

Project Update: August 2023

INTRODUCTION

Sustainably and thoughtfully cultivated aquatic systems provide nourishing sustenance for an ever-expanding global populace, alleviating the pressure on dwindling fish populations, all while fostering employment opportunities and enhancing the welfare of individuals. It's against this backdrop that fish farmers from various clusters underwent training in the advancement of ecologically responsible aquaculture within the confines of the Lake Victoria crescent. The training of the day focused on:

Educating and Engaging fish Cultivators and Other Aquatic Practitioners: This encompassed reaching out to fish farmers and other individuals engaged in aquaculture endeavours within the expanse of the Lake Victoria crescent. The training delved into comprehensive case studies of aquaculture administration within Mukono, Mpigi, Wakiso, Kampala, Masaka, and Buikwe districts. It additionally entailed a thorough assessment of aquaculture resources – gathering and deciphering pertinent data pertaining to aquacultural activities.

Guidance on Sustainable Aquaculture Principles: The training day's pedagogical focus was twofold. First, it delved into the underpinnings of the sustainable aquaculture concept its fundamental principles and concurrent undertakings within Uganda.

Formation of Collaborative Marketing Coalitions and their Role in Sustainable Aquaculture Advancement: Another key subject was the establishment of cooperative marketing associations and their pivotal role in driving the progression of sustainable aquaculture.

Exploration of Alternative Aquaculture Feeding Techniques: The training furnished insights into alternative sustenance approaches for aquatic organisms. This included pathways to cultivating sustainable feeds for aquaculture, thus reducing dependence on conventional feed sources.

Mapping the Route to Sustainable Aquaculture Development: The training emphasised a coherent trajectory toward sustainable aquaculture, outlining the key steps and components necessary for meaningful progress.

Value Addition in a Sustainable Context: The training expounded upon strategies for infusing sustainable value into the fish production cycle and the overall value chain, enhancing the overall economic viability of the sector.

Emergence of Forward-Looking Aquaculture Production Technologies:

The last facet of the training revolved around the emergent technologies that underpin sustainable aquaculture practices, fostering innovation in the field.

In sum, this training day comprehensively immersed participants in the multifaceted landscape of sustainable aquaculture – from its core principles and current national endeavours to the establishment of networks, innovative feeding strategies, and the integration of sustainable practices into the entire fish production process.

Educating and Engaging fish Cultivators and Other Aquatic Practitioners on sustainable aquaculture:

The training brought together participants from various backgrounds, including fish cultivators, aquaculture researchers, government representatives, and industry professionals. The training was organized in response to the growing need for environmentally responsible practices in aquaculture to ensure the long-term viability of the industry and the health of aquatic ecosystems in Lake Victoria crescent Uganda.

The training highlights:

Expert Presentations: The training began with a series of expert presentations on various aspects of sustainable aquaculture. Topics covered included water quality management, responsible feed practices, disease prevention, and the importance of biodiversity conservation. These presentations provided participants with a solid foundation of knowledge to build upon during the interactive sessions.





An expert for the aquaculture and fisheries department explaining to participant about sustainable aquaculture development-wakiso- Lake Victoria crescent, Uganda.

Interactive Discussions:

Following the expert presentations, participants engaged in interactive discussions and breakout sessions. These sessions encouraged participants to share their experiences and insights, enabling cross-learning among participants from different regions and backgrounds. Case studies of successful sustainable aquaculture projects were presented, sparking discussions on replicable strategies for sustainable aquaculture development in the Lake Victoria crescent, Uganda.



Participants engaged in interactive discussions and breakout sessions.

Fishpond construction Practical Demonstrations: To provide participants with hands-on experience, practical demonstrations were organized. These included techniques for setting up efficient fishpond aquaculture systems, designing environmentally friendly fish habitats, and employing natural pest control methods and the participants observed this on ground.

The points covered during this session focused on:

Environmental Regulations and Permits: Participants were introduced to local, regional, and national regulations governing fishpond construction in sensitive areas. The importance of obtaining the necessary permits and complying with zoning restrictions was emphasized to ensure legal compliance.

Site Selection:

The criteria for selecting suitable sites for fishpond construction were discussed. Factors like water availability, soil type, topography, and proximity to ecologically important habitats were taken into consideration to minimize negative impacts.

Ecological Impact Assessment:

Participants learned the significance of conducting ecological impact assessments prior to construction. The assessment process covered potential impacts on local flora, fauna, water quality, and other environmental factors to guide sustainable decision-making.

