

AICCRA CSA-Bundle two Lesson Learned Workshop Report

Netsayi N. Mudege, Henry Kanyembo, Mercy Sichone, Keagan Kakwasha, Agness Chileya, and
Lizzy Muzungaire



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Authors

Netsayi N. Mudege, Henry Kanyembo, Mercy Sichone, Keagan Kakwasha, Agness Chileya, and Lizzy Muzungaire

Affiliations

WorldFish Zambia

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Agness Chileya/WorldFish

Executive summary

This report presents the outcome of the lessons learned workshop organized by WorldFish in partnership with the AICCRA CSA-Bundle two Accelerator partners working on integrated aquaculture-agriculture systems in Luapula and the Northern Provinces of Zambia.

The main aim of the workshop was to reflect on the experiences, successes, challenges and outcomes of the project to identify valuable insights and takeaways to inform future work.

The workshop was held at Sali's Resort in Mansa on August 30th and 31st, August 2023, and 36 people (8 women) participated. The participants were drawn from the AICCRA accelerator partners, farmer cooperatives, the department of fisheries, commercial feed millers, and other private sector companies.

Several presentations were made during the workshop, including:

1. the experience of training smallholders on integrating aquaculture with small livestock and providing extension services,
2. the experience of providing inputs to smallholder farmers,
3. the experience of linking farmers to output markets,
4. the experience of gender and inclusion and dissemination of CIS information, and
5. the experience of implementing the AICCRA innovation challenge and internship grant.

Participants were asked to ask questions and also provide inputs. In addition to plenary presentations and question and answer sessions, participant also engaged in group work activities to interact, discuss, and share their observations, experiences, opinions, lessons learned, and recommendations for improvements on various interventions based on the workshop presentations. Based on the stakeholder contributions at the meeting, WorldFish compiled a list of proposed activities and recommendations for the project. Participants also recommended possible expansion of the project into Muchinga, Central, and Western Provinces.

Participants visited Toda Raba, an integrated aquaculture-agriculture fish farm, on the last day of the two-day workshop. The visit aimed to help workshop participants appreciate the skills, knowledge, and experience needed to run an integrated fish farm and foster a deeper understanding of farming practices. The farm has poultry, vegetables, livestock, aquaculture, and research and development units.

Introduction

Climate change threatens Zambia's food systems and affects smallholder farmers' livelihoods, making it urgent for farmers and other agricultural value chain actors to anticipate climate-related events and take appropriate mitigation measures. To address challenges related to climate change impacts on agriculture and aquaculture, AICCRA Zambia is working with agribusiness-based private sector players, especially Small to medium-scale enterprises (SMEs), to scale out climate-smart technical innovations and approaches. AICCRA Zambia is promoting the integration of Climate Information Services (CIS) in Climate Smart Agriculture (CSA). This report focuses on lessons learned from implementing the Integrated Agriculture Aquaculture Bundle in Zambia's Northern and

Luapula provinces through working with SMEs who were awarded a de-risking grant to promote access to CIS and CSA by smallholder fish farmers.

Objectives of the workshop

The main of the workshop was to reflect on the experiences, successes, challenges, and outcomes of the project to identify valuable insights and takeaways that can inform future work. The following were the expected workshop outcomes:

1. Documenting the experiences, knowledge, successes, and insights gained from the project.
2. Highlighting obstacles, issues, and challenges faced during the project
3. Incorporating feedback from stakeholders outside the immediate project team into project planning for 2024
4. Documenting feedback from stakeholders outside the immediate project team to gain a broader perspective on the project's outcomes and impact

The workshop took place over two days (See Annex 1). Thirty-six people participated in the workshop.

Opening remarks and workshop objectives

Mr Joseph Chiti, the Fisheries & Livestock Coordinator for Luapula province, welcomes workshop participants. He expressed his enthusiasm about the diverse audience in attendance and optimism that the knowledge exchange would provide valuable insights for the Ministry of Fisheries, helping them gain a deeper understanding of the effects of climate change on fish farming and the opportunities and challenges affecting the industry. Mr. Chiti emphasized the ministry's commitment to seriously taking the workshop's lessons.

