



# MARIANO MARCOS STATE UNIVERSITY

## **Sustainable Tilapia Aquaculture in Ilocos Norte**

Generally, the project aims to have sustainable tilapia production in the province of Ilocos Norte through the utilization of technologies and innovations on tilapia production.

Specifically, the project aims to:

1. Assess issues/problems of tilapia growers in the province;
2. Assess training needs of tilapia growers in the province;
3. Establish demo-farms for tilapia fingerling production and grow-out production;  
and
4. Extend technical assistance and monitor activities of tilapia growers in the province.



MARIANO MARCOS STATE UNIVERSITY


**Launching of SUSTAIN Project  
and Signing of MOA *cum*  
Training on Tilapia Grow-out,  
Breeding and Nursery**

**PROCEEDINGS**

**October 26-27, 2023**





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**PRESCRIBED TEMPLATE FOR PROCEEDINGS OF AN EXTENSION PROGRAM/PROJECT/ACTIVITY**

**I. Preliminaries**

- A. Title

Sustainable Tilapia Aquaculture in Ilocos Norte
- B. Date

October 26-27, 2023
- C. Venue

Brgy. Sacritan, Pinili, Ilocos Norte
- D. Implementing Unit/s or Agency/ies

MMSU-College of Aquatic Sciences and Applied Technology and LGU-Pinili

**II. Rationale**


Tilapia is one of the predominant fish cultured in the country next to milkfish. This species is considered as the chicken in aquaculture. Its rising popularity is due to its hardness, resistance to diseases, ease of breeding, reasonable growth rate, good taste, and tolerance to a wide range of environmental conditions including temperature and salinity. The introduction of this species in the 1950's aimed to increase fish production to meet the demand for fish protein from our growing population. Since then, research focused on the improvement of production through breeding and grow-out practices.

A substantial number of studies have already been undertaken in many aspects of tilapia culture resulting in the development of technologies that led to intensive production. However, despite of the innovations made, constraints on the application of results from these researches were mainly due to the high cost of inputs for production. Feeds comprise 60%-70% of the total operating cost for intensive fish production. Strategies to reduce feed inputs are of prime importance to make the industry more profitable at a sustainable level. The sustainability of aquaculture depends on cost-effective practices during the production period. Feeding practice is one of the practices that need to be optimized in aquaculture, because overfeeding could lead to higher production costs, and water pollution, whereas underfeeding could lead to poor growth performance, and poor economic gain (Eroldogan, Kumlu, & Akta, 2004).

In Ilocos Norte, tilapia aquaculture is gaining popularity and this could be due to its feasibility to culture. Demand for fingerlings for grow-out production is seasonal wherein farmers shift to aquaculture after the planting season of rice, corn and other high value crops during the rainy season. There are some existing tilapia hatcheries in the province which is operated by either the Local Government, Provincial Government and Bureau of Fisheries and Aquatic Resources. These hatcheries are located in Dingras, Batac, and Paoay respectively which caters the demand from their respective locality/agencies, thus fingerling demands from other municipalities and growers are not usually met that resulted in the procurement of fingerlings from other provinces like Nueva Ecija, Zambales, Bulacan and Pangasinan to name a few. It is within this context that this project was conceptualized.

This project aims to have sustainable tilapia production in the province of Ilocos Norte through the utilization of technologies and innovations on tilapia production from the research conducted by MMSU-CASAT. The project also aims to established demo-

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farms for fingerling and grow-out production to augment the income and production of farmers within the province. Aside from this, on-site trainings, technical consultation/assistance, and monitoring will also be conducted to ensure feasibility of the endeavors.

III. Objectives

Generally this project aims to have sustainable tilapia production in the province of Ilocos Norte through utilization of technologies and innovations on tilapia production.


Specifically the project aims:

- a. Assess issues/problems of tilapia growers in the province,
- b. Assess training needs of tilapia growers in the province,
- c. Established demo-farms for tilapia fingerling production and grow-out production,
- d. Extend technical assistance and monitor activities of tilapia growers in the province.

IV. Logical Framework


Narrative Summary/ Intervention Logic (ILO)	Objectively Verifiable Indicators (OVI)	Means of Verification (MOV)	Important Assumptions
<b>Goal</b> Sustainable Tilapia Aquaculture in Ilocos Norte	Increased and year round tilapia production  Improved socio economic status of tilapia growers	Production data  Interview/testimonies	Availability of inputs (supplies and materials)  Positive reception and cooperation of collaborators in adopting technologies introduced
<b>Objective/Purpose</b>  <ul style="list-style-type: none"> <li>Increased tilapia production</li> <li>Increased income of tilapia growers</li> </ul>	15% increased tilapia production Increased no. of tilapia growers  10 % increased income of tilapia growers  10% increased in volume of fingerlings produced	Production data (LGU's) LGU's Fishpond registration Record books (growers, hatchery operators) Financial reports interview/testimonies	Positive reception on technology adoption and cooperation of collaborators



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<b><i>Outputs/Results</i></b>  Promoted Tilapia Aquaculture in the province  Strengthened partnership with LGU's and others  Developed IEC materials on tilapia fingerling production and grow-out	No. of Demo-farms established  No. of partners  No. IEC materials developed	Documentation, logbook  MOA/MOU duly signed and notarized  Copy of IEC materials developed	Positive reception on technology adoption and cooperation of collaborators  Active participation of tilapia growers  Availability of subject matter specialist and staff
<b><i>Activities</i></b> Inception meetings with LGU'S  Forged partnership (LGU's)  Conduct Need Assessment  Conduct trainings based on training/needs analysis <ul style="list-style-type: none"> <li>• Tilapia fingerling production</li> <li>• Techniques on Nursery Rearing of Tilapia</li> <li>• Feeding schemes and practices on tilapia grow-out production</li> </ul> Establishment of demo-farms	No. of meetings conducted No. of participants  MOA's/MOU's signed  No. of assess communities No. of respondents  No. of trainings conducted No. of participants  Ocular-site inspection for site selection	Minutes of meetings  Duly signed and notarized MOA's/MOU's  Travel orders No. of need assessment conducted Training/ Need  Result of Training/Needs Analysis Attendance  Documentation during trainings Training Evaluation/Feedback forms  Ocular-site inspection report Duly signed and notarized MOA's/MOU's	Positive reception of LGU's  Adherence to MOA's/MOU's  Active participation of respondents  Active participation of tilapia growers  Positive reception on technology adoption and cooperation of collaborators  Feasibility of sites for aquaculture Positive reception and adoption of technologies by collaborators Adherence to MOA's/MOU's from

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			cooperators
<b>Inputs</b>			
Supplies and Materials	Quantity and quality of supplies and materials	Approved Work and Financial Plan PPMP	On time purchase and delivery of supplies and materials
Specialist/ Project Staff	No. of personnel designated	Pool of subject matter specialist	Availability of subject matter specialist and staff

#### V. Methodology/Mechanics of Implementation

The training was implemented by the training team and technical expert of MMSU-CASAT Research and Extension Personnel and partnership of Local Government of Pinili through the Municipal Agriculture Office. A 2-days Training was conducted at Brgy. Sacritan, Pinili, Ilocos Norte.

#### VI. Participants

The participants were composed of member of Tilapia growers of Pinili, Ilocos Norte, LGU personnel, MMSU-CASAT staff. Which majority of the participants were male (60%) and female (40). Thirteen (12) technical experts and resource speaker from MMSU-CASAT personnel and five (5) personnel from LGU-Pinili, Municipal Office.

Majority of the participants belong to age ranging from 35-44 and 45-54 (64%) and other participants belong to age ranging from 22-34 (20%), and 55-64 (16%).

#### VII. Training/Activity Management Team

The following are the TMT:


Team Leader: Ernesto S. del Rosario  
Jeric Reinard C. Balauro

Training Team (Resource Speaker and Secretariat)

Marjorie G. Ramos  
Jerome D. Binarao  
Keibrreil Keill P. Arcilla  
Jumari C. Fernandez  
Jhoanne E. Donato

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Nizza Ann B. Payap-a  
Ramil C. Llanes

Monitoring Officers: Jeric Reinard C. Balauro  
Ernesto S. del Rosario Jr.  
Jerry M. Allado

#### VIII. Funding

Proposed Budget: Php 164,350.00

##### LINE-ITEM BUDGET


MOOE	Year 1	Year 2	Total
Travel (gasoline expenses)	Php 12,000.00	Php 12,000.00	Php 18,000.00
Zoological supply (fingerlings 36 kg@ Php 250/kg) (breeders (2000 pcs @ Php 3/pcs) * 1 Tilapia Hatchery Demo-farm, 2 tilapia grow-out Demo-farms	Php 15,000.00		Php 15,000.00
Agricultural supply (Nets, twine, feeds, fertilizer etc.) * 1 Tilapia Hatchery Demo-farm, 2 tilapia grow-out Demo-farms	Php 74,350.00		Php 74,350.00
Office supply (bond paper, ball pen, record book etc.)	Php 3,000.00	Php 3,000.00	Php 9,000.00
Communication supply (cell cards)	Php 5,000.00	Php 5,000.00	Php 10,000.00
Training/ Seminar Workshop ( registration, snacks, meals) *125 participants	Php 25,000.00		Php 25,000.00
Representation (snacks)	Php 5,000.00	Php 5,000.00	Php 10,000.00
<b>Total</b>	Php 139,350.00	Php 25,000.00	Php 164,350.00

#### IX. Highlights

Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN) extension project generally aims to play a crucial role in addressing food security, livelihood stability, economic development and environmental sustainability for every Ilocanos which is primarily focusses on social significance and impacts to the lives of local communities. Through this project empowering local Tilapia growers to produce their own fish foods, creating opportunities for employment and income generation and become self-sufficient. During the conduct of two (2) training, participants were composed of male and female Tilapia growers. With their traditional and conventional farming practices it was noted that they were so actively participating during discussion and open forum particularly on actual practices and technologies that were extends, such as proper feeding managements and strategies, water

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quality monitoring, proper pond preparation, tilapia breeding and nursery and among other. Thus, with the successful implementation of the project this will serve as a catalyst for social change, promoting food security and sustainable development for fish farmers. Further, addressing the current challenges through effective extension intervention and strategies to provide significant impacts and leading to more resilient and empowered Tilapia grower communities.



Figure 1. Capacity building through Training on Tilapia Grow-out, Breeding and Nursery


Aquaculture technologies and practices which were extend to the Tilapia growers of Brgy. Sacritan, Pinili, Ilocos Norte were outputs of research based results and long-term practices and methodologies at Mariano Marcos State University-College of Aquatic Sciences and Applied Technology (CASAT) Fishpond and Freshwater Hatchery.

For Tilapia grow-out production, it was discussed during the training some of the advance and current technologies such as Cyclic Feeding method which aims to lessen the production cost particularly feeds consumptions and its costs which usually covers 60% (Lopez, G.R. et al. 2020). Elnady, A.M. 20215 noted that intermediate periods for fasting (1 to 3 days fasting period) followed by re-feeding (3 to 9 days refeeding periods) improved feed utilization and resulted in similar feed conversion ratio (FCR) compared to continuous feeding. Similar results was noted by Palubos, 2023 on the growth performance and survival on African Catfish conducted at MMSU-CASAT. Thus, this technology will be very helpful for local tilapia and catfish grower since fish are not force to feed daily which generally lower the amount of feed to be given. Also, it will helps to decrease amount of uneaten feed which results to water quality deterioration particularly dissolved oxygen depletion and high ammonia concentration. Likewise, during the training proper pond preparation (i.e., pond drying and disinfection, application of fertilizer, filing of water and stocking), water quality monitoring, fish health management were discussed to ensures that the beneficiaries and participant were equipped with technical know-how on the Current Good Aquaculture Practices (cGAP).

The application of aquashade technology to enhance seed production under hapa-based and pond based tilapia fingerlings production were extends and introduced.

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One problem on tilapia fingerlings production in the Province is the effect of high water temperature which leads to low seed production particularly during summer season. Thus, this technology will be very helpful for local tilapia hatchery owners to increase the production year round and produced and meet the demand of tilapia fingerlings on the Province of Ilocos Norte. It was noted by Grande, V.O. et al. 2016 unpublished that 77.30% increase on the seed production under shaded conditions over that of the non-shaded. Further the optimum range of water temperature for better seed production under Ilocos condition is from 30.39 °C to 31.79 °C. It was also noted that an 86.9% return of investment (ROI) will be achieve after 3 production cycles. Likewise, during the training Tilapia broodstock management, larval rearing and nursery management were discussed.




Figure 2. Tilapia Grow-out Technology Demonstration Farm

As part of the goal and objective of the project which aims to improve living conditions of Tilapia growers by providing sustainable livelihood through adoption of matured technologies. The establishment of technology demonstration farm will play vital role on the economic feasibility of the technologies extends to the beneficiaries. In which seed capital (i.e., tilapia fingerlings, feeds, and cages) were provided as their start up investment and livelihood assistant. As part of the bind terms and conditions on the signed Memorandum of Agreement (MOA) beneficiaries will commit, safeguard of the techno-demo farms and assist in the gathering and monitoring of the project. Thus, ensuring the sustainability of the project and will serve as benchmark and will boost the tilapia farming and entrepreneur in the communities of Ilocos Norte.

Achieving sustainable Tilapia aquaculture in Ilocos Norte plays important role on the sustainable aquaculture farming technologies primarily focuses on food production and environmentally sound practices and methods. With the above-mentioned technologies (i.e., establishment of techno-demo farm following cyclic feeding


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practices and aquashade technology for fingerlings production) it provides critical understanding to make informed baseline and decision making that expands sustainable aquaculture opportunities for local tilapia growers and also minimizing potential environmental impacts such as water quality deterioration due to excessive feeds inputs which lowers ecological carbon footprints in inland water resources.

With the project components (i.e., establishment of techno-demo farms, capacity building and technical assistances/consultancies) political supports and involvements plays pivotal role in the success planning and implementation of the project. Currently, the forging of Memorandum of Agreement (MAO) is on-going process. Thus, the commitment and support of the Local Government Unit (LGU) of Pinili, Ilocos Norte particularly with the Municipal Agriculture Office is very essential for the successful development and expansion of Tilapia aquaculture and enterprise in the Province. With the present efforts and collaboration of MMSU-CASAT and LGU-Pinili, and beneficiaries on Tilapia aquaculture, this may influence other Local Government Units (LGUs) of the Province to refocus and prioritize such projects and allotting fund resource for adoption and implantation on their respective municipalities and communities. In which the MMSU-CASAT and the University Extension Directorate will fully committed on continues technical assistant and community engagement to LGUs and fish farmers.



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**Program Components:**

Program of Activity			Program of Activity		
TIME	ACTIVITY/TOPICS (DAY 1)	RESPONSIBLE PERSON	TIME	ACTIVITY/TOPICS (DAY 2)	RESPONSIBLE PERSON
06:00-7:30AM	Travel to Pinalil, Ilocos Norte from MMSU-CASAT, Currimao	MMSU CASAT Personnel Staff	8:00-9:30AM	Tilapia Fingerling Production	Prof. Marjorie G. Ramos Mr. Jeric Reinard C. Balasano
07:31-8:15AM	Registration of Participants	Ms. Nizza Arm B. Payapa Faculty, MMSU-CASAT	9:31-11:30 AM	Cage Culture of Tilapia Cage Construction	Mr. Juman C. Fernandez Mr. Ramil C. Llanes Mr. Jay Linuel S. Oamerga Mr. Allen T. Argel
8:16-9:00AM	Preliminaries: -Prayer	Mr. Ramil C. Llanes Faculty/Cultural Coordinator, MMSU-CASAT	11:31-12:30 PM	Lunch Break/Health Break	
	Acknowledgement of the Participants	Mr. Lerich S. Daduya Municipal Fishery Coordinator, Pinalil	1:00-2:00 PM	Code of Good Aquaculture Practices for Tilapia (Water quality, disease management and practices) Tilapia Culture Economics Awarding of Certificates Closing Remarks	Mr. Kalbriel Kail P. Arcilla Ms. Joanne C. Donato
	Welcome Message	Hon. Rammel T. Labasan Municipal Mayor, Pinalil	2:01-3:00PM	Tilapia Culture Economics	CBEA Representative/Staff
	Messages	Dr. Marilou P. Lucas MMSU-Extension, Director	3:01-3:30PM	Awarding of Certificates	MMSU Representative/Staff
9:00-12:00NN	LECTURE PROPER		3:31-4:00PM	Closing Remarks	MMSU Representative/Staff
9:01-9:15AM	Rationale of the Project	Prof. Ernesto S. Del Rosario, Jr. OIC-Dean, MMSU-CASAT		- End of Day 2	
9:16-12:00NN	Launching of Sustain Project (AM ACTIVITY) - MOA Signing - Stocking of Fingerlings	MMSU Personnel/Staff			
1:00-1:15PM	Overview of Philippine Aquaculture	Ms. Nizza Arm B. Payapa Faculty, MMSU-CASAT			
1:16-2:00PM	Tilapia as an Aquaculture Species	Prof. Marjorie G. Ramos Faculty/College Secretary			
2:01-3:00PM	Tilapia Grow-out Production - Marketable Size Tilapia Production in Ponds	Prof. Ernesto S. del Rosario, Jr. OIC-Dean, MMSU-CASAT			
3:01-4:00PM	Nutrition and Feeding Management	Mr. Jerome D. Binarao Chairperson, Department of Fisheries			
	- End of Day 1				
<b>Mr. Ramil C. Llanes</b> <i>Master of Ceremonies</i>			<b>Mr. Ramil C. Llanes</b> <i>Master of Ceremonies</i>		

**X. Evaluation**


**A. Evaluation of the Training**

Training evaluation was done to determine the impacts, knowledge and skills gained by the trainees. Also, to assess their overall rating of the training. The evaluation guide questions are the following (1) relevance of the topic, (2) adequacy of information, (3) competency of the speaker/s, (4) provision of information to participants, (5) appropriateness of methods/process, (6) Effectiveness of methods/processes in attaining trainings objectives, (7) Venue, (8) Food, (9) accommodation, (10) overall rating for the whole training, (11) overall rating for the timeliness of the service delivery and (12) Quality of service of the training management team. Based from the result it was noted an average rating of 4.88 – 5.00 score which indicated high satisfactory rate.

