

Research Application Summary

Urban and rural poultry production for food security and income generation in Mozambique: Short communication

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Abstract

In Mozambique, as in many other African countries, eggs and poultry meat are important sources of animal protein. The data published in Mozambique indicate that 44% of children aged 0-5 years suffer from chronic malnutrition, resulting into death of one third of them, before they reach the age of five years. The severity of this situation is most pronounced in rural areas, where the diet is generally based on vegetable proteins that are naturally poor in essential amino acids. Nowadays, considerable benefits can be gained from the consumption of animal products, including fish. From the point of livestock production, the chicken is virtually the only affordable source of high nutritional value animal protein, providing meat and eggs. Poultry and chickens in particular are fast growing and prolific animals, which produce meat and eggs over a short time-span. In a country such as Mozambique, where two thirds of the territory is infested with tsetse fly, which limits cattle production, poultry production is of great importance. In Mozambique, the production of chickens is carried out in two production systems, intensive and extensive. The intensive system is predominant in periurban areas, while the extensive one is most common in rural areas. It is noteworthy that in both systems it is women and children, that are mostly involved in keeping of chicken. Despite the benefits of these birds several factors contribute to their low production and productivity such as: poor welfare, diseases, predators, poor food supplementation, and poor housing. Different authors indicate that good feeding, good housing, and good health and general management training may contribute to improve chicken production and productivity. These aspects, combined with education on the various ways of using this species, can make a major contribution to improving food and nutritional security of households, especially the most vulnerable, women and children, including people living with HIV/AIDS. The aim of this review is to present some aspects related to poultry production in (peri-) urban and rural areas in Mozambique.

Keywords: Broiler, food security, indigenous chickens, Mozambique

Resume

Au Mozambique, comme dans de nombreux autres pays africains, les œufs et la viande de volaille sont d'importantes sources de protéines animales. Les données publiées au Mozambique indiquent que 44% des enfants âgés de 0 à 5 ans souffrent de malnutrition chronique, entraînant le décès d'un tiers d'entre eux, avant qu'ils n'atteignent l'âge de cinq ans. Cette situation est plus prononcée dans les zones rurales, où l'alimentation est généralement basée sur des protéines végétales naturellement pauvres en acides aminés essentiels. De nos jours, des avantages considérables peuvent être tirés de la consommation de produits d'origine animale, y compris le poisson. Du point de vue de la production animale, le poulet est pratiquement la seule source abordable de protéines animales

à haute valeur nutritionnelle, fournissant de la viande et des œufs. La volaille et les poulets en particulier sont des animaux à croissance rapide et prolifiques, qui produisent de la viande et des œufs sur une courte période. Dans un pays comme le Mozambique, où les deux tiers du territoire sont infestés de mouches tsé-tsé, ce qui limite la production bovine, la production avicole revêt une grande importance. Au Mozambique, la production de poulets se réalise dans deux systèmes, intensive et extensive. Le système intensif est prédominant dans les zones périurbaines, tandis que le système extensif est plus courant dans les zones rurales. Il convient de noter que dans les deux systèmes, ce ne sont que les femmes et les enfants qui sont le plus souvent impliqués dans l'élevage des poulets. Malgré les avantages que confère l'élevage de ces oiseaux, plusieurs facteurs contribuent à leur faible production et productivité, tels que : les piètres conditions de bien-être, des maladies, des prédateurs, une mauvaise alimentation complémentaire et des mauvaises conditions de logement. Différents auteurs indiquent qu'une bonne alimentation, un bon logement, une bonne santé et une formation générale en gestion peuvent contribuer à améliorer la production et la productivité des poulets. Ces aspects, combinés à l'éducation sur les différentes façons d'utiliser cette espèce, peuvent apporter une contribution majeure à l'amélioration de la sécurité alimentaire et nutritionnelle des ménages, en particulier les plus vulnérables, les femmes et les enfants, y compris les personnes vivant avec le VIH/SIDA. L'objectif de cette revue est de présenter certains aspects liés à la production avicole dans les zones (péri-) urbaines et rurales du Mozambique.

