SMALL RUMINANT LIVESTOCK MANAGEMENT AND ALLEY FARMING IN SOUTHERN NIGERIA: A Case Study of Some Selected Communities

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ABSTRACT

The adoption potential of alley farming as an agro-intervention system capable of providing fodder to small ruminant livestock in southern parts of Nigeria is evaluated in this paper. Data were collected from a total of 240 respondents through the use of structured questionnaire in some selected communities of the south-western (SW) and south-eastern (SE) parts of Nigeria where the agro-intervention had been introduced in the past. Data analysis showed that ownership of small ruminants is more popular among households in savannah zone than forest zone, and among current and former alley farmers than non-alley farmers with browse being the most preferred feed given to the livestock. The management indicators showed that the care of the animals is generally the responsibility of all family members. The data suggest that the introduction of alley farming to produce supplemental feed for livestock may not gain quick adoption in areas with local sources of browse notably in the forest zone. The paper then concluded that the introduction of alley farming to produce supplemental fodder may be an innovation more suited to livestock owners' needs in the mid-term future, rather than immediately.

Key Words: Small ruminant, management, adoption, alley farming.

INTRODUCTION

Small ruminant animal production has been in existence under smallholder management system in Southern Nigeria for quite a long time. The animals mostly favoured by this group of smallholders are sheep and goats. In recent times, the increasing human population and the discovery of more efficient processing techniques for food crops have led to a reduced availability of the traditional feed stuff

for livestock such as crop residues and processing wastes, thus necessitating the search for other nutritious feed materials capable of promoting small ruminant animal production in the region. Alley farming offers a means of integrating livestock husbandry with crop production. The tree foliage (prunings) can be used as mulch and organic fertilizer for food crops and/or for feeding livestock. In addition alley farming enables the combination of cropping and fallow periods, separated under traditional farming system thus increasing land-use efficiency. The tree species generally chosen (*Leucaena leucocephala* and *Gliricidia sepium*) are therefore capable of maintaining and improving soil fertility, remain productive under regular pruning, allow improved crop production and provide nutritious and palatable browse to supplement existing feed to livestock.

The pioneering work on alley farming in southern parts of Nigeria was carried out by the International Institute of Tropical Agriculture (IITA) as part of its on-station research using *Gliricidia* sp. seeds collected from central America (IITA, 1980). In the pursuit of its objective of improving smallholder sheep and goat production systems in the Humid Zone through better feeding of livestock, the International Livestock Centre for Africa (ILCA) promoted alley farming to its target farmers for its use in producing supplemental livestock feed (Atta-Krah and Francis, 1987). Studies by Francis (1987) and Francis and Atta-Krah (1989) on the relationship between alley farming adoption and land tenure systems suggested some tentative conclusion as well as the need for further research into the structure of authority and decision-making within the household, gender and the utilization of forest

or tree products. According to Fabiyi, Idowu and Oguntade (1991) the male dominance of the agricultural decision making process and the type of access to farmland were found to greatly influence adoption of alley farming by women in Oyo State.

The major objective of the study was to determine the livestock management option capable of accommodating the introduction of alley farming given the present sociological environment of the people. Specifically the study examined the adoption potential of alley farming by small ruminant livestock owners in southern parts of Nigeria.

METHODOLOGY

Data Collection and Analyses:

The data used for the study were collected (using administered structured questionnaires) from those communities in the southwestern and southeastern parts of Nigeria where alley farming had been introduced by the International Livestock Centre for Africa (ILCA), the International Institute for Tropical Agriculture (IITA) and the National Livestock Projects Department (NLPD).

A total of 240 respondents were interviewed using proportional sampling based on the total population of alley farmers from the geographical regions and ecological zones.

The southwestern sites include Alebiosu, Aba Oku, Olori, Emi Abata, Arikuyeri, Ofa-Igbo (in Oyo State) and Ayepe including its satellite villages (in Osun State). The first four villages lie within the transitional forest-savanna zone while the rest lie within the forest zone. Within the southeastern region, the selected villages include Okwe-Oboro in Abia State and Mgbakwu in Anambra State. Mgbakwu lies within the transitional forest-savanna zone while Okwe-Oboro is within the forest zone.

The data were analysed through the use of simple descriptive statistics such as frequency counts, percentages and cross tabulation analysis as a result of the largely qualitative nature of the data and exploratory nature of the survey.

