



Aquaculture Baseline Survey

Introduction and Background

One of the objectives of Western Region Coastal Foundation is to improve socio economic conditions of the residents of the six coastal districts through effective investment in sustainable livelihood interventions and market system development. After a rigorous economic assessment conducted in 2015, five value chains, including Aquaculture were selected as intervention areas with the potential to increase income and jobs for the people of the six coastal districts.

WRCF's aquaculture intervention in the coastal districts aims to significantly boost productivity of low-income fish farmers to meet growing demand for fresh fish by means of sustained access to: (i) quality inputs (feed, fingerlings); (ii) know how on best pond/business management practices; and, (iii) diversified markets for farmed fresh fish (catfish and tilapia).

This intervention aims to make the coastal districts aquaculture industry a much more attractive investment by local farmers and a more robust market for aquaculture inputs/outputs despite its current low level of production, scattered and distant locations from markets. WRCF will implement this intervention in two stages over a period of 18 – 24 months:

In this first stage WRCF will support demonstration ponds in selected coastal communities as a mechanism to improve the knowledge of pond farmers in best pond/business management practices and as a platform to promote business relationships between pond farmers, their prospective suppliers of inputs and services and buyers of produce.

With incentives aligned and capacities of all value chain players strengthened, WRCF will further encourage other key market actors – new entrants into fish farming, financial institutions, local service providers (pond construction, security, harvesting), educational institutions, the media and local/regional government – to participate directly in advancing the growth of the Western Region aquaculture industry in line with their unique interests and capacity.

In practice, WRCF will play the role of bringing together key private, public and civil society actors in finding win/win relationships to enhance economic growth opportunities for reducing poverty and improving livelihoods.

1.1 Rationale for the Baseline Survey

This baseline survey was conducted in June 2016 to understand the current level of income earned by the fish farmers in Western Region, employees or farm hands, productivity, motivation to go into fish farming, access to input, existing market channels, support services for fish farming and the challenges of fish farming in Western region among others. This is aimed at establishing the current state of fish farming operations in Western Region of Ghana as a basis for establishing attributable changes to WRCF intervention in the life of the project beneficiaries.

2.0 Data from the Survey

2.1 GENDER DISTRIBUTION OF RESPONDENTS

The survey sought to understand the gender composition of the fish farmers. Females constitute 17% of the respondent while as much as 83% are males. There was a further enquiry into the role of women in fish farming. As much as 68% of the respondents indicated that women assist in feeding the fish in the pond. Other roles assigned to women include helping to prepare feed at home (5%), smoking of fish (5%), and sale of fish (5%), cooking for the men (5%) and providing moral support to the men (5%).

2.2 AGES OF THE RESPONDENTS

The survey revealed that fish farming in Western Region is dominated by adults with 53% within the ages of 46-65 years. Only 3% are between the ages of 16-24 years, with 45% falling within the age of 25-45 years. Only one person within the age of 16-24 years own a pond. It was found out that the major role of the youth in the aquaculture business is in the maintenance of pond and feeding of fish.

2.3 LOCATION OF FISH FARMERS

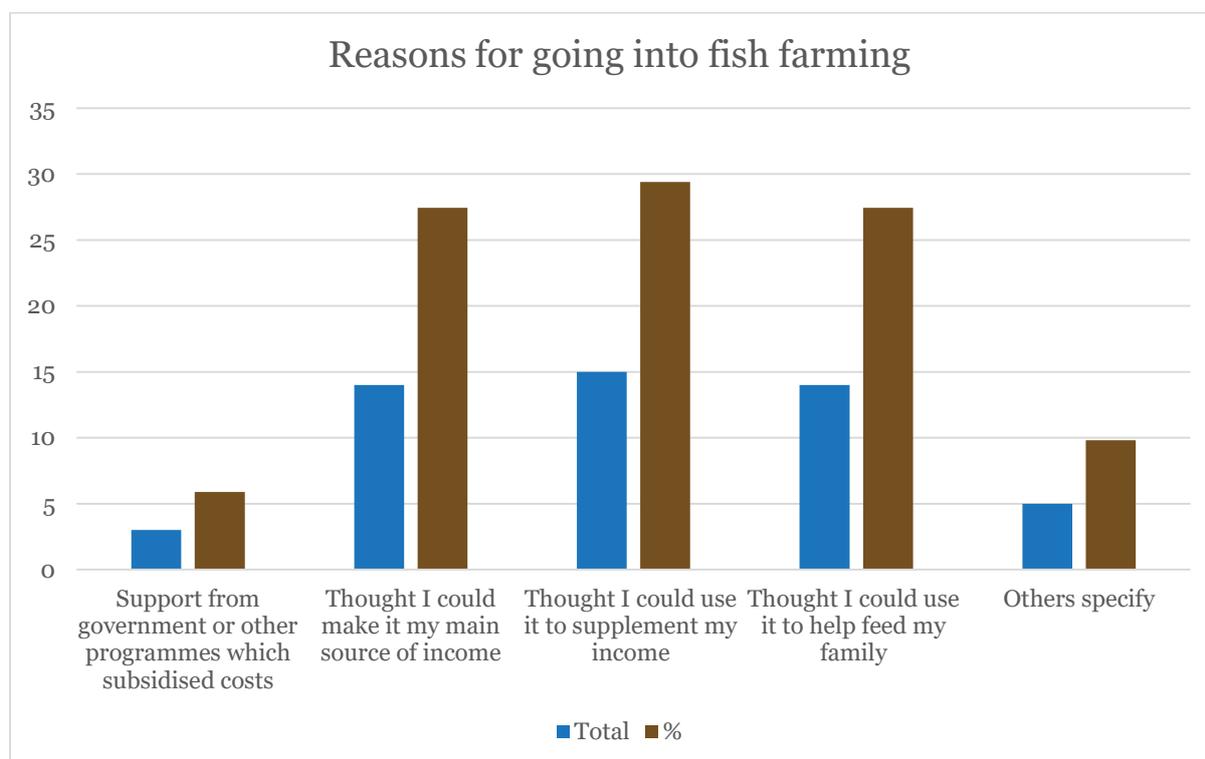
The table below displays the communities where the survey was conducted and the proportion of representation from each community.

