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Socioeconomic importance and production characteristics of village poultry production in Ethiopia: A review

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Target Audience: Policy makers, poultry extension agents, researchers, poultry marketers.

Abstract

This paper is aimed at reviewing the socio-economic importance and production characteristics of village poultry production in Ethiopia. The review indicated that poultry has played and still play important social and cultural roles in the life of rural people for building social relationships with other villages. The review also confirmed the widely recognized contribution of smallholder poultry to the income and internal household position of women. However, there is generally scant literature on poultry marketing system in the country. The limited research conducted so far showed that a large number of marketing agents involved in the poultry marketing chain where an average trader handled between 40 to 100 chickens per week while a middle man managed 2000 eggs per month. Poorly developed poultry input supply system including feed supply and availability of veterinary services in this country has adverse effect on the productivity and profitability of this subsector.

Keywords: village poultry production, socio-economics, constraints, opportunities

Description of Problem

Ethiopia is one of the largest countries in the world where village poultry plays a dominant role in total poultry production and marketing. The population of poultry is estimated to be 50 million (1). Although modern farms have recently been established and slightly expanded mainly in the capital (Addis Ababa) and nearby cities, their share from total national poultry production is still insignificant. Birds are owned by individual households and are maintained under a scavenging system, with few or no inputs for housing, feeding and health care. Village poultry keeping significantly contributed to the livelihoods of poor households: economically as starter capital, as means to recover from disaster, as an accessible protein source, and for income, and socio-cultural for hospitality and exchange of gifts to strengthen social relationships (3).

Chickens in Ethiopia represent a significant part of the national economy in general and the rural economy in particular and contribute 98.5% and 99.2% of the national egg and chicken meat production respectively (4). However, the economic contribution of this sector is still not proportional to the huge chicken numbers. Chicken production in the home is mainly the business of the women

who manages them freely and without any traditional feedback required of the husband. This provides for a measure of economic security to the women in the house.

The owner usually sells live birds and eggs in the local markets in which the number and prices of birds rise considerably during times of festivity (5). Occasionally, birds are sold to middlemen for transport and sales in larger towns and cities. Village poultry is part of a balanced farming system and 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 socio-religious function it is important in the rural peoples live. However, this sector is characterized by low input-output levels and is attributed to a range of factors such as suboptimal management, lack of supplementary feed, poor marketing performance, low genetic potential and high mortality rate. Although village poultry makeup by far the largest element in the national poultry production system relatively, little research has been carried out to characterize, understand and develop village poultry marketing system in Ethiopia (6). Therefore, it is worthwhile to review the current socio-economic roles, opportunities and constraints of village poultry production in Ethiopia.

Materials and Methods

A systematic review method was used to assess literature related to livelihood importance of village poultry keeping in Ethiopia. The realistic review approach used in this study is dependent on the principle of Cochran systematic review, however seeks explanation rather than empirical truth (7). The realistic review often includes tighter inclusion criteria and small number of other review approaches with a focus on depth and the use of predominantly qualitative critical analysis. This method provides an appropriate tool to understand the socio-economic importance of village poultry production. Manual searching and Google scholar search strategies were performed to update information on the subject matter. Researches from different databases both published and unpublished in English language were included. Finally, the full text documents were assessed to evaluate the relevance of the paper to village poultry production in Ethiopia.

Poultry production system in Ethiopia

Poultry production in Ethiopia can be categorized into three major production systems. These involves; traditional poultry production, small scale intensive and commercialized poultry production system that are based on some selected parameters such as breed, flock size, housing, feeding, health care, insecurity and other technologies (8).

The traditional poultry production system is characterized by low level of input and output. It is especially favorable to smallholder farmers due to its low capital requirement, high cost, efficiency, flexible production system and low production risk. This production system contributes over 98% national egg and over 99% poultry with annual output of 78,000 metric tons of egg and 72,300 metric tons of meat. There are also emerging small scale market oriented intensive system in urban and peri-urban areas holding small number of exotic breeds of chicken (50-1000) and are produced along commercial lines using relatively modern management methods. The commercial poultry production system contributes nearly 2% of the national poultry population in Ethiopia. It is highly intensive production system, which holds greater or equal to 10,000 birds. The system is characterized by indoor conditions with a medium to high bio-security level, holds imported exotic breeds that require intensive inputs such as feed, housing, health care and modern management system (9).

