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SOCIAL-ECONOMIC ANALYSIS OF FARMING RISKS IN FOOD CROP PRODUCTION IN EDO NORTH, NIGERIA

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ABSTRACT

The importance of the agricultural sectors to the Nigerian economy demands continuous research effort to generate information relating to the production activities in the sector. This paper examines the risks involved in the production of food crops in Edo State of Nigeria. The objectives of the study included the identification of the nature of risks, estimate the cost implications, and to make recommendations on how the effects of the risks could be reduced. The study focused on Edo State Agricultural Development Programme (EDADP) contact farmer. Thirty-two of them were analysed.

The results of the study showed that the food crop producers were facing risks resulting from climatic factors, production activities, social factors, post-harvest and marketing factors. Among the recommendations of the paper that could lead to a reduction of the effects of the risk are the need for co-operative insurance policy among farmers. There should be an increase in the extension service activities of the relevant agency of the government of Nigeria.

INTRODUCTION

The primary role of agriculture in the Nigerian economy is to provide food items, employment and income for a substantial proportion of the people in the country. In addition, the sector is also expected to provide raw materials for the agro-based industries. Since the time the nation become independent in 1960 up till when petroleum exploration activities became very prominent in the country in the early 1970s the agricultural sector had been making positive and significant impact on the nation's economy. With the increase in the oil production activities in the country, the contributions of the agricultural sector to the Gross Domestic product (GDP) have been declining consistently (Moyart, 1986; FAO, 1988; FOS 1988). Apart from the effects of the oil sector on the agricultural sector, the decline in the

contributions of agriculture to the GDP could also be attributed to factors that have bearing with the oil sector. Some of the factors according to Idachaba (1985) and Utomakili *et. al.* . (1993), include:

(i) Inconsistent government policies relating to increased agricultural production;

(ii) natural hazards which are peculiar to agricultural production

(iii) inadequate provision of basic production infrastructure; and

(iv) inadequate provision and in some cases the non-availability of the basic farm production inputs to the real farmer.

In recognition of the importance of the agricultural sector to the Nigerian economy, a number of measures have been taken by various governments in the country, over the years, to stimulate increased production in the sector. Such measures include the establishment of different agricultural development programmes, subsidies on production inputs, development and distribution of improved production inputs such as varieties of crops, breeds of livestock, and species of fishes, extension of credit facilities to farmers, and the formulations of various agricultural marketing policies (Williams, 1986; Egharevba and Utomaliki, 1988). The above measures, among others, seem not to have achieved the expected desires of the various governments on increase agricultural production in the country. One possible explanation for this apparent failure is the inadequate provision for compensating the farmers for the increasing risks they face in their efforts to increase agricultural production. This flaw in our agricultural development policies appears to be addressed by the establishment of the Nigerian Agricultural Insurance Company (NAIC) in 1987. To enhance the successful operation of the NAIC, there is the need for increase research efforts and generation of relevant information on farming risks in Nigeria. To this end, it was considered necessary to carry out this research effort in Edo State.[1]

Research Objectives

The general objectives of the research was to determine the risks associated with food crop production in Edo State. Specifically, the objectives include:

(i) identification of the nature of the farming risks;

(ii) estimation of the cost of risks to the farmers;

(iii) discussion of the implications of the risks to increase food crops production in the State; and

(iv) making some recommendations that could lead to the minimisation of the effects of the risks on the farmers.

MATERIALS AND METHODS

Underlying Analytical Framework: The term "risks" has often been used interchangeably with uncertainties. This is because the line differentiating between the two terms is blurred and as such it is sometimes more convenient to ignore the line than to emphasize its existence (Edema, 1988). In some cases, the objective of the discussion may lead to effort being made to distinguish between the two terms. Whenever that need arises, farming risks could be described as a situation in which the farmer is aware of the range of possible outcomes as well as probability associated with each outcome. The frequency and degree to which the outcomes can occur is fairly predictable. For uncertainties in farming operations, they represent the state of occurrence of the outcomes when the probability of the outcomes are unknown and unpredictable. In terms of what constitutes farming risks, various authors in the issue have expressed their views. They have said that farming risks include production risks, marketing risks, social risks, technological risks, and risks due to climatic factors (Jones, 1969; Drive, 1979; Ray, 1981; Fleisher and Robinson, 1985;).

