INCORPORATION OF LIVESTOCK IN THE FARMING SYSTEM FOR ECONOMIC REHABILITATION AND RKUANCK (A CASK STUDY OF BICHI TOWN, KANO STATE)

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Abstract

This paper focuses on the incorporation of livestock in the farming system for economic rehabilitation and reliance in Bichi town, Kano State. The study shows (lie great relevance of mixed fanning system due lo (he benefits attached to it. The study was earned out through library research, questionnaire, Intel-views mid field observations. The random sampling technique was adopted to collect information from farmers of different classes in terms of age, economic stains and education. The data collected was presented and analyzed using simple percentage and tabulation. It is recommended that policy makers should re-evaluate the benefits of farm animals as well as policy commitment, to livestock development in order to achieve greater food security, improve diets, increase employment opportunities and reduce, import costs. The degeneration of soil could be halted and even reversed with many further benefits. This will enhance economic rehabilitation and reliance of farmers in the business.

Introduction

Agriculture is a form of environmental management aimed at producing food and agricultural raw materials upon which man depends for his food, drugs, clothing, shelter and energy. The main aim of the smallholder farmers in Bichi (own as in other parts of the .state is to produce enough crops for their livelihood, and to achieve a sustainable use of the land devoid of all environmental crisis, particularly in the Sudan ecological /.one, where this research is based.

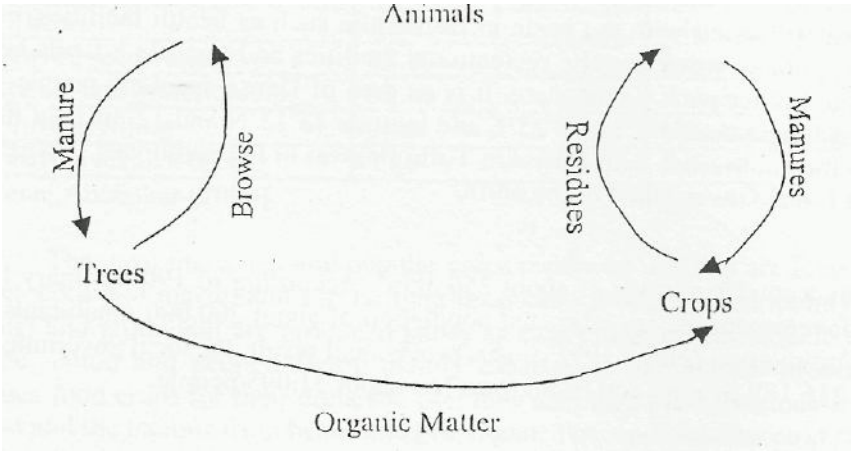
Land, on which all-human activities including agriculture lake place, is a natural resource which cannot be created by man. According to Uptong and Antonio, (1989) its quality has been called ''the original and indestructible powers of the soil'*. Therefore, since farm crops and trees cannot grow without soils, then conservation is the first essential factor in farm management for high yields.

In essence, since all living organisms (plants and animals) depend on soil, the conservation of soil, which means keeping it fertile, is a general problem. The food needed by the world population can only be produced if all possible conservation methods are employed. Soil conservation will also help in solving other related problems such as erosion, leaching, water logging and flooding.

According to Food and Agricultural Organization (F.A.O) working paper Feeding :i growing population from a limited land area is a challenge and one that scientist and farmers alike have striven to meet. To feed a growing population from a decreasing land area and simultaneously to satisfy the rising expectations of increasingly urbanized populations without further degrading land resource will be much more difficult. It will require increased productivity, but on sustainable basis. Some believed that this can be achieved only if more people become vegetarian, while the pro-livestock lobby maintains that livestock are essential to develop sustainable agricultural systems in third world countries (Sansoucy, 1994). Some people have a marginal view that there **is** a need to incorporate crops, livestock and trees for sustainable agricultural rehabilitation and reliance.

The system increases agricultural products, which both men and animals feed on. It possesses important attributes like productivity, sustainability and adoptability.

Figure 1: Natural Conservation System



Aim and Objectives

The broad aim of Ibis research work is to find out how the smallholder farmers in Bichi town earn their livelihood and (he methods they rely upon in (heir farm management. This aim can be achieved through the following objectives:

1. To assess the level of integration of (he trees, crops and livestock.
2. To assess other land management practices,

Methodology

In order to achieve the above staled aim and objectives, certain techniques and procedures were followed. The first task was reconnaissance survey in order to get acquainted with the peculiarities of the study area.

The data required for the study was obtained mainly from the primary and secondary resources of data collection. In the primary source, it involves the administration of the designed questionnaire, Held observation as well as informal discussion with farmers. Sixty (60) questionnaires were administered of which only fifty (50) were accepted as incidental samples. Informal discussions with the farmers verbally allow (hem to Hilly express their views. Random sampling method was adopted in order to collect information from farmers of different classes, especially in terms of age, economic status and education.

