

AGRO-ECONOMICS OF SUB-SAHARAN AFRICA : THE NIGERIAN CASE

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ABSTRACT

Assuming a modest growth rate of 3% per annum, the estimated population of Nigeria (about 104 million in 1984) is expected to be 166 million by 2000 AD. The profitability of agriculture is highly vulnerable due to low level of fertilizer use, low crop yields and low product prices. Sorghum, millet and cowpea form the common crop mixture in the rainfed areas of Nigeria. The per hectare net incomes from the three crops were US \$ 25. 50, 283. 91 and 48. 28, respectively making a total net income of 357. 69 dollars per hectare from the crop mixture. The estimated annual family living expenses for a family of 5 adults were 2, 647 dollars at the 1983 price level. The estimated annual family living expenses for a family of 5 adults were 2, 647 dollars at the 1983 price level. Thus, a total net income of US \$ 357. 69 per hectare from a crop mixture makes a farm size of 7.4 ha a minimum necessity to just meet the annual family living expenses.

Very poor agricultural growth against the population increase made Nigeria's food imports to be over 2 billion dollars a year since 1985. The food imports, and particularly the imports of rice have discouraged production of cheaper home-grown crops such as yam, gari and maize.

The estimated per capita availability of cultivable land in 1984 was 0. 78 ha which is likely to be reduced to 0. 54 ha by 2000 AD. The availability of cultivable land is sufficient to produce balanced food and attain self-sufficiency in food production. Nigeria's soaring food imports could be minimized by exploiting fresh and inland water resources for fish farming, increasing domestic milk and meat production with the help of the age-old expertise of the "Fulanis", and by producing cheaper substitutes for meat from soybeans.

INTRODUCTION

At the time of independence (October 1, 1960), Nigeria was a major exporter of cocoa, palm oil and groundnut. The oil boom of the mid 1970's in Nigeria, reduced its once flourishing agriculture to atrophy by 1982. The annual cocoa production now is only about half (160,000 tons) of that in 1970. As a result, the foreign exchange earnings from the exports of cocoa alone fell by 50 per cent than the peak level about a decade ago. In 1982, about 25,000 tons of palm oil had to be imported at a cost

of over US \$ 31 million. Consequent to the decline in the production of groundnut, Nigeria is annually spending over US \$ 78 million on the import of vegetable oils.

The set back to Nigerian agriculture has mainly been on three accounts. Firstly, the 1966-70 civil war destroyed the major food grain, groundnut, palm oil and cocoa producing areas of the country. Secondly, the falling international prices of Nigeria's export crops discouraged the farmers to increase their production. Thirdly, the oil boom which coincided with the end of "Biafran war" and falling world prices, led to the migration of farm population to the newly oil rich areas and cities. This set in a trend of increase in urban population at the rate of about 8% and decrease in rural population at the rate of 2% per annum since 1970. The total rural population, over 85% before the oil boom, was reduced to 65% by 1984. Despite the efforts to modernize agriculture, traditional Nigerian agriculture is largely unstable and backward against a fast growing population.

Estimates of Nigeria's Population

Assuming the annual growth rates of population to vary from 2.5 per cent to 4 per cent (Essang, 1978 and 1982), the present estimates and future projections for Nigeria's population have been made (Table 1).

Table 1. Estimates of Nigerian Population (millions)

Year	Annual rate of		population	growth (per cent)	
	2.5	3.0		3.4	4.0
1980	84.65	91.98	95.43	98.24	108.54
1985	95.74	106.60	111.81	116.10	132.03
1990	108.30	123.55	131.02	137.21	160.62
1995	122.50	143.20	153.53	162.15	195.39
2000	138.56	165.98	179.92	191.64	237.70

There is no population control programme in the country and a growth rate of 4.5 per cent per annum is common in Africa. To keep food imports at a minimum, Nigeria needs to increase her food production more than 3 per cent per annum. With the existent natural and human resources, available farm technology, petro-Naira and expertise, Nigeria has the capability to increase her food production at a rate higher than the rate of population growth. Determination, real commitment and practical action are needed to produce more food.