Table1: Population of poultry breeds in different regions in Ethiopia

Region	Native	Hybrid	Exotic	Total
Tigray	3, 029, 519	366,727	78149	3,474,394
Affar	43,720	0	0	43,720
Amhara	9,983,180	339,046	46,049	10,368,274
Oromia	11,983,432	545,062	75,165	12,603,660
Somale	106,414	0	0	106,534
Benshangul-Gumuz	735,343	7,260	0	742,858
SNNPR	6,437, 286	65,978	13,862	6,517,126
Harari	30,794	615	0	31,777
Addis Ababa	19607	1569	387	21564
Dire Dawa	45581	2176	0	47852
Total	32,414,876	1,328,433	213,612	33,957,837

Source: CSA (1)

The poultry population is mainly concentrated in Oromiya, Amhara, SNNR, Tigray, and Benhsangul Regional states (Table 1). This regional distribution is closely associated with the pattern of human population density in the respective regions. Moreover, it shows that the poultry sector is predominantly characterized by rural poultry farming. Poultry flock size per household is highest in Amhara region (11.24) and lowest in Oromia region (0.94) as shown in Table 2.

Table 2: Flock size per households in different regions of Ethiopia..

Region	Observation (N)	Average number of birds per household
Tigray	764	8.74 (7.77*)[a]
Amhara	1150	11.24 (12.98)[b]
Oromia	679	0.94 (11.21)[c]
SNNPR	385	5.38 (6.70)[d]
Total	2978	9.55 (10.89)

* Standard deviations are in parentheses; Column with different letter superscripts differ significantly ($P<0.05$)
Source: Aberra (5)

The egg production performance of local and improved breeds in different regions of Ethiopia is reported in Table 3. Across the regions, the general average number of eggs per year per layer for the local breed is about 56 eggs. Depending on the regions, annual egg production per local hen ranged from about 46 to 64 where the minimum is from Amhara and the maximum from Tigray and Oromia regions.

Table 3 Egg production performance of local and improved breeds in different regions of Ethiopia

Region	Breed	Observations	Number of eggs/year/ layer		Number of eggs/ laying cycle / layer	
			Mean	Std deviation	Mean	Std deviation
Tigray	Local	594	63.87	20.26	13.13	3.16
	Improved	167	165.64	67.25	98.05	84.43
Amhara	Local	920	46.34	21.13	12.56	2.66
	Improved	120	161.68	71.83	87.01	92.10
Oromia	Local	554	63.43	25.36	13.97	4.04
	Improved	57	171.74	74.62	75.88	81.83
SNNPR	Local	308	58.11	25.86	12.04	3.17
	Improved	11	132.73	74.03	43.18	44.49
Total	Local	2376	56.23	24.01	12.97	3.28
	Improved	355	134.26	70.24	89.06	86.27

Source: ILRI (28)

The main reasons for the low egg production include: poor feed availability, disease and low genetic potential. The non-availability of energy and dietary protein sources particularly during the dry season decreases egg production performance. The low genetic potential of local breeds is also one of the key causes for the low egg production performance.

Relative importance of village poultry production in Ethiopia

Village chickens are widely distributed across resource-poor households of Africa and are reared by almost every rural household that is surviving below poverty line (8). Thus poverty and hunger continue to adversely affect communal regions due to inefficient use of village chickens. So far, programmes focusing on village chickens to alleviate poverty and hunger and create wealth have received little attention, yet they play vital roles in rural livelihoods (6). Wide distribution of village chickens highlights opportunities of these birds in hunger reduction. The contribution of the sector to rural households depends upon reasons of rearing that can be demographical, socio-economic and cultural.