RESULTS AND DISCUSSION

Ownership of Livestock

Sheep and goats were owned by 54.6% and 79.2% of the people interviewed, respectively. Another 61.3% raised poultry, while only one respondent kept pig, and none, cattle. More households were found in the savannah zone owning sheep and goats than households in the forest zone (Table 1). Also, about three-quarters of southeastern families owned goats as opposed to only 30% of southwestern families, though sheep was owned by approximately the same percentage of households in both regions. The current and former alley farmers also tended to own sheep and goats more than non-alley farmers, a possible indication that the alley farms were initially established to provide supplemental feed to the livestock.

Care of Livestock By Family Members

In taking care of animals, all family members were involved in various cases (34.6% for sheep, 55.4% for goats and 45.4% for poultry). As can be seen from Table 2, men were slightly more likely to take care of sheep than other family members, while women tended to care more for goats and poultry. Children as well as adults were generally involved in the care of family animals. The general disposition of all members to take care of the animals tended to give positive indication that the cut and carry system required of fodder from the alley trees will not put much burden on particular members of the family. From personal observation, it was not uncommon for children to own animals given to them as gifts, or to care for animals for other people. Offsprings from such arrangements were shared according to a previously agreed ratio.

Sheep and goats were tethered during the day to prevent them from causing damage to crops planted on plots close to the village. According to the farmers, they were untied in the night to allow the animals to take some exercises since they were less likely to damage crops planted on the fields. (Table 3)

SMALL RUMINANT MANAGEMENT VS ALLEY FARMING

TABLE 1: LIVESTOCK MANAGEMENT INDICES (AS% OF HOUSEHOLD)

MANAGEMENT INDICATOR		ZONE		REGION		ALLEY FARM STATUS			OVER ALL
		Savanna	Forest	SW	Se	Current	Never	Former	
OWN	Sheep	72	38	57	51	63	44	67	55
	Goats	91	68	30	77	86	70	91	79
TETHER YEAR ROUND	Sheep	39	48	23	83	24	37	83	42
	Goats	35	33	17	69	21	27	74	34
FEED: TYPE	Leaves	91	70	82	77	91	70	88	81
	Crop Residue	86	70	80	74	70	70	86	77
	House hold Garbage	17	69	27	27	27	25	30	27
METH-OD OF FEED-ING	Bring feed to them	26	10	7	51	13	58	15	22
	Let Them roam about	5.2	7	2	77	1	2	6	4
	Both	64	74	80	24	80	33	59	61

Source: Field Survey, 1993

It was observed that sheep were consistently tethered more often than goats, perhaps because goats tended to stay closer to the house than sheep. With regards to crop damages experienced by farmers within the study areas, there was a highly significant relationship ($P < 0.01$) between tethering of livestock (sheep and goats) and the existence of damage to crops. 60 per cent of sheep owners who tether their livestock all year round believed the animals could cause damage to crops while 89.5 per cent of those who rarely or never tethered their sheep believed the animals do not normally damage crops. (Table 3).

The same interpretation holds for goats. Hence in most of the communities, where there were no sanctions against roaming of livestock either by the Local Government Authorities or the communities themselves, tethering of small ruminant livestock (sheep and goats) was left to the discretion of individual livestock owners with regards to perceived damages (potential and actual) to crops.

Feeding of Livestock

Majority of the farmers interviewed (61.0%) allowed their animals to roam about, but in addition still give the animals supplemental feeding during the day (See Table 1).

TABLE 2: CARE OF ANIMALS WITHIN THE FAMILY (AS % OF RESPONDENTS)

FAMILY MEMBERS	SHEEP	GOATS	POULTRY
Men only	6.7	0.8	0.8
Women only	0.4	1.3	2.9
Men and Women	5.4	14.2	8.3
Women and Children	2.9	11.7	20.4
Men and Children	5.4	2.1	0.8
All Family Members	34.6	55.4	45.4
No Response	44.6	14.5	21.4

Source: Field Survey, 1993.