The training provides relevance and adequate information (5.0 highly satisfied) to the trainees particularly on the current and advance technologies on tilapia grow-out production, breeding and nursery. In terms of competence of speakers, an average rating of 5.0 which indicates that resources speakers delivered their respective topics effectively.

For the usefulness of the training and appropriateness and effectiveness of the method/processes, an average of rating of 5.0, which indicates appreciation and confident to the training team particularly on the training methodology, usefulness after

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completing the training and on how they can perform and transferred these learnings and skills in their daily works and endeavors.

In terms of the venue, food and accommodation, the trainees indicated an average mean of 4.98, 4.96, and 4.98, respectively. Which indicates that the trainees appreciate their stay throughout the training while learning and these categories were met effectively and efficiently.

Based from the overall rating for the whole training an average rating of 5.0 was attained which indicates expectations and satisfactory was gained, also overall rating for timeliness of the training attained an average rating of 5.0 These results shows that the training was implement successfully as well as the quality of service of the training management team was effectively and efficiently.

The overall impact of the activity attained an average rating of 5.0 this shows that the trainees were really highly satisfied with the knowledge, gained skills and mastery of tilapia grow-out production, nursery and breeding as well as current Good Aquaculture Practices (cGAP).


Item	Mean	Descriptive Interpretation
1. Relevance of the topic/s covered	5.00	Highly Satisfied
2. Adequacy of information	5.00	Highly Satisfied
3. Competence of the Speaker/s	5.00	Highly Satisfied
4. Usefulness of the training/seminar/workshop	5.00	Highly Satisfied
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.) used	5.00	Highly Satisfied
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	5.00	Highly Satisfied
7. Venue	4.98	Highly Satisfied
8. Food	4.96	Highly Satisfied
9. Accommodation	4.98	Highly Satisfied
10. Overall rating for the whole training/seminar/workshop	5.00	Highly Satisfied
11. Overall rating for the timeliness of the service delivery.	5.00	Highly Satisfied
12. Quality of service of the Training Management team	5.00	Highly Satisfied
<b>Over-all Impact of the Activity</b>	<b>4.83</b>	<b>Highly Satisfied</b>

**Legend:**

Rating	Descriptive Interpretation
4.50 – 5.00	Highly Satisfied
3.50 – 4.49	Satisfied
2.50 – 3.49	Neutral

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1.50 – 2.49

Dissatisfied

1.00 – 1.49

Highly Satisfied

#### B. Evaluation of the Trainers

The participants were also asked to evaluate the resource speakers in terms of Achievement of Session Objectives, Level of Content Presented, Appropriateness, Applicability, Level of Coverage, Mastery of Subject Matter, Presentation Skills, Teacher-related Personality Traits, and Acceptability as Resource Speaker, Adherence to Principles of Learning, Quality of Presentation and Materials Used.

In terms of achievement of session objectives and Level of Content Presented, an average mean of 4.98, 4.96, 4.64, 4.50, 4.80 were given to Prof. Ernesto S. del Rosario, Mr. Keibreil Keill P. Arcilla, Prof. Marjorie G. Ramos, Mr. Jerome D. Binarao, Ms. Nizza Anna Payap-a and Mr. Jumari C. Fernandez, respectively. All their scores indicated a descriptive interpretation of *Highly Satisfied*. This means that the participants were highly satisfied with the information presented during the training. For the level of content presented, their scores were 4.90, 4.96 and 5.00, respectively.

Based on the result, the participants indicated an average mean of 5.00 for Prof. del Rosario, Mr. Arcilla and Mr. Fernandez while 4.96 for Prof. Ramos, and 4.90 for Mr. Binarao and 4.94 for Ms. Payap-a score in the appropriateness. A rating of 5.00 were given to Prof. del Rosario, Mr. Arcilla and Mr. Fernandez and 4.90, 4.98 and 4.76 were given to Prof Ramos, Mr. Binarao and Ms. Payap-a; respectively for Applicability of the training with a descriptive interpretation of *Highly Satisfied* which means that the activity was relevant to participants.


An average of 4.98, 5.00, 4.90, 4.98, 4.86, 4.90 were given Prof. Ernesto S. del Rosario, Mr. Keibreil Keill P. Arcilla, Prof. Marjorie G. Ramos, Mr. Jerome D. Binarao, Ms. Nizza Anna Payap-a and Mr. Jumari C. Fernandez, respectively in terms of level of coverage and were obtained with a descriptive interpretation of *Highly Satisfied* which means that all the speakers covered different subject matter improved the knowledge and skills of participants. An average of 5.00 were given Mr. Arcilla, Mr. Binarao and Mr. Fernandez while 4.90 and 4.86 were also given to Prof. del Rosario, Prof. Ramos and Ms. Payap-a, respectively in terms of Mastery of Subject and Presentation skills with all has a descriptive interpretation of *Highly Satisfied* which means that the speakers has shown mastery on their topic discussed during the training.

In terms of Acceptability as Resource Speaker, an average of score of 5.00 were given to Prof del Rosario, Mr. Binarao and Mr. Fernandez while 4.98, 4.70 and 4.80 were also given to Mr. Arcilla, Prof. Ramos, and Ms. Payap-a, respectively with a descriptive interpretation of *Highly Satisfied* which means that the speakers were effective as a resource speaker and mastered how to present their ideas and topics.

An average of 5.00 were given to Prof.del Rosario, Mr. Arcilla and Mr. Fernandez and 4.80, 4.90 and 4.88 were given to Prof. Ramos, Mr. Binarao and Ms. Payap-a in terms of Adherence to principles of learning and the quality of presentation. For the quality of materials used, the average is 5.00, 4.90 and 4.80, respectively with a descriptive interpretation of *Highly Satisfied* which means that the speakers used excellent presentation and their topics and demonstrations were comprehensible to the participants.

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Overall, the trainers garnered a rating of 5.00, 4.90 and 4.80 for the Overall impact as speakers with a descriptive interpretation of *Highly Satisfied*. Which indicate that the pool of expert and resources speaker for the conduction of Tilapia Grow-out, Breeding and Nursery Training were successfully implemented as well as participants were able to gained better understanding on Tilapia aquaculture for optimal production and to achieve sustainable tilapia aquaculture in Ilocos Norte. Thus to enhanced fish production and to contribute in the attainment of food security.

#### Evaluation Results of Prof. Ernesto S. del Rosario

Item	Mean	Descriptive Interpretation
1. Achievement of Session Objectives	4.98	Highly satisfied
2. Level of Content Presented	5.00	Highly satisfied
3. Appropriateness	4.90	Highly satisfied
4. Applicability	5.00	Highly satisfied
5. Level of Coverage	4.98	Highly satisfied
6. Mastery of Subject Matter	4.90	Highly satisfied
7. Presentation Skills	4.90	Highly satisfied
8. Teacher-related Personality Traits	5.00	Highly satisfied
9. Acceptability as Resource Speaker	5.00	Highly satisfied
10. Adherence to Principles of Adult Learning	5.00	Highly satisfied
11. Quality of Presentation Materials Used	5.00	Highly satisfied
<b>Over-all Impact of the speaker</b>	<b>4.96</b>	<b>Highly satisfied</b>

#### Evaluation Results of Mr. Keibrreil Keill P. Arcilla


Item	Mean	Descriptive Interpretation
1. Achievement of Session Objectives	4.96	Highly satisfied
2. Level of Content Presented	5.00	Highly satisfied
3. Appropriateness	5.00	Highly satisfied
4. Applicability	5.00	Highly satisfied
5. Level of Coverage	5.00	Highly satisfied
6. Mastery of Subject Matter	5.00	Highly satisfied
7. Presentation Skills	5.00	Highly satisfied
8. Teacher-related Personality Traits	4.98	Highly satisfied
9. Acceptability as Resource Speaker	4.98	Highly satisfied
10. Adherence to Principles of Adult Learning	5.00	Highly satisfied
11. Quality of Presentation Materials Used	5.00	Highly satisfied
<b>Over-all Impact of the speaker</b>	<b>4.99</b>	<b>Highly satisfied</b>

#### Evaluation Results of Prof. Marjorie G. Ramos

Item	Mean	Descriptive Interpretation
1. Achievement of Session Objectives	4.64	Highly satisfied
2. Level of Content Presented	4.96	Highly satisfied
3. Appropriateness	4.88	Highly satisfied
4. Applicability	4.90	Highly satisfied
5. Level of Coverage	4.90	Highly satisfied
6. Mastery of Subject Matter	4.86	Highly satisfied

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7. Presentation Skills	4.78	Highly satisfied
8. Teacher-related Personality Traits	4.90	Highly satisfied
9. Acceptability as Resource Speaker	4.70	Highly satisfied
10. Adherence to Principles of Adult Learning	4.80	Highly satisfied
11. Quality of Presentation Materials Used	4.80	Highly satisfied
<b>Over-all Impact of the speaker</b>	<b>4.82</b>	<b>Highly satisfied</b>

Evaluation Results of Mr. Jerome D. Binarao

Item	Mean	Descriptive Interpretation
1. Achievement of Session Objectives	4.50	Highly satisfied
2. Level of Content Presented	4.90	Highly satisfied
3. Appropriateness	4.98	Highly satisfied
4. Applicability	4.98	Highly satisfied
5. Level of Coverage	4.98	Highly satisfied
6. Mastery of Subject Matter	5.00	Highly satisfied
7. Presentation Skills	5.00	Highly satisfied
8. Teacher-related Personality Traits	5.00	Highly satisfied
9. Acceptability as Resource Speaker	5.00	Highly satisfied
10. Adherence to Principles of Adult Learning	4.90	Highly satisfied
11. Quality of Presentation Materials Used	4.90	Highly satisfied
<b>Over-all Impact of the speaker</b>	<b>4.92</b>	<b>Highly satisfied</b>


Evaluation Results of Ms. Nizza Ann Payap-a

Item	Mean	Descriptive Interpretation
1. Achievement of Session Objectives	4.78	Highly satisfied
2. Level of Content Presented	4.94	Highly satisfied
3. Appropriateness	4.86	Highly satisfied
4. Applicability	4.76	Highly satisfied
5. Level of Coverage	4.86	Highly satisfied
6. Mastery of Subject Matter	4.86	Highly satisfied
7. Presentation Skills	4.80	Highly satisfied
8. Teacher-related Personality Traits	4.80	Highly satisfied
9. Acceptability as Resource Speaker	4.80	Highly satisfied
10. Adherence to Principles of Adult Learning	4.88	Highly satisfied
11. Quality of Presentation Materials Used	4.90	Highly satisfied
<b>Over-all Impact of the speaker</b>	<b>4.84</b>	<b>Highly satisfied</b>

Evaluation Results of Mr. Jumari C. Fernandez

Item	Mean	Descriptive Interpretation
1. Achievement of Session Objectives	4.80	Highly satisfied
2. Level of Content Presented	5.00	Highly satisfied
3. Appropriateness	5.00	Highly satisfied
4. Applicability	5.00	Highly satisfied
5. Level of Coverage	4.90	Highly satisfied
6. Mastery of Subject Matter	5.00	Highly satisfied
7. Presentation Skills	5.00	Highly satisfied

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8. Teacher-related Personality Traits	5.00	Highly satisfied
9. Acceptability as Resource Speaker	5.00	Highly satisfied
10. Adherence to Principles of Adult Learning	5.00	Highly satisfied
11. Quality of Presentation Materials Used	5.00	Highly satisfied
<b>Over-all Impact of the speaker</b>	<b>4.97</b>	<b>Highly satisfied</b>

**XI. Insights / Lessons Learned**

During the Closing program three (4) trainees delivered their insights and learning, also their appreciation to the training. The following were noted;

1. Appreciation to the trainings management teams, food, venue and accommodation (and I quote "on time ti meryenda ken pangaldaw ken agkakaimas pay).
2. The training gives me more time to do hands-on and practical activities which gives better understanding and gained mastery particularly on Tilapia Production (and I quote "Na sursurome ti usto a wagas ti agtaraken iti tilapia kas ti umiso nga panagpakan ken panagaramid ti fish cage").
3. It also noted that the knowledge and skills they gained will surely be disseminate and shared to their fellow Tilapia growers on their families and communities.

**XII. Appendices**

- a. Copy of approved proposal
- b. Program/Invitation
- c. Lectures/Modules
- d. Accomplished evaluation forms
- e. Attendance Sheets
- f. Photo documentation
- g. Other pertinent documents

Prepared/Submitted by:

  
**JERIC REINARD C. BALAURO**  
 Activity Leader  
 Extension Coordinator

  
**NIZZA ANN B. PAYAP-A**  
 Project Staff

Endorsed by:

  
**JEROME D. BINARAO**  
 Chair, Fisheries Department

  
**ERNESTO S. DEL ROSARIO, JR.**  
 Project Leader  
 Dean, CASAT

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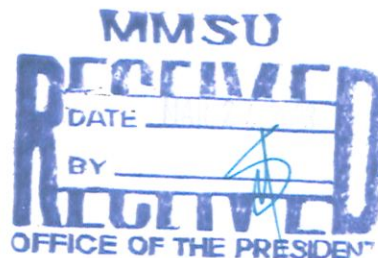
## College of Aquatic Sciences and Applied Technology

OFFICE OF THE DEAN

March 7, 2023

Ref. No. ESDR-23-013

Dr. SHIRLEY C. AGRUPIS  
President  
This University



THRU: **Dr. NATHANIEL R. ALIBUYOG**  
Vice President for Research and Extension  
**Dr. MARILOU P. LUCAS**  
Director, Extension

RECOMMENDED  
NO OBJECTION

ENDORSED  
NOTED

*Recommend Approval*

Madam:

Greetings!

This has reference to the extension project titled, "Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN)" which was approved for implementation on September 2021 to December 2022. Inception meetings with the target LGU beneficiaries were conducted and the Memorandum of Agreement with the Local Government Units of Currimao and Badoc has been finalized. However, other deliverables such as the conduct of on-site visitations and training were not yet implemented due to the COVID-19 pandemic restricting personnel mobility. Thus, the project has been initially started during the latter part of 2022.

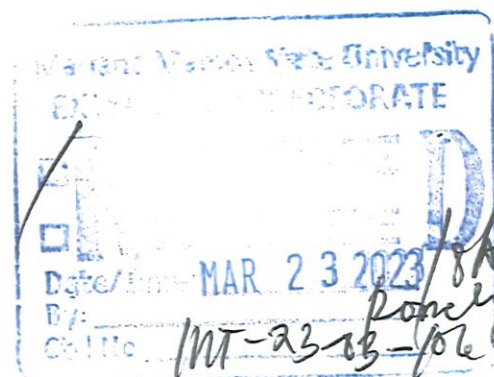
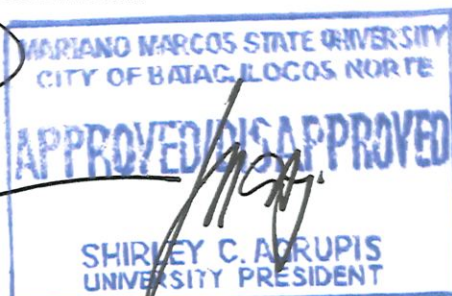
Anent this, may we respectfully request for the extension of the project for 1 year and 6 months (March 2023-September 2024) to accomplish all its deliverables; particularly to increase tilapia production and promote tilapia aquaculture in the province. Rest assured that the project team will be fully committed to attain and achieve our mandate to provide High Impact and Transformative Extension and Outreach Programs.

Anticipating with gratitude your favorable response to this matter. Attached is the 2023 work and financial plan and approved project proposal for your perusal.

Thank you very much for your continuous support to our endeavors.

