

Uganda Biosciences Information Center (UBIC)

Hand Over Report

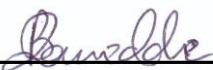
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Date: April 2020

Report prepared by:

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Signature:  Date: 15th April 2020

Report submitted to:

Dr. Godfrey Asea

Director, NaCRRI

Signature: _____ Date: _____

In the presence of:

Name: _____

Signature: _____

Designation: _____

Introduction

Uganda Biosciences Information Center (UBIC) is an information hub of the National Agricultural Research Organisation (NARO). UBIc was established in 2013 and is hosted at the National Crops Resources Research Institute (NaCRRI) —a NARO institute at Namulonge in Wakiso district. Currently, UBIc's activities are mostly supported by the Next Generation Cassava Project—an initiative of Cornell University.

UBIC exists to bridge the information and communication gap between the Ugandan public and agricultural research at NARO and other national, regional and international agricultural research and development institutions. Agricultural scientists have developed a spectrum of new technologies and processes to address perennial and problematic challenges and needs in agriculture, including: pests and diseases, climate change effects, and product quality.

UBIC's goal, mission and vision feed squarely into NARO's broader goal of enhancing the contribution of agricultural research to sustainable agricultural productivity, sustained competitiveness, economic growth, food security and poverty eradication.

Goal: To develop, produce, and disseminate information on modern biosciences innovations and advances in agricultural research in Uganda to facilitate informed decision making.

Mission: To foster public understanding of agricultural research for informed decision-making.

Vision: Better agricultural outcomes.

Objectives

1. *Influence target audiences to make informed decisions about biosciences application and regulation*

UBIC works with: farmers, students, scientists, policymakers, religious and cultural leaders, and the media; proving a platform for dialogue and information dissemination on modern biosciences for better and informed decision-making. We produce information materials, use media platforms and conduct awareness meetings.

2. *Strengthen biosciences training in the formal education system of Uganda*

UBIC develops and donates teaching aids to science educators and contributes biosciences literature and materials to support curriculum development at National Curriculum Development Center. We conduct essay writing and drawing competitions, outreach sessions and seminars in primary, secondary schools and tertiary institutions, as part of efforts to groom future leaders in science.

3. *Carry-out Biosciences outreach and communication capacity building*

Outreach activities are central to our work; enabling us to localize and disseminate factual information on modern biosciences and adequately engage Ugandans. Key

recipients of these activities include: policy makers, journalists, farmer associates, and journalists. Science communication training is done for scientists and journalists.

4. *Facilitate knowledge sharing and partnerships among biotech communication partners locally and internationally*

UBIC is part of national and international networks such as Uganda Biotechnology and Biosafety Consortium, Alliance for Science, and International Services for Acquisition of Agri-biotech Applications (ISAAA). Through these, we help to advance Uganda's science agenda and support international cooperation for advancements in modern biosciences for agriculture.

UBIC activities:

Awareness seminars, training meetings for targeted stakeholders' groups to promote dialogues and communication for increased understanding and decision-making on new agricultural technologies

Exhibitions and seeing-is-believing tours for various local, regional and international stakeholders to expose them to the research activities at NARO, and to farms to showcase agricultural innovations

Media engagements and speaking opportunities to increase positive media presence of agricultural innovations and technologies by interacting with media through meetings, engagements in NARO activities, and media programs on

Annual Writing and Drawing Contests to engage youth in formal education system in the discussion of relevant technologies for agricultural improvement in Uganda.

