliance and safeguard the welfare of human participants. Following stringent adherence to regulations, CAES-REC earned accreditation from the Uganda National Council for Science and Technology (UNCST) on January 2, 2023. This accreditation empowered it to conduct both initial and continuous reviews of research endeavors, prioritizing the protection of participants' rights and well-being. Additionally, CAES-REC achieved registration with the U.S. Department of Health and Human Services (HHS) and the Federal Wide Assurance (FWA), enabling it to facilitate the review of agricultural, environmental, social, and economic research protocols on both national and international fronts.



UNCST conducts site visit at CAES to evaluate accreditation readiness

4.3 Composition of CAES-REC

The CAES-REC brings together a diverse array of professionals, including faculty members, researchers, legal experts, and community representatives. This diverse composition ensures a thorough, multidisciplinary evaluation of research proposals submitted to the committee.

4.3.1 Present Composition of CAES-REC members

No.	Name	Gender	Qualification	REC Designation
1.	Dr. Kassim Sadik	Male	Plant Breeding & Biotechnology, PhD	Chairperson
2.	Dr. Daniel Waiswa	Male	Forestry/GIS/RS, PhD	Vice-Chairperson
3.	Assoc. Prof. Ahmed Zziwa	Male	Biosystems Engineering, PhD	Secretary
4.	Prof. Joseph Obua	Male	Forestry, Tourism, PhD	Member
5.	Assoc. Prof. Margaret N. Mangheni	Female	Agricultural Extension, PhD	Member
6.	Dr. Imelda Kashaija	Female	Agriculture - Plant Nematology, PhD	Member
7.	Dr. Callist Tindimugaya	Male	Water Resources, MSc	Member
8.	Dr. Racheal Namulondo	Female	Economics, PhD	Member
9.	Dr. Jesca Nakavuma	Female	Vet Medicine, PhD	Member
10.	Mr. Joseph Eritu	Male	Human Resource Development and Management, MSc	Member
11.	Dr. Peace Musiimenta	Female	Gender Studies, PhD	Member
12.	Prof. Peter Atekyereza	Male	Sociology, PhD	Member
13.	Prof. David Guwatudde	Male	Medical Statistics, PhD	Member
14.	Prof. Charles Ibingira	Male	Medicine in Surgery PhD	Member
15.	Mr. Henry Kanyike	Male	Training Methodology for Vocational Trainers	Community Representative

4.4 Progress



CAES-REC Site monitoring visit to ACLAIMS Africa Limited

Throughout the year, the REC convened seven meetings to review and deliberate on research proposals, addressing ethical concerns and providing recommendations for approval or modification. These sessions fostered robust discussions on emerging ethical

issues across agricultural, environmental, social, and economic research. Additionally, the REC held its quarterly institutional meetings, facilitating progress discussions and ethical considerations specific to each quarter. During this reporting period, CAES-REC

evaluated 22 research proposals/protocols across Agricultural Sciences (12), Natural Sciences (2), and Social Sciences and Humanities (8). Each submission underwent thorough and timely assessment to ensure compliance with ethical standards, methodological rigor, and regulatory alignment. The committee also conducted on-site monitoring of a research project titled "Proposal to conduct a Baseline study for the proposed Conservation and rural Enterprise (CARE) Project in Bwindi Impenetrable National Park and Budongo Central Forest Reserve," submitted by ACLAIMS Africa Limited under reference number CAES-REC-2023-06. This proactive measure aimed to verify protocol implementation and identify potential ethical concerns during research activities, ensuring continuous adherence to ethical standards in real-world settings.

4.5 Training of CAES-REC members by experts constituted by UNCST

The CAES – REC members were trained in Good Clinical Practices and Human Subject Protection course by Uganda National Council for Science and Technology and passed the assessment as required. In addition to its core functions, CAES-REC conducted training sessions for 50 researchers and students, enhancing their awareness and understanding of research ethics.



The Principal of CAES, Prof Gorettie Nabanoga giving closing remarks at the training of CAES-REC members by experts constituted by UNCST



05

KNOWLEDGE SHARING & PARTNERSHIPS

5. Knowledge Sharing and Partnerships

5.1 Soybean Breeders Workshop at Makerere

Despite the remarkable progress made by soybean-growing nations and the undeniable health and economic benefits the crop offers, several challenges persist, hampering productivity. These include pest and disease pressures, unpredictable weather patterns such as prolonged droughts and heavy rains, suboptimal agronomic practices, limited access to quality seeds for farmers, labor-intensive production processes, and market volatility including price fluctuations and supply-demand imbalances. Recent global events, such as Russia's invasion of Ukraine and the ongoing impacts of COVID-19, have further exacerbated uncertainties in the soybean market, driving up prices due to surging input costs and disruptions in fertilizer supplies and alternative crops. To tackle these challenges, strategies such as leveraging homegrown technologies, adopting a localized seed business model, and taking a holistic approach to the entire value chain are being explored. Additionally, adapting crop management practices, enhancing soil conservation efforts through

reduced tillage, promoting crop diversification, soil erosion prevention, and developing drought-tolerant soybean varieties are deemed crucial to combat the emerging climate-related challenges. In pursuit of solutions, soybean breeders from the USA, Brazil, various African nations, and scientists from CGIAR convened at Makerere University on November 28, 2023. Hosted by the Makerere University Centre for Soybean Improvement and Development (MAKCSID) and the Soybean Innovation Lab (SIL) of the University of Illinois, with support from USAID, the meeting aimed to facilitate knowledge exchange, foster collaboration, and brainstorm ways to enhance soybean productivity. During their four-day visit, the breeders toured screening facilities, soybean fields, and the Early Generation Seed Unit at MUARIK, providing invaluable insights for improvement. They also visited trial sites in Nakabango/Jinja) and the Buginyanya ZARDI, gaining firsthand experience and contributing to ongoing research efforts.



Dr. Gedfrey Chigeza from IITA Zambia (standing) responds to queries from Prof. Tukamuhabwa



Prof. Brian Diers from the University of Illinois sharing updates from SIL.

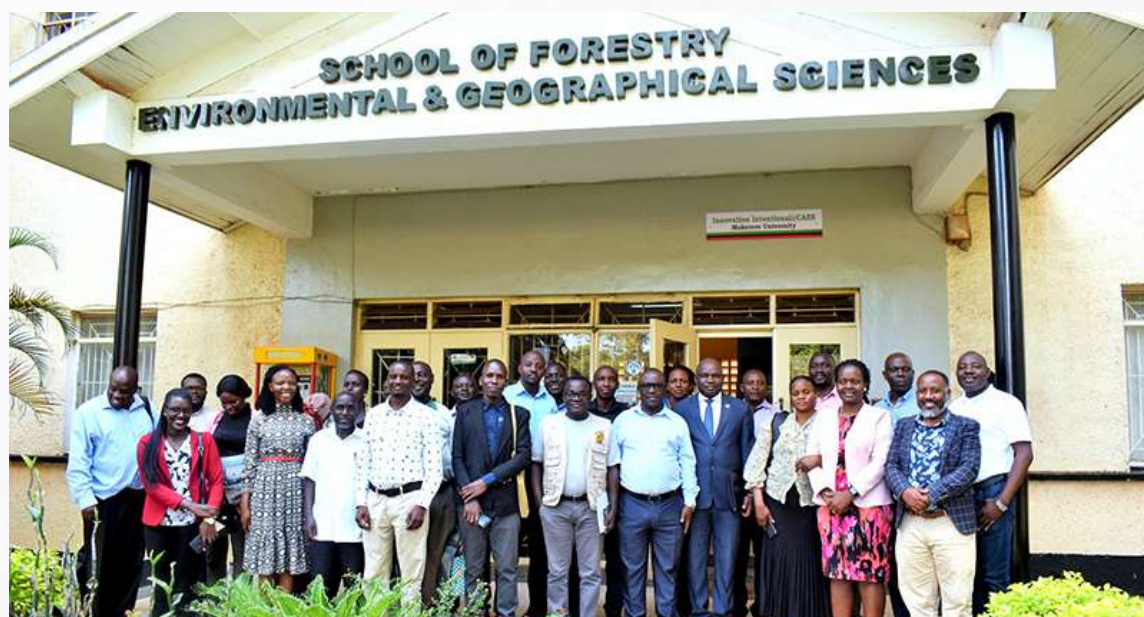


Left: The breeders touring one of the soybean fields at MUARIK. Right: Soybean breeders with the Principal of CAES, Prof. Gorettie Nabanoga (4th R); Deputy Principal, Prof. Yazidhi Bamutaze (3rd R); and the Dean SAS, Dr John Baptist Tumuhairwe (2nd R) during their meeting at Makerere.

