

A QUICK REFERENCE MANUAL FOR

POND AQUACULTURE

LUAPULA, ZAMBIA

Your Personal Guide to Thriving Pond Aquaculture

Publication Details

Background:

The GIZ Fish for Food Security in Zambia Project (F4F) is part of the special initiative "Transformation of AgriFood Systems" and part of the Global Programme- Sustainable Fisheries and Aquaculture. It is among 7 country packages implementing projects in the field of sustainable fisheries and aquaculture with a focus on artisanal practices. In Zambia, the F4F project is part of the Agriculture and Food Security (Agrifood) cluster, which comprises 10 projects implemented by GIZ, with the vision to shape a future with thriving livelihoods and food- and nutrition security in rural Zambia.

Funder:

Federal Ministry for Economic Cooperation and Development (BMZ)



Objective:

The F4F project aims to improve the availability of fish products and higher income from sustainable artisanal fisheries and aquaculture for food-insecure households in Zambia.

Project Partners:

The project partnered with the Ministry of Fisheries and Livestock (MoFL)



Ministry of Fisheries
and Livestock

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Introduction

The Quick Reference Guide for Pond Aquaculture is your compact companion for practical aquaculture advice in Zambia. Designed for easy use in the field for quick access to information. It features:

- **Practical Tips & What to Remember:** Concise advice and essential checklists tailored for the Northern regions of Zambia, focusing on efficiency and sustainability.
- **Diagrams & Pictures:** Visual aids and step-by-step guides illustrate processes and techniques, making complex tasks manageable.
- **Locally Relevant:** Content is specifically tailored to Zambia, incorporating local species, conditions, and successful practices.

How to Use: Start with basic concepts if you're new. Use the guide daily for tips and as a checklist to maintain your pond. Visual aids help with new techniques, and sharing knowledge with peers enhances community learning.

This guide aims to support your aquaculture journey, improving productivity and sustainability. Carry it with you, apply its lessons, and contribute to a thriving community.



1.

Pond Design



Part 1: Pond Design – the physical environment for fish

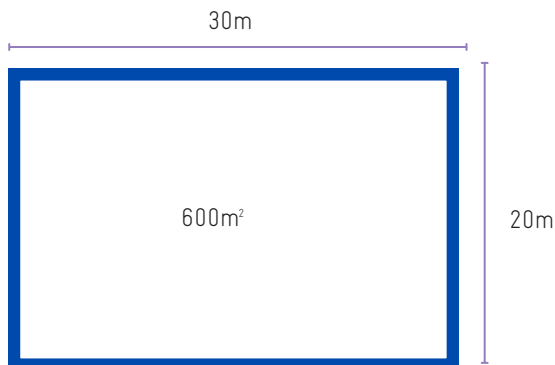
Introduction

Pond design is critical: a larger, deeper pond can substantially improve fish health and increase yield. Depth acts as a shield against predators and stabilizes temperature, which is crucial for fish comfort and growth. Incorporating a bottom drain is a wise investment; it streamlines water management and harvest by removing colder, bottom-layer water.

Why should we build a bigger fishpond?

- Maintains a more stable temperature, keeping water warmer at night.
- Ensures more consistent water quality.
- Allows fish to feel more secure and grow larger.

Recommended size of a fish pond



The Department of Fisheries recommends a fish pond size of 20m x 30m (600m²).



Pond Design Recommendation

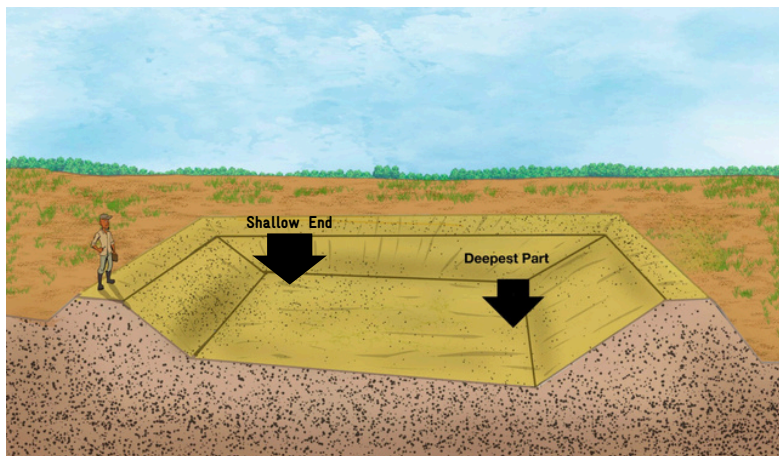


Figure 1: Aerial view of the pond showing the slope from low end to the deep end.

