

STRATEGIES FOR THE EXPLOITATION OF NATURAL RESOURCES, THEIR SUSTAINABLE DEVELOPMENT FOR INCOME GENERATION AND FOOD SECURITY IN THE NIGER DELTA AREA OF NIGERIA: THE FISHERIES OPTION

Jerimoth Kesena Ekelemu

Abstract

The average Nigerian, is malnourished as his daily food intake does not meet the Food and Agricultural Organisation (F.A.O.) recommended protein intake of 65g/caput/day by an adult. Governments over time have put in place measures geared towards increasing the sources of protein consumption by the populace through poultry, pig and ruminant animal production. These approaches have not achieved the desired objective as they have been faced with a lot of constraints. Thus there is need to explore the fishery option as an alternative. This option is recommended because of the abundant natural water resources available for stocking fish, it is sustainable, gender and environmentally friendly, does not require much skilled labour, has a low risk factor and high net positive return on capital invested. Moreover it is a veritable means of generating income and employment.

introduction

Nigeria is a coastal State, with marine and inland water systems covering an estimated 256,000 Km² (Tobor, 1994). She is endowed with vast areas of arable land and water bodies that can be profitably harnessed for plant and animal produce. Prior to and just after the post independence era, she was predominantly an agrarian State, with agriculture contributing a substantial proportion to the nations gross domestic product (GDP). Unfortunately with the oil boom in the early 1970s, agriculture has suffered serious neglect, as a result government's focus on the quick means of generating income from oil (petrodollar). The neglect of agriculture has resulted in a national food crisis whereby Nigeria is now a net importer of food, in spite of the enormous resources available to her. Thus to ensure food security and sustainable food production, the present Federal government administration in the country has included "Food Security and Agriculture" as one of her seven point agenda. The agenda is being vigorously pursued because food production, apart from being a means of income generation and livelihood, is needed by man for growth, production of new cells, replacement of old and worn out cells in the body. Furthermore, it is a healthy people that make a wealthy nation and a nation that is not self-sufficient in food production, is not truly independent. The food substances, which may be of plant or animal origin, need to be available and affordable. The procurement of these food substances is a major concern to families and governments the world over. To this extent, stakeholders on the subject need constant flow of reliable and quality information for the exploitation of the abundant natural resources for income generation.

Animals provide a unique food source, which translate quality to the food of man. Animal foods have a high nutrient density and palatability with unequalled degree of general acceptability compared to plant foods, synthetic foods and food from other sources (Omeje, 1999).

In meeting the protein needs of the populace, the livestock, poultry and fisheries sub-sectors of Agriculture are very significant. Their significance is not only in meeting the protein needs of the populace but they also play a role in the dynamics of the national economy as well as the living standards of the populace. This they do by firstly providing the greatest potential to bridge the protein deficiency gap in the state and country in general. Secondly, animal farming enterprises yield adequate returns on investment and ultimately enhance the quality of the nutrition of the average Nigerian (Omeje, 1999 and Dibia, 2009).

The steady increase in human population in Nigeria over the last three decades has not been matched by a corresponding increase in food production. While human population growth is rising at a rate of about 4 to 5 %, livestock production is trailing behind at a rate of about 2 to 3 % (Ekokotu and Ekelemu, 1999., and CBN, 2007). Thus, it becomes evident that a significant gap exists between supply and demand for meat protein. The consequence of this, is the soaring cost of purchasing animal protein.

Current Trends of Animal and Livestock Production in Nigeria

The current population of livestock in Nigeria is estimated at 273 million. This is made up of 166 million poultry, 52 million goats, 33 million sheep, 16 million cattle and 6 million pigs (Njoku, 2009).

An appraisal of the above figures may appear that Nigeria is blessed with an abundant livestock, yet the dearth of animal protein in the diets of most Nigerians still remains a major problem. The livestock industry is bedevilled with a lot of problems which has resulted in a negative growth of the sector. There has been a reported decrease in the annual rate of livestock production in Nigeria from 7.6 % in 1990 to 19.5 % in 1994 (Okagbare and Akpodiete, 1999). This trend has still not changed. This situation is tragic as the production index holds a grim prospect for animal protein supply. Fish serve as an alternative source of high quality animal protein. They possess lysine, methoinine and tryptophan, which are lacking in protein of plant origin and so are regarded as first class protein (Ekelemu *et al*, 2000). Capture fisheries accounts for the bulk of the total fish produced in the country, while culture fisheries (aquaculture) contributes only 3 %. (Ekokotu and Ekelemu, 1999., and CBN, 2007). Total annual mean fish production in Nigeria is 504,075 metric tonnes while annual mean demand is 752,297 metric tonnes (Ekokotu and Ekelemu, 1999. and CBN, 2007). Thus there is need to explore alternative sources of animal protein supply, as a means of increasing supply.

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Food and Agricultural Organisation (FAO, 1978) recommendation of protein intake is 65g/caput/day by an adult, with at least 35(54 %) of the protein being of animal origin (NARP, 1997). When compared with the present recorded protein in take of an average Nigerian which is 53g/caput/day with only 8.4g (15.6 %) being of animal origin, it is concluded that the average Nigerian is malnourished (Egbunike, 1997 and Okagbare, 2009).

Constraints to Animal Protein Production

1. Poultry Production: The growth of the poultry industry was very impressive from the 60's to the 80's. As at 1986, Nigeria had the largest poultry population in black Africa and its poultry contribution to animal protein consumption and the gross domestic product was substantial (Okunaiya, 1986). Today the industry has witnessed a sharp decline. The small scale farmers have no chance of survival as they have no easy access to credit facilities and have to buy all inputs at exorbitant prices (Orusebio, 2002). Government no longer supplies inputs to the farmers as it used to do. In addition to this, the introduction of the structural adjustment programme (SAP) and fall in naira value has not helped issues.