Location	Total	%
Kamgbunli	8	21.62
Tarkwa Esaaman	5	13.51
Anyinase	2	5.41
Esiana	1	2.70
Agona	1	2.70
Wusa	1	2.70
Tokobo No.2	2	5.41
Half Asini	5	13.51
Axim	1	2.70
Nyamebekyere	3	8.11

Sikadjor	1	2.70
Bonyere	1	2.70
Takoradi	1	2.70
Elubo	4	10.81
Sowudadzme	1	2.70
Total	37	100

2.4 REASONS FOR GOING INTO FISHING

Even though there are other economic activities including crop farming, and marine fishing, the respondents have decided to be in aquaculture for a living. The table below displays the reasons why respondents decided to go into fish farming.



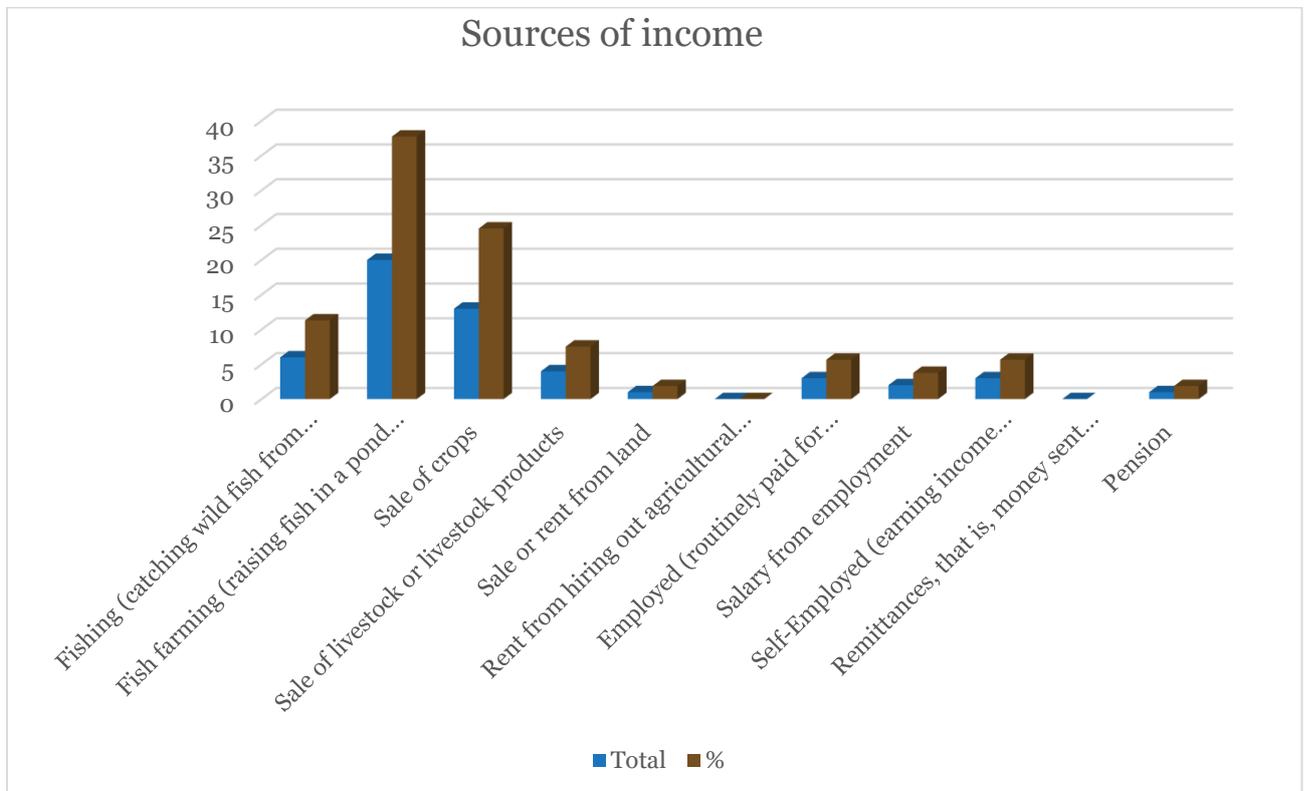
Majority of the fish farmers (29%) are into fish farming because they thought they could use it to supplement their income. Twenty seven (27%) went into fish farming because they thought they could make it their main source of income. Another 27% percent are into fish farming because they wanted to use it to feed their family.

2.5 SOURCES OF INCOME FOR FISH FARMERS

The table below gives an indication of the sources of income for the respondents. Fish farming, including raising fish in a pond or cage, constitute the greatest proportion (38%) of income earned by the respondents. The next major sources of income for the target group is sale of crop such as maize and cassava which constitute 25% of the income.