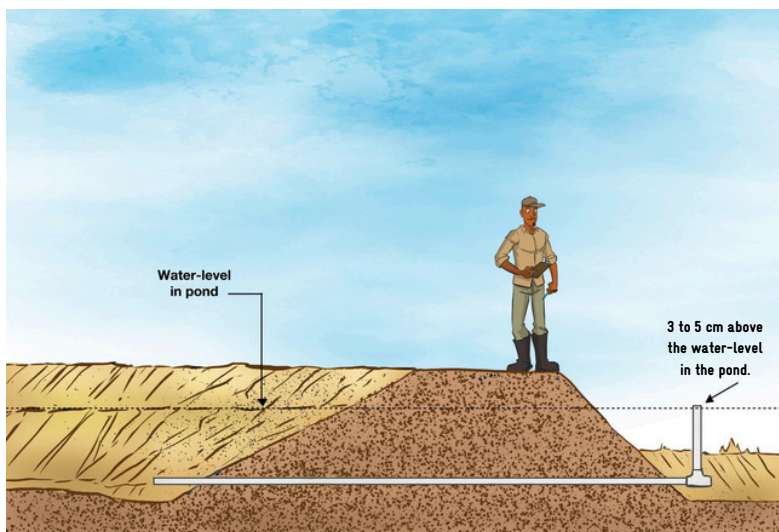


Figure 2: Cross-section of the pond dyke showing that the outlet pipe should be 3 to 5 cm above the water-level in the pond.



External upstand bottom drain system

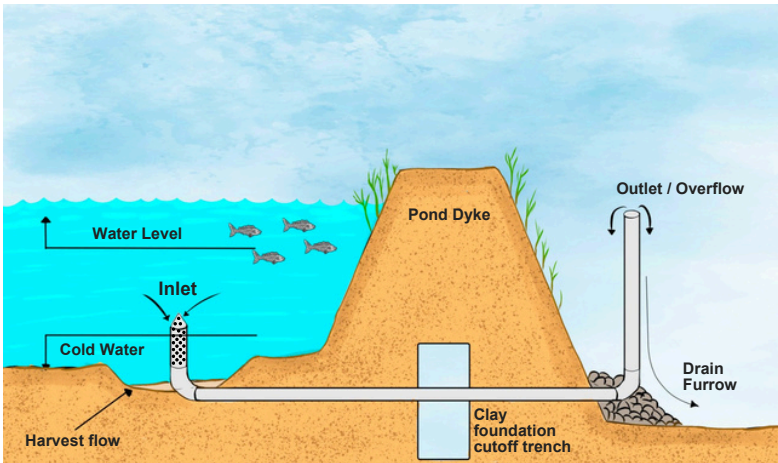


Figure 3: Cross-section of the pond dyke showing external upstand bottom drain system.

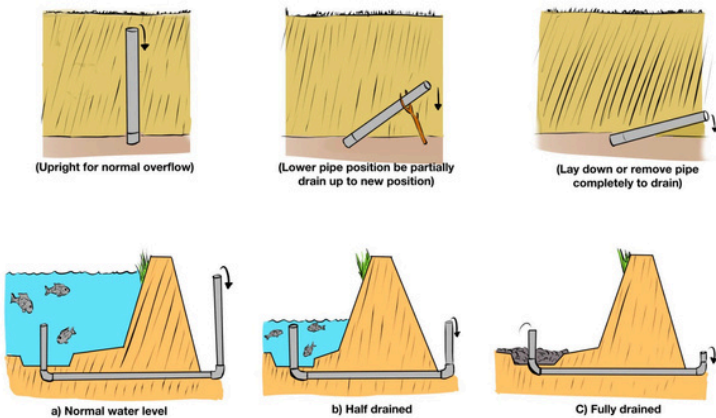


Figure 3: Above shows how the external upstand bottom drain system is used.



Essential Tips to Remember:

- Thick walls to support the weight of the water and prevent leaks.
- Use compacted anthill clay in the cutoff foundation trench to stabilize the walls and stop leaks.
- Excavate more soil from the pond's deeper end to economize on labour and create a sturdy wall with the excess soil.
- The soil's texture and structure determine the durability and size of the pond's dikes.
- Design the pond with a shallow end (1.0 – 1.2m) and a deeper end (1.5 to 1.8m deep) to ease the draining process during harvest.
- A bottom drain is crucial for removing cold water from the bottom and facilitating easier harvesting.



Climate Change Adaptation/Mitigation

Larger ponds with proper depth can withstand drought conditions and maintain healthier ecosystems. Thicker and higher pond walls can withstand flooding.



Family Note

Hard work of digging a fish pond and constructing dam walls can be lessened by working in a group of adults from a family and/or neighborhood working together.

2.

Pond Ecology



Part 2: : Pond Ecology – Life in the Pond

Introduction

Understanding pond ecology is fundamental for fish farmers, particularly the role of natural pond fertilization. Manure, dry grass, and compost introduce vital microorganisms—the unseen food fish thrive on. This section explores the various microscopic plants and animals that form the base of your pond's food web. Trainers will illustrate these microorganisms through microscopes or visual media, showing how they sustain your fish.

Understanding the Unseen

Previously, farmers fertilized ponds without fully grasping the ecosystem below the water's surface. Now, with better knowledge of pond ecology, farmers understand that manure isn't just for predator protection—it's a crucial nutrient source for algae and bacteria which fish feed on. The introduction of organic matter creates a thriving start for the unseen food fish thrive on.

