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MUKONO ZONAL AGRICULTURAL RESEARCH & DEVELOPMENT INSTITUTE-MUZARDI

NEWSLETTER



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Editor's Message



Welcome Note

We are happy to reach out to you our esteemed clients in the Lake Victoria Crescent Agro-ecological Zone (LVCAZ) through this Newsletter. This issue is focusing on the achievements attained by Mukono ZARDI in human resource, community outreach and research in the year 2020.

We therefore appreciate the editorial team and the different contributors to this issue for the tireless efforts invested. I hope you find this Newsletter informative.

Good reading.

Mary Nampeera. K.
Senior communication officer, MUZARDI

MUZARDI's Mandate

Our mandate is to carry out applied and adaptive research for the Lake Victoria Crescent Agro-ecological Zone. MUZARDi serves 22 districts of central Uganda which is the most populous region with about 10 million people.

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Cover Photo: Staff welcoming the New Director

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Director's Message



Dr. Barbara Mugwanya Zawedde, PhD

Welcome to the Mukono Zonal Agricultural Research and Development Institute (MUZARDI) for the year 2020. MUZARDI is one of the ZARDIs under the National Agricultural Research Organisation (NARO) with a mandate to carry out applied and adaptive research for the Lake Victoria Crescent Agro-ecological Zone (LVCAZ). It serves 22 districts of Central Uganda which is the most populous region with about 10 million people. It also has a national mandate for urban and semi-urban agriculture research and technology dissemination.

MUZARDI is located in Ntawo village, Mukono District about 17 km East of Kampala City with a Satellite station located in Kamenyamiggo, Lwengo district. The Ntawo station is strategically located to provide services to districts in the northern part of the Central region including Kyankwanzi, Nakaseke, Nakasongola, Luwero, Mukono, Kayunga, Buikwe, Buvuma, Kampala, Wakiso, Mpigi, Butambala, and Mityana. This Center is very near Kampala city and in close proximity with various universities, schools, industries, public and private sector head offices, and less than an hour's drive from Entebbe International Airport. This provides an opportunity to provide internships, holiday-packages and innovation incubation for students and private sector. It can also provide technical backstopping and technology exhibitions for corporate farmers, communities in urban and semi-urban setting, and agro-industries in all agricultural sub-sectors: crops, forestry, fisheries and livestock.

Kamenyamiggo station is strategically located to provide services to districts in the southern part of the Central region including Kiboga, Mubende, Kassanda, Gomba, Bukomansimbi, Masaka, Kalungu, Lwengo and Kalangala. It is ideal for adaptive research, seed production and technology demonstrations.

This year was characterised by the COVID 19 pandemic, which subsequently affected activities in the research system. We therefore focused a lot of efforts on retooling staff to work as a team; building and strengthening partnerships to support our research and technologies transfer activities to ensure lasting impact on communities and livelihoods.

This newsletter highlights some of the key achievements of MUZARDI, many of which were implemented in collaboration with other players. We do appreciate NARO Top and Policy Management as well as our collaborators who have supported us throughout this year.

Community Engagements

Mukono ZARDI being in charge of the Lake Victoria Crescent agro-ecological Zone has a key role in disseminating NARO research outputs and technologies as well as following up their assess, adaptability and preference among end users. We use different approaches to reach our stakeholders through community outreach activities: surveys, radio talkshows, and training sessions among others.

Mukono ZARDI engaged District political leaders and technical officers from the 22 districts of Lake Victoria Crescent Agro-ecological Zone in three meetings: meeting with the District Production and Marketing officers (DPMOs) at Ntawo station, two of the meetings were organized in collaboration with Uganda Biosciences Information Center (UBIC) at NaCRRI, Namulonge, in February 2020. The meetings focused on updating participants on the progress in research conducted by NARO and identifying best approaches to engage our clientele in the LVAEZ. Different avenues were suggested during the meetings that included open field days, farm clinics, farmer competitions, field demonstrations and community engagements among others.



Engagement of DPMOs at Ntawo station



Engagement of District political leaders and technical officers at NaCRRI, Namulonge

Village and church leaders' engagements were carried out in August and September 2020 at Ntawo and Kamenyamiggo stations, respectively. They were briefed about the institute's need to strengthen the working relationship with the community and thereafter were trained on proper banana and coffee management.

