STATUS AND PROMOTIONAL STRATEGIES FOR RABBIT PRODUCTION IN NIGERIA

Abu O.A.[1]*, Onifade A.A.[1], Abanikannda O.T.F.[2], Obiyan R.I.[1]

[1]Department of Animal Science, University of Ibadan, Ibadan, Nigeria
[2]Department of Zoology, Faculty of Science, Lagos State University, Ojo, Lagos, Nigeria
*Corresponding author: ohiahmed@yahoo.com

ABSTRACT

Status and promotional strategies of rabbit production in Nigeria were examined in this study. This was because such data were lacking and rabbit production offers a great potential for the attainment of food security in terms of provision of high quality animal protein intake. Data were obtained from field survey, questionnaires administration, personal observations and experiences of authors, structured personal interviews of identified rabbit farmers, agents, personal interviews and visitations to markets and retail outlets for rabbit, proxy information from distant collaborators, recorded data from government establishments and published data. All the information collected was synthesized to provide an informative blend on major aspects of rabbit production patterns in Nigeria. From the data collected, rabbit production in Nigeria is largely traditional, non-commercially oriented, family consumption targeted, and smallholder type operation comprising 2-7 does and 3 bucks. About 3.4-5.2% of the Nigeria population may be keeping rabbits with women and children being mostly involved. Rabbit keeping is both intensive and semi-intensive, though some scattered free range backyard rearing was recorded. Unlike the rural rabbit keepers, space is limiting for most urban rabbit keepers. Diets of rabbits in Nigeria are primarily forages, grasses and legumes, kitchen wastes, while feeding pelleted commercial feeds is rare and, when fed, the commercial feeds are mostly broiler poultry mash. Although feed millers do advertise their capabilities in production and sale of rabbit pellets, production is largely for specialized research based institutions. Bucks and does are generally under-utilized, with does producing up to 20 weaned rabbits per year, and are usually offered for sale after four parities. Exchanges of males for breeding was observed among some traditional rabbit keepers. In fact, advertisements are made for availability of rented breeding bucks for a paltry sum. Nigerian rabbits do not suffer any peculiar disease; however, mange and coccidia infections are very common. There are high peri- and post-natal mortalities, and overall mortality between birth and marketing was estimated at 30-40%, being highest in the young rabbits. The productive and reproductive performances of rabbits in Nigeria relate with the level of management. However, there is a latent and growing market for rabbit meat in Nigeria especially as a compliment and/or an alternative to broiler meat. Some promotional strategies and policy suggestions for sustainable expansion of rabbit production were highlighted in this paper.

Key words: Status, Promotional strategies, Rabbit production, Lesser- developed country, Nigeria.

INTRODUCTION

Animal protein intake is dismally low in lesser-developed countries (LDC's) than in developed countries (DC's). The FAO recommends a minimum of 70 g of protein daily per caput, out of which at least 35 g (50%) should come from animal proteins, but the average Nigerian consumes less than 10 g of protein with only 3.2 g of this amount from animal protein. Pathetically, Nigeria with a population of about 140 million, the highest in Africa, has the highest number of under-five mortality. These deaths occur because of low animal protein intake. To bridge this gap therefore, all reasonable and practical options deserve thorough consideration. Micro-livestock such as the rabbit, guinea pig, grass-cutter, giant rat, iguana and pigeons have been suggested Vietmeyer (1984) as a rapid mean of obtaining animal proteins. The rabbit (*Oryctolagus cuniculus*) appears to be the most sustainable mean

of producing high quality animal protein for the expanding populations of the LDC's like Nigeria. The attributes of rabbits include: affordable or low-cost management requirements, small-bodied size, short generation interval, fecundity, rapid growth rate, genetic diversity, ability to utilize forage and agricultural by-products, and adaptation over a wide range of ecological environments. Nigeria is estimated to have up to 1.7 million rabbits (RIM, 1992).

We discuss the findings of our survey on the status, management practices, marketing and consumption of rabbit in Nigeria.

MATERIALS AND METHODS

Methodology of survey

Sources of information, scope, areas and period of study

Sources of information were structured in questionnaires, personal interviews and observations, published data, and doctoral theses in the department of Animal Science, University of Ibadan. The approach was systematic assessment of some selected areas where sizable population of farmers was resident. Five hundred questionnaires were administered over a period of six months while personal interviews, visitations and records appraisal took approximately one and half years.

Data collection, interpretation and presentation

Primary data on rabbit population, capacity utilization, reproductive and performance traits were determined by physical assessment. Much of the information compiled in this study was obtained from non-questionnaire sources because less than 50% of the questionnaires were returned. Field data were also compared to theoretical published information in literature and recorded data at some governmental agencies and our personal data bank. All information was presented to provide an informative blend of directly observed, returned questionnaires, theoretical and experiment backgrounds of the authors, and some available published information to the authors.

