# ASSESSMENT OF THE BENEFITS DERIVED BY AGRIC-YES PARTICIPANTS ON INTEGRATED FISH FARMING IN LAGOS STATE, NIGERIA

**Lawal A.A.**
Department of Aquaculture and Fisheries Management, Federal University of Agriculture Abeokuta, P.M.B 2240 Alabata Road, Abeokuta, Ogun State.
School of Economics, Jilin University, 452 Guigu Street, Changchun City, Jilin Province, P.R.China. 130012.
Email: hardehboy08@gmail.com; +8615754326296

**ABSTRACT**

*This study assessed the benefits derived by participants of Agric-YES on IFF in Lagos State, Nigeria. A simple random sampling technique was used in selecting 20% (120) of the 600 registered participants. A primary research approach was used for data collection from the respondents with the aid of a structured questionnaire. The data were analyzed using descriptive and inferential analytical techniques. The major limitations of the scheme include the use of local farm tools, non-availability of modern technologies, inadequate availability of trainers, unavailability of start-up capital, and lack of access to credit facilities. The major benefits of the scheme are employment generation and increased income. The majority of the participants agreed that IFF ensures optimal utilization of available resources (88.3%), requires high-level experience (80.8%), uneasy to manage (75.8%), cost-effective (75.8%), and labour intensive (73.3%). Inferential analysis shows that there is no significant relationship between socio-economic characteristics and benefits derived except secondary occupation($\chi^2$ = 47.578, p = 0.001), household size (r = 0.381, p = 0.001) had positive and significant relationship while age (r = -0.188, p = 0.040) which has a negative and significant relationship with benefit derived from the programme. The result of this study revealed that the majority of the participants involved in the empowerment scheme for integrated fish farming age range was equally within the economically active range of less than 25- 30.*

**Keywords**: Youth, Empowerment, Poverty alleviation, Fish stock management

## INTRODUCTION

Agriculture is an important sector of Nigeria's economy with high potential for employment generation, food security, and poverty reduction. The Nigeria government had since independence in 1960, established and inaugurated several programmes, policies, and projects to ensure secure, reliant, and self-sufficient production of food. Some of such programmes include the National Accelerated Food Production programme (NAFPP-1973), River Basin Development Authority (RBDA-1975), Operation Feed the Nation (OFN-1976), Agricultural Development Programme (ADP-1985), Directorate of Food, Roads and Rural Infrastructure (DFRRI-1987), National Special Programme for Food Security (2003). Othersinclude National Fadama Development Project (1991), National Fadama Development Project (2004), International Funds for Agricultural Development (IFAD), Niger Delta Development Commission NDDC, Community-Based Natural Resources Management Programme (2001), and Agricultural Transformation Agenda (ATA-2011) (Nwaobiala, 2015). However, the aims and objectives of the programmes, policies and projects were not achieved, or in some cases, minimal impacts were said to have been made (Babatunde and Oyatoye, 2005; Ojoko 2014).

Agricultural Youth Empowerment Scheme (AGRIC-YES) is a programme aimed at empowering the youths of Lagos state in modern agricultural practices. The overall objective of the scheme is to train and develop a new generation of agro-entrepreneurs in poultry, fish farming, beekeeping, and all-season vegetable farming. The scheme was designed in three phases. The first phase of six months is full-time intensive training in class and practical in demonstration farms. The second phase is a six-month intensive training in reputable and viable commercial farms, where the participants are housed and made to work on the commercial farms before launching them into the real world of farming. The third phase is the final exit phase where successful trainees are permanently settled in farms after which Lagos State Government will support successful participants with the take-off grants and linkage to the Lagos Micro Finance Institutions (LASMI) for credit assistance (Vanguard, 2012)

Requirement for admission into the six months programme includes a passion for agriculture, Possession of a recognized degree and diplomas from universities and polytechnics, minimum of senior secondary school certificate, and satisfactory physical and health conditions.

However, the significant impact of the Agricultural Youth Empowerment Scheme (Agric-YES) which was created to better the lives of youths in Lagos has not been felt in the area of fish production. With the look of things within the State, the fish supply has not met the demand of the citizen. The research specifically covers only integrated fish farming for clarity purposes.