Measures for controlling or reducing farming risks have also been proffered by Adesimi (1988) and Iyeketu (1990). According to them, the controlling measures include the use of technical method, organizational method, expectation method, and the avoidance method.

Data Used

The data used in this paper were obtained from eight out of the nine Local Government Areas in Edo North. A total of 40 farmers were purposely selected from the list of the Edo State Agricultural Development Programme (EDADP) contact farmers in the Edo North Zone. The number of farmers selected could have been increased but for the limitation of the research resources. In any case, the size of the sample does not constitute a serious issue on the usefulness of the results obtained, as long as the researchers relied on past experience and prior information about the population to

(1) *This study was carried out in the former Bendel State, now made up of Edo and Delta States. Edo North refers to the Northern part of Edo State, the area covered in the study.*

ensure that the sampling design was representative (Ladipo, 1966; Stephen *et. al.*, 1986; Utomaliki, 1987). The questionnaire used emphasized the following variables; the major crops grown, farming risks, damage to crops, prices of harvested crops, quantities harvested, among other variables. At the end of the interview operations, 8 copies of the questionnaire could not be analysed due to some inconsistency in the information provided by the respondents. Consequently, 32 cases (80% of total respondents) wee analysed for this paper.

The data collected from the above variables were converted to standard units of measurements, where local units were used. In estimating the importance of the crops grown and of the degree of risks encountered, points were assigned to the various ranking that the farmers made with respect to the importance of the crops and the risks involved. For the crops, the ranking ranged from 1 to 12 with the most important crop having 12 points and the least important crop had 1 point. The range was determined by the available number of crops that the farmers cultivated. The total score for a crop was determined by the summation of the points for each crop. In a similar manner, the scores for the risks factors and the damages done were determined.

RESULTS AND DISCUSSION

The results of the analysis of the data collected showed that about 91% of the farmers practiced mixed cropping, 6% sole cropping, and 3% relay cropping systems.

The preponderance of the mixed cropping system among the farmers was attributed to the need to reduce the risk of crop failure and/or income from the farming system. This agrees with the recommendation of Adesimi (1988) of the use of the organisational method to minimise the effects of farming risks. According to him, the method involves the use of insurance policy, diversification of farm enterprises and flexibility in enterprise change. This farmers' measure of minimising farming risks in the area was found to be indigenous and old practice.

In Table 1, the results of the analysis of the importance of the various crops in the areas studied are shown. The three most important crops were yam and cassava, and maize. Among the least important crops was cocoyam. In agreement with the Bendel State Government report (1985) which indicated that yam and cassava were the most important food crops in the State, the total scores obtained for these two crops in our analysis were the highest as shown in the Table.

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It was revealed from the study analysis also that major sources of risk incurred on the body of the farmers were sickness due to hard work on the farm, body injury from farming operations, injuries not due to farming operations, injury due to going to and from the farm, and injuries incurred during preparations for the farm activities. The above factors had some negative impact on farming operations of the farmers through absence from the farm and the spending of farm income to get treatments. The estimated total amount spent per farmer for treatment of sickness and/or injuries arising form the body injuries accounted for about 42% of the total money spent. The remaining 58% was spent on treatment of injuries.

The apparent low amount spent per farmer for treatment could be due to the fact that the traditional methods were mainly used, according to some of the farmers. The rural nature of the communities could also be responsible; people are more of their brother's keeper than in the urban areas. In some cases, the treatment was carried out by family members and as such little or nothing was paid to the doctor.

