



ORIGINAL RESEARCH ARTICLE

Assessment of livestock production and crop residue utilization in Fashola farming community, Oyo State, Nigeria

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ABSTRACT

The drop in the production level of crop farmers due to climatic condition suggests the need for diversification. Livestock production, is the closest possible activity that farmers could engage in. Biomass wastes generated from crop farming could serve as input for livestock production. The study assessed livestock production and crop residue utilisation among crop farmers in Fashola farming community, Oyo State, Nigeria. Questionnaire was administered to 84 randomly selected crop farmers. Data obtained were analysed using descriptive statistics. Crop farmers were predominantly males (67.9%), married (89.3%) with mean age of 48.3 ± 14.3 years. Most household size (51.1%) had between 9 and 12 persons with the mean farm size of 2.7 ± 1.3 acres. Most farmers (46.4%) had no formal education, 89.2% engaged in crop farming as primary occupation, while majority (69%) were involved in livestock farming as secondary occupation. The mean annual income of the farmers was ₦164,285.71 $\pm$ 279,755.86. Majority (79.8%) had farming experience of over 17 years. Animals raised mostly were chickens (79.3%) and goats (77.6%), others raised were cattle, sheep, turkey, pig and duck. Feed resources utilised in feeding animals were cassava peel, cassava tuber, maize, concentrate, guinea corn together with grazing. Cassava and maize were grown by majority of farmers (100% and 88.1%, respectively) on an average farm size of 10.6 and 6.7 acres, respectively. About 72% of the crop farmers burnt the crop residues generated on the farm, 23.4% gave out crop residues to other livestock farmers while only 4.6% fed residues to own animals. None of the farmers possessed the knowledge of hay and silage production but showed interest in acquiring additional knowledge on forage conservation. Major limitations reported on livestock rearing were access to land (59.5%) and capital (48.8%). The study revealed the non utilisation of crop residues by majority of the crop farmers in Fashola community despite their involvement in livestock production, thus suggesting the need to enlighten farmers on their utilisation and preservation.

Keywords: Crop farmers, Crop residues, Standard of living, Income, Feed preservation.

INTRODUCTION

Biomass residues generated in most of Europe, North America and China are being increasingly channeled into material production for construction, furniture and bioenergy. Also, more interest and investment are being directed to increased utilisation of biomass wastes in those part of the globe (Karlen and Johnson, 2014). In developing economies, such residues are still being left on the field to rot or burnt, resulting in undesirable environmental impacts. There are no known concrete plans in Nigeria towards achieving the levels attained by most of the countries of the west in biomass waste utilization as biofuel. Emerging biofuel and bioenergy projects in Nigeria are targeted at

utilising first generation biomass feedstocks, which entails utilisation of food crops and not biomass waste as feedstocks (Ben-Iwo *et al.*, 2016). It is therefore expedient for developing countries to optimize these abundant resources for livestock production.

Although, agriculture as a livelihood activity is connected with diverse risks and uncertainties, thus, expose the farming households to low quality of life and also reduced food security status. These risks and uncertainties associated with agricultural sector have led farming households to look for alternative sources of income thereby diversifying their means of livelihood.

Integrated farming system (IFS) is a judicious combination of more than one agricultural enterprise, whereby the waste from one enterprise will be a resource for the other enterprise (Sasikala *et al.*, 2015). Integrated farming system (IFS) has been proven sustainable to abate the low-income lifestyle of farmers, creating continuous income all year round, thereby reducing poverty and malnutrition (Singh and Ratan, 2009). The benefits of IFS supersedes that of monocropping or mixed cropping system, as failure in a planting season put the farmer at a disadvantage of very low to zero income as production is mostly dependent on rain.

More than 60 percent of the population of sub-Saharan Africa is smallholder farmers (Goedde *et al.*, 2019) and therefore generate large amount of biomass waste. Ruminant animals have the tendency due to the presence of the microflora in the rumen to convert fibrous feed materials into meat and milk thus, reducing the competition of grains with humans. Moreover, forage utilization as local feed resource has been reported to be very important in facilitating the transition to 100% organic feed supply for organic poultry meat and egg producers (Abouelezz *et al.*, 2012).

Therefore, this study was carried out to look at the utilisation of crop residues and livestock production among crop farmers in Fashola farming community, Oyo, Nigeria.

MATERIALS AND METHODS

The study was carried out in Fashola farming community, Oyo (Oyo West Local Government Area of Oyo State), located in the Southwest geopolitical zone of Nigeria. The state lies between longitude 3° and 5° E and latitude 7° and 8° N and covers an area of approximately 26,500km². The area shares boundaries with Orire Local Government in the North, Akinyele Local Government in the South, Iseyin Local Government in the West. It enjoys a tropical humid climate with two climatic seasons, with annual rainfall regime which ranges from 1000-1350mm from April to October and dry season that lasts from November to March. Vegetation in the area is made up of Guinea savannah and

semi deciduous forest. Mean temperature varies from daily minimum of 18.9° C to daily maximum of 35° C and relative humidity is about 70% on the average. The surface soil which is light textured sand or sandy loam is suitable for growing crops like cereals (maize, millet, sorghum) and root crops (cassava and yam) which are particularly grown and used as staple food by farmers in the area. The area was purposefully chosen for this study because of the ecological conditions that favours crop-livestock production systems. The settlement pattern showed that people of different background reside in Oyo State. The villages in the study area were Apata-Oloro, Ilutuntun, Apologun, Balaale, Aare-Agbo and Sangodeyi.