Workshop Objectives by Dr Netsayi Noris Mudege

Dr Netsayi Mudege elaborated on how climate change events, such as droughts and floods, have affected the aquatic food system. She mentioned that the AICCRA project implemented by CGIAR centers in collaboration with the government, private sector agribusinesses, and local partners sought to scale climate-smart agriculture and aquaculture innovations to promote resilience among smallholder farmers. Dr. Mudege further noted that the AICCRA project is operational in six African countries, including Zambia. These countries were chosen for project implementation due to their classification as climate change hotspots or their vulnerability to climate-related risks. She stressed the value of prior stakeholder consultations, as these discussions informed the project's interventions. She summarised the project's objectives as follows:

1. Knowledge generation and sharing for effective services.
2. Partnerships for delivery
3. Supporting the uptake of climate-smart agriculture (CSA) innovations

She concluded by welcoming the workshop participants and encouraging their active participation.

Presentation on the experience on training smallholders on integrating aquaculture with small livestock and providing extension services by Collins Chongo (see [here](#))

Mr. Collins Chongo presented the experience of the SMEs in training smallholders on integrating aquaculture with small livestock and providing extension services. The SMEs worked together to enhance the dissemination of CIS and CSA technologies through social and cultural innovations using various locally available communications technologies and methods. Secondly, the SMEs aimed to increase the production of quality fingerlings using climate-smart technologies such as greenhouses and other technologies developed by international agriculture research centers and promote the production and marketing of farmed fish using a land-based integrated agriculture

system. The SMEs had a target of reaching 75,000 smallholder farmers (40% women; 35% youths) and providing them with access to climate-smart agriculture technologies and climate information advisories.

In his presentation, Mr. Chongo explained that they used various approaches to disseminate information to farmers. These included

1. local radio stations;
2. provincial agriculture and commercial shows;
3. the use of demo fishponds and providing on-farm training to farmers reachable in our communities and
4. roadshows in partnership with Kasama Arts, DOF, NAIS, and ZANIS.

Farmers were trained on pond construction, stocking fingerlings, type of fish species, feeding practices, and harvesting. They were also given information on where farmers can access output markets to sell their fish products.

Presentation on the experiences on the provision of inputs (feeds and fingerlings) by Mubanga Seketeni, Felix Mulenga, and Wilbroad Musanshi (see [here](#))

The SMEs shared their experience with input provision.

ADSEK Enterprises Limited - feed supply: The SME supplied and distributed commercial feed and agrovet products and disseminated climate information to clients consisting mainly of farmers in aquaculture, poultry, small ruminants, and crops. He explained that the accelerator grant from the AICCRA project and the technical support from WorldFish helped the business grow and become a reliable source of fish feed and other agrovet products for smallholder farmers in northern Zambia. The business operates two outlets in Mansa and Kawambwa districts, respectively. Before the partnership with the AICCRA project, ADSEK used to supply 10 metric tons of feed to farmers per month, and the volumes have since doubled to 20 metric tons per month. He attributes this to the growing number of smallholder farmers buying feed from him in the region. The business also supplies broiler day-old chicks at an average of 2000 chicks every week. Mr Mubanga also highlighted that his company has been recognized by the Zambian government as a reliable feed supplier in the region and was awarded a contract to supply 1,000 bags of fish feed to farmers funded by the Citizens Economic Empowerment Fund (CEEC).

Hope Ways Private Limited and Kasakalabwe Multipurpose Cooperative - Fingerlings production and distribution - Wilbroad Musanshi (HopeWays) and Felix Mulenga (Kasakalabwe) shared their experiences with *Oreochromis macrochir* and catfish fingerling production. The SMEs made progress on broodstock development for producing *Oreochromis macrochir* fingerlings in greenhouses. Broodstock increased from 2,250 in 2021 to 12,315. However, the SMEs only produced 28% (1.39 million) fingerlings against a target of 5 million.

HopeWays Enterprises could not meet the target because the government had imposed a temporal ban on fingerling production following the outbreak of some fish diseases in the region, particularly fungal infections. The government collected fish samples from HopeWays fish farms and the Chambeshi River. Upon screening, it was discovered that the disease was not from HopeWays' farm but from the Chambeshi River in the Shiwangandu district of Muchinga Province. Production resumed after clearance.

For Kasakalabwe lack of water in the hatchery impacted productivity and caused fingerling mortality. The groundwater supply was low, leading to a low water supply in the hatchery. The temperatures were also high during the 2021–2022 production season, causing fungal infections on the fish farm. The problem of high temperatures affected other farmers in the Northern Province.

