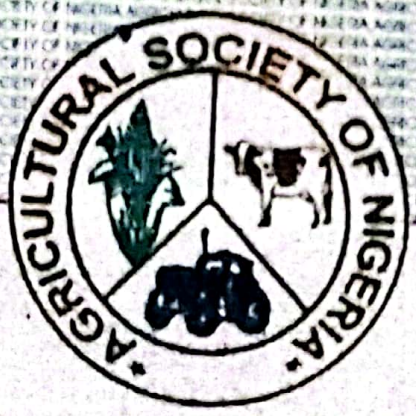

The Role of AGRICULTURE in POVERTY ALLEVIATION

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ECONOMICS OF CROP PRODUCTION IN TRADITIONAL FARMING IN NORTHERN NIGERIA: A CASE STUDY OF DUNDAYE VILLAGE IN SOKOTO STATE

BY

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ABSTRACT

This study was carried out in Dundaye Village, with the objectives of determining the resource use, the level of adoption of improved inputs and practices, cropping patterns and crop yield, the level of farm income and also to draw policy implications from the findings of the study. To achieve these objectives data were collected from 60 randomly selected farmers. The data collected were analysed using descriptive statistics and farm budgeting model. The findings of the research show that the use of improve inputs was low, also crop yields were below levels that could be attained. Although all farmers realized profits, it was found that even more profit could be attained through increased use of improved inputs. Based on the findings it is concluded that, resource use, crop yield and farm income could be increased if the constraints identified in the study such as non availability of improved inputs and inadequate credit facilities are addressed as a matter of urgency.

INTRODUCTION

Agricultural production in Nigeria is pre-dominated by subsistence farmers, owing to their low level of income, savings, investments and productivity levels. It has been argued that the low productivity is as a results of stagnant and subsistence cultivation on small-size farm lands using crude tools and obtaining poor yields with total output incapable of meeting the needs of a family of ten (Olayide, 1982). Resources are also under utilized and this gives rise to low output and hence low farm income.

Probably because of the low productivity characteristics of the traditional agriculture, indications of problems in Nigeria agriculture emerged right from the first decade of the country's independence (1960 – 69). These indications were clearly evident from increasing food prices. To meet the supply short falls, government has over the years, resorted to importation of food materials.

Worried about the food imports bills, and in an apparent move to reverse the situation, successive governments in Nigeria introduced several strategies aimed at improving agricultural production. Such programmes include the National Accelerated Food Production programme (NAFPP), Agricultural Development Programme (ADP) Operation Feed the Nation (OFN), the Green Revolution Programme, National Agricultural and Land Development Authorities (NALDA) to mention but a few. There were instituted and launched in 1972, 1975, 1980 and 1992 respectively.

Collectively and individual, these programmes were aimed at increasing resource use., improving productivity and increasing farm income. It is therefore necessary to examine the traditional agriculture to see the extent to which these objectives were being achieved and determine whether opportunities exist for increasing them.

This study therefore examined the economics of crop production in traditional farming, using Dundaye in Sokoto State as a case study.

MATERIALS AND METHODS

The Study Area:

Dundaye Village is a district in Wamakko Local Government Area of Sokoto State. The Village is a few kilometres (3 –4km) aways from Sokoto Metropolis within usmanu Danfodiyo University Permanent Site.

Eighty percent of the people in the area are engaged in farming activities. The climate of Sokoto State is semi-arid with a severe water deficit from Ocxtober to June. The major crops grown in the area are millet, guinea corn, rice, and cowpea. Other minor crops grown are groundnut, cotton, and potato. Also, vegetable crops such as tomato and onions are extensively grown.

The topography of the study area is characterisized by gently undulating plains with few low lying valleys referred to as Fadama. The soil of the area is sandy, well-drained and characteristically brown. The Fadama soil is loamy capable of holding moisture.

Sampling and Data Collection

Random sampling method was used, in which a sample of 60 farmers was drawn. Structured questionnaire was the material used to collect the required information, through personal interview by the researchers. Information on resource use, crop yield, farm income and marketing were collected. The data was collected in march, 1995.

Data Analysis

Descriptive statistics such as frequencies, percentages and mean were used in analyzing the data. Also farm budgeting was used to find the net farm income of the farms in the study. Farm budgeting provides information on cost and benefits of the farming business, which gives a measure of the profitability of the farming business.