Mots clés : Poulet de chair, sécurité alimentaire, poulets indigènes, Mozambique

Introduction

The Mozambique Government's Plan of Action against malnutrition recommends reducing chronic malnutrition in children under five years of age from 44% in 2008 to 20% by 2020. This goal can only be achieved by combining efforts and harnessing all available resources that contribute to diversifying the sources of nutrients and in particular protein. According to Bahand Gajigo (2019) poultry, together with seafood, is one of the main sources of animal protein for the Mozambique population, in addition to being an important source of income for poultry producers and other businesses along the various segments of the value chain. Furthermore, the poultry sector is particularly suited to small-scale operators and poor households in rural areas. In this context, the promotion of poultry production is offered as a viable alternative. This is almost the only source of protein of animal origin widely consumed, without cultural or religious restrictions and health concerns due to its natural characteristics of taste and low fat content (Kingori *et al.*, 2010).

Poultry production is characterized into two broad systems; small-scale village or scavenging chicks and intensive (commercial) system. The two systems vary widely with respect to number, types of birds, biosecurity practices and management. The commercial system involves production with hybrid breeds under intensive confined management with uniform stock and age groups mainly for commercial purposes. The common commercial breeds for broilers are Ross, Arbor acres, Hubbard and Cobb. The commercial producers can be characterized as mainly small scale (< 1,000 broilers) and some medium scale (1,000-10,000) with relatively few growers having a housing capacity of over 10,000 birds. Most of the small —scale producers are independent producers, buying day-old chicks and feed from the major suppliers. They are themselves responsible for the sale of the broilers when they attain slaughter age (28-35 days). Approximately 76% of the broilers are sold live and the rest to the slaughterhouses (Oppewal *et al.*, 2016).

Broiler production is most common in the urban areas of Maputo city, where small producers raise their poultry confined in a backyard with the birds being housed in small houses. On the other hand, production of indigenous chickens is more frequent in rural areas, where small producers raise their birds under extensive systems. Overall, the production system of these chickens differ based

on input-output relationships, and other aspects, such as bird types and flock size, house type, feed resources, health and disease control, marketing and product utilization (Garce's, 2008).

Urban broiler production. Urban poultry production is a sub-system of farming within intra—urban or peri-urban area aimed primarily at income generation (Graces, 2008). The most distinguishing characteristic of urban production is not its location but the fact that it is an integral part of urban economic, social and agro-ecological system. It uses urban resources, produces for urban consumers, and is strongly influenced by urban conditions (formal and informal markets and prices) and influences the urban system (effect on food security and poverty reduction).

In urban Maputo, small scale producers rear 200 to 2500 birds per cycle with 4 to 5 cycles per year. Most broiler production is done in their backyards or in rented poultry houses that are not in use by their owners or associations that no longer use the premises .

The production system is supported of a value chain consisting of incubators (production of day-old chicks); feed mill; slaughterhouses; marketing (veterinary medicine and vaccination; feed, chicks, chicken meats, alive chickens); and veterinary or extension services (Bah and Gajigo, 2019). This production is mostly done by women who associate this activity with the production of vegetables in the areas called “Green Zones”. The technological level and productivity is lower due to poor housing, deficient feeding, poor health care and poor bird welfare. The negative aspects described above, together with inadequate biosecurity, lack of waste disposal and poor hygiene present a constant threat of disease outbreaks and raised public health concern. Human contact with live poultry, both in small household farms and in industrial operations, is a clear risk factor for exposure to avian commensals that can infect humans, including bacteria such as *Campylobacter* spp., *Salmonella* spp., and *Listeria monocytogenes*, as well as viruses such as avian influenza (Leibler *et al.*, 2008). Despite the problems described above, this system contributes to broiler meat needs, employment especially for young people and income generation.