Table 1: Ranking of Food Crops In order of Importance, Edo North, Nigeria

Crops	Total Score	Percentage
Yam	354	18.3
Cassava	354	18.3
Maize	333	17.2
Tomatoes	235	12.2
Pepper	98	5.80
Cocoyam	45	2.33
Plantain	58	3.00
Rice	80	4.15
Cowpea	129	6.69
Soyabean	64	3.32
Melon	157	8.14
Others	20	1.03
Total	1,927	100.00

Source: *Computed from Survey Data, 1990*

Damages to Crops

Another area of risk to the farmers was the damage done to crops. It was observed that animals, farm workers, and insect pests constituted the greatest sources of damage to crops. Table 2 shows the various factors and the percentage of farmers affected in Edo North. The damage by animals was mainly in the form of removal of seeds from the ground and feeding on them; bush-fowl and rodents were the major animals that caused this form of damage. The indication that about 50% of the farmers had their crops damaged by farm workers shows that poor management of farm workers and crop arrangement on the farm could constitute some danger to the crops on the farm. The incidence of disease causing damage to the crops was not high. This could be due to the fact that most of the contact farmers used improved disease resistant planting materials.

Some of the farmers could not give the estimated cost of the crops damaged by these sources. The range of the monetary loss incurred by the farmers who estimated the cost of damage done to their crops was from N5.00 to N1,500.00; the highest amount lost was from rot damage.

Table 2: Sources of Damage to Crops in Edo North, Nigeria.

Damage	No. of Workers	Percentage
Farm Workers	16	50
Animals	19	59.5
Reptiles	8	25
Insects	12	37.5
Birds	10	31.25
Diseases	7	21.5
Fire	10	31.25
Unknown	1	3.12

Natural Risks

Further indications from the results of the analysis showed that the two major climatic factors that constituted the natural risks were excessive rainfall and late rainfall. Other factors included poor distribution of rainfall in the area and excessive heat. Over 80% of the damage due to the natural factors was attributed to rainfall. The late rains often lead to drought and poor yield while excessive rainfall usually lead to flooding. One unique characteristics about the natural risks in farming is that they cannot be controlled easily. This gives credence to the assertion by Adegeye (1981) that only a form of insurance can save farmers for the dilemma of natural hazards.

Social Risks

The study also found that social activities in the farmes' communities constituted the major social risk factor. They accounted for about 30% of the total number of days that the farmers were absent from their farms. During this period, the activities that engaged the attention of the farmers included the new yam festival and age-group festivals. Other social risk factors were death in the family or community, family disputes, community issues, and other unspecified issues. Apart from the social activities, death constituted another major social risk factor-it accounted for about 18% of the number of days that the farmers were absent from their farm activities. On the average, each farmer lost about 12 man-days of farm work due to the social issues. This suggests that farming in the rural communities is closely related to other activities in the communities. Non-farming risk factors have some multiplier effects on farming itself. Therefore farming cannot be excised from other economic and social activities in any community

Post-Harvest Risks

The analysis of the damage done to the harvested crops showed that fire and rot accounted for about 46% of the total quality of the farm produce damaged. The value of the quality damaged by the factors was about 41% of the total value of the produce damaged; Table 3 shows the various factors, the quantities damaged, and the values of the farm produce.

The dominance of fire and rot as post-harvest risk factors among the food crop producers could be associated with the prevalence of bush burning for animal hunting which was reported by the respondents during the survey. Another reason could be the nature of the major food crops produced in the area, cassava and yam reported earlier. Both crops can easily get rotten from the heat effect of the fire during bush burning. The statistics in the Table also revealed that insect pests, theft, and storage were major sources of damage to the harvested crops. The issue of

theft could be associated with the side effect of the Structural Adjustment programme (SAP) of the Nigerian Government, according to some of the respondents. The storage and insect problems could be due to the nature of some of the crops produced, which are suspectable to damage during storage, when proper care is not taken. Tomato, which was one of the important crops in Edo North, can easily get bad during storage in the rural areas as a result of inadequate provision of relevant storage facilities.