In Ethiopia, marketing of chicken and egg is one of the functions of keeping free-range chicken by stallholder farmers. Village chicken and eggs are sold in local and urban markets to traders or directly to consumers depending on the location of the farm. According to (10), smallholder village chicken owners found in different parts of the country sell chicken and eggs to purchase food items, cover school fee, get cash for grain milling services, purchase improved seeds and to adjust flock size. It was also reported (11) that few farmers in central highlands of Ethiopia exchanged their free range chicken for food and household items. The impact of village chicken in the national economy and its role in improving the nutritional status, income, food security and livelihood of many smallholders is significant owing to its low cost of production (12). Village chickens are rarely the sole means of livelihood for the family, but it is one of the numbers of integrated farming activities contributing to the overall well being of the

households. It provides employment and income generating opportunity. It is a priority animal for holiday and religious sacrifices (13). Village chicken also plays a role in converting household leftovers, wastes and insects in to high quality proteins (14). There are only few alternative animal protein sources available in the tropics (15). Family chicken meat and egg contribute around 20-30% to the total animal proteins supply in low income and food-deficit countries (16).

Generally, village poultry production system (17) provides 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 product 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. Research results (18), however showed that rural households consume a very limited quantity of poultry products because they rank cash income as the primary purpose of village chicken production. Its consumption is moreover closely associated with wealth status where the poorer the household, the fewer poultry products are eaten. Chickens are daily food even for better-off household but consumed mostly during holidays. In general, poultry consumption accounts for less than 1% of the total annual food needs of farm households.

The level of consumption and sale of chickens and egg varies during the year. There is an increase in chicken and egg consumption during the Ethiopian New Year, Christmas and Easter holidays (17). For the poor, poultry meat is the only special meal they can afford during religious festivities like New Year, Christmas and Easter. Church leaders and attendants are also served with chicken dishes. It has also become common for live birds to be given to very sick people. Cocks are used as alarm clocks of dawn and as offering to deities.

Poultry also have mystical uses where villagers in some parts of the country believed bad spirit that target the family member can be diverted with white-feathered chickens. This explains why many households want to keep at least one chicken in their compound. In general, socio-cultural roles were more important in the area with the poorest market access. Chickens are important sources of food for women post-birth; chickens are also sources of payment being provided to villagers for local health services; chickens are gifts to newly married couples; and strengthen social networks between women (8). In addition to these, the spiritual benefits of sacrifice of indigenous chicken types occupy an important place in the cultural, social, and religious functions of the Ethiopian societies (11).

Poultry meat and egg are relatively cheap and affordable sources of protein for most consumers compared to other animal products such as beef. Consumption of poultry products is more in urban than in rural areas especially high during holiday periods. Price of chicken is highly related to holidays, on fasting seasons for the orthodox Christians (19). Local breeds are considered to be the only birds fit to use for spiritual sacrifice and as gifts (11). How prices can rise to more than twice their normal levels during the main social and religious festivals had been reported by (20). There is significant price fluctuations associated with seasons and festivals in Benin (21).

Poultry are used to strengthen marriage partnership in northern part of Ethiopia. In the local culture, particularly in remote areas, women who can provide men with food like chicken dish (doro wot) are considered to be contributing to stable marriages; it strengthens respect to guest. Customarily, most nutritious parts of the carcasses e.g. gizzard, drum sticks and breast bones are served to men, as it is believed that it improves the strength of old

men and helps in increasing their libido. Whereas body parts like neck, wings and skin are served to women and children.

A study conducted by (21) in rift valley areas of Oromia, indicated that village poultry production is used as a source of income for immediate household expenses. Female and children owned majority of village chicken produced. This indicated that most of the time women and children are responsible for chicken rearing while the men are responsible for other farm activities. Chicken and eggs are usually taken to the local market by women and children and sold to traders or directly to consumers. The decision makers for egg and chicken sale and home consumptions are husband and wife.

