


**စိုက်ပျိုးရေး၊ မွေးမြူရေးနှင့် ဆည်မြောင်းဝန်ကြီးဌာန**  
**နိုင်ငံခြားအကူအညီ/အထောက်အပံ့စီမံကိန်းများ၏**  
**သုံးလပတ် အကောင်အထည်ဖော်ဆောင်ရွက်မှုအခြေအနေ**  
**(၂၀၂၀ ခုနှစ်၊ ဇန်နဝါရီ ၁ ရက်မှ မတ်လ ၃၁ ရက်အထိ)**  
**(ဆောင်ရွက်ဆဲ)**

**Ministry of Agriculture, Livestock and Fisheries**  
**Quarterly progress report of MYSAP Inland**  
**01 January to 31 March 2021**

တင်ပြသည့်ရက်စွဲ: Reporting date: 31 March 2021

၁	စီမံကိန်းအမည်(မြန်မာ/အင်္ဂလိပ်) Name of the project (Burmese and English)	Myanmar Sustainable Aquaculture Programme – Inland (MYSAP Inland)
၂	အကောင်အထည်ဖော်မည့်ဌာန Implementing Organization	WorldFish Myanmar
၃	အထောက်အပံ့ ပံ့ပိုးသည့်အဖွဲ့အစည်း Donor Organization	European Union and German Federal Ministry for Economic Cooperation and Development (BMZ)
၄	စီမံကိန်းဆောင်ရွက်မည့်ဒေသ MYSAP Inland Area 	MYSAP Inland conducted field activities in the five townships below until 31 May 2020: i) Kale (ကလေး - MMR005027) Township, <b>Sagaing Region</b> ; ii) Shwebo (ရွှေဘို - MMR005004) Township, <b>Sagaing Region</b> ; iii) Kengtung (ကျိုင်းတုံ - MMR016001) Township, <b>Shan State</b> ; iv) Pinlaung (ပင်လောင်း - MMR014009) Township, Southern Shan State; and, v) Amarapura (အမရပူရ - MMR010006) Township, <b>Mandalay Region</b> .  From 01 June 2020 onwards, MYSAP Inland conducted field activities in only Kale, Shwebo and Kengtung Townships.



၅	<p>သဘောတူစာချုပ်အရ အဓိကဆောင်ရွက် သည့်လုပ်ငန်း</p> <p>Main activities according to the agreement</p>	<p>MYSAP Inland – Result 4 contributes to:</p> <p>Services, education and training Availability and access to inputs Aquaculture value chains Food security and nutrition</p>
၆	<p>ဩဂုတ် ၁ ရက်မှ ဒီဇင်ဘာလ ၃၁ ရက်အထိသုံးလပတ် ကာလအတွင်းအဓိကလုပ်ငန်းများ ဆောင်ရွက်ပြီးစီးမှုအခြေအနေ</p> <p>Main activities implemented from 01 August to 31 December 2020</p>	<p>See below:</p>
၇	<p>စီမံကိန်းအပေါ် သုံးသပ်တင်ပြချက်</p>	<p>Review of the MYSAP Inland component</p>
<p>During the 2018-19 culture season MYSAP Inland delivered training and extension services on small-scale aquaculture and improved human nutrition to a total of 648 direct beneficiary households each with a pond of less than 0.5 acres (0.2 hectares) in area, which holds water for at least six months per year. Extension services were provided under sub-grant agreements (SGA's) by Ar Yone Oo, BRAC Myanmar and Malteser International to 151, 256 and 241 households respectively in Kale, Shwebo and Kengtung townships.</p> <p>In the 2019-20 culture season MYSAP Inland delivered training and extension services on small-scale aquaculture and improved human nutrition to a total of 1,264 direct beneficiary households through the same 3 NGO's in Kale, Kengtung and Shwebo Townships and the Department of Fisheries in Pinlaung Township.</p> <p>In the 2020-21 culture season MYSAP Inland is delivering training and extension services on small-scale aquaculture and improved human nutrition to a total of 1,255 direct beneficiary households through the same 3 NGO's in Kale, Kengtung and Shwebo Townships.</p> <p>From the start (06 April 2017) to the end (31 May 2021) of the MYSAP Inland period training and extension services on small-scale aquaculture and improved human nutrition will be delivered to 1,504 direct beneficiary households.</p> <p>WorldFish Myanmar has continued collaborative contracts with the DoF and Myanmar Fisheries Federation for the operation of the DoF Nad Yay Kan hatchery, Mandalay and the MFF Shwebo hatchery as satellite hatcheries for genetically improved farmed tilapia (GIFT) breeding and all-male seed production.</p>		
၈	<p>ဆက်သွယ်ရန်ပုဂ္ဂိုလ်</p> <p>Contact person</p>	<p>Don Griffiths, MYSAP Inland, Team Leader</p>
၉	<p>အထူးတင်ပြရန်ရှိသည့်အချက်များ</p> <p>Any issues or comments</p>	<p>In Q1 of 2021, planned activities with direct beneficiary households in the field were constrained by COVID-19 and</p>



		effective 01 February 2021 a state of emergency following a military coup with imposition of night time curfews, internet closure 20.00 to 09.00 hours daily, civil disobedience movement (CDM) protests, etc. and MYSAP instructions to suspend all external activities from 08 February 2021.
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## Main activities implemented 01 January to 31 March 2021

### COVID-19 context and State of Emergency

Throughout Q1 of 2021, the MYSAP Inland office in Mandalay remained closed and the MYSAP Inland staff have worked virtually from home, except the Team Leader who worked remotely from Songkhla, Thailand and the Field Coordinators who worked from the Ar Yone Oo and the Malteser International offices in Kale and Kengtung Townships respectively.

COVID-19 movement restrictions were eased in Kale, Shwebo, Mandalay and Kengtung Townships so training and extension activities went ahead as planned in the field until the end of January 2021. Meetings of up to a maximum of 30 people were allowed in January 2021, under COVID-19 restrictions.

On 24 January 2021 one Ar Yone Oo driver was confirmed COVID-19 positive, but he had self-isolated at home from 11 January 2021 and no other Ar Yone Oo staff became infected.