Follow-up activities included training sessions with a group of 25 Muslim women were trained in modern urban farming (vegetable growing), while in Kalungu sub-county, 55 farmers were trained on proper land and soil management. Key messages from the stakeholders was the need for MUZARDI to supply farmers with high quality seed of best plant varieties and animal breeds; provide services of soil testing, artificial insemination and technical consultancy; provide value addition options to help users increase their income; support maintenance of multi-stakeholders engagement platforms for different commodities.





Opinion leaders during the meeting at Ntawo and Kamenyamiggo



MUZARDI Scientists demonstrate GAPs to Ntawo farmers



MUZARDI Scientists demonstrate GAPs to Kalungu farmers



A technician training the women



Adoption of urban farming methods by women farmers

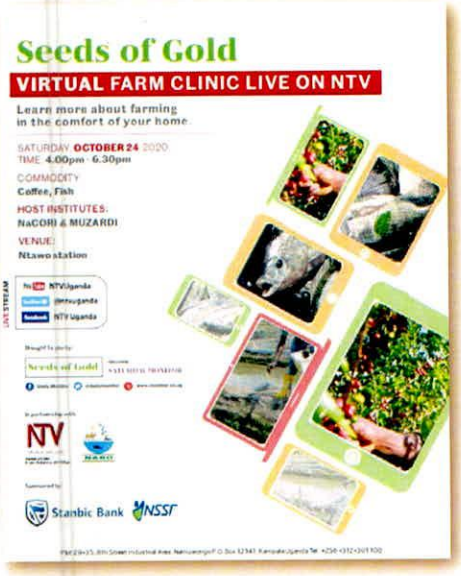
Adopting Digital Tools

COVID 19 pandemic has created a new normal of reaching out to stakeholders in ways that seemed ambitious before. Mukono ZARDI organised a webinar with a theme **"Urban and Peri-Urban Agriculture for Covid-19 Resilience"** in collaboration with Kampala Capital City Authority (KCCA), and private sector partners including Kwagala Farm, Happy Farmer Supplies and Magezi Buggaga Farm. The webinar focused on sharing experiences, challenges and opportunities amidst the pandemic.

MUZARDI hosted the first virtual Farm Clinic edition on 24th October 2020 with the theme **"Climate smart Agriculture"**. The event was organized in collaboration with Monitor Publications, NaCORI, NaFIRRI, Stanbic Bank, NSSF and Bank of Uganda. The event was streamed live on Nation media's station of NTV and online platforms showcasing coffee and aquaculture enterprises https://www.youtube.com/watch?v=y1anIIH2eUU&t=5626s

The institute was also aired on international TV, CGTN, promoting agro-tourism.

https://www.facebook.com/muzardi/videos/2859963120940175





Posters for Urban Agriculture Webinar and Virtual Farm Clinic held at MUZARDI

The institute also participated in a Virtual World Food Day event held at NaFORRI on 16th October 2020. The event was streamed live on Uganda Broadcasting Corporation television as well as online platforms of National Agricultural Research Organisation (NARO) and Ministry of Agriculture Animal Industry and Fisheries (MAAIF). MUZARDI showcased various urban farming technologies emphasizing vertical gardens using stair and cake garden, and shared some seed and information materials among others.



MUZARDI Staff attend to stakeholders at the WFD

Mukono ZARDI also participated in a National World Science day celebration held at Kyambogo University. The exhibition organised by the Ministry of Science, Technology and Innovation run under the theme, "Science for and with Society". NARO, Universities, private sector and farmer groups showcased STI technologies for national development. In his remarks, His Excellence the Vice-President Hon. Edward Ssekandi, said that "The science disciplines shouldn't be underestimated since all first world countries are where they are because of their spirited investment in science, engineering and Information technology".



Staff engages the Vice President, Hon. Edward Ssekandi, and Minister of Science, Technology and Innovation, Hon. Elioda Tumwesigye, during the World Science Day 2020.

MUZARDI Welcomes New Director



Staff welcoming the New Director

> **Mrs. Ssabaganzi encouraged the staff to support the new Director to make MUZARDI shine again as they serve their constituents.**

MUZARDI staff welcomed a new Director on 3rd January 2020. The event witnessed by the Advisory Committee Chairperson Mrs. Rebecca Ssabaganzi and staff saw Dr. Stella Kabiri Marial, Acting Director, handing-over the tools of power to Dr. Barbara Mugwanya Zawedde. Mrs. Ssabaganzi encouraged the staff to support the new Director to make MUZARDI shine again as they serve their constituents.