Crop husbandry and its profitability

In Nigeria, on the whole, about 28, 32 and 18% of cultivated area are annually put under millet, sorghum and cowpea crops, respectively and thus these three crops

together account for about 78% of the total cultivated area. Millet and sorghum, both in terms of cultivated area and consumption, are the major food crops of the country. Uncertain climatic conditions make crop husbandry a high risk enterprise, especially in the sub-Saharan Africa. This has led to the practice of mixed cropping.

Profitability of the major crop mixture, in the north-west Nigeria has been calculated on the basis of inputs used by 94 farmers and the yield returns obtained during the July-December crop season of the year 1983 (Table 2).

The per ha net incomes were U.S. \$ 283.91, 25.50 and 48.28 from millet, sorghum and cowpea, respectively. Thus, from the crop mixture (millet + sorghum + cowpea) as a whole, the total net income was to the tune of US \$ 357.69 per hectare.

The item-wise cost calculations in Table 2 show that labour used in manure application, weeding, harvesting, threshing and winnowing accounted for about 8, 23, 7 and 13 per cent of the total cost of production. The daily labour wage in the study area was US \$ 5.88. The miscellaneous costs which include charges for transporting inputs and farm produce and other minor expenses, such as repairs of hand tools, accounted for about 8 per cent of the total cost of production. Rental value of land for crop production accounted for about 20 per cent of the total cost of production. Government of Nigeria paid up to 10% subsidy on the cost of fertilizers. But the highly un-balanced use of super phosphate on millet, sorghum and cowpea indicated the need of proper extension efforts to educate the farmers about the balanced and adequate use of fertilizers.

The costs of production (per q) of the millet, sorghum and cowpea worked out in crop mixture were US \$ 30.23, 46.42 and 102.17, respectively against their respective post-harvest prices of US \$ 44.12, 40.00 and 132.34. The cost of sorghum production was higher than the market price. That is, for every dollar spent on the production, on an average, a farmer received a total return of US \$ 1.38 from sorghum as compared to \$ 1.73 and \$ 2.29 from cowpea and millet, respectively (Table 2). The market prices for millet, sorghum and cowpea are not remunerative enough to act as incentives for increasing crop yields. It is widely believed that in Africa, prices paid to the farmers are often well below the world market prices.

Family and farm size :

Norman *et al.* (1976) reported that in 1967, the average size of family farm in the Gidan Karma village of Kware Local Government Area was 6.25 ha. Our surveys in 1983 revealed that on the sample farms, the average family farm size was 9.68 ha (range 0.2 ha to 24 ha). This increase was due to the migration of people from farms to the cities as a result of oil boom.

The average family size in survey area was 5; a husband, two wives and two children above 12 years of age. For a family of five, minimum expenses to feed, to clothe and to provide a minimum standard of living comes to US \$ 220.59 per month.

Table 2. Per hectare economics of major crop mixture in north-west Nigeria, 1983 (value in US \$)

Item	Millet		Sorghum		Cowpea	
	Qty	Value	Qty	Value	Qty	Value
Inputs :						
<i>Material</i>						
Seed	17.5 kg	7.72	4 kg	1.76	5 kg	2.20
Superphosphate	80 kg	8.83	20 kg	2.20	10 kg	1.10
Organic manure	37.5 baskets	6.25	12 baskets	2.00	10 baskets	1.66
<i>Labour</i>						
(Man days)						
Land preparation	1.25	7.35	0.5	2.94	1.0	5.88
Organic manure application	3.0	17.64	1.2	7.05	1.0	5.88
Sowing	0.75	4.40	0.32	1.88	0.5	2.94
Fertilizer application	1.25	7.35	0.5	2.94	0.3	1.76
Weeding I	5.0	29.40	1.0	5.88	1.0	5.88
Weeding II	3.75	20.07	—	—	—	—
Harvesting	2.5	14.70	1.2	7.05	1.0	5.88
Threshing & winnowing	4.75	27.92	2.0	11.76	2.0	11.76
<i>Miscellaneous</i>		18.28		6.12		6.20
Interest on working capital @ 8.5% per annum for 6 months		7.22		2.19		2.17
Rental value of land		43.53		13.53		13.10
Total costs		220.66		67.30		66.41
Produce (kg)						
i) Grain	730	322.07	145	58.00	65	86.02
ii) Straw	1825	182.50	435	34.80	97.5	28.67
*Income : Gross		504.57		92.80		114.69
Net		283.91		25.50		48.28
Cost of production (per q grain)		30.23		46.42		102.17
Returns per unit investment		2.29		1.38		1.73
*Post harvest price in December, 1985 :						
Grain ;		44.12		40.00		132.34
Straw ;		10.00		8.00		29.41

To meet the annual family living expenses of US \$ 2647, a minimum farm size of 7.4 ha is needed to cover the family living expenses by yielding a net income of about US \$ 2647 at the 1983 price level. There are savings only on the farm sizes >7.4 ha.