44,200 kg of commercial pelleted feed funded by the EU as COVID-19 support was transported from Yangon on 3 trucks on 28 January 2021, with 10,160 kg, 17,200 kg and 16,840 kg being sent to Kale, Shwebo and Kengtung townships respectively. The pelleted feed arrived in Kale and Shwebo on 29 January 2021 and in Kengtung on 01 February 2021. The EU supported feed was distributed to a total of 1,075 direct beneficiary households and 2 community ponds with benefits shared by a further 180 households by 12 February 2021.

On 01 February 2021 a state of emergency was announced and a night time curfew was imposed from 20.00 – 04.00 hours. On 08 February 2021 evening the MYSAP Head of Programme notified MYSAP Inland that GIZ had instructed MYSAP to suspend all field activities for 4 weeks and until further notice thereafter unless there were other instructions. On 09 February 2021 the MYSAP Inland Team Leader instructed its staff and collaborating NGO's to suspend all field activities until after 07 March 2021, except on-going activities under service contracts which could continue, if the ground situation was assessed as safe.

Malteser International stopped all visits to villages in Kengtung Township from 15 February to 12 March 2021 inclusive. Junior staff worked from home and senior staff half from home and half from the office to maintain a skeleton staff at the MI office.

In February 2021, 1,500 surgical face masks were delivered to Ar Yone Oo, BRAC Myanmar and Malteser International offices to be given out at future training events and 100 N95 face masks and liners were distributed to the staff of MYSAP Inland and the staff of the 3 collaborating NGO's. The surgical face masks, N95 face masks and liners were funded by the EU.

Effective 01 March 2021, Notification # (28/2021) by the Central Bank of Myanmar (CBM), Section 2 limited (i) ATM withdrawal to a maximum of MMK 500,000 per day; (ii) Bank withdrawal amounts were limited to a maximum of MMK 2,000,000 per week for individuals, and MMK 20,000,000 per week for organizations or companies.

On 15 March 2021, telephone data internet services were stopped in certain areas of Myanmar, with only wifi working, following enactment of Act 419 giving greater control to the military. This negatively impacted the MYSAP Inland end-line survey Wetlet, Kale and Shwebo Townships.

On 24 March 2021 BMZ ordered the immediate cessation of all MYSAP activities. There would be closing of the programme but the exact timeline and steps for the closure still required further clarification at the end of this reporting period.

### Availability and access to inputs – seed, feed and extension and training services and raising COVID-19 awareness

As part of rolling out a Participatory Community Outreach Modality MYSAP Inland through its NGO partners selected a total a total of 81 (27 ♀) village resource people, i.e. 21 (3 ♀) from Kale, 32 (14 ♀) from Shwebo, and 28 (10 ♀) from Kengtung Townships to be trained and equipped to provide local support in the event that COVID-19 restrictions were further tightened. 68 cast nets and weighing scales were ordered, so that after training, the village resource people can lead fish sampling and feeding ration adjustment. However virtual training for the village resource people was cancelled following the suspension of MYSAP external field activities.

MYSAP funded the printing of 1,200 copies of a technical guide booklet entitled *MYSAP Inland Small-scale aquaculture and integrated vegetable production and improved human nutrition*. However distribution of the guide booklet to direct beneficiary households, and IP and DoF staff planned for February 2021, was also put on hold on following MYSAP instructions. The booklets are being held at the 3 NGO offices.



There were no new uploads of new IEC materials onto the MYSAP Inland Virtual Fish Culture Learning Group (VFCLG) in February or March 2021. On 31 March 2021 the VFCLG had 203 members (56 ♀) being 159 farmers (35 ♀) and 44 (21 ♀) IP and MYSAP Inland staff. A total of 27 training videos (11 in Myanmar and 10 in Arka and 2 in Lahu and 4 in Shan languages) have been edited and uploaded onto the VFCLG Facebook page. BRAC Myanmar staff are currently working on 4 more videos.

### Genetically improved farmed tilapia (GIFT)

The GIFT tilapia broodstock at both the DoF Nad Yay Kan hatchery and the Aung Zay Ya Shwebo hatchery were rested and conditioned in single sex hapas in January 2021. On 26 January 2021, the DoF Nad Yay Kan began pond and breeding and nursing hapa cleaning.



On 28 January 2021 5 breeding hapas (3.0 m x 1.5 m x 8.0 m), funded by MYSAP, were shipped from the manufacturer to the DoF Nad Yaw Kan hatchery.

In January 2021, a total of 45,500 all-male GIFT seed were sold, being 9,000 from the DoF Nad Yaw Kan hatchery for an unknown number of grow-out farmers from Lashio Township and 36,500 from the Aung Zay Ya hatchery.

On 05 February 2021, 100 females and 33 males were stocked into 8 breeding hapas to restart GIFT breeding at the DoF Nad Yaw Kan hatchery with GIFT egg collection and all-male GIFT fry production on-going throughout February and March 2021. There were no GIFT sales from the DoF Nad Yaw Kan hatchery in February or March 2021.

Egg collection data from the DoF Nad Yaw Kan

Date	# of ♀ with eggs	Weight of eggs (g)	Egg weight (g) per ♀	Comment
16 February 2021	31	500 g	16 g	Many stage one eggs
23 February 2021	38	700 g	18 g	
10 March 2021	27	300 g	11 g	
16 March 2021	58	530 g	9 g	
23 March 2021	45	390 g	9 g	
30 March 2021	18	145 g	8 g	

In February 2021 pond preparation was conducted ready for GIFT breeding and nursing commenced at the Aung Zay Ya Shwebo hatchery. However no water was available from the rice irrigation canal in Shwebo. Aung Zay Ya sold 9,000 all-male GIFT seed to WorldFish Myanmar on 28 Feb 2021 for distribution to 15 grow-out farmers in the delta area.

	
<p>Pond preparation at Aung Zay Ya hatchery Shwebo in February 2021</p>	<p>Incubation of GIFT eggs at the DoF Nad Yaw Kan hatchery in February 2021</p>

The owner of the Aung Zay Ya Shwebo Hatchery plans to increase GIFT seed production and sales to between 200,000 – 300,000 all-male fry per month and has set up 38 breeding

hapas which he plans to stock with 60 female and 25 males broodstock each. GIFT egg collection will commence in April 2021 at the Aung Zay Ya Shwebo Hatchery.