The main objective of the study was to assess the skills acquired in integrated fish farming

by Agricultural Youth Empowerment Scheme (AGRIC-YES) participants in Lagos, State, Nigeria. The specific objectives are to:

1. Ascertain the socio-economic characteristics of AGRIC-YES participants.
2. Identify the training received by the participants.
3. Determine the benefits derived by the participants.
4. Determine the extent of acquisition of practical training.
5. Identify the limitations facing AGRIC-YES participants.
6. Determine the AGRIC-YES participants' perception of integrated fish farming.

**Research Hypotheses**

1. There is no significant relationship between the benefits derived from the Agricultural Youth Empowerment Scheme (AGRIC-YES) and the socio-economic characteristics of the participants.
2. There is no significant relationship between benefits derived from Agricultural Youth Empowerment Scheme (AGRIC-YES) and participants' perception towards the programme.

## MATERIALS AND METHODOLOGY

### Study area

Lagos State is located in the southwestern geopolitical zone of Nigeria and was created on May 27, 1967. In terms of land area, Lagos State is the smallest of Nigeria's 36 states. Lagos State is arguably the most economically important state of the country (John, 2013), containing Lagos, the nation's largest urban area. The State has a total land area of about 347,500 hectares, swamp and water bodies of about 75,755 hectares, a cultivable area of about 169,613 hectares, and about 50,884 hectares under cultivation. The geo-referenced points of Epe are between 6° 35′ 0″ N of the equator and between 3° 59′ 0″ E. It shares an international boundary with the Republic of Benin to the West. On the North and East, it is bounded by Ogun State. Behind its southern borders lies the Atlantic Ocean. Epe is a town located on the north side of the Lekki Lagoon. Ikeja is the capital of Lagos State and Epe is popular for the fishing activities attributed to the city, the 2006 census of the population of Epe was 181,409 (NPC, 2006). The two dominant religions in the state are Christianity and Islam. Traditional religion is still practiced, though not by a large proportion of the people.

### Method of data collection

Data used for the study were obtained with the aid of a structured questionnaire administered to the fish farmers. The structured questionnaire used in the course of the study contains 75 questions, which are divided into six different sections with each section focusing on the specific objectives.This was only administered to 20 percent of the 600 participants in the Lagos Agric-YES scheme. The draft research instrument (questionnaire) was subjected to face and content validity for clarity and purposefulness by the judgment of the supervisor and other experts in related fields. This helped to know how well the behavioral constructs covered by the measurement, match those specified in the stated objectives (Olaoye, 2010). The reliability test for the research instrument test was done through the test-retest method in which the copies of the questionnaire were administered to some selected respondents within the space of two weeks to ascertain the consistency of results obtainable from several administered instruments (Olaoye, 2010). A reliability coefficient using the Pearson's Product Moment Correlation of 0.75 indicated that the research instrument was reliable for the data collection

### DATA ANALYSIS

Data were analyzed using descriptive statistics such as frequency, mean, percentage, and standard deviation as well as inferential statistics such as correlation and Chi-square analytical techniques. The results were presented in frequency distribution tables and charts.

## RESULTS

The socio-economic characteristics of the respondents included in this study were age, sex, marital status, household size, level of education, religion, primary occupation, secondary occupation, and membership of fish farm group and area of residence. Each socio-economic variable is discussed below:

The result in table 1 indicates that more than half (57.6%) of Agric-YES participants were in the age bracket of between 25-30 years, 13.3% were younger than 25 years while 18.3% and 10.8% were in the age bracket of 31-35 and older than 36 years respectively. The mean age of participants was 29.06. The result revealed that close to three-fifths (58.3%) of the AGRIC-YES participants were males, while the remaining (41.7%) were females and it also shows that about 65% of respondents are single and 35% of respondents are married. None of the respondents was divorced, separated, or widowed. The table shows that about 42.5% and 55.9% of the respondents had between 1-2 persons per household and 55.9% of the respondents had between 3-5 persons per household while only 1.6% had more than 6 persons per household size. The mean household size was 2.84 for participants and 8 for non-participants.