Food Requirements vis-a-vis growing population

The Fifth National Development Plan (1986-1990) of Nigeria envisages considerable governmental efforts to increase production of livestock and fish to meet the domestic needs and create a surplus for export. Historically and particularly after the independence in 1960, the growth rate of food supply has lagged behind the country's population. While the population growth index increased at an annual compound rate of 5.2 per cent between 1960 and 1974, that of food production registered a growth rate of only 2.5 per cent during the same period. And after the oil boom in the mid 1970's the agricultural growth rate in Nigeria has been close to zero up to 1980.

As a result of increasing population and poor agricultural growth, Nigeria's food imports have been soaring year after year and the estimates for food imports in the year 1985 were more than worth US \$ 2255 million. Because of the highly skewed income distribution in Nigeria, the imported food stuffs are purchased and consumed by the higher income groups. In 1981 alone, Nigeria imported more than 500,000 tons of rice at an exorbitant price of US \$ 2000 per ton against the world market price of only US \$ 500 per ton. Thus, inspite of a 3-fold increase in domestic production, Nigeria today imports rice worth more than US \$ 1 billion. Rice has now become prestigious food in Nigeria and the fashionable "chop" for the neo-rich well-to-do city dwellers. This has discouraged production of less elegant, cheaper home grown crops such as yam, gari and maize although these continue to be the staple diet of low income groups and the farming community. However, the prices of these food stuffs are also on the increase due to a decreased production, increasing demands of a growing population and inadequate marketing and distribution system.

The rapid increase in population has also caused a gradual decline of the land-to-man ratio particularly after the independence in 1960. The per capita availability of land was 1.86 ha in 1961 and 1.48 ha in 1970.

Food and Land Requirements for a Healthy Population

Estimated per capita availability of land was 0.78 ha in 1984 and it works out to be 0.67 ha in 1990 and 0.54 ha in 2000 AD. Thus despite a gradual decline in its availability, shortage of cultivable land in food production is not likely till 2000 AD, since per capita need of land works out to be only 0.53 ha to meet the dietary requirements (Table 3). Thus Nigeria can attain the national goal of self-sufficiency.

in the food production with more attention given and efforts made for appropriate and timely input supplies. The Green revolution programme is a comprehensive and serious attempt by the Federal Government to make Nigeria self-sufficient in food production.

Nigeria also has to bear a colossal drain of the valuable foreign exchange for the import of meat and fish (about US \$ 790.44 million). This can be put to check by utilizing Nigeria's vast fresh and inland water resources for fish breeding and production. Centuries old expertise of the "Fulanis" in the northern Nigeria could be used to increase milk and meat production. Derivatives of soybean can be successful substitutes for meat, being equally tasty and acceptable. These substitutes can reduce the domestic demand for the prestigious imported meat and fish, reducing the consumer's price and thus increasing the purchasing power of his money besides saving the foreign exchange.

Table 3. Dietary requirements, crop yields and estimated land requirements, 1983

Food component	Per capita daily need (g)	Annual requirement (kg)	Av. yield (kg/ha)	Per capita requirement of land (ha)
Cereals	475	173.375	860.05	0.2015
Pulses	65	23.725	243.49	0.0974
Roots and tubers	100	36.5	8,952.45	0.0040
Fruits	30	10.95	9,340.00 (a)	0.0012
Milk	100	36.5	6,000.00 (a)	0.0609
Sugar	40	14.6	5,094.00 (a)	0.0289
Fats and oils	40	14.6	458.00 (a)	0.0319
Meat, fish and eggs	60	21.9	222.00 (a)	0.0986
			Total	0.5244

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