

## Analysis of Use of Organic Farming Practices among Rural fish Farmers in South-South Nigeria

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### Abstract

*The paper focused on the use of organic farming practices amongst fish farmers in South-South Nigeria. Multistage sampling technique was used and three states (Akwa Ibom, Bayelsa and Delta) were randomly selected from the six states that make up South-South zone in Nigeria. Data for the study was obtained with a structured questionnaire administered to a sample size of one hundred and fifteen (115) fish farmers. Findings revealed that fish farmers were aware of six out of the fourteen organic farming practices listed. Use level was low in organic farming practices for fish. The results revealed that out of the fourteen (14) practices outlined, fish farmers engaged in the use of three of such practices. Farmers agreed to the use of eco-friendly design ( $\bar{x} = 2.56$  and  $SD = 0.86$ ), site is far from polluting substances ( $\bar{x} = 2.57$  and  $SD = 1.01$ ) and pond protection from predators ( $\bar{x} = 2.70$  and  $SD = 0.89$ ). From the result, the following were identified as not being used: Management without growth hormones ( $\bar{x} = 2.41$  and  $SD = 0.89$ ), antibiotics is used in critical cases where no other treatment would work ( $\bar{x} = 1.97$  and  $SD = 0.88$ ), cultivate without genetic engineering ( $\bar{x} = 2.21$  and  $SD = 1.18$ ), quality water source ( $\bar{x} = 2.14$  and  $SD = 1.09$ ), organic fertilizer ( $\bar{x} = 1.89$  and  $SD = 0.98$ ), low stock density 10kg/m<sup>3</sup> ( $\bar{x} = 1.62$  and  $SD = 0.98$ ), manage without synthetic appetizer and coloring ( $\bar{x} = 1.92$  and  $SD = 1.78$ ), poly-culture ( $\bar{x} = 1.98$  and  $SD = 0.99$ ), proper record keeping ( $\bar{x} = 1.98$  and  $SD = 1.10$ ), use of resistant species ( $\bar{x} = 2.43$  and  $SD = 1.00$ ) and natural treatment (homeopathy) ( $\bar{x} = 1.86$  and  $SD = 0.89$ ). The low use of organic farming practices among fish farmers could be as a result of challenges or difficulties in carrying out such practices and lack of awareness of the dangers associated with the conventional practices. It is recommended therefore that training on organic fish production practices be emphasized in Extension activities.*

### Introduction

A rural area in Nigerian context is defined by Ekong, (2010) as an area of settlement in which half or more than half of the household working population is engaged in farming. Rural communities are different from urban ones. They are very important for the development of the nation and the National Economy. Akpabio (2005) outlined the importance of rural areas. A high percentage (70%) of Nigeria populace resides in the rural communities and this makes it impossible to ignore them in national issues. Rural dwellers according to him cultivate and provide the bulk of food that is consumed by the entire populace aside importation. Fish is an important source of protein and a means of improving nations economic base (World Bank, 2000). A Hotel in Kenya (Bridge organic and Health restaurant) is a place where all the food served is considered organic because the raw materials used are grown organically (Kagai, 2005). The fish that are produced under natural conditions according to the organic agricultural principles, not exposed to any protective additives or genetic modification, fed with baits prepared with completely natural materials and certificated by a control agency are called "organic fish" (Awuror and Karugu 2014). Organic fish production is a model of production which

raises fishes with low stock density and attaches importance to human health without using any chemical pesticides or the products modified genetically (Do cytowanian *et al*, 2010). The Council of Europe adopted a recommendation on the welfare of farmed fish in 2005 and in 2008 the World Organization for animal health, (European Food Safety Authority (EFSA), 2009). Organic fish farming system rely on practices such as cultural and biological disease management and virtually prohibit utilization of synthetic chemicals in fish production. Ponds and cages are the recommended rearing system for organic aquaculture. Tank systems are permitted for hatcheries and nurseries but not for grow out operations on the farm. The stocking density of cultured species is limited and must be less than that of conventional aquaculture  $10\text{kg}/\text{m}^2$ . The use of mechanical aeration is usually banned, while an exception is made for mechanical mixing of the water column for a limited number of hours per day with a small number of devices. Organic aquaculture aims to reduce instances of diseases and emphasizes preventive treatments. Chemicals and antibiotics are not permitted but vaccines and probiotics are permitted in aquaculture (Preinet *al.*, 2012). Feeds should come from certified organic agricultural inputs or from aquatic sources that have been cultured under controlled organic conditions. There is no doubt, organic produce are superior to the conventionally grown food. In spite of the benefits of organic farming, research on organic livestock and fish farming is low. Previous studies on organic farming concentrated more on crop production. Availability of information on the importance of any agricultural practice could enhance its adoption among farmers. It is pertinent therefore to find-out the level of awareness of organic farming practices and level of use of such practices among farmers in South -South Nigeria

