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FISH POND CONSTRUCTION AND MANAGEMENT SKILLS NEEDED BY YOUTHS FOR SUSTAINABLE SELF EMPLOYMENT IN ENUGU STATE

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Abstract: *The study examined the fish pond construction and management skills needed by the youths for sustainable self-employment in Enugu State. The study adopted a descriptive survey research design. Two research questions and two null hypothesis guided the study. The null hypotheses were tested at probability of 0.05 level of significance. The population of the study comprised 200 respondents made up of 38 commercial fish farmers and 162 extension workers scattered in the six agricultural zones in Enugu State. There was no sampling because the population was manageable. Structured questionnaire was used for data collection made-up of 54 items. The instrument was validated by three experts and Cornbach Alpha Statistics was used to determine the internal consistency of the instrument and data collected were analysed using mean and standard deviation to answer, the research questions and t-test were used in testing the null hypothesis at 0.05 level of significance at 198 degree of freedom. The study found out that all the items for fish pond construction and management skills were needed by the youths for sustainable self-employment in Enugu State. The null hypothesis tested showed no significant difference in the mean responses of fish farmers and agricultural extension agents with respect to the fish pond construction and management skills needed by the youths for sustainable self-employment in Enugu State. Based on these findings, it was recommended that youths should be encouraged to enrol in skill acquisition centres where these skills are taught and agricultural extension agents should create more awareness on the benefits of youths joining young farmers club where they will have the opportunity to be exposed to these skills.*

Keywords: *Fish pond construction and management skills, youths, sustainability, self-employment.*

INTRODUCTION

Unemployment appears to be not limited to the illiterates and people with poor educational background but also, graduates of tertiary institutions such as Universities, Polytechnics and Colleges of Education. The private and public sectors seemed to be saturated and are no longer willing to absorb the large number of graduates produced annually. This challenges has drawn the attention of many scholars who attributed the problem to several factors, such as poor educational programmes which produce job seekers instead of job creators thereby increasing the rate of unemployment among Nigerians (Ozougwu, 2020). Unemployment according to Oduma (2012) is a state of joblessness or a state of total absence from work as a result of limited number of available or unqualified applications, while employment is the capacity of being absorbed by a firm either paid or self-employed. Self-employed may be seen as a situation where an individual works for himself. This implies that self-employment is a situation where an individual crates, and takes control of the business decision rather than working for an employer or a boss. But it has been observed in the study area that most of the youths are underpaid employment.

Youths according to Abdullah and Sulaiman (2013), are people aged between 18 and 35 that are both genders (male and female). Youths are group of individuals of

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school age and it encompasses teenagers, adolescents and young adults. Youths according to Abdullah as on the other hand, Agricultural youths may be seen as male and female who falls within the age bracket of 18-35 years, registered or is practicing farming (crop or animal). In this study, youths are referring to as senior secondary school, colleges of education and university graduates who are interested in agriculture. Some of them possess rudimentary skills in agriculture especially in farming which are grossly inadequate for establishing them successfully in fish production hence, many of them are unemployed.

Fish production encompasses the sum total of all operations, system or processes involved in the rearing of fish. Fish production according to Ude (2010), is a principal aspect of aquaculture which involves the cultivation of fishes in ponds, tanks, or other chambers from which they cannot escape. Taiwo (2018) descried fish farming as activities undertaken in order to produce fish in large quantity. Fish farming is the rearing of fish in natural and man-made ponds. Iwena (2012) also defined fish farming as the act of rearing selected species of fish under scientifically controlled conditions in enclosed bodies of water such as ponds, streams and rivers, where they feed, grow, breed and harvested for consumption or for sale.

However, fish farming in the context of this study may be seen as a branch of agricultural science and practices which requires a lot of work skills ranging from construction of fish ponds, fish pond management, hatching and breeding of fish, production of fish feeds, fishing equipment, fish processing, marketing, storage and utilization of cropping. Therefore, to carry out these activities effectively, there is the need for acquisition of requisite skills in fish production.

Skills is defined by Okorie (2011) as a well-established habit of doing something and involves the acquisition of performance capability. Possession of a skill is to demonstrate the habit of acting, thinking, and behaving in a specific activity in such a way that the process becomes natural to the individual through repetition or practices. On the other hand, skill is the ability to carry out specific tasks or jobs very well. Skill acquisition is very important for success in any productive venture epically in construction and management of fish pond.