Fish Diet and Microorganism Growth

Remember, tilapia and other fish feed on microorganisms like algae and tiny animals, invisible to the naked eye. These microorganisms proliferate in various ways: algae through photosynthesis, bacteria by breaking down organic matter, and small animals by consuming algae and bacteria. Adding manure, compost, and dry grass to the pond equips these microorganisms with the necessary materials to flourish, which in turn provides food for your fish.

FEED THE POND, FEED THE FISH



Figure 3: The pond ecosystem, a woman is feeding the pond with manure, compost, and organic matter to enhance the growth of microorganisms that serve as food for the fish.

Maintaining Water Quality

In a new pond, adding extra organic matter helps develop nutrient-rich mud and seals the pond. This not only aids in preventing leaks but also kick-starts the ecosystem to prepare for stocking fish.

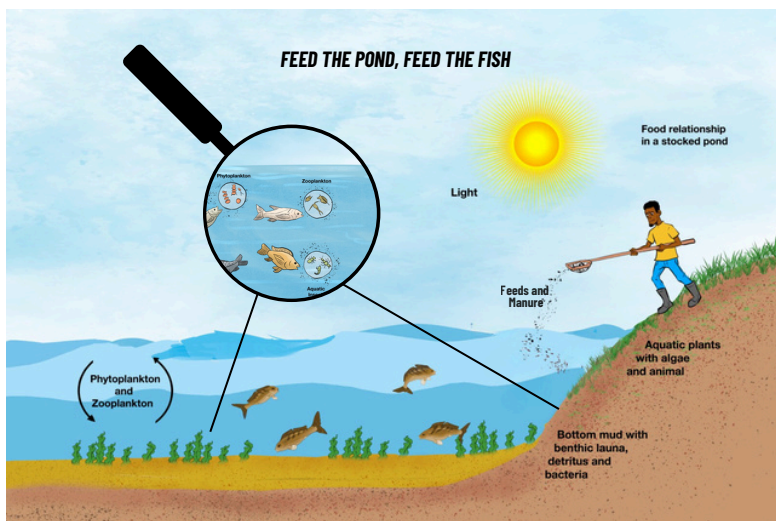


Figure 4: Cross-section of the pond dyke showing farmer feeding the fish pond.

Integrated Aquaculture and Agriculture

- Microorganisms are the foundation of your pond's food web. Tilapia and other fish rely on these tiny creatures for nourishment.
- Regularly add manure, compost, and dry grass to the pond. These materials feed microorganisms like algae and bacteria, which in turn feed your fish.
- Apply these substances evenly across the pond to ensure a balanced growth of microorganisms.
- Be mindful of soil fertility and chemistry, as they directly affect water quality and the health of pond life.
- Integrate your fish farming with crop cultivation wisely. Use pond water for irrigation, but avoid contaminating your pond with pesticides or fungicides from your fields.



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Climate Change Adaptation/Mitigation

Applying manure to the pond promotes ecological balance by converting production waste into nourishment for organisms instead of burning it.



Family Note

Knowledge of pond ecology empowers everyone and contributes to managing a healthy pond, regardless of age or gender.

3.

Fish Identification and Polyculture



Part 3: Fish Identification and Polyculture

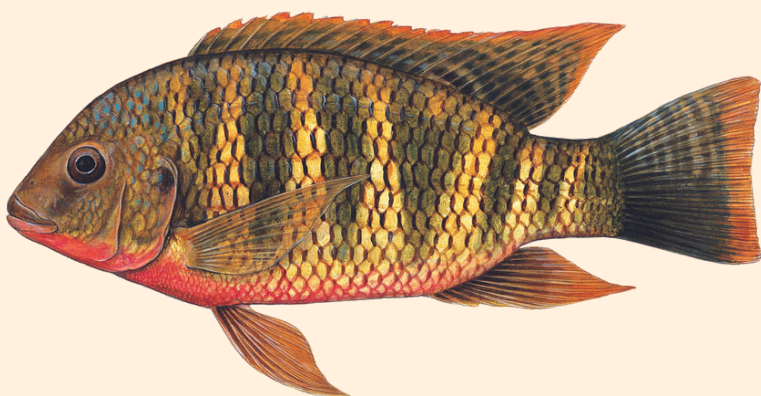
Introduction

Recognizing fish species and embracing polyculture are vital in optimizing pond productivity. This module empowers fish farmers in Luapula with knowledge about the variety of species suitable for pond cultivation, considering their distinct environmental needs and genetic diversity. An understanding of polyculture—the practice of raising multiple fish species together—will be provided, highlighting the benefits of their varied feeding habits.

The main species cultured in Luapula Province are redbreasted tilapia (Mpende, Cituku, Akachenje), greenhead tilapia (Pale, Nkamba), banded tilapia (Matuku, Chinkanda) and Nile tilapia. Some farmers also keep catfish (Milonge, Umuta) and giraffe catfish (Imbowa).