2.5.1 Sources of income for the fish farmers

Only 11% of the respondents indicated that they earn all their income from fish farming. Other sources of income and their proportion to the total income is shown below.



2.5.2 Income earned from different sources

This survey also investigated the amount of money earned from the different sources of income over the last 12 months to understand which sources provide the major sources of income for the respondents. The Average amount of money earned from Fish farming (raising fish in a pond or cage is GHC 3059. That of fishing (catching wild fish from seas and rivers) is GHC 1,033 which was reported by 52% of the respondent as earning some income from this source. Sale of crop was reported by 24% of the respondents as a source of income with an average amount of money earned as GHC 4,133.

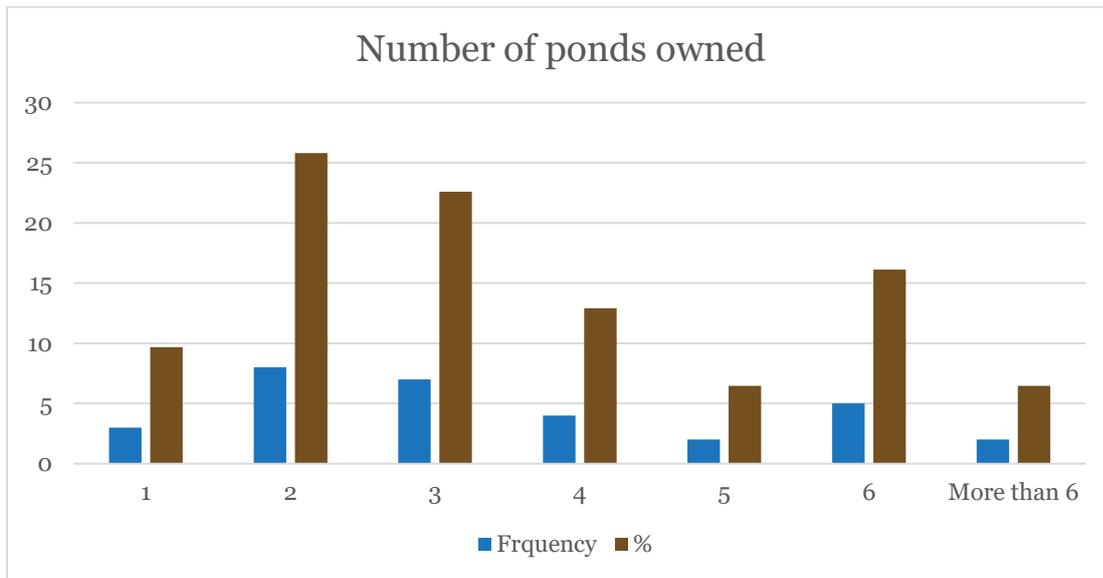
Sale of livestock or livestock products was reported by 12% of the respondents as a source of income. The average amount of money from sale of livestock is GHC 1,116. Only 6% of responded that they earn income from salary with an average of GHC 3,566.

3.0 Aquaculture

3.1 NUMBER OF PONDS PER FARMER

The respondents were asked about the number of ponds they operate and the percentage of people who own their ponds. Only 2 out of 31 respondents owned

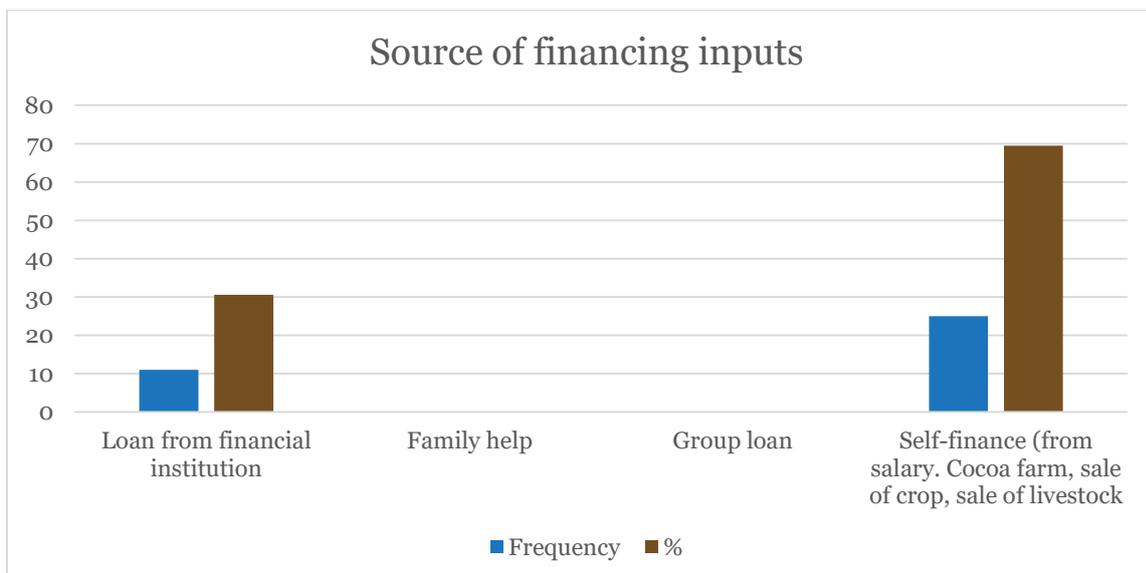
more than 6 ponds (11 ponds and 9 ponds). Ninety four (94%) own the ponds they operate while 6% rent the ponds.