In the context of this study, fish pond construction skill is very vital in fish production because fish pond construction is the process of building the pond. Fish pond could be constructed in areas where the soil could hold water (Ajana, 2001). The most important factor in fish pond construction is the level of the pond relative to the water supply and drainage. An ideal pond receives water supply under gravity and discharge the used water under gravity. A well-constructed pond is easy to manage and facilitates bumper harvest. Pond is an artificial body of water where fish can be reared. Fish ponds are established to serve different purposes in fish farming such as hatching, larva breeding, etc. A fish pond is controlled pond, artificial lake, or reservoir that is stocked with fish and is used in aquaculture for fish farming (Ozigbo, Anyadike, Adegbite & Kolawole, 2014). This implies that well-constructed fish pond will be easy to manage. Fish pond management entails certain manipulators and human in reference employed in the production of fish (Ezeiwa, 2009). Fish pond management skills which include; meeting all requirements for stocking with desired fish species, care and maintenance of the water quality and quantity, procedural repairs of holding facility, feeding of the fish with the desired diets and harvesting of the fish using appropriate fishing gears.

In Enugu State which is the study area, fish farming business has a huge potential for contributing to achieving food security, lower-price fish, employment generation and increased foreign exchange earning capacity as well as poverty reduction as it can generate much income to elevate fish farmers (youths) socioeconomic status (Adewuyi, Philp, Ayinde & Akerele, 2010). Fish farming is becoming very lucrative in Enugu State and many people are seriously engaging in the business in the state because fish provides valuable food, employment to millions of people, and serving as a source of livelihood for people in coastal communities mainly. Fish is a source of raw

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material for industries, research materials, foreign exchange, recreation and tourism for the youths and lager society. This implies that fish farming can help in providing sustainable employment to the youth.

In order to solve the problem of unemployment among Nigerian youths, the federal government has established skill acquisition centres in every state of the nation where people receive theoretical and practical training as well as guidelines in different work areas. Njoku (2012) stated that skills acquisition centres are places where artisans training courses are offered. An artesian is an unskilled workman. The skills acquisition centres in the states are managed with the help of extension officers to empower some of these youths in various occupations. Iwena (2012) defined extension officers as those who carry modern farming techniques and research findings to the farmers and then take the problems of the farmers back to the research institute. These extension officers and fish farmers re knowledgeable in fish production and can assist the youths in acquisition of work-skills in fish farming.

Furthermore, the view of extension officers and fish farmers are pertinent because they possess expert knowledge to be able to demonstrate the required work-skill in fish production and most appropriate method of imparting these skills. This in turn will provide sustainable employment for the youths. This is because sustainability deals with the maintenance of certain state of affairs and is the process of living within the limits of available physical, natural and social resources in ways that allow the living systems in which humans are embedded to thrive in perpetuity (United Nations, 2013). Sustainability encompasses many aspects of life including economy. This is why the Nigerian government have in recent times focused on youth empowerment through agricultural education for sustainable self-employment. These youths could be self-reliant if they embark on agricultural practices (fish farming). This is because agricultural practices (fish farming) have several opportunities that will provide skills for business enterprises especially through production of food (fish) which could invariable address some of the challenges associated with unemployment especially among the youths. Hence, the need arouse to determine the fish production skills needed by the youths for sustainable self-employment in Enugu State.

Purpose of the Study

The major purpose of the study was to determine the fish pond construction and management skills needed by the youths for suitable self-employment in Enugu State. Specifically, the study sought to determine the:

1. Fish pond construction skills needed by the youths for sustainable self-employment in Enugu State.
2. Fish pond management skills needed by the youths for sustainable self-employment in Enugu State.

Research Questions

The following research questions guided the study:

1. What are the fish pond construction skills needed by the youths for sustainable self-employment in Enugu State?
2. What are the fish pond managements skills needed by the youths for sustainable self-employment in Enugu State?

Hypotheses

The following null hypothesis were tested at 0.05 level of significance:

Ho_1: There is no significant difference in the mean ratings of fish farmers and extension officers on fish pond construction skills needed by the youths for sustainable self-employment.

