

Traditional Chicken Production System and Marketing in Ethiopia: A review

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Abstract

In Ethiopia, the agricultural sector is a corner stone of the economic and social life of the people. The sector employs 80-85 percent of the population and contributes 40 percent to the total GDP. Livestock production, as one component of agriculture, covers 40 percent of agricultural output and it also plays an important role in the national economy as it contributes 13-16 percent of the total GDP. Poultry production, as one segment of livestock production, has a peculiar privilege to contribute to the sector. Similarly, households in Ethiopia keep birds for household consumption, sale and reproduction purposes including other social and cultural roles. Estimating the economic value of rural poultry is more difficult than for other livestock because of the lack of reliable production data. Rural chicken in Ethiopia represents a significant part of the national economy in general and the rural economy in particular and contribute to 98.5% and 99.2% of the national egg and chicken meat production, respectively. However, the economic contribution of the sector is still not proportional to the huge chicken numbers, attributed to the presence of many technical, organizational and institutional constraints. It is difficult to design and implement chicken based development programs that benefit rural people without understanding traditional chicken production systems and marketing. This paper is to review traditional chicken production system and marketing in Ethiopia.

Keywords: Chicken, marketing and traditional

1. Introduction

In Ethiopia, the agricultural sector is a corner stone of the economic and social life of the people. The sector employs 80-85 percent of the population and contributes 40 percent to the total GDP (Zinash *et al.*, 2001). Livestock production, as one component of agriculture, covers 40 percent of agricultural output and it also plays an important role in the national economy as it contributes 13-16 percent of the total GDP (Abassa, 1995; Seifu, 2000). The diverse agro ecology and agronomic practice prevailing in the country together with the huge population of livestock in general and poultry in particular, could be a promising attribute to boost up the sector and increase its contribution to the total agricultural output as well as to improve the living standards of the poor livestock keepers. Poultry production, as one segment of livestock production, has a peculiar privilege to contribute to the sector. This is mainly due to their small size and fast reproduction compared to most other livestock and its well fitness with the concept of small scale agricultural development. Moreover, it goes eco friendly and does not compete for scarce land resources.

There are varieties of chicken production systems because of the considerable differences that exist in the physical and socio-economic circumstances of rural community in developing countries (Kitalyi, 1998). Likewise, different names have been given to these chicken production sometimes used interchangeably. These includes: village, family, free range, scavenging, rural or traditional and smallholder chicken production (Cumming, R.B.1992; Tadelle and Ogle, 1996a; Kitalyi, A.J. 1996; Gueye, E.F. 2000a, Alemu, Y. 2003). Poultry farming is widely practiced in Africa almost every farmstead keeps some poultry mainly for consumption and cash sales. Religions and cultural considerations are also amongst the reasons for keeping chickens by resource poor farmers in Africa. (Dwinger *et al.*, 2003).

Similarly, households in Ethiopia keep birds for household consumption, sale and reproduction purposes including other social and cultural roles (Tadelle and Peter, 2003). Estimating the economic value of rural poultry is more difficult than for other livestock because of the lack of reliable production data. Animal productions in general and chicken production in particular play important socioeconomic roles in developing countries (Alders, 2004). Nearly all rural and peri-urban families in developing countries keep a small flock of free range chicken (Branckaert and Gueye, 1999). Approximately 80% of the chicken populations in Africa are reared in free scavenging systems (Gueye, 1998). Smallholder farming families, landless laborers and people with incomes below the poverty line are able to raise chicken with low inputs and harvest the benefits of eggs and meat via scavenging feed resources. In most African countries, the rural chicken population accounts for more than 60% of the total national chicken population (Sonaiya 1990). The proportional contribution of poultry to the total animal protein production of the world by the year 2020 is believed to increase to 40%, the major

increase being in the developing world (Delgado *et al.*, 1999). However, most communities lack the required husbandry skills, training and opportunity to effectively improve their household chicken production (Mlozi *et al.*, 2003).