Very truly yours,

**ERNESTO S. DEL ROSARIO JR.**  
Project Leader



Brgy. 9 Pias Sur, Currimao, 2903 Ilocos Norte, Philippines  
casat@mmsu.edu.ph ☎ (077) 770-4509 🌐 www.mmsu.edu.ph

MMSU @45: ACHIEVE-ing  
more for the future



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			Effectivity Date	April 3, 2020

**ANNUAL WORK AND FINANCIAL PLAN**

College/Section: College of Aquatic Sciences and Applied Technology


PROGRAM/ PROJECT	ACTIVITY	PERFORMANCE INDICATOR	TIMELINE	SOURCE OF FUND	ESTIMATED BUDGET	RESPONSIBLE COLLEGE/UNIT/ PERSON
Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN)	Signing MAO with partnerships (LGU of Currimao and Badoc, Ilocos Norte)	No. of duly signed and notarized MOA	2023- 2024	MMSU	Php 103,000.00	CASAT
	Conduct Need Assessment  Conduct Trainings: 1. Tilapia fry and fingerling production 2. Techniques on nursery rearing of Tilapia 3. Feeding schemes and practices on Tilapia grow- out production 4. Organic Tilapia farming	No. of assess communities (Currimao and Badoc, Ilocos Norte) No. of respondents No. of participants who adapt technologies, practices and methodologies learn from the trainings				
	Monitoring and Evaluation Impact Assessment	No. of conducted monitoring and evaluation No. of conducted impact assessment				



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		No. of conducted meetings	2023-2024	MMSU	Php 50,000.00	CASAT
Promotion and Adoption of Aquaculture Technologies to Enhance Fish Production and Income for the Indigenous Cultural Communities/Indigenous Peoples (ICCs/IPs)	Inception/Consultation meeting the partner (BFAR, NCIP & LGUs and ICCs/IPs representatives)	No. of conducted meetings				
	Signing of Memorandum of Agreement (MOA)	No. of signed MOA				
	Conduct Need Assessment Survey through FGD/KII	No. of asses ICCs/IPs communities				
	Project Implementation Site validation Purchase of supply and materials Establishment of technodemo farms Conduct trainings based on the trainings need assessment	No. of conducted On-site inspection and evaluation No. of established technodemo No. of conducted trainings				
Aqua-Based Food Products Development for Livelihood and Resource Sustainability in Northern Ilocos	Monitoring and Evaluation Impact Assessment	No. of conducted monitoring and evaluation No. of conducted impact assessment (for AACCU accreditation revisit)	2023-2024	MMSU	Php 15, 000.00	Extension Directorate CASAT

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Fiberglass Reinforced Plastic (FRP) Boat Constructions, Repair and Maintenance	Monitoring and Evaluation Impact Assessment	No. of conducted monitoring and evaluation	2023-2024	MMSU	Php 15,000.00	Extension Directorate CASAT DA-BFAR
		No. of conducted impact assessment (for AACCUUP accreditation revisit)				

Prepared by:

  
**JERIC REINARD C. BALAURO**  
College Extension Coordinator

Attested:

  
**ERNESTO S. DEL ROSARIO JR.**  
College OIC Dean

  
**DR. MARILOU P. LUCAS**  
Director for Extension





MARIANO MARCOS STATE UNIVERSITY  
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Technology

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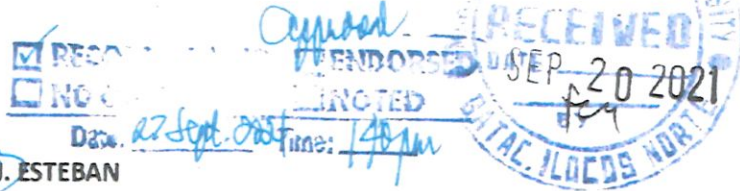
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14 September 2021

DR. SHIRLEY C. AGRUPIS

President

This University



Thru: DR. CARMELO J. ESTEBAN

Vice President for Research, Extension and Business

DR. ARIS REYNOLD V. CAJIGAL

Director, Extension Directorate

Endorsed  
C. Cajigal

9/21 8:45  
V

Madam:

Greetings!

In line with the 7-Point Agenda ACHIEVE highlighting H for "High-Impact and Transformative Extension and Outreach Programs, I would like to submit our extension project proposal entitled "**Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN)**". This project aims on sustainable tilapia production in the province of Ilocos Norte through utilization of technologies and innovations on tilapia production developed from the College for our tilapia growers in the province.

Attached is the extension project capsule proposal for your perusal.

Anticipating with gratitude your approval to this request. Thank you very much.

Very truly yours,

ERNESTO S. DEL ROSARIO, JR.

Chair, Fisheries Department

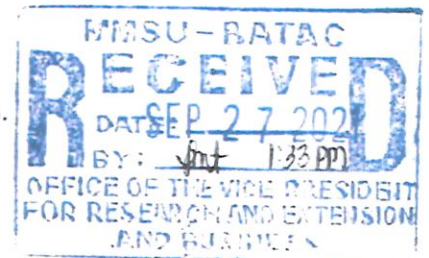
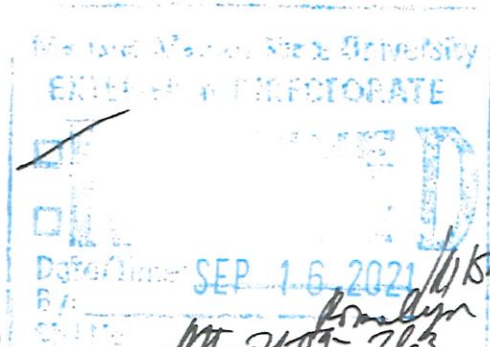
Recommending Approval:

VERONICA O. GRANDE

OIC-Dean, CASAT

FUNDS AVAILABLE

IMPLD



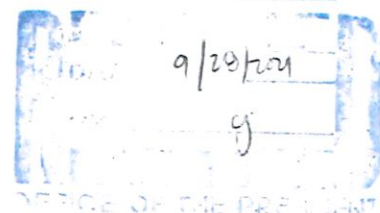
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Approved  
[Signature]



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### CAPSULE PROPOSAL

I. **Title:** **Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN)**

II. **Proponent:** Project Leader: Ernesto S. del Rosario Jr. *10946-527-5268*

Project Staff: Veronica O. Grande  
Joyce Tolentino  
Marjorie Ramos  
Janne Angelique Ravelas  
Rhea Espiritu  
Rommel Pascua  
Honnie Joy M. Balauro  
Ronald Sanguir  
Diosdado A. Saladino  
Carmencita A. Saladino  
Jay Linuel S. Oamerga  
Allen T. Argel

III. **Target Participants :** Tilapia Growers, Fish pond owners, Fishermen, Farmers, Hatchery operators, Extension workers (LGU's MAO)

IV. **Extension Site/Venue:** MMSU- CASAT Freshwater Hatchery, Cooperators/Collaborators farm

V. **Date:** October 2021 to September 2023


#### VI. **Background of the Proposed Extension Program**

Tilapia is one of the predominant fish cultured in the country next to milkfish. This species is considered as the chicken in aquaculture. Its rising popularity is due to their hardness, resistance to diseases, ease to breeding, reasonable growth rate, good taste, and tolerance to a wide range of environmental condition including temperature and salinity. Introduction of this species in the 1950's was aimed to increase fish production to meet the demand for fish protein from our growing population. Since its introduction, researches were focused on the improvement of production through breeding and grow-out practices.

A substantial number of studies have already been undertaken in many aspects of tilapia culture resulting in the development of technologies that led to intensive production. However, despite of the innovations made, constraints on the application of results from these researches was mainly due to high cost of inputs for production. Feeds comprise 60%-70% of the total operating cost for intensive fish production. Strategies to reduce feed inputs is of prime importance to make the industry more profitable at a sustainable level. The sustainability of aquaculture depends on cost effective practices

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during production period. Feeding practice is one of the practices that need to be optimized in aquaculture, because overfeeding could lead to higher production costs, and water pollution, whereas underfeeding could lead to poor growth performance, and poor economic gain (Eroldogan, Kumlu, & Akta, 2004).

In Ilocos Norte tilapia aquaculture is gaining its popularity and this could be due to its feasibility to culture. Demand for fingerlings for grow-out production is seasonal wherein farmers shift to aquaculture after the planting season of rice, corn and other high value crops during the rainy season. There are some existing tilapia hatcheries in the province which is operated by either the Local Government, Provincial Government and Bureau of Fisheries and Aquatic Resources. These hatcheries are located in Dingras, Batac, Paoay respectively which caters demands from their respective locality/agencies, thus fingerling demands from other municipalities and growers are not usually met that resulted to procurement of fingerlings from other provinces like Nueva Ecija, Zambales, Bulacan and Pangasinan to name a few. It is within this context that this project was conceptualized.


This project aims to have sustainable tilapia production in the province of Ilocos Norte through utilization of technologies and innovations on tilapia production from the research conducted by MMSU-CASAT. The project also aims to established demo-farms for fingerling and grow-out production to augment income and production of farmers within the province. Aside from this, on-site trainings, technical consultation/assistance and monitoring will also be conducted to ensure feasibility of the endeavors.

## **VII. Significance of the Extension Activity**

This project will help in building up sustainable tilapia aquaculture in the province of Ilocos Norte. Extension activities/interventions to be conducted will be based on issues, problems and needs of tilapia industry in the province wherein research based technologies developed from the college could be adopted and promoted.

Through this project, year round production of tilapia fingerlings and marketable sizes could be achieved in which incomes of participants/collaborators/cooperators will be augmented through engagement in the project. Demo-farms to be established will be a training venue wherein on-site trainings will be conducted for the participants to have hands-on experience on hatchery and grow-out activities, thus participants on trainings will not only learn on theories and information's that is usually practiced with common trainings being conducted nowadays.

It is within the concept of this project that livelihood opportunities will be also developed through creation of tilapia enterprises. Since this is not a dole out project,

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responsible participation of collaborators will be insured for the success on the endeavor thus start-up capital will just be revolving wherein tilapia growers within the province will be benefited through the project.

#### **VIII. Objectives:**

Generally this project aims to have sustainable tilapia production in the province of Ilocos Norte through utilization of technologies and innovations on tilapia production. Specifically the project aims:

- Assess issues/problems of tilapia growers in the province,
- Assess training needs of tilapia growers in the province,
- Established demo-farms for tilapia fingerling production and grow-out production,
- Extend technical assistance and monitor activities of tilapia growers in the province.

#### **IX. Expected Outputs**

Through this project, the following are the expected outputs:

- Sustainable Tilapia Production
- Create livelihood enterprise/opportunities for fishermen and farmers
- Augment income of target beneficiaries
- Increase knowledge and interest on tilapia aquaculture
- Promote Tilapia Aquaculture in the province

#### **X. Methodology/Mechanics of Implementation**

##### **Collaboration with LGU's**

Courtesy visit/ inception meeting with Local Government Unit's (LGU's) through the Municipal Agriculture's Office (MAO) will be conducted to discuss the proposed extension activities within their locality.


##### **MOA/MOU with partner LGU's**

Memorandum of Agreement and/or Understanding will be crafted with partners in the implementation of the Project.

##### **Need Assessment Survey**

Through collaboration with LGU's (MAO) a Need Assessment Survey will be conducted to tilapia fish growers as respondents with concerned LGU's through a prepared questionnaire which will be either through Focus Group Discussion (FGD)/ Key Informant Interview (KII).



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After the assessment that will be conducted analysis of result will be follow to determine the needs of respondents wherein interventions will be developed. Streamlining of Farmers/Fisherfolk beneficiaries through parametric analysis will be also conducted.

#### Extension Interventions

##### ■ Establishment of demo-farms

Dialogue/Inception meeting and Ocular site inspection will be conducted with possible collaborators/cooperators for the establishment of demo-farms. Demo-farms to be established will be assessed based on a prepared matrix for establishment of demo-farms (see table 1.) Demo- farms to be established will be: tilapia fingerling production and tilapia grow-out production demo-farm respectively.


Table 1. Matrix for demo-farm establishment

Criteria	Percentage (%)
Registered fisherfolk/farmer	5%
Existing farm/facility registration with LGU	5%
Feasibility of demo-farm site based on aquaculture site selection protocol (e.g. water source, soil type, security, accessibility etc.)	40%
Willingness/ assertiveness to adopt technologies to be promoted	35%
Financial capability to sustain project after 1 year of implementation	15%
Total	100%

In order to attain sustainable tilapia production in the province through the establishment of demo-farms revolving scheme will be adapted, wherein start-up capital awarded from the first two (2) demo farms to be established will be passed to next demo-farms to be established after 1 production cycle which will be elaborated on the MOA/MOU and dialogue/meeting as part of their responsibilities/counterpart in this endeavor.

##### ■ Technical Assistance and Monitoring

Demonstration farms that will be established will be monitored and be rendered with technical assistance to ensure feasibility of the endeavor, this will be also done with other fish growers based upon their request from the college.

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▪ **Conduct of on-site trainings**

Trainings on tilapia fingerling and grow-out production will be conducted with tilapia growers in different municipalities along Ilocos Norte to promote and adapt technologies generated from researches of the College. Trainings to be conducted will be based on the result of TNA which will be conducted as initial activity for this project.

**Project Management and Strategies**

The project will be implemented by a pool of experts from Fisheries and Marine Biology Department of the College of Aquatic Sciences and Applied Technology. These pool of experts will be the extension workers which will act as mentors to guide cooperators along the way to succeed with the endeavors of the project. Cooperators (farmers/fisherfolks) will be then leaders of change that will inspire others to engage on aquaculture.

**XI. Monitoring and Evaluation**


The Extension Directorate through the Technology Demonstration and Communication sections will take charge in monitoring the project. Periodic monitoring activities will be undertaken to ensure efficient and effective implementation of the project. The project will be evaluated after its termination in September 2023.

**XII. Workplan (please see attached workplan)**

**XIII. Logical Framework**

Figure 1 and Table 1 show the conceptual and logical framework wherein the proposed project was conceptualized.



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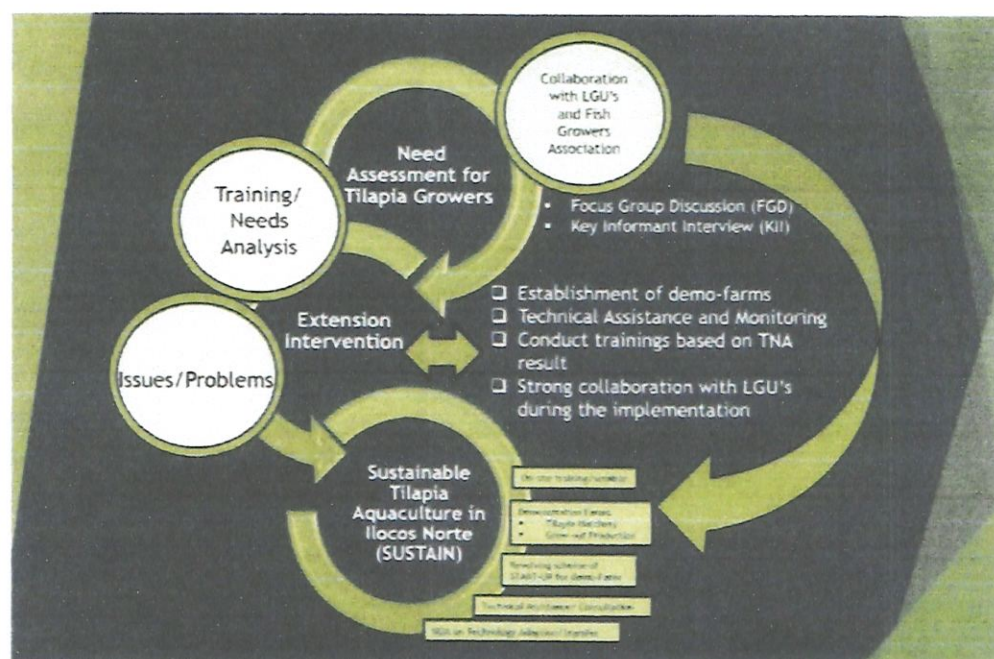



Figure 1. Conceptual framework of Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN)

Table 1. Logical framework of Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN)

Project Summary	Indicators	Means of Verification	Assumptions
<b>Goal:</b> Sustainable Tilapia Aquaculture in Ilocos Norte	Increased and year round tilapia production	Production data	Availability of inputs (supplies and materials)
	Improved socio-economic status of tilapia growers	Interview/testimonies	Positive reception and cooperation of collaborators in adopting technologies introduced
<b>Outcomes/Purpose</b> ■ Increased tilapia production  ■ Increased income of tilapia growers	15% increased tilapia production Increased no. of tilapia growers  10 % increased income of tilapia growers	Production data (LGU's) LGU's Fishpond registration Record books (growers, hatchery operators) Financial reports Interview/testimonies	Positive reception on technology adoption and cooperation of collaborators


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			Effectivity Date	August 29, 2019	

	10% increased in volume of fingerlings produced		
<b>Outputs</b> Promoted Tilapia Aquaculture in the province  Strengthened partnership with LGU's and others  Developed IEC materials on tilapia fingerling production and grow-out	No. of Demo-farms established  No. of partners  No. IEC materials developed	Documentation, logbooks  MOA/MOU duly signed and notarized  Copy of IEC materials developed	Positive reception on technology adoption and cooperation of collaborators  Active participation of tilapia growers  Availability of subject matter specialist and staff
<b>Activities</b> ■ Inception meetings with LGU's	No. of meetings conducted No. of participants	Minutes of meetings	Positive reception of LGU's
■ Forged partnership, (LGU's)	MOA's/MOU's signed	Duly signed and notarized MOA's/MOU's	Adherence to MOA's/MOU's
■ Conduct Need Assessment	No. of assess communities No. of respondents	Travel orders No. of need assessment conducted Training/ Need	Active participation of respondents
■ Conduct trainings based on training/needs analysis	No. of trainings conducted No. of participants	Result of Training/Needs Analysis  Attendance	Active participation of tilapia growers