Specification of the farm budget model is as follows

NFI = GFI – (CV + FC)

Where

NFI = Net farm income

GFI = Gross farm income which is obtained by multiplying total output by unit price of the output

VC = Variable cost which includes, cost of labour, cost of fertilizer, cost of other inputs like storage chemicals and cost of seed.

FC = Fixed cost – this includes depreciation of tools such as hoes, cutlass, sickle and plough

RESULTS AND DISCUSSION

Resource use

Resources employed by the farmers include land, labour and capital. Majority (8.66%) of the respondents reported inheritance as a means of acquiring land, while none rented the land. A few farmers (3.33%) purchased their lands, 8.33% acquired their lands through communal ownership. Inheritance encourages both the subdivision of holdings and fragmentation. The principal economic effect of this is a potential reduction in the efficiency of labour. Further more, the results from this study indicates that 65% of the respondents cultivated 1`-2 plots. The farmers have 2.2 plots on average. Despite the fact that the farmers had different plots, none of the plots were under fallow. This shows that the plots are always under cultivation, and the productivity of the land is bound to decline. This is in agreement with Levi and Harinde (1982).

The use of machinery is almost impossible since land is fragmentyed into small hectares as revealed by the study. Results from Table 2 shows that majority of the farmers (56.67%) had 2 ha or less and on average 3.15ha. This is in variance with what was confirmed by Norman *et al* (1976) who indicated that the average size of arm holding in Sokoto area was 10 acres (4 hectares). The farm size appear to be decreasing probably because of the nature of land ownership which is mainly by inheritance.

In addition, the results from Table 2 shows that non-family labour accounted for 42 mandays per hectare, while family labour constituted 16 mandays. Thus, it can be seen that much of the labour utilized came from non family source. This contributes to high production, cost in the area. Weeding accounted for 27.50% of the total labour input which was followed by land preparation. The lowest labour usage is in the area of threshing and planting with a paltry figure of 8.62 percent each. All the farm operations were carried out by men except winnowing which was done by women. This seems to be in agreement with the assertion of Norman *et al*(1975) who reported that the Islamic practice of purdah precludes extensive participation by female adults in farm work. On average N65.00 was paid on labour per manday. The labour utilized can however be minimized by the use of mechanized farming systems. Machinery were however not readily available for farmers to use.

The non-durable capital inputs employed by the respondents were seed, storage chemicals, pesticides and fertilizers. The findings of the study further shows that no farmer indicated using improved seed varieties. Since most improved seed varieties produce higher yield than local varieties, farmers output and income could have been improved if they had access to such varieties. All 9100%) the respondents used seeds from previous harvest. The resultant effect of this is that continuous use of seeds from previous harvest usually result in reduced vigor as the seed tend to become homozygous with time. Only 5% of the farmers used storage chemicals and 5% used pesticides. The implication of these is that agricultural products are prone to attack by several storage pest. And because the farmers do not have access to such chemicals they sold most of their products immediately after harvest at low prices, which in turn led to low income. Seventy five percent of the respondents used fertilizer. However, fertilizer was the common improved input used by the farmers. It was used on 64.77% of the total plots put under cultivation in the study area. This is in agreement with the assertion of Norman 91974) who considered chemical fertilizer as the main modern input of new technology. The major rate of 50-100kg/ha as found in the study is however lower than recommended rates (Table 3). Farmers attributed this low utilization to inadequate supply and high cost.

The durable capital inputs used by the respondents were hoes, cutlasses, sickle, and rake. This has shown that the farmers are still operation with traditional tools. Only one farmer had animal drawn plough. The major sources of capital is through personal savings.

Cropping Patterns and Cultural Practices

Table 4 shows that 81.67% of the farmers practiced mixed cropping. While 5% practiced sole cropping \. Millet-sorghum-cowpea mixture is predominant. The farmers practiced mixed cropping in other to avoid crop losses, the other reason is because it gives more total output when compared with sole cropping. This is similar with the observation of Norman (1974) in Zaria, area of northern Nigeria. He stated that mixed cropping is more prevalent on upland fields, with millet-sorghum-cowpea being the predominant mixture. Ansari *et al* (1984) also reported similar findings. It is evident from the study that 91.66% of the farmers use manual power for all the operations carried out on the farm. This perhaps explained why the labour input is high in the study area.

Only 6.67% used both manual and motorized tractors. The tractor hiring units of the Ministry of Agriculture have not made impact in the study area.

