

Homestead Fish Production – Prospects and Constraints. Being a lecture delivered to the staff and students of the Department of Human Nutrition, University of Ibadan, Ibadan on Wednesday 4th February, 2004

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1.0 INTRODUCTION

1.1 What is Production? The Chambers Mini Dictionary defined production as the act to bring forth, bring out, bring into being, to yield especially on a farm or in a garden, things such as crops, eggs, milk etc. I add fish. Homestead is derived from home i.e. the place where one usually lives or where one's family lives. Homestead is therefore synonymous to a farm house. So putting the two definitions together we can deduce that homestead fish production is the act of bringing forth fish from a farm house. The farm house in the case of fish is a pond.

There are three different types of ponds:-

- (i) Earthen
- (ii) Concrete
- (iii) Make-shift containers such as fibre glass, bathroom tubs, plastic and earthen pots, dug-out or plant canoes (Olukunle, 2000).

Fish production in a homestead culture system was a pre-conceived solution to (i) the poaching activities by itinerant poachers in Nigeria in general and Oyo State in particular. (ii) It was designed to meet the pressing demands for fish by the increasing Nigerian population. (iii) To meet the requirements for animal proteins and (iv) to stall poverty.

Table 1: Protein Consumption in Nigeria (1997)

Details	Nigeria	FAO	Developed countries
Protein g/caput/day	44.1	67.0	94.8
Animal Protein g/caput/day	8.5	39.0	61.5
% Total Protein	19.3	57.0	64.9
Calories (kcal/caput/day)	2053.0	2191.0	3417.0

Source: Ezeagu (1999).

The Protein Problem in Nigeria

Ezeagu (1999) reported 44.1g as daily protein intake per person for Nigeria but of greater concern is the small proportion that is of animal origin Table 1. FOS (1999) reported that about 66% of Nigeria's population live below poverty level. I sincerely hope this percentage has not increased to 70% or above (2004) with the current state of affairs – pensioners not being paid over one year ago and high levels of unemployment.

Proteins traditionally are sourced from meat (beef, poultry, bush meat)^{from such as} plants^{as} beans, roasted groundnut and fish^{as} fresh, boiled, ^{or} smoked etc. In riverine and coastal areas of Nigeria 90% of their protein supply is derived from fish caught in what we regard as "capture fishery" which is composed of the artisanal and industrial fisheries. The artisanal fishery is represented by the local fisherfolks i.e. men and women who fish on all the lakes rivers, coastal and brackish waters while the industrial fishery is dominated by foreign companies who fish on the seas and oceans using powered and high technological innovations. The artisanal sector contributes over 90% of the Nigeria's domestic fish production (FDF, 1997).

Fish demand in Nigeria based on 1991 population census of 88.5 million (Akinyemi, 1998) is at least 1.6^{as shown in Table 3} metric tones while total fish production from all sources was about 300 – 350,000^{0.9} metric tonesⁿ per annum (Obakin, 1988).

Table 2: Distribution of Homestead fish pond in Oyo State, Nigeria

LGA	No. of fish farm	Total size m ²	Annual production (kg)
Ibadan North	9	193	7340
Ibadan S/E.	10	491	7220
Ibadan S/W	6	145	5190
Ibadan N/E	5	108	4850
Akinyele	3	650	2400
Ejioku	12	650	4830
Lagelu	2	115	2000
Ona-Ara	2	40	1100
Afijio	1	60	500
Ogbomosho N	1	60	500
Ogbomosho S	1	24	100
	52	1951	46,030

Source: IFAD sponsored committee on farm adaptive trial of the cage culture project.

Aquaculture fish production estimate in Nigeria is about 30,000 tons (Fagbenro, 2000) which approximates to 10.0% of total fish production in Nigeria. The implication is that there is still room for improved production using local, imported but simple technological adaptations. Such technology must be simple, easily adaptable at rural level and should be able to eliminate major problems of aquaculture production in Nigeria such as poaching, flooding and land acquisition and technological know-how.

This lecture, therefore, is to highlight homestead fish production as one of the solutions to the aforementioned problem. I will try to refrain from painting bright the prospects of this project just because it is my pet baby and I promise not to shy away from highlighting the constraints.

2.0 The Status of Homestead Pond in Nigeria using Oyo State as a test case

I worked in the Department of Fisheries Ministry of Agriculture for 17 years 1989 – 1997 as an officer in charge of the Asejire Lake, worked with the fisherfolks, cooperatives and the fish market unit before joining the University service. In each of these sections, I was in contact with the fisherfolks and watched helplessly as the pond owners were

impoverished by rogues who think they are smart. Whenever ponds were test-cropped, the end story was a very poor harvest, disappointment, and despair. I also watched the decline in aquacultural activities in Oyo State leading to lack of incentive to invest in aquaculture. I therefore became challenged to find a solution to this problem of incessant deprivation.

In the year 2000, an IFAD sponsored Committee on farm adaptive trial of cage culture produced Table 2 which showed the status of homestead fish ponds in Oyo State on local government basis, the number of fish farms in existence, size and annual production.