The table above shows that 26% of the respondents own 2 ponds, 23% own 3 ponds with 16% owning 6 ponds.

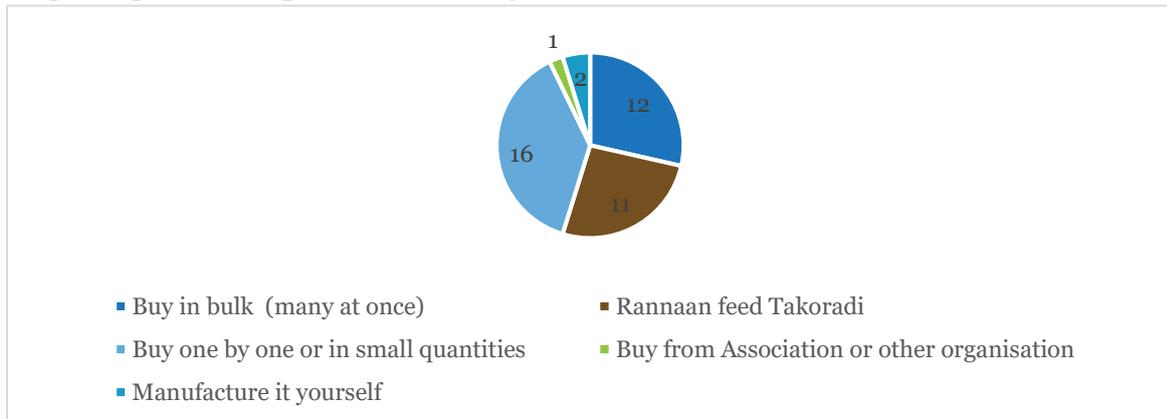
3.2 MEANS OF FINANCING INPUT COST OF FISH FARMING

The responses to the question around sources of finance for input cost of fish farming revealed that 69% of the fish farmers pay for the cost of inputs through Self-finance (from salary. Cocoa farm, sale of crop, sale of livestock). Thirty one (31%) finance their inputs through loans from financial institutions.



3.3.1 Sources of Catfish fingerlings

The table below shows that majority of the fish farmers (38%) obtain their catfish fingerling in small quantities, one by one.



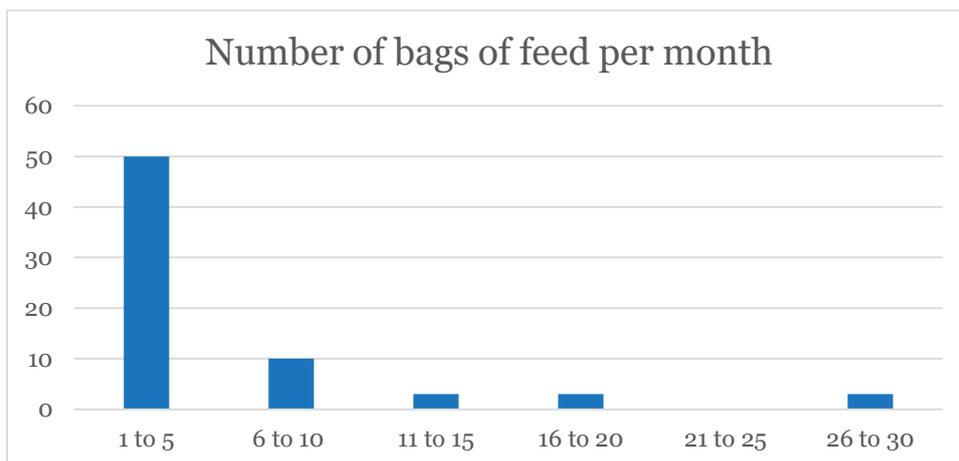
Twenty nine (29%) buy in bulk (many at once). Fifty six percent obtain their feed from Rannaan feed company, 26% from Copens fish feed in Ashiaman, and 16% from Multi Feed.

3.3.2 Cost per kilogram of fish feed

The average cost of feed is between GHC 80 and GHC 100 for 20kg of feed. The survey revealed that the cost of feed at Ranaan fish feed is GHC 80 for 20kg. The cost at Corpens, and multi feed is GHC 100 for 20kg.

3.3.3 Number of feed purchased per month

The report shows that 50% of the respondents purchase 1 to 5 bags a month. Only 6% use between 16 and 30 bags a month

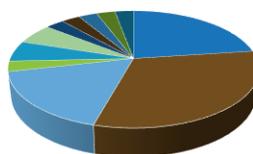


Fifty one percent indicated that they do not intend to change their brand of feed with 49% saying they want to change their feed. 46% of those who want to change their feed will do so because of cost, 31% due to quality and 23% due to distance.

3.3.4 Sources of fingerlings

Twenty three percent (23%) of those interviewed obtain their fingerlings from Aidoo Farms at Tikobo No 2 with additional 31% from Giba Farms at Tikobo No 2. Other sources of fingerlings are displayed in the figure above.