Furthermore, the study reveals that all the respondents had one form of education or another. It shows that 29.2%, 10.8%, 20.8%, 37.5% and 0.8%

were OND, NCE, HND, BSc. and MSc graduates respectively. Out of the sampled participants, the higher proportion (54.2%) of the respondents practiced Christianity while Islam was practiced by 45.89%of the youths. It further reveals that 44.1% and 46.7% of the youths had 1-2 years and 3-4 years fish farming experience respectively while only 9.1% of the respondents had 5-6 years of fish farming experience with a mean fish farming experience of 2.86 years. As shown in the table, more than half (53.3%) and (38.3%) of the respondents had no primary and secondary occupation respectively. It also shows that 13.3% had schooling as a primary occupation while 29.2% and 43.3% took agriculture as their primary and secondary occupations respectively. While trading is considered as a primary occupation by only 3.3% of the participants, 14.2% had traded as a secondary occupation. Figure 4 shows that the majority of the farmer (82.5%) of the participants were not members of any farmers group while just the remaining (17.5%) were members of at least one farmers' group. Most (62.5%) of the participants were residents in the rural part of the state while 37.5% were from the urban areas.

The training received by AGRIC-YES participants during the scheme was presented in Table 2. It reveals that majority of the participants received training on pond construction (97.5%), fish breeding (99,2%), feed formulation and compounding (94.2%), pond maintenance (97.5%), pond stocking (90.8%), fish preservation (95.8%), fish processing (95.0%), fish marketing (89.2%), fish stock management (96.7%), fish harvesting (95.8%), water quality monitoring (90.8%), integrated farm management (81.7%), record keeping and financial management (86.7%), inventory management (70.8%), pond selection (90.8%), pond liming (88.3%), fertilizer application (95.0%) fish pond netting (84.2%).

Results on the extent of practical skills acquired by the respondents during the scheme were presented in Table 3. It shows the highest proportions of the participants of the scheme had received practical skills on fish feed production and pelleting (55.8%), analysis and quality control of water (48.3%), fish production (55.8%), fish stock management (55.0%), fish marketing (45.8%) and fish harvesting (60.0%) to a high extent. The use of pond water to irrigate crops, production of fishmeal from fish waste, and processing of poultry droppings into manure were practical skills acquired by 40.8%, 32.5%, and 43.3% of the participants at a slightly high extent. The mean values of the extent of practical skills acquisition range from 1.37-2.44.

As revealed in Table 4, the limitations of the AGRIC-YES programme as perceived by the participants were the use of local farm tools (90.0%), non-availability of modern technologies (83.0%), lack of access to credit facilities (80.0%), Inadequate supply of inputs (79.2%) and unavailability of startup capital (78.3%). Others include inadequate availability of trainers (71.7%), inadequate feed monitoring and evaluation (62.5%) and application forms are not readily available (63.3%). Table 9 also reveals that an un-conducive training environment was identified as a limitation of the scheme by only 21.7% of the participants.

The level of benefits derived by the participants of the AGRIC-YES programme was presented in Table 5. It shows that the highest proportion of the participants benefitted from generated employment (70%), increased income (47.5%), increased practical knowledge on integrated fish farming (55.8%), and exposure to modern production technology (50.8%) and access to improved aquaculture technologies (43.3%). The mean values of the level of benefits range 0.90-1.68 for linkage with insurance agencies and generation of employment opportunities respectively.

The results in Table 6 shows that the highest proportion of respondents agreed that IFF ensures optimal utilization of available resources (88.3%), IFF is cost-effective (75.8%), AGRIC-YES has stimulated the youths' interest to practice IFF (66.6%), and that IFF contributes to food security (73.3%). The majority of the participants were also in agreement that IFF requires a high level of experience (80.8%), more capital (82.5%),uneasy to manage (75.8%), and labour intensive (73.3%). It was however disagreed by 60.0% of theparticipants that IFF can lead to diversion of attention to the non-aquaculture enterprise while54.2% agreed that IFF is vulnerable to disease outbreak. The result in Figure 3 also shows that more than half of respondents (63.30%) has a favorable perception towards the scheme while just (36.70%) has unfavorable perception.