REDBREAST TILAPIA

(COPTODON RENDALLI)



DESCRIPTION

- Important fish for farming in Luapula.
- Redbreast tilapia has a reddish belly although other species develop red breast during mating season
- They are monogamous substrate spawners – parent fish make a nest and carefully guard their eggs and newly hatched fry.
- Highly vegetarian, feeds on algae and able to feed on grass and leaves
- Grows well in small ponds and can be cultured with other species like greenhead (Pale) and banded tilapia (Matuku)
- The caudal fin is emarginate shaped
- It is considered the most tasty fish in Zambia and has a wide market acceptance

GREENHEAD TILAPIA

(OREOCHROMIS MACROCHIR)



DESCRIPTION

- The greenhead bream has a bright green color with black fleck on the face and body
- It has red eyes with a seemingly black ring around the eyes
- Silvery on the side of the body in young fish (sometimes called white pale)
- It is a mouthbrooder.
- The male fish make a volcano shaped nest where the female lay eggs
- The eggs, embryos and fry are brooded in the mouth of the female fish.
- The baby fish (fry) swim back in the mouth of the female fish in the night or in case of danger for protection
- Can be cultured in fertilized pond on natural microorganism foods (feeds on detritus and phytoplankton)
- Cross-breeds with Nile tilapia

BANDED TILAPIA

(TILAPIA SPARRMANII)



DESCRIPTION

- This is a small species commonly found in small streams and wetlands, and they thrive in small-scale fishponds.
- Banded tilapia has an indistinct (not so clear) color, its bluish green, dark olive.
- They are substrate spawners, the parent fish guard the young with great energy and feed on algae, soft plants, and insects.
- They are often viewed negatively by farmers because they do not grow to large size as the other cultured tilapia: however, they are extremely prolific, easily sold and are one of the most widely eaten species in communities across Zambia.
- They reproduce quickly and at a small size.
- Matuku are nutrition champions: they are very high in iron and calcium, both important micronutrients especially in areas without livestock.
- Tilapia is one of the only fish genre where an African name has been used in their scientific name from the Setswana word tlhapi – meaning fish.

GIRAFFE CATFISH

(AUCHENOGLANIS OCCIDENTALIS)



DESCRIPTION

- The most famous of Luapula's fishes, it is renowned for its rich, tasty flesh which is very fatty and smokes well.
- Juvenile fish show a mottled giraffe-like pattern, which becomes uniform grey-brown as they grow
- Eggs are scattered in a nest and guarded by the male fish.
- It can grow up to a maximum length of 80cm (31.5")
- Insect eater and scavenger, but will readily accept most sinking foods
- Generally peaceful when cultured with other species but smaller fish may be at risk of being eaten.

SHARPTOOTH CATFISH

(CLARIAS GARIEPINUS)



DESCRIPTION

One of Zambia's most abundant, widespread and economically important food fish species.

Polyculture Benefits

- Polyculture involves growing multiple fish species together, leveraging their different feeding levels to enhance food resource utilization in the pond.
- In Luapula, species such as greenhead tilapia (Pale) and redbreast tilapia (Mpende) can be cultured simultaneously to utilize their distinct diets. Mpende consumes vegetation, while Pale favours plankton.
- This method not only improves pond efficiency but also provides farmers with a diverse harvest for consumption.

What to Remember for Fish Identification and Polyculture

Remember: Identifying your fish by their body shape, head, mouth, and size is the first step to effective fish farming. Utilizing polyculture supports a balanced ecosystem in your pond, leading to a healthier, more productive fish population.



Did you know?

The "Three Sisters" of Luapula, redbreasted, greenheaded and banded Tilapia are not only the most common native species in the region but also play complementary ecological roles, and thus making them ideal for maintaining a balanced aquatic ecosystem when kept together.





Essential Tips to Remember:

- Know your fish: Identify each species in your pond by their body, head, mouth, and size.
- Polyculture is key: Raise different fish species together to make the most of your pond's food resources.
- Tilapia varieties: Familiarize yourself with the tilapia species in Luapula, noting their unique features and local names.
- Feeding habits: Understand and manage the diverse feeding habits of co-cultured species for optimal pond health.
- Embrace diversity: Enjoy the benefits of polyculture, including better food resource use and a varied diet from your harvest.



Climate Change Adaptation/Mitigation

Polyculture can be a strategy for risk mitigation against the impacts of climate variability.



Family Note

All family members should participate in species selection and share knowledge which will ensure good fish pond management practices at all times.

4.

Harvest Cycle



Part 4: Harvest Cycle – Overbreeding, Partial Harvesting, and Benefits of Small Fish

Introduction

Mastering the harvest cycle is key to maintaining a thriving fish population and ensuring steady income from aquaculture. Understanding partial harvesting and managing overbreeding are crucial to preventing overcrowding and stunting in fishponds. This section will guide you through creating an effective harvest plan that aligns with market trends for optimal financial returns.

Traditionally, farmers did not practice partial harvesting, leading to crowded ponds and slow-growing fish. After training, farmers now apply partial harvesting, thinning out smaller fish, which results in multiple benefits: better growth conditions for remaining fish, immediate food supply, and consistent cash flow from incremental sales.

Addressing Overbreeding

Tilapia species begin breeding at a small size, which can lead to overcrowding and competition for resources. This competition can cause stunting and increased susceptibility to diseases due to stress. A well-maintained pond minimizes these risks, allowing for healthier and faster-growing fish.