Schools Outreach Program to engage educators and learners so as to interest students in agricultural- related sciences and courses. We aim to share integrate the advances in agricultural research and applied technologies in the teaching materials and in the curriculum

Publications and information materials are produced and disseminated to create awareness about advances in agricultural innovations and technologies such as hybrids and biotech crops

Partners

- Africa Biosafety Network of Experts (ABNE)
- African Agriculture Technology Foundation (AATF)
- All academic institutions (including universities and schools)
- Center for Life Sciences (CLS)
- Cornell University
- International Center for Genetic Engineering and Biotechnology (ICGEB)
- International Service for Acquisition of Agri-biotech Applications (ISAAA)
- Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)
- Ministry of Education and Sports
- Ministry of Gender, Labour and Social Development
- Ministry of Science, Technology and Innovation
- Ministry of Water and Environment
- Miss Uganda Foundation

- National Agricultural Research Organization (NARO) Biotech Projects and PARIs
- National Curriculum Development Center (NCDC)
- New Partnership for Africa's Development (NEPAD)
- Program for Biosafety Systems (PBS)
- Science Foundation for Livelihoods (SCIFODE)
- Uganda National Council for Science and Technology (UNCST)
- Uganda Science Education Program (USEP)

Key achievements Phase 1 (2013-2017)

1. Passage of the National Biotechnology and Biosafety Bill

Participated in a number of activities implemented together with partners to support passage of the National Biosafety Bill (2017) by the 10th Parliament of Uganda on 4th October 2017. Activities included:

a. Community leaders engagements:

UBIC in collaboration with Cornell Alliance for Science (CAS) and Science Foundation for Livelihoods and Development (SCIFODE) organized 30 grassroots sensitization meetings targeting community and opinion leaders, farmers and youth groups. Annually participated in at least two national expos that attract over 4500 visitors. The aim was to increase appreciation of biotechnology products under research in Uganda, and help mobilize support for the passage of the National Biotechnology and Biosafety Bill. In the end, such training was expected to strengthen the capacity of a number of selected volunteers from constituencies of key members of Parliament so that they appreciate the role of Biotechnology for national development, and to build their skills in grassroots mobilization. Table 1 below shows the number of community leaders trained. Strategic partnerships developed with communication offices of other NARO Institutes, ISAAA, CAS, PBS, ABNE, OFAB, UBBC and the Ministry for Science and Technology.

Table 1. Number of participants in grassroots mobilization trainings organized in collaboration with CAS.

Location	Number trained		
	Male	Female	Total
Masaka	45	12	57
Mbale	77	31	108
Lira	55	13	68
Kampala	65	31	96
Total	242	87	329

b. Seeing-is-believing tours

In collaboration with the Uganda Biotechnology and Biosafety Consortium (UBBC), SCIFODE, (Program for Biosafety Systems (PBS) and Open Forum on Agricultural

Biotechnology (OFAB), UBIC organized 13 seeing-is-believing activities at NaCRRI for policy makers including the new ministers for Science, Technology and Innovation (MoSTI) [Figure 1], and State for Agriculture [Figure 2]; the Permanent Secretary and new officials for MoSTI, Members of Parliament; representatives from the President's office; media practitioners (Figure 3); regulators; university students; and researchers.



Figure 1. The Minister for Science, Technology and Innovation Hon. Elioda Tumesigwe, visiting the Biosciences Facility at NaCRRI.



Figure 2. Minister of State for Agriculture, Hon. Christopher Kibazanga, touring the Biosciences labs.



Figure 3. Engages journalists ascribed to the Uganda Parliamentary Press Association, and members of the Uganda Agribusiness Alliance.

c. Media engagements

Broadcast and print media presence was greatly increased annually to provide a platform for public discourse and debate on the technology and its regulation; Five public debates also organized in collaboration with three academic institutions, OFAB and UBBC. In an effort to amplify the voices for biotechnology, UBIC with local partners held the first ever Media Excellence Awards in Biotech Reporting in May 2017, to recognize journalists' work in increase public knowledge of biotechnology (Figure 4). We shall continue to engage and support our champions while grooming new media practitioners.



Figure 4. Representative of the MAAIF, DG- NARO and the awarded journalists.

d. Youth engagements

Together with Miss Uganda Foundation, UBIC conducted three bootcamps for about 60 Miss Uganda Contestants. We believe that the beauty queens have the power to positively influence women and the youth. At least five youth champions built and engaged to implement outreach activities. These included two Agriculture Champions were crowned during the 2016 Miss Uganda beauty pageant. UBIC, with partners, will support these two Agriculture Ambassadors to use televised school demonstrations, and social media, to promote greater appreciation of modern biotechnology in agriculture, and the need to regulate some of the biotechnologies. One of the Agriculture Ambassadors, Ms. Daisy Nyamon, has been engaging students and educators in 10 schools (Figure 5).