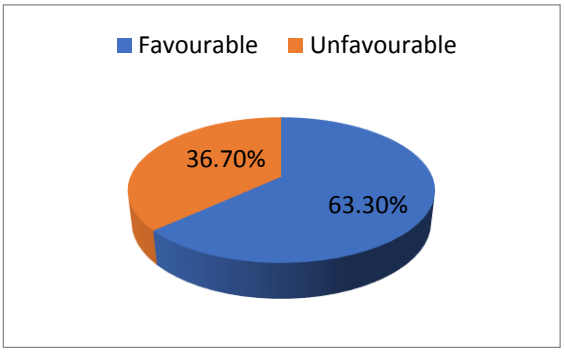


**Figure 1: Perception of respondents towards Agric-YES programme**

**Testing of hypotheses**

This shows the relationship between some of the independent variables and dependent variables.

**$H_0$1**: There is no significant relationship between benefits derived from the AGRIC-YES programme and socio-economic characteristics.

The results of Chi-square analysis that showed the relationships between socio-economic variables measured at nominal and the benefits derived by the participants were presented in Table 7. It shows that there was no significant relationship between benefits derived from AGRIC-YES and marital status ($\chi^2 = 1.973$, $p > 0.05$), sex ($\chi^2 = 3.910$, $p > 0.05$), educational level ($\chi^2 = 6.532$, $p > 0.05$), religion ($\chi^2 = 4.805$, $p > 0.05$) primary occupation ($\chi^2 = 12.758$, $P > 0.05$), farmers' group ($\chi^2 = 1.935$, $P > 0.05$), area of residence ($\chi^2 = 2.311$, $P > 0.05$) while there was a significant relationship between benefits derived from AGRIC-YES and the secondary occupation ($\chi^2 = 47.578$, $p < 0.05$) of the participants.

The result of Pearson's Product Moment Correlation is presented in Table 8. It shows that age ($r = -0.188$, $p = 0.040$) was negatively related to the respondents' derived benefits while household size ($r = 0.381$, $p = 0.001$) had positive and significant relationship with participants' derived benefits. However, fish farming experience ($r = 0.036$, $p = 0.698$) had no significant relationship with the benefits derived from the AGRIC-YES programme.

**$H_0$2**There is no significant relationship between benefits derived from the AGRIC-YES programme and the perception of youth farmers' towards the programme.

Table 9 reveals that there was no significant relationship between benefits derived from the AGRIC YES programme and the perception of the participants ($\chi^2 = 2.126$, $p > 0.05$) in the study area.

## DISCUSSION

From the field survey, it was discovered that the majority of sampled participants of the AGRIC-YES programme in Lagos State were men and not older than 35 years. The mean age also implies that the majority of the participants were considered to be within the age range that is highly productive and active to undertake strenuous tasks associated with fish farming. This could also ensure that the participants adopt and continue the use of improved fisheries technology. This position is supported by Bello (2000) who opined that age influences a person's acceptance of innovation and risk-taking.

The survey further revealed that most of the respondents were single implying that although most of the participants were youths without family responsibilities, they needed to contribute to household income through their participation in the Agric-YES programme. The reports obtained also suggest that all participants had access to formal education at different levels. This, therefore, subject them to a high level of acquisition of practical skills and this agrees with the report of Abdullahi (2010) that education is considered important for easy understanding of improved methods of agricultural production and makes farmers more receptive to advise from extension agencies or be able to deal with technical recommendations that require a certain level of numeracy and literacy.

The mean household size of approximately three persons per household implies that the participants had a small household size and can be associated with their young age. This could however prevent them from taking advantage of family labour availability due to few household members. However, large household size implies that it will increase household consumption expenditure, which would compete with production for limited financial resources within the household. This position aligns with Afolabi (2008) who noted the existence of negative influence of household size on repayment capacity in his study of loan repayments among small-scale farmers from the Oyo State of Nigeria.

Table 1 showed that about 91% of the participants had fish farming experience between 1 and 4 years. This implies that the majority of the participants had little experience in fish farming. Thus, we can interpret the result by saying that participants with little fish farming experience are more likely to acquire and adopt newer fish farming skills and techniques rather than sticking with the original methods familiar to them. This agrees with Faruque *et al* (2018) findings that indicated that more experienced farmers are less likely to adopt new farming recommendations.