Sources of fingerlings



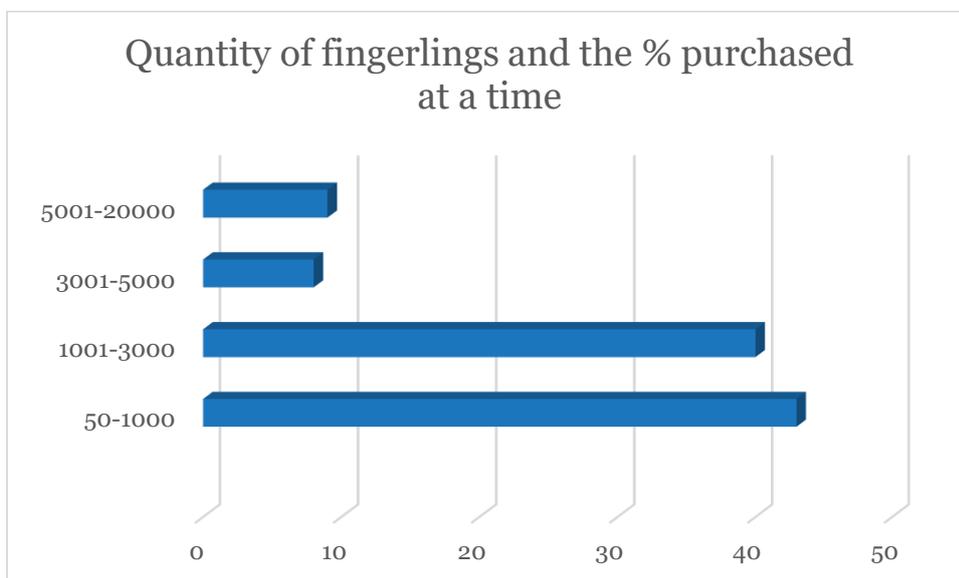
- Aidoo Farms / Tokobo 2
- Giba Farms at Tikobo 2
- Tarkwa (kpemle)
- Lucky center –Tokobo
- Tawa
- Self
- akosombo
- Airforce
- kumasi
- Anyinasi (from chairman)
- Tema

Eighty seven (87%) of the cost per fingerling ranges from 5 to 7 pesewas per fingerling.

3.3.5 Quantity of fingerlings purchased at a time

The table and chart below display the percentage of farmers who purchase different quantities at a time. Forty three percent (43%) of the farmers purchase between 50 and 1000 fingerlings at a time

Quantity of fingerlings	50-1000	1001-3000	3001-5000	5001-20000
%	43	40	8	9



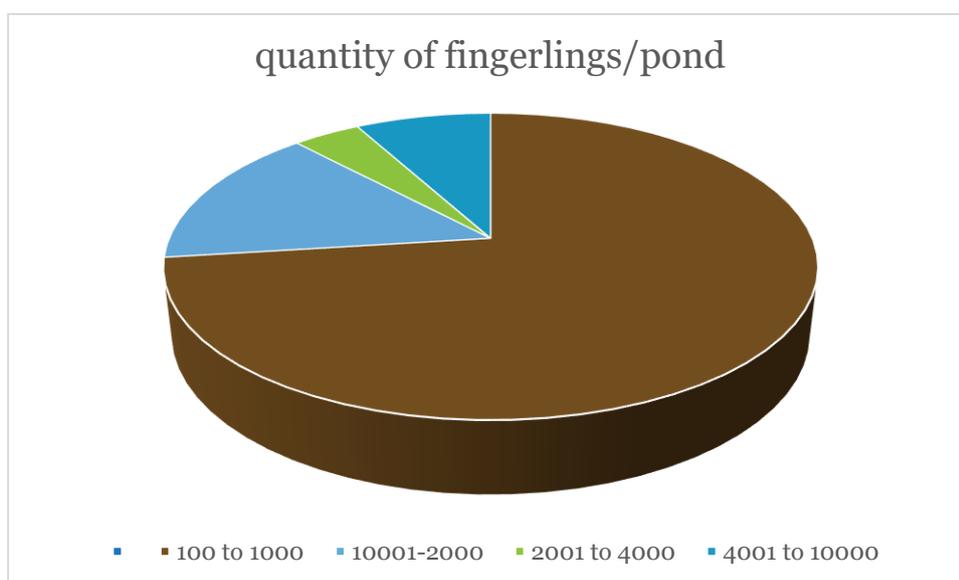
Decision to purchase fingerlings from different supplier		
Decision	Total	%
Yes	9	35

No	17	65
Total	26	100

Sixty five percent (65%) of the respondents are happy with where they get their fingerlings from. 35 % want to purchase fingerlings from different sources. The reasons for wanting to change their suppliers are high cost and poor quality. The reasons for staying with the current suppliers of fingerling include reliability, good quality and after sales support.