Figure 5. Ms. Nyamon monitoring the maize and bean gardens for one of the schools.

1. Integration of Modern Biotechnology in the education systems

UBIC also made progress in heightening integration of modern biosciences in the formal education system. The five national biotech essay writing competition 2017 targeting college and secondary schools students/educator, and two agriculture poster drawing contest targeting primary schools pupils/educators conducted. Over total 3700 students and educators engaged through these contests and at least 2000 students engaged through the visits. Partnerships developed with four universities, twelve schools, the National Curriculum Development Center and the Ministry of Education. by conducting the award ceremony for the five Annual National Biotech Essay Competitions and two National Primary Schools' Poster Drawing Competition for

Agriculture Development. In October 2017 (Figure 6). The essay writing contest, themed “*Uganda in 2025: How biotechnology will change agriculture*” attracted 222 essays received from 43 tertiary institutions and secondary schools from different parts of the country. The drawing competition themed “*Best Ways to Improve Agriculture in Uganda*” attracted over 1000 submissions from schools countrywide. The award ceremony exposed over 100 teachers and students from all participating schools and/or colleges to the biotechnology research at NaCRRI. UBIC always conducts an award ceremony for each Annual National Competition.



Figure 6. NARO Director General handing over a gift to one of the participants.

2. Development and dissemination of information materials

Twelve types of information materials developed and over 10,000 copies distributed: 30 CropBiotech Updates published about the biotech research and communication progress in Uganda. Distribution of information materials is critical during our activities and to get the message to our target audiences that we cannot directly engage. We continued to distribute information material to our nodes including members of Parliament, Ministries, Departments, Government agencies, NARO institutes, media houses, schools, universities and extension services offices. Information materials including the Top 10 Facts about Biotechnology and Biosafety in Uganda by 2015; Quotable Quotes about Biotech in Uganda; Pocket-size briefs about the National Biotechnology and Biosafety Bill; and Facts and Figures on Crop Biotech Research in Uganda (Figure 7).



Figure 7. Info materials about Biotechnology and Biosafety.

7. Supported the commercialization pathways NARO biotechnology projects.

The Coordinator of UBIC provided regulatory technical support to the WEMA and VIRCA-Plus projects including developing the commercialization frameworks, filling in and submission of the dossiers, and oversight of the field trials. The UBIC team participated in the communication activities of these projects plus the NEWEST rice and Late Blight Resistant Potato projects.



Figure 8. Regulatory technical support

8. Baseline and end-of-project impact studies

Two KAPs (baseline and endline) studies that targeted at 1600 respondents conducted; two publications prepared for submission to peer reviewed journals from the two KAPs studies; Communication strategy and partnership mechanisms developed and

implemented. An end-line study was conducted to evaluate the impact of the biotechnology communication efforts in the various districts of Uganda. A total of 650 respondents from 12 districts were surveyed to assess their knowledge, perceptions and attitude toward agricultural biotechnology, and their preferred sources of information. Generally, findings showed an increase in percentage of respondents that have heard about biotechnology (Figure 9). There was also an increase in percentage of respondents that agreed that it was useful and morally acceptable. Radio remained the most ranked source of information as well as the most preferred source of information, with slightly more females than males using it.