Expanded GIFT breeding hapa set up at Aung Zay Ya Hatchery, Shwebo Township

AquaMyanmar received the awaited reagent from Singapore on 14 January 2021, but some technical issues with their ABI step one plus Real Time PCR machine delayed the release of the TiLV results for 30 samples from the DoF Nad Yay Kan and 30 samples from the Aung Zay Ya Hatchery, Shwebo until 22 February 2021. All the samples however at both locations were **negative** for Tilapia Lake Virus and MYSAP Inland shared copies of the test report in Myanmar language from AquaMyanmar with both hatcheries.

In February 2021 the Team Leader contributed as a co-author of an internal WorldFish document entitled, *WorldFish strategy for genetically improved farmed tilapia in Myanmar, 2020-2030*.

To 31 March 2021 a cumulative total of 516,030 all-male GIFT fingerlings produced with MYSAP support have been sold to a total of 367 grow-out farmers.

Unfortunately planned international consultant input to deliver 10 days of hands-on practical training at the Nam Sai Farms commercial facility, Thailand on i) tilapia swim-up fry nursing, ii) sex-reversal, and ii) conditioning before transportation and packing, was cancelled because of the COVID-19 pandemic.





### **Small indigenous fish species (SIS)**

The 70 demonstration farmer ponds have continued to grow SIS in conjunction with larger fish species and are continuing to regularly harvest, consume, give to friends and sell the SIS. There was no negative impact found on the growth and survival of large carp species in the demonstration ponds that were stocked with SIS in the 2019-20 culture season.

### **Carp species**

In September 2020, MYSAP agreed a list of factors that impact on fish seed quality, including improved hatchery management, biosecurity, disease testing practices and inbreeding prevention. MYSAP Inland together with MYSAP’s Development Adviser in the Inle Lake region and MYSAP’s M&E team developed a follow-up questionnaire survey to assess MYSAP hatchery support impact. MYSAP translated the questionnaire into Myanmar language and sent it to DoF hatcheries by the end of 2020 that had had MYSAP Inland training and support to improve fish seed quality and have asked it to be completed and returned to assess the outcome of support and training provided and especially Dr Matthew Hamilton’s missions in 2018 and 2019. MYSAP’s analysis of the data was delayed by staff relocation, the State of emergency and poor internet connections.

Materials were ordered in January 2021 for practical hands-on common carp breeding training planned in Shwebo 08-10 February 2021, in Kengtung on 19 February 2021, and in Kale in March 2021. All 3 MYSAP funded courses were to have been delivered in collaboration with DoF staff from the district and township level. However following the State of Emergency and Civil Disobedience Movement (CDM) protests, the Shwebo and Kengtung courses planned for February 2021 were postponed.

Following a visit by Malteser International staff to give instructions on pond preparation to the nursery farmer on 04 March 2021, Malteser International delivered the common carp spawning training course in Kengtung Township, 18-19 and 22 March 2021. Twenty (6 ♀) trainees attended the training and successfully spawned common carp using Ovaprim and Suprefact, producing a large number of seed.

The MYSAP Inland Sagaing Region Field Coordinator delivered common carp and silver barb artificial breeding training for 9 people (all men) in Kale Township on 12 and 15 March 2021.

The common carp artificial breeding training course first planned for February and then March 2021 in Shwebo Township was finally cancelled on 16 March 2021, because the situation on the ground was deemed by BRAC Myanmar to be unsafe for both the BRAC Myanmar staff and the trainees to attend.

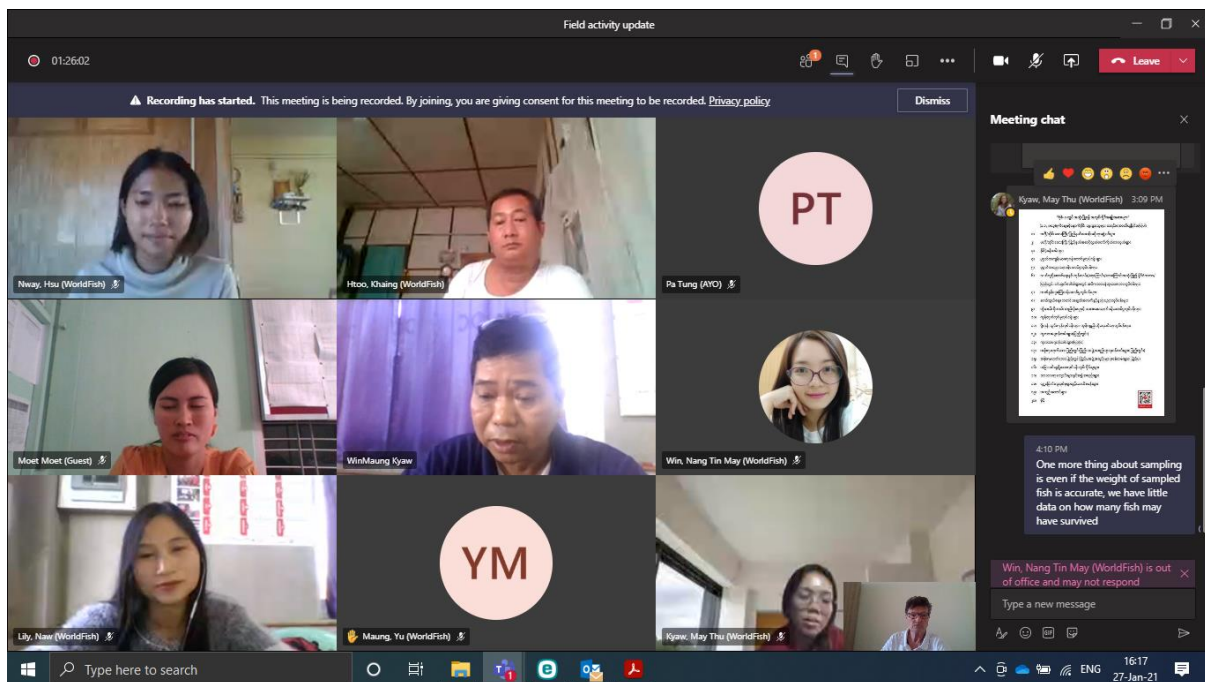
### **Fish nursing**

Farmers were identified for MYSAP Inland fish nursing training and support in January 2021, but thereafter field activities were suspended on MYSAP instructions.