5.2 Climate Science Policy Dialogue

On June 20, 2023, Makerere University School of Forestry, Environmental, and Geographical Sciences, in partnership with MUCCRI, EMLI, and World Wide Fund for Nature Conservation-Uganda Country Office (WWF-UCO), hosted a policy dialogue centered on climate science. This event, held at Makerere University under the theme **"Climate Change Knowledge Brokering,"** drew participants from diverse backgrounds, including researchers, policy-makers, civil society representatives, government officials, and private sector stakeholders. Despite increasing public awareness of climate change and ongoing adaptation efforts, Uganda faces a significant

adaptation gap that is expected to widen. Key barriers to effective adaptation include limited climate literacy and public engagement, underutilization of adaptation science, and inadequate financial resources. To address these challenges and contribute to closing the adaptation gap, Makerere University Climate Change Research Institute (MUCCRI) and Environmental Management for Livelihood Improvement Bwaise Facility (EMLI) aim to collaborate with partners. Their goal is to foster mutual learning and facilitate open dialogue among relevant stakeholders, particularly researchers, civil society organizations, policymakers, and the private sector.



Participants at the Policy Dialogue on Climate Science held at the School of Forestry, Environmental and Geographical Sciences (SFECS), College of Agricultural and Environmental Sciences (CAES), Makerere University on 20th June 2023.

5.3 CAES Announced Amongst the Best Innovators at the 29th Source of the Nile National Agricultural Show

The College of Agricultural and Environmental Sciences (CAES), Makerere University won a trophy for being among the best exhibitors in the academic institutions category at the 29th Source of the Nile National Agricultural Show held in Jinja from 4th-13th August 2023. The Source of the Nile National Agricultural Show is the largest of its kind in Uganda and is an annual event that has been held since 1990, attracting an annual average of 350 agricultural exhibitors from different parts of the country and beyond. The 10-day exhibition is organized by the Uganda National Farmers Federation (UNFFE) in partnership with the Ministry of Agriculture, Animal Industry and Fisheries

(MAAIF). It was held under the theme; "Fostering resilient agricultural value chains to drive agro-industrialization". Among the innovations showcased were; Black Soldier Fly (for alternative protein source material for animal feeds, & fertilisers), & in-vitro micro-propagation techniques for clean planting materials. Other innovations showcased included cost-effective feeds using local resources (e.g gliricidia and panicum), bio-pesticides for environmental sustainability, the newly released soybean varieties, state of the art water testing equipment, soil water & nutrients sensing machine, soil testing kits, bio-degradable maize stover punnets, farm record templates, indigenous micro organisms (imo).



CAES staff and students at the exhibition in Jinja

5.4 CAES Participates in Youth and Innovation Expo 2023

CAES was actively involved in the Youth and Innovation Expo 2023, a collaborative effort between Makerere University and UNDP. Held on October 6th-7th, 2023, at the Yusuf Lule Central Teaching Facility, the event centered around the theme **"Fostering Innovations for Uganda's Transformation & Development."** Distinguished guests, including the Deputy Speaker of Parliament, Hon. Thomas Tayebwa, and University officials led by the Chair Council, Mrs. Lorna Magara, graced the occasion.



CAES Exhibition and Outreach Coordinator, Dr Stephen Lwasa during the exhibition



A section of CAES students exhibiting the innovations from CAES

5.5 Training of Extension Workers

Makerere University conducted a comprehensive training program for 546 extension workers from Northern and Eastern Uganda, spanning from September 5th, 2022, to January 2023. This five-month initiative, hosted at Makerere University Agricultural Research Institute Kabanyolo (MUARIK), enlisted expertise from various academic departments including the College of Agricultural and Environmental Sciences (CAES), College of Natural Sciences (CoNAS), College of Veterinary Medicine, Animal Resources and Biosecurity (CoVAB), Makerere University Business School (MUBS), and officials from the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). Coordinated by Dr. Bernard Obaa, Senior Lecturer in the Department of Extension and Innovation Studies at CAES, the **"Provision of Training Services to**

Technical Staff of Local Governments for improved Extension Service Delivery to Farmers in Northern Uganda" program aimed to enhance extension service delivery to farmers in Northern Uganda. Covering a wide array of topics such as Integrated Pest and Disease Management, Climate Smart Agriculture, Postharvest Handling, Animal and Fish Feed Formulation, Breeding Management, Apiculture, Institutional Capacity Development, Agribusiness, Market Linkages, and Financial Management, the training addressed crucial areas for agricultural advancement. The Minister of State for Northern Uganda, Hon. Grace Freedom Kwiwucwiny, presided over the official closing ceremony at MUARIK on January 27th, 2023, marking the culmination of the successful training initiative.



Left: The Minister of State for Northern Uganda, Hon. Grace Freedom Kwiwuchiny (c), the representative of Makerere University Vice Chancellor, Prof. Buyinza Mukadasi (6th R) and the representative of the Head of the EU Delegation in Uganda (4th L) with some of the trained extension workers at the closing ceremony. Right: The Minister handing over equipment procured for extension workers.

5.6 The NARO-Mak Third Joint Scientific Conference held at Speke Resort Munyonyo



The Rt Hon. Prime Minister of Uganda, Robinah Nabbanja graced the conference

The NARO-Makerere Third Joint Scientific Conference, held from March 14th to 16th, 2023, at Speke Resort Munyonyo, was a significant gathering aimed at devising strategies for accelerated agro-industrialization, focusing on the African continent. The conference was inaugurated by the Prime Minister of the Republic of Uganda, the Rt. Hon. Robinah Nabbanja, and attended by notable figures such as the Minister of State for Animal Industry, Hon. Bright Rwamirama, and the Vice Chancellor of Makerere University, Prof. Barnabas Nawangwe, among others. Under the theme **"Innovations for enhancing productivity and agro-industrialization,"** the conference aimed to spotlight cutting-edge innovations and opportunities supportive of Africa's agro-industrial-

ization agenda. It also aimed to facilitate the establishment of viable networks and collaborations to catalyze agro-industrialization and stimulate the generation of new knowledge to address emerging challenges. Over the course of three days, participants, including researchers from Makerere University and NARO, as well as representatives from the public and private sectors, engaged in discussions on various topics, including Mechanization and Agro-Industrialization, modernization of post-harvest management and food safety systems, intensification of crop productivity and seed systems, development of the Animal Resources-based Industry, management of agriculture-fragile ecosystem interactions, and leveraging ICT-based innovations for agricultural transformation.



The Minister of State for Animal Industry, Hon. Bright Rwamirama with some of the keynote speakers on Day One of the conference.

5.7 Support to food security in Northern Uganda using Soybean



Some of the extension workers from Northern Uganda during a training at MUARIK

In collaboration with Development Initiatives for Northern Uganda (DINU), we distributed over 55 metric tons of Soybean foundation seed to various districts, including Karenga, Kabong, Amudat, Nabilatuk, Napak, and Nakapiripirit. Additionally, we conducted training sessions for 145 stakeholders from Karamoja, including District Agriculture officers, Extension workers, and Local seed business holders. These sessions focused on state-of-the-art seed and agronomic production practices, as well as post-harvest handling techniques. Furthermore, we are actively involved in the Soybean component of the National Oil Seeds Project (NOSP), funded by IFAD and the Government of Uganda. Operating from a hub in Kalamoja, this project spans across districts such as Napak, Nakapiripirit, Nabilatuk, Abim, and Kabong, aiming to enhance soybean production and promote sustainable agricultural practices in the region.