Another 22.0% practised only cut-and-carry feeding for their animals in confinement. Only 4% livestock owners rely solely on letting their animals roam about. The data show that more small ruminant livestock owners within the transitional forest - savannah zone (26%) tend to raise their animals in confinement by bringing feed to them than those in the forest zone (10%). Also, those of southeastern region (51%) tend to confine their animals more than in the southwest (7%). This may not be unconnected with the open nature of the farmlands in the forest - savannah zone and the closeness of the farmlands to the homesteads in the southeastern region, both of which encourage the destruction of farmlands by livestock if they were not confined. However, contrary to our expectation, livestock owners who have never alley - farmed tended to raise their animals more in confinement than other categories of livestock owners. The non-alley farmers claimed to have access to other local browse leaves around the villages for feeding their sheep and goats.

The results further show that many livestock owners invest a fair amount of labor and time

into their livestock. All the categories of farmers claimed to purchase by-products of maize, cowpea and cassava to feed their animals. Hence, given other favourable conditions, alley farming could help reduce farmers' expenditures on feed thereby permitting them to use the money for other purposes.

Less than 25% of the farmers interviewed agreed that livestock damage to crops is common. Attempts to reduce crop damage by livestock were often carried out by building of fences around fields to keep out animals (2.1% of household), confining the animals during the daytime (37.1% of households) and building of fences to confine the animals (3.3% of households). The construction of fences around fields and to confine animals, though not a common practice could be facilitated by using sticks cut from matured alley farms. Because of the excellent vegetative propagative ability of *Gliricidia* sp, these fences can become permanent if properly pruned and maintained thereby eliminating the need for constant repair of fences.

Tree leaves, crop residues and garbage represent the bulk of the feeding material

TABLE 3: TETHERING OF GOATS AND SHEEP AND EXISTENCE OF DAMAGE TO CROPS.

Count Row% Column%	ALL YEAR ROUND	DURING CROPPING SEASON	RARELY OR NEVER	ROW TOTAL
There is Damage to Crops by Goats and Sheep if not tethered	36(33) 65.5 (68.8)	10 (9) 18.2 (18.8)	9 (6) 16.4 (12.5)	55 (48) 28.9 (36.6)
There is No damage To crops by Goats and Sheep if not tethered	29 (22) 21.5 (26.5)	20 (10) 14.8 (12.0)	86 (51) 63.7 (61.4)	135 (83) 71.1 (63.4)
	44.6(41.0)	66.7 (52.6)	90.5 (89.5)	
Column Total	65 (55) 34.2 (42.0)	30 (19) 15.8 (14.5)	95 50.0	190 (131) 100.(100.00)
Chi-Square *** = 39.88442 *** = (P<0.01)	(30.61305***)		d.f. = 2	

*Figures in parenthesis represent those for sheep
Source: Field Survey, 1993.

TABLE 4: PERCEIVED BENEFITS OF ALLEY FARMING BY FARMERS

Count Row % Column%	ALLEY FARMS HAVE HELPED AS:			Row Total
	Fodder	Crop Production	Both Fodder And Crop Production	
Transitional	11	0	16	27
Forest-savannah	40.7	0.00	59.3	36.5
Zone	34.4	0.0	61.5	
Forest	21	16	10	47
Zone	44.7	34.0	21.3	63.5
	65.6	100.00	38.5	
Column	32	16	26	74
Total	43.2	21.6	35.1	100.00
Chi-Square	=	16.29446***	***	= (P < 0.01)
d.f.	=	2		

Source: Field Survey, 1993.

given to livestock (Table 2).

However, less than 7% of the livestock owners believe that any of the feed resources (leaves, crop residue, household garbage, and pasture) are becoming scarce. This means that most livestock owners within the study areas see little need to produce more feed for their livestock.

Perceived Benefits of Alley Farming By Farmers

Among the benefits claimed for alley farming as a sustainable system of farming, there seems to be certain ecological differences. Rather about 41% and 59% perceived the agro intervention technique to be useful as fodder for livestock and both fodder plus crop production, respectively. However, within the forest zone 34% of the farmers considered the technique to be beneficial to crop production only and a lesser percentage (21%) for both fodder and crop production. This observed difference between the two ecological zones was found to be significant ($P < 0.01$).

CONCLUSION

The data suggest that the introduction of alley farming to produce fodder only may not quickly gain acceptance in areas where other local browse leaves are available around the villages especially in the forest zone. However, the increasing demand for cultivable land may lead to the destruction of current feed resources thereby providing an incentive for

farmers to seek for sources of fodder. Therefore, utilizing alley farms to produce supplemental fodder may be an innovation more suited to livestock owners' needs in the mid-term future, rather than immediately.

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