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	<b>MARIANO MARCOS STATE UNIVERSITY</b> <b>Extension Directorate</b>		Document Code	ED-TEMP-001	
	<b>PRESCRIBED TEMPLATE FOR CAPSULE PROPOSAL</b> <b>OF AN EXTENSION</b> <b>PROGRAM/PROJECT/ACTIVITY</b>		Revision No.	2	Page 1 of 1
			Effectivity Date	August 29, 2019	

"Tilapia fingerling production"  "Techniques on Nursery Rearing of Tilapia"  "Feeding schemes and practices on tilapia grow-out production"  "Organic tilapia farming"		Documentation during trainings Training Evaluation/Feedback forms	Positive reception on technology adoption and cooperation of collaborators
■ Establishment of demo-farms	Ocular-site inspection for site selection	Ocular-site inspection report Duly signed and notarized MOA's/MOU's	Feasibility of sites for aquaculture Positive reception and adoption of technologies by collaborators Adherence to MOA's/MOU's from cooperators
<b>Inputs</b>			
Supplies and Materials	Quantity and quality of supplies and materials	Approved Work and Financial Plan PPMP	On time purchase and delivery of supplies and materials
Specialist/ Project Staff	No. of personnel designated	Pool of subject matter specialist	Availability of subject matter specialist and staff

XIV. **Proposed Budget:**      Php 164,350.00


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	<b>MARIANO MARCOS STATE UNIVERSITY</b>	Document Code	ED-TEMP-001	
	<b>Extension Directorate</b>	Revision No.	2	Page 1 of 1
	<b>PRESCRIBED TEMPLATE FOR CAPSULE PROPOSAL OF AN EXTENSION PROGRAM/PROJECT/ACTIVITY</b>	Effectivity Date	August 29, 2019	

**XV. Line Item Budget**

<b>MOOE</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Total</b>
Travel (gasoline expenses)	Php 12,000.00	Php 12,000.00	Php 18,000.00
Zoological supply (fingerlings 36 kg@ Php 250/kg) (breeders (2000 pcs @ Php 3/pcs) * 1 Tilapia Hatchery Demo-farm, 2 tilapia grow-out Demo-farms	Php 15,000.00		Php 15,000.00
Agricultural supply (Nets, twine, feeds, fertilizer etc.) * 1 Tilapia Hatchery Demo-farm, 2 tilapia grow-out Demo-farms	Php 74,350.00		Php 74,350.00
Office supply (bond paper, ball pen, record book etc.)	Php 3,000.00	Php 3,000.00	Php 9,000.00
Communication supply (cell cards)	Php 5,000.00	Php 5,000.00	Php 10,000.00
Training/ Seminar Workshop ( registration, snacks, meals) *125 participants	Php 25,000.00		Php 25,000.00
Representation (snacks)	Php 5,000.00	Php 5,000.00	Php 10,000.00
<b>Total</b>	Php 139,350.00	Php 25,000.00	Php 164,350.00


Prepared by:

  
**ERNESTO S. DEL ROSARIO JR.**  
Dept. Chair- Fisheries Department  
MMSU-CASAT

Reviewed by:

  
**SHERLYN B. NICOLAS**  
Chief, Monitoring and Evaluation

Recommend Approval:

  
**VERONICA D. GRANDE**  
OIC Dean- MMSU CASAT

**ARIS REYNOLD V. CAJIGAL**  
Director for Extension 1

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## PROJECT WORKPLAN

am Title:

at Title: Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN)

Duration (in months): 24 months

(4) Planned Start Date: October 2021

(5) Planned End Date: September 2023

OBJECTIVES	(7) TARGET ACTIVITIES	(8) TARGET ACCOMPLISHMENTS (quantify, if possible)	Y1				Y2			
			Q	Q	Q	Q	Q	Q	Q	Q
			1	2	3	4	1	2	3	4
1. Assess Problems/Needs of Tilapia grower in Ilocos Norte	Meeting for collaboration with LGU									
	Forged Partnership with LGU concern	Two (2) MOU/MOA with LGU								
	Preparation of questionnaire for Need Assessment									
	Dry-run/trial of questionnaire for Need Assessment									
Assess training needs of a growers in Ilocos Norte	Conduct Need Assessment	Need Assessment of Tilapia Growers from two (2) municipalities								
	Training/ Need Analysis	Training/Need Analysis of tilapia Growers from two (municipalities)								
	Extension Intervention (FGD)	FGD with								
d technical ance and monitor of tilapia growers in nce	Ocular site- inspection									
	Stock sampling, monitoring and consultation	# of technical assistance extended with tilapia growers								
ished demo-farms a fingerling	Ocular site- inspection	1- Demo-farm for fingerling								

[illegible]





MARIANO MARCOS  
STATE UNIVERSITY

**Lunching of SUSTAIN Project and  
Signing of MOA: *cum* Training on  
Tilapia Grow-out, Breeding  
and Nursery**

October 26-27, 2023

9:00am-5:00pm

Brgy. Sacritan, Pinili, Ilocos  
Norte

---

This serves as invitation.



MARIANO MARCOS  
STATE UNIVERSITY

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Norte

---

This serves as invitation.

## Program of Activity

ACTIVITY/TOPICS (DAY 1)	RESPONSIBLE PERSON
Travel to Pinili, Ilocos Norte from MMSU-CASAT, Currímao	MMSU CASAT Personnel/ Staff
Registration of Participants	Ms. Nizza Ann B. Payap-a Faculty, MMSU-CASAT
Preliminaries: Prayer	Mr. Ramil C. Llanes Faculty/Cultural Coordinator, MMSU-CASAT
Acknowledgement of the Participants	Mr. Lerich S. Daduyog Municipal Fishery Coordinator, Pinili
Welcome Message	Hon. Rommel T. Labasan Municipal Mayor, Pinili
Messages	Dr. Marlou P. Lucas MMSU-Extension, Director
LECTURE PROPER	
Rationale of the Project	Prof. Ernesto S. Del Rosario, Jr. OIC-Dean, MMSU-CASAT
Launching of Sustain Project (AMCTIVITY)	MMSU Personnel/Staff
MOA Signing	
Stocking of Fingerlings	
Overview of Philippine Aquaculture	Ms. Nizza Ann B. Payap-a Faculty, MMSU-CASAT
Tilapia as an Aquaculture Species	Prof. Marjorie G. Ramos Faculty/College Secretary
Tilapia Grow-out Production Marketable Size Tilapia Production in Ponds	Prof. Ernesto S. del Rosario, Jr. OIC-Dean, MMSU-CASAT
Nutrition and Feeding Management	Mr. Jerome D. Binarao Chairperson, Department of Fisheries
- End of Day 1	

**Mr. Ramil C. Llanes**  
*Master of Ceremonies*

## Program of Activity

TIME	ACTIVITY/TOPICS (DAY 2)	RESPONSIBLE PERSON
8:00-9:30AM	Tilapia Fingerling Production	Prof. Marjorie G. Ramos Mr. Jeric Reinard C. Balauro
9:31-11:30 AM	Cage Culture of Tilapia Cage Construction	Mr. Jumari C. Fernandez Mr. Ramil C. Llanes Mr. Jay Linuel S. Oamerga Mr. Allen T. Argel
11:31-12:30 PM	Lunch Break/Health Break	
1:00-2:00 PM	Code of Good Aquaculture Practices for Tilapia (Water quality, disease management and practices) Tilapia Culture Economics Awarding of Certificates Closing Remarks	Mr. Keibriel Keill P. Arcilla Ms. Jhoanne C. Donato
2:01-3:00PM	Tilapia Culture Economics	CBEA Representative/Staff
3:01-3:30PM	Awarding of Certificates	MMSU Representative/Staff
3:31-4:00PM	Closing Remarks	MMSU Representative/Staff
	- End of Day 2	

**Mr. Ramil C. Llanes**  
*Master of Ceremonies*



## Nutrition and Feeding Management

**Jerome D. Binarao**  
 Instructor, Department of Fisheries

Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN)  
 Training on Tilapia Grow-out, Breeding and Nursery



### Topics:


- Nutritional Requirements of Tilapia
- Feeding Habits of Tilapia
- Feeding Methods
- Natural food and Supplemental feeds



### Introduksion:

Participants must have:  
 tilapia fish diet;  
 to feed, how much to feed,  
 monitoring the growth of  
 feeding management; and  
 for tilapia


**>50%**  
 expenses  
**FEEDS**

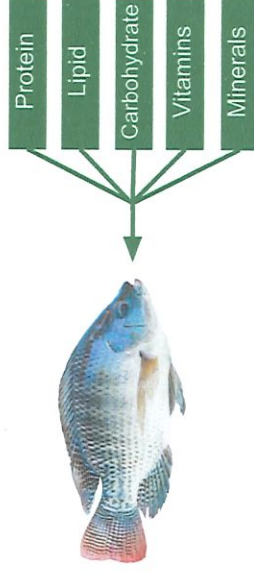

 Basit ti  
 pannakaammo  
 malpapan ti feeding  
 management

Panagpili ti feeds  
 Panangmanage iti  
 malpakan a feeds  
 Istratehiya ti  
 panagpakan iti tilapia

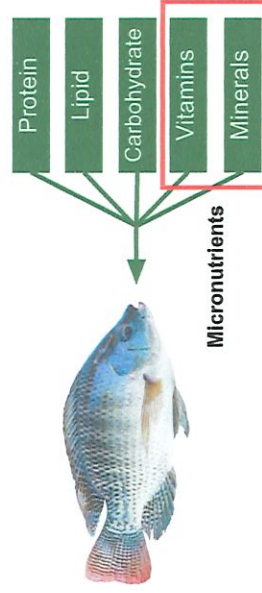
(Rana et al., 2009 ; Romana-Egula et al., 2013)



### Kasapulan a nutrisyon ti Tilapia



### Kasapulan a nutrisyon ti Tilapia



### Kasapulan a nutrisyon ti Tilapia



Size of fish	Protein level
First feeding to 0.5g.	50%
0.5 to 10.0g	35–40%
10.0g. to 35g	30–35%
35.0g to market size	25–30%
Broodstock	30%

(BFAR, 2013)





## Tilapia



nutrients	
acid (EFA) and	10 - 15
	0.5 - 1.0 <sup>g</sup>
	1.0 <sup>g</sup>
	40
	8-10
	110 <sup>g</sup>
	120 <sup>g</sup>



## No kasano iti pannangan ti Tilapia

- **Omnivorous** – mangan agpada iti plant-based ken animal-based a makan.
- Plankton
- Aquaplant
- Snails
- Insekto
- Detritus
- Manganda iti aldaw, agdigesta iti rabii.

(FAO, n.d.)



## No Ania ti ipakan iti Tilapia

- Compound feeds
- Natural food (plankton)
- Plant-based (duckweed, azolla)
- Bran chaff (rice bran, wheat bran)
- Oil cake feed (soybean meal, cotton seed meal)

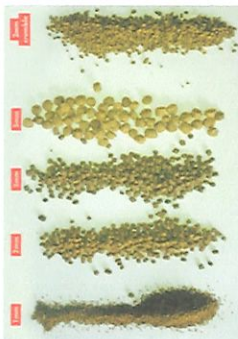
(FAO, n.d.)



## Compound Feeds

- Commercial feeds
  - Formulated feeds
- Forms of Feeds**
- Mash/powder form
  - Crumbles
  - Pelleted feed
  - Extruded feed

(FAO, n.d.)



## Dagiti Laglagipen no Agpakan iti Tilapia



Kaadu ti pupok nga ikan



Kaadu ti maipakan (Feeding Ratio)



Iskedul ti panagpakan

(FAO, n.d.)



## Agpakan iti Tilapia

**Agpakan nga ikan:**  
(m<sup>2</sup>)  
Feed is optional)  
lings/m<sup>2</sup>)  
feed  
lings/m<sup>2</sup>)

(FAO, n.d.)



## No kasano ti agpakan iti Tilapia

Kaadu ti maipakan iti maysa nga aldaw:

Feeding Strategies	Size of Fish	Feeding
Fertilization + Supplemental Feeding	Fry	10-5 % BW
	Fingerlings	5-3
	Juvenile	3-2
	Market Size/ Breeder	3-2
Complete Feeding	Fry	30-15 % BW
	Fingerlings	10-15
	Juvenile	10-5
	Market Size/ Breeder	5-2

(FAO, n.d.)



Size of fish	Feeding frequency
Fry	minimum of 4 times to 8 times a day
Fingerlings	2-4 times a day
Juveniles	2-4 times a day
Adult	2-4 times a day

(FAO, n.d.)



## No kasano ti agpakan iti Tilapia

Daras ti panagpakan iti maysa nga aldaw





## Objectives

Definition of tilapia aquaculture  
and of tilapia aquaculture in the Philippines  
and of tilapia produce

## Launching of SUSTAIN Project and Signing of MOA cum Training on Tilapia Grow-out, Breeding, and Nursery

October 26-27, 2023  
Brgy. Sacitan, Pinali, Ilocos Norte

## Overview of Tilapia Aquaculture

Nizza Ann B. Payap-a  
Instructor 1  
[nayapayap-a@mmsu.edu.ph](mailto:nayapayap-a@mmsu.edu.ph)

### What is tilapia aquaculture?

- Involves raising and cultivating tilapia (freshwater fish) for food production.
- Essential industry globally, contributing to a sustainable source of fish protein.
- Popular due to their mild taste and high nutritional value.



### What is tilapia aquaculture?

- It can tolerate brackishwater
- Grow-out culture in backyard and commercial scale
- Widely acceptable and is suitable for local consumption and mass production.
- Produce can be sold fresh, chilled.
- It can also be filleted, and smoked.





## Aquaculture in the Philippines

Tilapia Aquaculture Fish Production (metric tons)	
277,006 MT	
279,388 MT	
283,871 MT	
281,111 MT	

aquaculture production in four years (2018-2021).



## Aquaculture in the Philippines

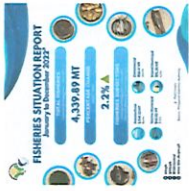


Figure 1. Philippine Fisheries Situation Report 2022  
(Source: Philippine Statistics Authority, 2022)



## Aquaculture in the Philippines

Region	Tilapia Production (Metric tons)
III	133,358
IV-A	81,491
I	16,880



## Aquaculture in Ilocos Region (I)



Figure. Contribution of Top Species to the Total Aquaculture Production in Ilocos Region.  
(Source: Philippine Statistics Authority, 2022 Fish Production Survey)

## Aquaculture in Ilocos Norte

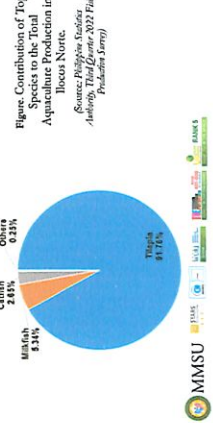


Figure. Contribution of Top Species to the Total Aquaculture Production in Ilocos Norte.  
(Source: Philippine Statistics Authority, 2022 Fish Production Survey)

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## genetic improvements

and Swansea, Egypt and Indonesia

only two species, *O. niloticus* and *O.*



## Pond – Based Tilapia Fingerlings Production

MGRamos



## Tilapia Strains in the Philippines

- GIFT strain (Genetically Improved Farmed Tilapia).
- BFAR - Genetically Enhanced Tilapia-Excellent strain (GET-EXEL),
- FAC/CLSU - FaST strain (FAC Selected Tilapia)
- Genomar (Norway)- GenoMar Supreme Tilapia (GST).
- BFAR-NFTC, FAC/CLSU and Feedmix Specialist II. GIFT strain renamed to GIFT Feedmix Fortified (GIFT<sub>FF</sub>).
- Tilapia molibicus
- GIFT and GIFT- derived strains

## *O. niloticus* - FaST Strain

FAC Selected Tilapia Strain, developed by FAC-CLSU. This is a combination of four *O. niloticus*, Philippine strain known as Taiwan, Israel, Thailand and Singapore (Lester et al., 1988).



## *O. niloticus* - GET-EXCEL Strain

GET-EXCEL. Genetically Enhance Tilapia Excellent, developed by BFAR-NIFTDC. This strain is purported to be 38% better in terms of growth and yield than unimproved tilapia.



## Source of Breeders

- Must be from reputable government or private institution
- Accredited hatcheries
- Must be carefully grown to maturity
- Must be fed with nutritious feeds
- Must not be stressed or stunted
- Must be properly conditioned
- Must not be sex reversed

## Criteria for Selecting Breeders

- Sexually mature
- Good growth rate
- No abnormalities
- No signs of disease
- No parasites
- Active



# Mature Tilapia

reproduce

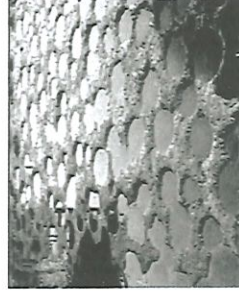
abdomen

S



Photo: Dong Ho-CEOMA-RIAL-2010

## eeding



s

t

Category	Physiological characteristics	Days until spawning
Ready to spawn	Red head and protruding genital papilla, fully exposed genital pores, and distended abdomen	3 to 7
Swollen	Red head, protruding genital papilla, slightly exposed genital pores, and slightly distended abdomen	5 to 10
Not ready to spawn	White to clear and flat genital papilla, and normal abdomen	21 to 30
Not spawned	Red genital papilla, and shrunk to compressed abdomen	15 to 30

Table 2. Different categories of sexual maturity of female Nile Tilapia and the expected timeframe of days until spawning.