Implementing Partial Harvesting

Regularly harvesting smaller fish, or 'thinning,' ensures:

- More space and nutrients for the remaining fish, encouraging growth.
- A nutritious food source for the farmer's household and the local community.
- Continuous cash flow, allowing for sales all year round.

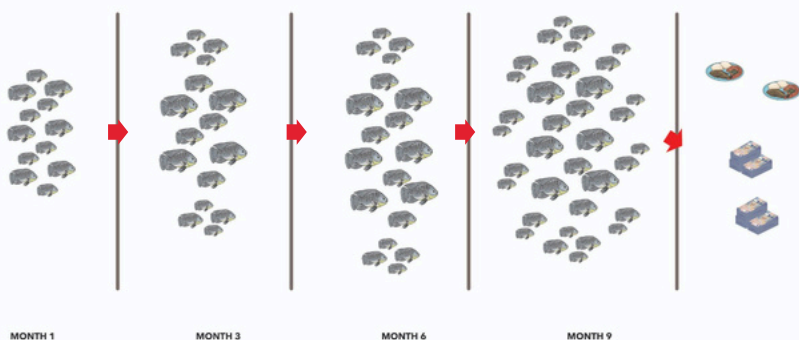
Strategic Harvesting Considerations

- Plan your harvests to match market demand; sell smaller fish during lean times and save larger fish for peak market prices.
- Always retain a selection of medium and larger fish to serve as breeders for the next cycle.



Small fish for sale using 'Mbale Mbale' measuring dish

NON - PARTIAL HARVESTING



PARTIAL HARVESTING

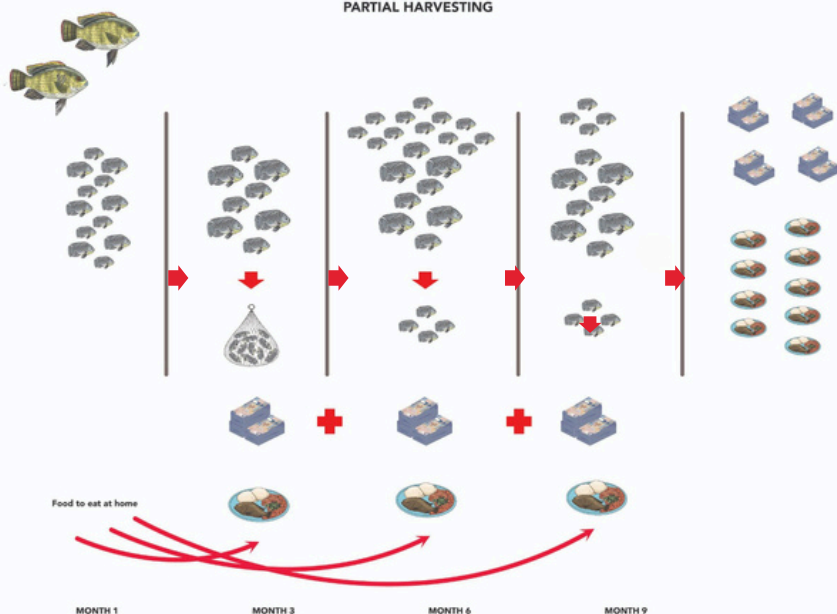


Figure 10: Without partial harvesting, the fish continue breeding and competing against each other for space and food. By the time of final harvest, the remaining fish will have grown larger and will attract higher prices when sold. Remember, you don't have to stock fingerlings...you can also use larger parent fish for stocking and they will quickly produce fingerlings in the pond!



Essential Tips to Remember:

- Practice partial harvesting to prevent overbreeding and overcrowding in your pond.
- Regularly thin out smaller fish to provide more resources for the remaining fish, promoting their growth.
- Use partial harvests to sustain your household and generate income, even during off-peak seasons.
- Retain a mix of sizes in your pond after harvesting, including some larger fish to continue breeding.
- Plan your harvest strategy around market demands to maximize your profits and ensure a steady cash flow.



Climate Change Adaptation/Mitigation

A well-managed harvest cycle can make the aquaculture system more resilient to climate-related stress. It is better to harvest small quantities of fish frequently because it is a way of risk reduction.



Family Note

Harvesting small fish can be a fun and entertaining activity for children. They will learn how to catch fish using hook and line. Ensure an adult, familiar with the pond and water, is present as it can be dangerous if someone falls into the pond.

5.

Nutritional Benefits of Fish



Part 5: Nutritional Benefits of Fish

Introduction

Recognizing the nutritional value of fish is essential for both personal health and effective marketing of fish products. This module addresses the critical role of fish as a major, cost-effective protein source in Zambia, emphasizing its contribution to food security and nutrition, especially during the first 1,000 days of life.

Nutritional Significance of Fish

Fish is not just a staple in the Zambian diet for its protein; it's a vital source of vitamins and minerals. Rich in Omega-3 fatty acids, fish, especially the oily varieties, is critical for children's brain development. Its regular consumption is a practical approach to combating malnutrition and micronutrient deficiencies.