5.8 MaRCCI elevated to an African Host Centre for PhD Training in Plant Breeding

The Makerere University Regional Centre of Excellence for Crop Improvement (MaRCCI), operating under CAES, has been designated as a premier center for training high-quality PhDs in Plant Breeding and Biotechnology. Named as an “African Host Centre (AHU/C),” MaRCCI, in collaboration with the Department of Agricultural Production at CAES, is tasked with addressing the human resource gap in highly qualified specialists in these fields across Africa. The inaugural cohort of ten scholars from Benin, Kenya, Mozambique, Nigeria, South Sudan, and Uganda has already commenced their study programs, supported by funding from the Regional Scholarship and Innovation Fund (RSIF). Later this year, another group of four PhDs from Nigeria and Rwanda will join as cohort 2. This program aims to enroll a minimum of ten PhD students annually at Makerere University, fully funded, to meet the growing demand for expertise in Plant Breeding and Biotechnology across the continent.



One of the research labs at MaRCCI



06

**AWARDS
AND RECOGNITIONS**

6. Awards and Recognitions

CAES Management Congratulates;



- 1 Dr Robert Fungo upon his election as President, Federation of African Nutrition Societies (FANUS). Dr Fungo is a Lecturer in the Department of Food Technology and Nutrition at CAES.

2. The five recipients of the Vice Chancellor's Research Excellence Award



Dr Dorothy Nakimbugwe,
Assoc. Prof. (Department of Food
Technology and Nutrition)



Dr Anthony Egeru,
Assoc. Prof. (Department of
Environmental Management)



Prof. John H. Muyonga
(Department of Food Technology
and Nutrition)



Prof. Kaaya Natigo Archilleo
(Department Food Technology
and Nutrition)



Dr Mukisa Muzira Ivan,
Assoc. Prof. (Department Food
Technology and Nutrition).



A person wearing a white lab coat and glasses is holding a corn cob. The background is a lush green field of corn plants with yellow tassels. The image has a soft, blurred effect, emphasizing the agricultural setting.

07

MUARIK
AT A GLANCE

7. MUARIK at a glance

Introduction

The Makerere University Agricultural Research Institute, Kabanyolo (MUARIK) started as a University Farm in 1953 and was later upgraded to a fully-fledged research institute in 1996. It is one of the institutes of the College of Agricultural and Environmental Sciences (CAES), whose role is to support CAES' teaching, research, outreach, and production mandates. The institute sits on about 230 hectares of land and is the arm of the Makerere University that interfaces with the National Agricultural Research System. MUARIK has the quadruple mandate of 1) research, 2) training, 3) production, and 4) outreach. The objectives are to;

7.1 Functioning of MUARIK

As part of the National Agricultural Research System (NARS), MUARIK carries out research based on national priorities. These include biotechnology, tissue culture technology, plant breeding, development of improved farming techniques, agro-processing, value addition, and marketing. To facilitate research, the institute houses the graduate training and research laboratory, Continuing Agricultural Education Centre (CAEC), Makerere Regional Centre for Crop Improvement (MaRCCI), Centre of Excellence in Waste Management, Centre for Soybean Improvement and Development and the Consortium for Enhancing University Responsiveness to Agribusiness Development Limited (CURAD). In addition, two KOICA funded projects i.e. modern layers production unit, and a modern climate controlled greenhouse for vegetables production are housed at MUARIK. All these centers/units are run as independent units. MUARIK also houses research units for the School of Agricultural Sciences (Biotechnology Laboratory, Tissue Culture Laboratory, experimental fields, Horticulture Unit, Livestock Unit, and the black soldier fly project), the School for Food Technology, Nutrition, and Bioengineering, and the School of Forestry, Environmental, and Geographical Sciences. Currently, there is ongoing research on edible insects, worms as alternative feed for livestock, agroforestry, horticulture, and food processing and value addition for value chain improvement among others. There is strong research partnership with the Uganda Flowers Exporters Association (UFEA). Through this partnership, new flower species are being tested for commercial production in Uganda given the fact that the industry now has

to move from the export of single species (mainly roses) flower bunches to mixed species bouquets. There are also ongoing efforts to find native natural enemies for pests and diseases of Chrysanthemums through a collaboration with UFEA, Wageningen University and Research, breeders, and the National Agricultural Research Organization.

With regard to outreach, MUARIK offers on-spot technical advice to the farming community. Outreach activities mainly focus on schools and farmers. On average, over 600 primary, secondary, and tertiary schools with a total population of about 30,000 visit MUARIK annually. The institute also undertakes production of a wide range of crops and livestock. Although these units are primarily for commercial production, they are also used for teaching, research, and outreach activities.

Other important units housed at MUARIK include, a health clinic under the University Hospital, student hostels headed by the Warden under the university Dean of Students, security unit under the University Security unit, and a police post under the under the Uganda Police. The student hostels at MUARIK can accommodate over 70 undergraduate and about 20 postgraduate students who stay at the institute to gain practical experience in production and research under typical farming conditions. The postgraduate residents consists of students drawn from different countries in the East and Central Africa region such as the Democratic Republic of Congo, Rwanda, Zambia, Zimbabwe, Tanzania, Sudan, Eritrea, Somalia, Ghana, Nigeria, Liberia, Mozambique to mention a few.

7.2 Enterprises at MUARIK, their status and challenges

MUARIK is endowed with good soils, pasturelands, wetlands, woodlots (agroforestry, pine and eucalyptus), fish pond, stream, and a valley dam, all sitting on 230 hectares of land. A summary of the enterprises at MUARIK and brief notes about them is given in table 1 below:

Enterprises at MUARIK

1. About 100 Acres of Pastures
2. Dairy farm
3. Feed mill
4. Silage production
5. Study tours and learning
6. Poultry
7. Piggery
8. Banana plantations
9. Crops mainly maize and soybean
10. Horticulture
11. Rabbit Unit reactivated with the introduction of four breeds i.e New Zealand White, Chinchilla, California White, and Flemish Giant
12. Coffee plantation
13. Goat farming

7.3 Progress made

Improvement in enterprise management: Two new members of staff were recruited to head the Livestock and Crops units. In an effort to enhance management, crop level heads have also been appointed for banana, coffee, mango, and pastures. Records keeping have also been decentralized to ensure that expenditure, income, and stock can be audited at the sub unit level. Weekly work plans have also been improved. All these efforts are aimed at preparing MUARIK production units for increased interaction with students and CAES members of staff through training and research.

Renovation activities: With facilitation from CAES, MUARIK basic renovation is taking place at the at the poultry and piggery units. Notably, automatic drinkers have been introduced in these units. Security at the piggery unit (new fence installed) has been improved significantly.

Soybean production: The partnership between MUARIK and the Makerere University Centre for Soybean Improvement and Development through an outgrower scheme has been strengthened. Production has been maintained at about 50 acres per season and an overhead solar powered irrigation system installed on about 23 acres of land.

Pasture gardens expansion: To increase income and ability to feed animals, MUARIK has planted an additional 20 acres of Chloris gayana pasture. This brings the total area to about 100 acres.

Stores records: Records are in place and updated regularly. Requisition books, material transfer note book, bin cards and registers have been put in place. Accountability has improved as a result of ensuring that funds advanced to users are spent appropriately and items bought are received, checked, recorded and issued following store management procedures. The MUARIK store is now an independent unit.

Coffee plantation improvement efforts: The management of the coffee plantation is jointly being conducted together with members of staff from the Department of Agricultural Production especially in the area of soil, pest, and disease management. Pasture lands are in the process of being restored. Manure, fertilizer, and mulch are now regularly applied. This has resulted in increased yields and processing of beans is taking place. It is now possible to purchase roasted coffee beans from MUARIK. Work on branding is in progress to reveal the history of MUARIK's coffee plantation i.e. one of the oldest in Uganda.

Machinery purchase: With support from CAES, new equipment i.e. disc harrow, tractor mounted rake, and hay maker have been purchased. One truck and tractor will also undergo major repairs. These developments are going to have a significant positive impact on mechanization of operations and reflect the intentional approach towards revamping activities at MUARIK by CAES management.

Student and staff projects: MUARIK has also hosted several student and staff projects. The list below contains selected undergraduate student projects, while table 2 indicates graduate and staff research projects and the respective researchers.