The other method used in collecting more relevant information is through the secondary data source. Existing literature on similar studies were used to develop framework for the study. Here, library resources such as textbooks, journals, annual reports, and papers presented at seminars and conferences and other relevant documents were a11 consulted. Cartographic base map of the study area was retrieved and interpreted to give the precise location of the study area. The data collected were presented and analyzed using cross tabulation and simple percentage.

The Study Area

Bichi town is the headquarters of Bichi Local Government, Kano State in the northern part of Nigeria. The town is situated in the northwestern part of Kano State. It is one of the oldest towns in Kano State. Bichi town is blessed with the basic infrastructure such as health facilities, educational institutions, electricity, potable water supply, recreational facilities and good link roads between the town and its villages and other parts of the slate. It is an area of Hausa speaking people which lies approximately between longitude $8^{l)}$5'l; and 8"25'E and latitude !2°13'N and 12°30'N of the equator. It share boundaries in the south-west with Dawakin Tola, Bagwai in the south-east, Tsanyawa in the north-east and Kunchi Local Government in the north.

Size and Population

Bichi town has a total landmass of about 350.5km". According to 1990 primary health care survey, Bichi Local Government has an estimated population of about 200,000 inhabitants. From the National Population Commission (NPC) 1991 census provisional result, the local government area has a population of about 216,189 people; and Bichi town has about 31,095 people.

Geology and Landform

Most parts of Bichi Local Government Area are found to be heavily underlined by ancient crystalline rocks of Pre-Cambrian basement complex; the characteristics topography of the basement complex is of gently undulating plain with ridges and valleys interspaced with a number of laterite capped hills such as scattered group of inselbergs which usually stand up to about 25metres above the surrounding country, which lies between 250 and 500 metres above sea level.

Soil and Vegetation

The soil developed in this area is generally moderately deep, well drained, and coarse textured surface horizon. The natural vegetation of Bichi Local Government in Kano Slate is the Sudan savannah type.

Climate

According to Olofin, (1987) the climate of Kano State (which correspond lo (hat ofBichi) is the tropical wet and dry type as coded by A.W Koppen although some climatic changes are believed to have occurred. The climate of Bichi Local Government Area has the usual features of northern belt of Nigeria.. It experiences distinct dry and wet seasons.

Data Presentation, Analysis and Discussion

About 100% of the farmers in Bichi town practice mixed farming because they know it is important in soil conservation and fertility improvement. Among the other methods of improving soil fertility, the most common is the animal manuring, this is because almost all of them keep some animals in their homes and therefore, generate manure; also manure is the most common and cheapest source of adding soil nutrients. They also use chemical fertilizer (mostly in small quantities) to supplement the animal manure. Some farmers use litter and ashes from their domestic homes to improve their farmland's fertility. The fallow system is practiced by very few individuals (0.7%) due to high pressure on the available land for the growing population (Table 1).

TabIe1: Farm Management Practice in Bichi Town

Improve Techniques		**Improving Soil Fertility**	-
Technique	%	Method	%
Tractor	9.90	Manuring	31.80
Fertilizer	35.6	Chemical fertilizer	26,50
Improved weed variety	28,80	Utter	18.50
Pesticide mill insecticide	12.10	Ashes	17.20
Improve seedling	9.90	Mixed farming	5.30
Improve livestock breed.	3.80	Fallow	0.70

Source: Abubakar (2000).

The most important and popular crops produced in Bichi are food crops. They include millet, guinea corn and maize, and the Tanning household produces them mainly for consumption. Cowpea (beans) and groundnut arc produced partly as cash crops, others include cassava, cotton, soya beans tomato, onion and pepper. Being mainly subsistence agricultural producers, their main aim is to produce food crops for their domestic use; they also feed (heir livestock from the farm remnants (e.g. stalks) and the haulms from beans and groundnut. The most popular crop is sorghum whereas maize is less popular because of its higher need for chemical fertilizer and moisture, while groundnut follows suit due to dangers of the pest attack.

Table_2:_Crop Production in Bichi Town

Types of crops	%
Sorghum	24.60
Cowpea	24.00
Millet	23.50
Groundnut	15.30
Maize	12.60

Source: Abubakar (2000).

There are three (3) main types of livestock that are commonly kept by the farmers in Bichi town they are goat, sheep and cattle. They keep livestock for meat, to generate income from sales of animals and their products and more importantly manure.

Most dominant type of livestock in Bichi town is goat which form about 50% of total livestock holding because of its low maintenance cost, and high reproductive rate. Sheep forms 40% while only 10% are cattle because most farmers do not have enough capital to invest in buying cattle and the maintenance cost is high.

In terms of benefits, cattle arc (he best, because they produce more milk, meat and manure than cither goal or sheep. On the average each of (he farmers interviewed has 7 goals, 5 sheep, 1 cow (Table 3).