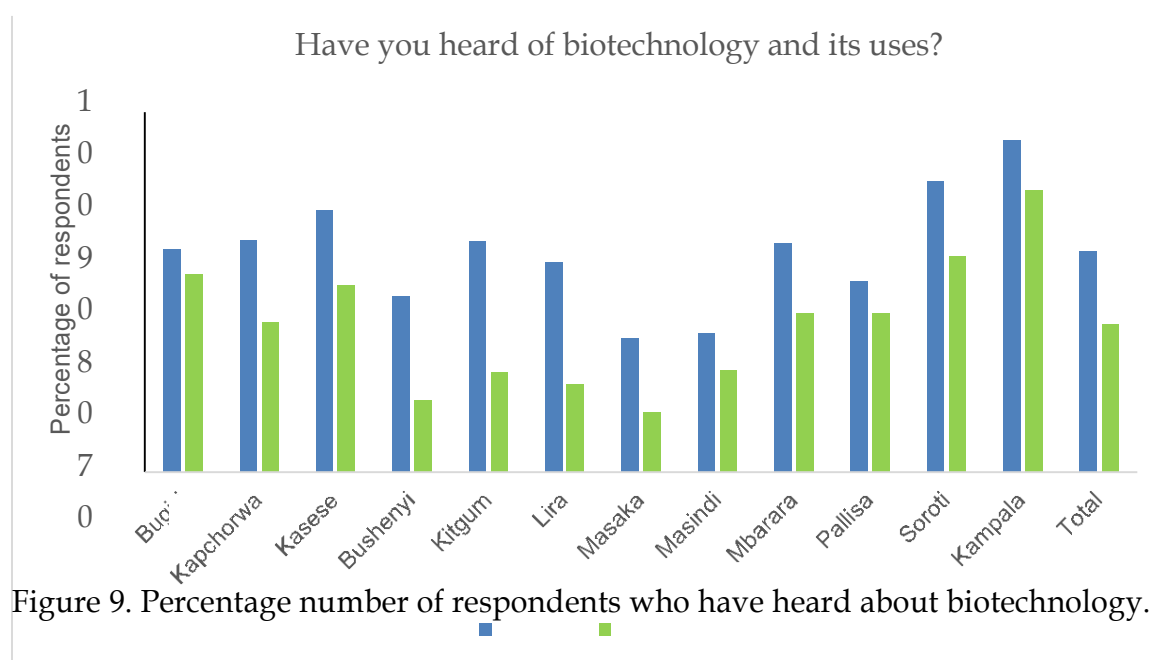


Figure 9. Percentage number of respondents who have heard about biotechnology.

9. Strengthening partnerships

UBIC strengthened its global presence and collaborations by conducting joint-activities with the Cornell University Alliance for Science, and ISAAA. UBIC was also one of the organizers for the first Uganda Biosafety Forum organized by the National Council for Science and Technology. UBIC shared its experience during risk communication training programs at ICGEB activities in Tobago and Ethiopia. We collaborated with the Feed the Future's AgriKool and academic institutions for some of the youth engagement activities. UBIC also received a grant from the Competitive Grants Scheme of the National Agricultural Research Organisation (NARO) to document NARO's Success Stories of adoption of NARO technologies, and how they are changing farmers' lives. The one-year grant will see UBIC develop a compendium of these milestones and produce a documentary on the same.

10. Establishment of the Marth T. Hamblin Resource Centre

UBIC conceptualised the establishment of this Center as an enduring memorial to Dr.

Martha Hamblin, for her dedicated service and visionary leadership that was instrumental to the success of the NEXTGEN Cassava project. The knowledge resource centre is housed within the conservation facility at NaCRRI and is envisioned to become a premier reference/research library that will support research, learning and administrative processes for agricultural research. It will also provide comprehensive, accurate and timely information regarding the latest trends in agricultural research.

Key achievement Phase 2 (2018-2020)

1. Support establishment of an enabling policy environment

This aim to support effective application and regulation of modern biotechnology products. UBIC in partnership with NARO Top Management, NARO Biotech Projects, PBS, SCIFODE, ISAAA and Cornell Alliance of Science carried out seven activities to support the passing of the Genetic Engineering Regulatory Bill by the Parliament of Uganda. Activities included organizing NARO strategic meetings, participation in consultations meetings organized by Government MDAs, and Parliamentary exhibitions, organizing seeing-is-believing tours for key members of Parliament including the Speaker of Parliament. Our activities are increasingly becoming central to a growing push for access to better agricultural technologies while helping policy stakeholders navigate a complex and often polarized regulatory regime for biotechnology in Uganda. To this end, we have been at the forefront of efforts that twice—in 2018 and 2019—led to the passing of the Genetic Engineering Regulatory Act by the Parliament of Uganda. Lingering political concerns have prevented the expedited passing of the Act. However, optimism is high the gains we have thus far achieved bring us closer to a tipping point for access to and application of biotechnology products in Uganda.