7.4 List of undergraduate student projects conducted at MUARIK in 2023

1. **Kimera Godfrey** - Production of pumpkin under manure application and irrigation on a Ferralsol.
2. Ejidra William - Tomato yield response to application of poultry manure types with irrigation on a low fertility Ferralsol.
3. Kataike Annah Violet - spatial variability of carbon and major nutrient stocks in Chloris gayana pasture fields in Kabanyolo.
4. Rukundo Adrine - Characterization of nutrient composition of three Nakati genotypes from central Uganda.
5. Nasamba Immaculate - Variation in nutrient contents of banana cultivars grown at Kabanyolo.
6. Nakaye Judith Sitenda - Fluxes of carbon and nutrient stocks and nutritional status of coffee in the coffee field at Makerere university agricultural research institute, Kabanyolo.
7. Kobugabe Grace - Evaluation of surface nutrient balances and economic performance of banana enterprise at Kabanyolo.
8. Caroline Namanya - Sustainability of Chloris gayana pasture production system at Kabanyolo.
9. Avabo Micheal - Mineral nutrient contents of mango genotypes grown on a Ferralsol in Kabanyolo.
10. Namulinde Dagan - Characterization of nutrient composition of selected indigenous spider plant genotypes.
11. Tumulyame Banarbas - Variation in nutrient composition and yield of grape genotypes grown in MUARIK.
12. Celina Akurut - Nutrient recoveries by cutflowers under greenhouse conditions (On-going)
13. Tushabe Sennita - Enhancement of mango shelf life using ginger and aloe vera extracts.
14. Atandu Harmony - Effect of harvest procedure on the postharvest physiology and shelf life of tomatoes.
15. Akol Elly - Effects of storage temperatures and storage materials on the physiochemical properties of maize grain.
16. Okello Solomon - Evaluating the efficacy of selective herbicides for weed management among Maksoy soybean varieties.
17. Agaba Lonius - Effect of inter-row spacing on the performance of Maksoy soybean varieties.
18. Nalubega Sharon Grace - Assessment of maize double haploid inbred lines for forage in open field conditions.
19. Nakaye Irene - Effect of plant beneficial microbes and fertilizers on the vigor of potato (*Solanum tuberosum*) seedlings obtained from true potato seeds.

20. Oyella Franka – Characterization of grape genotypes collected from Western Uganda.
21. Ayella Simon - the influence of stem quality and vase solutions on cut flower vase life in rose (*Rosa hybrida* L.).
22. Contrasting common mulching materials with substitute mulching materials in improving soil conditions and cabbage yield.
23. Development of a smart handheld soil moisture and nutrient sensor with an integrated fertilizer rate calculator for improved nutrient use efficiencies in farmers' fields in Uganda.
24. Effect of black soldier fly frass on soil health and vegetable productivity.

7.5 Partnerships

MUARIK has MOUs with several institutions. These include:

- Chonbuk National University International Agriculture Development and Cooperation Center
- Moon Agriculture and Processing Co Ltd.
- Consortium for enhancing University Responsiveness to Agribusiness Development Limited (CURAD)
- The Hive Uganda

Partnerships that are being pursued include:

- Grainpulse Ltd: MUARIK is exploring the possibility of demonstrations and off taker arrangements with this company in the areas of horticulture, coffee, maize, soybean, and pastures.
- Wageningen University and Research: There are ongoing discussions on setting up model production units to demonstrate Nature Intensive Agriculture and a prototype for Tropical Horticulture Resilience.
- Wageningen University and Research: Future-proof and bio-control based Chrysanthemum production.
- Uganda Flowers Exporters Association: There are ongoing trials on summer flowers through a project funded by the Makerere Research and Innovation Fund.
- Association of Vanilla Exporters from Uganda, Catholic Relief Services, and Ministry of Agriculture, Animal Industry, and Fisheries: Towards a scientific basis for declaration vanilla harvest dates in Uganda.
- KOICA Uganda Volunteer Programme: A care farm has been initiated by a group of volunteers from South Korea. The volunteers have also developed a draft Landscaping plan for MUARIK.

7.6 Opportunities at MUARIK

MUARIK presents numerous opportunities:

7.6.1 Land resources:

The large acreage at MUARIK totaling 230 hectares (562.5 acres) has high potential for training students in a variety of crop, forestry and animal enterprises including development of skills using the existing wood and metal workshops.

7.6.2 Proximity to urban area and to NaCRRI

MUARIK has excellent access to a ready market with good a road connection to both Kampala city and NARO's National Crop Research Resources Institute at Namulonge.

7.6.3 Academic and support staff

MUARIK has access to CAES's technical staff with much endowment of skills and knowledge in the fields of agriculture, food, forestry and environmental sciences. MUARIK has an excellent opportunity to use these skills by engaging in profitable enterprises for food production, value addition and environmental management to make a significant contribution towards food and nutritional security at Makerere University and the country.

7.7 Outreach

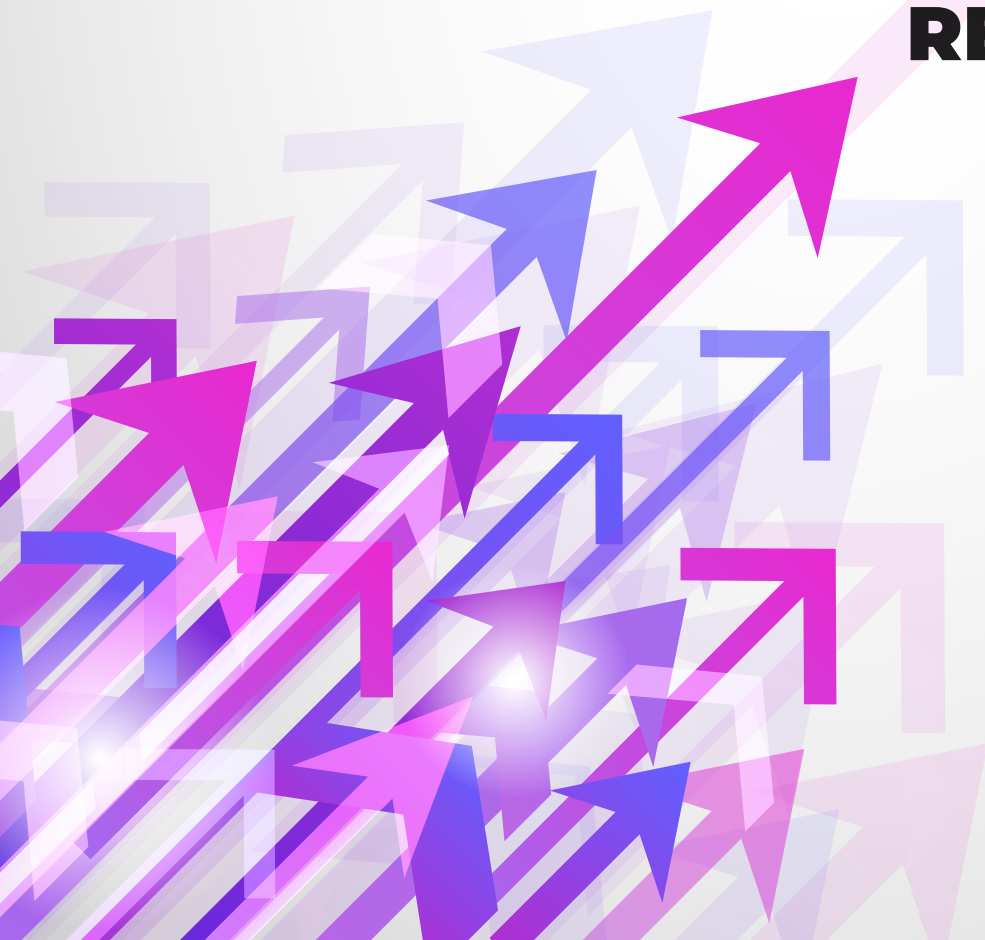
The farm often receives pupils and students interested in physical observation of machinery, tools, forage, weed, pests and diseases specimen that are covered and school curriculum but not easily available in schools. The farm also receives farmers and other visitors interested in learning how to produce organic pigs, coffee and fruit tree seedlings, flowers, grafting, mixing feeds, produce hay bales, compost manure, and local/crossed chicken. Some companies promoting new crop varieties, agrochemicals are interested in establishing roadside demos.