### Aquaculture value chains

In Q1 of 2021, Ar Yone Oo, BRAC Myanmar and Malteser International have continued to deliver training and extension services on small-scale aquaculture and improved human nutrition to a total of 1,075 direct beneficiary households in Kale, Kengtung and Shwebo Townships with individual household ponds and to a further 180 households which are sharing the benefits from 2 community ponds in Kengtung Township, making a total of 1,255 households that are benefitting from MYSAP Inland. Services were delivered face to face in January, and remotely in February and March 2021.

Senior MYSAP Inland and IP staff attended a COVID-19 situation update and planning meeting on 27 January 2021. Arrangements were thereafter made to present the 2019-20 fish culture results by virtual meeting. The MYSAP Inland webinar scheduled for 22 February 2021 to present the 2019-20 fish culture production season results was conducted at a scaled-down level, because of protests, as a test run. Twelve people (6 ♀) attended. The webinar presentation will be repeated when all invitees can attend.



### Ar Yone Oo – Kale Township:

In the final 2020-21 fish, vegetable and fruit culture season AYO is supporting a total of 254 direct beneficiary households (dbh). Support was face to face in January and via mobile phone in February and March 2021.

Following the lifting of movement restrictions, Ar Yone Oo were able to catch up with training planned for 6 of the 21 small-scale aquaculture groups that staff were unable to visit in December 2020. All planned small-scale aquaculture and nutrition training for dbh





members was completed by Ar Yone Oo staff in January 2021. The outstanding financial literacy training which was to have been conducted in February 2021 was postponed due to the CDM. Ar Yone Oo delivered financial literacy training sessions to 13 of their 21 SSA, with 160 (66 ♀) attending in March 2021. The remaining SSA groups will receive financial literacy training in April 2021, if the situation on the ground is safe enough to do so.

Most farmers have abundant water in Kale Township and want to grow their fish on beyond the end of the MYSAP Inland implementation period. MYSAP will therefore report the data of those farmers that finally harvest and for those demonstration farmers that do not want to harvest, will report production estimates based on latest sampling data.

**BRAC Myanmar – Shwebo Township:**

In the final 2020-21 culture season BRAC Myanmar is supporting a total of 430 dbh. In January face to face extension and training services were provided, while virtual mobile phone support was provided in February and March 2021.

BRAC Myanmar staff arranged the second partial stocking of 7,250 all-male GIFT fingerlings purchased from Aung Zay Ya Hatchery into 14 grow-out ponds on 18 January 2021.

By the end of January 2021, BRAC Myanmar staff had completed all planned small-scale aquaculture training and completed the delivery of all planned financial literacy training, and training on the use of the Green Way mobile phone application for dbh members. A total of 430 people (101 ♀) have received financial literacy training from BRAC Myanmar.

Kyaw Zin, Deputy Technical Officer resigned on 01 March 2021.

Most farmers in Shwebo will probably complete harvest of their household ponds in April 2021.

**Malteser International – Kengtung Township:**

In the final 2020-21 culture season Malteser International has continued to provide extension and training services to 391 dbh. Services were provided face to face in January and virtually by mobile phone support in February and March 2021.

A systematic check was conducted in January 2021 of the 257 households of the 391 dbh with water in their ponds and the 2 community ponds, to assess how fast pond water levels were dropping due to water seepage and evaporation. Appropriate recommendations were given for topping up water where this was possible and was economic to do so, and if not to partially harvest and sell the largest fish and / or transfer fish to another location if possible. Twelve ponds were harvested early because the water depth could not be topped up and the fish from 9 ponds were transferred to another pond which still had water available.

By 31 January 2021 a total of 1,704 viss (2,777.5 kg) of sinking pellets feed was distributed to 24 demonstration farmers and 2 community ponds. Malteser International staff completed the delivery of Module 3 (sessions 19-27) to a total of 377 (209 ♀; 55.4%) new and old farmers and all planned small-scale aquaculture training for dbh were complete.





At the end of January 2021 a total of 236 small-scale household ponds were continuing to grow fish on, being 24 demonstration farmers and 212 other grow-out farmers. Farmers will probably harvest in March or April 2021, but will grow fish on longer, if there is sufficient pond water depth.

In February 2021 MYSAP supported the provision of lime for the Naung Kan and the Joe Phyu community ponds to increase the pond pH, to flocculate out suspended clay particles, the increase light penetration, photosynthesis and natural food production.

### **MYSAP pilot rice-fish activities**

U Sai Sum Tip, Mikesili, Koon Village, Kengtung Township conducted his final pilot rice-fish plot harvest between 21-23 February 2021. In one year the 0.6 ha (1.5 acre) pilot rice-fish plot yielded 4,400 kg (2,699.4 viss) of rice, being 2,320 kg (1,423.4 viss) of irrigated summer SR456 rice and 2,080 kg (1,276 viss) of monsoon RO428 rice without the use of any pesticides and a total of 689.5 kg (423 viss) of fish being 546 kg (335 viss) of tilapia and 86.5 kg (53 viss) of common carp and 57 kg (35 viss) of wild snakehead, catfish and SIS.

The final net cash profit from the pilot rice-fish plot was MMK 2,309,447, with 57.8% from the fish, 22.9% from the summer rice and 19.3% from the monsoon rice.

Both pilot rice-fish farmers in Shwebo completed their fish harvests in March 2021. BRAC Myanmar are writing up the results which will be shared in April 2021.

Two of the four pilot rice-fish farmers in Kale Township have completed harvesting of the fish from their plots and the results are being written up.

On 31 March 2021 MYSAP was supporting 02 pilot rice-fish plots in Kale Township that have fish in their plots. Both plan to harvest in April 2021.

MYSAP will support piloting of 2 summer season rice-fish nursery production systems in Kale Township starting in April 2021.