Individual interview was carried out on 84 households. The participants (crop farmers) were selected at random. One member per household was invited for the interview and questions were translated from English to Yoruba language for the respondents and recorded in English Language. Data collected were analysed using descriptive statistics.

RESULTS AND DISCUSSION

Presented in Table 1 is the socio-economic characteristics of crop farmers in Fashola community, Oyo. The study revealed that 67.9% of the farmers were male, this corroborated Ajayi *et al.* (2019) that majority of smallholder crop farmers in South-West Nigeria were male. The mean age in the farming community was 48.3±14.3(years), which indicated that most people involved in crop farming in study area were agile and energetic to meet the rigorous demand of food production. Majority (79.8%) of the farmers were indigenes of the study area, this could be because of the ease of farm land acquisition through communal land ownership or by inheritance.

About 20.2% of the crop farmers were migrants from neighboring countries such as Republic of Benin, while some also migrated from other regions within the country to engage in crop farming. The non-indigenes claimed that they came in search of greener pastures and decided to settle in the farming location due to land

availability and long existing relationship between the indigenes and the non-indigenes.

Table 1a: Socio-economic characteristics of farmers in Fashola Community, Oyo

Parameters (n=84)	Frequency	Percentage
Sex		
Male	57	67.9
Female	27	32.1
Age		
21-30 years	11	13.1
31-40	21	25.0
41-50	27	32.1
51-60	11	13.1
61-70	8	9.50
>70	6	7.10
Indigene	67	79.8
Non-indigene	17	20.2
Religion		
Christian	27	32.1
Islam	57	67.9
Marital status		
Single	7	8.30
Married	75	89.3
Widowed	2	2.40
Educational qualification		
No formal	39	46.4
Vocational study	16	19.0
Adult education	2	2.40
Primary	20	23.8
Secondary	6	7.10
Tertiary	1	1.20
Primary Occupation		
Crop	75	89.2
Trading	4	4.80
Artisan	5	6.00
Secondary Occupation		
Artisan	12	14.3
Trading	5	6.00
Crop farming	9	10.7
Livestock farming	58	69.0

Table 1b: Socio-economic characteristics of farmers in Fashola Community, Oyo

Parameters (n=84)	Frequency	Percentage
House hold size (persons)		
1-4	11	13.1
5-8	13	15.5
9-12	48	57.1
>12	12	14.3
Farm size (acres)		
1-5	24	28.6
5-10	17	20.2
10-15	6	7.10
>15	37	44.0
Yearly income ('000')		
<30	16	19.0
30-59	18	21.4
60-89	11	13.1
90-119	16	19.0
>120	23	27.4
Years of farming experience		
<5	6	7.10
5-10	2	2.40
10-15	9	10.7
>15	67	79.8

Source: Field survey, 2018

*Multiple responses

Islam was mostly practiced (69.7%). Most of the respondents were married (89.3%) corroborating the report of Otekhile and Nahanga, (2017).

The study also revealed that less than 50% of the farmers (46.4%) had no formal education while only 1.6% attended tertiary institution, this was similar to the report of Jamie *et al* (2017) that more than 40% of heads of household of smallholder farmers had no formal education. The modal household size of 9 to 12 was observed in 57.1% of the respondents' households. The large family size could be due to the fact that most of the farmers were married and had more than one wife. Another factor could be the influence on productivity, as greater number of hands enhanced productivity especially where mechanization was absent or limited. The primary occupation of all the respondents (100%) was crop farming, while 69% engaged in livestock farming as their secondary occupation. This agreed with Herrero

et al. (2010) that smallholder farmers in developing countries engaged in crop and livestock farming. The highest income realised by most of the farmers (27.4%) annually was on the average of ₦120,000:00, meaning that respondents had less than ₦18,000:00 monthly, the minimum wage paid by Nigerian government. Although, the income declared was exclusive of the farm produce consumed by household members, labours, friends and relatives and considering the fact that farmers hardly keep records. This income seemed to be inadequate to maintain a better standard of living thus, having a negative implication on the welfare and livelihood of the farmers. Most of the respondents (79.8%) had more than 15 years farming experience.

Despite the enormous crop residues generated from different arable crops cultivated, only the stumps of cassava and standing maize stovers were consumed by grazing cattle and this happened in the dry season, when there was shortage of forages. Data in Figure 1 shows that about 72% of the respondents burnt the crop residues generated on the farm, 23.4% allowed grazing cattle owned by Fulani herdsman living within the farming community access to the residues with the aim of using the faeces defecated as manure for subsequent cultivation, while only 4.6% of the respondents fed the residues to owned animals. It could be deduced that majority of the respondents seemed not to know the benefits of these crop residues and this agrees with the findings of Simbaya (2002), that after harvesting, majority of the crop residues were considered as nuisance and were usually ploughed under as a way of recycling nutrients into the soil while some were just left to decay in the fields.