RESULTS AND DISCUSSION

Status of rabbit production in Nigeria

Rabbit production in Nigeria is largely traditional, non-commercial oriented, family-consumption targeted, and smallholder type comprising 2-7 does and 3 bucks on average. Between 3.4-5.2% of Nigerian population keep rabbits. Rabbits are raised for meat, pets or as laboratory animal, none is raised for pelt, fur or wool. Demographic data obtained showed that women and the children are the most involved in the routine management and are particularly tasked during the dry season when green forages is scarce. The age brackets of children involved in rabbit keeping fall between 5-17 years of age, while older children (17-25 years) work only in cases where they have their own herd. Female gender involvement in rabbit keeping up to 55-60 years of age was obtained while fewer men above 40 years of age except at research institutions engage in rabbit keeping. The average rabbit population among rearers and capacity utilization in Nigeria is presented in Table 1.

Table 1: Average rabbit population among category of rearers and their capacity utilization in Nigeria

Category	Number of rabbits[1]	Capacity utilization[2] (%)
Hobbyist	3-4	95-100
Backyard keepers	5-15	94-100
Small-scale farmers	15-25	73-92
Commercial producers	70-100	60-85
Research Institute and Universities	35-50	40-55
Government Agencies	20-150	7.5-45%

Source: Field Survey; [1]Number of rabbits include all categories (does, bucks, weanlings, kits); [2]Percentage of cages utilized with live rabbits inside as a proportion of the cages present in the rabbitry

Management practices

Housing management of rabbits
Rabbit keeping in Nigeria is both intensive and semi-intensive, though some scattered cases of free-range backyard rearing were recorded. Spatial allowance tends to be bigger in the rural areas where space is non-limiting, and there are local materials for making the houses. In the rural areas, rabbit housing are made from planks, woods or wood barks or bamboo. Houses built with mud having cemented or non-cemented floors are also common. Institutional or research centers keep rabbits in cages made of iron, steel or wood. Adaptation of abandoned layer cages into rabbit housing cages was also observed. Local people use wooden cages because of cheaper cost although they are less durable. In the Northern Nigeria where ambient temperature may reach 40^{o}C (104^{o}F) or more, rabbits are occasionally burrow into warrens to escape the heat.

Feeds and feeding
Rabbit feeding in Nigeria remains traditional and rudimentary. Feeds are served in feeding troughs made of wooden or clay or cement, iron, metal, half-split bamboo, and empty cans. Feeds are frequently and carefully sprinkled with little amount of water to reduce feed dustiness and wastage. Feeds are usually not pelleted except commercially prepared diets. Diets of rabbits in Nigeria are primarily forages, grasses and legumes supplemented with kitchen wastes and agricultural by-products such as dried cassava peels, wet milled cereal by-products. Indeed, in most rural, peri-urban and sub-urban areas, rabbits consume solely vegetable matter. Pasture cultivation for rabbit feeding is non-existent despite the sole dependence on green plants. Thus, feed security becomes critical during the dry season particularly in Northern Nigeria. Rabbits lose weight during this period, and breeding is negatively affected. Forages such as *Panicum maximum* (guinea grass), *Pennisetum purpureum* (elephant grass) *Tridax procumbens*, sweet potato leaves, cassava leaves and groundnut haulms, and *Talinium triangulare*, though less nutritive are commonly fed to rabbits by local people. Feeding of the leaves of multipurpose leguminous trees like *Leucaena leucocephala*, *Gliricidia sepium*, *Acacia albida* and the lesser-known types are carried out mostly in research institutes and universities. Commercial rabbit feed production constitutes less than 0.3% of the local livestock feeds producers in Nigeria (Onifade and Nasiru, 1997).The low patronage of commercial rabbit feed pellets discouraged commercial livestock feeds producers from producing rabbit pellets or at best produce minimally or produce on request. Commercial rabbit producers rely often on green forages more than rabbit pellets.

Reproductive management
At the smallholder level, a ratio between 1:2 or 1:3 is common largely because of economic and spatial constraints. The buck and the doe are usually kept distance apart to avoid familiarity. Large-scale producers do have 1:5 or 1:10. However, there are some cases of over-utilization of the buck's capacity when they are rented out to service does on other farms. Renting bucks to service does on other farms is a way of preventing inbreeding, and optimizing the potential of the buck. Similarly, does are brought in for mating proven buck on other farms, if the former is resident. Artificial insemination is not practiced.

Most traditional rabbit keepers allow doe to be introduced to the buck, and organized breeding programs are not common, farmers prevent indiscriminate mating. Provision of a kindling box is rare at the smallholder level; however, separate accommodation is usually reserved for the doe (and the kits) immediately after pregnancy confirmation. Does kindle 5-8 kits per litter and 4-6 kits reach weaning age and about twenty weaned rabbits per year.

Health management
Rabbits in Nigeria do not suffer from any peculiar diseases. Frequent attack of skin disease (mange) is common and this is often treated locally by rubbing a mixture of discarded engine oil and salt or kerosene. Leaves of *Aspilia africana* and *Carica papaya* are fed to rabbits for their medicinal properties against diarrhea. However, it was estimated that the overall mortality between birth and marketing, irrespective of the category of rabbit, was between 30-40% being highest in the young ones is common in Nigeria.

