



AFRICA CENTER OF EXCELLENCE IN AQUACULTURE AND FISHERIES

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EDITOR'S NOTE:

Dear Readers,

In this edition of our newsletter, we are delighted to highlight the strides made in aquaculture innovation and capacity-building efforts spearheaded by the Africa Center of Excellence in Aquaculture and Fisheries (AquaFish). From empowering Malawian fish farmers with cutting-edge techniques to fostering regional collaboration and entrepreneurship, AquaFish continues to be at the forefront of sustainable aquaculture development in Africa.

One of the remarkable initiatives featured in this edition is the recent training organized in Mchinji, Malawi, aimed at enhancing tilapia production through innovative fingerling breeding techniques. Through this five-day training, attended by dedicated fish farmers and agricultural officers, participants were equipped with the skills to improve the quality of fingerlings, thereby boosting productivity and profits in the Malawian fish sector.

Additionally, AquaFish hosted a series of impactful short courses on integrated aquaponics, black soldier fly production, and BSF fabrication, GIS and remote sensing, and Integrated Soil Fertility Management. These courses not only provided participants with practical skills but also served as catalysts for entrepreneurship and knowledge-sharing, as evidenced by the inspiring stories of individuals like Peace Mlenemba, whose journey from research student to entrepreneur underscores the transformative potential of AquaFish's initiatives.

Furthermore, we are excited to announce a landmark agreement between AquaFish and Gambian institutions, symbolizing a significant step towards fostering regional collaboration and knowledge exchange in aquaculture and fisheries science.

In the realm of research, AquaFish continues to drive innovation through strategic partnerships and collaborative efforts, as demonstrated by the recent stakeholder consultative meeting on cannabis research. By harnessing the expertise of key stakeholders, AquaFish aims to explore the potential of industrial hemp in aquaculture feed production, furthering its commitment to sustainable practices and environmental stewardship.

Lastly, we are thrilled to announce the progress of the Africa Center of Excellence in Aquaculture and Fisheries Office Complex. This modern facility will serve as a hub for innovation, research, and collaboration, reflecting our dedication to providing cutting-edge infrastructure for the advancement of aquaculture and fisheries science.

We hope that the stories and initiatives featured in this edition serve as inspiration for all stakeholders committed to advancing sustainable aquaculture practices and fostering economic growth and resilience in Africa.

Thank you for your continued support and dedication to the mission of AquaFish.

Patricia Ngwale
Acting Marketing and Communication Manager - LUANAR

AQUAFISH DRILLS STUDENTS, FARMERS AND ENTREPRENEURS ON BSF FABRICATION FOR SUSTAINABLE FOOD PRODUCTION



Participants of the training constructing a portable aquaponics system

In a bid to boost the capacity for sustainable aquaculture and fisheries practices, the Africa Center of Excellence in Aquaculture and Fisheries recently organized a comprehensive five-day Black Soldier Fly (BSF) fabrication Short Course held from the 11th to the 15th of March 2024 at the Lilongwe Technical College Campus.

The course which was attended by Lilongwe Technical College students, LUANAR students, farmers as well as entrepreneurs, emphasised practical skills and theoretical knowledge around BSF fabrication. The course aimed to equip participants with the necessary expertise to design, fabricate, and troubleshoot integrated BSF-aquaponics systems.

AquaFish Director, Professor Daud Kassam, emphasized the importance of such initiatives, stating, “As part of this project, we have several activities that we need to undertake. The basic idea is to enhance the capacity of our participants so that wherever they go, they can apply what they have learnt here. We desire to see the knowledge gained here to be implemented.”

Lilongwe Technical College Principal, Suzgika Mvalo, hailed the collaboration between AquaFish and his institution, underscoring the significance of leveraging local capacity to address the increasing demand for food amid a growing population.

“Lilongwe Technical College is excited to work with AquaFish to support the growth of Aquaponics in Malawi. With the population of Malawi changing over time, the demand for food has increased. It is important to use technologies like Aquaponics to produce enough food for our growing population,” Mvalo stated.

Participants echoed sentiments of empowerment and readiness to utilize their fresh knowledge. Chigomezgo Kayira, one of the trainees, expressed her gratitude and outlined her plans for the future.