Table 3: Nigeria's Projected Population and Estimated Demand for Fish (1991 – 2010)

Year	Project Population (millions)	Per Caput Consumption (Kg)	Projected Fish Demand (mt)
1991	88.5	11.0	973500
1992	90.36	11.0	993960
1993	92.22	11.0	1014420
1994	94.08	11.0	1034880
1995	95.94	11.0	1055340
1996	97.80	11.0	1075800
1997	99.96	11.0	1096260
1998	101.52	11.0	1116720
1999	103.38	11.0	1137180
2000	105.24	13.0	1368120
2001	107.10	13.0	1392300
2002	108.96	13.0	1414480
2003	110.82	13.0	1440660
2004	112.68	13.0	1464840
2005	114.54	13.0	1489020
2006	116.40	13.0	1513200
2007	118.26	13.0	1537380
2008	120.12	13.0	1561560
2009	121.98	13.0	1585740
2010	121.84	13.0	1609920

Source: Akinyemi (1998).

3.0 The need for homestead Ponds

There is a lot of economic benefits from this venture in terms of (i) sales, (ii) the possibility of improving the protein intake of members of the families and the nation.

(iii) the potential of reducing Nigeria's dependence on foreign fish supplies and (iv) reducing the pressure of demand on the available fresh fish from captured fisheries (v) reducing the cost of fresh fish in the market. If at least 1% of the population or 100,000 families can produce 100kg of fish per annum/family, the cost of fish will not increase to ₦400/kg and the production of fish will improve by 10m tonnes and (vi) the resultant effect is the preservation of our foreign exchange. (vii) the creation of jobs (viii) provision of recreational facilities e.g. using hook and line to catch fish or just watching the fish feed calms the nerves and ^(ix) easily accessible protein is good and easily digestible.

4.0 Prospect

In the year 2000, I constructed a concrete fish pond dimension 8m x 3m x 1.5m divided into 4 units each 2m x 3m x 1.5m. Between 2000 – 2004 my homestead pond had been used most of the time for experimental purposes. The expenditure incurred in the construction was ₦100,000:00 when a bag of cement was ₦450 per bag. The income so far accounted for at the end of the year 2003 was ₦120,030, minus family consumptions and gifts. In addition I have completed 3 experiments, from which I have published one book "Homestead Pond Management". 1,000 copies were printed out of which I have sold 75% at ₦200:00 per copy and I have published two journal articles while the third article is yet to go to press. This year, the concrete tank is still in solid shape and I plan to go into full production.

One of the farmers I consulted for who had a concrete pond 5m x 5m x 1.5m and who stocked 1,000 fingerlings harvested 560kg of fish in the first year. The sales recorded i.e. the one reported to me is about ₦168,000:00. You can be sure he got more. He sold a kilogram of fish for ₦300:00. A professor in my department reported ₦1.5m (2002), and over ₦2m

(2003) sales. He has at least 2 large ponds over 10m x 10m x 1.5m. He produces his own fingerlings and his own feeds. He markets brooders and table fish.

There is the prospect of running an hatchery for raising only fingerlings or juvenile fish for sale instead of raising them to table fish. You only need 3 – 4 weeks from hatching eggs to the fry/fingerlings and 5 – 8 weeks to raise to juveniles. The market for fingerlings and juveniles is very elastic and inexhaustible for now. Each fingerling sells currently for ₦5 – ₦7 while juvenile sells for ₦10 – ₦30 each. For an hatchery you may use an indoor or an outdoor facility which may be concrete or earthen. You need the good knowledge in breeding fish to handle this. It is a fast money-spinning venture but could be frustrating if you do not have the know-how. You hatch the number of fingerlings your hatchery can produce, which in turn depends on how much you are ready to invest.

You can have an integrated farm with piggery, cattle rearing, poultry (to supply manure and maggots) and the waste water from your fish pond to wet your vegetables, horticultural crops (plantain, banana, and citrus fruits) during the dry season.

You can get involved in auxillary industries that depend on fish like fish meal smoked, tinned, dried, salted fish production.

5.0 Constraints

1. You must have the technological know-how. We run workshops in conjunction with State and Federal Fisheries Departments; we run practical demonstrations for practicing and desiring farmers. A book is in press on hints for these sets of farmers.
2. Land tenureship. Endeavour to construct your concrete tank within your compound for security purposes. The land must belong to you or the owner when he sees your sales might ask you to remove your pond.

3. Availability of adequate and good water supply from wells, rain or tap. Tap water can be stored for 24 – 48 hours to reduce the chlorine content to acceptable level.
4. Fingerlings must be available in the right quantity when you need them. These can be gotten from reputable farms, State or Federal Fisheries Department. Use advanced fingerlings – average weight 5 – 8g in concrete ponds.
5. Good, protein rich diet should be compounded to contain 48 – 50% crude protein for rapid growth, high immune system and body repairs; carbohydrate and fats (plants and animals) to supply energy; minerals especially calcium, phosphorus, sodium, chloride and zinc and vitamins especially vitamin C, D for fingerlings and E for broodstock.

6.0 Conclusion

Aquaculture, (the umbrella study for this topic) is a multidisciplinary subject. If you require an academic qualification my department runs a postgraduate diploma course and a M.Sc. programme is in the pipe line. However, you can raise your own fish for your own family, in your own backyard without an academic qualification; just see the relevant advisers, we shall help you out. You can also buy this book “Homestead Pond Management” and practice homestead fish farming just like poultry farming. Thank you for listening.

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