

Fish for Livelihoods (F4L) Newsletter

Issue 8, July - September 2021

Fish for Livelihoods:

The United States Agency for International Development (USAID) funds the Fish for Livelihoods (F4L) Activity, which aims to increase fish production, labor productivity, food availability, and fish consumption especially for women and children from vulnerable households. It provides opportunities for entrepreneurial activities in small-scale aquaculture (SSA) systems and promotes social behavioral change messages that direct home production and market purchases towards nutritious-conscious household decisions.

Fish for Livelihoods is being implemented in five inland states and regions in Central and Northern Myanmar: Mandalay, Magway, Sagaing, Shan, and Kachin for a period of 5 years (October 2019 – September 2024). The *Activity* primarily targets SSA households with small ponds (<1 acre) and associated supply chain actors. The *Activity* targets at least 10,000 individuals, mainly pond farmers, and fish supply chain market actors, over the 5 years of the *Activity*.

Activity anticipated results:

Inclusive and sustainable aquaculture growth to improve nutrition and food security especially for reproductive-age women and children under 5 years of age in central and northern Myanmar.

IR 1: Production. Small-scale aquaculture production increased through improved land and water use and increased access to information, high-quality inputs, and credit.

IR 2: Increased access to food-safe fish and fish products in the markets. Access of SSA farmers to domestic markets increased and a consistent supply of food-safe fish and fish products was ensured.

IR 3: Improved nutrition, food safety, and WASH. Improved diet diversity and consumption of safe fish products and increased access to WASH packages especially for women of reproductive age and children under 5 years of age.



Figure 1. A farmer stocking fish with the fingerlings received from the F4L Activity in Pehkon Township.

A. Fish for Livelihoods capacity-building initiatives:

In the last quarter of FY 2021, the Activity rolled out several capacity-building initiatives for SSA farmers, market actors, and partner organization staff members. In total, 57 participants of which 53 percent were women attended these sessions notably in post-harvest, feed mills operation, and Training of Trainer (ToT)

programs (Figure 2). Brief details of these capacity-building initiatives can be obtained from the ensuing paragraphs.

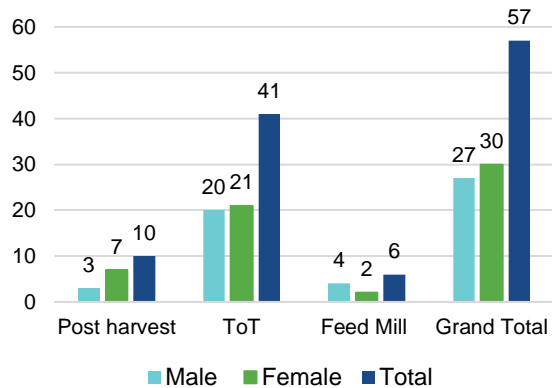


Figure 2. Number of participants who attended capacity building sessions from July to Sep 2021.

1. Good post-harvest training for farmers in Salin Township, Magway:

In the first week of July 2021, WorldFish organized a two-day online training on good post-harvest practices for fresh fish vendors and community facilitators (CFs) of a partner organization in the Magway region. The key objectives of the training were to empower women and men fish vendors to:

- Improve the quality of their fish and help them improve their incomes from sales.
- Enhance their ability to provide safe and fresh fish to consumers.



Figure 3. Participants in discussion during the post-harvest training session.

A national consultant from Asper Consulting facilitated the training sessions. On the first day of the training session, the facilitator discussed with participants about good post-harvest practices -- ice for profit, a clean and attractive place for good business as well as the role of the facilitator and facilitation techniques, among others. During the second day of the training session, the facilitator demonstrated how to impart training and build the capacity of fish vendors as well as how to display the fish with ice to maintain fish quality (Figure 3). A total of ten participants (male=3, female=7) attended the training sessions. The vendors and CFs were trained on the importance of good post-harvest practices that improve and enhance the profitability of their businesses. Soon after the training, the vendors would put into practice the knowledge and skills gained from the training and shared them with nearby vendors. The CFs would then prepare to deliver the training sessions to fresh fish vendors in their respective activity areas.