In Ethiopia, the income from poultry products is closely associated with wealth status and women do sell poultry products to optimize their income. In this respect, (8) tried to assess the gender dimension in attempt to predict the likely income impacts of avian flu on women based on selected study sites in southern Ethiopia. In the study, it was estimated based on the results of village research, that a woman would have an annual cash income of birr 200. Here, it should be noted that this estimate would be much higher if current poultry prices have been used. Moreover, it was found that variability of poultry income is closely associated with wealth status and women do sell a mix of chicken and eggs to optimize income from poultry.

Opportunities of village poultry production and marketing in Ethiopia

Village poultry production also avail ample opportunities compared to other alternative investments in rural areas, particularly it requires less labour, less capital management in which rural communities have comparative advantage and technical skills (23). The growth in global demand for meat and other livestock products is tremendously fueled by population growth, economic growth, urbanization, changing diets and reductions in the relative prices of livestock products. The market for poultry meat is growing faster than that for any other meat product, and is projected by the International Food Policy Research Institute (IFPRI) to maintain this position in the coming decades (22). Rising demand has fueled a structural change in the production and supply of poultry meat, with production for the global market concentrated in the hands of relatively few large companies, characterized by vertically integrated production and marketing. Indigenous chicken provides major opportunities for increase in protein production and income for smallholder farmers. They can also be transported with ease to different areas and are relatively affordable and consumed by the rural people as compared with other farm animals such as cattle and small ruminants. Indigenous chickens are good scavengers as well as foragers. They are said to have good level of disease tolerance, possess good maternal qualities and are adapted to harsh conditions and poor-quality feeds as compared to the exotic breeds. In some communities village chickens are important as starter of livelihood improvement (22).

Backyard poultry production contributes significant role to food security, poverty alleviation especially for the poorer members of the community by diversifying agricultural production including increased distribution of resources through involvement of women and ecologically sound management of natural resources. It is also a source of employment for underprivileged groups in many local communities (23). Moreover, indigenous chickens are known for their merits such as broodiness behavior with high fertility and hatchability, disease resistance thermo tolerant, good egg and meat flavor, hard eggshells, productivity at zero or minimal feed

supplementation and high dressing percentage that matches with the poor family poultry production systems (24). Consumers overwhelmingly prefer local to exotic birds and eggs hence, in local markets, an indigenous bird of 1.25 kg live weight and its 40g eggs (or lighter) command the same prices as exotic birds of 1.5 kg and eggs of 60g. The premium for local birds is attributed to better meat flavor and more deeply colored egg yolks. Small scale scavenging production could be an effective means of transfer of wealth from higher income urban consumers to poorer and poor rural and peri-urban members of the community. Many producers recognize the contribution of poultry to an improved diet that is higher in animal protein and thus promotes better growth in children and improved health in adults (5).

Village chickens require limited amounts of inputs such as land, feed, vaccination, housing and time. These birds are able to survive under poor management but are still able to produce meat and eggs that are used by farmers for various purposes such as income generation, basis of bartering, source of manure and consumption. Village chicken products have also obtained preference to many people mainly for better taste, freshness, color of the carcass and yolk (25). In Kenya, Tanzania and Ethiopia, rich households that do not own village chickens buy village chicken meat through food retail centers at premium prices (22). This indicates that resource-poor households should exploit advantages of rearing these chickens as they have short generation intervals for rapid increase of flock sizes, thus improvements can be realized in a short run.

Village Poultry Production Constraints

Disease problems, predation and feed shortage are the major barriers to expansion in village poultry production (Table 4). A study by (24) showed that about 37% of the total respondents pointed out that disease was the most important constraint particularly New Castle Disease (NCD). Absence of day and night housing, variable inputs and predation were also mentioned as economically important challenges in the production and marketing of local birds and egg (22).

Table 4: Response of farmers on barriers to expansion of village chicken production in different districts in Ethiopia

Barriers to village chicken production	Woreda		
	Bure (No= 280hh)	Fogera (No= 72hh)	Dale (No= 160hh)
Disease problem	46.2	48.6	√
Predation	25.7	-	√
Poor productivity of local chicken	3.5		√
Land shortage		8.3	√
Feed shortage	12.7	19.4	√
Poor management practices (feeding, housing, disease control etc.)	10.2	-	√
Others (lack of capital, lack of information, marketing problems, theft problem)	1.7	18.2	√

√= list of problems expressed in words; hh=households

Source: Aberra (5)

Mortality of village poultry chicken due to disease outbreak is higher during short rainy season, mainly in April (66.8%) and May (31.4%). The major routes of contamination and spread of NCD among chicken from one village to another were during scavenging and exchange of chicken from a flock where the disease is incubating and during marketing. The availability of vaccines and veterinary drugs in the area was generally low.