## Methodology

Fish farming was selected from the three prominent agricultural enterprises of fishery, livestock and crop. Multistage sampling technique was used. Firstly, three states- Delta, Bayelsa and Akwa-Ibom were selected from the six states that make up South-South Nigeria. Data for the study was obtained with a structured questionnaire administered to a sample size of one hundred and fifteen fish farmers. The instrument elicited information on level of use of organic fish farming practices identified with responses on a four point rating scale of very regularly = 4, regularly =3, rarely =2 never =1. A decision rule of mean score of 2.50 was established.

## Result and Discussions

### Level of awareness of organic farming practices amongst fish farmers

Amongst fish farmers, out of the fourteen (14) listed organic farming practices; results as shown in Table 1 revealed that farmers were aware of six of such practices. They are eco friendly design ( $\bar{x}=2.91$ ,  $SD=1.06$ ), high quality water source ( $\bar{x}=2.90$ ,  $SD=1.24$ ), pond protection from predators ( $\bar{x}=3.36$ ,  $SD=0.97$ ), use of resistant species ( $\bar{x}=2.95$ ,  $SD=1.21$ ), natural treatment ( $\bar{x}=2.64$ ,  $SD=1.38$ ), cultivation without genetic engineering ( $\bar{x}=2.58$ ,  $SD=1.34$ ) and management without growth hormones ( $\bar{x}=2.60$ ,  $SD=1.06$ ). Other practices were below mean score of ( $\bar{x}=2.50$ ). These were low stock density  $10\text{kg}/\text{m}^2$  ( $\bar{x}=2.46$ ,  $SD=1.16$ ), management without synthetic appetizer and colouring ( $\bar{x}=2.31$ ,  $SD=1.09$ ), organic fertilizer ( $\bar{x}=2.24$ ,  $SD=1.29$ ), location of site faraway from polluting substances ( $\bar{x}=2.11$ ,  $SD=1.30$ ), antibiotics only use in critical cases ( $\bar{x}=2.10$ ,  $SD=1.32$ ) and poly-culture ( $\bar{x}=1.79$ ,  $SD=1.10$ ). The grand mean was 2.49. This implies a high awareness level which could be as a result of organic fish farming practices being in line with the traditional method of fish farming.

### Level of use of organic farming practices among fish farmers.

Table 2, presents the level of use of organic farming practices among fish farmers. The result revealed that out of the fourteen (14) practices outlined, fish farmers engaged in the use of three of such practices. Farmers agreed to the use of eco-friendly design ( $\bar{x}$  = 2.56 and SD = 0.86), site is far from polluting substances ( $\bar{x}$  = 2.57 and SD = 1.01) and pond protection from predators ( $\bar{x}$  = 2.70 and SD = 0.89). From the result, the following were considered not being used; Management without growth hormones ( $\bar{x}$  = 2.41 and SD = 0.89), antibiotics is used in critical cases where no other treatment would work ( $\bar{x}$  = 1.97 and SD = 0.88), cultivate without genetic engineering ( $\bar{x}$  = 2.21 and SD = 1.18), quality water source ( $\bar{x}$  = 2.14 and SD = 1.09), organic fertilizer ( $\bar{x}$  = 1.89 and SD = 0.98), low stock density 10kg/m<sup>3</sup> ( $\bar{x}$  = 1.62 and SD = 0.98), manage without synthetic appetizer and coloring ( $\bar{x}$  = 1.92 and SD = 1.78), poly-culture ( $\bar{x}$  = 1.98 and SD = 0.99), proper record keeping ( $\bar{x}$  = 1.98 and SD = 1.10), use of resistant species ( $\bar{x}$  = 2.43 and SD = 1.00) and natural treatment (homeopathy) ( $\bar{x}$  = 1.86 and SD = 0.89).

The low use of organic farming practices among fish farmers could be as a result of challenges or difficulties in carrying out such practices and lack of awareness of the dangers associated with the conventional practices. This does not augur well for the quest for healthy living. The work of Sakib *et al.* (2014) revealed a positive relationship between knowledge of agricultural practice and innovativeness of farmers. Shibanda (1996) in his assessment of small holder fish farmers information needs underscored the value of information as a commodity itself and the need to recognize it as an essential resource for the small farmer in taking decisions and improving farming practices. Also, policy makers have continued to draft and pass policies such as those encouraging the importation and use of cheap agro- chemicals and fertilizers (East Africa Community, 2004). Farmers have no choice but to stick to conventional practices.