2. Training of trainers on Good Fish Processing Practices among partners' staff:

In August, the Activity conducted an online training, facilitated by Asper Consulting, for CFs and team leaders totaling 41 participants (women=21, men=20).

The training was aimed to build the capacity of the participants to become effective facilitators when they share their knowledge to fish processors in Kachin, Eastern Shan, Southern Shan, Magway, Mandalay, and Sagaing. The training covered the following topics; 1) Importance of observing good processing practices, 2) Good personal hygiene, 3) Ideal processing area and premises, 4) Recommended utensils and containers, 5) Proper fish handling and processing, and

6) Production of good quality local fish-based products (Figure 4).



Figure 5. Facilitators demonstrating via Zoom video conferencing how to properly place iced fresh fish inside a cool box in Nam Sang Township.

After the training, participants provided feedback to Asper Consulting in helping them revise the *Good Fish Processing Practices for Fish Processors* manual to make it more operational at the field level. The training provided detailed information on how to best use the manual and facilitate the process. It is expected that when the topics are shared with fish processors by the CFs and team leaders, it will help improve the quality of their processed fish to increase their income and in turn enhance their ability to provide safely processed fish to consumers.

3. Feed mill training to the farmers in Pwint Phyu Township, Magway: In the current quarter, the Activity extended its support for SSA farmers to Salin, Pwint Phyu, and Ngape Townships, with the help of a partner organization, PACT Myanmar. In August, the field team conducted a feed mill training at Kan Phya village, Pwint Phyu Township. There were six participants (male=4, female=2) who attended this in-person feed mill training session (Figure 5). It was delivered by a WorldFish field team member and handouts on feed mill training were also distributed to the participants. Despite the difficult political and COVID-19 situations, the face-to-face training was

delivered successfully with farmers participating actively.



Figure 4. Farmers receiving feed mill training in Pwint Phyu Township.

The Activity provided feed mill training to SSA farmers for the first time in that area and they received clear guidelines on how to identify quality raw materials as well as how to locally produce good fish feed. Moreover, they learned about the important role of feed for fish growth and the effects of the size of the feed pellets. They also learned how to calculate the protein percentage in the feed, how to safely handle and run the feed mill as well as how to properly store the feed. The feed conversion ratio (FCR) calculation is crucial for fish growers to understand and calculate periodically throughout the production season. The computation of FCR was demonstrated in the feed mill training, which included testing of the produced feed as well. When the farmers know how to calculate FCR, they can easily manage feeding plans and reduce feed waste.

B. Provision of inputs to the SSA farmers:

One of the main tasks of the F4L Activity is to ensure that the supported SSA farmers have access to quality inputs (fish seeds, feeds, etc.). In the reported quarter, the Activity distributed 316,468 fingerlings to 251 SSA farmers. Further details of the

distribution are discussed in the ensuing paragraphs.

1. Fingerlings distribution to farmers in Keng Tong Township: The common carp is one of the high-demand fishes with good market prices in the Tarlay market. The price of common carp in the retail market is 4,000 MMK (Kyat) [\$2.40] per kilogram. Due to its marketability, most of the farmers prefer to stock common carp in their ponds. Some farmers in the Eastern Shan State prefer to grow Genetically Improved Farmed Tilapia (GIFT) while some grow rohu species. These fishes have good market demand in Eastern Shan State but, this year, transportation of GIFT seed from central Myanmar was not possible because of the travel restrictions posed by COVID-19 and the military coup. From February to July 2021, the Activity field team comprising of WorldFish and partner staff distributed fingerlings to SSA farmers in the Keng Tong Township (Figure 6). In aggregate, 122,718 fingerlings (common carp=106,400 and rohu=16,318) 3 inches in size with an average weight of 8 grams per fish were distributed to 176 farmers.