The productive performance of village chicken was relatively low (50-60 eggs/hen/year). Although the local chicken ecotype found in the entire study district was slow maturing, they were adapted to the agro-ecologies and the existing poor management conditions (27). Although predation was not an important problem in the Fogera Woreda plains, it was identified as another economically important constraint in village chicken production system in Bure and Dale Woredas. (9) also reported that predation is one of the major constraints in village chicken production in northwest Ethiopia. In Bure Woreda, 59.3% of the respondents indicated that wild Egyptian Vulture (locally called ('Chilfit') was a dangerous predator that attacked young chicks.

The other major limiting factor of village chicken production is feed quality and quantity. 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.

Constraints in Village Poultry Marketing

There is generally a scant literature on poultry marketing system in Ethiopia. However, the limited research showed that a large number of marketing agents are involved along the poultry marketing chain. For example, (26) have identified the major poultry and poultry products' marketing channels. The marketing channel showed that a large number of middlemen were involved in the marketing chain between producers and consumers. They were informal and poorly developed where chicken and eggs were sold to consumers within the villages, on roadsides and in local and urban markets.

Poultry market chain analysis conducted by (26) in Dale and Alaba districts of southern Ethiopia indicated that input supply system for exotic breeds is poorly developed or nonexistent and characterized by high price and inconsistent availability if it exists. The input supply system for local breeds was also poor and inconsistent in availing inputs like compound feed and veterinary services that cannot be found in local market places. Even if it existed, it is characterized by high price and found in long distance from the farmers' residence. This poorly developed input supply system can have adverse effect on the productivity and profitability of the subsector. This also makes the marketing system function inefficient to coordinate the flow of birds and eggs between the production and consumption points. The same author also reported that lack of reliable market information, access to credit, shortage of supply and prevalence of disease are the most frequently mentioned constraints in both chicken and egg marketing system. Lack of packaging material is a significant threat on egg marketing that creates systematic inefficiencies at different stages of the marketing functions across the supply chain. The study conducted by (27) on indigenous chicken production and marketing systems in Ethiopia showed the major constraints to include low output supply because of disease and predation, presence of only few/limited market outlets, lack of credit services and poor transportation services.

Recommendations

About 99 percent of the country's poultry supply constitutes local breeds from rural farm

families most of who live farther away from market places and where most public goods are in short supply. There is a need to develop infrastructures in the country as a whole. Poultry producers' accesses to credit and extension services are important factors determining farmers' participation decision and the level of chickens and eggs supplied to market. Therefore village poultry producers should be linked with microfinance institutions to access credit services. Extension advisors also should be actively involved in equipping producers with training about profitability and untapped productivity potentials of village poultry production with minimal increment in inputs usage and management such as introduction of supplementary feeding, separate night housing and veterinary services. It was indicated that Newcastle disease was a major cause of mortality in village poultry. Therefore farmers' awareness on the importance of vaccinating their flocks should be seriously waded in to.

Conclusion and Applications

This review revealed that:

1. Village poultry was by far the largest element in the national poultry production system in Ethiopia contributing 98.5% and 99.2% of the national egg and chicken meat production respectively.
2. The sector is characterized by low input-low output levels attributed to factors like suboptimal management, lack of supplementary feed, poor marketing performance, low genetic potential and high mortality rate due to Newcastle disease.
3. Village chicken production is part of a balanced farming system by supplying high- quality protein to the family and provides small disposable cash income in addition to the socio-religious functions important in the rural people's lives.
4. Rural households consumed a very limited quantity of poultry products because they ranked cash income as the primary reason for going into village chicken production.

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