In Ethiopia, chicken are widespread and almost every rural family owns chicken, which provide a valuable source of family protein and income (Tadelle *et al.*, 2003a). The total chicken population in the country is estimated at 38.1 million (CSA, 2009). The majority (99%) of these chickens are maintained under a traditional system with little or no inputs for housing, feeding or health care. The most dominant chicken types reared in this system are local ecotypes, which show a large variation in body position, colour, comb type and productivity (Teketel, 1986; Tadelle *et al.*, 2003b; Halima, 2007). The greater part of the feed for village chicken is obtained through scavenging, which includes the household cooking waste, cereal and cereal by-products, pulses, roots and tubers, oilseeds, shrubs, fruits and animal proteins (Tadelle 1996).

Rural chicken in Ethiopia represents a significant part of the national economy in general and the rural economy in particular and contribute to 98.5% and 99.2% of the national egg and chicken meat production, respectively (Tadelle, 1996; Aberra, 2000). However, the economic contribution of the sector is still not proportional to the huge chicken numbers, attributed to the presence of many technical, organizational and institutional constraints. According to Gueye (1998), it is difficult to design and implement chicken-based development programs that benefit rural people without understanding traditional chicken production systems and marketing. The objective of this paper is to review traditional chicken production system and marketing in Ethiopia.

2. Characteristics of traditional chicken production system in Africa and Ethiopia

Generally, there are four poultry production systems in developing countries and in Africa in particular in Ethiopia. These include the free-range system or traditional village system; the backyard or subsistence system; the semi intensive system and the small-scale intensive system (Bessei, 1987; Sonaiya, 1990a; Kitalyi, 1998; Branckaert and Gueye, 2000 and Gueye, 2000a). Some of the important characteristics of these poultry production systems in Africa and Ethiopia are summarized in Table 1.

Table 1. The major characteristics of the chicken production system in Africa and Ethiopia

| Characteristics | Traditional range | free Backyard Subsistence | or Semi intensive | Small scale |
|-----------------------|---------------------------------|---------------------------------|----------------------------------|-------------------------------------|
| Flock Size | 1-10 | 10-50 | 50-200 | 50-500 |
| Ownership | Women& children | Women & family | Middlemen | Business men |
| Breeds | Indigenous | Indig. & crossbreds | Cross breeds | Layers or broilers |
| Feed Source | Scavenging | Scavenging & supp | Commercial/local | Balanced diets |
| Health Status | No vaccination No medication | Vaccination & Little medication | vaccination Little medication | Full vaccination Full medication |
| Housing | No specific housing | Simple and small houses | Medium & improved | Big and improved |
| Egg Production | 30-50 eggs/yr/hen | 50-150 eggs/yr/hen | 80-160eggs/yr/hen | 250-300eggs/yr/hen |
| Use Patterns | Home consumption | H. consump & sale | Family income | Business income |

Source: Sonaiya, Kitalyi, 1998; Sonaiya and Swan, 2004; Gueye, 2003 and Riise *et al.*, 2004b.

The most common production system found in Africa are the free-range and backyard production systems (Sonaiya, 1990a; Gueye, 2003) and approximately 80% of chicken populations in Africa are reared in these systems (Gueye, 1998). The chicken in this system are a function of natural selection. As a result the performance of chickens under rural conditions remain generally poor as evidenced by highly pronounced broodiness, slow growth rates, small body size and low production of meat and eggs (Kitalyi, 1998; Sonaiya, 2000).

Poultry production systems in Ethiopia show a clear distinction between traditional low input systems and modern production system using relatively advanced technology. There is also a third emerging small-scale intensive system as an urban and pier urban small-scale commercial system (Alemu and Tadelle, 1997). However, the traditional chicken rural poultry production that predominately exist in the country is characterized as including small flocks, nil or minimal inputs, with low output and periodic devastation of the flock by disease (Tadelle and Ogle, 1996a). The present situation in many villages is that poultry left with little or no care. This causes severe fall in productivity.