Comprehensive Nutritional Profile

Consuming small fish whole, including heads, skin, and bones, maximizes the intake of essential nutrients. These fish are especially high in:

- Calcium and zinc, support bone health and the immune system.
- Iron is vital for preventing anaemia and essential in producing healthy red blood cells.
- A range of fats that are beneficial for brain function and overall health.

Highlight on *Tilapia sparmanii* (Amatuku)

Amatuku, known for its rapid growth in fishponds and its rich calcium and iron content, is a small yet nutritionally dense species. Its popularity stems from both its health benefits and its pleasant taste.



Essential Tips to Remember:

- Fish is crucial for a nutritious diet, offering more than just protein but a range of essential micronutrients.
- Small indigenous fish species, eaten whole, are particularly nutrient-dense, providing critical minerals and vitamins.
- Regular fish consumption is integral to maintaining good health and is especially important for the growth and cognitive development of children.
- Cultivating and consuming fish like the banded tilapia (Amatuku) can enrich your diet, cater to local tastes, and support community health initiatives.



Climate Change Adaptation/Mitigation

Adapt harvesting strategies to climate trends, ensuring sustainable fish stocks and ecosystem resilience.

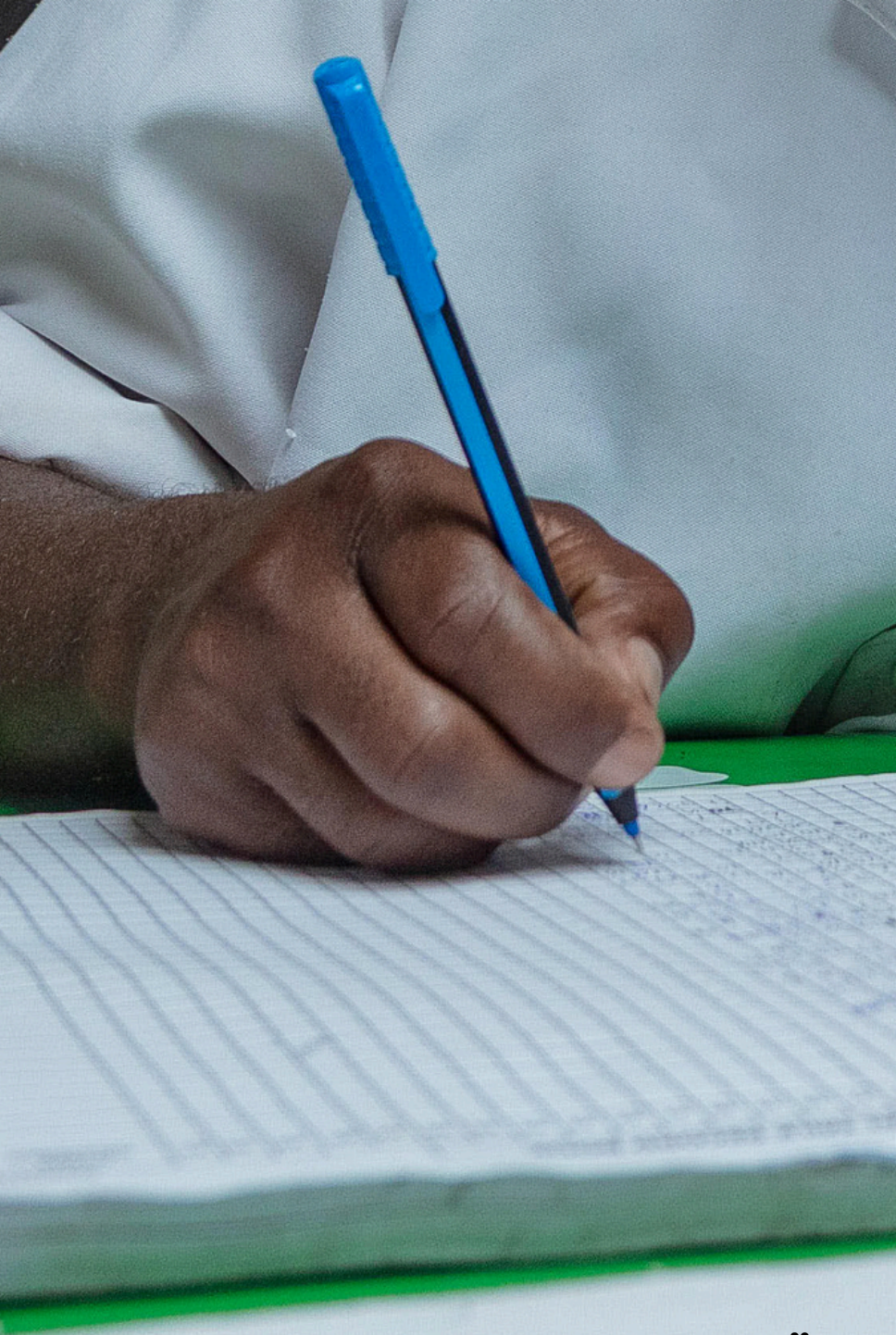


Family Note

Involve both genders in planning and executing the harvest cycle, leveraging diverse insights for improved efficiency and yield.

6.