Ho_2: There is no significant difference in the mean ratings of fish farmers and extension officers on fish pond management skills needed by the youths for sustainable self-employment

Research Method

The descriptive survey research was adopted for the study. The design was used because it is a design in which a group of people or items are studied by collecting and analysing data from only a few people or items considered to be representative of the entire group (Nworgu, 2015). The area of study was Enugu State

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which comprises six agricultural zone namely: Agbani, Awgu, Enugu, Enugu Ezike, Obollow-Afor and Udi. The population for the study consisted of 200 respondents (38 commercial fish farmers and 162 extension officers) according to Enugu State Agricultural Development Programme records, Enugu (2021). There was no sampling because the population size was manageable, hence the entire population was used. The instrument used for data collection was a structured questionnaire containing 54 items which sought for information on fish pond construction and management skills needed by youths for self-employment in Enugu State. Each skill item had a four-point scale of Very Highly Needed (VHN) – 4, Highly Needed (HN) – 3, Moderately Needed (MN) – 2 and Not Needed (NN) – 1.

The instrument was face validated by three experts, two from the Department of Technology and Vocational Education and one from Measurement and Evaluation of the Department of Mathematics and Computer Science Education both from the Faculty of Education in Enugu State University of Science and Technology, Enugu. They validated the instrument to ensure the appropriateness of the measuring instrument and that the instrument was structured to address the purpose of the study (Uzoagulu, 2011). The comments of the validators were used to modify the final instrument used for data collection. The reliability of the instrument was determined by using Cronbach Alpha reliability method to determine the internal consistency of the instrument. The clusters yielded a coefficient reliability of 0.71.

A total of 200 copies of the questionnaire were distributed to the respondents with the help of three research assistants. These assistants were properly guided to assist the researcher in administering the instruments to the respondents. A total of 200 properly were properly filled and returned, giving a return rate of 100%. It was this 200 people filled copies that were used for data analysis. Mean with standard deviation were used to answer the research questions while the t-test were used to test the null hypothesis of no significant difference at probability level of 0.05. The decisions were based using real limits of the mean thus:

- Very Highly Needed - 3.50 – 4.00
- Highly Needed - 2.50 – 3.49
- Moderately Needed - 1.50 – 2.49
- Not Needed - 1.00 – 1.49

The null hypothesis was not rejected when the calculated t-value was less than or equal to the critical t-value but rejected when the calculated t-value was greater or equal to the critical value of 1.96.

Results

The result of the study were presented in tables according to the research questions and hypotheses that guided the study.

Research Question 1

What are the fish pond construction skills needed by the youths for sustainable self-employment in Enugu State?

Table 1: Mean Ratings and Standard Deviation of the Respondents on Fish Pond Construction Skills needed by Youths for Sustainable Self-Employment in Enugu State.

S/N	Fish pond construction skills include the ability	Fish Farmers N = 38		Extension Officers N = 162		Overall N = 200		Overall Decision
		Xl	SD,	X_2	SD_2	X	SD	
1	Locate a suitable site for the pond	3.66	0.94	3.54	0.81	3.60	0.88	VHN
2	Survey the site for the	3.39	1.18	3.44	0.90	3.44	0.95	HN
3	Clear the pond site	3.58	1.03	3.51	0.79	3.55	0.91	VHN
4	Determine the suitable pond size	2.95	1.37	3.49	0.90	3.22	1.35	HN
5	Determine the pond shape	3.37	1.17	3.43	0.94	3,42	0,98	HN

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6	Determine the type of pond to construct	3.03	1.35	3.49	0.88	3.41	1.00	HN
7	Determine the pond depth	3.50	1.11	3.49	0.90	3.50	0.94	VHN
8	Excavate the top soil for earthen pond	2.95	1.37	3.39	1.03	3.31	1.11	HN
9	Determine the material for the concrete pond	3.13	1.32	3.47	0.88	3.41	0.98	HN
10	use earthen pond for fishery	3.08	1.36	3.48	0.86	3.41	0.98	HN
11	Construct concrete pond for fishery	3.50	1.11	3.50	0.88	3.50	0.92	VHN
12	Build the drainage system	2.89	1.41	3.48	0.86	3.37	1.01	HN
13	Construct the water inlet	3.08	1.36	3.51	0.82	3.43	0.95	HN
14	Construct the water outlet	3.37	1.17	3.54	0.81	3.44	0.89	HN
	Cluster Mean/SD	**3.25**	**1.23**	**3.48**	**0.88**	**3.43**	**0.99**	**HN**

NOTE: VHN = Very Highly Needed, HN = Highly Needed, SD = Standard Deviation.