“With the knowledge that I have gained from this training, I will be able to start a business of fabricating aquaponics systems as well as a black soldier fly production unit,” Chigomezgo said.

The training covered various topics ranging from the fabrication of biofilters and larval rearing units to the construction of aquaponic grow beds and plumbing systems, as well as system integration and testing, culminating in discussions on maintenance and long-term care. The practical sessions, which included fabrication exercises and troubleshooting simulations, provided a hands-on approach to learning, ensuring that participants left the course equipped with practical skills ready to be applied in real-world scenarios.

FISH FARMERS EMPOWERED WITH INNOVATIVE TECHNIQUES FOR ENHANCED TILAPIA PRODUCTION



The facilitator of the training, Pemphero Kumbani, demonstrating the addition of prepared hormone for sex change into the fish pond with fingerlings.

The Africa Center of Excellence in Aquaculture and Fisheries organized a five-day fish breeding training in Mchinji from 22nd to 26th January 2024, as part of the sustainable fingerling breeding model for smallholder fish farmers project. The training was attended by fish farmers, Agricultural Extension Development Coordinators, Agriculture Extension Development Officers, and District Fisheries Officers from Kasungu and Mchinji.

The training facilitator, Pemphero Kumbani, stated that the training aimed to train the participants on using a pond-based tank system in fingerling production and the technique of changing the sex of fish from female to male.

“In this training session, we focused on demonstrating how fish farmers can change the sex of fish from female to male using hormones. The method aims at ensuring the production of all-male fingerlings, a strategy known for its positive impact on aquaculture-Tilapia production in Malawi,” Kumbani explained.

Kumbani further revealed that obtaining quality fingerlings and fish feed are the main challenges in the Malawian fish sector saying the sustainable fingerling breeding model for smallholder fish farmers project aims to address the issue of fingerling quality. Hence ensuring that fish farmers in Malawi have access to high-quality fingerlings, ultimately boosting their productivity and profits.

Annie Abraham, a fish farmer from Lisasadzi Extension

Planning Area in Kasungu, expressed that the training will help her maintain an all-male fish population in her ponds.

“We have learnt how to change the sex of fingerlings from female to all males. This knowledge will help us maintain an all-male population in our fish ponds, ultimately improving our fish production. Upon returning home, I plan to share this information with my fellow fish farmers, especially the women in my area, so that they can also learn how to change the sex of fish,” she said.

Michael Msika Phiri, an Extension worker from Mikundi EPA in Mchinji, added that the information gained during the training will be used to teach fish farmers how to use this technique.

“As we return, we will disseminate the information we acquired today to our Extension Planning Areas and districts, teaching fellow farmers about this method of changing the sex of fingerlings from female to male. Additionally, we will advise farmers to consider purchasing all-male fingerlings if they are unable to produce them on their own,” Phiri said.

The sustainable fingerling breeding model for smallholder fish farmers project is being implemented with the funding of the Sustainable Food Systems Programme in Malawi. The project is being implemented in two districts, Mchinji and Kasungu, covering four Extension Planning Areas: Mkanda, Mikundi, Santhe, and Lisasadzi.

AQUAFISH HOSTS A SHORT COURSE ON INTEGRATED AQUAPONICS AND BLACK SOLDIER FLY PRODUCTION

The Africa Center of Excellence in Aquaculture and Fisheries hosted a short course titled Integrated Aquaponics and Black Soldier Fly Production. The course, held from 4th to 8th March 2024, aimed to train participants on innovative methods of sustainable agriculture and waste management.

Peace Mnelemba, the lead facilitator, emphasized the short course's significance in promoting local innovation and capacity building.

"This five-day short course, sponsored by the AquaFish center and facilitated in collaboration with Hilfe für Malawi's support, aimed to equip participants with skills for producing fish feed using waste and implementing recirculating aquaponics systems," Mnelemba stated.

Attended by a diverse group of extension workers, students, and farmers, the course covered various aspects of aquaponics systems and the integration of black soldier flies for waste management and nutrient cycling, fish and plant species selection, and practical applications of black soldier fly technology.