Members witnessing the handover

Team Building Milestone at MUZARDI



Staff enjoying a team building exercise

A Team building training was organised for Mukono ZARDI staff in March 2020. The training was attended by staff from both Ntawo and Kamenyamiggo (KMG) centres at Ntawo campus. The training facilitated by a Principal Trainer from the Jinja Public Service Training Institute focused on activities of Emotional Intelligence to support teamwork.

> **The Director called on the staff to regain trust and build teamwork for better performance.**

Since her arrival, the New Director has periodically engaged with the labourers both at Ntawo and KMG. She pledged that "Management will do its best to support the labourers so that the working conditions are conducive. However, they too have to demonstrate their commitment to support progress of the institute". An urban farming training was also organised for labourers at Ntawo campus where they were encouraged to be champions in their communities for using NARO technologies promoted by MUZARDI.



Labourers during urban farming training session

NARO Top and Policy Management Visit to MUZARDI



Management team touring KMG ponds.



A scientist talks to Management in the fish lab at Ntawo

In September 2020 NARO Top and Policy Management carried out a routine tour to monitor progress of research activities at Kamenyamiggo and Ntawo campuses. The Management team included among others; the Chairperson and members of NARO Governing Council, the Director General, Deputy Director General Research, Deputy Director General Technology Promotion, Director Finance and Director Human Resource, to mention a few.

Several issues were discussed that highlighted the Institute achievements and challenges faced over the COVID 19 period.

"Management pledged to support solving the challenges, and commended the staff for the hard work and team spirit used to uplift research and outreach by MUZARDI.

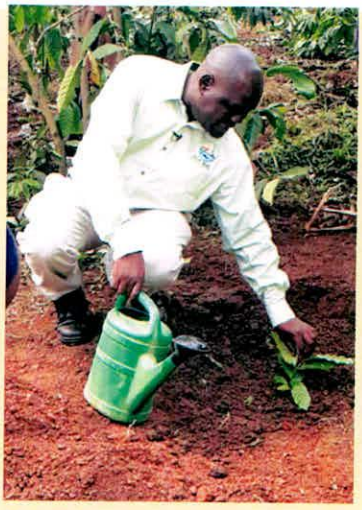
Selected Training Topics

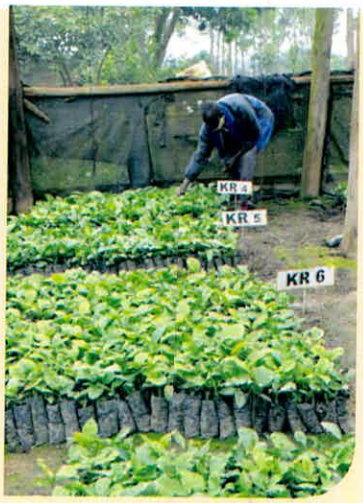
Enhancing Coffee Production in Central Districts of Uganda

National Advantage

Coffee remains the number one cash crop in Uganda. According to Uganda Coffee Development Authority (UCDA), Coffee exports for the coffee year (October 2019 to September 2020) totaled about 5.3M bags worth US512.2M compared to 4.4M bags worth US$ 434M the previous year. However, this production is still low compared to the President's directive of 20 million bags of green coffee by the year 2025. MUZARDI is promoting good management practices including proper and timely planting, effective pests and diseases control, selective pesticide use, tree shade management, and soil and water management among others.

At planting, farmers are encouraged to plant at least 3-4 varieties of coffee because Robusta coffee is self- sterile (one variety cannot self-pollinate itself). Farmers are also encouraged to practice coffee agro-forestry using recommended shade-tree species that do not compete with the coffee trees for nutrients. The shade trees reduce moisture loss from the soil and leaves, and provide natural mulch for soil management.





Staff demonstrating planting a coffee plantlet. Ready KR seedlings in the nursery.

Apart from planting trees as a climate-smart practice in coffee production, farmers need to mulch their gardens and dig trenches to conserve moisture in the soil , improve crop production by enhancing soil quality through conserving soil moisture and reducing weed growth. "When mulch decomposes, it provides organic matter to the soil, which improves its fertility," says Dr. Seruwu. When harvesting coffee, farmers should be careful to pick only the mature red cherries that produce quality coffee along the value chain, and hence fetches good prices.