Plenary discussions

After the SMEs made their presentations, the workshop participants asked the presenters questions. The following were the questions and responses:

1. **What measures have the hatchery operators put in place to enhance biosecurity in hatcheries following the outbreak of fungal infections in the country?** One of the hatchery operators (Hope Ways) explained that the hatchery has proper biosecurity certified by several stakeholders who have inspected his farm, including the Zambia Bureau of Standards (ZABS) and the Department of Fisheries. He also clarified that the government was being cautious and that its directive to close production was enforced to ensure that all hatchery operators were free from diseases during the outbreak of the fungal infections, not necessarily that his farm was infected.
2. **Have you reached 75,000 beneficiaries, and from this number, how many smallholders are practising integrated aquaculture?** The SMEs explained that they only managed to reach 45,100 beneficiaries through their various engagements. It was also noted that of the 45,100 beneficiaries, 15,700 were recorded in the digitized database managed by WorldFish.
3. **What fish-based products does Eunimos Investment produce?** The chairperson for Eunimos Investment explained that the company produces table-size fish and is also an off-taker for table-size fish, chicken, soybeans, and maize from farmers. The company processes the fish and chicken products by packaging them in branded products, which are further supplied to supermarkets in Mansa. The supermarkets that stock Eunimos products are Best Choice Limited and China Home Limited.
4. **Of the farmers you have reached, how many have smart phones to access digital information?** Some farmers are not recorded in our database, but among the registered farmers, 1,130 have smartphones, 5,076 have small phones for communication and receiving USSD messages, and 9,575 do not have phones. We have always been aware that some farmers do not have phones, which is another reason why we use various communication channels such as radio, road shows, agriculture shows, and demo plots to cater to various groups of farmers and help them receive enhanced information on how they manage climate shocks.
5. **What are the noticeable changes you have observed in the smallholder farmers who have accessed your services?** We have not done any adoption studies to understand the impact of these interventions, but we have observed an increase in the number of people demanding our products and services.
6. **What is the difference between smallholder farmers and SMEs?** A participant explained that the government, through the newly created Ministry of Small and Medium Enterprises, is working on the operational definition of an SME to ensure that the definition is inclusive and helpful in determining the kind of support needed by those identified as SMEs.
7. **You have mentioned that you are helping a group of smallholder farmers produce fingerlings; why are you doing that instead of telling them to buy high-quality fingerlings from you?** Kasalabwe hatchery operator representative explained that the farmers cannot afford to buy fingerlings from the hatchery in Kasama because they have to cover a long distance if they do so and are constrained with resources. "Yes, the aforementioned ponds will be used to produce fingerlings that will be given to female farmers for nutritional reasons and simply because the majority of farmers in these areas are still unable to afford to purchase fingerlings from the Kasakalabwe hatchery".
8. **I wanted to know whether the Fisheries Department was informed of the fungus and high-temperature Kasakalabwe had reported. If so, what action did the department take?** A representative from the Department of Fisheries acknowledged that the ministry was aware of the outbreak of fungal infections, and they advised the hatchery operators, including Kasalabwe, to strengthen their biosecurity in the hatcheries. Mukasa Agro Solutions Limited added that the University of Zambia is collaborating with Mukasa Agro Solutions to create a common fish disease protocol to help farmers identify specific diseases on their farms; hence, every farmer was advised to look out for this information.

Presentation on the experience of linking farmers to output markets by Cosmas Chachi (see [here](#))

Mr Cosmas Chachi, owner of Triple Blessings Center (a supermarket and restaurant) in Luwingu, Zambezi's Northern Province, shared his outgrower scheme experience. Triple Blessings Shop supplies urban clients in its area with 200kg of locally farmed fish per week and over 2.8 tons

per month. Mr. Chachi explained in his presentation that locally farmed fish sells faster than imported fish from China, so he has expanded his partnership with smallholder farmers beyond providing an offtake market to include extension services to ensure a constant supply of fish that meets his clients' quality standards. Mr Chachi said WorldFish training and project-funded local radio station awareness campaigns had improved his profile in the district, allowing him to extend his business beyond the store, restaurant, and training centre in Luwingu. He has set up seven demonstration ponds to instruct smallholder farmers on better management practices so they can supply him with quality fish to meet his market demand. He funded 20 Kachila village farmers (10 women and ten men) to raise fish together. He trains and supplies this group with fingerlings and feed while farmers provide labor. He believes such a strategy will motivate farmers to learn quickly and deliver fish, which is crucial to his business. "I want them to keep producing because the business cannot afford to have fish in the shop today and nothing tomorrow".