Traditional chicken production system is an appropriate system that makes the best use of locally available resources (Tadelle *et al.*, 2003a). Data on livestock populations in Africa show that chicken population is the highest (Sonaiya *et al.*, 1998). In sub-Saharan Africa, 85% of all households keep chicken under free range/extensive system, with women owning 70% of it, providing scarce animal protein in the form of meat and eggs as well as being a reliable source of cash income (Gueye, 1998; Sonaiya and Swan, 2004).

Ethiopia is one of the few African countries with a significantly large population of chicken, estimated

at 38.1 million (CSA, 2009). However, the number of chicken flocks per household in most Ethiopian rural communities is small; constituting an average of 7–10 mature chicken, 2–4 adult hens, a male bird (cock) and a number of growers of various ages (Tadelle and Ogle, 2001). Alemu and Tadelle (1997) also reported that the local chicken in Ethiopia vary widely in body size, conformation, plumage colour, comb type and feather cover.

3. Importance of traditional chicken production system

Chicken were among the most adaptable domesticated animals and more people are directly involved in chicken production throughout the world than in any other single agricultural enterprise and the impact of village chicken in the national economy of developing countries and its role in improving the nutritional status, income, food security and livelihood of many farmers and smallholders are significant owing to its low cost of production (FAO, 1997; Gondwe, 2004; Abdelqader *et al.*, 2007; Abubakar *et al.*, 2007).

According to Moreki *et al.* (2001), family chicken are rarely the sole means of livelihood for the family, but is one of a number of integrated farming activities contributing to the overall well-being of the households. It provides employment and income generating opportunity and is a priority animal for holy day and religious sacrifices (Sonaiya, 2000; Tadelle and Ogle, 2001; Gueye, 2003). Village chicken also play a role of converting household leftovers, wastes and insects into valuable and high quality protein (Doviet, 2005). There are only few alternative animal protein sources available in the tropics including chicken and eggs (Odunsi, 2003). Family chicken meat and eggs contribute 20–30% to the total animal protein supply in low-income and food-deficit countries. Village chicken could be particularly important in improving the diet of young children in sub-Saharan Africa (Alam, 1997).

Chicken provide major opportunities for increased protein production and incomes for smallholder farmers because of short generation interval, high rate of productivity, the ease with which its products can be supplied to different areas, the ease with which its products can be sold due to their relatively low economic values, its minimal association with religious taboos and its complementary role played in relation to other crop–livestock activities (Muchenje *et al.*, 2000). According to Tadelle (2003), in Ethiopia, traditional chicken production systems are characterized by low input–low output levels. A range of factors such as sub optimal management, lack of supplementary feed, low genetic potential and high mortality rate are the major causes for the apparent low output level. However, traditional chicken production is part of a balanced farming system, plays an important role in the supply of high quality protein to the family food balance, and provides small disposable cash income in addition to the socio-religious functions important in the rural people's lives.

4. Management of traditional chicken production system

4.1. Feeding

Family poultry production in Africa survives by scavenging and generally, no supplements provided except that some times, household waste fed to the birds and other circumstances the diet supplemented with grain (Dwinger *et al.*, 2003). Similarly, in Ethiopia the traditional chicken production system is characterized by keeping under free range system and the major feed sources are believed to be insect worms, seed and plant materials (Tadelle and Ogle, 1996a; Solomon, 2004). The birds find their feed by scavenging around the houses in the village, and in addition, they might get leftovers from the harvest. As a result, feed is rarely adjusted to the needs of the birds. Young chicks are left scavenging together with adult birds having to compete for feed and becoming an easy prey for predators and spread of diseases. Very often birds do not get enough water, or they get dirty water, which may transfer diseases. Birds are also rarely put in an enclosure or shelter. Nests for hens are rarely provided causing the birds to lay their eggs on the ground even some times in the nearby bush. Furthermore, the system is usually based on hens with the ability to go broody and rear their own chicks. This has many advantages, but the long broody periods reduce egg.