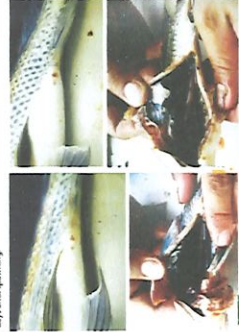


Figure 4. Ready to spawn (S) female of Nile Tilapia. Note the pink to

pink to red head, protruding genital papilla, and distended abdomen.

## Selecting of Breeders



m

## Size of Breeding Ponds

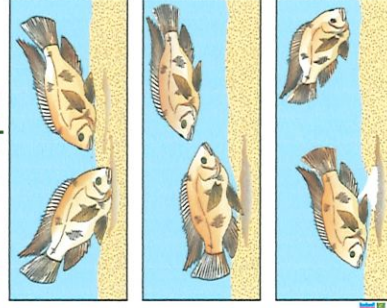
- A properly constructed and well fertilized pond serves both for breeding and rearing fry.
- Water depth may vary from 1.5 m to about 2.5 m.
- Spawning ponds are generally 2,000 m<sup>2</sup> or smaller.
- Must be drainable
- supplied with adequate quantities of organic and inorganic fertilizers for sufficient natural pond productivity.

## Selecting Breeders



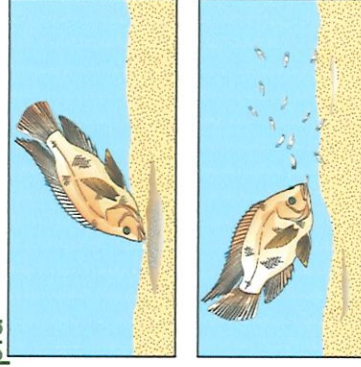
## Diagram of reproduction in tilapia (mouthbrooders)

- Male and female preparing nest.
- Female lays eggs in the nest.
- Male fertilizes the eggs.



## Reproduction in tilapia (mouthbrooders).

- Eggs picked up in mouth by female.
- Fertilized eggs held in mouth until they hatch
- yolk sac is absorbed 4 to 5 days after hatching.





Females incubate eggs



and defend the fry



## Female

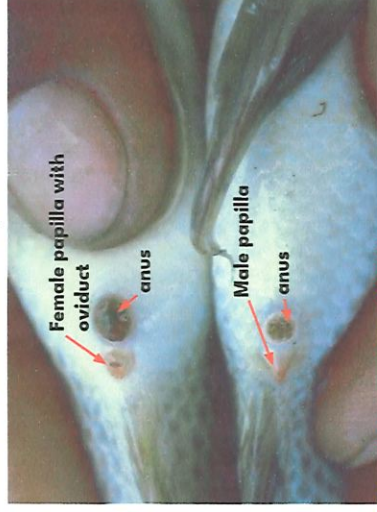
Smaller

Bulging abdomen

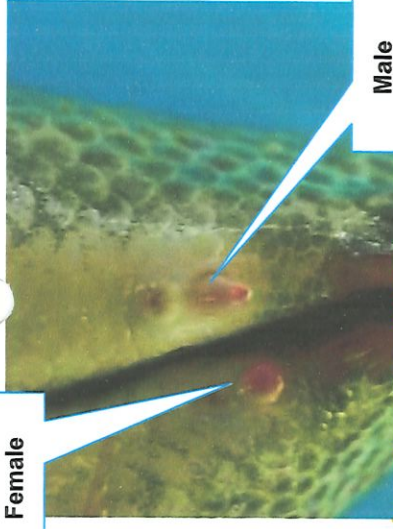
Yellowish coloration of skin near operculum and ventral side when sexually mature

Holds eggs inside the mouth

## Visual Inspection of the Genital Papilla



Female

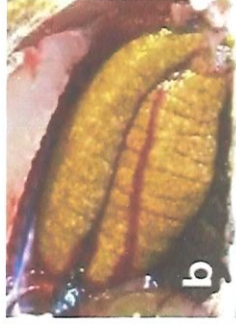


Male



## Fecundity

- A female brood fish of 90-300 g produces as much as 500 eggs per spawning
- brood fish stocking rate is variable, ranging 0.2 - 0.3 kg/m<sup>2</sup> in ponds.
- Female Breeders of 1-1.5 kg can produce 45 fry/m. sq./month and needs to harvest every 17-19 days.



## Broodstock Conditioning

- The weight of breeders ranges from 50 grams to 1,000 grams.
- Male and female breeders are placed in a separate cages for 5-7 days.

- Stock breeders at 3-4 pcs per sq. m.

- With regular feeding

- Crude protein requirement- 32 %
- Feeding rate – 2% body weight
- Broodstock feeds (Tateh)

- Water quality monitoring

- Dissolved oxygen, Water temperature

Note: Optimum water temperature for breeding of tilapia is at range of 30 to 32 °C and D.O should be not less than 4-5 mg per liter.



## Feeding

Feeding is different from that of other fish

require a diet rich in protein and vitamins to meet the nutritional requirements of producing healthy eggs and fry

protein content were previously 15-20% for tilapia broodstock.

Quality feed at 0.5-2 percent of body weight

## Methods of Fingerling Production

- Pond Method
- Hapa Method
- Tank Method



## Stocking in Tilapia Breeding Ponds

Stocking Method of Breeders	Sex Ratio (male:female)	Stocking of Breeders
Weight Method	1:3	100-200 kg/ha
Set Method 1 set = 1 male: 3 female	1:3	1 set per 5-7 m <sup>2</sup>
Number per Unit Area	1:3	1 breeder/ 2-4 m <sup>2</sup>



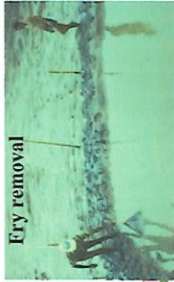


## Fry can

1. Partial harvested



2. Completely harvested



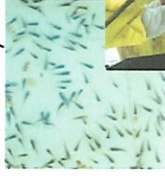
Fry removal

Brooder removal



## Fry can be harvested:

18 days after hatch



40 days after hatch



## ection

0 to 26 days,  
on the 30th day after  
which is also the total  
pond.  
ne by hand scoop nets along  
imize pond disturbance and  
from #24 to #17.  
t period at an interval of two

## Feeding of Fry

- Natural foods or live foods like zooplankton, brine shrimp or high protein powder of flake food ca either be use to feed the newly hatched fry.
- Fry mash can also be used as supplemental feed.



## Hatching and Fecundity

- Hatching-four to eight days.
- After hatching, the fry remain in the female's mouth for another three to five days.
- Females may spawn every four to six weeks
- Fecundity: 100 gm female - 100 to 150 eggs,
- 1 kg female - 1,000 and 1,500 or more eggs per spawning.
- Males in will mate with more than one female.



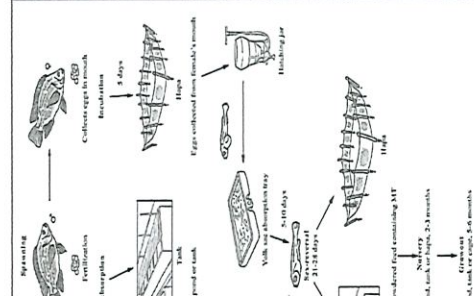
## Tilapia Nursery

MGRamos



## Fry and fingerling collection

- The tilapias lay eggs from 20 to 26 days.
- Three to five days after the eggs are hatched
- Fry harvesting should be done by hand scoop nets along the edges of the pond to minimize pond disturbance and fry mortality.
- Collect fingerlings using knot 32 mesh seine.
- Do this 3-4 times per harvest period at an interval of two to four weeks



## Rearing in nursery hapas

- Fry are transferred to nursery hapas (1 x 1 x 1 m) at a density of 150 to 200 fry/m<sup>3</sup>.
- The fry are reared for 21 days in nursery hapas and then transferred to B-net cages.



## Rearing in B-net Cages

- The fry are transferred to B-net hapas (1 x 1 x 1 m) to allow better water circulation and improved growth.
- The density of fry should be reduced to 100 to 150 per m<sup>3</sup>, and the fry should be reared for another 21 days until they reach a live weight of at least 3 to 5 g, and are ready to be tagged.



## Size 24

- Weight: 0.045 – 0.096 grams
- Length: 1.4 – 1.9 cm
- Depth: 0.40-0.60 cm



## Size 22

- Weight: 0.129 – 0.415 grams
- Length: 2.0 – 3.0 cm
- Depth: 0.65-1.0 cm

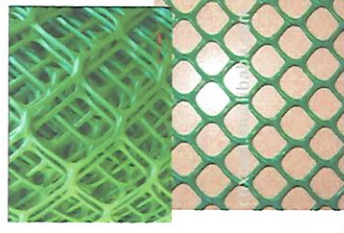


## Size 14

- Weight: 1.3 – 2.96 grams
- Length: 4.1 – 5.7 cm
- Depth: 1.40-1.8 cm
- Price:



## Tilapia Fingerling Grading



## Fingerlings





## Porting Tilapia

ly conditioned before

fingerlings per  
size of the fish

## Fingerling Transport

- Transport fingerlings in oxygenated water in plastic bags.
- Leave about 15 cm space at the top of each bag for air.
- Put plastic bags inside buri bags before transporting the fishes.
- It is advisable to transport fingerlings in the early morning or late afternoon to avoid drastic change in temperature during noontime.
- Place ice at the sides of the bag to maintain the water temperature.


















































































































































































































































































































































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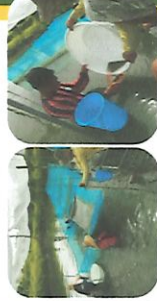
Optimum Water Parameters	
Parameters	Tilapia Breeder
Temperature	28 - 32°C
pH	6.5 - 9.0
Dissolved Oxygen	5 - 10 ppm
Ammonia	< 3 ppm
Salinity	0 - 5 ppt

## enance of Hapa



of  
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 is in  
 by  
 the

## Tilapia fry and Fingerlings Production in Hapa-based System



## Breeding and Seed Production

- Stocking rate will be maintained at 800 grams to 1000 grams
- with a sex ratio of 3♀:1♂ brood fish per m<sup>2</sup>
- and 2% feeding rate will be given.
- Breeding period will be done 21 days for each production cycle



## Characteristics of Breeders

- Size broodstock
  - Female 200-250 grams,
  - Male 250-300 gram (PaST and GET EXCEL strain)
- The body weight of brood fish usually determined the fecundity.
- Ready to spawn female brood fish were selected manually using the following criteria:
  - the genital papilla is red in color and stomach is swollen, and
  - for male brood fish genital pore should be distinct and no sign of abnormalities.



## Breeding and Seed Production

- Artificial incubation for intensive fry production
- This primarily use to produce good quality of mono-sex fry (sex-reversed tilapia)
- Fertilized eggs will be collected from the females mouth (starts on 11-14 days) and transfer to hatchery.
- Every 4 days collection



## Simple Cost and Return

- Based from Aquashade technology Project (hapa-in-pond) during summer season
  - (April, June, and July 2017) where water temperature increase
  - optimum water temperature (30-32°C) requirement for tilapia breeding and reproduction.
  - ROI 105.6%

### Production Cost

For 20x25 m Fish Pond	Quantity	Total Cost
1. Silver straw shade net @16,800.00 with 10x50m size	2pcs	33,600.00
2. Bamboo poles @ 30.00 per pc	50 pcs	1,500.00
3. Sinumay net @2,500.00 per roll	3 rolls	7,500.00
4. Fry Booster @650.00 per bag	2 bags	1,300.00
5. Broodstock, fish @ 1,100.00 per bag	3 bags	3,300.00
	Php.	47,200.00

### Gross Income

2. 60% fingerlings per hapa @0.6 pesos per pc.	20 hapas	53,020 pcs
53, 920 pcs x 0.5 pesos		43,136.00 x
	Php.	3 months
	Php.	97,056.00

### Net Income

Gross Income - Production cost	Php.	49, 856.00
97, 056 - 47, 200		

Results from the project funded by POST-PCAAARD 2016 entitled "Tilapia Seed Application of Aquaculture Technology to Increase Water Temperature and Enhance Seed Production in Hapa Hatchery System"

Thank you!





Flower Horn Cichlid - Amphilophus hybrid



Tilapia skin graft - to help heal burns

## Tilapia as an Aquaculture Species

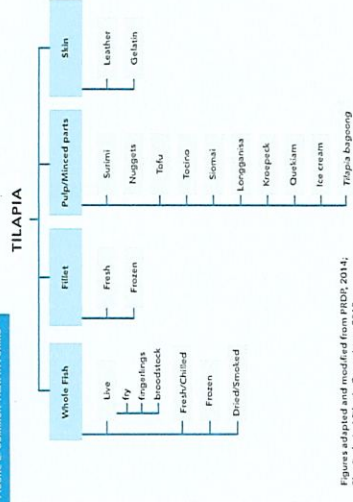
MGRamos



## What is Tilapia

- Tilapia is a common name for various species of freshwater fish that belong to the family **Cichlidae**.
- These fish are widely farmed and consumed around the world, and they have become one of the most popular fish species in aquaculture.
- most common species include Nile tilapia (*Oreochromis niloticus*), Mozambique tilapia (*Oreochromis mossambicus*), and blue tilapia (*Oreochromis aureus*), among others.

FIGURE 2: COMMON TILAPIA FORMS



Figures adapted and modified from FIDP 2014, The Technical Tilapia Committee, 2018

## ulture Fishery

Production(MT)	Value (PHP'000)
1,611,790	9,334,720
388,854	34,436,587
261,032	18,567,782
48,611	19,707,815
21,051	162,347
20,747	243,677
17,297	517,226
16,183	5,121,969
7,325	1,656,123
3,580	958,354

## Taxonomy

- Three genera
- Tilapia* - substrate spawners and nest guards (30 species)
  - Sarotherodon* - paternal or biparental mouth-brooders (18 species)
  - Oreochromis* - arena spawners and maternal mouth-brooders (42 species)

The nomenclature of *Oreochromis niloticus* was authored by Linnaeus in 1758.

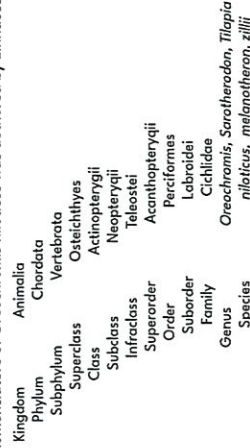
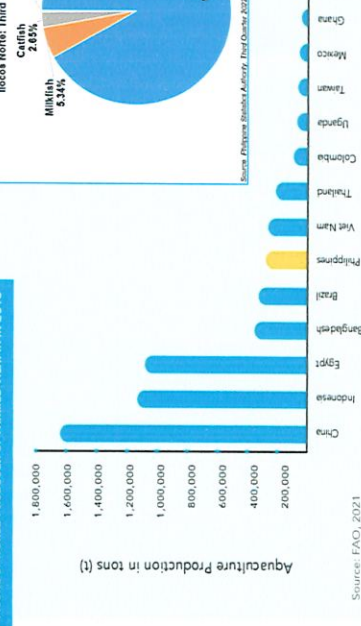


FIGURE 3: WORLD PRODUCER OF FARMED TILAPIA IN 2018



Source: FAO, 2021

## Statistics

- There are about 70 species of tilapias, most of them native to Western rivers of Africa
- Of these, nine species are used in aquaculture worldwide (FAO 2002).
- However, tilapia production is concentrated mainly on Nile tilapia (*O. niloticus*), Mozambique tilapia (*O. mossambicus*) and Blue tilapia (*O. aureus*).
- Of these 3 species, *O. niloticus*, has for many decades, been responsible for the significant increase in global tilapia production from freshwater aquaculture



## Tilapia species and strains

us collected from Bolinao, Pangasinan



## Tilapia species and strains

Male *Oreochromis niloticus* GIFT Strain 7th Generation



## Tilapia species and strains

Male red tilapia (Florida Strain)



## Tilapia species and strains

pia (Florida Strain)



## Tilapia species and strains

Male Genomar Supreme Tilapia



## Tilapia species and strains

Female *Oreochromis hornorum*



## d showing countries where had been introduced



## Commercially important tilapias and their characteristics (modified from Mair 2001)

Species	Common name	Characteristics
<i>Oreochromis niloticus</i>	Nile tilapia	Performs well in tropical/subtropical areas, sexual maturity in wide range of farming system (extensive to highly intensive), tolerant to high temperatures, good consumer and producer acceptance, least tolerant to cold water
<i>O. aureus</i>	Blue tilapia	Water cold resistant species, can tolerate low temperatures of 8-9 °C, suitable for culture in countries with seasonal change in temperature, second maturity in pond culture, production of monosex tilapia
<i>O. mossambicus</i>	Mozambique tilapia	High saline tolerance (grows well up to 20ppt), early maturity, high fecundity, poor aquaculture potential except when used for hybridization
<i>O. spilargenteus</i>	None	Saline tolerant, used in seawater cage culture
<i>O. hornorum</i> ( <i>Tilapia hornorum</i> )	Zanzibar tilapia	Can tolerate brackishwater
<i>Sarotherodon galilaeus</i>	Galilee tilapia	Saline tolerant, slow growth
<i>S. melanocheilus</i>	Black-chinned tilapia	Wide saline tolerance (0-45 ppt but prefers 10-16 ppt. of salt), tolerant to low input, suitable for extensive aquaculture in some parts of Africa
<i>Tilapia rendalli</i>	Redbreast tilapia	Feeds on macrophytes
<i>T. zilli</i>	Redbelly tilapia	Grows well in full strength seawater
Red hybrids*	Hybrid tilapia	Suitable for brackishwater and seawater because of saline tolerance, fast growth, high fecundity, good consumer acceptance (e.g. in rice-fish culture), suitable for farming under low-input conditions; initial high acceptance due to color, sometimes exhibit low fecundity