Proposed short training courses: Due to high demand of short duration training in the field of general Agriculture, a training program focusing on holiday makers, school drop outs, famers and general public interested in Agriculture can be started.



08

HUMAN RESOURCES



7. Human Resources

Appointments



Dr Revocatus Twinomuhangi
DEAN, School of Forestry, Environmental
and Geographical Sciences



Dr Julia Bulya L. Kigozi,
DEAN, School of Food Technology,
Nutrition and Biosystems
Engineering



Dr Ivan Muzira Mukisa, Assoc Prof.,
HEAD, Department of Food Technology
and Nutrition

Table 11: Promotions, Confirmations, Resignations

Promotions			
NO.	Name	Department	Rank
1.	Dr Yazidhi Bamutaze	Geography, Geo-Informatics and Climatic Sciences	Professor
2.	Dr Jim Ayorekire	Forestry, Biodiversity and Tourism	Associate Professor
3.	Dr Gabriel Elepu	Agribusiness and Natural Resource Economics	Associate Professor
4.	Dr Peter Tumutegyeize	Agricultural and Biosystems Engineering	Senior Lecturer
5.	Dr Robert Mugabi	Food Technology and Nutrition	Senior Lecturer
6.	Dr Fred Yikii	Environmental Management	Lecturer
7.	Dr Kenneth Balikoowa	Environmental Management	Lecturer
8.	Dr Lucy Mulugo	Extension and Innovation Studies	Lecturer
9.	Dr Stephen Lwasa	Agribusiness and Natural Resource Economics	Lecturer
10.	Dr Kanifa Kamatara	Agricultural Production	Lecturer
11.	Dr Prossie Nakawuka	Agricultural and Biosystems Engineering	Lecturer
12.	Dr Tonny Obua	Agricultural Production	Lecturer
13.	Dr. Stellah Byakika	Food Technology and Nutrition	Lecturer
14.	Dr George William Omiat	Agribusiness and Natural Resource Economics	Lecturer
15.	Dr Catherine Mulinde	Geography, Geo-Informatics and Climatic Sciences	Lecturer
16.	Dr Agatha Syofuna	Forestry, Biodiversity and Tourism	Lecturer
17.	Dr Isaac Dramadri Onziga	Agricultural Production	Lecturer
18.	Dr Christopher Mawa	Extension and Innovation Studies	Lecturer
19.	Dr Paul Aseete	Agricultural Production	Lecturer
20.	Dr Deogratius Luyima	Agricultural Production	Lecturer

21.	Ms. Prescah Florence Muheebwa	Forestry, Biodiversity and Tourism	Assistant Lecturer
22.	Ms. Mercy Namara	Department of Agricultural Production	Assistant Lecturer
23.	Mr. Alex Tumusiime	Department of Agricultural Production	Technical Assistant
23.	Mr. Ivan Goby	Department of Agricultural Production	Technical Assistant

Ordinary contracts

1.	Mr. Habinshuti Simon Johnbright	Department of Agricultural Production	Assistant Lecturer
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Confirmations

No.	Name	Department	Rank
1.	Dr Caroline Aboda	Geography, Geo-Informatics and Climatic Sciences	Lecturer
2.	Dr Moses Okech	Extension and Innovation Studies	Lecturer
3.	Dr Asha Nalunga	Agribusiness and Natural Resource Economics	Assistant Lecturer
4.	Dr Denis Nsubuga	Agricultural and Biosystems Engineering	Assistant Lecturer

Post retirement contracts

No.	Name	Department	Rank
1.	Prof. Charles Muyanja	Food Technology and Nutrition	Professor

Resignations

1.	Dr Florence Turyashemerwa	Food Technology and Nutrition	Lecturer
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Retirees

No.	Name	Department	Rank
1.	Mr. Steven Katende	Agricultural Production	Technician
2.	Ms. Maria Nalukwago	Agribusiness & Natural Resource Economics	Cleaner
3.	Mr. Jonas Serugendo	Agribusiness & Natural Resource Economics	Cleaner

Deceased members of staff

No.	Name	Department	Rank
1.	Dr Francis Tibayungwa	Agricultural Production	Lecturer



09

**CAES
PUBLICATIONS
2023**

9. CAES Publications 2023

School of Agricultural Sciences

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28. Kigambo M., Wasswa P., Obala J., Nakibuule J. and Mugisha J. (2023). Effect of seed source, size and treatment on potato growth and yield. *Makerere University Journal of Agricultural and Environmental Sciences*, 12 (1): 1 – 22
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31. Mbaziira, J. 2023. Insights into Agropastoral communities' Innovations to drought in Uganda's cattle corridor. <https://www.sciencedirect.com/science/article/pii/S2773032823000020>
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3. Anna Muchwampaka Kyokuhair, Colin A. Chapman, Patrick A. Omeja, David wesigye Tumusiime, Banana Yabezi Abwoli, and Michael J. Lawes (2023). Mitigating crop-raiding by forest elephants and baboons at Kibale National Park. *African Journal of Ecology*, Vol 61, No.1 March 2023. <https://doi.org/10.1111/aje.13095>
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10

BUDGET PERFORMANCE ACHIEVEMENTS, CHALLENGES FUTURE PLANS

10. Budget Performance

Makerere University
College of Agricultural and Environmental Sciences
Financial Statement

June 30, 2023			
	Notes	Sub Total	Total
Approved Budget	1	2,042,858,412	
<i>Revised Budget</i>			2,042,858,412
Releases/Warranties			
<i>Quarter 1-4</i>	2	2,042,858,412	
Total Releases/Warranties			2,042,858,412
Expenditure			
<i>Actual Expenditure</i>	4	2,042,585,700	
<i>Encumbrances</i>	3	-1	
			2,042,585,699
Balance	5		272,713

11. Achievements

- i) Establishing a **“Transformation Pact”** via ‘grassroots’ departmental engagement (rather than top-down agenda) for entire college to spur innovation
- ii) Established new College Mantra - **“Innovation Intentional @CAES”**
- iii) Curriculum for about 15 programmes have been revised and are undergoing approval processes. The curriculum for some of the programmes were reviewed to be innovation intentional, with enhanced content that skills for entrepreneurial green economies and incorporated learner-centered and gender-responsive delivery modes.
- iv) Started testing a pilot department model that reduces teaching loads and allocates additional faculty time for creative outreach efforts (e.g., creating industry internships)
- v) Revitalized staff motivation engagements toward building a more cohesive team at CAES.
- vi) The Research and Ethics Committee (REC) at CAES approved and launched by National Council for Science and Technology.
- vii) The Journal of Agricultural & Environmental Sciences (MUJAES) revitalized to raise our visibility with respect to research dissemination. The 30 acre SFECS Botanical Garden for in-situ conservation of indigenous tree species at MUARIK launched.
- viii) Several Academic national and international conferences held to facilitate information exchange, increasing the visibility of CAES and networking.
- ix) Revitalizing MUARIK to improve research and farm production for commercialization training, among others.

12. Challenges

1. **Inadequate resources** - Problem Based Learning/ Practical-based Training is resource intensive and the current facilitation is not sufficient to support with innovative pedagogical delivery and application of innovative training method.
2. **Poor laboratory infrastructure and equipment** - All labs need refurbishment and some equipment need replacement.
3. **Lack of technicians** to support practical training in labs and in the field, as such, most of the training is theoretical and yet the curricula we deliver is 50% practical oriented.
4. **Old fleet of vehicle to facilitate students' field practicals** - **All the college vehicles have** exceeded the recommended 10 years useful life, hence are all due for disposal as most of them are over 20yrs old and are no longer fit for insurance cover. However, given that there is a government freeze on motor vehicle purchases and limited resources, we continue to use the old fleet to transport students to various destinations for their field practices, exposing to high risks due to lack of alternative means. Please note that motor vehicles in the college is a teaching material which is essential in facilitating student practical learning and training. This situation continues to challenge our aspiration of improving the quality of Teaching & Promoting Learner-centered/Practical-based Training and collaborative Learning.
5. **Lack of a clear policy to optimize and harness the full potential of MUARIK** - The University council commissioned a committee to develop policy/ies that would govern the operation of all units in the category of MUARIK.
6. **Dwindling grants to CAES**
7. **Inadequate exposure of students to practical training**- The main infrastructure assets at CAES' disposal in the implementation of STEM programmes and delivery of practical oriented training to the students are still suboptimal considering the needs and student numbers. We are instituting a problem-based-Student-community-local government research engagements intentioned at providing requisite skills to enable our graduates handle contemporary challenges and issues in the mandated fields and transform communities. We will be intentional to engage local governments and private sector in this engagement. We could consider fast-tracking the provision of infrastructure at Kabanyolo in order to relocate CAES to MUARIK for better and efficient delivery in her practical training mandate.