4.2. Housing

Although no data are available about housing at national level, the local birds are set free on free range whereby they move freely during the day and spend the night in the main house. Overnight housing, perched in trees or on roofs and overnight housing within the main house are the common patterns of housing prevailing in the country (Tadelle, 2003).

4.3. Disease and predators' control

The indigenous flocks are said to be disease resistant and adapted to their environment. However, the survival rates of the Ethiopian indigenous chicks kept under natural brooding conditions considered low. No vaccination and medication applied for the traditional or village chicken production. Predators such as snakes, rats, dogs, cats and foxes are the main causes of losses especially in young birds.

5. Production and reproduction performances of village chicken

The productivity of traditional chicken production systems is low. This is due to low egg production and high mortality rate (Nigussie *et al.*, 2003). Teketel (1986) and Aberra (2000) also characterized the low productivity of local chicken due to low egg production performance, production of small sized eggs, slow growth rate, late maturity, small clutch size, an instinctive inclination to broodiness and high mortality of chicks.

In Ethiopia, a local scavenging hen on average lays about 36–40 eggs/year (Tadelle *et al.*, 2000; FAO, 2004). The average egg weight of local hens around Arsi, Ethiopia, was reported to be 38 gm (Brannang and Persson, 1990). The average number of eggs/clutch of local hens in Burkina Faso was estimated to be 12 eggs which are comparable to the range of 12–18 eggs reported by Gueye (1998). In Guinea and 9 eggs/clutch by Kuit *et al.*, (1986) in Mali. Halima (2007) reported an average productivity of 9–19 eggs/clutch with 2–3 clutch periods/hen per year and an average total egg production ranged from 18–57 eggs/year per hen for local hens in North-West Ethiopia. The average number of clutches/ hen per year and the number of eggs/clutch of local chicken in Sudan were 3 and 12 eggs, respectively (Khalafalla *et al.*, 2001).

According to Sonaiya and Olori, (1998), Gueye (2000), the annual egg production/hen of local hens in village conditions ranged from 20 to 100 eggs; with an average egg weight range of 30 to 50 gm. According to Gueye (2000), the adult male and female weight of African village chicken range from 1.2 to 3.2 kg and from 0.7 to 2.1 kg, respectively.

6. Challenges in traditional chicken production system

The most striking problem in traditional chicken production systems is the high mortality rate which could reach as high as 80–90% within the first few weeks after hatching, due to diseases and predation (Wilson *et al.*, 1987)? Newcastle disease (NCD) is highly infectious and causes more losses than any other diseases in the tropics. The disease spreads rapidly through the flock and mortality could reach up to 100% (Nigussie *et al.*, 2003; Serkalem *et al.*, 2005; Nwanta *et al.*, 2008).

Among the infectious diseases, NCD, salmonellosis, coccidiosis and fowl pox are considered to be the most important causes of mortality in local chicken while predators are an additional causes of loss (Eshetu *et al.*, 2001). According to Tadelle (2001), the high mortality of chicks under traditional or village chicken production in the central highlands of Ethiopia is due to diseases, parasites, predation, lack of feed, poor housing and insufficient water supply.

The other major limiting factor of traditional or village chicken production is feed, in terms of both quantity and quality (Mohamed and Abate, 1995). The nutritional status of local laying hens from chemical analysis of crop contents indicated that protein was below the requirement for optimum egg production and the deficiency is more serious during the short rainy and dry seasons (Tegene, 1992; Alemu and Tadelle, 1997).

In addition to the above mentioned constraints; Singh (1990) reported other vital problems affecting the productivity of traditional or village chicken including: low productivity of local chicken (attributed to low genetic potential, disease and poor chicken management practices), poor extension services and inadequate credit facilities, availability of few or limited research activities, lack of organized marketing system, seasonal fluctuation of price and lack of processing facilities.

7. Role of women in village chicken production and ownership

Traditional or village chicken production in most developing countries is based mainly on scavenging system and rural women and children traditionally play an important management role. They are generally in charge of most chicken husbandry practices, since small-scale animal production does not require heavy manual labour (Riise *et al.*, 2004b). According to Bradley (1992), Village chicken production or family poultry could be easily managed within homesteads and the management has been associated with women for various historical and social factors.