\*produced through crossbreeding of albino or mutant-reddish, orange *O. mossambicus* (a normally black species) with other species, including *O. niloticus*, *O. aureus* and *O. hornorum*

Table 2. Introduction of tilapias in the Philippines (Quarero, 1983; Ekaath et al, 1991)

Species	Year	Origin	Agency	Person Responsible
<i>Oreochromis mossambicus</i>	1950	Thailand	BFAR	Villalobos
<i>O. niloticus</i>	1963	Thailand	Private	Ang
<i>O. hornorum</i> x <i>O. mossambicus</i>	1971	Thailand	LIDA	Frugan
<i>O. niloticus</i> (Uganda)	1972	Israel	BFAR	Tapador
<i>Tilapia zilli</i>	1973	Taiwan	BFAR	Tapador
<i>O. aureus</i>	1974	Israel	BFAR	Schlotter
<i>O. niloticus</i> (Ghana)	1977	USA	CLSU	Schroeder
<i>O. niloticus</i> (Ghana)	1977	Israel	BFAR	Chen
<i>O. niloticus</i> (Ghana)	1977	Singapore	BFAR	Chen
<i>O. aureus</i> (Israel)	1978	Singapore	SEAFDEC	Basilita
<i>O. niloticus</i> (Ghana)	1978	Singapore	SEAFDEC	Basilita
Red Tilapia (hybrid)	1979	Taiwan	BFAR	Liao
<i>O. niloticus</i>	1979	Israel	BFAR	Garcia
<i>O. niloticus</i>	1981	Singapore	Private Sector	Mines
Red Tilapia (hybrid)	1981	Taiwan	Private Sector	Mines
<i>O. aureus</i>	1982	Israel	Private Sector	Mines
<i>O. niloticus</i> (Ghana)	1982	Israel	Private Sector	Mines
<i>O. niloticus</i>	1983	Taiwan	Private Sector	Mines
<i>O. niloticus</i>	1983	Taiwan	Private Sector	Mines
<i>O. spilargenteus</i>	1983	Saudi Arabia	FYD (?)	Falbas (FAO)
<i>O. niloticus</i>	1987	Thailand	BFAR	Ekaath
<i>O. niloticus</i>	1988	Senegal	GIFT-BFAR	Ekaath
<i>O. niloticus</i>	1988	Ghana	GIFT-BFAR	Ekaath
<i>O. niloticus</i>	1988	Egypt	GIFT-BFAR	Ekaath
<i>O. niloticus</i>	1989	Egypt	GIFT-BFAR	Ekaath
<i>O. niloticus</i>	1989	Kenya	GIFT-BFAR	Ekaath
<i>O. niloticus</i>	1989	Kuwait	CLSU-BFAR	Ekaath





## Chicken

readily adaptable ingredient in various  
al amino acids  
relatively quickly; they can be bred,  
relatively short time.  
d can feed on a wide range of food  
e range of environmental conditions  
relatively easy to farm, just as chickens



## Fish for Aquaculture

2.0

ths  
and affordable

0 - Php 180



## Nile tilapia is a popular aquaculture species because...

- ✓ **Hardiness:** suitable for aquaculture in diverse regions.
- ✓ **Fast Growth:** relatively fast growth rate
- ✓ **High Reproductive Capacity:** ability to breed multiple times a year
- ✓ **Tolerance to Crowding:** can be raised at relatively high stocking densities
- ✓ **Diet Flexibility:** omnivorous and can thrive on a variety of diets, including commercial feeds, agricultural byproducts, and natural aquatic vegetation. This diet flexibility can help reduce production costs.
- ✓ **Market Demand:** Tilapia is a popular and widely consumed fish around the world



## Nile tilapia is a popular aquaculture species because:

- ✓ **Taste and Texture:** mild flavor and a firm, white flesh, versatile
- ✓ **Reduced Environmental Impact:** Nile tilapia is often seen as an environmentally friendly option for aquaculture because it can be raised in recirculating aquaculture systems (RAS) or integrated aquaculture-agriculture systems
- ✓ **Local Adaptation:** Over time, many local strains and hybrids of Nile tilapia have been developed with specific adaptations to local conditions.
- ✓ **Profitability:** Due to its fast growth, high reproductive capacity, and market demand, Nile tilapia can be a profitable species for aquaculture operations.



Thank you!



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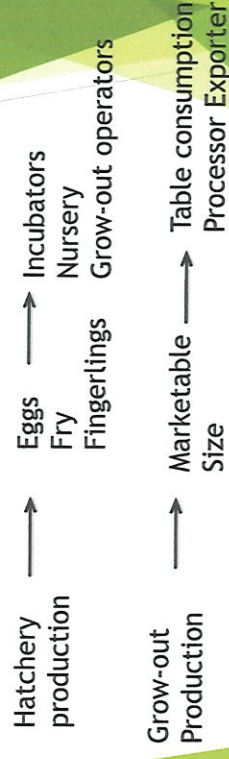
## and Grow-out ement

ited Technology

## Characteristic of Tilapia that is good for production

- ☐ Fast grower
- ☐ Ability to accept feeds
- ☐ Omnivores
- ☐ They can breed in captivity
- ☐ Hardy and can tolerate unfavorable conditions
- ☐ Reach marketable size within 4 months
- ☐ High consumer acceptance

## TILAPIA CULTURE



## and Environment

Brackish water	Marine water
✓	
✓	✓
✓	✓

## TILAPIA PRODUCTION BY ENVIRONMENT AND CULTURE SYSTEM (IN MT) CY 2010

Environment	Fish pond	Fish pen	Fish cage	Rice Fish	SFR
Fresh water	138,406	21,544	84,556	57.85	143.9
Brackish water	13,999	58.82	76.67		
Marine			7,2		
Total	152,405	21,592	84,640	57.85	143.9

Grand total: 258,840.12

## FISHPOND GROW-OUT MANAGEMENT ACTIVITIES

- ☐ Pond Preparation
- ☐ Stocking
- ☐ Routine Management
- ☐ Feeding
- ☐ Water Quality Monitoring
- ☐ Harvesting

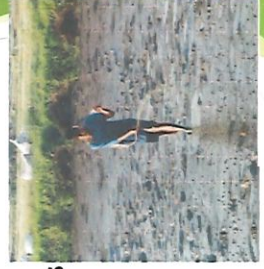
## paration



pond  
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ocks,  
nted

## 2. Pest Elimination and Pond washing

- ☐ Use of poisons and pesticides are not recommended



## 2. Pest Elimination and Pond washing

How pest elimination is done?

- ☐ Use of safe pond treatments :
  - a. tea seed cake
  - b. rotenone
  - c. tobacco dust/powder
  - d. use of lime plus inorganic fertilizer





## Dikes and gates

harvest  
during culture



## 4. Leveling of pond bottom

- facilitate ease of seining during harvesting
- Helps in complete draining of pond after culture period



## 5. Pond drying

- Allows toxic gases to evaporate such as ammonia and hydrogen sulfide
- It also help in elimination of unwanted species



## g of Soil and Water



## 7. Installation of Screens

- To avoid entry of unwanted species and escape of fish stocks
- Repair and replacement of screens should be done if needed



## 8. Water Filling

- Initial filling of filtered water to the pond of about 0.5 meter depth only
- Full filling of water to desired level of 1.2-1.5m will be done later upon releasing of fingerlings from nursery area to grow-out area.



## II. Stocking of fingerlings

- Stock the fingerlings in the nursery area early in the morning or late in the afternoon
- fingerlings to be stocked should be:
  - a. good quality
  - b. similar age and size
  - c. healthy



## Stocking Density

The quantity of fingerlings to be stocked is base on;

- Culture System
- Water Quality Management
- Quality and Quantity of Feeds Used

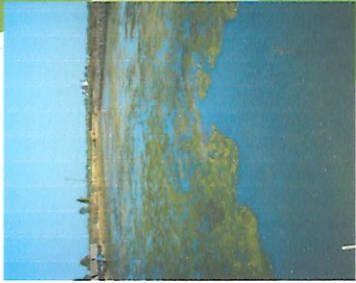


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## Level of intensity of outputs



### 2. SEMI-INTENSIVE

- Commercial feeds given
- Stocking density 3 - 5 pcs./m<sup>2</sup>
- Manures and chemical fertilizers are used
- Greater yield is obtained compared to extensive



### 3. INTENSIVE

- Large amount of feeds are applied
- Stocking density of 5 pcs. and above
- Ponds are aerated by mechanical means



Minimum feed ration based on water movement

Feed ration	Optimum fish production (kg/ha)
	2,500 - 4,000
	4,000 - 6,000
	6,000 - 8,000

### Stocking density computation

No. to stock =  $\frac{\text{desired wt. at harvest (kg/ha)}}{\text{desired average wt. at harvest}}$

Example : the farmer wants to harvest fish averaging 250g and expected a total weight of 8,000 kg/ha at harvest.

Number to stock :  $\frac{8,000 \text{ kg/ha}}{0.25 \text{ kg}} = 32,000 \text{ pcs.}$

### Feeds and Feeding Management

- Good nutrition in animal production is essential to economically produced a healthy and high quality product.
- In fish farming, nutrition is critical because feeds:
  - the most expensive component in the intensive aquaculture industry.
  - Represents over 70% of production costs.



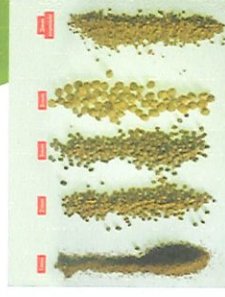
### MAJOR NUTRIENT REQUIREMENTS OF TILAPIA

NUTRIENT	SIZE GROUP			
	Fry (0.01g to 0.5g)	Post-fingerlings (5g to 20g)	Juvenile (21g - 100g)	Broodstock (>100g)
Crude Protein	50%	35 - 40%	30 - 35%	25 - 30%
Crude Lipid	10%	10%	6 - 10%	6%
Digestible carbohydrates	25%	25%	25%	25%
Crude Fiber	8%	8%	8-10%	8-10%

Requirement  
Let nutrients such as  
proteins, fats, vitamins

### FEEDING

- Proper selection and preparation of feed needs to be considered before stocking, to ensure that there is appropriate food for the fish
- Both quality and quantity of feed needs to be considered
- Starvation, malnutrition or nutritional deficiency can easily cause slow growth, increase susceptibility to disease and death to aquatic animals





## Types of Feeds

- When changing from one feed to another, the change should not be abrupt but gradual.

Types of feeds required at different stages of Tilapia.

Types of Feeds	Ave. Body Weight
1. Fish Fry Mash	0.01g - 5.0g



Types of feeds	Ave. Body Weight
2. Fish Starter	
a. Starter Crumble	5.0g - 20.0g



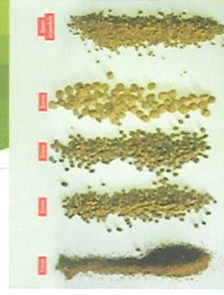
b. Starter Pellet	20.0g - 50.0g
-------------------	---------------

## PELLET SIZE

Rule of thumb:

- Small feed particles for small fish
- Large feed particles for large size of fish

- When changing from one feed to another, the change should not be abrupt but gradual.



. Body Weight  
50 g - 150 g

>150g

## Feeding Frequency

- Small fish need high protein diet frequently and energy demand and require only small amount of feed
- As fish grow, frequencies should be lowered and protein requirement reduced

4x to 2x a day	8:00 - 9:00 AM
	11:00 - 12:00 AM
	1:00 - 2:00 PM
	3:00 - 4:00 PM

## 2. Feeding Bag

- Feeds are placed in a B-net feeding bag
- The bag is suspended in pond water surface.
- Fish obtain feeds by picking or suction.



## 3. Mechanical Feeders/ Automatic Feeders

- Usually used with large commercial farms





## Feeding Strategies

it can be employed

3. Supplemental feeding
  - this is done when natural productivity of the water cannot maintain maximum growth. This strategy is practiced in semi-intensive culture system at a rate of 3-5 pcs/m<sup>2</sup>



increase natural food rate of 1-2 pcs/m<sup>2</sup>



## Examples of Supplemental feeding:

- Fertilization + commercial feeds
- One to forty five days - provision of fertilizers forty six days onward - provision of commercial feeds
- Fertilization + formulated feeds + lemma (70% formulated : 30% lemma)
- Fertilization + rice bran/bread crumbs
- Alternate day feeding

## Determination of Daily Feed Requirement (DFR)

Daily Feed Requirement (DFR) Formula

$$= \text{ABW} \times \text{Total Stocks} \times \text{Feeding Rate} \times \% \text{ Survival}$$

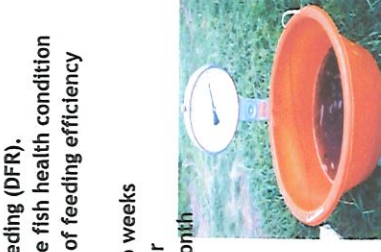
EXAMPLE:

Stocks - 1,500 pcs  
Feeding Rate - 6%  
Average BW - 50g  
% Survival - 90%

$$\begin{aligned} \text{DFR} &= 50\text{g} \times 1,500 \text{ pcs} \times 6\% \times 90\% \\ &= 4,050\text{g or } 4.05\text{kgs} \end{aligned}$$

- Growth Monitoring/Fish Sampling
- Purpose:
    1. To adjust feeding (DFR).
    2. To assess the fish health condition
    3. Assessment of feeding efficiency

- Frequency:
  - a. every two weeks
  - b. 21 days or
  - c. once a month



## Conversion Ratio

needed to produce a kg of

of the feeds and

viability of the

eds: 1.0 kg tilapia)

## Water Quality Monitoring and Management

### Environmental Requirements:

Table 1: Limits and optima of water quality parameters for tilapia.

Parameter	Range	Optimum for growth	Reference
Salinity (ppt)	Up to 36	Up to 19	El-Sayed (2006).
D.O. (Mg/L)	Down to 0.1	> 3	Mugid and Babiker (1975); Ross (2000).
Temperature (C <sup>o</sup> )	8 - 42	22 - 29	Sariq (1969); Morgan (1972); Mires (1995).
PH	3.7 - 11	7 - 9	Ross (2000).
Ammonia (Mg/L)	Up to 7.1	< 0.05	El-Shafey (1998); Redner and Stickney (1979).

- Play a great role during the culture period
- Affects feed consumption and fish health

## Water Quality Monitoring and Management

- Water exchange/ pond freshening should be every 15 days at the start of the culture.
- Monitor water color for addition of fertilizer for phytoplankton growth.

intensive)  
ity feeds at a rate of above

eed that fish will consume

me

gy

re-feeding



## in reeding of Fish

old season

season. in cease to

2. Dissolved Oxygen
  - low D.O. content reduces the fish appetite
  - Do not feed or add fertilizers

es with  
O<sub>2</sub> content  
g factor.

## Record Keeping

- Maintain records of all activities as they will serve as a valuable reference for the future
- Accurate records will enable a fish farmer to assess feeding efficiency in current or past culture periods and in different ponds



## Harvesting

- depending on the preference of the market, fish are harvested upon reaching marketable size



## ing

of the

size of

a cast net



## Complete Harvesting

- requires total draining of the pond
- seining is carried out while the pond is being drained (to speed up harvesting)




## Cost and Return Analysis

### Is TILAPIA farming profitable?

Technical Information for a 5-hectare tilapia grow-out pond

Project duration (years)	5
Area (ha)	5
Stocking density (per m <sup>2</sup> )	7
Total stocks per crop	350,000
Croppings per year	2
Average weight at harvest (kg)	0.250
Feed conversion ratio	1.8
Survival rate (%)	75
Recovery at harvest (pieces)	262,500
Total weight at harvest (kg)	65,625
Farm gate price (PHP/kg)	55
Gross sales (PHP)	3,609,375
<b>Costs-and-returns</b>	
Total variable cost per cropping (PHP)	2,742,000
Total fixed cost per cropping (PHP)	531,813
Net income per year (PHP)	335,562
Internal rate of return (%)	108
Return-on-investment (%)	129
Payback period (years)	0.72

you!!!!