MPs during in a Bt cotton trial during a visit to ILRI, AATF, Kenya NBA, Bt cotton NPTs



Speaker of Parliament on a visit to NaCRRI, February 2019

2. High-level policy engagements

Following the challenges faced with the passage of the Biotech and Biosafety legislation in Uganda, UBIC organized periodic strategic meetings between Ministry of STI, Ministry of Justice, Ministry of Agriculture, and NARO Management to provide technical support and guide decision-making.



Strategic meeting of NARO Management with Ministry of Agriculture, February 2019



Strategic meeting of NARO Management with Ministry of Justice and Constitutional Affairs, September 2019

3. Grassroots engagements and identification of champions

We also organized over 33 grassroots sensitization workshops for policy makers, religious and community leaders, media, as well as farmers and their associates, reaching over 2,500 stakeholders. With the Cornell Alliance for Science, we conducted screenings of the [Food Evolution movie](#)—a documentary that explores the thorny landscape of the heated global debate on modern agricultural biotechnology. The screenings reached over 500 university students, lecturers, policy makers, public and private sector representatives, farmers, and journalists.



Biotech sensitization workshop for local gov't leaders, Mar 2020



Seeing-is-believing tour for farmers in January 2019

The biggest opportunity for us to target wider audiences was participating in International and National Agricultural Expos for example the National Agricultural and Trade Show, World Food Day, Independence Day, and SMACK Agribusiness Conference. Over 4,500 people were reached including farmers, policy makers, civil servants, and students etc. Such interactions facilitate 'buy in' by the public towards for adoption of modern technologies from NARO. They also

contributed towards expanding our reach nationally and helped build critical grassroots support for key policy decisions especially regarding commercialization of biotech crops and other pertinent agricultural technologies.



National Agricultural & Trade Expo, July 2019



Exhibition at World Food Day celebrations, October 2019

4. Integration of biotechnology teaching in the formal education system.

UBIC acknowledges the critical importance of capacity building to ensure sustained impact. For this reason, during the period 01st April 2018 to 31st March 2020, we continued our schools' outreach and mentorship program. We continued to work with the National Curriculum Development Center (NCDC) and the Ministry of Education and Sports to integrate modern biosciences in the national schools' curriculum. We are happy to report that biotechnology was integrated into the new lower secondary agriculture curriculum. The curriculum was rolled out in schools starting February 2020.

We also conducted two week-long teachers' internships to develop skills in teaching about ag-biotech and biosafety innovations at the National Crops Resources Research Institute (NaCRRI). Activity involved over 59 teachers from 35 secondary schools and seven tertiary institutions countrywide, officials from the Uganda National Examinations Board (UNEb) and the National Curriculum Development Center (NCDC). Teachers got acquainted with the modern agricultural biotechnology work going on at NARO, and interacted with different scientists/experts. Participants have reported elevated confidence levels during their teaching of biosciences and biotech concepts. The workshop also shared ideas that will inform the publication of a learning guide to facilitate biosciences teaching in schools.

We also followed up our engagements with the NCDC, the Ministry of Education and top textbook publishing houses in the country. We are also supporting the NCDC and publishing companies to ensure appropriate biotechnology content is incorporated into the recently approved lower secondary schools' curriculum. To this effect we have

conducted and/or participated in five activities with said stakeholders reaching over 30 curriculum experts, ministry officials and publishers.



Teachers' internship, August 2018



Teachers' internship, Jan 2020

Additionally, we organized a university debate in which over 500 students and educators from ten universities discoursed on pertinent issues in ag-biotech research and development. Participants at the dialogue/debate appreciated the need to embrace modern agricultural biotechnology to address some of the most pressing challenges facing Uganda's agriculture such as pests, diseases and climate change.