13. Future Plans

- i) Build synergies and strategically leverage our Private-Public-Partnerships in providing innovative solutions to National and Regional Challenges.
- ii) Leverage the innovations at CAES, to provide products and services.
- iii) Continue to re-tool faculty for the delivery of Innovation-Intentional, learner-centered, and Gender-responsive curricula.
- iv) Implement practical learning at MUARIK for all 8 Departments with respect to internships, in-semester practicals, recess, and students' research projects; and fully operationalize and commercialize the university farm.
- v) Begin institutionalizing Student-Faculty, Faculty-Faculty and Student-Student innovation mentorship pairs
- vi) Generate internal resources to supplement funds from government subventions.
- vii) Develop and implement an internal reward system for exceptional performance.



14

STAFF ESTABLISHMENT

14. Staff Establishment

COLLEGE / ADMINISTRATIVE UNIT		NAME OF COLLEGE PRINCIPAL OR HEAD OR ADMINISTRATIVE UNIT	
College of Agricultural and Environmental Sciences		Prof. Gorettie Nabanoga	
S/N	Name Of Staff	Position	Gender
Administrative Staff			
1	Jofrina Kyohairwe	College Registrar	F
2	Tom Vok Elwana	Accountant/ Team Leader	M
3	Annet Naluyinda	Accountant	F
4	George William Opee	Accountant	M
5	Harriet Hawa Juma	Principal Human Resource Officer	F
6	Mary Nantale	Administrative Secretary 1	F
7	Christine Apolot Oditte	Senior Administrative Assistant	F
8	Grace Apili	Senior Administrative Assistant	F
9	Dan Kiganda	Assistant Registrar	M
10	Kabejja Hasifa	Principal Communications Officer	F
11	Kasemiire Mariam	Wed Administrator	F
Support Staff			
12	Hamba Loyce	Secretary	F
13	Anyaku Isaac	Custodian	M
14	Peter Walusimbi	Driver	M
15	Ntambi Jimmy	Driver	M
16	Magal Joseph	Security Guard	M
17	Kibirango Charles	Security Guard	M
18	Kidyani Paul	Security Guard	M
19	Kabanda Margaret	Library Assistant	F
20	Ms. Gorreti Aguttu	Principal Technician	F
21	Ms. Maria Nalukwago	Cleaner	F
22	Mr. Jonnes Sserugendo	Cleaner	M
23	Ms. Immaculate Nakafeero	Pool Stenographer	F
24	Dorothy Nabakabya	Senior Technician	F
25	Ambrose Atwine	Technician	M
26	Jessica Kaahwa	Copy Typist	F
27	Ponsiano Sendegeya	Lab Attendant	M
28	Kaitsei Benny	Sanitary Cleaner	M
29	Nasanga Juliet	Cleaner	F
30	Namubiru Justine	Cleaner	F
31	Namudu Sarah	Cleaner	F
32	Naggayi Teddy	Messenger/Cleaner	F
33	Ndagire Aidah	Sanitary Cleaner	F
34	Kisitu Daniel	Computer Technician	M
35	Nanteza Florence	Library Assistant	F

36	Tumwesigye Phoebe	Administrative Assistant II	F
37	Namirembe Goretti	Sanitary Cleaner	F
38	Nanziri Sarah	Administrative Secretary III	F
39	Nalwanga Shiffah	Messenger	F
40	Namazzi Mayanja Gorretti	Head Cleaner	F
41	Namukwaya Margaret	Cleaner	F
42	Kiggundu Habibu	Cleaner	M
43	Birungi Rose	Cleaner	F
44	Mwiyeretsi James	Sanitary Cleaner	M
45	Nassanga Costance	Sanitary Cleaner	F
46	Musaazi Matthias	Security Guard	M
47	Kato Tom	Driver	M
48	Buzimwa Muhammadi	Turn Boy	M
49	Wairagala Bonny	Turn Boy	M
50	Alelo Christine	Security Guard	F
51	Mutebi Emmanuel	Senior Technician	M
52	Mzee Patrick	Laboratory Assistant	M
53	Najjuma Christine	Technical Assistant	F
54	Nagaddya Harriet	Lab. Attendant	F
55	Kawooya Teddy Mary	Lab. Attendant	F
56	Nabimanya Deborah	Cleaner/Messenger	F
57	Kyobutungi Edith	Cleaner/Messenger	F
58	Kabonesa Grace	Cleaner	F
59	Bukenya Joseph	Labourer	M
60	Nanozi Margaret	Cleaner/Messenger	F
61	Muhereza Richard	General Farm Worker	M
62	Onyera Mary	Gardener	F
63	Nantale Agnes	General Farm Worker	F
64	Nakaana Peninah	Copy Typist	F
65	Mr. Andrew Otim	Technician	M
66	Mr. James Kaddu Makubuya	Technician II	M
67	John Tumwijukye	Ox-Man	M
68	Mr. Ronald Nsobya	Ox-Man	M
69	Nakalema Imelda	Messenger/Cleaner	F
70	Nanyonga Annet	Senior Copy Typist	F
71	Nambatya Ruth	Copy Typist	F
72	Kasujja Geoffrey	Lab. Assistant	M
73	Ndagire Deborah	Cleaner/Messenger	F
74	Naggayi Teddy	Messenger/Cleaner	F
75	Ndagire Aidah	Sanitary Cleaner	F
76	Nankunda Bennet	Custodian	F
77	Nakiyemba Consolata	Administrative Secretary II	F
78	Namukwaya Ruth	Lab. Attendant	F
79	Ssentomero Dan	Technician I	M
80	Kusemererwa Aggrey	Driver	M
81	Sombi Kella	Cleaner	M

82	Nagawa Maimuna	Sanitary Cleaner	F
83	Musoke Harriet	Cleaner	F
84	Namukwaya Margaret	Cleaner	F
85	Natamba Leo	Farm Manager	M
86	Mr. Banjwa H. Samuel	Asst. Foreman	M
87	Kiwanuka Robert	Tractor Driver	M
88	Okello Richard	Carpenter	M
89	Musoma Moses	Driver	M
90	Musisi Vincent	Sanitary Cleaner	M
91	Ntongo Edith	Sanitary Cleaner	F
92	Mutungire Bowers	General Farm Worker	M
93	Toko George	General Farm Worker	M
94	Kaaja Yusuf	General Farm Worker	M
95	Nabwire Immaculate	General Farm Worker	F
96	Male Stuart	General Farm Worker	M
97	Nambaziira Harriet	General Farm Worker	F
98	Musisi Godfrey	General Farm Worker	M
99	Nambooze Joyce	General Farm Worker	F
100	Ssentamu Godfrey	General Farm Worker	M
101	Nabisubi Kasifa	General Farm Worker	F
102	Nuwagaba Abias	General Farm Worker	M
103	Ndezaho Godfrey	General Farm Worker	M
104	Nandawula Margret	General Farm Worker	F
105	Nanfuka Harriet	General Farm Worker	F
106	Zaguma Godfrey	General Farm Worker	M
107	Balyejusa Samuel	General Farm Worker	M
108	Tumukunde Herbert	Clerical Officer - Accounts	M
109	Berunga Winfred	Clerk Of Works	F
110	Tumushabe Jannet	Library Assistant	F
111	Byaruhanga Andrew Simon	Security Guard	M
112	Tumusiime Yosinta	Office Messenger	M
113	Sabiiti Charles	Trail Cutter	M