The study was done in Maputo to investigate the broilers production under urban conditions. Two types of producers were found to characterize the system: Those who work through the entire production chain from day old chicks to the slaughterhouse and others that only raise broilers from day old chicks and sell live mature birds to individuals or slaughter house. The production is carried out on private poultry farms using intensive production methods, with purpose-built premises and established nutritional and health management practices. Generally, broiler chicks are reared for a period varying from 28 to 42 days. Most birds are currently vaccinated against Newcastle Disease (ND), and some farmers vaccinate against Infectious Bursal Disease and Infections Bronchitis, although the vaccination schemes vary among the farmers. In addition to vaccines, producers administer antibiotics and multivitamin complexes uuring the entire broiler production process to reduce mortality.

Bird productivity is related to a number of factors ranging from general bird management to animal welfare standards. Animal welfare standards are becoming increasingly important even if there are different opinions in the definition of acceptable animal welfare conditions due to cultural, ethical or religious differences between individuals (Girasole *et al.*, 2015). A study carried out by Jose (not published) described and quantified animal welfare indicators/ principles (stocking density, good feeding, good housing, good health), during the entire production cycle in peri-urban areas of Maputo. He showed that production conditions do not observe the standards of animal welfare, resulting into fodtpad dermatitis and hock burn.

After 28 days of raising, there are two different destinations for the chickens as shown in Figure 1: The birds are taken to the slaughterhouse, where they are processed and subsequently sold in supermarkets, restaurants, hotels or surrounding population, or the birds are transported alive to the

informal market, where they can be sold live or processed (killed /slaughtered in the same place) to different consumers.

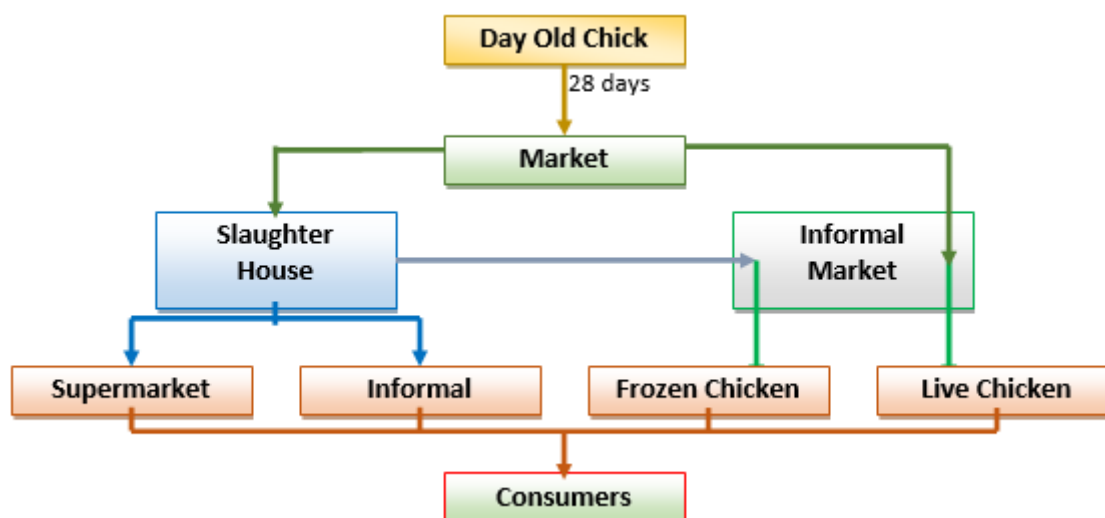


Figure 1. Broiler market chain in Mozambique

The informal market players are generally non-compliant with animal welfare rules during fattening, during transportation, stunning and slaughtering of the chickens.