### **Food Security and Nutrition**

A WorldFish blog with examples taken from MYSAP nutrition activities of both MYSAP Inland and the USAID funded Fish for Livelihoods in Myanmar, entitled *Nutrition-sensitive approaches from pond to plate in Myanmar* was posted on the WorldFish website on 19 January 2021 at the link below:

<http://blog.worldfishcenter.org/2021/01/nutrition-sensitive-approaches-from-pond-to-plate-in-myanmar/>

The MYSAP Inland Team Leader approved Mr Saw Eden, MD, Save the Children, Nutrition Program Advisor to repost the same nutrition blog on the Facebook page “Myanmar Nutrition Community of Practitioners,” that he administers and for the WorldFish Myanmar



Nutrition Advisor to share the nutrition blog through SUN CSA.

### Post-harvest innovation consultancy

Asper Consulting Limited produced and shared a draft English version of a *Facilitator guide for post-harvest best practices* for the peer to peer learning. MYSAP funded the translation of facilitator guide into Myanmar and Big Shan languages. The Myanmar and Big Shan language versions of the *Facilitator guide for best post-harvest practices* were delivered on 15 and 16 February 2021 respectively and finalized on 05 March 2021.

Following a Zoom meeting on 26 February 2021 conducted by Asper Consulting Limited to check the internet connectivity at the 3 NGO offices, an Asper Consulting Limited national post-harvest consultant delivered 1.5 hour virtual training sessions (15.00 – 16.30 hours) for 5 days on 01, 03-05 and 08 March 2021 to vendors and NGO staff to field test the *Facilitator guide for post-harvest best practices* in small COVID-19 safe groups. It was too dangerous to leave the home in Kale on 03 March 2021 and so no Ar Yone Oo staff attended that day.

Date	Ar Yone Oo	Kale vendors	BRAC MM	Shwebo vendors	Malteser International	Kengtung vendors	Total
01/03/2021	6 (4 ♀)	5 (5 ♀)	6 (5 ♀)	0	4 (3 ♀)	5 (5 ♀)	26 (22 ♀)
03/03/2021	0	0	6 (5 ♀)	0	4 (2 ♀)	5 (5 ♀)	15 (12 ♀)
04/03/2021	3 (1 ♀)	5 (5 ♀)	6 (5 ♀)	0	4 (1 ♀)	5 (5 ♀)	23 (17 ♀)
05/03/2021	2 (0 ♀)	5 (5 ♀)	6 (5 ♀)	0	4 (2 ♀)	5 (5 ♀)	22 (17 ♀)
08/03/2021	3 (1 ♀)	5 (5 ♀)	6 (5 ♀)	0	4 (3 ♀)	5 (5 ♀)	23 (19 ♀)

A range of 15-26 people (12-22 ♀) including 10 vendors (all ♀) from Kale and Kengtung Townships and NGO staff from Ar Yone Oo, BRAC Myanmar and Malteser International joined the training and gave feedback to improve the *Facilitator guide for best post-harvest practices*.

In a Teams meeting on 15 March 2021 with the Asper Consulting Limited post-harvest innovation consultancy team, MYSAP Inland and Fish for Livelihoods, it was agreed that further virtual training would be conducted for MYSAP Inland trainees from Kale and Kengtung Townships as part of scaling up and to end the MYSAP Inland post-harvest innovation consultancy.

In a Teams on 30 March 2021 with Asper Consulting Limited, it was agreed that virtual Zoom training would be provided for NGO staff that had not yet been trained on post-harvest best practices on 06 April and that all NGO staff would be trained on facilitation of post-harvest best practice sessions on 07 April 2021. After updating the Facilitator Guide based on feedback in Myanmar and Big Shan languages, the Asper Consulting Limited international consultancy contract would be closed.

### Fish drier and powdered SIS trial

The MYSAP report on *Piloting a Low-Cost Fish Drier* was finalized on 06 January 2021 and



disseminated.

On 14 January 2021 a consignment of sample dried powdered SIS was couriered from Mandalay to Yangon and then hand-delivered by a WorldFish Myanmar staff member to the DoF QCRS Analytical Laboratory, on 15 January 2021.

A consignment of sample dried powdered SIS which was couriered to Yangon in late December 2020 was held up awaiting an import-export licence which was issued on 21 January 2021. The samples were then couriered onwards from Yangon on 29 January 2021 addressed to the Trouw Nutrition MasterLab, Schiphol, the Netherlands, for food safety testing. The consignment of samples arrived safely in Amsterdam, the Netherlands on 01 February 2021. However Bee Logistics did not include the required documentation set inside the sample box and the Schiphol airport authorities destroyed the samples, rather than release them for testing. Stair Freight which contracted Bee Logistics agreed to cover the shipment costs themselves because of the mistake made by Bee Logistics.

The DoF QCRS Analytical Laboratory, submitted the proximate analysis results (see the table below) of the dried fish samples on 10 February 2021.

Township	Moisture content (%)	Crude protein (%)	Fat (%)	Total ash (%)	Salt (%)
Kale	9.60	54.87	11.50	21.5	2.2
Shwebo	10.80	51.40	12.43	17.5	3.3
Kengtung	11.35	53.15	11.96	18.5	3.7

QCRS Analytical laboratory provided the other food safety results on 04 March 2021.

Township	TPC cfu/g	Coliforms cfu/g	<i>E. coli</i> cfu/g	<i>Staphylococcus aureus</i> cfu/g	<i>Salmonella</i> 25 g	<i>Vibrio cholerae</i> 25 g
Kale	5.2 x 10 <sup>5</sup>	< 10	< 10	< 10	Not detected	Not detected
Shwebo	4.5 x 10 <sup>5</sup>	< 10	< 10	< 10	Not detected	Not detected
Kengtung	4.0 x 10 <sup>5</sup>	< 10	< 10	< 10	Not detected	Not detected

