

LIVESTOCK PRODUCTIVITY INDICES OF TRANSHUMANT AGROPASTORALISTS IN A GRAZING RESERVE IN NORTHERN NIGERIA

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Abstract

The offtake and some other production parameters of transhumant agropastoralist settlers in the Bobi Grazing Reserve, Niger State, Nigeria was determined from a stratified sample of twenty percent (20%) of settlers in each of the five (5) settlement blocks in the reserve. Sample size was forty settler households who had a total of 1659 cattle, 301 sheep and 559 goats. Data collected were subjected to simple statistical analysis (Percentage, Standard Deviation, Mean). Age at first calving was between 43 and 48 months, calving interval was 16-20 months, calving percentage was 56.6% and calf mortality was 18.89%. Settled pastoralists in the reserve had productivity indices that were better than national average indices, despite inadequate extension promotion and delivery facilities in the reserve.

Keywords: Productivity indices, Agropastoralist, Grazing Reserve, Livestock

Introduction

Transhumant (semi-settled) agropastoralists are a group of traditional pastoralists who have a permanent place of residence and practice subsistent crop production. They keep small herds (30-50 cattle) and usually move cattle out of transhumance in search of grazing and water as the dry season intensifies. Grazing Reserves are planned to encourage nomadic pastoralists to become transhumant or fully settled agropastoralists (mixed farmers). This is done by provision of gazetted land, individual land rights, medicine, infrastructure as well as veterinary and extension services (Magaji, 1981; SLDP, 1985; Anon, 1988).

The Offtake and other livestock production parameters under existing traditional pastoral production in Nigeria have been reported by various authors (Nigeria-SLDP, 1986; Ajogi 1987; RIM, 1989; Okoruwe, 1994). The objective of this study was to determine the offtake and other productivity indices of settled pastoralists at the Bobi Grazing; at the end of Nigeria's Second Livestock Development Programme (SLDP) in 1995, and compare results to previously reported indices. This will give an indication as to whether the grazing reserve approach to pastoral development has led to improvement in pastoral productivity.

Materials and Methods

The case study for this work was the Bobi Grazing Reserve located between latitudes 10° 00' and 10°10'N and longitudes 5° 45' and 6° 00'E near

Kontagora, Niger State, Nigeria. It was one of the three (3) new grazing reserves developed (in addition to five of the six older ones) during Nigeria's Second Livestock Development Programme (SLDP) (1987-1995). The reserve was divided into six settlement blocks. Those in the reserve before development began in 1985 were 'enclaved' in block I. New pastoralists who wanted to settle in the reserve were distributed into blocks II to VI. By April 1995, there were one hundred and ninety six (196) settlers in blocks II to VI.

Primary data were collected between March and December 1995 by use of three (3) sets of structured questionnaires, by interviews, field surveys, project site visitation and personal observations. These were used to collect information on settlement, socioeconomic and production characteristics of pastoralists. The questionnaires were translated into Hausa which was the medium of application. Taking the five settlement blocks as strata, a stratified sample of twenty percent 20% of settlers in the reserve by April 1995 was used. Forty settlers were used in all. Data were subjected to relevant statistical analysis (means, median, standard deviation and percentile) to calculate herd composition, production parameters, as well as crop and livestock farming characteristics. Results were summarized in tables and by means, median and standard deviation indices.

Results and Discussion

Tables I and II respectively show the offtake percent and reasons for livestock sales in the reserve in 1995. Table III compares the pastoral production parameter determined from the study with figures of production parameters of traditional cattle herds in Nigeria previously given by other workers.

The highest offtake (84.31%) was from male domestic fowls (cocks). Indigenous fowls raised on range provide the most rapid and convenient means of raising stock for sales. Each household sampled had means of 6.4 cocks/household and 24.95 hens/household. On the average, only one cock was left to breed the hens (6.4 minus 5.38) while up to 18 of the hens are left for breeding (24.95 minus 6.73). Similarly, each household had a means of 1.47 guinea fowl cocks and 5.9 of hens with offtake being 51.61% and 3.81% respectively.

The next highest offtake was in castrated bulls (76.48%). RIM 1989 has noted that pastoralists in Niger State deliberately kept a number of castrated bulls mainly to sell them to meet cash needs.

Slightly less than one-third of adult bulls and one sixth of yearling bulls were similarly sold. Rarely were adult cows (6.89%), calves (6.84%) and heifers (1.43%) ever sold. Pastoralists are interested in breeding not just for their number but more important for the milk production that they depend on for sales and as a major part of the diet. For the women, milk sales have the additional significance of providing social interaction at market places where they take the products for sale.

About one-quarter of the goats and one-fifth of the sheep are sold by settlers in the reserve. The onset of rains is a major period for sales of small ruminants (especially goats) to reduce the problems associated with restraining them to prevent damage to crops.