Table 1. Distribution of fish farmers by level of awareness of farming practices

Organic Farming Practices	Not at all	Low	Moderate	High	Mean	Std deviation
Eco-friendly design	22 (19.1)	4 (3.5)	51 (44.3)	38 (33.0)	2.91	1.06
Manage without growth Hormone	31 (27.0)	3 (2.6)	61 (53.0)	20 (17.4)	2.60	1.06
Antibiotics is only used in clinical cases where no other treatment would work	65 (56.5)	2 (1.7)	19 (16.5)	29 (25.2)	2.10	1.32
Cultivate without genetic engineering.	44 (38.3)	5 (4.3)	21 (18.3)	45 (39.1)	2.58	1.34
Site is far from polluting substances	63 (54.8)	4 (3.5)	20 (17.4)	28 (24.3)	2.11	1.30
High quality water source (stream, river)	31 (27.0)	1 (0.9)	31 (27.0)	52 (45.2)	2.90	1.24
Organic fertilizer	54 (47.0)	4 (3.5)	20 (17.4)	31 (27.0)	2.24	1.29
Low stock density 10kg/m	39 (39.9)	6 (5.2)	47 (40.9)	23 (20.0)	2.46	1.16
Manage without synthetic appetizer and coloring	40 (34.8)	15 (13.0)	44 (38.3)	16 (13.9)	2.31	1.09
Polyculture	70 (60.9)	13 (11.3)	18 (15.7)	14 (12.2)	1.79	1.10
Proper record keeping	65 (56.5)	3 (2.6)	18 (15.7)	29 (25.2)	2.09	1.32
Pond protection from predators	13 (11.3)	2 (1.7)	36 (31.3)	64 (55.7)	3.31	0.97
Use of resistant species	29 (25.2)	1 (0.9)	34 (29.6)	51 (44.3)	2.95	1.21
Natural treatment (homeopathy)	43 (37.4)	8 (7.0)	11 (9.6)	53 (46.1)	2.64	1.38

Source: Field survey, 2015.

Mean score 2.50 = aware (A), mean score < 2.50 = not aware (NA)

Values in parenthesis stand for percentages

**Table 2. Distribution of fish farmers by level of use of organic farming practices**

Organic Farming Practices	Never	Rarely	Regularly	Very. regularly	Mean	Std Deviation
Eco-friendly design	24 (20.9)	6 (5.2)	81 (70.4)	4 (3.5)	2.56	0.86
Manage without growth hormone	31 (27.0)	5 (4.3)	79 (68.7)	0 (0.0)	2.41	0.89
Antibiotics is only used in clinical cases where no other treatment would work	45 (39.1)	29 (25.2)	40 (34.8)	1 (0.9)	1.97	0.88
Cultivate without genetic engineering.	51 (44.3)	7 (6.1)	38 (33.0)	19 (16.5)	2.21	1.18
Site is far from polluting substances	28 (24.3)	9 (7.8)	62 (53.9)	16 (13.9)	2.57	1.01
High quality water source (stream, river, Organic fertilizer	52 (45.2)	2 (1.7)	53 (46.1)	8 (7.0)	2.14	1.09
Low stock density 10k/m	59 (51.3)	11 (9.6)	43 (37.4)	2 (1.7)	1.89	0.98
Manage without synthetic appetizer and colouring	80 (69.6)	2 (1.7)	29 (25.2)	4 (3.5)	1.62	0.98
Polyculture	69 (60.0)	1 (0.9)	30 (26.1)	15 (13.0)	1.92	1.78
Proper record keeping	56 (48.7)	7 (6.1)	50 (43.5)	2 (1.7)	1.98	0.99
Pond protection from predators	62 (53.9)	1 (0.9)	44 (38.3)	8 (7.0)	1.98	1.10
Use of resistant species	22 (19.1)	1 (0.9)	81 (70.4)	11 (9.6)	2.70	0.89
Natural treatment (homeopathy)	35 (30.4)	3 (2.6)	69 (60.0)	8 (7.0)	2.43	1.00
	50 (43.5)	35 (30.4)	26 (22.6)	4 (3.5)	1.86	0.89

**Source:** Field survey, 2015

Mean score  $\geq 2.50 \geq$  Use (U), mean score  $< 2.50 \geq$  Non Use (NU)

Values in parenthesis stand for percentage

## Conclusion and Recommendations

There is low use of Organic Fish Production Practices of farmers in South-South, Nigeria. To enhance the practice of organic fish production in the study area, there should be training on organic production practices in extension activities and awareness should be created on the difference between organic and conventional fish production.

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