Figure 6. Farmers receiving fingerlings for their ponds in Kent Tung.

2. Fish seed stocking in Nan Sang and Pekhon Townships: The Activity field teams identified and selected 155 new farmers in Nan Sang Township and 156 new farmers in Pekhon and Pinlaung Township, Southern Shan State. Partner organizations, BRAC and KMSS (a local non-profit entity), are leading the implementation to provide in-kind

assistance (seed, feed, etc.) to the SSA farmers. In August, an aggregate of 156,300 (87,300 common carp and 69,000 grass carp) fingerlings were distributed to 58 fish ponds in Nan Sang Township (Figure 7). Moreover, 37,450 (14,000 common carp, 9,250 silver barb, 9,300 grass carp, and 4,900 rohu) fingerlings were distributed to 21 ponds in Pekhon Township.



Figure 7. A farmer stocking fish in his pond in Nan Sang Township.

Farmers prefer to receive good quality fish seeds that are larger because this ensures good survival. Farmers are happy to receive the fingerlings from Activity supported private hatcheries because Activity provided quality training to the private hatchery owners. Hatchery owners are keen to produce excellent fingerlings every year to fulfill the fingerling market demand in the area and are committed to promoting access to quality seed by the SSA farmers locally. The ponds are stocked with the requisite seed amount following the stocking density guideline developed by the Activity. As a result, the fish will grow faster than previous production cycles and generate greater profitability, provided the farmers practice what they have been trained to do and adopt Better Management Practices (BMPs).

3. Mrigal broodstock distribution to hatcheries at Nyaung Shwe Township, Southern Shan: Mrigal, an Indian major carp species, is a fish in high demand with good market acceptance and commands a good price at Southern Shan State as well as other regions. The Activity supported hatchery was unable to produce enough seed to meet

demand due to its induced breeding technique and broodstock constraints. The production relies mainly on freshwater captured fisheries rather than aquaculture in the market. Taking these issues into account, the Activity made an effort to use wild collected fish to be reared as broodstock at hatcheries. The wild-caught fish enhances the growth rate and disease resistance when compared with some hatchery-produced fish.

The Activity engages a provider from Twantay Township, Yangon region to supply the broodstock. In July, a total of 500 broodfishes at an average of 600 grams per fish were distributed to two hatcheries; U Hla Kyaw Hatchery (450 fish) and Ma Nan Win Htwe Hatchery (50 fish) (Figure 8). The quality of fish seed is determined by broodstock genetics. Maintaining quality broodstock as well as the avoidance of inbreeding is the key to broodstock management protocol at the hatchery. The broodstock sourced from different geographical areas by the Activity ensures the production of quality seed that reaches its full growth potential. Furthermore, it will minimize the inbreeding risk which leads to genetic degradation and the poor-quality slow-growing seed. To produce seed for subsequent years, broodstock is reared in the hatchery's brood pond until it reaches spawning size. Once the seed is produced, it can help farmers raise economically viable and profitable fish, to a large extent.



Figure 8. Hatchery owner of Ma Nan Win Htwe Hatchery, Nyaung Shwe Township receiving broodstock from the Activity.

C. Distribution of WASH material and seed kits to SSA farmers and their families:

1. WASH material distribution in Salin and Ngape Townships, Magway & Waimaw and Mogaung Townships, Kachin State:

To improve the health status of SSA farmers and their families, it is imperative to improve water, sanitation, and hygiene (WASH) conditions and promote awareness so that farmers and their families will adopt better and improved WASH practices. Diarrhea is the fourth primary cause of childhood fatality, making up 7.7 percent of the total under-five deaths in Myanmar. In August, 85 SSA farmers -- 59 from Salin and 26 from Ngape - - received WASH equipment through the Activity's support (Figure 9). The farmers from Salin received 20 water filters, 13 water containers, 26 toilet bowls, and pipes whereas the farmers from Ngape received five water filters, 11 water containers, ten toilet bowls, and pipes. The Activity selected 40 SSA farmers -- 35 farmers from Waimaw and five farmers from Mogaung Townships, Kachin State -- to initiate WASH interventions. These 40 participants received WASH materials (toilet bowl, toilet pipe, soap, and handwashing container) from one of the sub-IPs, MFF-Kachin.