A farmers' group is social participation that helps farmers to pool their resources to have access to fisheries inputs and to have insights into their fishing issues. This shows that the majority of the participants in the study areas do not belong to any group, which may be because of a lack of awareness and interest. Hence, being a member of an association group could create peer pressure for fish farmers to adopt new modern facilities. This was in agreement with Akinbile, (1998) who perceived that groups make sure members derive benefits they cannot get individually if they were acting alone.

The limitation faced by participants during the scheme includes the use of local farm tools, inadequate availability of trainers, inadequate supply of inputs, lack of access to credit facilities amidst others as major constraints. Other factors of production are often considered to be motivated by credit facilities. For instance, it can make the latent potential or under-used capacities functional. Easy availability of credit motivates small farmers to take up new technology and increase production (Gupta, 2006).

The result in Table 7 shows that there was a significant relationship between benefits derived from AGRIC-YES and the secondary occupation ($\chi^2 = 47.578$, $p < 0.05$) of the participants. Respondents who took fish farming has their only occupation derived higher-level benefits and that can be attributed to the fact there would be no diversion of

interest to other occupation and total concentration of fish farming. The result of Pearson's Product Moment Correlation is presented in Table 8 shows that age (r = -0.188, p = 0.040) was negatively related to the respondents' derived benefits. The younger the fish farmer, the higher they derived benefit from the program, and as such the implication is that lower aged youth derived higher level of benefit than older-aged and this could be because they could easily adopt modern technologies, acquire skills more easily than the older generation. Household size (r = 0.381, p = 0.001) had positive and significant relationship with participants' derived benefits. The higher the household size, the higher the benefits derived. That is possible because the large household size can serve as cheap labour, which would reduce the cost of production thereby increasing income. Table 9 reveals that there was no significant relationship between benefits derived from the AGRIC-YES programme and the perception of the participants ($\chi$ = 2.126, p = 0.345) in the study area.

## CONCLUSION

The result of this study revealed that the majority of the participants involved in the empowerment scheme for integrated fish farming age range was equally within the economically active range. Lack of credit facilities, poor extension services among others are problems facing trainees. Based on the finding, it showed that there is no significant difference between benefits derived from Agric-YES and the perception of participants towards the scheme. This may be attributed to many factors that were observed in the course of the survey. Such because of the high-interest rate or limited moratorium (if any) given to them. Therefore, as a means of solving the problems, other available sources of loan facilities should be extended to youth fish farmers, assess productive land resources, and increased practical knowledge on integrated fish farming.

## REFERENCES


Abdullahi, O.E. 2010. Comparative study of Kwara State secondary school students, habits in the English language. Its implication for counseling. *Educational Research*, 1 (6). Published by Educational Research (ER). http://interesjournals.org/ER. 40pp.

Afolabi, J.A. 2008. Analysis of loan repayment among small-scale farmers in south-western Nigeria – a discriminant approach. J. Soc. Sci., 17(1): 83-88.

Akinbile, L.A. 1998. Group formation and group dynamics. Paper presented at National Agricultural Extension and Research Liaison Services workshop on Extension Communication Techniques. Moor Plantation, Ibadan, Nigeria. 11pp.

Babatunde, R and E. Oyatoye. 2005. Food security and marketing problems in Nigeria: The case of maize marketing in Kwara State. http://www.tropentagde/2005/abstracts/links/babatunde_deu4urzi.pdf

Bello, M.O. 2000. Cauterization of potential adopters for organic-based fertilizer among vegetable farmersin Ojo LGA, Lagos State, Nigeria. Bachelors of Agriculture Project University of Agriculture, Abeokuta. 55pp.

Faruque, A.S, Z. Huang and T. Karimamzira. 2018. Investigating key factors influencing farming decisions based on soil testing and fertilizer recommendation facilities (STFRF)-A case study on rural Bangladesh. Sustainability, 10(11), 4311. https://doi.org/10.3390/su10114331

Gupta, M.V. 2006. Challenges in sustaining and increasing fish production to combat hunger and poverty in Asia. In: NAGA, World Fish Center Quarterly, Penang Malaysia, *29*(1 &2), 4 – 10.

John, M.O.E. 2013. Out of Africa: Fashola: Reinventing servant leadership to engender Nigeria's transformation. AuthorHouse. p.135.