2. Pig Production: These are simple stomached animals and have some peculiar characteristics which include prolificacy early maturity, poor utilisation of roughages, efficient conversion of concentrates to meat and fat, tremendous fat storage capacity and good resistance to diseases. Despite the inherent productive capabilities of pigs its production is low in Nigeria. This may be linked to the problem of feeds, health, management, social, religious and economic reasons.

3. Ruminant Animal Production: This group includes goats, sheep and cattle. They contribute significantly to meat, milk, hides and skin and manure production in Nigeria. Production from these animals compared to those of the developed countries is quite low. An average of 14Kg of meat and 90 litres of milk is produced per head of cattle in Nigeria while in the developed countries 79 Kg of meat and 900 litres of milk are produced. This poor performance can be linked to a number of factors which include harsh climate, inadequate nutrition, poor management, health hazards, social and economic factors (Okagbare and Akpodiete, 1999).

1. Fish Production: Fish is a vital source of protein in our diet and is preferred to beef, chicken, pork or mutton for the following reason:

Cheapness, readily available, less tough, contains low amount of cholesterol, easily digestible and contains more minerals.

The demand for fish and fishery products is on the increase without commensurate increase in supply. There is pressure on the fisheries resources which presently contributes over 40 % of animal protein consumed by Nigerians. 3

The imbalance between supply and demand if not urgently addressed portends danger to the health and well being of the populace. This is in line with the popular adage that a healthy mind is in the healthy body. In fact, it is the healthy man that can be productive. To close this yawning gap between fish protein supply and demand in the country, a number of options are open for consideration (CBN, 2007).

The first option is to step up the exploitation of the wild stock (capture fisheries) through acquisition of outboard engines and deep sea fishing facilities, to be able to fish reported gradual decline in fish output from the wild (FAO, 1978). This is blamed on over-exploitation of the natural fisheries resource. The fish stock is exhaustible, because the rate at which stock is replenished, does not match the rate of exploitation. The report stated that production from the wild reached its peak in the early 1970s and levelled off, before a downward plunge.

A second option is the development of large fish farm complexes geared towards industrial production of farmed fish. This option again has the problem of escalated over-head cost, resulting in low returns on investment. The high over-head cost is with regards to staff wages and maintenance of facilities.

A third option is the survey of the numerous inland water bodies, that abound in the country, with a view to knowing:

- i) their physical and chemical water quality
- ii) the fish fauna in each water body
- iii) the dominant fish species in each water body
- iv) the species which are acceptable for food in the different localities.

Having done this, the government through the Ministry of Agriculture and Natural Resources (Fisheries unit) could conduct a fish seed transplant by stocking these inland water bodies (lakes and reservoirs) with hatchery bred fingerlings (Ekelemu and Ekokotu, 1999). Closed seasons should be declared, to prevent poaching and people going to fish in stocked waters, thereby giving the fishes time to grow to maturity before being harvested (Ekelemu, 2006). This option has some merit in it, in that there are no added costs in constructing the lakes and reservoirs as well as feeding the fish.

The fourth and probably most feasible option is the participatory subsistence farming which is geared towards the development of efficient rural based, low external input sustainable small scale fish culture. This option is attractive for a number of reasons:

- it is gender friendly and so can be undertaken by males and females
- it does not require much skilled labour
- large expanse of land and volume of water are not needed for effective fish production
- the risk factor is low
- net positive returns on capital invested is high.

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The ease with which this form of fish culture can be practised, and the fact that rural farmers and laymen can operate small scale fish farms side by side other occupational activities, strongly recommends this option. In Nigeria, numerous water bodies abound, that can be effectively mobilised for fish culture. The current effort is therefore geared towards exploring and exploiting alternative animal protein sources like fish, to satisfy the protein needs of the people. While doing this, the economic well being of the people is enhanced through the sale of fish and fish products.

Fish Farming

Setting up a Small Scale Fish Farm

Fish farming is a serious business which is not only aimed at meeting the farmer's needs but also generating income. Thus certain decisions are necessary to be taken before embarking on it. Like many other business concerns, the often mind boggling question by many prospective fish farmers is whether they will make money or not. The answer to this question is yes. The answer however depends on a number of factors, known and unknown, of which the most important among the unknown is the "personal factor". Here the care, commitment and attention given to the business at its early stage of establishment is embodied in the personal factor (Oruseibio, 2002).

Some known factors to be considered are: land (size and topography which determines the outlay of the farm), soil type which may be clayey or laterite, supply of good quality water, security, choice of cultured fish, source of fingerlings, feed availability and its marketing outlet. The main area of expenditure in fish farming is the initial cost of constructing the pond. Subsequent expenditure on the purchase of fingerlings and feed are quite minimal.

Pond Construction

It may be earthen, if soil is clayey and can hold water. However concrete ponds are also feasible. The concrete ponds can be built below the ground level or as surface tanks above ground level. Recent innovation in pond construction is the use of polythene materials supported by a frame work made from wood or metal.

Farming Systems

Polyculture or monoculture can be practiced. In addition, integrated fish culture of poultry-cum-fish or duck-cum-fish can be practised. From the poultry droppings, maggots can be produced and used as feed for fish as well as for sale.

Pond Size

For beginners it is advisable to start with a few small ponds and then expand as experience is gained. It is also worthy, to note that smaller ponds are easier to manage and more productive than large sized ponds.

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