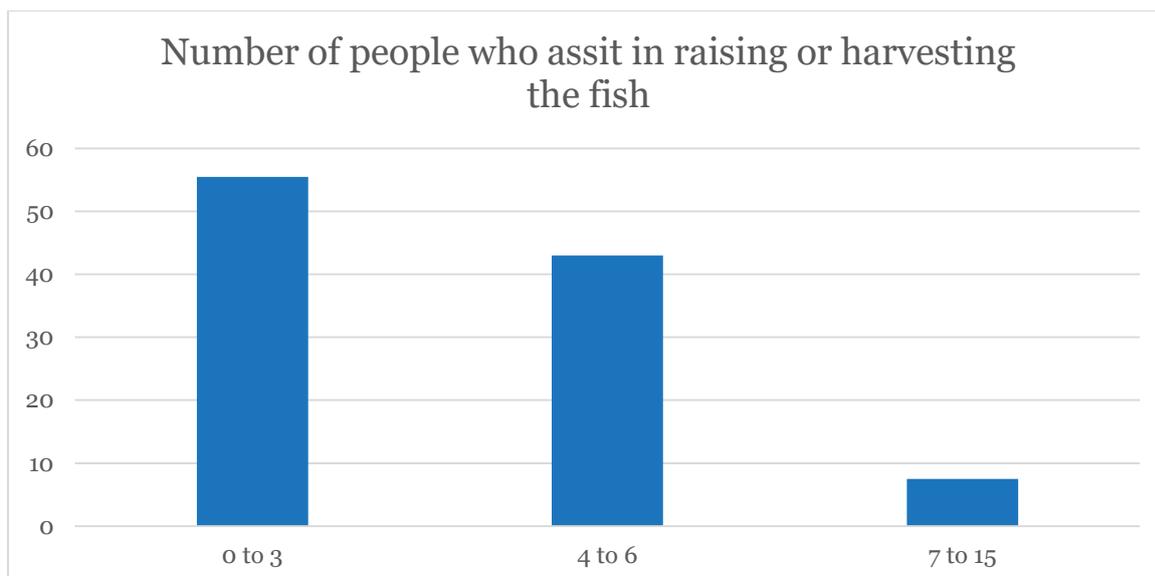
3.3.6 Quantity of fingerlings purchased per pond

The survey revealed that 73% of the fish farmers purchase between 100 and 1000 fingerlings per pond with greater proportion (28%) of the farmers within this range purchasing 1000 fingerlings per pond.



3.4 FARM HANDS PER FARMER

The chart below indicate that 57.5% of the fish farmers engage between 0 and 3 people to assist with the raising or harvesting the fish. Greater proportion (55%) of that is between 2 and 3 hands.



3.4.1 Monthly payment to employees

As much as 27% of farm hands are family members who do not receive cash payment for their work. Thirty five (35%) of the employees receive between 201 and 400 Ghana Cedes a month.

Monthly payment to employees					
Amount	Family members	40 to 100	101 to 200	201 to 400	4001 to 1000
% of employees	27	16	13	35	9

3.5 NUMBER OF MONTHS WAITED BEFORE CATFISH IS HARVESTED

Greater proportion of fish farmers (42%) wait for 6 months before harvesting fish

Number of months	%
1 month	0
2 months	3
3	0
4	0
5	6
6 months	42
7	13
8 months	29
9 months	6
	100

3.5.1 Number of times fish is harvested/year

Ninety two (92%) of the farmers harvest their fish one or twice within the year

Number of times fish is harvested/year	%
Once	44
Twice	48
Thrice	4
Quarterly	4
Total	100

3.5.2 Percentage of fish not harvestable due to death, sickness, or being underweight

It came out of the survey that 78% of the farmers are not able to harvest between 31 and 60% of their fish due to deaths, sickness and underweight.

% of fish	5 to 30	31 to 60	61 to 80
% of farmers	13	78	8

3.6 PERCENTAGE OF HARVESTED FISH ABLE TO SELL

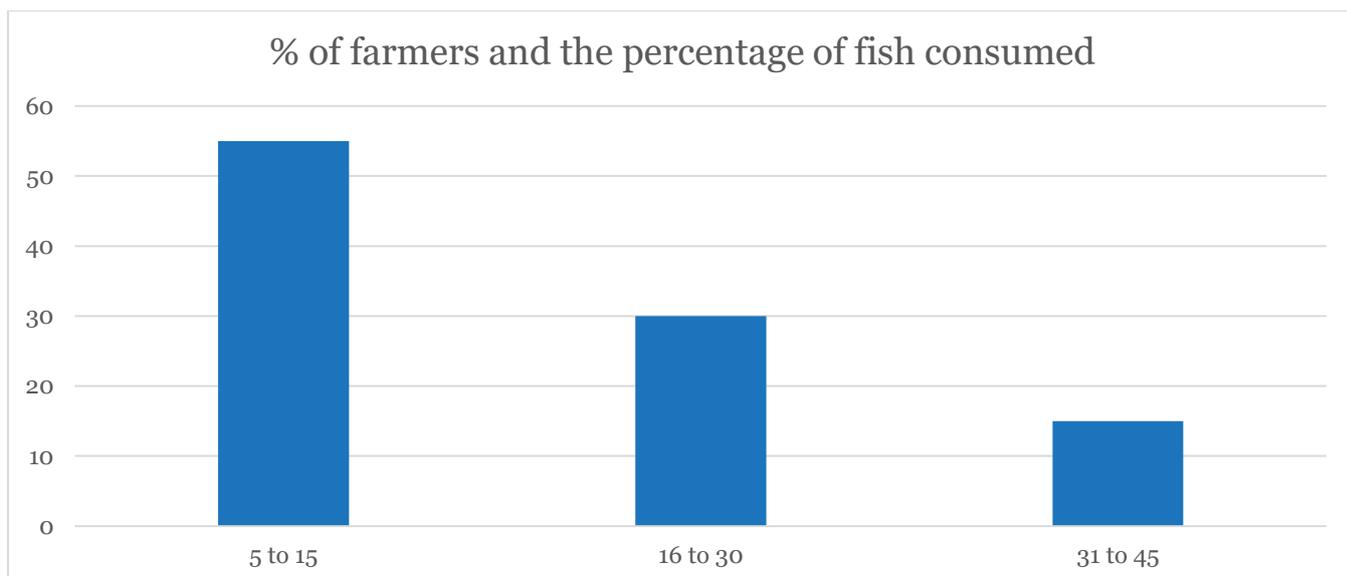
The table below indicate that 38% of the farmers are able to sell between 40 and 60% of their harvested fish