National Population Commission. 2006. National population census figure. Abuja. Available from https://www.nationalpopulation.gov.ng/. [Accessed: 03/02/2018]

Nwaobiala, C.U. 2015. Determinants of rice output among ADP contact farmers in mining and non-mining location of Ivo Local Government Area of Ebonyi State, Nigeria. The Nigeria Agricultural Journal. 46(1&2): 292-313.

Ojoko, E. 2014. Growth Enhancement Support Scheme (GESS) and the Challenges of food security in Nigeria (ARPN) Journal of Agricultural and Biological Science, 9(7): 25-31.

Ojuekaiye, E.O. 2001. Economic Analysis of cassava production in Three Local Government Areas of Kogi State. Unpublished M.Sc. Thesis, Department of Agricultural economics and rural sociology, ABU, Zaria. 75pp.

Olaoye, O.J. 2010. Dynamics of the adoption process of improved fisheries technologies in Lagos and Ogun States, Nigeria. A Ph.D. thesis, Federal University of Agriculture, Abeokuta, Ogun State, Nigeria. 337pp.

Vanguard. 2012. Agric Yes program: Over 300 youths empowered in Lagos: retrieved online from http://www.vanguardngr.com/2012/10/agric-yes-program-over-300 youths empowered-in-Lagos 2/amp/.

**Table 1: Socioeconomic characteristics of the respondent**

| Socioeconomic characteristics | Frequency | Percentage | Mean ( $\bar{X}$ ) |
|---|---|---|---|
| **Age** | | | |
| Less than 25 | 16 | 13.3 | |
| 25-30 | 69 | 57.6 | |
| 31-35 | 22 | 18.3 | 29.06 years |
| Above 36 | 13 | 10.8 | |
| **Sex** | | | |
| Male | | 58.37 | |
| Female | | 41.75 | |
| **Marital status** | | | |
| Single | | 65 | |
| Married | | 35 | |
| **Household size** | | | |
| 1-2 | 51 | 42.5 | |
| 3-5 | 67 | 55.9 | 2.84 persons |
| 6-8 | 2 | 1.6 | |
| 1-2 | 51 | 42.5 | |
| **Level of education** | | | |
| SSCE | 1 | 0.8 | |
| OND | 35 | 29.2 | |
| NCE | 13 | 10.8 | |
| HND | 25 | 20.8 | |
| BSc. | 45 | 37.5 | |
| MSc. | 1 | 0.8 | |
| PhD | 0 | 0 | |
| **Religion** | | | |
| Christian | 16 | 54.2 | |
| Islam | 69 | 45.8 | |
| **Fish farm experience** | | | |
| 1-2 | 53 | 44.1 | |
| 3-4 | 56 | 46.7 | 2.86 years |
| 5-6 | 11 | 9.1 | |
| **Member of fish farmers group** | | | |
| With farmers group | 16 | 17.5 | |
| Without farmers group | 69 | 82.5 | |
| **Area of residence** | | | |
| Urban | 16 | 62.5 | |
| Rural | 69 | 37.5 | |

| Occupation | Primary Occupation | | Secondary Occupation | |
|---|---|---|---|---|
| | Frequency | Percentage | Frequency | Percentage |
| Unemployed/None | 64 | 53.3 | 46 | 38.3 |
| Agriculturist | 35 | 29.2 | 52 | 43.3 |
| Trading | 4 | 3.3 | 17 | 14.2 |
| Artisan | 1 | 0.8 | 5 | 4.1 |
| Schooling | 16 | 13.3 | 0 | 0.0 |

**Table 2: Training of the respondents**

| Training Received | Frequency | Percentage |
|---|---|---|
| Pond construction | 117 | 97.5 |
| Fish breeding | 119 | 99.2 |
| Feed formulation and compounding | 113 | 94.2 |
| Pond maintenance | 117 | 97.5 |
| Pond stocking | 109 | 90.8 |
| Fish preservation | 115 | 95.8 |
| Fish processing | 114 | 95.0 |
| Fish marketing | 107 | 89.2 |
| Fish stock management (sorting) | 116 | 96.7 |

| | | |
|---|---|---|
| Fish harvesting | 115 | 95.8 |
| Water quality monitoring | 109 | 90.8 |
| Integrated farm management | 98 | 81.7 |
| Record keeping and financial management | 104 | 86.7 |
| Inventory management | 85 | 70.8 |
| Pond site/selection | 109 | 90.8 |
| Pond liming | 106 | 88.3 |
| Fertilizer application | 114 | 95.0 |
| Fish pond netting | 101 | 84.2 |