A survey in four African countries (Ethiopia, Gambia, Tanzania and Zimbabwe), showed that women dominate most activities of village chicken husbandry, except for shelter construction and marketing. The result also showed that various gender based constraints such as poor access to information and heavy workloads should be addressed to meet the needs of women and opportunities for improving village chicken production (Kitalyi and Andre, 1998).

According to Abubakar *et al.* (2007), in a study conducted on village chicken production in some parts of Nigeria and Cameroon, all gender categories are involved in chicken management, with children having the highest responsibility of housing the chicken at night and letting them out in the morning. Based on the result of the study, women own the majority of chicken (52.7%) followed by children (26.9%) and men (20.4%) in Cameroon; unlike the situation in Nigeria, where the majority of the chickens are owned by men (55.6%) followed by women (38.9%) and children (11.1%). In Bangladesh, women are able to operate and manage technical enterprises like broiler farming, layer farming and duck farming efficiently with a high economic return on the investment (Riise *et al.*, 2004b). Halima (2007) also reported that rural women in North-West

Ethiopia are more responsible for chicken rearing in both male and female headed households, while men are responsible for crop cultivation and other off-farm activities.

In a number of African countries, approximately 80% of the chicken flocks are owned and largely controlled and managed by rural women (Gueye, 1998; Mcainsh *et al.*, 2004). In male headed households, the wife and husband are co-owners of the chickens but sometimes children own some chicken in the flock and are allowed to sell their chicken and eggs to cover expenses for school or to purchase clothes.

According to Gueye (2003), the management of rural chicken in Africa is a family affair. Construction of chicken house and major decisions on sale of chicken and eggs and consumption of chicken products is under the control of men, while looking after chicken, controlling and utilizing the earnings from the sale of eggs and chicken belongs to women. Similarly, Tadelle and Ogle (2001) indicated that in Ethiopia, management of chicken is fully in the domain of women, while decision on control and access to resources varies considerably.

8. Marketing systems of chicken and eggs for traditional chicken production system in Ethiopia

Poultry marketing structure has not well studied in Ethiopia. The market outlets or channels available to producers are diverse at all markets, although their importance differs across markets. The major channels through which producers/farmers sell their chicken in the markets are direct sold to consumers and/or to small retailers that take the chicken to large urban centers (Kena *et al.*, 2002). However, the farmers do have little knowledge on how the market works and why price fluctuates and have virtually no information on market conditions (Sonaiya, 2000). Thus, most farmers sell chickens within their vicinity. This can attribute to the small number of chickens offered for sale, long distance to the high demanding urban and pier urban markets and that selling of chickens is occasional and based on prevalent pressing needs of the family (Kena *et al.*, 2002). Although local consumer generally prefer the indigenous birds the high consumption associated only with holy days resulted in the largest off take rates from the flock to occur particularly during holidays and festivals and during the onset of disease outbreaks (Tadelle and peter, 2003). In such circumstances, prices fall dramatically due to the high supply compare to demand. Ultimately, affect the producers.

In most cases, traders use public transportation (buses and minibuses) or hire space in private trucks to transport chicken to terminal markets. During transportation, the chickens may be kept along with other bags sacks of grain bundles of firewood by binding their legs together that can result in considerable lose due to stressful conditions (Danida, 1998). The traditional chicken and egg collectors, who collect eggs and birds from the villages, can facilitate the marketing of small holders however, such marketing structure are over looked, or criticized, as it is not sustainable.

9. Summery and conclusions

Traditional chicken production systems in Ethiopia show a clear distinction traditional low input system. However, the village chicken rural poultry production that predominately exist in the country is characterized as including small flocks, nil or minimal inputs, with low output and periodic devastation of the flock by disease. The present situation in many villages is that poultry left with little or no care. This causes severe fall in productivity. The marketing system in Ethiopia is not still well organized.

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