Figure 1: People buying fish from the Triple Blessings center in the Luwingu district

Mr. Cosmas Chachi is now connected to other SMEs and businesspeople throughout the province and beyond the province. He is also now recognized by district officials and other stakeholders as a businessperson and an off-taker of fish, chickens, and other agricultural products.

"From the time you exposed me to the aquatic foods being produced in the local markets, I get many calls, even from the government through the farmers under the Citizens Economic Empowerment Commission (CEEC), and as a business, it is important to provide what people want, so I have to strategize to make sure I meet my customers' needs. I didn't see this coming when I first started with you because my business focused on the restaurant and other assorted groceries and food items sold in the supermarket, but now I see a huge demand for local fish".

Plenary discussions

After the presentation, participants were asked questions. Below are the questions and answers:

1. **Why is it that very few women have attended this workshop, yet you have explained that most people buying fish from your supermarket are women?** Men are more active than women when it comes to attending meetings. Within their communities, women actively participate in meetings organized within their communities.
2. **Someone wanted to know how Triple Blessings Center would benefit from the 20 farmers participating in the demonstration pond.** The owner of Triple Blessings explained that the demonstration pond serves as a teaching tool to guide smallholder farmers in producing fish that meet the market's needs in terms of size. In this case, Triple Blessing will supply the fingerlings and feed needed for the entire growth period so farmers can learn management practices. Triple Blessing will purchase any produced fish, and any proceeds will go to the group.
3. **What steps have been taken to help farmers losing fish due to mortality from drying ponds?** African Life Assurance has created insurance plans for the aquaculture industry. Farmers ought to think about registering for such plans. Another farmer added that the drying up of fishponds at the end of the dry season is a huge problem in Zambia; therefore, it is

crucial for every farmer who could be impacted to take precautions now rather than waiting for the worst to happen.

Presentation on the experience with gender and inclusion and dissemination of CIS information by Peter Chinunda (see [here](#))

Peter Chinunda, the owner of Kasama Arts Theatre, facilitated this presentation. Kasama Arts disseminates climate-smart agriculture technologies and information to rural farmers who may not have access to radio and TV. The theatre packages CSA and CIS information using a drama series based on real-life experiences of women and male farmers, demonstrating how climate hazards negatively impact farmers' agricultural productivity and providing solutions for managing climate risks. Kasama Arts carries out road shows in rural communities, and the drama series are also digitized for radio and social media broadcasting. They are also beamed on the Kasama Arts digitized billboard in public gatherings. Information is disseminated by local radio stations such as Radio Mano, Radio Kasama, Radio Luswepo, Lutanda Radio, KFM Bangwela Radio, Luapula Radio, Tuta Radio, Lukwanga Radio, Kalungwishi Radio, Radio Yangeni, One Love Radio, Walamo Radio, Liberty Radio, and Lwansase Radio.

AICCRA Innovation Challenge and Internship Grant by Simunza Muyangana

Mr Simunza, a representative of BongoHive, presented on the AICCRA Innovation Challenge and Internship Grant, which they implemented. The AICCRA Innovation Challenge and Internship Grant was implemented in 2022 to support in-country capacity in the development of innovations within the agriculture industry that service Climate Smart Agriculture (CSA) and Climate Information Services (CIS) needs, as well as developing partnerships with players within the sector and beyond. One of the key benefits of this program was to support young entrepreneurs and young professionals through private-sector working experience and demand-driven innovation development in Zambia's agriculture sector. BongoHive hosted the Internship Innovation Challenge, and 35 interns participated. By the end of the internship, 28% of the interns had started their own agribusinesses and supplied retail shops and local markets; 65% had started home gardens; and 5% were implementing mushroom projects during holidays and utilizing financial literacy education to earn money. In addition, 31 parents adopted innovations from their children.