**Allowed levels in products for export from Myanmar:**

Total plate count = 5 x 10<sup>5</sup> to 10<sup>7</sup>

Coliforms = 11 – 500 cfu/g

*Escherichia coli* = 11 – 500 cfu/g

*Staphylococcus aureus* = 10<sup>3</sup> cfu/g

*Salmonella* = not detected

*Vibrio cholerae* = not detected

Township	<i>Listeria monocytogenes</i> 25 g	<i>Vibrio parahaemolyticus</i> 25 g	<i>Shigella</i> 25 g	<i>Enterobacteriaceae</i> cfu/g	Yeasts cfu/g	Moulds cfu/g
Kale	Not detected	Not detected	Not detected	< 10	< 10	< 10
Shwebo	Not detected	Not detected	Not detected	< 10	< 10	< 10
Kengtung	Not detected	Not detected	Not detected	< 10	< 10	< 10

**Allowed levels in products for export from Myanmar:**

*Listeria monocytogenes* = not detected (reference ICMSF 2<sup>nd</sup> edition)

*Vibrio parahaemolyticus* = not detected (reference ICMSF 2<sup>nd</sup> edition)

*Shigella* = not detected (reference ICMSF 2<sup>nd</sup> edition)

*Enterobacteriaceae* = < 300 cfu/g (reference ICMSF 2<sup>nd</sup> edition)

Yeasts = 10<sup>2</sup> to 10<sup>5</sup> cfu/g (reference ICMSF 2<sup>nd</sup> edition)

Moulds = 10<sup>2</sup> to 10<sup>5</sup> cfu/g (reference ICMSF 2<sup>nd</sup> edition)

Township	Aflatoxin B1	Histamine (ppm)	Arsenic (ppm)
Kale	5.92 µg/kg	14.50	0.102
Shwebo	Not detected	11.48	0.095
Kengtung	Not detected	26.73	0.086

**Allowed levels in products for export from Myanmar:**

Aflatoxin B1 = 20 µg/kg in feed materials and 10 µg/kg in complete feeds (EU standard)

Histamine = EU standard 200 ppm; India standard 20 ppm

Arsenic = 0.1 ppm for rice for infants in the EU.

Township	DDT (µg/kg)	Dieldrin (µg/kg)	Heptachlor (µg/kg)
Kale	Not detected	Not detected	Not detected
Shwebo	Not detected	Not detected	Not detected
Kengtung	Not detected	Not detected	Not detected

**Allowed levels in products for export from Myanmar:**

DDT = 5,000 µg/kg (reference, DoF)

Dieldrin = 300 µg/kg (reference, DoF)

Heptachlor = 300 µg/kg (reference, DoF)

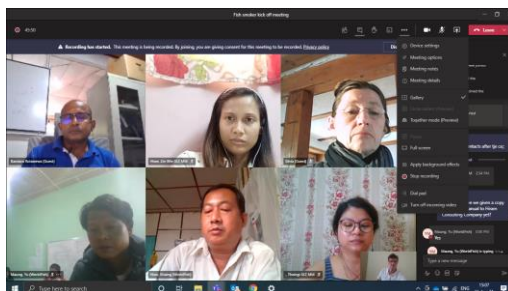
Thelma Tun-Thein, MS, RDN, IBCLC, RLC, Registered Dietitian/Nutritionist and International Board Certified Lactation Consultant who stated that feeding the dried SIS powder as a complementary food for infants of 6 months of age and above, “would be helpful

for increasing protein, .....with the analysis showing that all items tested fall within the acceptable ranges..... I think this powder will be a wonderful nutrient and flavour enhancer.....The salt content is also low so this complements our typically high sodium Myanmar diet”

In summary, the dried SIS powder from Kale, Shwebo and Kengtung Townships is within the food safe levels for all parameters tested and can be fed to infants of 6 months of age and above mixed with rice soup and mashed up vegetables.

### Pilot fish smoker testing

After extending the deadline for submission of quotes in the Voice Daily to tender for construction of 2 pilot fish smokers in Kale Township Ar Yone Oo to 04 January 2021, and checking references, the Hiram Construction Company (HCC) was selected for construction of 2 improved (FAO FTT Thiaroye) smokers funded by MYSAP. A virtual kick-off meeting was held on 11 January 2021 to discuss and agree how to take the activity forward.



WorldFish signed a service contract on 14 January 2021 to engage HCC to construct the two FAO FTT Thiaroye improved fish smokers. Work commenced with site clearing and lay out on 15 January 2021, with planned completion on 14 February 2021. The Team Leader submitted an article on the construction of the two improved smokers to MYSAP of uploading onto their Facebook page on 28 January 2021.

The 2 photos below show the status of the smoker construction at the 2 village locations on 25 January 2021.



Daw Vuli, Pyin Khone Lay Village Kale Township



U Lala, Nay Gyi Kong Village, Kale Township



Guidelines on construction of the improved FAO FTT Thiaroye fish smoker, drafted by the MYSAP contracted international smoking consultant were sent to a national consultant for translation into Myanmar language and the Myanmar language version of the construction guidelines was received on 14 February 2021.

Hiram Construction Company (HCC) completed the construction of the improved fish smokers on 16 February 2021.



The completed improved fish smoker of Daw Vuli, Pyin Khone Lay Village Kale Township



The completed improved fish smoker of U Lala, Nay Gyi Kong Village, Kale Township

The MYSAP contracted international consultant provided a protocol for testing the smoker on 19 February 2021. The protocol was sent for translation into Myanmar language on 22 February and the Myanmar language version was received on 24 February 2021.

The Hiram Construction Company service contract required the smokers to be operated and any faults to be rectified before the final construction invoice could be paid. Therefore testing of the smokers, was conducted in Pyin Khone Lay Village with Daw Vuli on 04-05, 08-11 March 2021 and in Nay Gyi Kong Village, with U Lala, on 08-09 and 16 March 2021, with the rohu used in the testing of the smokers funded by MYSAP, because there was no guarantee that the product could be sold. The international smoking consultant provided data collection formats on 09 March 2021 for use during smoker testing to track weight loss due to gutting, smoking and oven cooking, the smoking duration in hours, and quantity of fuel wood and sawdust used for the smoking.

Key initial findings to date were that the improved FAO FTT Thiaroye smoker:

- Used significantly less wood and sawdust;
- Took approximately 33% less time to smoke different size grades of rohu;
- Gave a better colour to the smoked rohu;
- Gave a more uniform smoked product than traditionally smoked rohu.