The reasons for sales of livestock are shown in Table II. Marriages and festivals during dry season were a major aspect of pastoralist sociocultural existence. For this reason, bulls (castrated or unsaturated) are sold to provide money for bride price, dowry and festivities associated with these events. Significantly, 95% of respondents stated they sold animals to buy veterinary drugs. It appears that the settler pastoralist had realised the beneficial effects of improved healthcare for their stock. The need to purchase food and consumables was another major reason for sales for livestock. For this purpose, smaller animals, such as goats, sheep and fowls are sold. Nearly half of the respondents indicate they cull sick animals, an indication of the need for improved veterinary services in the reserve. A little less than one-third stated they sell stock to buy breeding cows to replace old cows, an indication of the importance

of breeding to the pastoralist.

The dry season was the season of most sales, with between 60-90% of respondents selling in this season. This is the season when marriages and festivities are celebrated, when there is insufficient livestock feedstuff, when household food stores are depleted and when malnourished animals that cannot go on transhumance are culled.

Productivity Indices: The productivity indices at the reserve are shown in the first row of Table II. This is compared to figures of national productivity indices reported earlier by other workers.

The indices of the settled agropastoralists show slight improvement when compared to other figures. The slight reduction in age at first calving can be attributed to reduced stress due to cessation of nomadism. A major production practice of transhumant pastoralists is to leave pregnant and lactating cows behind with their calves at the homestead during dry season, while others are taken out on migration in search of food and water. Those left behind are given supplementary feed (hay and concentrates) to sustain milk production during the season. This will obviously improve calving percent, calving rate and calving interval when compared to animals on the traditional nomadic system.

The calf mortality figure is still comparatively high. This can be attributed to high incidence of helminthosis and coccidiosis expected where there is a building of livestock population, as was the case in the reserve. Helminthosis was one of the most important problems complained about by the settlers. Other reasons for the high calf mortality include susceptibility to disease transmitted by herds of influxing pastoralists, dry season malnutrition and resultant low lactation, and exposure to vectors (ticks, tsetse flies and snails).

It is clear from the above that transhumant livestock production in the reserve shows some improvement compared to nomadic pastoral production.

Conclusion

The livestock production indices of semi-settled transhumant in the Bobi Grazing Reserve showed some improvement compared to existing records of non-settled pastoralist outside the reserve. This was due to the sedenterization (i.e. settlement) of productive herds and supplementary feeding rather than to improved extension services in the reserve. Higher offtake, reduced herd-size and increased arable farming activities accompanied the improved production.

These are acknowledged features of settled livestock production system. It is expected that with adequate

nary services, a more efficient livestock production under settlement conditions will be achieved in the reserve.

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Table I: Livestock sales by type and age group, 1995

Type	Total in Herd	Total sold*	Offtake%
Adult bull	214	68(1.70)	31.78
Adult	609	42(1.05)	6.90
Bull	(2-3 years) 164	29(0.75)	17.68
Heifers	(2-3 years) 279	4(0.10)	1.43
Calves	(<2 years) 351	24(0.80)	6.84
Castrated bulls	42	32(0.80)	76.19
Total Cattle	1659	199	12.00
Sheep	301	68	22.59
Goats	559	140	25.04
Male domestic fowl	255	215	84.31
Female domestic fowl	989	269	27.20
Male Guinea fowl	72	32	44.44
Female Guinea fowl	236	9	3.81

Source: Field survey, January to February, 1996

*Number in brackets= mean per household

Table II: Reasons for sale of livestock by settlers at Hobi Grazing Reserve, 1995

Reason	No. of response (%)
Marriages and festivities	40 (100.0)
Purchase of drugs	38 (95.0)
Purchase of food and consumables	36 (90.0)
Culling of sick animals	19 (47.5)
Replacement (to buy breeding cows/ new animals)	12 (30.0)
Purchase of livestock feed	4 (10.0)
Animals "too many"	3 (7.5)
To pay fine/settle police	2 (5.0)
To pay tax	1 (2.5)
Dry season malnutrition	1 (2.5)
To buy fertilizers for farming	1 (2.5)

Source: Field Survey, January to February, 1996

Table III: Comparative promotion parameters of traditional cattle herds in Nigeria

Source	Mean age at 1st calving (months)	Calving interval (months)	Calving rate (%)	Calf mortality	Offtake%
This study, 1996	43 to 48	16 to 20	56.6	18.89	12.00
RJM, 1989a	48	21 to 24	53.6	18.90	
RJM, 1989b	43	21	54.2		
RJM, 1989c	48	20.3	55.8		
RJM, 1989d	54	24.3	47.0		
Ochere, 1989	60	25.2	48.2	22.4	
NLPD, 1985			45.0	20.0	8.7
Pullan, 1979	60	27	36 to 46		
Van Raav, 1974	36 to 42	16 to 18	45.0	40.0	
Lamorde & Weinman, 1972	45			18.6	
Weinabn				27.0	9 to 10
Tijani, 1952	50	24			
Shaw & Coville, 1959	60 to 70	24	40.0	14.0	5.2
Shaw & Coville, 1955 (Sokoto)			47.0	18.0	9.2

RJM 1989a = mean for Niger state

RJM 1989b = transhumant agropastoralist (Niger state)

RJM 1989c = exclusive pastoralist (Niger state)

RJM 1989d = Secretary agropastoralist (Niger state)

Adapted and updated from Ajogi (1987)