Plenary discussions

After the presentation, participants asked questions. The questions and answers are reported below:

1. **Did you have any challenges engaging interns?** Yes, most of the interns were students who had not yet graduated. So they did not manage to go on holiday to rest since they needed to do the internship when on holiday from the Universities. It was not easy to coordinate to ensure that every intern participated in their placement throughout the assigned period. In the next phase, we will recruit those who have graduated to ensure full participation and easy coordination.
2. **Of the 65% who are doing gardening, are they doing it as a hobby or a business, and did you provide them with any financial literacy?** They are doing it as a business, and yes, indeed, we acknowledge that financial literacy skills are critical to helping young professionals succeed in their businesses. Many businesses are failing because financial literacy is not good.
3. **Do we know if consumers are willing to pay extra for food, including vegetables produced using organic farming methods?** Currently, we have not carried out any sensitization on the health benefits of eating food produced using organic farming methods or climate-smart technologies. It is not expensive to produce food using organic farming methods. What makes such food expensive is the low yields. Yields are low when compared to food produced using chemical fertilizers, so those using organic methods need to be compensated for that loss in productivity
4. **Did you have any internships in aquaculture?** We did not have. This is something that we need to consider in the next cohort.

Group Presentations

After the challenges and successes were presented, participants were divided into five groups to discuss about the challenges and provide suggestions for improvement. This section presents the outcome of the group presentations. Participants were organized into groups to allow them to engage in discussions and share their insights, experiences, and suggestions for improvements related to different workshop presentations. The groups were categorized as follows: (i) linking farmers to output markets, (ii) fingerling production, (iii) input markets, (iv) training and information dissemination, and (v) gender equality and social inclusion.

Group 1: Linking Customers to the Output Market

Background	Experience/Challenge	Innovations	Recommendations
A large number of customers' need large and medium-sized fish.	Most of the local farmers are growing smaller fish.	Improve on feeding. Keeping fish longer in the pond to attain the required market size	Capacity building. Improved extension services to sensitize farmers

<p><u>LINKING FARMERS TO OUTPUT MARKETS</u></p> <ul style="list-style-type: none"> + Continue with integration programme. → To counter-effects of Climate Change → Cost Saving as a result of integration. → Promote the Culturing of Catfish <ul style="list-style-type: none"> - More resilience - more profitable - easier to manage → Provide technical help assistance to Catfish Hatchery operators to enhance fingerling production 	<p><u>FINGERLINGS INPUT</u></p> <p><u>BACKGROUND</u></p> <ul style="list-style-type: none"> - EXPECTED TO PRODUCE 5m FINGERLINGS TO LUAPULA AND NORTHERN PROVINCES. - 4.5m O. macrochir - 500,000 Cat fish fingerlings <p><u>Reflection/Challenges</u></p> <ul style="list-style-type: none"> - O. macrochir 1.390m (28%) - Cat fish = 00 - Deficit = 3.610m (72%)
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Figure 2: Notes from the group discussions

Group 2: Fingerlings production

Background	Experience/Challenge	Innovations	Recommendations
Expected to produce 5 million fingerlings in Luapula and Northern provinces, i.e., 4.5 million O. macrochir and 500,000 catfish.	<ul style="list-style-type: none"> • Produced only 1.3M with a deficit of 1.6M • The quality of broodstock was poor. • Immature broodstock for catfish • Suspected fish diseases for fungal and EUS resulting in the closure of the hatcheries • Inadequate water supply • Low temperature • Inadequate fish tanks for nursery and broodstock • Catfish hormone was scarce. 	<ul style="list-style-type: none"> • Access to high-quality broodstock • The right pairing of broodstock • Resting broodstock • Introduction of biosecurity measures at the hatcheries • Greenhouse technology • Additional fish tanks • Access to hatchery feed through collaborating partners 	<ul style="list-style-type: none"> • Availability of catfish feed and hormone • Constant water supply to the hatcheries and earthen ponds

Group 3: Input markets

Background	Experience/Challenge	Innovations	Analysis	Recommendations	Lessons
increasing access and availability of commercial stock feed for smallholder feeds	The conditions of some suppliers were prohibitive, i.e., minimum quantity for free delivery and distance between agents (SMEs).	The supplier gave the option of combining clients in a single load so as to allow the clients to meet the required minimum tonnage for free delivery. The supplier also revised the proximity clause.	Supplier policy demanded a minimum tonnage, which was beyond the ability of the SMEs. The supplier also recommended that agents be spaced to a given minimum distance. Observed that clients and SMEs had stable supply, which built customer confidence, and tonnage	Suppliers should be flexible and undertake market studies to understand the needs of their clients. Additionally, support from projects should be meaningful so as to allow for sustained performance by the SMEs.	The flexibility of the suppliers resulted in improved performance for the SMEs as sales improved due to improved farmer confidence in both accessibility and availability.