Fasika Bekele, an MSc student from Ethiopia, expressed enthusiasm about implementing the technology in her home country.

"When I return to Ethiopia, I will implement this technology and share it with my community," she affirmed.

Agnes Msekandiana, another participant, highlighted the practical insights gained from the course.

"I have learned how to set up a backyard aquaponics system and explore alternative feed options like black soldier fly. This knowledge will have a significant impact, as I can now promote the use of black soldier flies as feed for fish and poultry," Msekandiana shared.

One of the highlights of the course was the hands-on experience provided at the Aquaponics for Life Village, where participants had the opportunity to develop their aquaponics systems. The village, established with support from Hilfe für Malawi, served as a practical learning environment for applying the knowledge gained during the course.



The facilitator, Peace Mnelemba, showcasing the aquaponics system at the Aquaponics for Life Village during the training.



Mike Goliath demonstrating the Black Soldier Fly (BSF) to trainees.



The Bunda Fish farm manager, Mofolo Sifo leads participants in an engaging session on integrated aquaponics and BSF production

EXPERTS BANG HEADS OVER CANNABIS RESEARCH



Dr. Jere from AquaFish briefs participants on the project

The Crops and Soil Science department in collaboration with the Africa Center of Excellence in Aquaculture and Fisheries (AquaFish), hosted a stakeholder consultative meeting on LUANAR's Cannabis Research Plan at the Crossroads Hotel.

The workshop, held in collaboration with key players from both the public and private sectors, aimed to foster collaboration, share research plans, and identify priority areas for exploration in the emerging field of industrial cannabis.

Dr. Joseph Chimungu, Deputy Dean of the Faculty of Agriculture, expressed the university's enthusiasm to contribute to the growing cannabis industry through research and education

"We have organized this workshop to gain insights from industry pioneers and the regulatory authority. We intend to equip ourselves with knowledge and understanding, laying the groundwork for our active participation in the cannabis industry. We believe LUANAR can contribute to this evolving sector, not only through cutting-edge research but also by imparting valuable knowledge through teaching," he emphasized.

Highlighting the significance of the workshop, Dr. Jere stated that AquaFish supported the event due to its major interest in integrated agriculture aquaculture systems.

"As a center, one of our primary focuses is the development of livestock feed, including formulations

suitable for fish. To achieve this goal, we have established a collaborative partnership with the Crops and Soil Science Department, concentrating on research into Industrial Hemp. This joint effort enables us to harness hemp's potential for creating a variety of fish/livestock feed products, including cakes and other products," said Dr Jere.

Participants of the workshop included representatives from the Cannabis Regulatory Authority, Invegro, Profix Cannabis, Chitedze Research Station, Aquaponics for Life and Mbazi Estate. The participants shared their ongoing projects, offered valuable insights into cannabis research and development, and engaged in discussions to identify priority areas for cannabis.



Dean of Faculty of Agriculture, Dr. Chimungu giving his opening remarks during the meeting

LUANAR STUDENTS TRAINED IN GIS AND REMOTE SENSING



Dr. Fiwa instructing students during the training session

AquaFish hosted a comprehensive five-day training program on Geographic Information Systems (GIS) and remote sensing from 26th February to 1st March 2024.

The course was aimed at providing a foundational understanding of GIS-based spatial data processing, analysis, visualization, and decision-making.

“The purpose of organizing this training was to provide students, particularly masters and undergraduate students, with knowledge in GIS and remote sensing. Throughout the program, we focused on teaching them how to create basic maps, study area maps, and conduct spatial analysis. Additionally, we introduced them to using GPS data for mapping areas of interest for their studies,” said Dr Felix Kamala, the lead facilitator.

The short course covered introductory sessions on GIS, data models, and project planning, as well as practical exercises on digitization of features, data import, creation of attribute tables, and relational database management concepts. Additionally, the training addressed advanced topics such as on-screen editing of maps and tables, data and coordinate transformations, 3D views, and map layout design.

Dr. Wilson Jere, the AquaFish training coordinator, encouraged participants to leverage their newfound skills for entrepreneurial endeavours.