 <b>MARIANO MARCOS STATE UNIVERSITY</b> Extension Directorate	Document Code		ED-TCE-FRM-002	
	Revision No.		3	Page 1 of 1
<b>EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS</b>	Effectivity Date		November 4, 2020	

### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: TRAINING ON TLAPIA GROW-OUT, BREEDING & NURSERY  
 Date: OCTOBER 26-27, 2023  
 Venue: SACUNTAN, PINULI  
 Name of Participant (optional) \_\_\_\_\_  
 Sex: ☒ Male      Age Range: ☒ 21 & below      ☐ 22 to 34      ☐ 35 to 44  
          ☐ Female                      ☒ 45 to 54      ☐ 55 to 64      ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.) used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation		/			
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				


What is your most significant learning/insight from this training/seminar/workshop?

SEMINAR ON TLAPIA AQUACULTURE

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?



	<b>MARIANO MARCOS STATE UNIVERSITY</b>	Document Code	ED-TCE-FRM-002	
	Extension Directorate	Revision No.	3	Page 1 of 1
	<b>EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS</b>	Effectivity Date	November 4, 2020	

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Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☒ 22 to 34      ☐ 35 to 44  
☐ Female      ☐ 45 to 54      ☐ 55 to 64      ☐ 65 & above

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ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	<input checked="" type="checkbox"/>				
2. Adequacy of information	<input checked="" type="checkbox"/>				
3. Competence of the Speaker/s	<input checked="" type="checkbox"/>				
4. Usefulness of the training/seminar/workshop	<input checked="" type="checkbox"/>				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	<input checked="" type="checkbox"/>				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	<input checked="" type="checkbox"/>				
7. Venue	<input checked="" type="checkbox"/>				
8. Food	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
9. Accommodation	<input checked="" type="checkbox"/>				
10. Overall rating for the whole training/seminar/workshop	<input checked="" type="checkbox"/>				
11. Overall rating for the timeliness of the service delivery	<input checked="" type="checkbox"/>				
12. Quality of service of the Training Management team	<input checked="" type="checkbox"/>				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

Post harvest in Tilapia

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: Training of Tilapia Grow-out, Breeding and Nursery  
 Date: October 26-27, 2013  
 Venue: Baq. sacista, Mindo Marcos Inst  
 Name of Participant (optional) \_\_\_\_\_  
 Sex: ☒ Male      Age Range: ☒ 21 & below      ☒ 22 to 34      ☐ 35 to 44  
          ☐ Female                      ☐ 45 to 54                      ☐ 55 to 64                      ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.) used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?  
culture of Tilapia and Nutrition and Breeding management.

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

Hands-on training on Tilapia production

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

Thank you guys much!



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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) WILLIAM C. GAMPONG

Sex: ☒ Male      Age Range: ☐ 21 & below      ☐ 22 to 34      ☐ 35 to 44  
☐ Female      ☐ 45 to 54      ☒ 55 to 64      ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.


ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

KUNG PAKO PO MAG-ALAGA NG TAMANG TILAPPA.

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) MELANDA A. DEL ROSARIO

Sex: ☐ Male      Age Range: ☐ 21 & below      ☐ 22 to 34      ☒ 35 to 44  
☒ Female      ☐ 45 to 54      ☐ 55 to 64      ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.) used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				


What is your most significant learning/insight from this training/seminar/workshop?

No kasano agtarakon ti gusto iti Tilapia

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?



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Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) JUAN LAURESTA

Sex: ☐ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☒ 35 to 44  
☒ Female      ☐ 45 to 54    ☐ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	✓				
2. Adequacy of information	✓				
3. Competence of the Speaker/s	✓				
4. Usefulness of the training/seminar/workshop	✓				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	✓				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	✓				
7. Venue	✓				
8. Food	✓				
9. Accommodation	✓				
10. Overall rating for the whole training/seminar/workshop	✓				
11. Overall rating for the timeliness of the service delivery	✓				
12. Quality of service of the Training Management team	✓				


What is your most significant learning/insight from this training/seminar/workshop?

PAANO MAG-ALAGA NG TULAPIA

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

ABOUT ANIMALS LIKE HOW TO RAISE GOAT & OTHERS

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male ☒ Female      Age Range: ☐ 21 & below ☐ 22 to 34 ☒ 35 to 44  
☐ 45 to 54 ☐ 55 to 64 ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	n/a				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

*Ilupia culture & Nat Chury*


What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

*n/a*

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

*n/a*



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Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male      Age Range: ☐ 21 & below    ☒ 22 to 34    ☐ 35 to 44  
☒ Female      ☐ 45 to 54    ☐ 55 to 64    ☐ 65 & above


**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_


Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☒ 35 to 44  
☒ Female      ☐ 45 to 54    ☐ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				
What is your most significant learning/insight from this training/seminar/workshop?					
<hr/> <hr/>					
What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.					
<hr/> <hr/>					
What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?					
<hr/> <hr/>					



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Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☒ 35 to 44  
☒ Female      ☐ 45 to 54    ☐ 55 to 64    ☐ 65 & above


**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☒ 35 to 44  
☒ Female      ☐ 45 to 54    ☐ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.


ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?



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Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
☒ Female      ☒ 45 to 54    ☐ 55 to 64    ☐ 65 & above


**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
☒ Female      ☒ 45 to 54    ☐ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.


ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?



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Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
☒ Female      ☒ 45 to 54    ☐ 55 to 64    ☐ 65 & above


**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male      Age Range: ☐ 21 & below      ☐ 22 to 34      ☒ 35 to 44  
☒ Female      ☐ 45 to 54      ☐ 55 to 64      ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.


ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?



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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
☒ Female      ☐ 45 to 54    ☒ 55 to 64    ☐ 65 & above


**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☒ 35 to 44  
☒ Female      ☐ 45 to 54    ☐ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

\_\_\_\_\_

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?



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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: training on tilapia grow out  
 Date: 10-27-23  
 Venue: Brgy Hull Sacritan  
 Name of Participant (optional) \_\_\_\_\_  
 Sex: ☐ Male Age Range: ☐ 21 & below ☐ 22 to 34 ☐ 35 to 44  
☒ Female ☒ 45 to 54 ☐ 55 to 64 ☐ 65 & above


**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	-				
2. Adequacy of information	-				
3. Competence of the Speaker/s	-				
4. Usefulness of the training/seminar/workshop	-				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	-				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	-				
7. Venue	-				
8. Food	-				
9. Accommodation	-				
10. Overall rating for the whole training/seminar/workshop	-				
11. Overall rating for the timeliness of the service delivery	-				
12. Quality of service of the Training Management team	-				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: TRAINING ON TILAPIA GROW-OUT  
 Date: OCT. 26 - 27, 2023  
 Venue: COVERED COURT CANTON  
 Name of Participant (optional) MAGELENE CARIAS  
 Sex: ☐ Male Age Range: ☐ 21 & below ☐ 22 to 34 ☐ 35 to 44  
☒ Female ☒ 45 to 54 ☐ 55 to 64 ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.


ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?



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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: training on filapia  
 Date: 10-27-23  
 Venue: Brny Hall Saerlan Pinali  
 Name of Participant (optional) \_\_\_\_\_  
 Sex: ☐ Male Age Range: ☐ 21 & below ☒ 22 to 34 ☐ 35 to 44  
☒ Female ☐ 45 to 54 ☐ 55 to 64 ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	✓				
2. Adequacy of information	✓				
3. Competence of the Speaker/s	✓				
4. Usefulness of the training/seminar/workshop	✓				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	✓				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	✓				
7. Venue	✓				
8. Food	✓				
9. Accommodation	✓				
10. Overall rating for the whole training/seminar/workshop	✓				
11. Overall rating for the timeliness of the service delivery	✓				
12. Quality of service of the Training Management team	✓				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: Launching of Sustain Project and Signing of Memorandum Training on Teleapia  
 Date: Oct 27, 2023 Grow-Out, Breeding, and Nutrition

Venue: Boya 25 Sacardin Pinar Delos Norte

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male Age Range: ☐ 21 & below ☐ 22 to 34 ☒ 35 to 44  
☒ Female ☐ 45 to 54 ☐ 55 to 64 ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.


ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	✓				
2. Adequacy of information	✓				
3. Competence of the Speaker/s	✓				
4. Usefulness of the training/seminar/workshop	✓				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.) used	✓				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	✓				
7. Venue	✓				
8. Food	✓				
9. Accommodation	✓				
10. Overall rating for the whole training/seminar/workshop	✓				
11. Overall rating for the timeliness of the service delivery	✓				
12. Quality of service of the Training Management team	✓				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?



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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: launching of sustain project and signing of MoA cum training on tilapia  
 Date: Oct. 27 - 2020 (Grow-out breeding and nursery)

Venue: Sacatitan Pinali Docos North

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male ☐ Female      Age Range: ☒ 21 & below ☐ 22 to 34 ☐ 35 to 44  
☐ 45 to 54 ☐ 55 to 64 ☐ 65 & above


**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.) used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☐ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
☒ Female      ☒ 45 to 54    ☐ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	<input checked="" type="checkbox"/>				
2. Adequacy of information	<input checked="" type="checkbox"/>				
3. Competence of the Speaker/s	<input checked="" type="checkbox"/>				
4. Usefulness of the training/seminar/workshop	<input checked="" type="checkbox"/>				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.) used	<input checked="" type="checkbox"/>				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	<input checked="" type="checkbox"/>				
7. Venue	<input checked="" type="checkbox"/>				
8. Food	<input checked="" type="checkbox"/>				
9. Accommodation	<input checked="" type="checkbox"/>				
10. Overall rating for the whole training/seminar/workshop	<input checked="" type="checkbox"/>				
11. Overall rating for the timeliness of the service delivery	<input checked="" type="checkbox"/>				
12. Quality of service of the Training Management team	<input checked="" type="checkbox"/>				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?



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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_  
 Date: 22 23  
 Venue: \_\_\_\_\_  
 Name of Participant (optional) Mica Forhiller  
 Sex: ☐ Male Age Range: ☐ 21 & below ☐ 22 to 34 ☐ 35 to 44  
☒ Female ☐ 45 to 54 ☒ 55 to 64 ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	<input checked="" type="checkbox"/>				
2. Adequacy of information	<input checked="" type="checkbox"/>				
3. Competence of the Speaker/s	<input checked="" type="checkbox"/>				
4. Usefulness of the training/seminar/workshop	<input checked="" type="checkbox"/>				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.) used	<input checked="" type="checkbox"/>				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	<input checked="" type="checkbox"/>				
7. Venue	<input checked="" type="checkbox"/>				
8. Food	<input checked="" type="checkbox"/>				
9. Accommodation	<input checked="" type="checkbox"/>				
10. Overall rating for the whole training/seminar/workshop	<input checked="" type="checkbox"/>				
11. Overall rating for the timeliness of the service delivery	<input checked="" type="checkbox"/>				
12. Quality of service of the Training Management team	<input checked="" type="checkbox"/>				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_


Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
☐ Female                      ☐ 45 to 54    ☒ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				
What is your most significant learning/insight from this training/seminar/workshop?					
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What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.					
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What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?					
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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_


Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☒ 35 to 44  
☐ Female                      ☐ 45 to 54    ☐ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				
What is your most significant learning/insight from this training/seminar/workshop?					
<hr/> <hr/>					
What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.					
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What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?					
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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below      ☐ 22 to 34      ☐ 35 to 44  
☐ Female      ☒ 45 to 54      ☐ 55 to 64      ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.


ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?



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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below      ☐ 22 to 34      ☒ 35 to 44  
☐ Female      ☐ 45 to 54      ☐ 55 to 64      ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.) used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				
What is your most significant learning/insight from this training/seminar/workshop?					
<hr/> <hr/>					
What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.					
<hr/> <hr/>					
What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?					
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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below      ☒ 22 to 34      ☐ 35 to 44  
☐ Female      ☐ 45 to 54      ☐ 55 to 64      ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	<input checked="" type="checkbox"/>				
2. Adequacy of information	<input checked="" type="checkbox"/>				
3. Competence of the Speaker/s	<input checked="" type="checkbox"/>				
4. Usefulness of the training/seminar/workshop	<input checked="" type="checkbox"/>				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	<input checked="" type="checkbox"/>				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	<input checked="" type="checkbox"/>				
7. Venue	<input checked="" type="checkbox"/>				
8. Food	<input checked="" type="checkbox"/>				
9. Accommodation	<input checked="" type="checkbox"/>				
10. Overall rating for the whole training/seminar/workshop	<input checked="" type="checkbox"/>				
11. Overall rating for the timeliness of the service delivery	<input checked="" type="checkbox"/>				
12. Quality of service of the Training Management team	<input checked="" type="checkbox"/>				

What is your most significant learning/insight from this training/seminar/workshop?

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
☐ Female      ☐ 45 to 54    ☒ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
          ☐ Female                      ☒ 45 to 54    ☐ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
☐ Female                      ☒ 45 to 54    ☐ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
☐ Female                      ☐ 45 to 54    ☒ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				
What is your most significant learning/insight from this training/seminar/workshop?					
<hr/> <hr/>					
What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.					
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What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?					
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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
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ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_


Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☒ 22 to 34      ☐ 35 to 44  
☐ Female      ☐ 45 to 54      ☐ 55 to 64      ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				
What is your most significant learning/insight from this training/seminar/workshop?					
<hr/> <hr/>					
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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_


Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☒ 35 to 44  
☐ Female                      ☐ 45 to 54    ☐ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	<input checked="" type="checkbox"/>				
2. Adequacy of information	<input checked="" type="checkbox"/>				
3. Competence of the Speaker/s	<input checked="" type="checkbox"/>				
4. Usefulness of the training/seminar/workshop	<input checked="" type="checkbox"/>				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	<input checked="" type="checkbox"/>				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	<input checked="" type="checkbox"/>				
7. Venue	<input checked="" type="checkbox"/>				
8. Food	<input checked="" type="checkbox"/>				
9. Accommodation	<input checked="" type="checkbox"/>				
10. Overall rating for the whole training/seminar/workshop	<input checked="" type="checkbox"/>				
11. Overall rating for the timeliness of the service delivery	<input checked="" type="checkbox"/>				
12. Quality of service of the Training Management team	<input checked="" type="checkbox"/>				
What is your most significant learning/insight from this training/seminar/workshop?					
<hr/> <hr/>					
What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.					
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What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?					
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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
☐ Female                      ☒ 45 to 54    ☐ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.


ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

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Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☐ 22 to 34      ☐ 35 to 44  
☐ Female      ☒ 45 to 54      ☐ 55 to 64      ☐ 65 & above


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ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	<input checked="" type="checkbox"/>				
2. Adequacy of information	<input checked="" type="checkbox"/>				
3. Competence of the Speaker/s	<input checked="" type="checkbox"/>				
4. Usefulness of the training/seminar/workshop	<input checked="" type="checkbox"/>				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	<input checked="" type="checkbox"/>				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	<input checked="" type="checkbox"/>				
7. Venue	<input checked="" type="checkbox"/>				
8. Food	<input checked="" type="checkbox"/>				
9. Accommodation	<input checked="" type="checkbox"/>				
10. Overall rating for the whole training/seminar/workshop	<input checked="" type="checkbox"/>				
11. Overall rating for the timeliness of the service delivery	<input checked="" type="checkbox"/>				
12. Quality of service of the Training Management team	<input checked="" type="checkbox"/>				

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☐ 35 to 44  
☐ Female                      ☐ 45 to 54    ☒ 55 to 64    ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				

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### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: launching of SUSTAIN Project / Training on Tilapia

Date: October 26 - 27, 2023

Venue: Brgy. Sacrista, Pinal, I.N.

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male ☐ Female      Age Range: ☐ 21 & below ☒ 22 to 34 ☐ 35 to 44  
☐ 45 to 54 ☐ 55 to 64 ☐ 65 & above


**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	✓				
2. Adequacy of information	✓				
3. Competence of the Speaker/s	✓				
4. Usefulness of the training/seminar/workshop	✓				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	✓				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	✓				
7. Venue		✓			
8. Food		✓			
9. Accommodation	N/A				
10. Overall rating for the whole training/seminar/workshop	✓				
11. Overall rating for the timeliness of the service delivery	✓				
12. Quality of service of the Training Management team	✓				

What is your most significant learning/insight from this training/seminar/workshop?

What additional training or information do you need? Your response will help the organizers plan for future need-based training/seminar/workshop.

What are your additional comments or suggestions to further improve the conduct of future trainings/seminars/workshops?

	<b>MARIANO MARCOS STATE UNIVERSITY</b> Extension Directorate	Document Code	ED-TCE-FRM-002	
	<b>EVALUATION FORM FOR</b> <b>TRAININGS/SEMINARS/WORKSHOPS</b>	Revision No.	3	Page 1 of 1
		Effectivity Date	November 4, 2020	

### EVALUATION FORM FOR TRAININGS/SEMINARS/WORKSHOPS

Title of training/seminar/workshop: \_\_\_\_\_

Date: OCTOBER 26-27, 2023

Venue: PINKI

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☒ 22 to 34      ☐ 35 to 44  
☐ Female      ☐ 45 to 54      ☐ 55 to 64      ☐ 65 & above

**Instruction:** Please evaluate the training/seminar/workshop in terms of the items listed below based on the following scale: (1) Highly Dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; and (5) Highly Satisfied. If an item is not applicable, please leave it blank. Rest assured that your answers will be kept confidential. Your responses will certainly help the organizers in improving the conduct of future trainings/seminars/workshops.

ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	✓				
2. Adequacy of information	✓				
3. Competence of the Speaker/s	✓				
4. Usefulness of the training/seminar/workshop	✓				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	✓				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	✓				
7. Venue	✓				
8. Food	✓				
9. Accommodation	✓				
10. Overall rating for the whole training/seminar/workshop	✓				
11. Overall rating for the timeliness of the service delivery	✓				
12. Quality of service of the Training Management team	✓				

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Date: \_\_\_\_\_

Venue: \_\_\_\_\_

Name of Participant (optional) \_\_\_\_\_

Sex: ☒ Male      Age Range: ☐ 21 & below    ☐ 22 to 34    ☒ 35 to 44  
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ITEM	RATING				
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1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
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7. Venue	/				
8. Food	/				
9. Accommodation	/				
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Title of training/seminar/workshop: \_\_\_\_\_

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Sex: ☒ Male      Age Range: ☐ 21 & below    ☒ 22 to 34      ☐ 35 to 44  
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ITEM	RATING				
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1. Relevance of the topic/s covered	/				
2. Adequacy of information	/				
3. Competence of the Speaker/s	/				
4. Usefulness of the training/seminar/workshop	/				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	/				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				
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Title of training/seminar/workshop: \_\_\_\_\_

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Name of Participant (optional) \_\_\_\_\_

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ITEM	RATING				
	5	4	3	2	1
1. Relevance of the topic/s covered	<input checked="" type="checkbox"/>				
2. Adequacy of information	<input checked="" type="checkbox"/>				
3. Competence of the Speaker/s	<input checked="" type="checkbox"/>				
4. Usefulness of the training/seminar/workshop	<input checked="" type="checkbox"/>				
5. Appropriateness of methods/processes (e.g., lecture, discussion, workshop etc.)used	<input checked="" type="checkbox"/>				
6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	<input checked="" type="checkbox"/>				
7. Venue	<input checked="" type="checkbox"/>				
8. Food	<input checked="" type="checkbox"/>				
9. Accommodation	<input checked="" type="checkbox"/>				
10. Overall rating for the whole training/seminar/workshop	<input checked="" type="checkbox"/>				
11. Overall rating for the timeliness of the service delivery	<input checked="" type="checkbox"/>				
12. Quality of service of the Training Management team	<input checked="" type="checkbox"/>				

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6. Effectiveness of the methods/processes in attaining training/seminar/workshop objectives	/				
7. Venue	/				
8. Food	/				
9. Accommodation	/				
10. Overall rating for the whole training/seminar/workshop	/				
11. Overall rating for the timeliness of the service delivery	/				
12. Quality of service of the Training Management team	/				
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ATTENDANCE SHEET

Launching of SUSTAIN Extension Project

TITLE OF ACTIVITY

Pinili, Currimao  
(Venue)

October 26, 2023  
(Date)

	NAME	ADDRESS/OFFICE	POSITION/ DESIGNATION	SEX		CONTACT NUMBER
				Male	Female	
1	Ernesta Espiritu	SACRITAN	FARMER	/		
2	Adriano S. Gabur Sr.	Sacritan	Farmer	-		090822244
3	GABRIEL L. GABUR JR.	SACRITAN	FARMER	-		094515540
4	DONALDSON ADZUWAT	"	"	/		
5	Joglet Valera	"	"	/		
6	JULITA LACUESTA	"	FARMER		-	09164421
7	William Zganyon	"	"	/		
8	Richard Valera	"	"	/		
9	VINCENT VERGARA	"	"	/		
10	Sixto Valera Jr.	"	"	/		
11	Stanley Lacuesta	"	"	/		
12	ANTONIO CALAYCAN	"	"	/		0936558
13	James Lumbog	"	"	/		09752076
14	Arnel Espiritu	"	"	-		099768947
15	Jimmy Pagat	"	"	/		
16	Lito Canales	"	Farmer	/		092649864



ATTENDANCE SHEET

Launching of SUSTAIN Extension Project

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Pinili, Currjmao  
(Venue)

October 26, 2023  
(Date)

	NAME	ADDRESS/OFFICE	POSITION/ DESIGNATION	SEX		CONTACT NUM
				Male	Female	
17	Jelvy Todor	Sacritan		1	-	09355325
18	IRENE AGANDOK	Sacritan				09355325
19	CHARENCE CALAYCAY	SACRITAN		-		09453891
20	ANGEL CALAYCAY	SACRITAN		-		
21	Nila Fabilla	Sacritan		-		
22	Emmanuel Aguilay	II		✓		
23	Petronilo Baybay	SACRITAN		✓		0953-206
24	SEGUNDO SALDO JR	SACRITA		✓		09354912
25	ZACARIAS CALAYCAY	SACRITAN		✓		0955814
26	SHARON C. SIMBULAN	SACRITAN			✓	09356473
27	Hard Venus Cullana	Sacritan			✓	09161014
28	Fely Crista S. Odona	Sacritan			✓	09084829
29	Christopher Simbulan	Sacritan		-		
30	LEPICK S. DADUJO	MAAYAP / M/AO		✓		09955644
31	HONEY JOCE C. LUMBO	NABTRIGOM / M/AO			✓	
32	Clara Mei Guja	PALINE / M/AO			✓	





MARIANO MARCOS STATE UNIVERSITY

Office of the President

ATTENDANCE SHEET

Document Code

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Effectivity Date

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## ATTENDANCE SHEET

Launching of SUSTAIN Extension Project

TITLE OF ACTIVITY

Pinili, Currimao  
(Venue)October 26, 2023  
(Date)

	NAME	ADDRESS/OFFICE	POSITION/ DESIGNATION	SEX		CONTACT NUMBER
				Male	Female	
33	MACNEL AGANON	SACRITAN PINILI I N	FARMER	✓		0997882736
34	WANE GRACE AGADUS	VALBUENA PMU I.N.	SPM/LEU	✗		0917155451
35	JERON LACUESTA	SACRITAN PINILI I N	FARMER	✓		0966159825
36	MAGDENE CANOTE	" " "	FARMER		✓	09264986414
37	Melanda A. Delosano	"	<del>Farmer</del> FARMER		✓	09053552689
38	ROPEL D. VALERA	"	FARMER	✓		
39	Persival A. Rear	"	FARMER	✓		0927198825
40	MARIO LAYUGAN	"	FARMER	✓		0915580
41	Imari C. Fernandez	Currimao/MMSU-CASAT	Instructor	✓		
42	Margaret B. Ramos	"	Asst. Prof		✓	
43	NITEL LUN B. PRYAP-A	CURRIMAO/MMSU-CASAT	I-1		✓	
44	Jerome Pinaran	MMU-CASAT	Instructor	✓		
45	Rubiel Cecil P. Alcala	"	Instructor	✓		
46	RAMON LUNTE	"	Instructor	✓		
47	Joanne E. Dorado	MMU-CASAT	I-1		✓	







## ATTENDANCE SHEET

Launching of SUSTAIN Extension Project

TITLE OF ACTIVITY

Pinili, Currimao

(Venue)

October 27, 2023

(Date)

	NAME	ADDRESS/OFFICE	POSITION/ DESIGNATION	SEX		CONTACT NUM
				Male	Female	
1	Roger Valera	Sacritan	Farmer	/		
2	Gabriel Coloma Jr.	sacritan Pinili I N	Farmer	/		
3	VIDEUS VERGADA	"	"	/		
4	CAROLYN R. COMAN	"	Farmer		/	
5	Melanda A. Delosario	"	"		/	1908352689
6	Petronilo Baybado	SACRITAN	FARMER	/		0953 206 7
7	DOMINADOR ABELARDO	SACRITAN	FARMER	/		
8	Sharon Simbalan Luntor	"	"		/	
9	Arnel Gspiritu	"	"	/		099768947
10	James Lacresta	"	"	/		097520760
11	Jimmy Bigsoy	"	"	/		0936393
12	Julia Lacresta	"	FARMER		/	09164421
13	ANTONIO CALAYCAI	"	"	/		09365589
14	Emmanuel Aguday	"	"	/		
15	Sixto Valera Jr.	"	"		/	
16	Nila Fabillar	"	"		/	



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(Date)

	NAME	ADDRESS/OFFICE	POSITION/ DESIGNATION	SEX		CONTACT NUMBER
				Male	Female	
17	ALLAN AGAYON	SACRITAN	FARMER	/		
18	JETHON LAGUSTIT	"	FARMER	/		
19	<i>Ja Vela</i>					
20	Jumari C. Fernandez	MMSU-CASAT	Instructor	/		
21	VERICH S. DADUNJO	LGU-PINILI	Asst.	/		
22	<i>Ramon R. Borja</i>	MMSU-CASAT	EDUCATOR	/		
23	<i>Rubio P. - Alarcon</i>	MMSU-CASAT	DRIVER	/		
24	<i>San Gingo Dany</i>	"	Public Admin.	/		
25	Rayah Jessica Agarano	LGU-PINILI	Admin. Aide I		/	
26	RAMON WILSON	MMSU-CASAT	Instructor I	/		
27	Marijani G. Pamas	"	Asst. Prof. IV		/	
28	EUNSTO S. DO ROSARIO	CASAT	Asst. Prof. IV	/		
29	NIZA ANN B. PAYAPAN	CURRIMAO / MMSU	INSTRUCTOR I		/	
30	Jesse Pinaro	MMSU-CASAT	I-3	/		
31	STARON C. SIMBULAN	SACRITAN	FARMER		/	
32	<i>Jebiel Paul A. Alarcon</i>	MMSU-CASAT	Instructor I	/		





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(Date)

	NAME	ADDRESS/OFFICE	POSITION/ DESIGNATION	SEX		CONTACT NUMBER
				Male	Female	
33	NiLO FABILLAR	SARIN	POSSIBLE		✓	
34	BERNARD VALERE	II	✓		✓	
35	VICTORIO CALAYCAY	II	✓		✓	
36	SIXTO VALERE JR.	II	✓		✓	
37	WILLIAM SAGUNDO	II	✓		✓	
38	CHARICE CALAYCAY	SACRITAN	✓			094538913
39	MACNEL AGANON	✓				099788273
40	STANLEY LACUESTA	✓				
41	ANGIE CALAYCAY	✓				
42	CHRISTOPHER SAMPAN	✓	✓			
43	PERSIVAL O. REAS	✓	✓		✓	0927 196 82
44	MAGETRE CANATE	✓	FARMER		✓	092649864/5
45	IRENE AGANON				✓	0935532307
46	JERRY TADDIO	✓	FARMER		✓	
47	MARIO LAYUGAN	✓	FARMER		✓	09155805
48	Ernesto Espiritu	✓	✓	✓		

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to compliance to the Document  
established by

October 27, 2023  
(Date)



# Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN) Project



**Inception Meeting and Presentation of SUSTAIN Project with Hon. Vice Mayor, Sanguniang Bayan Members and Municipal Agriculturist**



**MMSU**





# Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN) Project



## MEMORANDUM OF AGREEMENT

### KNOW ALL MEN BY THESE PRESENTS:

This Memorandum of Agreement (MOA), entered into on this \_\_\_\_ day of \_\_\_\_ 2023 at \_\_\_\_\_, by and between:

The **MARIANO MARCOS STATE UNIVERSITY (MMSU)**, a state institution of higher learning in the Ilocos Region established in 1978 created by virtue of PD 1279, with official address in Batac, Ilocos Norte, represented herein by the University President **Dr. SHIRLEY C. AGRUPIS**, hereinafter referred to as the "MMSU";

-and-

The **LOCAL GOVERNMENT UNIT OF PINILI (LGU-Pinili)**, with principal office address at the Municipal Hall, Pinili, Ilocos Norte, represented herein by its Mayor, **Hon. ROMMEL T. LABARAN**, as authorized by the Sangguniang Bayan through Resolution No. 317 - 2022, hereinafter referred to as the "LGU-Pinili";

-and-

**MR. ZACARIAS C. CALAYCAY**, **MR. JAMES O. LACUESTA** and **MR. CLARENCE B. CALAYCAY**, Tilapia Growers beneficiaries of Tilapia Grow-out Production demonstration farm from the Province of Ilocos Norte, hereinafter referred to as "Beneficiaries";

### WITNESSETH:

WHEREAS, MMSU through the College of Aquatic Sciences and Applied Technology (CASAT) is mandated to conduct extension and technology promotion and utilization services to promote livelihood opportunities, employment generation, increased income and improved quality of life and standard of living in rural communities;

WHEREAS, the Local Government Unit of Pinili as mandated by the Local Government Code of 1991, has the responsibility to assist in the transfer and promotion of technology through establishing partnership with other development organization with the ultimate goal of improving the quality of life of its constituents;

WHEREAS, MMSU and LGU-Pinili known herein collectively as PARTIES, recognize the importance of collaboration and partnership to forge a common commitment of addressing the foregoing concerns;

WHEREAS, the Beneficiaries attended and participated in the training on Tilapia Grow-out, Breeding and Nursery Operation;

WHEREAS, the Beneficiaries accepted the technology demonstration farm as livelihood assistance and agreed to the terms and conditions in the Memorandum of Agreement;

NOW, THEREFORE, for and in consideration of the foregoing premises and their mutual covenants hereinafter set forth, the parties hereto hereby agree as follows:

### Article I. Title of Joint Undertaking

The agreement is concerned with the implementation of a project for the residents of barangays (farmers/fishermen) of Pinili, Ilocos Norte entitled Sustainable Tilapia Aquaculture (In Ilocos Norte (SUSTAIN)).

### Article V. Separability Clause

Any provision of this MOA declared illegal, invalid, or inoperative in whole or in part shall not affect the rest of the other provisions which shall remain in full force and binding.

### Article VI. Effectivity and Duration of the Agreement

This Agreement shall take effect after the same is duly signed.

IN WITNESS WHEREOF, the parties have hereunto signed their names and affixed their seals on this \_\_\_\_ day of \_\_\_\_ 2023 in the City of Batac, Ilocos Norte.

**MARIANO MARCOS STATE UNIVERSITY** **LOCAL GOVERNMENT UNIT OF PINILI**

By:

**Dr. SHIRLEY C. AGRUPIS**  
President

By:

**Hon. ROMMEL T. LABARAN**  
Mayor

Beneficiaries:

**Mr. ZACARIAS C. CALAYCAY** **JAMES O. LACUESTA**  
Beneficiaries

SIGNED IN THE PRESENCE OF:

**ERNESTO S. DEL ROSARIO JR.**  
Project Leader/OIC Dean, MMSU-CASAT  
Witness for MMSU

**PHILIP**  
Municipal Officer  
Witness for LGU-Pinili

Forging of Memorandum of Agreement (MAO) between Local Government of Pinili, MMSU-College of Aquatic Sciences and Applied Technology (CASAT) and Tilapia Grower/Beneficiaries

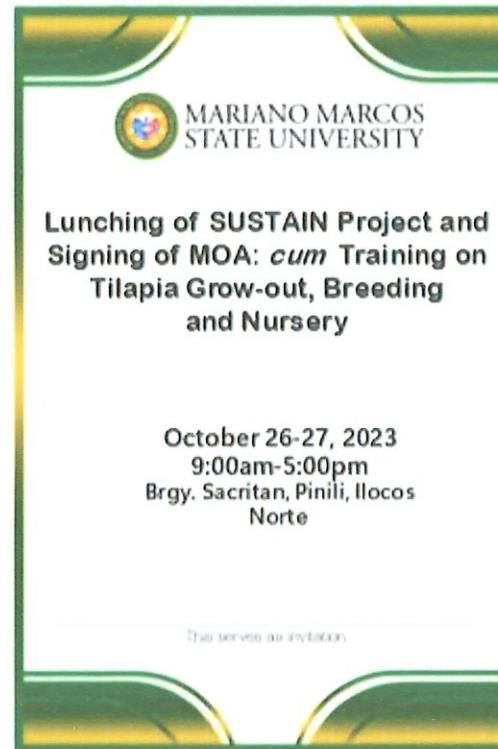


MMSU





# Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN) Project



**Conduct of two (2) day Training on Tilapia Grow-out Production, Fry and Fingerlings Production, and Nursery attended and participated by 50 active Tilapia Grower at Brgy. Sacritan, Pinili, Ilocos Norte**



**MMSU**





# Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN) Project

Establishment of Technology demonstration Farm for Tilapia Grow-out Production



MMSU





# Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN) Project



MARIANO MARCOS STATE UNIVERSITY

This

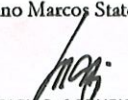
## *Certificate of Recognition*

is awarded to

**Ernesto del Rosario Jr. & Jeric Reinard Bal**

for presenting their Extension Program/Project/Activity entitled  
*Sustainable Tilapia Aquaculture in Ilocos Norte (SUSTAIN)*  
during the 2023 In-House Review of Extension Programs/Projects/Activities (PPAs) Accomplishment Report  
held on November 14-15, 2023 at the ILAARDEC-OSIS, Mariano Marcos State University,  
City of Batac, Ilocos Norte.

Given this 15<sup>th</sup> day of November 2023 at Mariano Marcos State University, City of Batac, Ilocos Norte

  
SHIRLEY C. AGRUPIS, Ph.D.  
President, MMSU



**Presentation of Accomplishment Report during the 2023 Extension Review**



**MMSU**





# SUSTAIN Project Monitoring and Evaluation (Demo-Farm)



## Growth Performance Monitoring



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RANK 401-600  
IN THE WORLD

RANK 2 IN THE PHILIPPINES