Design Considerations:

Sustainable design principles were highlighted, encompassing pond sizing, shape, and depth. Design features such as buffer zones, wildlife corridors, and water management systems were explored to promote environmental harmony.



Participants being taken through sustainable design principles of fishponds.

Erosion and Sediment Control: Erosion and sediment control techniques were taught to prevent soil runoff into water bodies. Strategies like vegetative cover and silt fences were introduced as effective measures to mitigate erosion risks.

Water Management:

The importance of proper water management was underscored for maintaining optimal pond conditions. Techniques such as water circulation, aeration, and nutrient control were addressed to prevent water quality degradation.

Species Selection:

Participants were educated on selecting appropriate fish species for stocking in line with the local ecosystem. A preference for native species was advocated to minimize the risk of invasiveness.

Habitat Preservation:

The training stressed the preservation of surrounding habitats and natural features. Strategies like buffer zones, wetland protection, and avoiding disturbances were discussed to safeguard the ecosystem.

Waste Management:

Effective waste management strategies were covered, including addressing fish waste and uneaten feed. Participants learned how to prevent pollution and nutrient enrichment of nearby water bodies.

Monitoring and Maintenance:

Participants gained insights into regular monitoring of pond conditions and the environment. Water quality assessment, fish health evaluation, and ecosystem monitoring were focal points. Routine maintenance practices were also detailed.

Case Studies:

Real-life case studies of successful fishpond construction initiatives were presented. These studies illuminated lessons learned, challenges faced, and positive outcomes achieved, offering valuable insights to participants.



Successful aquaculture farmers explaining fishpond construction projects in locality- fellow fish farmers paying attention.

Hands-On Exercises:

The training integrated practical exercises and site visits to reinforce theoretical knowledge. Participants engaged in field trips to existing fishponds, hands-on construction technique demonstrations, and interactive training.





Site visits to reinforce theoretical knowledge by participants-observing existing fishponds.

Policy and Regulation:

Representatives from governmental bodies shared insights into existing policies and regulations related to aquaculture. This facilitated a better understanding of the legal framework and how participants could align their practices with sustainability guidelines.



Representative from governmental bodies sharing insights into existing policies and regulations related to sustainable aquaculture development.

Training on feeding fish with black soldier fly as a sustainable fish feed source
The global agricultural and aquaculture sectors face increasing challenges in meeting the rising demand for protein sources while minimizing environmental impacts. In response, innovative and sustainable approaches are being explored. One such approach involves utilizing black

soldier fly (*Hermetia illucens*) larvae as an alternative protein-rich feed for fish. Under this session, participants were taken through how to integrate black soldier fly larvae into fish diets.



Participants being taken through integrating black soldier fly larvae as alternative fish feed .

The focus of the session was:

Why black soldier fly in feeding fish as a sustainable feed source?

The presenter took the participants through the need to integrate the black soldier fly larvae in fish feeding as the alternative and environmentally friendly feed source, the following were cited as key reasons.

Nutritional Value:

Black soldier fly larvae are rich in essential nutrients like protein, fat, and amino acids. They provide a well-balanced diet for fish, promoting healthy growth and development.

Protein Content:

Protein is a crucial component of a fish's diet, as it supports muscle development, immune function, and overall health. Black soldier fly larvae are particularly high in protein, making them an excellent protein source for fish feed.

Healthy Fats:

Fish require healthy fats, such as omega-3 and omega-6 fatty acids, for various physiological functions. Black soldier fly larvae contain a favourable ratio of these fats, contributing to the overall well-being of the fish.

Digestibility:

The nutritional composition of black soldier fly larvae makes them highly digestible for fish. This means that fish can efficiently absorb and utilize the nutrients present in these larvae.

Environmental Benefits:

Using black soldier fly larvae as fish feed is environmentally sustainable. They can be reared on organic waste materials like food scraps, agricultural by products, and manure. This reduces the burden on landfills and contributes to a circular economy.

Reduced Competition with Human Food:

Utilizing black soldier fly larvae as fish feed can help alleviate the pressure on global fish stocks and reduce overfishing. Instead of using traditional fishmeal made from wild-caught fish, which can impact ocean ecosystems, the larvae can be used as a more sustainable alternative.

Economic Viability:

Producing black soldier fly larvae can be cost-effective and efficient. Their rapid growth and ability to thrive on various types of organic waste make them a relatively low-cost option for producing high-quality fish feed.

Feeding Behaviour:

Many fish species are naturally inclined to consume insect larvae in the wild. Feeding fish with black soldier fly larvae aligns with their natural feeding behaviour, making it a suitable and attractive food source.





Participants observing the black soldier fly larvae as an alternative sustainable fish feed during the training.