Participants pledged to engage their colleagues on biotech to further raise awareness and galvanize support for the adoption of advancements in agriculture particularly in developing countries like Uganda. They voiced the need for the National biotechnology and biosafety bill to be passed by parliament to enable Ugandan farmers' access improved biotech crops.



Students' debate and follow-up seminar, December 2018



Our flagship activity – The Annual National Biotechnology Essay-writing Contest – ran for its sixth and seventh editions over this reporting period. It helped raise biotech awareness to over 5000 students and educators. Over the two years, the contest received a combined 1,902 submissions from 17 primary, 48 secondary schools and 22 tertiary institutions countrywide. We recorded unprecedented diversity in participating institutions – a notable indicator of our expanding reach and influence.



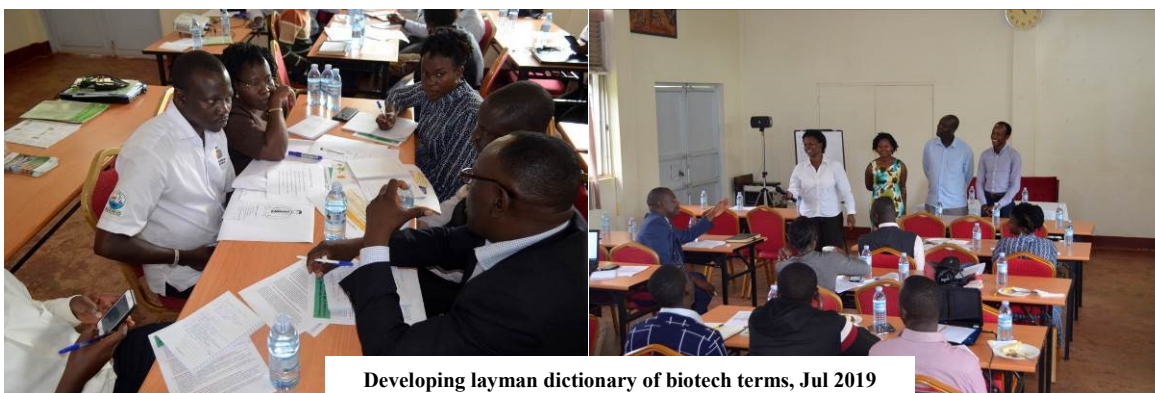
Award ceremony for National Biotech essay-writing contest, 2019



Award ceremony for National Biotech essay-writing contest, 2018

5. Streamlining science communication in Uganda

UBIC in collaboration with biotechnology partners developed the first ever dictionary of simplified biotech messages and related terminologies for use by science communicators. The dictionary was further translated into six common languages spoken in Uganda including Swahili, Luganda, Runyoro-Rutoro, Runyankole-Rukiga, Ateso and Luo. The dictionary will be made widely available to support and ease science communication efforts in Uganda and the region. This is expected to significantly help stakeholders, especially scientists and communicators navigate a highly polarized biotech debate and oft skeptical public. Different designs were used to package the messages developed and these were used to train or shared to various stakeholders from policy makers to grassroots communities. Copies of all developed and distributed materials have been handed over to the new Coordinator.



Developing layman dictionary of biotech terms, Jul 2019

6. Capacity building opportunities for UBIC staff.

Joshua Muhumuza, an outreach officer with UBIC participated in the Agricultural biotechnology and biosafety program and the international short course in food safety at Michigan State University from July 28-August 16, 2019. In 2018, he took part in the

Bio-Africa Convention in Durban, South Africa and in a CIP Communication Skills training workshop for late blight resistant potato in Nairobi, Kenya. Nassib Mugwanya, an outreach Officer with UBIC participated in the IFAL 2018 Symposium, Food and Agriculture: A Global Conversation that took place on April 22-28, 2018 at the University of California, Davis. He also attended a science- writing training at The Breakthrough Institute that culminated into publication of an article on entitled, “Why Traditional Farming Practices Can’t Transform Africa’s Agriculture” in the Breakthrough Journal. Barbara Zawedde, the coordinator of UBIC, participated in the African Union Negotiation training (September 2018), and the UN Biodiversity Conference (COP14, COPMOP9 & COPMOP3) in November 2018, and was invited as a resource person to facilitation training on data transportability in Addis Ababa, Ethiopia in March 2019 and in a training for Potato breeders in Ghent, Belgium in June 2019.