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Table 2: Type of livestock raised and feed offered to livestock in Fashola farming community, Oyo

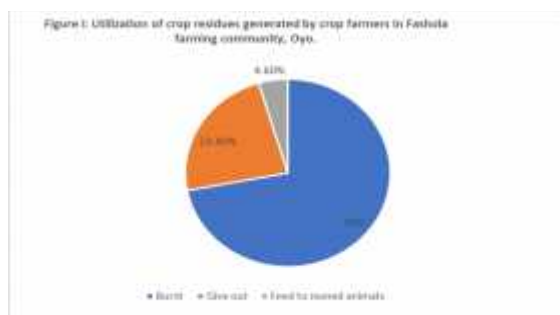
Parameters	Frequency	Percentage
*Type of livestock raised (n=58)		
Cattle	7	12.1
Sheep	32	55.2
Goat	45	77.6
Turkey	6	10.4
Chicken	46	79.3
Pig	3	5.20
Duck	6	10.4
Feeding Pattern of Livestock		
Cattle (n=7)		
Cassava peel	7	100
Grazing	3	42.8
Goat (n=45)		
Cassava peel	45	100
Browsing	45	100
Cassava tuber	12	26.7
Sheep (n=32)		
Cassava tuber	11	34.4
Cassava peel	27	84.4
Grazing	27	84.4
Turkey (n=6)		
Maize	5	83.3
Concentrate	1	16.7
Guinea corn	4	66.7
Chicken (n=46)		
Maize	27	58.7
Concentrate	3	6.50
Millet	18	39.1
Guinea corn	4	8.70
Scavenging	46	100
Pig (n=3)		
Cassava peel	3	100
Duck (n=6)		
Scavenging	6	100
Maize	3	50.0

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crop residues were considered as nuisance and were usually ploughed under as a way of recycling nutrients into the soil while some were just left to decay in the fields.

Data in Table 4 shows that none of the famers were aware of the importance and the methods of preparation of silage and hay. Their non-awareness might be as a result of their minimal utilisation of crop residues and also the lack of know-how. Although, hay production is better in the northern regions where the hot and dry environment encourages drastic reduction in the moisture content of grasses. However, silage making is better adopted in the southern part due to its non-dependence on weather, as it can be done during the rainy season characterized by abundance of grasses and crop residues as reported by Mannetje (1999). All the respondents showed interest in acquisition of required skill for crop residues conservation as this could improve animal productivity and also serve as another source of income.

As shown in Table 5, access to land was the major limiting factor reported by 59.9% of the respondents. This may be because the community was basically into crop production and invasion of livestock into crop farms was frowned at.



Conclusion

The study revealed that more than half of the crop farmers were involved in the rearing of livestock, but only 4.60% of the crop farmers fed the residues generated from grown crops to owned animals and a larger percentage burnt the residues. It was also observed that there was 0% knowledge of crop residues conservation.

Table 3: List of crops grown by crop farmers in Fashola farming community, Oyo

Types of crop grown	N0 of farmers	Percentage (%)	Average farm size (Acres)
Cassava	84	100	10.6
Maize	74	88.1	6.7
Yam	66	78.6	2.0
Tomatoes	43	51.2	1.7
Pepper	41	48.8	1.5
Okra	23	27.4	1.5
Beans	17	20.2	1.3
Rice	12	14.3	2.3
Vegetable	7	8.33	0.5
Potatoes	6	7.14	2.8
Egg plant	4	4.76	0.5
Guinea corn	1	1.20	1.0

Source: Field survey, 2018

*Multiple responses

Table 4: Awareness of farmers on conservation of crop residues

Parameter	Frequency	Percentage
Heard about silage		
No	84	100
Have an idea of how it is done		
No	84	100
Heard about Hay		
No	84	100
Interested in acquiring additional skills on hay and silage conservation		
Yes	84	100

Source: Field survey, 2018

Recommendation

There is need for synergy among the government, researchers and extension workers to organize enlightenment programs for farmers on the importance of livestock rearing as an enterprise that could be operated concurrently with crop farming. This will go a long way to enhance farmers' income and reduce malnutrition most especially at the period of low crop yield.

Table 5: Constraints to livestock rearing among crop farmers in Fashola farming community

Parameters (n=84)	Frequency	Percentage
Capital	41	48.8
Lack of feed	15	17.9
Access to Land	50	59.5
Inadequate time	16	19.0
Lack of interest	13	15.5
Lack of know how	15	17.9

Source: Field survey, 2018

*Multiple responses

Moreover, information on utilisation of crop residues and its conservation should also be disseminated to the farmers, this would help to reduce the cost of production of animals raised and could also fetch them more income when sold as animal feed.

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