“These courses go beyond mere acquisition of knowledge. It is not enough to simply possess this knowledge without putting it into action to generate

income. Our aim is for you to leverage the expertise you have acquired to establish viable businesses,” he emphasized.

Eveless Foster, one of the enthusiastic participants, shared her excitement upon completing the training.

“I am thrilled to announce that I have successfully completed the Geographic Information System and remote sensing training at LUANAR Bunda campus. Throughout the training, I gained valuable skills in GIS data analysis, spatial mapping techniques, collecting coordinates, NDVI, and using drones. This has greatly facilitated my research project, which focuses on mapping particulate matter hotspots at Bunda campus,” she exclaimed.

Foster went on to express her intentions to utilize her newfound skills in her career endeavours.

“I am going to incorporate these skills into my consultancy, focusing on research with mapping techniques, data collection, and field surveys using GPS,” she said.

The training not only equipped participants with valuable technical skills but also inspired them to harness their knowledge for meaningful contributions in their respective fields, highlighting the transformative potential of quality education initiatives.

AQUAFISH HOSTS SUCCESSFUL INTEGRATED SOIL FERTILITY MANAGEMENT TRAINING

AquaFish conducted a five-day training on Integrated Soil Fertility Management (ISFM). The training was held at Lilongwe University of Agriculture and Natural Resources, Bunda campus from 26th February to 1st March, 2024.

Led by Dr. Kestron Njira from LUANAR's Crops and Soil Sciences Department, the training aimed to equip participants with essential skills for sustainable soil management. The training attracted a diverse group of attendees, including government extension officers, NGO personnel, and farmers keen on improving soil fertility on their farms.

"This training provided a platform for participants to exchange ideas and experiences, enriching their understanding of sustainable soil management. We are

pleased with the positive feedback and look forward to continuing our efforts to support agriculture and environmental stewardship," said Dr. Njira.

"Participating in this training has been an eye-opener for me," said Sarah Gunya, a farmer from Dalitso Farm in Madisi.

"I learned practical techniques for identifying soil deficiencies and applying suitable fertilizers, which will greatly benefit my farm's productivity," she continued.

Throughout the five days, participants engaged in discussions and hands-on activities covering various aspects of ISFM, from understanding soil nutrition to implementing sustainable farming practices.



Training participants sharing their group discussion findings



A participant posing for after during certificate presentation



Participants pose for a group photo with the facilitators

FROM RESEARCH STUDENT TO BUSINESS: AQUAFISH SPARKS AQUAPONICS FOR LIFE VENTURE

In a remarkable journey from academia to entrepreneurship, Peace Mlenemba, a former student at the Africa Center of Excellence in Aquaculture and Fisheries, showcases the transformative impact of research sponsorship programs. Sponsored by AquaFish during his studies, Mlenemba's story highlights how students are not just educated but empowered to become entrepreneurs through innovative research initiatives.

Driven by his research on sustainable integrated agriculture aquaculture technologies, conducted during his MSc studies, Mlenemba was inspired to harness his findings for real-world impact.

This vision led to the establishment of "Aquaponics for Life," a company dedicated to integrated agriculture aquaculture technologies and climate-smart energy systems.

"Mostly, we deal with integrated agriculture technologies and climate-smart energy systems. Our focus is on growing fish and vegetables in recirculating systems, alongside producing fish feed and livestock feed sustainably and innovatively," Mlenemba explained.

Central to Aquaponics for Life's operations is the utilization of the Smart Secular Bioeconomy approach.

This involves intricate systems where waste from one component becomes the input for another, fostering a closed-loop cycle of resource utilization.

"For example, in our aquaponics system, fish waste is utilized as nutrients for crops, while the crops, in turn, purify the water for the fish. Additionally, we employ the black soldier fly to convert kitchen waste into highly nutritious larvae, serving as food for both fish and livestock," he said.

This innovative approach not only minimizes waste but maximizes resource efficiency, demonstrating a commitment to sustainability and environmental stewardship.

Significantly, Mlenemba's entrepreneurial journey was nurtured through partnerships and collaborations with institutions like AquaFish Center of Excellence and Hilfe für Malawi. These collaborations have provided invaluable support, expertise, and networking opportunities, enabling Aquaponics for Life to thrive and expand its impact.