Department of Agricultural Production

118	Kyamanywa Samuel	Professor	M
119	Tukamuhabwa Phinehas	Professor	M
120	Basamba Ali Twaha Ateenyi	Associate Professor	M
121	Karungi Jeninah	Associate Professor	F
122	Talwana Herbert	Associate Professor	M
123	Kabi Fred	Associate Professor	M
124	Mukasa Settumba Blasio	Associate Professor	M
125	Kugonza Donald Rugira	Associate Professor	M
126	Mpairwe Denis R	Associate Professor	M
127	Tumuhairwe John Baptist	Associate Professor	M
128	Nambi-Kasozi Justine	Senior Lecturer	F
129	Tusiime Geofrey	Senior Lecturer	M
130	Edema Richard	Senior Lecturer	M

131	Ebanyat Peter	Senior Lecturer	M
132	Katongole Constantine Bakyusa	Senior Lecturer	M
133	Bisikwa Jenipher	Senior Lecturer	F
134	Ochwo Ssemakula M K N	Senior Lecturer	F
135	Katuromunda Sylvester	Senior Lecturer	M
136	Odong Thomas Lapaka	Senior Lecturer	M
137	Wasswa Peter	Senior Lecturer	M
138	Tibayungwa Francis	Lecturer	M
139	Olupot Giregon	Lecturer	M
140	Walusimbi Sadhat	Lecturer	M
141	Zziwa Emmanuel	Lecturer	M
142	Ongom O Robert Cyrus	Lecturer	M
143	Opolot Emmanuel	Lecturer	M
144	Taulya Godfrey	Lecturer	M
145	Musinguzi Patrick	Lecturer	M
146	Nuwamanya Epraim	Lecturer	M
147	Alou Isaac Newton	Lecturer	M
148	Mwije Anthony	Lecturer	M
149	Tibezinda Mary	Assistant Lecturer	F
150	Kamatara Kanifa	Lecturer	F
151	Magala Henry	Assistant Lecturer	M
152	Idibu Joachine	Assistant Lecturer	M
153	Simon John Bright Habinshuti	Assistant Lecturer	M
154	Obua Tonny	Lecturer	M
155	Lutakome Pius	Assistant Lecturer	M
156	Nampijja Zainah	Assistant Lecturer	F
157	Nyamaizi Sylvia	Assistant Lecturer	F
158	Kyeyune Gerald	Chief Technician	M
159	Kiirya David	Chief Technician	M
160	Serunjoji Katende Steven	Principal Technician	M
161	Natumanya Robert	Principal Technician	M
162	Kakooza Lydia	Principal Technician	F

Department Of Agribusiness and Natural Resource Economics

163	Gabriel Elepu	Senior Lecturer	M
164	Bernard Bashaasha	Professor	M
165	Johnny Mugisha	Professor	M
166	Dick Sserunkuuma	Professor	M
167	Theodora.S. Hyuha	Assoc. Professor	M
168	Mukadasi Buyinza	Professor /Academic Registrar	M
169	Fredrick Bagamba	Senior Lecturer	M
170	Jackline Bonabana-Wabbi	Associate Professor	F
171	Gracious. Diiro	Senior Lecturer	M
172	Rosemary Isoto	Lecturer	F
173	Stephen Lwasa	Lecturer	M
174	Ilukor John	Lecturer	M
175	Alice Turinawe	Lecturer	F

176	Alex Tatwangire	Lecturer	M
177	Florence Lwiza Nsereko	Lecturer	F
178	George Omiat	Lecturer	M
179	Paul Aseete	Lecturer	M
180	Elizabeth. Ahikiriza	Assistant Lecturer	F

Department of Extension and Innovation Studies

181	Turyahabwe Nelson	Professor	M
182	Agea Jacob Godfrey	Professor	M
183	Najjingo Mangheni M K	Associate Professor	F
184	Kibwika Paul	Associate Professor	M
185	Nabanoga Gorretie	Associate Professor	F
186	Miir Richard	Senior Lecturer	M
187	Isubikalu Prossy	Senior Lecturer	F
188	Kyazze Florence Birungi	Senior Lecturer	F
189	Obaa Bernard Bonton	Senior Lecturer	M
190	Karuhanga Monica	Lecturer	F
191	Karubanga Gabriel	Lecturer	M
192	Mubangizi Narisi	Lecturer	M
193	Nasirumbi Losira	Lecturer	F
194	Akello Sarah	Lecturer	F
195	Orum Emuria Boniface	Lecturer	M
196	Okech Moses	Lecturer	M
197	Mulugo Lucy	Assistant Lecturer	F
198	Mawa Christopher	Assistant Lecturer	M
200	Biryomumaisho Dickson	Assistant Lecturer	M
201	Mukebezi Rebecca	Assistant Lecturer	F

Department of Agricultural and BioSystems Engineering

202	Wanyama Joshua	Senior Lecturer	M
203	Isa Kabenge	Associate Professor	M
204	Allan John Komakech	Senior Lecturer	M
205	Ahamada Zziwa	Associate Professor	M
206	Ayaa Fildah	Asst. Lecturer	F
207	Peter Tumutegereize	Lecturer	M
208	Nicholas Kiggundu	Senior Lecturer	M
209	Robert Kyeyune Kambugu	Lecturer	M
210	Julia Kigozi	Senior Lecturer	F
211	Sam Cherotich	Assistant Lecturer	M
212	Prossie Nakawuka	Assistant Lecturer	F
213	Francis Okori	Assistant Lecturer	M
214	Peter Mulamba	Lecturer	M
215	John Bosco Kawongolo	Senior Lecturer	M
216	Kivumbi Hussein Balimunsi	Senior Lecturer	M
217	Erion Bwambale	Assistant Lecturer	M

Department of Food Technology and Nutrition

218	John Muyonga	Professor	M
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219	Archileo Kaaya	Professor	M
220	Charles Muyanja	Professor	M
221	Yusuf Byenkya Byaruhanga	Assoc. Professor	M
222	Dorothy Nakimbugwe	Assoc. Professor	F
223	Ivan Muzira Mukisa	Assoc. Professor	M
224	Abel Atukwase	Senior Lecturer	M
225	Margaret Kabahenda	Senior Lecturer	F
226	Gaston Ampe Tumuhimbise	Senior Lecturer	M
227	Agnes Nabubuya	Senior Lecturer	F
228	Acham Hedwig	Senior Lecturer	M
229	Denis Male	Lecturer	M
230	Robert Fungo	Lecturer	M
231	Robert Mugabi	Lecturer	M
232	Florence Mary Turyashemererwa	Lecturer	F
233	Fred Brany Lukwago	Assistant Lecturer	M
234	Stellah Byakika	Assistant Lecturer	F
235	Joseph Balamaze	Chief Technician	M
236	Emmanuel Okalany	Principal Technician	M

Department of Environmental Management

237	Frank Kansiime	Professor	M
238	John R.S Tabuti	Professor	M
239	David Tumusiime	Professor	M
240	Vincent Muwanika	Assoc. Professor	M
241	Justine Namaalwa	Assoc. Professor	F
242	Bob Nakileza	Senior Lecturer	M
243	Anthony Egeru	Assoc. Professor	M
244	Kenneth Nyombi	Senior Lecturer	M
245	Patrick Byakagaba	Senior Lecturer	M
246	Ellen Kayendeke	Lecturer	F
247	Kinobe Joel	Lecturer	M
248	Kenneth Balikoowa	Assistant Lecturer	M
249	Erima Godwin	Assistant Lecturer	M
250	Ezra Natumanya	Assistant Lecturer	M
251	Fred Yikii	Assistant Lecturer	M
252	Faridah Nalwanga	Assistant Lecturer	F
253	Paul Musali	Lecturer	M

Department of Geography, Geo-Informatics and Climatic Sciences

254	Bamutaze Yazidhi	Professor	M
255	Tumwine Fredrick	Associate Professor	M
256	Mugagga Frank	Associate Professor	M
257	Twinomuhangi Revocatus	Senior Lecturer	M
258	Waiswa Daniel	Senior Lecturer	M
259	Isolo Mukwaya Paul	Senior Lecturer	M
260	Mfitumukiza David	Senior Lecturer	M