7. Biotechnology communication skills training

UBIC organized biotechnology communication skills training for communication officers and selected staff from all NARO Institutes, and from other Government Ministries, Departments and Agencies (MDAs). The training boosted participants’ capacity for biotech and biosafety communication with an aim of building institutional champions that are engaged in grassroots activities in their proximity to support the pathway towards commercialization of NARO biotech products. We also facilitated and coordinated the development of a biotechnology communication strategy for NARO and the Ministry of Science Technology and Innovation (MoSTI). Our linking role with NARO and other government MDAs such as MoSTI on such projects ensured cohesion of related efforts by different stakeholders.



Communication strategy meeting, February 2019



Engagement of over 50 Government MDAs Communication Officers, October 2019

8. **Supporting the regulatory compliance and commercialization pathway of NARO biotech projects**

UBIC team participated in regulatory and communication efforts of NARO Biotech projects including TELA® Maize Project, VIRCAPlus Project and the NextGen Cassava Project.

9. **Strengthening strategic partnerships** to leverage unique expertise and share resources and experiences is vital to our work. We strengthened strategic partnerships with international agencies like ISAAA, Cornell Alliance for Science, University of California, Davis, Michigan State University, International Institute for Life Science, European Commission's Joint Research Center, Ghent University and Swedish University of Agricultural Sciences. Regionally, we strengthened partnerships within the African Union, Biosciences for Eastern and Central Africa, NEPAD, AATF to mention a few. The reporting period included the launch of the Annual ISAAA Report on the [Global Status of Commercialized Biotech/GM Crops: 2017](#). This included a workshop and wide distribution of the report among key biotech stakeholders and government agencies.



Global Status of Commercialized Biotech/GM Crops Report launch, August 2018

10. Engagement on digitalization for Agriculture (D4Ag)

UBIC is keenly aware of the opportunity presented by developments such as digitalization for Agriculture (D4Ag) to complement other technologies like biotechnology in revolutionizing Uganda's agriculture. We therefore made initial steps to broaden our scope to include a wider diversity of new technologies – such as digital agriculture – which alongside biotech, have immense potential to advance Uganda's food systems. We conducted a workshop in which tools to improve insights into needs of specific stakeholder categories and tailored solutions to bridge the research-extension gap were explored. We believe that such efforts are key first steps towards harnessing the complementary power of different technologies champion an efficient, progressive, responsive and profitable agriculture sector in Uganda.

Resources mobilized

Project	Amount (USD) Received	Amount (Shs.) Pending Balance
NextGen Cassava Project, Phase 1 (2013-2017)	800,000	-
NextGen Cassava Project Phase 2 (2018-2019)	244,308	-
NARO CGS Project CGS 5/23/16	56,500	-
Cornell Alliance of Science Agreement No. 73218-10640	38,698	–
Cornell Alliance of Science Agreement No. 83578-11008	50,368	11,081

Assets acquired

Item	Quantity
Van (UAU 927X)	1
Camera	2
Video camera	1
Desktops (moved to Dr. R. Kawuki's office)	1
Laptops	1
Printer	1
Hard drive	1

I am very grateful to NaCRRI Management, the NextGen Cassava Project Management and NARO Management teams for the excellent leadership, support and guidance. I acknowledge the contribution and support of the NaCRRI and NARO staff, media practitioners, scientists from different Universities, teachers, and champions identified in various stakeholders groups. Special thanks to the Bill and Melinda Gates Foundation through Cornell University for supporting the NextGen Cassava Project and for allowing the Biosafety Component to be included on the Project.