The crop yield obtained from this study shows that aggregate yields are generally higher under mixed cropping than sole cropping. The yields are low when compared to optimum yields under experimental conditions. The low yield could be due to several reasons, such as inadequate use of fertilizer, pesticides and herbicides, timeliness in weeding especially during peak period of farm operations when labour is scarce, and non-availability of improved seed varieties.

Cost and Returns

Results from the study has shown that the total cost o f labour on average was N2.967.45/ha. This appears to be high when compared with the cost of other inputs, which all together accounted for only N803.07/ha (Table 5). This is because farmers depend on manual labour which is expensive and inefficient. In order to alleviate this problem, chemical weed control may be desirable as reported by Ogunbile, *et al* (1982) and Sinha *et al* 1980) who both reported that judicious use of herbicides reduces labour requirement and cost of weed competition, and consequently increase profitability. The total fixed capital was N174.75/ha. This was low because farmers are still operating with simple technologies. The only fixed capital items used were traditional implements. This is similar to the observation made by Etuk (1982) who observed that the levels of fixed capital in Zaria area are relatively low.

Farm Income

Majority (36.67%) of the respondents had between N3,000.00 to N5,000.00 net farm income. On average the net farm income was N6,252.57/ha (Table 6). This appears to be higher than that which was obtained by Yaman (1974). The net farm income however could be increased by using improved inputs.

Conclusion and Policy Implications

The economics of crop production in traditional farming system based on resource use, crop yield and farm income have been determined in this study.

This study revealed that the major constraints that militated against crop production in the study area include non-availability of improved inputs, such as improved seeds, pesticides, storage chemicals, seed dressing chemical, credit facilities, mechanized farming implements, and fertilizer. Based on the result it is concluded that, resources uses, crop yield and farm income could be increased if the constraints identified in the study are addressed properly and timely.

In view of this, it is recommended that agricultural inputs should be made readily available to small scale farmers at reasonable prices, also timely release and judicious use of such inputs be ensured by all agencies concerned. Agricultural loans/credits for small scale farmers should be enhanced vigorously by providing enough funds to agricultural credit agencies and eliminating undue restrictions on small holder credit schemes The government should be committed to realistic pricing policy and effective marketing arrangements that will ensure enhanced profitability to encourage farmers and make the farming profession lively and worthy while.

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Table 1: Distribution of respondents according to farm size (ha)

Farm size	Frequency	Percentage
0.00-2.00	34	56.67
2.01-4.00	14	23.33
4.01-6.00	7	11.67
6.01 – 8.00	2	3.33
8.01-10.00	2	3.33
>10	1	1.67
Total	60	100

X = 3.15ha
Source: Field Survey, 1995

Table 2: Distribution of family and non-family labour use by operation (mandays/ha

Operations	Family labour	Non-family Labour	Total	Percentage
Land preparation	3	8	11	18.97
Planting	2	3	5	8.62
Weeding	4	12	16	27.59
Fertilizer application	2	2	4	6.89
Harvesting	3	6	9	15.52
Threshing	1	4	5	13.79
Winnowing	1	7	8	
Total	16	42	58	100

Source:Field Survey, 1995

Table 3: Distribution of respondents according to fertilizer inputs (kg/ha)

Range	No. of farmers	Percentage
0	15	25
<50	0	0
50-100	16	26.67
101-150	9	15
151-200	4	6.67
201-250	6	10
251-300	1	1.67
301-350	0	0
351-400	0	0
401-450	0	0
451-500	3	5
>500	6	9.99
Total	60	100

X = 114.67kg/ha
Source: Field Survey, 1995

Table 4: Distribution of farmers according to cropping patterns

Cropping patterns	No. of farmers	Percentage
Sole	3	5
Mixed	49	81.67
Both	8	13.33
Total	60	100

Soruce: Field Survey, 1995

Table 5: Summary of costs (N/ha)

Cost	Average cost	Percentage
Variable cost	803.07	20.36
Farm supplies (inputs) Labour	2967.45	75.22
Total variable cost	3770.52	92.57
Fiex cost (Depreciation)	174.75	4.43
Total cost	3,945.27	100

Table 6: Net farm income of respondents (kg/ha)

Net farm income	No. of respondents	Percentage
<1000	3	5
1001 – 3000	15	25
3001-5000	22	36.67
5001-7000	3	5
7001-9000	4	6.67
9001-11000	2	3.33
11001-13000	2	3.33
13001-15000	2	3.33
15001-17000	3	5
17001-19000	1	1.67
>19000	3	5
Total	60	100

X = N6,252.57 per hectare
Source: Field Survey 1995