**Table 3: Extent of acquisition of practical skills by the respondents**

| Practical Skills | High Extent | Slightly high Extent | Low extent | Not at all | Mean $\overline{X}$ | S.D |
|---|---|---|---|---|---|---|
| Fish feed production and pelleting | 67(55.8) | 38(32.7) | 12(10.0) | 3(2.5) | 2.41 | 0.772 |
| Use of pond water to irrigate crops | 38(31.7) | 49(40.8) | 25(20.8) | 8(6.7) | 1.98 | 0.893 |
| Production of fish meal from fish waste | 29(24.2) | 39(32.5) | 37(30.8) | 15(12.5) | 1.68 | 0.979 |
| Processing of poultry droppings into manure | 21(17.5) | 52(43.3) | 28(23.3) | 19(15.8) | 1.63 | 0.953 |
| Production of maggots from livestock waste | 14(11.7) | 39(32.5) | 42(35.0) | 23(19.2) | 1.37 | 0.932 |
| Analysis and quality control of water | 58(48.3) | 42(35.0) | 13(10.8) | 7(5.8) | 2.26 | 0.874 |
| Fish production | 67(55.8) | 38(31.7) | 14(11.7) | 1(0.8) | 2.43 | 0.729 |
| Post-harvest management | 67(55.8) | 35(29.2) | 13(10.8) | 5(4.2) | 2.37 | 0.840 |
| Pond construction and maintenance | 62(51.7) | 45(37.5) | 12(10.0) | 1(0.8) | 2.40 | 0.703 |
| Fish stock management | 66(55.0) | 38(31.7) | 15(12.5) | 1(0.8) | 2.41 | 0.739 |
| Fish marketing | 55(45.8) | 51(42.8) | 13(10.8) | 1(0.8) | 2.33 | 0.702 |
| Fish harvesting | 72(60.0) | 31(25.8) | 15(12.5) | 2(1.7) | 2.44 | 0.776 |

**Table 4: Limitations of Agric-YES**

| Limitations | Frequency | Percentage |
|---|---|---|
| Use of local farm tools | 108 | 90.0 |
| Non-availability of modern technologies | 100 | 83.3 |
| Inadequate availability of trainers | 86 | 71.7 |
| Un conducive training environment | 26 | 21.7 |
| Inadequate field monitoring and evaluation | 75 | 62.5 |
| Inadequate practical demonstration | 60 | 50.0 |
| Inadequate infrastructural facilities | 63 | 52.5 |
| Unavailability of start-up capital | 94 | 78.3 |
| Lack of access to credit facilities | 96 | 80.0 |
| Inadequate supply of inputs | 95 | 79.2 |
| Application forms are not readily available. | 76 | 63.3 |

**Table 5: Benefits derived from Agric-YES by the participants**

| Benefits of Agric-YES | High Extent | Low Extent | Not at all | Mean $\overline{X}$ | S.D |
|---|---|---|---|---|---|
| Generation of employment opportunity | 84(70.0) | 31(25.8) | 4(3.3) | 1.68 | 0.550 |
| Increased income | 57(47.5) | 53(44.2) | 9(7.5) | 1.42 | 0.643 |
| Provision of input | 34(28.3) | 55(45.8) | 31(25.8) | 1.03 | 0.739 |
| Access to extension service | 35(29.2) | 52(43.3) | 33(27.5) | 1.02 | 0.756 |
| Access to credit facilities | 35(29.2) | 51(42.5) | 34(28.3) | 1.01 | 0.761 |
| Linkage with insurance agencies | 30(25.0) | 48(40.0) | 42(35.0) | 0.90 | 0.771 |
| Marketing opportunities | 29(24.2) | 62(51.7) | 29(24.2) | 1.00 | 0.698 |
| Access to productive land resources | 37(30.8) | 47(39.2) | 36(30.0) | 1.01 | 0.783 |
| Increased practical knowledge on integrated fish farming | 67(55.8) | 38(31.7) | 15(12.5) | 1.44 | 0.719 |
| Exposure to modern fish production technologies | 61(50.8) | 47(39.2) | 12(10.0) | 1.42 | 0.681 |
| Access to improved aquaculture technologies | 52(43.3) | 34(28.3) | 34(28.3) | 1.15 | 0.837 |