Main Type of Livestock		Average Size of Holdings	
Specie	%	Specie	Number
Cattle	10.00	Cattle	1
Sheep	40.00	sheep	5
Goat	50.00	Goat	7

Source: Abubakar (2000).

Some of the farmers keep poultry e.g. chicken, ducks and pigeon, some keep the local specie while others keep improved variety of chicken (i.e. Broilers and Layers), They derive a lot of benefits including egg,-meat, income for sale, and their droppings are also used as a manure for some garden crops e.g. onion and pepper.

Farm Income: This comprises of all the monetary benefits they derive from both crops and livestock.

Crops: Being small holders, practicing subsistence economy they normally consume most of what they produce; this is why they mainly plant food crops only. All the same, some use lo sell part of what they harvest.

For the purpose of this research the income generation include all (he benefits they derive from crops including the one they consume, estimated amount sold and others like haulm, stalks, gifts, zakkat etc. was taken as their output. Therefore, it is not the raw cash that the fanner earns from his crops, farmers with annual income ranging from N15000 lo N34999 form about 56.0%, while 20.0% earn N65000 to N74999 (Table 4)

It is a known fact that in every business there is a hope of making profit. The profit is the difference between the value of production and the amount of investment. Due to variability in farm sizes, costs of production and income, the profit earned by each farmer varies accordingly. From the research, findings show that 42.0% enjoy the profit of between ££5000 to N9999 per annum from their crops (Table 4). Those having profit margins not exceeding .$420,000 per annum form only 8.0% this clearly shows the fact that the farmers are low wage earners.

Table 4:Estimated Cash Beiief1its and Profit Margins from_Crops in Bichi Town

Income from Crops		Profit Margins	
Range (N)	%	Range (N}	Number
5000-14999	22.00	1000-4999	24.00
15000-24999	28.00	5000-9999	42.00

25000-34999	28.00	10000-14999	20.00
35000-44999	4.00	15000-19999	6.00
45000-54999	6.00	20000-24999	2.00
55000-64999	6.00	25000-29999	2.00
65000-74999	2.0	50000-54999	2.00
75000 & above	4.00	55000 & above	2.00

Source: Abubakar (2000).

Livestock: Depending on the type and size of holdings of the livestock the income generation varies. The. income from livestock comprises of all the benefits derived from them in terms of milk, meat, manure, traction, transport and sale. These benefits are estimated in cash, and therefore taken as the income. Most of the farmers derive a lot from the manure generated by their animals; this is because manure is valuable since fertilizer is expensive. About 38.0% derive between 2000 to 6999 annually from their animals. Only the few farmers having cattle earn as much as 57000 and above per annum (Table 5.).

Table 5: Income from Livestock in Bichi Town
Income in Cash

Range(N)	%
2000-6999	38.00
7000-1999	22.00
12000-16999	14.00
17000-21999	6.00
22000-26999	2.00
27000-31999	2.00
32000-4199')	4.00
37000-41999	2.00
42000-46999	2.00
47000-51999	2.00
52000-56999	2.00
57000 & above	6.00

Source: Abubakar (2000).

From the general income structure, the standard of living of the farmers can be classified as below average standard. This clearly indicates that there is poverty among the farmers of Bichi even though the mixed farming system helps a lot in their economic rehabilitation and reliance on farming for a living.

Conclusion

Traditional agriculture in Bichi incorporates crops, livestock with trees under one management system. The mixed farming offers varied diet that incorporates egg, milk, meat, grains, vegetables and fruits, which are more nutritious than diets based on only crop products.

Economic risk is reduced by mixed farming systems, food security is enhanced, and such system also offers the opportunity to recycle materials (nutrients). Straw and haulms are a no cost feed for livestock, while harvests winnowing such as broken grains and chaff can be fed to livestock and poultry; grasses and other vegetative including tree foliage that would not be utilized otherwise. The animals also supply manure to fertilize the farms.

However, the main constraint to crop production is the inadequate fertilizer application. The supply of chemical fertilizer is far short of demand so, the fertilizer price is inflated beyond the reach of the small farmers, one tonne of cow dung contains about 8kg of Nitrogen, 14kg Phosphorous and 16kg of Potash (NP1C 8:14:16).

Livestock also remain a major source of draught power in developing countries despite tractorization. Draught animal power utilizes locally produced animals, harness implements and feed. In contrast 90% of tractors and their implements are produced in industrialized countries, and this, together with fuel, is a drain on foreign exchange. Draught animals also compact soil less than tractors, less compacted soil also usually yield more crops.

Recommendations

The following recommendations are considered useful.

i. Government should provide and subsidize fertilizer lo the fanners to increase production. ii. Policy makers should re-evaluate the role and benefits of farm animals as well as policy commitment, to livestock development in order to achieve greater food security, improve diets, increase employment opportunities and reduce import costs. The degeneration of soil could be halted and even reversed with many further benefits.

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