Peace Mlenemba's story exemplifies the transformative potential of research sponsorship programs in fostering entrepreneurship and driving real-world impact.



Peace and Bernd Ueberschaer briefing the GIZ team on the Aquaponics system at the Aquaponics for Life Village

GAMBIAN STUDENTS JOIN AQUAFISH CENTER IN LANDMARK AGREEMENT BETWEEN LUANAR AND THE GAMBIAN GOVERNMENT

In a historic development, the Africa Center of Excellence in Aquaculture and Fisheries welcomed its inaugural group of students from Gambia. Ten students, seven of whom are enrolled under the AquaFish center, have embarked on their academic journey, marking a significant milestone in regional collaboration and academic excellence.

This achievement is the climax of intensive efforts by LUANAR and AquaFish to forge partnerships with the Government of Gambia, advocating for the enrollment of



The Gambian students upon their arrival at Kamuzu International Airport

Gambian students at the center. Through sustained lobbying and cooperation, this landmark agreement emphasizes the commitment of all stakeholders to foster regional collaboration and knowledge exchange in the aquaculture and fisheries sector.

The arrival of the Gambian students represents a significant step towards enhancing collaboration and knowledge-sharing among African nations, further solidifying the reputation of LUANAR's AquaFish center as a beacon of excellence in aquaculture and fisheries science on the continent.

THE AFRICA CENTER OF EXCELLENCE IN AQUACULTURE AND FISHERIES SCIENCE OFFICE COMPLEX TAKING SHAPE



The AquaFish Office Complex under construction

Construction of the office complex for the Africa Center of Excellence in Aquaculture and Fisheries, is currently in progress, marking a significant milestone in the center's development.

The project, which is being implemented in four phases, has reached a significant milestone with the completion rate of the first phase standing at 70%. Initiated in February 2023, the construction of the complex is on track and it is projected to be completed by December 2024. Funded by the World Bank to the tune of \$1,300,000, the project is being undertaken by Wahkong Construction Company.

Upon completion, the office complex will provide a dedicated workspace for center staff, as well as learning and study areas for students, aimed at fostering innovation and entrepreneurship within the aquaculture and fisheries sector.

The establishment of this modern office complex highlights the commitment of the AquaFish center to providing state-of-the-art facilities conducive to research, learning, and collaboration, further solidifying its position as a leading institution in aquaculture and fisheries science in Africa.

NAMIBIAN FARMERS TRAINED IN POULTRY AND RABBIT FARMING



Participants posing for a group photo with the facilitators

Africa Center of Excellence in Aquaculture and Fisheries in collaboration with the University of Namibia conducted a short course on Poultry and Rabbit farming in Namibia from 12 to 16 February, 2024. The training was aimed at equipping participants with the essential skills needed to boost food production, generate income, and alleviate poverty using affordable and locally available resources.

This five-day course provided a comprehensive introduction to Poultry and Rabbit Farming, emphasizing low-cost approaches. The curriculum was tailored to highlight the significant role that Poultry and Rabbit Farming can play in enhancing food security, nutrition, and economic development within communities.

Dr. Andy Safalaoh, a lead facilitator from the Lilongwe University of Agriculture and Natural Resources, emphasized the course's practical benefits, saying, "This training was designed to help participants improve their farming practices. By using locally available materials and sustainable methods, they can increase their productivity and support their community's food security and economic growth."

Throughout the training, participants learned about the high nutritional and commercial values of Poultry and Rabbit Farming, which can be achieved with minimal inputs. The industry's sustainability and small space requirements make it accessible and affordable for all social classes. The course provided practical insights on adopting various farming technologies to increase food production and build successful farming businesses.

The course was well-received, with participants appreciating the hands-on experience and expert insights provided. They left the training motivated and equipped to apply the new techniques and knowledge to their farming practices.

Africa Center of Excellence in Aquaculture and Fisheries,
Lilongwe University of Agriculture and Natural Resources,
P.O. Box 219,
Lilongwe,
Malawi.

Email: aquafish-project@luanar.ac.mw

www.luanar.ac.mw/aquafish