Record Keeping



Part 6: Record Keeping

Introduction

Efficient record keeping is the backbone of successful fish farming management. By meticulously tracking every aspect of your operations—from stocking dates to harvest yields—you'll gain valuable insights into your farm's performance. This section underscores the significance of maintaining accurate records to not only enhance management and profitability but also to strengthen your position when seeking loans or investors.

Record Keeping Essentials

Maintaining records is crucial for understanding the financial and operational health of your fish farming business. Accurate records offer a clear picture of expenses and labor, enabling you to pinpoint cost-saving opportunities and optimize workforce efficiency.

Starting Your Record-Keeping Journey

Begin with a dedicated notebook and writing tools to chronologically track all farm activities, including feeding schedules and maintenance tasks. Accurate and up-to-date entries will form a reliable database for your fish farm.

INPUTS

- Dates of fish stocking and harvest.
- Quantity and type of feed administered.
- Sources of fingerlings, feed, and water.
- Incidents of fish mortality.
- Hours spent on labor and associated costs.
- Expenditures on feed, fingerlings, and pond maintenance.

OUTPUTS

- Harvest details, including the quantity and size of fish.
- Income generated and analysis of profit or loss.

Informed Decisions from Your Records:

- Harvest details, including the quantity and size of fish.
- Income generated and analysis of profit or loss.
- Calculate your farm's profitability accurately.
- Make strategic changes to improve farm productivity.

Here are some examples of how you can keep your records in your book.

Recording your inputs (things you buy for the pond):

INPUTS RECORDS				
Date	Input	Quantity	Price	Time
01 Jan 2021	Fingerlings	1000	K 1,500	4 hours
05 Jan 2021	Piecework Slashing	6 Pounds	K 30	8 hours
10 Jan 2021	Buying Manure	1 Bag	K 10	1 hour
20 Jan 2021	Buying Fish Feed	1 Bag	K 250	1 hour
30 Mar 2021	Piecework Harvest	1 Pond Worker	K 45	4 hours

Weekly Hours / Timesheet:

Work type	Who?	Quantity	Hours
Feeding Fish	Wife	3 Times a week	3 Hours
Applying Manure	Husband	1 Time a week	1 Hour
Slashing	Son	1 Time a week	0.5 Hour
Checking Ponds	Wife	7 Times a week	1.5 Hours
Maintaining Ponds	Husband	2 Times a week	2 Hours
Adding dry grass	Children	1 Time a week	1 Hour
Cleaning Furrow	Daughter	1 Time a week	3 Hours
		Weekly Total	12 Hours

Income and Harvest Records:

HARVEST RECORD				
DATE	ITEM	MEASUREMENT	HOME USE OR SELLING	PRICE
01 Jan 2021	Partial Harvest Small fish	3 Mbale Dish	Home use	
05 Feb 2021	Fingerlings	2 Fish	Selling	K200
28 Mar 2021	Big fish from Harvest	50 heaps with 5 fish per heap are being sold at K30 per heap.	Selling	K1,500
28 Mar 2021	Small fish from harvest	20 Mbale Dish at K10	Selling	K200
28 Mar 2021	Big fish from harvest	2 heaps of five fish	Gift to family and home consumption	



Essential Tips to Remember:

Consistent record keeping not only illuminates the current state of your farm but also informs business decisions, allowing for comparisons with other farming activities. By diligently logging your inputs and outputs, you'll establish a solid foundation for assessing your farm's efficiency and growth over time.



Climate Change Adaptation/Mitigation

Utilize record-keeping to monitor and adapt to climate change impacts on aquaculture. Records of water temperature, weather events, and fish growth rates can help identify patterns and guide adjustments in practices to mitigate climate-related risks and sustain fish production.



Family Note

Encourage both men and women to engage in record-keeping activities. Provide gender-sensitive training and resources to ensure that everyone has the skills and confidence to maintain accurate and useful records, supporting informed decision-making in aquaculture operations.

7.

Basic Financial Literacy



Part 7: Basic Financial Literacy in Aquaculture

Introduction

Building financial acumen is a game-changer for fish farmers aiming to elevate their operations from mere subsistence to a profitable venture. This module dives into financial literacy's core—planning, budgeting, saving and understanding marketing within aquaculture to equip farmers with the know-how for informed decision making and strategic business growth.

Financial Literacy Fundamentals

Financial literacy encompasses the skills needed to manage financial resources prudently and profitably. Keeping meticulous financial records, whether in a simple notebook or through other means, is critical. It's the bedrock of effective farm management, allowing for goal setting and progress tracking.

The Role of Savings

Saving is essential for reasons such as expanding your aquaculture business, managing risks, securing loans, and handling unexpected emergencies. Various savings options are available, from community-based village banking to commercial banks.

Mastering Budgeting

Budgeting is not just for large sums; it's about overseeing all financial aspects of the farm. It helps determine production capability, plan for infrastructure, stock fingerlings, manage labor, and predict sales and yields. Even the smallest amounts should be accounted for, as they collectively contribute to the farm's financial health.

Marketing and Market Analysis

Marketing goes beyond selling; it's understanding customer needs, preferences, and behaviors to meet them profitably. Knowing who your buyers are, what they prefer, and how to reach them forms the core of market analysis. This insight guides production decisions, from harvest timing to storage and transportation strategies.