Percentage of harvested fish able to sell			
% of harvested fish	10 to 30	40 to 60	70 to 80
% of people	29	38	33

3.6.1 Percentage of harvested fish consumed

Fifty five (55 %) of the farmers consume between 5 and 15 % of their harvested fish

% consumed	5 to 15	16 to 30	31 to 45
% of farmers	55	30	15



3.6.2 Average weight of fish sold

Sixty seven percent (67%) of the farmers sell fish with an average weight of 1-2 kilograms

Average weight of fish sold				
Weight of fish	I don't weigh	1 to 2 kg	3- 4 to 4 kgs	5kg +
% of farmers	14	67	14	5

Sixty (60%) of the farmers smoke 67% of their fish. 40% smoke 33 % of their fish. Sixty five (65%) of the fish are consumed in the households. 22% consumed in Restaurants, hotels, or catering. 38% consumed within the district. 38% consumed in other part of Ghana.

3.7 PRICE OF FISH

3.7.1 Price of live fish sold to bulk buyers

Price/ live fish (ghc) to bulk buyers			
Price/ live fish (ghc) to bulk buyers	5 to 8	9 to 15	16 to 20
% of farmers	35	46	19

3.7.2 Price per smoked fish sold to bulk buyers

Sixty four (64%) of the farmers sell smoked fish to bulk buyers between 4 and 10 Ghc.

Price (Ghc) smoked fish to bulk buyers	4 to 10	11 to 15	16 to 20
% of farmers	64	28	8

3.8 PERCENTAGE OF FISH SOLD TO FISH MONGERS

Fifty five (55%) of the fish farmers sell between 80 and 100% of their fish to fishmongers

Percentage of fish sold to fish mongers			
% fish sold to fish mongers	10 to 40	50 to 70	80 to 100
% of farmers	11	34	55

Forty three (43%) sell their fish to the fish mongers between GHC 4 and GHC10

Price per live fish sold to fish mongers			
Price /live fish to fishmongers	4 to 10	11 to 15	16 to 20
% of farmers	43	43	14

Smoked fish is sold between GHC 10 and GHC 13 to the fish mongers

3.8.1 Average weight of catfish sold to fishmongers/retailers

Sixty four (64%) of the farmers sell catfish of 1kg per fish to the fishmongers

Response (weight)	% of farmers
2kg	18
70g	9
50g	9
1kg	64

4.0 Support from Organisations

Greater percentage (56%) receive support from the Association of fishermen in the form of technical training / Assistance as depicted in the table below

Organization	% of farmers
Fisheries Commission	30
Fisherman's Association	56
Universities	11
Other government source (specify)	0
Foundations or development projects	4
Others specify	0
Total	100

5.0 Loans from Financial Institutions

Sixty one percent of the farmers receive loans from financial institutions

Loan from financial Institution	%
Yes	61
No	39

Average amount of loans received from financial institutions is GHC 5600. The loans were received from the following financial institutions Fiaseman Rural Bank, Ankobra Rural Bank, Nzema Manle Rural Bank, credit union, Bonteaco, Women's World Bank, Lower Prah, Ghana Commercial Bank.

6.0 The Extent to Which Climate Change Affect Fish Farming

Fifty percent (50%) responded that climate change affect fish farming by drying their ponds

The extent to which climate change affect fish farming	%
Low level of water	5
Shortage of water	25
Drying of the pond	50
Flooding	10
Rising temperature	10
	100

Sixty eight (68%) worried that their household would not have food to eat last year

Did you worry that your household will not have food in the past year	%
Yes	68
No	32

7.0 Constraints or Barriers Against Your Business

Money to buy feed formed the greatest constraint to business expansion

Constraints or barriers against your business	%
Money to buy feed	34
High cost of feed	7

Finance to expand the farm	21
Birds destroying fish	3
Marketing	7
Money to buy net	7
Money to buy fingerlings	10
Lack of support	3
Lack of knowledge	3
Finance to expand the farm and my hatchery	3
	100

8.0 Vision of Fish Farm in the Next Five Years

Majority of the farmers (48%) aspire to expand their farm or acquire additional pond in the next five years

Response	%
Expansion of my farm	32
Improve production	26
Improve market linkage	13
Employ more people	3
Acquire additional ponds	16
Acquire cold store	3
Machine	3
Technical guidance	3
	100

9.0 Support Needed To Achieve Vision

The table below indicate that 25% of the respondents require land to achieve their vision. Additional 21% will require Technical training/Assistance on feeding and stocking to avoid failure

Response	%
Feed making machine	2
Labour	8
Land	25
Money	25

Equipment	2
Water pump	2
Fencing of ponds	2
Technical training on feeding and stocking to avoid failure /technical assistance	21
Support with feeding	2
Construction of pond	2
Quality fingerlings	4
Business management training	4
	100

ANNEX A:

Questionnaire for Collecting Baseline Information from the Aquaculture Farmers in Western Region

1. Why did you decide to go into fish farming: (*Prompt as needed, tick all that apply*)

- Supported from government or other programmes which subsidized costs
- Thought I could make it my main source of income
- Thought I could use it to supplement my income
- Thought I could use it to help feed my family
- others specify _____

2. Over the past 15 years, did you earn part or all of your livelihood fishing (*catching wild fish from seas and rivers*)?