Productivity of rabbits
Daily body weight gains vary from 8-13 g (Abu and Onifade, 1996), 16-25 g (Omole and Sonaiya, 1981). These are low values compared with values of 42 g/day/rabbit obtainable in temperate climates. The high ambient temperature of tropical climates, low animal protein supplementation in rabbits diets, possibility unimproved genetic ability caused by uncontrolled breeding program suggestive of inbreeding depression are implicated.

Marketing and consumption of rabbit

Markets for rabbit meat exist in Nigeria but not organized or festival-targeted. This is unlike beef cattle, sheep, goats, broiler or spent laying chickens and the reason could be the subsistence level of rabbit production. Nonetheless, the increasing popularity of rabbit among the populace is gradually expanding the market for rabbit meat. Rabbits in Nigeria are marketed live or processed by roasting or removal of skin, and cutting into parts. Consumers prefer smoked rabbit probably because it reflects the traditional preparation of game animals. Rabbit meat is not sold in restaurants.

Status of research on rabbit as source of animal protein in Nigeria

One hundred and ninety-three (193) MPhil and PhD theses spanning 1969-2006 in department of Animal Science, University of Ibadan, Nigeria were collated and analyzed. Of this number only 6 (3%) involved rabbits for research. Two theses were in the area of nutrition, two on rabbit processing and consumer acceptance and the remaining two were in the area of reproductive physiology. The use of rabbit is low compared with other livestock and poultry.

Strategies for promoting rabbit production in Nigeria

Revitalization of past promotional efforts by government agencies like such as the Department of Rural Development and World Bank Assisted Agricultural Development Projects would greatly encourage rabbit keeping backed with an effective extension services. Provision and accessibility of the co-operative rabbit keepers to micro financing represents an ideal incentive strategy. The government should establish a National Rabbit Program with the broad aim of boosting rabbit production in Nigeria.

Marketing of rabbit and their products need to be promoted to sustain the economic initiatives of the producers. Pragmatic steps involve documenting highlights of the comparative meat types in print and in electronic media; organizing rabbit shows, serving rabbit meat at public banquets or dinners, hotels and restaurants as variety meat.

There are no known social or religious believes against the consumption of rabbit meat, some people, however, perceive the rabbit as a pet, especially the white-color coat rabbit. In some communities newly wed couples are discouraged from raising rabbits because it may lead to failed fertility in such couples! A good strategy is advertisement, persuasion, and endorsement from religious and communal traditional leaders.

CONCLUSIONS

Rabbit production can provide impoverished urban population and the resource-poor rural dwellers the opportunities to meet part of their total protein intake and earn additional income. The rabbit can be a potential money-spinner if properly managed. To achieve this, government, planners, academics, non-governmental organizations must prepare a well-coordinated plan action in promoting rabbit production.

ACKNOWLEDGEMENTS

We wish to acknowledge the World Rabbit Science Association, the Organizing Committee of the 9th World Rabbit Congress and the University of Ibadan, Nigeria for providing funds to attend the conference.

REFERENCES

Abu O.A. 1995. Potentials of rabbit production as means of supplying animal protein in Nigeria. A paper published in *"GREEN", Publication of The Nigerian Association of Agricultural Students, University of Ibadan, Nigeria, 23-24.*

Abu O.A., Onifade A.A. 1996. Effects of cassava waste substitution for maize in weaner rabbit diets. *Bull. Anim. Hlth. Prod. Afr., 44, 167-172.*

Longe O.G., Fagbenro-Byron J.O. 1990. Composition and physical characteristics of some fibrous wastes and by-products for pig feeding in Nigeria. *Bietr. Trop. Lanwirtsch. Vet. Med., 28, 199-205.*

Olorede B.R., Onifade, A.A., Okpara A.O., Babatunde G.M. 1996. Growth, nutrient retention, haematology and serum chemistry of broiler chickens fed sheabutter cake or palm kernel cake in the tropics. *J. Appl. Anim. Res., 10, 173-180.*

Onifade A.A., Abu O.A., Obiyan R.I., Abanikannda O.T.F. Rabbit production in Nigeria: Some aspects of current status and promotional strategies. *World Rabbit Sci., 7 (2), 51-58.*

Onifade A.A., Nasiru F.A. 1997. The impacts of structural adjustment programme on livestock production in Nigeria. *A report prepared for National Planning Committee, Lagos, Nigeria.*

Omole T.A., Sonaiya E.B. 1981. The effect of protein source and methionine supplemetation of cassava peel meal utilization by growing rabbits. *Nutrition Reports International, 23 (4), 720-737.*

RIM 1992. Nigerian livestock resources. Four volume report to the Federal Government of Nigeria by Resource Inventory and Management Limited. I. *Executive summary and atlas; II. National synthesis; III. State reports; IV. Urban reports and commercially managed livestock survey report.*

Vietmeyer N.D. 1985. Potentials for micro livestock in developing countries. *J. Appl. Rabbit Res., 8, 10.*