In Table 1, the mean ratings obtained from fish farmers on items number 1, 3, 7 and 11 are 3.66, 3.58, 3.50 and 3.50 while the mean ratings of 3.54, 3.51, 3.50 and 3.54 are obtained for extension officers on items number 1, 3, 11 and 14 indicating that the respondents agreed on the itemized skills as very highly needed while the mean rating range of 2.89 to 3.49 obtained for the rest of the items indicate that the items are highly needed by youths in fish pond construction for sustainable self-employment in Enugu State. However, the overall mean rating range of 3.25 to 3.48 denotes that fish pond construction skills are necessary for sustainable self-employment of youths in Enugu State. Nevertheless, the cluster mean rating of 3.43 obtained for all the items affirms to that while the relatively low cluster standard deviation of 0.99 denotes that the disparity in opinions of respondents is small indicating that the respondents' responses are closely clustered around the mean.

Hypothesis 1: There is no significant difference in the mean ratings of fish farmers and extension officers on fish pond construction skills needed by youths for sustainable self-employment in Enugu State.

Table 2: Summary of t-test Analysis of the Mean Ratings of Fish Farmers and Extension Officers regarding Fish Pond Construction Skills needed by Youths for Sustainable Self-Employment in Enugu State.

Respondent	N	X	SD	df	Prob.	t-cal.	t-crit.	Decision
Fish Farmers	38	3.25	1.23	198	.05	-1.090	1.960	NS
Ext. Officers	162	3.48	0.88					

NOTE: NS = Not Significant. SD = Standard Deviation. df = Degree of freedom.

Result in **Table 2** shows that the hypothesis test of no significant difference yielded a t-calculated value of -1.090 obtained at .05 level of significance and 198 degree of freedom for all the items under discuss with the t-critical (table) value of 1.96, However, the t-calculated value of -1.090 is less than the t-table value of 1.960; the null hypothesis is therefore not rejected for these items. This invariably shows that there is no significant difference in the mean ratings of fish farmers and extension officers regarding fish pond construction skills needed by youths for sustainable self-employment in Enugu State.

Research Question 2

What are the fish pond management skills needed by the youths for sustainable self-employment in Enugu State?

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Impact factor: 4.33

Table 3:

Mean Rating and Standard Deviation of Respondents on Fish Pond Management Skills needed by Youths for Sustainable Self-employment in Enugu State.