- Yes, part Yes, all No

3. Over the past 12 months, which of the following were sources of income for the household?

- fishing (*catching wild fish from seas and rivers*)
- Fish farming (*raising fish in a pond or cage*)
- Sale of crops
- Sale of livestock or livestock products
- Sale or rent from land
- Rent from hiring out agricultural equipment
- Employed (*routinely paid for services by one or more persons*)
- Self-Employed (*earning income from selling goods or services you produce*)
- Remittances, that is, money sent from overseas
- Pension
- Other state benefits

4. Over the past 12 months, about how much money did your household earn from the following activities? *If not known or refused, ask for an estimate to the nearest 1000 cedis.*

- Fishing (*catching wild fish from seas and rivers*) _____
- Fish farming (*raising fish in ponds or cages*) _____
- Sale of crops _____
- Sale of livestock or livestock products _____
- Sale or rent from land _____
- Rent from hiring out agricultural equipment _____
- Salary from employment _____
- Money from self-employment _____

- Remittances, that is, money sent from overseas _____
- Pension _____
- Other state benefits _____

Ask the following questions only if farmer has received household income from fish farming.

1. How many ponds or cages do you use to farm fish?
2. How many ponds or cages are on land that you own, or rent?
 - Own directly Rent Other (specify): _____
3. How do you finance input cost for your ponds? _____
4. Where do you get your catfish feed from?

 - Buy in bulk (many at once) Buy one by one or in small quantities
 - Buy from Association or other organisation Manufacture it yourself
 - 4a. If self-manufactured what materials do you use? _____
 - 4b. Do you stock your ponds or cages with tilapia or other fish as an alternative food source?
5. What brand of feed do you usually use?

6. Do you add any supplements to the feed (vitamin, mineral, medicinal, hormonal)? Yes
 - 6a. If so, what are they? _____
 - 6b. If so, where do you get these from? _____
7. What is the cost per bag of the feed you use? _____ kg at GHs _____
8. How many bags do purchase monthly? _____
9. Are you considering purchasing a different brand of fish feed?
 - Yes No
 - If yes, what brand would you like to switch to? _____
 - If yes, why? Cost Distance Quality

10. Where do you get your fingerlings?

11. How much do you pay for each fingerling?

12. How many fingerlings do you buy at a time?

13. How many fingerlings do purchase per pond? _____

14. Have you ever thought of purchasing fingerlings from a different supplier?

Yes No

If yes, why Cost Distance Quality

15. Besides yourself, how many people help you raise and/or harvest your fish?

16. How much do you pay them monthly? _____

17. In the last seven days, about how many hours did you work? (*This is any activity that you hope will make some money, even if you were not actually paid.*)

18. And in the last seven days, about how many hours did you work with fish farming?

19. About how many months do you wait before harvesting your catfish?

20. In the past five years, how many times did you harvest your catfish earlier than you would have liked?

21. On average, about how many times do you harvest catfish per year?

22. On average, when you harvest one pond or cage:

a. About what percentage of the fingerlings you bought are not harvestable? (*Due to death, sickness, or being underweight*) _____

b. About what percentage of the fish do you harvest are you able to sell?

c. (*If less than 100%*) What percentage of the fish you harvest do you...

Consume in your own household _____

Trade or barter _____

Smoke to sell later _____

Keep in the pond to sell later _____

Other (specify) _____

a. About how many hours do you travel in order to reach your buyers?

_____ (If buyers come to the pond or community, write '0')

b. What is the average weight of the fish you sell? _____

c. What proportion of harvested catfish (1kg and above) do you sell to bulk buyers?

d. What percentage of fish you bring to market are smoked? _____

e. Who do you sell harvested catfish to? (Tick all that apply)

f. Do you know who the final consumers of your fish are?

Restaurants, hotels, or catering

Households

Processing plants

g. Do you know if your final consumers are domestic or foreign?

Within the district

Within the Western Region

within other parts of Ghana

within other countries in West Africa (Specify): _____

to other foreign countries (Specify): _____

h. What is the average price per live/fresh fish sold to bulk buyers?

GHS _____

i. What is the average price per smoked fish sold to bulk buyers?

a. GHS _____

- j. What proportion of harvested catfish do you sell to fishmongers/retailers?
- k. What is the average weight of catfish sold to fishmongers/retailers?
- l. What is the average price per live/fresh fish sold to fishmongers/retailers?
 - a. GHS_____
- m. What is the average price per smoked fish sold to fishmongers/retailers?
 - a. GHS_____

23. Do you get any support from any outside organisations?

- Fisheries Commission
- Other government source (specify):
- Fisherman's Association
- Foundations or development projects
- Universities
- Others specify _____ -

24. How much do you pay for this support? _____

25. What kinds of support did you receive?

26. Have you ever secured a loan from a financial institution to support your fish farm?

- Yes No

If yes, what is name of the financial institution?

If yes, how much was the loan and how long did it take you to repay the loan?

27. To what extent does climate change affect your fish farm?

28. In your opinion, how can women and youth fit in the aquaculture value chain?

29. In the past year, did you worry that your household will not have enough food?

Yes No

If yes, were you compelled to consume food from your pond? Yes No

30. What are the constraints/barriers (if any) against your business?

31. How do you envisage your fish farm in the next five years?

32. What would you need to support this vision?