The training /workshop went successfully and the way-forward was discussed with the participants.

These were the key highlights:

Sustainable aquaculture development in the Lake Victoria Crescent region of Uganda requires a comprehensive and well-planned approach that considers environmental, social, and economic factors. The key steps and strategies that were discussed by the participants are:

Prioritising an ecosystem-based approach that takes into account the health and balance of the Lake Victoria ecosystem. Ensure that aquaculture practices do not harm the natural habitat, water quality, and biodiversity of the lake and its surrounding areas.

Strengthening and enforcing regulations and policies related to aquaculture development. These should cover issues such as water use, waste management, species selection, and disease control. Collaboration

between government agencies, local communities, and industry stakeholders is essential.

Identifying suitable areas for aquaculture activities. Avoid environmentally sensitive zones and areas with high biodiversity. Conduct thorough environmental impact assessments before establishing new aquaculture sites.

Choosing appropriate fish species for aquaculture that are well-suited to the local ecosystem and have a low risk of becoming invasive. Native species should be prioritized over exotic ones.

Implementing integrated farming systems that combine aquaculture with other agricultural activities, such as crop farming and livestock rearing. This can help minimize waste generation, enhance resource utilization, and improve overall system sustainability.

Implementing strict biosecurity measures to prevent the introduction and spread of diseases among aquaculture stocks. Regular health monitoring and appropriate use of veterinary medicines should be part of the management plan.

Providing training and education to aquaculture farmers on sustainable practices, modern techniques, and best management practices. This can help improve productivity while minimizing negative impacts.

Involving local communities in decision-making processes regarding aquaculture development. Their traditional knowledge and insights can contribute to more informed and sustainable choices.

Investing in research and development to improve aquaculture practices, breeding techniques, and disease control methods. Encourage innovation and collaboration between researchers, industry experts, and farmers.

Developing market linkages for aquaculture products. This can involve creating value-added products, improving processing and storage facilities, and establishing partnerships with local markets and export channels.

Regularly monitoring and evaluating the environmental, social, and economic impacts of aquaculture activities. This information will help identify potential issues and guide adaptive management strategies.

Providing financial support and incentives for small-scale farmers to adopt sustainable aquaculture practices. This can include access to credit, grants, and subsidies.

Raising awareness among consumers about the importance of supporting sustainable aquaculture products. Educate the public about the benefits of responsible consumption and its positive impact on the environment.



Principal investigator taking through the participants on the way forward for sustainable aquaculture development in the Lake Victoria crescent Uganda.

Other Field Photos below:



Conclusion

In conclusion, the successful training session conducted on August 22nd, 2023, marked a further significant milestone in advancing our understanding of local community perceptions and the potential for sustainable aquaculture development within the ecologically sensitive areas of Lake Victoria Crescent, Uganda. The active participation and engagement of stakeholders, researchers, and community members alike have not only enriched our knowledge but also paved the way for informed and collaborative efforts towards responsible and environmentally conscious aquaculture practices. As we move forward, armed with these insights, we are better equipped to foster a harmonious balance between community needs, ecological preservation, and economic growth, ensuring a brighter and more sustainable future for both the region and its inhabitants.

Acknowledgement

With sincere appreciation, I extend my heartfelt gratitude to the Rufford Foundation for the invaluable support and funding that has paved the way

for the realization of my project, "Understanding Local Community Perception and Potential of Sustainable Aquaculture Development in Ecologically Sensitive Areas of Lake Victoria Crescent, Uganda."

I acknowledge the profound generosity of the Rufford Foundation, whose contribution has empowered me to embark on a critical journey of research and exploration. This endeavour holds the potential not only to deepen my comprehension of Lake Victoria Crescent's intricate ecosystem but also to nurture sustainable practices that resonate harmoniously with the environment and the local community's dependence.

The Rufford Foundation's unwavering dedication to environmental preservation and community involvement is truly admirable, and I feel deeply honoured to be the recipient of their support. This funding provides me with the means to delve into the nuanced interplay between local perceptions, the development of sustainable aquaculture, and the safeguarding of ecologically sensitive zones. With enthusiasm, I embrace this undertaking, aspiring to contribute to the knowledge repository that will shape both policies and actions within the region.

Once more, I convey my heartfelt appreciation to the Rufford Foundation for their unwavering belief in the mission of my project and their resolute commitment to enhancing our natural world. I pledge to continue maximizing this opportunity to its fullest extent, with the aspiration of effecting a positive and enduring transformation upon Lake Victoria Crescent and the adjoining communities it sustains.