Finalized versions of the English and Myanmar versions of the *Construction guidelines for*



*an improved FAO FTT Thiaroye smoker* were shared with MYSAP on 04 March 2021. The improved and updated *Guide for operation and testing of the improved FAO FTT Thiaroye smoker* was finalized on 16 March and sent for translation into Myanmar language. The finalized Myanmar language version of the *Guide for operation and testing of the improved FAO FTT Thiaroye smoker* was shared with MYSAP on 30 March 2021.

Under tests supervised by the international consultant the improved smokers processed about 50 viss (81.5 kg) daily working with 2 wooden smoker racks over each of the 2 furnaces. The quantity of smoked fish produced would be further increased by using more wooden smoker racks.

On 16 March 2021 MYSAP Inland purchased a medium sized oven to conduct the final stage of weight and moisture loss of the smoked product determination. The final oven drying results of 90 individual fish samples (6 samples for small, medium and large) for 2 traditional batches of smoked fish and 3 batches of smoked fish from the improved driers were supplied to the international consultant on 30 March 2021 and his feedback on the moisture content is awaited.

A blind taste testing of smoked rohu produced by the traditional smoking method and the FAO FTT Thiaroye improved smoker supported by MYSAP will be conducted in April 2021 to get feedback on how the taste, texture, flavour and aroma of smoked rohu from the improved smoker compares to the of the traditional rohu smoking process. It remains to be seen if any differences will translate into more income and profit per weight of smoked rohu produced.

**Nutrition awareness training at micro-credit repayment locations and health clinics**

121 people (all ♀) received nutrition awareness training at micro-credit repayments in January 2021, but thereafter to reduce the likelihood of COVID-19 contagion and spread BRAC Myanmar stopped group attendance for the repayment of micro-credit loans in February and March 2021, where they had planned to deliver nutrition awareness training to a target of 1,250 women. BRAC Myanmar has delivered nutrition awareness training to a cumulative total of 364 people (343 ♀) at micro-credit repayment locations.

A cumulative total of 444 people (420 ♀) have also received nutrition awareness training delivered by BRAC Myanmar staff at health clinics.

Malteser International under an agreement with mid-wives commenced nutrition awareness training in Kengtung Township on 07 January 2021 for pregnant women and women with children under the age of five years old. To 31 March 2021, a total of 193 women were trained at 8 different Ministry of Health and Sport health centres.

To 31 March 2021 Ar Yone Oo staff provided nutrition awareness raising training for 275 women (no ♂) at 8 health clinics in Kale Township and this activity is now finished.

Due to a) the state of emergency and civil disobedience movement protests and b) Covid-19,



BRAC Myanmar or Malteser International did not conduct any nutrition awareness raising training at health clinics in Kale, Shwebo or Kengtung Townships in February 2021, nor was any nutrition awareness training conducted at the Ar Yone Oo and BRAC Myanmar micro-credit loan repayment centres in Kale or Shwebo Townships.



Malteser International staff member delivering nutrition raising awareness training at a health clinic in Kengtung Township, Shan State

	Health clinics	Micro-credit	Total
Kale	275 (275 ♀)	0	275 (275 ♀)
SBO	444 (420 ♀)	364 (343 ♀)	808 (763 ♀)
KET	193 (193 ♀)	0	193 (193 ♀)
	912 (888 ♀)	364 (343 ♀)	1,276 (1,231 ♀)

### Market survey reports

It was agreed on 26 February 2021 and the service contract was modified on 01 March 2021 to reflect that the Department of Economics, Meiktila University, would submit their finalized reports for the Kale, Shwebo and Kengtung market surveys on 09 April 2021.

### Mobile phone application – Green Way

A MYSAP Inland article entitled, *A stacked value chain analysis study of smoked rohu from Kale Township, Sagaing Region, Myanmar*, was shared with Greenovator on 05 January 2021 and was uploaded onto the Green Way app on 07 January 2021 at the link below:





[https://greenwaymyanmar.com/posts/smoked\\_rohu\\_kale](https://greenwaymyanmar.com/posts/smoked_rohu_kale)

To 08 February 2021, a total of 24,960 people had viewed the 20 different aquaculture and nutrition articles, leaflets, posters and success stories uploaded onto the Green Way mobile phone app by MYSAP Inland. Greenovator did not provide any updated data in March 2021.

If and when GIZ MYSAP approval is given, the MYSAP Inland IEC Officer will arrange uploading of all the 26 MYSAP Inland supported training videos produced by the IP staff onto the Green Way mobile phone app in April or May 2021.

Nutrition, horticulturalists, livelihoods and communication specialist staff from the inland component of the Myanmar Sustainable Aquaculture Programme (MYSAP), and Fish for Livelihoods programme have worked collaboratively on the joint production of 2 IEC materials being i) a pamphlet booklet entitled, Best management practices for vegetable production systems covering 15 key vegetable species that are important for human nutrition and ii) the production of a leaflet on the production of a fish amino acid fertilizer made from fish processing wastes which can be used as a fertilizer for vegetables crops and fruit trees. The English version of the BMP for vegetable production systems was finalized and submitted for translation into Myanmar language on 16 February 2021. The Myanmar translation was received on 31 March 2021. Dissemination of the material is currently on hold, until approved by MYSAP.

**Information sharing and networking**

The Team Leader joined the *MYSAP - Yangon University – Asian Institute of Technology Stakeholder Workshop for the Master's Curriculum in Fisheries & Aquaculture at Yangon University* by Zoom, on 19 January 2021.

The Team Leader joined a MYSAP Aquatic Animal Health virtual workshop on *Presentation of Small Research Projects* on 22 January 2021 and shared MYSAP Inland protocols in Myanmar language for taking fish and shrimp samples for histopathology and PCR testing with the participants which included Department of Fisheries and university staff.

The MYSAP Inland Team Leader attended the Big Fish Series, *Impacts on COVID-19 on Seafood Value Chains* virtual seminar on 11 February 2021 co-hosted by the University of Stirling’s Institute of Aquaculture and the Johns Hopkins Center for a Liveable Future.

As part of the celebrations for the International Day of Women and Girls in Science, the biography of the MYSAP Inland IEC officer was included in the package of promotional material released by WorldFish on 11 February 2021.