Figure 9. A female participant receiving a toilet bowl in Salin Township.

It was difficult to gain access to SSA farmers and their household members amid the health (COVID-19) and political crises with

state of emergency imposed in many townships. Aquaculture promoters (APs) helped the field team with the distribution of WASH materials provisioned to targeted villages and SSA farmers' household members. When WASH materials are installed in houses and compounds of participants, this will improve their health and hygiene status over time. After the provision of WASH material and equipment along with increased knowledge of better hygiene practices, it is expected that the SSA farmers and their families will adopt improved hygiene practices.

2. Provision of vegetable seed kits to farmers in Southern Shan and the Kachin States:

Undernutrition and micronutrient deficiencies still exist in poor rural households due to limited nutritional knowledge and inadequate food supply, the so-called "hidden hunger". To promote improved nutrition and availability of diverse food in rural households, the Activity delivered training sessions on pond dike cropping and encouraged SSA farmers to practice an integrated fish-agri farming system by optimizing land and water utilization in their homestead garden.



Figure 10. A staff handing out vegetable seed kits to a female household member of an SSA farmer in Myitkyina Township.

The field staff identified seeds based on farmers' preferences and those that are grown in the area with marketability. In Kachin State, the Activity selected 21 SSA farmers and provided them with vegetable seed kits in early September 2021 -- 18

farmers from Waimaw Township, two farmers from Mogaung Township, and one farmer from Myitkyina Township. These farmers received in-kind assistance with vegetable (pumpkin, sweet corn, bitter gourd, tomato, long green bean, ridge gourd, and cucumber) seeds. The field team also carried out capacity-building activities with the targeted farmers and their family members and it is expected that these model farmers will assist to spread their knowledge among their communities.

In Southern Shan State, despite the challenging circumstances, the Activity distributed diverse seeds to SSA farmers with the assistance of APs. The seed kits (pumpkin, eggplant, long bean, chili, and lettuce) were distributed to 15 SSA farmers in Hopong Township (Figure 11) and 18 SSA farmers in Hsi Hsieng Township (Figure 12). Furthermore, seed kits



Figure 11. A farmer received vegetable seed kits in Hopong Township.



Figure 12. A female SSA farmer receiving vegetable seed kits in Hsi Hsieng Township.

(radish, long bean, sweet corn, and cucumber) were distributed to 27 SSA farmers in Pindaya Township. The Activity also selected five integrated fish-agri-food system model households -- two in Pindaya, two in Hsihseng, and one in Hopong Townships -- and distributed a set of diverse seeds such as tomato, pumpkin, cucumber, hot pepper, eggplant, sweet corn, luffa, bitter gourd and long bean to them. Moreover, the Activity provisioned beans, cucumber, sweet corn, and radish to 187 SSA farmers in Taunggyi Township.

Farmers received a variety of vegetable seeds to grow in their gardens and on pond embankments. This will also serve as a learning opportunity for the farmers on how aquatic food production systems, as well as integrated fish-agri farming, enhance their daily diet through diversified food with only minor investments in selecting quality seeds and time spent caring for them during the growing season. Any surplus can then be sold for additional income. It will also address the underlying causes of malnutrition through the consumption of a balanced diet of fish and home-produced fresh vegetables. Horticulture cum aquaculture adds options for SSA farmers and their families to diversify and improve their diets.