Table 3: Distribution of Damage Done to Harvested Crops, Edo North, Nigeria

Hazard	Estimated Quantity (kg)	Estimated Value (₦)	Percentage (Estimated Quantity)	Percentage (Estimated (Value)
Fire	1,310	2,840	18.4	19.18
Rot	2,432	5,425	34.2	27.10
Transport	740	19,34	120.44	9.66
Animals	203	845	2.85	4.20
Disease	295	874	4.14	4.30
Insect	680	1,710	9.56	8.54
Theft	495	1,158	6.96	5.78
Storage	468	3,238	6.58	16.17
Sunlight	485	990	6.8	4.90
Total	7,111	20,014	100	100

Source: *Computed from the survey data, 1990.*

Marketing Risks

Analysis of the marketing risks indicated that the prices which the farmers received for their harvested crops were generally lower than what they were expecting at the beginning of their farming period. The range of the percentage deviation was from 14%, for tomato, to 36% for melon. The mean percentage deviation was about 26%. The percentage deviation for maize, yam, cassava, pepper, cowpea, and melon were above the mean figure. Only plantain had the mean figure and the other crops had their deviation figures below the mean value. One possible explanation for the lower prices which the farmers obtained for their harvested crops is that they all planted their crops at the same time. This means that they will also harvest about the same time and bring the produce to the market at the same time since storage and processing facilities were inadequately supplied. The implication of this situation is that there will be glut in the supply of the produce to the market and the price levels will fall. This general reduction in the price level received by the farmers is a major risk they have to contend with. This supports Webster's (1977) assertion that farmers generally take decision based on imperfect knowledge of the market. Also, the time lag between crop planting and harvesting increases the riskiness of price estimation at harvest.

SUMMARY AND RECOMMENDATIONS

Generally, the research findings have indicated that the food crop produce in Edo North faced various forms of farming risks. The risks included production, climatic, social post-harvest, and marketing risks. It was only in the area of the production risks that the farmers took some measures to minimise the effects of the risks. This took the form of diversifying the farming enterprises. In the other areas of the farming risks, the farmers were found to be helpless because there was apparently no measure that was taken to minimise the effects of the risks.

The implications of the finding of this research include the fact that in the absence of any definite measure to reduce the farming risks in the area studied, food crop production activities may continue but the output will not be commensurate with the amount of investment involved in the production activities. Closely related to the above point is the fact that the income of the farmers from their food crop production operation will be reduced. Another implication of the finding is a reduction in the average life span of the farmers due to the risk of sickness and injuries to the body of the farmers. Furthermore, food crop production may become less attractive due to the high farming risk involved.

Given the importance of the agricultural sector of the Nigerian

economy and the need to increase food crop production in the country, there is the need for definite measures to be take that would reduce the effects of the farming risks on the food crop producers in the state and the country in general. In view of the above, this paper makes the following recommendation;

1. The Nigerian Agricultural Insurance Company (NAIC) should broaden crop production activities in the area studied in particular and the nation in general. In order to do this, there is the need for more research efforts in the area of risks in food crop production in the country. This will help to generate more information on the issues involved in the project.

2. The development of Co-operative insurance among the farmers should be encouraged. This will make it easier for both the NAIC and the farmers to carry out the relevant insurance policy for the farmers and hence encouraging increase food crop production in the country.

3. Increased extension services activities should be encouraged by the various governments in the country. This will help in training the farm in food farm management technique, with a view to reducing their exposure to the various farming risks. To do this, all constraints to the efficient performance of the extension services in the state in particular and in the nation in general should be addressed.

4. Adequate provision of farm chemicals to farmers to enable them tackle the problems of pests and diseases that attack farm crops and produce.

5. There is the need to ensure that the laws against indiscriminate bush burning are effectively carried out through community leaders in the rural areas.

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