S/N	Fish pond management skills include ability to:	Fish Farmers N = 38		Extension Officers N = 162		Overall N = 200		Overall Decision
						x	SD	
15	Identify some fish disease prevention drugs	3.50	1.11	3.44	0.94	3.47	1.03	HN
16	Master fish disease preventive skills	3.05	1.36	3.48	0.90	3.27	1.01	HN
17	Identify the symptoms of disease	3.21	1.28	3.54	0.79	3.38	0.91	HN
18	Identify fish that is sick	3.21	1.28	3.53	0.84	3.37	0.94	HN
19	Cull diseased fish	3.61	0.95	3.51	0.86	3.56	0.87	VHN
20	Remove dead fish	3.34	1.24	3.42	0.90	3.41	0.97	HN
21	Treat pond after disease evasion	3.61	1.03	3.48	0.86	3.55	0.89	VHN
22	Maintain a good culture environment	3.16	1.33	3.56	0.81	3.48	0.94	HN
23	Avoid over feeding offish	3.13	.32	3.46	0.92	3.40	1.01	HN
24	Remove organic matters in the pond	2.84	.44	3.48	.813	3.36	0.99	HN
25	Maintain a suitable stocking density	3.21	.34	3.46	0.96	3.42	1.04	HN
26	Change water in the pond regularly with fresh water	3.11	.37	3.59	0.74	3.35	0.91	HN
27	Check the predators	3.29	.23	3.45	0.88	3.42	0.95	HN
28	A\c:c reeding fish with bacteria infected feca	3.13	.38	3.60	0.76	3.37	0.92	HN
29	Cr.ecK -end for maintenance in the momin.-' daily	3. IS	\ •••*	3.54	0.82	3.48	0.92	HN
30	Maintain the oxygen leve. with fresh water	3.03	.40	3,41	0.92	3.34	1.03	HN
31	Maintain good quality water level always	3.32	1.23	3.57	0.76	3.45	0.87	HN
32	Consult veterinary doctors	3.26	.29	3.44	0.90	3.41	0.98	HN
33	Fertilize the pond with organic manure	3.29	1.23	3.54	0.77	3.42	0.87	HN
34	Lime the pond with lime stone	2.97	1.39	3.60	0.76	3.48	0.94	HN
35	Provide the pond with a shade	2.89	1.41	3.49	0.90	3.38	1.04	HN
36	Put clean water in the pond	3.00	1.40	3.42	1.00	3.34	1.09	HN
37	Test the pH of the water (alkaline water level)	3.82	0.69	3.55	0.79	3.60	0.78	VHN
38	Clean the pond before stocking fish	3.66	0.85	3.47	0.88	3.51	0.87	VHN
39	De-silt the pond for aeration	2.97	1.44	3.39	0.99	3.31	1.10	HN
40	De-weed the pond to word off pest	3.34	.24	3.40	0.96	3.39	1.01	HN
	Cluster Mean/SD	**3.24**	**1.25**	**3.49**	**0.86**	**3.42**	**0.96**	**HN**

NOTE: *VHN= Very Highly Needed, HN= Highly Needed, SD= Standard Deviation.*

Table 3 shows that the overall mean ratings obtained for both fish farmers and extension workers on items number 19, 21, 37 and 38 are 3.56, 3.55, 3.60 and 3.51. This shows that the listed skills are very highly needed by youths in fish pond management for sustainable self-employment in Enugu State by the respondents. The Table also shows that the mean ratings range of 3.27 to 3.48 obtained for the rest of the items denotes that the itemized skills are highly needed by youths in fish pond management for sustainable self-employment in Enugu State respectively. However, the cluster mean of 3.42 indicates that fish pond management skills are important for sustainable self-employment of youths in *Enugu State while the cluster standard deviation of 0.96 denotes that the respondents' opinions are homogeneous.*

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Hypothesis 2: *There is no significant difference in the mean ratings of fish farmers and extension officers on fish pond management skills needed by youths for sustainable self-employment in Enugu State.*

Table 4: ***Summary oft-test Analysis of the Mean Ratings of Fish Farmers and Extension Officers regarding Fish Pond Management Skills needed by Youths for Sustainable Self-Employment in Enugu State.***

Respondent	N	X	SD	df	Prob.	t-cal.	t-crit.	Decision
Fish Farmers	38	3.24	1.25	198	.05	1.168	1.960	NS
Ext. Officers	62	3.49	0.86					

NOTE: NS = Not Significant. SD - Standard Deviation, df- Degree of freedom.

Result in Table 4 shows that the t-calculated value of-1.S68 was obtained at .05 level of significance 198 degree of freedom for all the items under discuss with the t-table value of 1.960. However, the null hypothesis is therefore not rejected for these items since the t-calculated value is less than the t-table value. This denotes that there is no significant difference in the mean ratings between fish farmers and extension officers regarding fish pond management skills needed by youths for sustainable self-employment in Enugu State, By extension, the opinions of the respondents in this case is not statistically significant and thus their status have no significant influence regarding fish pond management skills needed by youths for sustainable self-employment in Enugu State.

Findings

The following findings were made based on the result of the data analysed.

1. Agricultural extension agents and farmers agreed that fish pond construction skills are highly needed by the youths for sustainable self-employment in Enugu State.
2. A significant difference did not exist on the mean ratings of the responses of agricultural extension agents and fish farmers on fish and construction skills needed by the youths for sustainable self-employment in Enugu State.
3. Fish pond management skills are highly needed by the youths for sustainable self-employment in Enugu State as the respondents agreed to this.
4. A significant difference did not exist between the mean responses of agricultural extension agents and fish farmers on fish and construction skills needed by the youths for sustainable self-employment in Enugu State.