Mukono ZARDI has nurseries both at Ntawo and Kamenyamiggo stations that supply quality seedlings of the NARO resistant coffee varieties (KR1-7), and experienced staff that are available to provide technical consultancy services.

Enhancing Fish farming in the LVCAZ

National Advantage

Uganda has potential to be the biggest tilapia producer in Africa. As much as 16-20% of Uganda's total surface area is covered by water in form of lakes, rivers, swamps and marshes, as well as a mostly untapped aquifer (underground water) system that could enable all-year-round growth of fish. In addition, some of the most farmed fish worldwide are native to the lakes and rivers of Uganda.

Unlike most subtropical countries, there are no extreme weather conditions, fish can grow all year round making this country a "fish farmers' paradise". No wonder Uganda is ranked as the highest tilapia producer in sub-Saharan Africa, only second to Egypt in the whole of Africa. Compared to Egypt though, a huge gulf still exists and something must be done about that. Egypt recorded 1.82 million tons in 2017 and is primed to produce 2.9 million tons by 2030 compared to Uganda's 120,000 tons in 2017 and aiming to produce 1.7million tons by 2030.



Partial harvesting of fish using a seine net for sampling fish weight, length and health

The most popular farmed fish species are Nile tilapia (*Oreochromis niloticus* **'Ngege'**) and the North African catfish (*Clairas gariepinus* **'Emalle'**) although NARO scientists are attempting to adopt new species into the fish farming fold such as Barbus sp. **('Kisinja')**, *Bagrus* **('Semutundu')** and Lungfish (*Protopterus* **'Emamba'**)

Some of the most limiting factors for growth of fish farming include:

Quality Feeds: Account for more that 60% of the total production costs because the are imported. There is to invest in local manufacturing of large quantities of quality feeds.

Quality seed (fry and fingerlings) are the other limiting factor to the growth and success of fish farming. NARO - Mukono ZARDI researchers are raising strains of tilapia that can reduce this growing period to about 6 months in cages and 8 months in ponds.

Farmers' support: The Aquaculture unit at Mukono ZARDI is a reliable source of information. It provides consultancy and training services for fish farming.

MUZARDI popularizes Low land apple growing in central districts

MUZARDI has embarked on popularizing low land apple growing in the Lake Victoria Agro-ecological Zone. Research carried out by scientists at Mukono ZARDI indicates that apples are high value fruits which perform well in the Lake Victoria Agro-ecological Zone and are highly profitable. While speaking to farmers during a training held at Kamenyamiggo satellite station, Dr. Sarah Mutonyi a Senior Research Officer noted that commercial apple growing is possible but one has to be mindful of five factors i.e. removing the shoot and bending the branches to maintain the tree within a manageable size; removing the leaves (defoliation) at an advised time to simulate Fall season; remove the branches below the grafting point to reduce branch competition and increases light penetration,which improves flowering and promotes growth of larger fruits; pest and disease control; and provide enough water to the plant.



An Agroforestry Scientist holds an apple tree with fruits at Ntawo station



Training farmers in apple growing at Kamenyamiggo station, Lwengo district.

Uganda is blessed to have two Apple seasons in a year. An Apple tree can yield 400-600 fruits per tree per harvest. Focusing on the Ugandan market each fruit goes for 1,000 shillings, one can therefore obtain good income at a single sale from one tree. Apples are ideal trees for uban farming when well-managed. Dr. Sarah advises that urban households can grow 1-2 trees, while rural ones with 10-30 apple trees can also depend on apple growing as an enterprise.

Inclusiveness in the Apple value chain

Apple growing is a lucrative business that can be adopted by youths and women. Every week, young farmers like Ariho Asaph (28 years old) come to MUZARDI station to learn, buy seedlings and sometimes fruits. Many enjoy the experience in our productive orchard which has six different apple varieties. MUZARDI advises farmers to be mindful and make sure that the apple seedlings they buy will perform well in their area. Quality seedlings are available at MUZARDI at modest prices.





Research products and Services

- Quality seeds & seedlings (banana, coffee, fruit trees and vegetables)
- Urban & peri urban agriculture
- Soil and land mangement
- Livestock management & quality breeds
- Aquaculture management and fish fry supply
- Technology promotion & training services
- Incubation of innovations
- Conference services



Seedlings in the nursery at Mukono ZARDI



Training youths about aquaculture research



Quality cambrough breeds



Soil and land mangement practices



Mukono ZARDI supplies quality Hass avocado seedlings at modest prices. Value addition research is also on-going.

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