Indigenous chickens (Landim chickens). The importance of indigenous chicken production in the national economies of developing nations of Africa and its role in improving the nutritional status and income of many smallholder farmers has been recognised by several scholars and policy makers worldwide (Melesse, 2014). For most rural households dependent primarily on crop income, the poultry sector can increase their resilience by reducing their vulnerability to rainfall and other crises. Poultry products also contribute to food security - an important factor given the high prevalence of malnutrition in several countries including Mozambique, which affects 40% of children under five years (Bah and Gajigo, 2019).

Landim chickens are generally raised in small extensive scavenging systems, where birds scavenge around the houses and feed on anything available, such as household refuse, insects, earthworm, and residues from agriculture. Sometimes farmers supplement their birds with leftovers from family meals, leftovers from food preparation / cooking, maize grains, bran, etc.

According to Alders *et al.* (2018), chickens are often considered the petty cash because they are sold to meet the diverse needs of the family such as buying school materials or paying fees, medical bills, medicine or offering a chicken to a traditional healer; and buying sugar, salt, oil, or other household items. In Mozambique, the average flock sizes vary significantly ($P < 0.05$) with six birds per household in case of poultry for egg-purposes and 17 birds per household in case of dual purpose production.

The marketing of chicken raised in rural areas is informal and birds are sold live. Street shoppers go to the producer's house, buy the chickens (10-20 beaks or more) and transport them by bicycle or on foot to the local, urban or road markets. In the market, the birds are sold by the first buyer, to another retailer, or are sold directly to restaurants and stalls. Birds are bought from the producer for 120-200 Mozambique Meticaís (approximately US \$ 3.3) and resold for 150-250. When the birds are in the market waiting to be sold, they are housed in cages or just tied together by their feet. Most of the vendors are male, but there are cases of girls selling their parents' birds

on the road and in markets. Below is a schematic representation of the chicken marketing circuit.

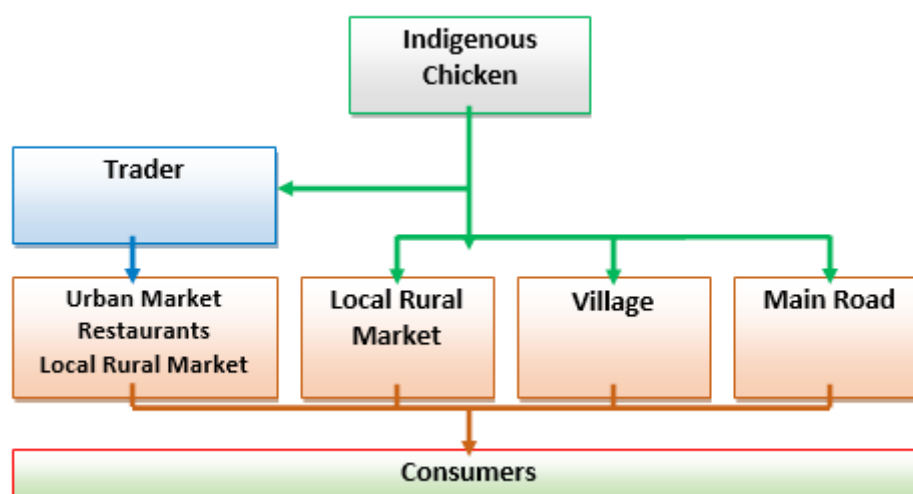


Figure 2. Landim (indigenous) chicken value chain in Mozambique

Conclusions

All the sector actors are important in terms of food security and each one has a contribution in the value chain. However, there is a need to improve each sector to achieve better production results. The main tool to develop the sectors is farmer training. The intensive production system need qualified labour to handle the different needs of the production system.

Peri-urban production system needs to strictly implement standard management, machine especially observance of sanitary and biosecurity produces. This can be done with support of extension services. The small-scale village or scavenging system need to strengthen the value of native chicken and improve the production practices. With the support of extension services, the sector can move from the traditional to commercial production, and this would contribute to higher income.

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