Discussion

The findings of the study showed that Fish pond construction skills were needed in fish production for sustainable self-employment of youths in Enugu State. This is clearly revealed as four items out of the 14 items of research question were perceived as very highly needed in fish production for sustainable self-employment of youths in Enugu State. These skills include abilities to locate a suitable site for the pond, clear the pond site, determine the pond depth and construct concrete pond for fishery. However, adequate skill acquisition on these areas would invariably promote self confidence in fish production and as well as sustainable self-employment of youths in Enugu State.

This finding agreed with the findings of Dumbiri (2016) who enumerated the skills in fish pond construction to include; survey the land to be used for the pond, clear and mark out the area of the land, measure and mark out the walls, excavate the pond bottom, build the drainage system, build the water inlet, build the pond walls, seal the pond bottom and

walls, provide the pond with some shade and introduce water in the pond. These findings are also in line with Iwena (2012) also identified fish pond construction skill as capabilities in the; selection of a good site, carrying out a detail survey of chosen site, clearing the site, removing the stumps, constructing dam around the stream, constructing a core trench, constructing a spill way, impound the pond by opening the monk board of the reservoir, apply lime to the side and bottom of the pond to seal pores and prevent water loss, fertilize the pond to encourage the growth of planktons 15 days before stocking pond with fish, carry out pond inoculation by introducing proper planktons species into the pond maintain pond water green by adding fertilizer to the pond every week and stock the pond by inducing proper fingerlings into the pond at the rate two fingerlings per square meter.

Similarly, the corresponding hypothesis showed that a significant difference does not exist in the mean ratings of fish farmers and extension officers with regard to fish pond construction skills needed by youths for sustainable self-employment in Enugu State since the t-calculated value of is less than the t- critical ('table) value at appropriate degree of freedom and level of significance. This result by extension showed that the status of the respondents have no influence on their opinions regarding fish pond construction skills needed by youths for sustainable self-employment in Enugu State.

The result of the data analyzed for the study in research question two showed that fish pond management skills are highly needed by youths in fish production for sustainable self-employment in Enugu State. This is because the respondents identified fish pond management skills to concern itself with abilities including but not limited to culling diseased fish, removing dead fish, test the pH of the water (alkaline water level), maintaining good quality water level always, consulting veterinary doctors, fertilizing the pond with organic manure, liming the pond with lime stone and cleaning the pond before stocking fish.

This findings were in line with the findings of Ude (2010) who noted that the pH (acidity and alkaline) of the pond's water were determined using pH meter and this can be controlled by liming. Accordingly, Agwu and Afieroho (2017) also included fertilization, liming, weed control, monitoring water quality, checking the pond fertility, giving supplementary feed on a spot always, acclimatization of fingerings before stocking, routine check of pond water levels, fish health management, clearing the water pipe, clearing the pond bark, repairing the leaks and cracks on the pond, clearing and drying pond after cropping, constructing compost fence in the pond, bund embankment maintenance, constructing separate water channels to and from the pond and filling the pond at least two weeks before stocking as fish pond management skills. In this view, acquisition of saleable skill-in pond management would undoubtedly prepare youths especially in fish production for sustainable self-employment in Enugu State. Additionally, the hypothesis tested showed test of no significant difference on the opinions of the respondents thus depicting that their status have no significant influence regarding the fish pond management skills needed by youths for sustainable self-employment in Enugu State.

Conclusion

Fish production encompasses the sum total of all operations, system or process involved in the rearing of fish. To carry out these operations or activities effectively there is need that the youths acquire the requisite skills in fish production that will enable them have sustainable self-employment. This is because possession of a skill is to demonstrate the habit of adding, thinking and behaving in a specific activity in such a way that the process becomes natural to the individual through repetition or practice. Therefore, for youths to improve in fish farming for sustainable self-employment, they must have sufficient knowledge and skills in fish pond construction and management.

Recommendations

Based on the findings of the study, some recommendations were made as follows:

1. The youths should be encouraged to go and enroll in skill acquisition centres where these skills are taught.
2. Agricultural extension agents should create more awareness on the benefits of youths joining young farmers club where they will have the opportunity to be exposed to theses skills.

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