Essential Tips to Remember:

- Financial literacy is crucial for transforming your fish farm into a sustainable business.
- Savings fortify your farm against risks and help capitalize on growth opportunities.
- A comprehensive budget aligns your farm's resources with your goals and tracks progress.
- Effective marketing and thorough market analysis are indispensable for meeting customer demands and maximizing profits.

By embracing these financial principles, fish farmers can optimize their operations, increase profitability, and secure a more resilient future for their businesses.



Climate Change Adaptation/Mitigation

Financial literacy includes planning for future scenarios, savings as well as insurance for adaption and mitigation of climate change events and disasters.



Family Note

Financial management skills are crucial for both men and women, ensuring equal opportunities for business success.

Did you know? Families that share decision-making on their home and business enjoy better food and financial security.

8.

Gender and Aquaculture



Part 8: Gender and Aquaculture

Introduction

Fisheries and aquaculture are important sources of employment and livelihood for both men and women in Zambia. The fisheries sub-sector is supporting around one million people both directly and indirectly. Rural households relying on fisheries and aquaculture as their main source of income are characterized by a strong division of tasks between men and women, with men being more involved in production and owning resources, while women are mostly involved in marketing and processing. Addressing gender gaps and roles is crucial for sustainable growth in aquaculture.

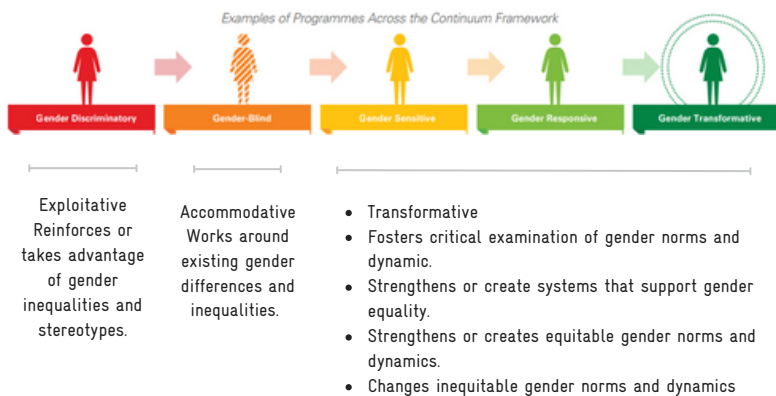
Understanding Gender in Aquaculture

The roles of women, men, boys, and girls in a community are shaped by culture and tradition but can adapt to social and economic changes. Gender roles in aquaculture, such as pond digging being seen as a male activity, have led to the misconception that only males can undertake aquaculture. Gender equality aims to value the needs and aspirations of all stakeholders and promote balanced rights and responsibilities. To achieve gender equality in aquaculture, the narrative that only males can do it must be deconstructed, and equal access to land, water, capital, and knowledge must be ensured for both males and females. This would allow females to have the same opportunities to participate in fish farming as males.

Therefore, gender equality seeks to address and fulfill the specific needs of each male and females fairly.

Difference between gender roles and sex roles

The societal behaviours, attitudes, and responsibilities expected of men and women are dictated by gender roles, which are learned and change over time. While sex roles, which are biological, remain constant across societies.



Advantages of transforming gender norms in aquaculture

In the specific case of aquaculture, fostering an equal access to the aquaculture activity by all stakeholders holds many advantages.

Once a household is evenly involved in this activity:

In general, the equal involvement of males and females in the Aquaculture ensure a more prosperous business.



The workload regarding setting up, maintaining, and running the aquaculture farm is equally distributed.



With more family members involved in the fish farming it is possible to expand it more quickly and to make more profit.



The management of the farm done at household level is less time intensive for the male.



The mental charge of worrying about the productivity, rentability and decision making is shared and thus less heavy.



Every household member in charge of selling is aware of the products value and may not sell it under price



The technical knowledge remains in the family and ensures steady growth and sustainability.



Essential Tips to Remember:

- Gender equality and equity are foundational to developing a more inclusive and productive aquaculture sector.
- Acknowledging and adapting gender roles according to changing social and economic environments can lead to more effective community engagement in aquaculture.
- Ensuring that both men and women have equal opportunities to contribute to and benefit from aquaculture is vital for the industry's growth.
- Empowering women in aquaculture can lead to diverse perspectives, increased productivity, and overall community development.



Climate Change Adaptation/Mitigation

Implement sustainable aquaculture practices that reduce environmental impact and adapt to climate change. Promote the use of resource-efficient technologies and methods among all genders, enhancing resilience to climate variability and supporting ecosystem health.



Family Note

Ensure equitable participation and leadership opportunities in aquaculture for both women and men. Recognize and address the unique challenges faced by women in accessing resources, training, and decision-making roles to create a more inclusive and productive aquaculture sector.

Equal involvement of males and females in aquaculture ensures a more prosperous and sustainable business.

Gender Involvement in Fish Harvesting





Fish for Food

German Development Cooperation

1st Floor Evexia Office Building

Private Bag RW 37X Lusaka, Zambia

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