The MYSAP Inland Team Leader attended, some presentations as work commitments allowed, of an FAO organized webinar entitled, *Small low-cost fish: from bait to plate*, on 15-16 February 2021.





On 16 February 2021, the MYSAP Inland Team Leader attended a virtual webinar arranged by Australian National University (ANU) Myanmar Research Survey, entitled, *Military coup in Myanmar: what just happened?*

The MYSAP Inland Team Leader attended the WHO, OIE and FAO organized webinar entitled *Antimicrobial resistance is simple to understand, yet it is often misunderstood* on 24 February 2021.

The MYSAP Inland Team Leader and Prof Andy Shinn have co-authored an article entitled, *Trichodina a common fish parasite in freshwater ponds*. MYSAP Inland funded translation of the article from English into Myanmar language which was finalized on 09 March 2021. Dissemination of the extension leaflet has been put on hold until further notice on GIZ MYSAP instructions.

The MYSAP Inland Team Leader attended an internal WorldFish webinar entitled International Women’s Day Celebration on 08 March 2021, pledging that MYAP Inland would “*Challenge gender stereotypes and bias*”.

On 08 March 2021, the MYSAP Inland Team Leader provided feedback to an International Water Management Institute Research Assistant on MYSAP Inland activities to mitigate against climate change impacts.

The MYSAP Inland Team Leader attended the Global Aquaculture Alliance arranged webinar entitled, *Best Aquaculture Practices Farm Standard (Issue 3) Overview*, on 11 March 2021.



The MYSAP Inland Team Ledaded attended the FAO organized webinar entitled, *Experiences in Implementing Gender Transformative Approaches in the Fisheries and Aquaculture Sector for Food Security and Nutrition*, on 16 March 2021.

**End-line survey**

A virtual Teams meeting was conducted on 28 January 2021 with Dr Alexandros Gasparatos, Associate Professor of Sustainability Science, Institute for Future Initiatives (IFI), Tokyo University and his team to discuss the sampling questionnaire for the MYSAP Inland end-line survey.

Dr Alexandros Gasparatos, and his team provided the MYSAP Inland end-line survey questionnaire, which was sent for translation on 17 February 2021, while Myanmar Survey Research (MSR) was awarded a service contract on 17 February to check the questionnaire logic, to code and to digitize the end-line questionnaire into the KoBo Toolbox platform.

A virtual Teams meeting was conducted on 19 February 2021 with Tokyo University to discuss the MYSAP Inland end-line survey. It was agreed that:

- MYSAP Inland would provide Tokyo University with a complete list of households excluding demo, feed millers and nursery farmers so that grow-out dbh could be randomly selected for sampling split into season 1 and season 2 dbh.
- Control households will be selected from the new dbh list of the USAID funded Fish for Livelihoods project that have similar pond sizes (less than 0.5 acres) and which to date have had no F4L training.
- The MDD-W section of the questionnaire would be conducted after the other survey questions and would be answered by a female household member.

The Myanmar translation of the MYSAP Inland end-line survey questionnaire was finalized on 19 February 2021 and forwarded on 22 February 2021 to MSR for digitization.



MSR provided training on 25 February of the MYSAP Inland M&E Coordinator on using the end-line survey questionnaire on the KoBo Toolbox digital platform and how to check and clean data. MYSAP Inland provided feedback to MSR on using the MYSAP Inland end-line survey questionnaire after uploading onto the KoBo Toolbox platform on 03 March 2021. A meeting with MSR and the MYSAP Inland M&E Coordinator to discuss and finalize the MYSAP Inland end-line questionnaire on 05 March 2021 was rescheduled to 08 March 2021.

On 08 March 2021 the MYSAP Head of Programme instructed MYSAP Inland to conduct its end-line survey by mobile phone only following the suspension of all field activities.

The finalized digitized MYSAP Inland questionnaire was supplied by MSR on 09 March 2021 and uploaded into KoBo Toolbox the same day by the MYSAP Inland Monitoring and Evaluation Coordinator.

The MYSAP Inland M&E Coordinator provided training on 12 March 2021 for a total of 38 (21 ♀) people including 31 (17 ♀) implementing partner staff, 6 (3 ♀) MYSAP Inland staff and the WorldFish Myanmar Nutrition Advisor (1 ♀) on use of the MYSAP Inland end-line questionnaire survey and how to enter the data into the KoBo digital platform on a mobile phone. On 12 March 2021 the IP staff tested the end-line questionnaire both face to face and by mobile phone.

The MYSAP Inland end-line survey commenced on 15 March 2021 in Kengtung and Shwebo where there was Wi-Fi internet, but was delayed in Kale, Tachileik and Wetlet because internet services were suspended.

23 questionnaires were conducted in Shwebo and these were uploaded onto KoBo. Six questionnaire were done in Kengtung, but only 3 of these were not uploaded onto KoBo. Tokyo University provided feedback on the quality of the data entered on 16 March 2021 and full roll-out of the MYSAP Inland end-line survey commenced the same day.

Date	Year 1			Year 2			Control	
	Kale	Shwebo	Kengtung	Kale	Shwebo	Kengtung	Wetlet	Tachileik
15/03/21	0	15	1	0	7	1	0	0
16/03/21	6	5	3	7	8	4	0	0
17/03/21	0	13	10	6	13	3	0	0
18/03/21	5	10	10	6	13	1	0	1
19/03/21	7	8	5	8	9	1	0	2
20/03/21	0	4	3	0	4	3	0	0
21/03/21	0	4	9	4	2	8	0	4
22/03/21	11	1	5	6	4	7	0	1
23/03/21	5	0	4	2	0	9	0	8



24/03/21	0	0	1	0	0	8	6	10
25/03/21	0	0	3	1	0	4	19	10
26/03/21	0	0	2	0	0	1	10	11
27/03/21	0	0	0	0	0	0	4	3
28/03/21	0	0	0	0	0	0	8	0
29/03/21	0	0	0	0	0	0	9	4
30/03/21	0	0	0	0	0	0	22	5
Total	34	60	56	40	60	50	78	59

By 31 March 2021, 437 of the 480 households (91%) that will be interviewed by mobile phone for the MYSAP Inland end-line questionnaire survey. Data collection from the field should be completed on 02 April 2021.