**Table 6: Perception of respondents towards integrated fish farming**

| PERCEPTION | Strongly Agree | Agree | Un Decided | Disagree | Strongly Disagree | Mean $\overline{X}$ |
|---|---|---|---|---|---|---|
| IFF ensures the optimal utilization of available resources. | 73(60.8) | 33(27.5) | 11(9.2) | 2(1.7) | 1(0.8) | 4.45 |
| IFF is cost-effective. | 43(35.8) | 48(40.0) | 23(19.2) | 4(3.3) | 2(1.7) | 4.02 |
| Risk can be reduced with IFF. | 32(26.7) | 39(32.5) | 36(30.0) | 10(8.3) | 3(2.5) | 3.75 |
| AGRIC-YES has stimulated my interest in IFF. | 49(40.8) | 31(25.8) | 20(16.7) | 14(11.7) | 6(5.0) | 3.85 |
| IFF contributes to food security. | 47(39.2) | 41(34.2) | 25(20.8) | 4(3.3) | 3(2.5) | 4.06 |
| IFF requires a high level of experience. | 64(53.3) | 33(27.5) | 20(16.7) | 2(1.7) | 1(0.8) | 4.35 |
| It requires more capital. | 72(60.0) | 27(22.5) | 17(14.2) | 3(2.5) | 1(0.8) | 4.38 |
| It is not easy to manage integrated fish farming. | 64(53.3) | 27(22.5) | 16(13.3) | 8(6.7) | 5(4.2) | 4.13 |
| Integrated fish farming is labour intensive. | 61(50.8) | 27(22.5) | 26(21.7) | 3(2.5) | 3(2.5) | 4.17 |
| It can lead to diversion of attention to non -aquaculture enterprises. | 15(12.5) | 15(12.5) | 18(15.0) | 16(13.3) | 56(46.7) | 2.28 |
| IFF is vulnerable to disease outbreak | 30(25.0) | 35(29.2) | 35(29.2) | 14(11.7) | 6(5.0) | 3.58 |

**Table 7:** Chi-square analysis of participants' benefits derived from Agric YES programme and socio-economic characteristics.

| Variable | $\chi^2$ | Df | P-Value | Decision |
|---|---|---|---|---|
| Marital status | 1.973 | 2 | 0.373 | NS |
| Sex | 3.910 | 2 | 0.142 | NS |
| Educational level | 6.532 | 10 | 0.769 | NS |
| Religion | 4.805 | 2 | 0.09 | NS |
| Primary occupation | 12.758 | 8 | 0.120 | NS |
| Secondary occupation | 47.578 | 8 | 0.001 | S |
| Farmers' group | 1.935 | 2 | 0.380 | NS |
| Area of residence | 2.311 | 2 | 0.315 | NS |

$\chi^2$= Chi-square calculated, df = Degree of freedom, P-value, S = Significant (P < 0.05), NS = Not significant (P > 0.05).

**Table 8:** Correlation analysis of the respondent's benefits derived from the AGRIC-YES programme and socio-economic characteristics.

| Variables | R | P | Decision |
|---|---|---|---|
| Age | -0.188 | 0.040* | Significant |
| Household size | 0.381 | 0.001** | Significant |
| Farming experience | 0.036 | $0.698^{NS}$ | Not significant |

r= correlation coefficient, *significant relationship at 0.05 level of significance, **significant at 0.01 level of significance, $^{NS}$ not significant at either 0.01 or 0.05 significant levels

**Table 9:** Chi-square analysis of benefits derived by participants from the AGRIC-YES programme and perception of participants towards the programme.

| Variable | $\chi^2$ | Df | p-value | Decision |
|---|---|---|---|---|
| Perception | 2.126 | 2 | 0.345 | NS |

**Data Source: Field survey, 2017**

$\chi^2$= Chi square calculated, Df = Degree of freedom, P- value, S = Significant (P < 0.05), NS = Not significant (P > 0.05).