D. Community events & renovation of a hatchery:

1. Community human nutrition events in Ngape Township, Magway Region: The Activity selected 35 villages to conduct nutrition events within ten villages in Ngape Township, seven villages in Pwint Phyu Township, and 18 villages in Salin Township, Magway Region.

In Ngape Township, the ten villages were Kyaung Kone, Pay Kone, Pin U, Kan Thar, Set Si Taung, Kyaung Dwin, Kwet Thit, Thar Si, Kan Lel, and Myoe U Kwet Thit. The events in these ten villages commenced between August 25 and 31, 2021 (Figure 13).

During the human nutrition campaign, the APs distributed human nutrition posters and



Figure 11. A farmer family (woman & kids) looking at weatherproof nutrition vinyl and pamphlet while participating in a nutrition event in Ngape Township.

pamphlets, including information regarding the importance of small indigenous fish species (SIS) for human nutrition. WASH materials were distributed together with pamphlets on fish seed and vegetables such as pumpkin. In addition to the distribution of information, education, and communication (IEC) materials, the APs briefed farmers and their families on the importance of diversity of foods in their daily food intake (Figure 14).



Figure 12. Weatherproof vinyl posters on human nutrition available for communities at nutrition events.

At the time, due to the spread of COVID-19 infections across the country along with security concerns and travel restrictions, it was difficult for the field staff to visit villages directly. APs helped by ensuring the distribution of IEC materials and the delivery of nutrition events at the villages. In each of these, around 25 villagers participated in each of the sessions. On aggregate, 253 farmers (males=129, females=124) and their families attended the nutrition events. Human

nutrition and WASH aspects are very important and a priority for the communities to promote better hygiene and nutrition practices. The communities, primarily farmers and their families, now know of the three basic food groups, safe drinking water, sanitation as well as good hygiene practices. It is expected that the farmers and their families will adopt improved hygiene and nutrition practices through the knowledge they attained from these events.

2. Fish hatchery renovation in the Eastern Shan State:

The availability of a local hatchery in any region ensures the supply of quality fish fingerlings and reduced mortality after stocking. There is also reduced cost of transportation, increased accessibility of fingerlings to SAA farmers, options to choose from different types of fingerlings as well as technical knowledge and capacity to use hatcheries at the household level. As part of building the capacity of hatchery owners and an increased supply of fingerlings, the Activity assisted one of the existing hatcheries in Myanmar located at Wan Latt Village, Loi Lon Tract, Keng Tong Township, Eastern Shan through the support of the hatchery's building renovation, which included roofing, fencing, a 3,000-liter water tank, pipes, and equipment installation. In addition, a solar system was set up to ensure a consistent electricity supply to the hatchery system. The hatchery renovation and upgrading started in March 2021 and were completed in September 2021 (Figure 15).

The revamping of a hatchery by WorldFish through the Activity has improved the capacity of the hatchery. Besides renovating the infrastructure, the Activity staff also helped the hatchery owner in building his technical capacity on how to set up a hatchery and ensured that the design of the hatchery is functional based on the local context. With this improved hatchery in Eastern Shan State, fish farmers will be able to receive quality fingerlings at a reasonable price. Moreover, the farmers will have easy access to several types of fish species they want to culture. With the availability of multiple species of fish seed locally, they don't need to order fish from China or Thailand – a scenario full of uncertainty amid the political situation and the COVID-19 restrictions at the borders. This will be beneficial for the farmers in many ways -- farmers can physically select healthy fingerlings and the required size with their own eyes at the hatchery. Easy access to quality fingerlings in the region will help ensure increased production, which in turn will generate a reasonable profit not only for the hatchery owners but for all SSA farmers in Eastern Shan.

For more information about the Activity and to access communication products and material, please visit the link given below:

<https://www.worldfishcenter.org/project/fish-livelihoods>



Figure 13. Ongoing renovation of a hatchery in Eastern Shan Township.