261	Nimusiima Alex	Lecturer	M
262	Nanteza Jamiat	Lecturer	F
263	Twinorugyendo Penninah	Lecturer	F
264	Sabiiti Geoffrey	Lecturer	M
265	Musoke Semakula Henry	Lecturer	M
266	Ddumba Saul Daniel	Lecturer	M
267	Wasswa Hannington	Lecturer	M
268	Mugume Isaac	Lecturer	M
269	Nseka Denis	Lecturer	M
270	Aboda Caroline	Lecturer	F
271	Mulinde Catherine	Lecturer	F

Department of Forestry, Biodiversity and Tourism

272	Nyakaana Jockey Baker	Professor	M
273	Banana Abwoli Yabezi	Professor	M
274	Tweheyo Mnason	Professor	M
275	Nyeko Philip	Professor	M
276	Obua Joseph	Professor	M
277	Eilu Gerald	Associate Professor	M
278	Okullo John Bosco	Associate Professor	M
279	Babweteera Fred	Associate Professor	M
280	Ahebwa W Manyisa	Associate Professor	M
281	Mwavu Nector Edward	Associate Professor	M
282	Balaba Susan Tumwebaze	Associate Professor	F
283	Bahati Joseph Basikhan	Senior Lecturer	M
284	Mugabi Paul	Senior Lecturer	M
285	Nakabonge Grace	Senior Lecturer	F
286	Orikiriza Baguma Lawrence Justus	Senior Lecturer	M
287	Ayorekire Jim	Senior Lecturer	M
288	Mbogga Michael Ssekaayi	Lecturer	M
289	Nagawa Christine Betty	Lecturer	F
290	Muhwezi Deus Kamunyu	Lecturer	M
291	Rutabatiina Abraham Mwesigye	Lecturer	M
292	Mugizi Francis	Lecturer	M
293	Kizito Simon	Lecturer	M
294	Boonabana Brenda	Lecturer	M
295	Ssekuubwa Enock	Lecturer	M
296	Ochieng Amos	Lecturer	M
297	Byaruhanga Micheal	Assistant Lecturer	M
298	Sseremba Owen Emmanuel	Assistant Lecturer	M
299	Syofuna Agatha	Assistant Lecturer	M
300	Nsobyia Joseph	Librarian	M
301	Mulwany Edward	Security Personnel	M



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**CAES CONTRACT
STAFF**

Caes Contract Staff

Contract staff paid by the college

No.	POSITION	NAME OF STAFF	GENDER	UNIT
1	Assistant Accountant	Namusoke Terry	F	Principal's Office
2	Assistant Accountant	Mbabazi Grace	F	Principal's Office
3	Systems Admin	Muhumuza Albert	M	Principal's Office
4	Records Clerk	Acheke Dinah	F	Principal's Office
5	Watchman	Kayima Humalu	M	Principal's Office
6	Custodian	Francis Musana	M	DEM
7	Custodian - MUARIK	Benjamin Ashok Ogutti	M	Principal's Office
8	Office Attendant	Namirembe Rose	F	Principal's Office
9	Office Attendant	Kisembo Wilson	M	Principal's Office
10	Driver	Mukonzi Eric	M	Principal's Office
11	Driver	David Kajozi Mubiru	M	Principal's Office
12	Driver	Mabonga Wilson	M	Principal's Office
13	Watchman	Owundo Dominic	M	Principal's Office
14	Administrative Assistant (Rec)	Gorret Kamoga Namukwaya	F	Principal's Office
15	Security Guard	Collin Wandwali	M	Principal's Office
16	Assistant Registrar	Hilda Mukune	F	Dean's Office SAS
17	Records Assistant	Joan Businge	F	SFECS
18	Security Guard	Darius Mboniyintwari	M	SFTNB
19	Accounts & Logistics	Muguruka Lugard	M	MUARIK
20	Coordinator Dvc	Taremwa Precious	M	MUARIK
21	Technician	Wamala Robert	M	SFTNB
22	Technician	Nkinzehiki Allan Moses	M	SFTNB
23	Computer Technician	Lutalo William	M	SFECS
24	Assistant Domestic Bursar	Kato Innocent Mwesige	M	MUBFS
25	Headman	Kugonza Robert	M	MUBFS
26	Cook	Kakyo Malyamu	M	MUBFS
27	Security Guard	Kasaija Ebenezer	M	MUBFS
28	Security Guard	Mugisa Expedito	M	MUBFS
29	Station Driver	Kyalimpa Wilson	M	MUBFS
30	Station Driver	Sembatya Paul	M	MUBFS
31	Store Man	Kemigisa Patience	M	MUBFS
32	Trail Cutter/Cleaner	Rutenta Wilson	M	MUBFS
33	Trail Cutter/Cleaner	Bamukusa Francis	M	MUBFS
34	Trail Cutter/Cleaner	Tibeya Adolf	M	MUBFS
35	Trail Cutter/Cleaner	Katuramu Clovis	M	MUBFS
36	Trail Cutter/Cleaner	Birungi Charles	M	MUBFS

37	Trail Cutter/Cleaner	Kisembo Vicent	M	MUBFS
38	Trail Cutter/Cleaner	Kusemererwa Charles	M	MUBFS
39	Trail Cutter/Cleaner (Ngogo)	Nyakahuma Richard	M	MUBFS
40	Trail Cutter/Cleaner (Ngogo)	Zahura James	M	MUBFS
41	Trail Cutter/Cleaner (Ngogo)	Atuhaire Samuel	M	MUBFS
42	Security Guard	Edelu Francis	M	MUARIK
43	Security Guard	Magino Richard	M	MUARIK
44	Security Guard	Lejorugu Benson	M	MUARIK
45	Security Guard	Ajowo William	M	MUARIK
46	Security Guard	Angutoko Marlon	M	MUARIK
47	General Farm Worker	Musinguzi Julius	M	MUARIK
48	General Farm Worker	Ndenzyaho Dominic	M	MUARIK
49	General Farm Worker	Bagenyi Mark	M	MUARIK
50	General Farm Worker	Nanfuka Sarah	F	MUARIK
51	General Farm Worker	Nakigozi Annet	F	MUARIK
52	General Farm Worker	Bsreba John	M	MUARIK
53	General Farm Worker	Nalugoye Grace	F	MUARIK
54	General Farm Worker	Eimana Stell	F	MUARIK
55	General Farm Worker	Kalenzi Festo	M	MUARIK
56	General Farm Worker	Agaba Issa	M	MUARIK
57	General Farm Worker	Kariia Julius	M	MUARIK
58	General Farm Worker	Nabakooza Imelda Mary	F	MUARIK
59	General Farm Worker	Niwamanya Tobias	M	MUARIK
60	General Farm Worker	Ssemambo Joseph	M	MUARIK
61	General Farm Worker	Mugumya Edgar	M	MUARIK
62	General Farm Worker	Ariho Benon	M	MUARIK
63	General Farm Worker	Muwonge Joseph	M	MUARIK
64	General Farm Worker	Byaruhanga Richard	M	MUARIK
65	General Farm Worker	Namwanje Robinah	F	MUARIK
66	Herdsmen	Muhereza Baram	M	MUARIK
67	Plumber	Nuwagira Saxson	M	MUARIK
68	Tractor Operator/Driver	Ssamanya Alex	M	MUARIK
69	Assistant Foreman-Machinery	Azizi Dara Charles	M	MUARIK
70	Assistant Foreman-Poultry	Mpanga Joshua Samuel	M	MUARIK
71	Training Coordinator	Awalo Mercy	F	MUARIK



MAKERERE UNIVERSITY
**COLLEGE OF AGRICULTURAL &
ENVIRONMENTAL SCIENCES (CAES)**

📍 Makerere University Road, Opposite University Library

✉ principal.caes@mak.ac.ug / pr.caes@mak.ac.ug

☎ (+256) 414 542277 🌐 www.caes.mak.ac.ug

✕ @MakCAES