			by the SMEs went up.		
	Low sales from smallholder farmers	increased extension services through increased on-farm visits by SME staff, and also budgeted for and involved public extension service infrastructure. Also, credit facilities and discounts. Also started taking advantage of exhibitions such as district agriculture shows.	It seemed the luck of the draw was behind the low response from the farmers. The inconsistencies in supply also demotivated the farmers. The price of feed continues to be an issue for most farmers.	Imbedded within the projects are models that look at access to finance, financial literacy, and savings among the smallholder farmers.	Increased farmer awareness through extension services such as training and consistency in the availability of stock improved farmer purchases.
	Farmers, especially those on poultry, are demanding smaller packages of feed.	Nothing was done as the supplier was ready to adjust due to manufacturing costs. Self-prepackaging is not legal.	This was mostly observed by those farmers keeping smaller numbers between 25 and 50. Equally towards the end of the production cycle, when the farmers had started off-loading and needed lower quantities.	Possibly allow for flexibility for agents (by the suppliers) to prepackage the stock but with strict regulations to avoid fraud. Evidence seems to indicate that reductions in package sizes increase manufacturing costs and can, as such, result in increased feed prices.	

Group 4: Training and Information Dissemination

Background	Experience/Challenge	Innovations	Analysis	Recommendations
<p>Train farmers on CIS-CSA and promote the integration of farming activities.</p> <p>The SMEs used radio as well as on-farm training to disseminate CIS-CSA information, including</p>	<p>People were expecting funding from us during trainings.</p> <p>collection of data on the number of listeners from radio stations.</p> <p>Uptake of information was slow.</p>	<p>Construction of modern fishponds</p> <ul style="list-style-type: none"> Support irrigation 	<p>Communities respect local and traditional leaders.</p>	<p>It is important to involve traditional leadership whenever the community is engaged.</p>

Group 5: Gender Equality and Social Inclusion

Background	Innovations	Recommendations
<p>Road shows: We did not only receive farmers during road shows but rather a mixed grouping. This gave others an opportunity to learn about CIS-CSA. It was, however, difficult to account for the fact that women received the training through road shows.</p>	<p>We switched to well-structured women's cooperatives.</p> <p>A lot of smallholder farmers and women were reached thanks to beaming shows during agriculture shows in the evening.</p>	<p>Cooperatives, camp shows, field days, and block agriculture shows are just a few examples of more structured settings where training should take place.</p> <p>To make the purpose of the training more visible, pop-ups or teardrops should be used.</p> <p>An expert should be present anytime a road show is taking place to respond to technical queries.</p>

In addition, during group presentations, the participants were allowed to ask questions and receive the following questions and answers:

- One of the farmers wanted to know how Novatek Animal Feeds Limited is handling the issue of new products such as catfish feed and what the difference is between tilapia and catfish feed. And lastly, where is the market for catfish, especially since a section of Zambians is superstitious regarding the species in question?** A representative from Novatek explained that the main difference between catfish feed and tilapia feed is in the ingredients; catfish feed requires more animal protein than tilapia, and to produce catfish feed or any other new product, there is a need to ensure that there is a sufficient market to buy the feed because our machines cannot produce small volumes; there is a minimum tonnage for a machine to operate, so if there are many farmers demanding catfish feed, then the company can start producing. Currently, the number of farmers is too small to warrant catfish feed production. In terms of the market for catfish, DRC consumes a lot of catfish, and customers from DRC are willing to come and buy catfish in Zambia provided it is available.
- How is Novatek assisting farmers with the distribution of feed?** If the SME cannot manage to order feed up to the volume of 30 tons, Novatek has what is known as the co-

loading method, which allows an SME to request a specified tonnage with the macro (the main feed outlet in the region) filling the remaining space. These solutions can still be made available to farmers upon request and with a precise tonnage because the minimum tonnage for a truckload is 30 tons. Alternatively, SMEs can work together by combining their resources and placing a minimum order of 30 tons.

2024 Proposed Activities for the AICCRA project.

This section provides the stakeholder's recommended activities for aquaculture from 2024. These activities were proposed to be implemented in Luapula and Northern Provinces, with an expansion to Muchinga, Central, and Western Provinces.

Proposed activities to cope with the demand for fingerlings in the country

1. Improve biosecurity in hatcheries.
2. Support installation of Re-circulating Aquaculture Systems (RAS) system in hatcheries
3. Capacity building in broodstock management
4. Technical training in catfish hatchery management and growth out
5. Engage all interested feed suppliers regarding the packaging of feed in small quantities.

Proposed activities to address gender inequality

1. Identifying aquaculture cooperatives to strengthen women's participation and ownership of productive assets.
2. Working with the Department of Community Development.
3. Carry out adoption studies to understand the number of female farmers using various interventions provided, including their impact on yield.

Proposed activities to address the fish (table size) supply deficit

1. Continue with the accelerator extension and demonstration sites.
2. Strengthen the farmed fish cold chain and post-harvest management.
3. Training of smallholder farmers in integrated fish farming as well as basic fish farming skills
4. Support the development of an aggregation model to allow SMEs to aggregate for large off-taker firms. The support may take the form of either financial or asset support.
5. Carry out adoption studies to understand the number of farmers using various interventions, including their impact on yield.

Proposed activities to supplement extension services and agro advisories

1. Support the expansion of internship programs to include all relevant fields, including agriculture engineering.
2. Develop appropriate and efficient mass media extension methods.
3. Asset support targeting extension challenges and critical points
4. Develop, adopt, blend into, or scale digital advisory platforms.
5. Consider teaching agricultural assistants (camp officers) in aquaculture because they reside in farming communities and are primarily called on to help the farmers on various agriculture value chains, including fish.

Policy compliance among fish producers

1. The existence of SMEs is threatened by significant legislation being implemented; therefore, it will be crucial for stakeholders such as WorldFish to consider educating SMEs on these rules and regulations, such as water rights.

Farm Visit: Toda Raba Farms

On the last day of the two-day training, participants visited Toda Raba, an integrated aquaculture-agriculture fish farm. The visit aimed to help workshop participants appreciate the skills, knowledge, and experience needed to run an integrated fish farm and foster a deeper understanding of farming practices. The farm has poultry, vegetables, livestock, aquaculture, and research and development units.



Annexes

Annex 1: Workshop agenda

AICCRA CSA Bundle 2 Lessons Learnt Workshop

Venue: Sali Lodge, Mansa

Dates: 30th & 31st August, 2023

Day 1

Time	Content	Facilitator
08:00 – 08:30	Registration	Agness Chileya (WF)
08:30 – 08:40	Introductions	Lizzy Muzungaire (WF)
08:40 – 08:50	Welcoming Remarks	Mr. Joseph Chiti, Luapula Provincial Fisheries & Livestock Coordinator
08:50- 09:00	Meeting objectives Project overview	Netsayi Mudege (WF)
09:00 – 09:30	Experience on training smallholders on integrating aquaculture with small livestock and providing extension services	Collin Chongo
09:15 – 09:30	Experiences Provision of inputs (feeds and fingerlings)	Mubanga Seketeni, Felix Mulenga, Wilbroad Musanshi
09:30 –09:45	Experience on linking farmers to output markets	Cosmas Chachi
09:45 – 10:00	Experience with gender and inclusion, and dissemination of CIS information	Peter Chinunda
10:00 – 10:30	QA	Agness Chileya
10:30 – 11:00	Health Break + Photo	Mercy
11:00- 12:00	Group sessions lessons learnt	Group 1 Training Group 2: Provision of inputs Group 3 Output markets Group 4: Gender and inclusion and dissemination of CIS information
12:00 – 13:00	Plenary	
13:00-14:00	Lunch	Mercy

14:00 – 14:20	Presentation by BongoHive- share experiences from agri-businesses & internship	Simunza Muyangana
14:20 – 14:30	QA	
14:30- 15:00	Munda Maker over video	Agness Chileya
15:00- 15:30	Discussion	Lizzy Muzungaire
15:30 – 16:00	Health Break	Mercy
16:00	Logistics for Day2	Lizzy Muzungaire

Day 2

Time	Content	Facilitator
08:00 – 08:30	Registration	Agness Chileya (WF)
8:30 - 8:45	Recap	Keagan Kakwasha
8:45 – 10:00	Next steps and planning	5 Groups
10:00 – 10:15	Health Break	Mercy
10:15 – 13:15	Field visit	Henry Kanyembo
13:15- 14:15	Lunch	Mercy
14:15-14:30	Field visit debrief	Lizzy Muzungaire
14:30– 15:00	Munda Make Over	Agness Chileya
15:00- 15:10	Discussion	
15:10- 15:20	Closing remarks	Netsayi Mudege
15:00 – 15:30	Health Break	Mercy

