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Economic and social values of family poultry production and its constraints in Ethiopia

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ABSTRACT

Although Ethiopia has large number of chickens, their productivity is marginal and constrained by genetic, environmental and management factors. This paper has tried to review the socio-economic contribution of rural poultry production and its constraints in Ethiopia. Indigenous chickens account for about 98% of the total poultry population. The productive and reproductive performance of the local chickens is very poor with an average egg yield of 30-60 eggs/hen and 6 months age at first lay. To improve the livelihood of rural communities by improving the productivity of poultry, development endeavors and research institution should focus on introducing improved breeds along with full packages and investigating on means of improving the local genotype.

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Introduction

Free-range and backyard poultry production systems are the most dominant production system in rural areas of Ethiopia. These systems have been collectively called rural poultry production system (Tadelle et al., 2000) and approximately 80% of chicken populations in Africa are reared in these systems (Gueye, 1998a). These production systems are characterized by small flocks, no or minimal inputs, with low outputs and periodic destruction of the flocks by disease. In Ethiopia chicken populations are estimated about 49.3 millions (CSA, 2011). Out of the total national poultry population, Amhara and Tigray regional states collectively own about 43% with an average number of chickens per household 7.2 in Tigray and 4.4 in Amhara regional state whereas at national level, flock size is estimated to be 4.1 chickens per household (Solomon, 2008). Birds are owned by individual households and are maintained under scavenging system, with little or no inputs for housing, feeding or health care. Typically all households have flock containing birds from each age group with small flock size (Abdelgader et al., 2007) but it is an important sector in Ethiopia where chickens and their products are important sources of food and income. Several rural households in Ethiopia keep birds for like household consumption. various purposes sale. reproduction, social and cultural purposes (Tadelle and Peter, 2003). Therefore, the objective of this review is to point out the economic value of family poultry production and its challenges in the country.

Economic and social value of Poultry

Village chickens contribute significantly to food security and poverty alleviation that require low levels of inputs (Guéye 2003). Ethiopian farmers believe that poultry keeping is the first step on the ladder for poor households to climb out of poverty. It is regarded as an important livelihood opportunity for the poor households: economically as starter capital, as a means to recover from disasters and for income and exchange purposes (Aklilu, 2007). They are also considered as a walking bank by many families and often sold to meet emergency cash needs

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(Moreki et al 2001). In the rural areas, farmers rear chickens for different purposes; for example, a study conducted in central Tigray showed that about 50 and 40% of the male and female headed households in lowland areas reared chickens for home consumption whereas 47.5 and 60% of the male and female headed households in midland agro-ecology used the eggs for sale (Alem et al., 2014). This indicates that poultry production in midland areas used as important source of income mainly for female headed households. In addition, a study conducted by Tadelle et al. (2003), showed that about 50, 27 and 23% of the egg produced in the Central Highlands of Ethiopia are used for hatching, sale and home consumption, respectively. Abera (2007) also showed that in southern parts of Ethiopia, about 71.4% of chickens raised by the rural community were used for egg production while the rest 28.6% were used for meat production purposes. Poultry in Ethiopia are socio-culturally important with no religious taboos attached. Poultry products rather have great values in the cultural and religious life of rural communities (Tadelle et al., 2000). For most of these social and cultural functions or sacrifices, a specific sex and plumage color of poultry are prescribed (Gueye, 2003a). For instance, Tadelle (2003a) reported that white and red cock sacrificed for the purposes of good harvest wishes and red and black spotted cock sacrificed for the purpose of Ethiopian New Year. Poultry are used for strengthening marriage partnership.

In the local culture, preparation of '*doro wot*' (chicken dish) is taken as a major way of assessing how much a future wife cares for her husband (Aklilu, 2007). According to the study in central Tigray, social relationship in the area was more expressed by chickens in the form of gift to relatives and newly established households, preparing especial dish (*Doro wot*) for the prestige of bride and bridegroom at the time of wedding and in the form of entertaining special guests like son in-law, father in-law, father figure, soul father (priest), brother, uncle and other relatives (Alem *et al.*, 2014). Village chickens are active in pest control, provide manure, are required for special festivals and are essential for many traditional ceremonies (Alders *et al.*,



2003). Chickens are also used as scorpion pickers around human resting areas (Hasen et al., 2012).

Importance of rural poultry and gender

Male and female-headed households in Ethiopia differ in their household resources and priorities (Aklilu, 2007). In rural areas of sub-Saharan Africa, more than 70% of chicken owners are women (Gueye, 1998b). In many cases eggs and poultry are the only and most common items women commercialize in the market. Specifically in the rural areas of Ethiopia, poultry provide women with immediate income to cover household expenses (e.g. food items) by themselves instead of expecting men to provide (Aklilu, 2007). Rural women raise poultry for income generation in order to purchase basic commodities such as salt, cooking oil, sugar and others (Solomon, 2008). Some studies showed that women have a more active interest in poultry ownership than men do. Dessie and Ogle (2001) indicated that in Ethiopia management of chickens was fully in the domain of women whereas decision making regarding control and access to resources varies considerably. Development of family poultry production will not only enhance the cash income of women (Gueye, 2003b) but can lead to their greater empowerment when they participate as poultry advisers, extension workers and vaccinators (Sonaiya et al., 1999). But when we come to the decision making power, although rural poultry production is generally run by women, they do not have full control over the production tools and the benefits gained from this venture (Sonaiya et al. 2001). When decisions are made by women regarding their birds, they usually consult with men, mainly the head of the household. In case of women headed households however, decision making and control over poultry resources is done by themselves.

Consumption of chicken products is higher in female headed households especially during cultural and religious festivals. According to Aklilu *et al.* (2007) poultry consumption and sale per family member were larger for female headed households than for male-headed households by 25% and 66%, respectively. Similarly, average consumption of chicken per household per year in lowland agro-ecology was 5.4 and 4.4 chickens in male and female headed households while in midland agro-ecology 3.9 and 2.9 chickens in male and female headed households, respectively (Alem *et al.*, 2014). This does not mean female headed households have better wealth status; rather it is probably the result of lack of other sources of animal protein (Aklilu *et al.*, 2007) as they may not be able to afford large animals.

Constraints of family Poultry production *Shortage of capital*

Most of subsistence poultry producers in the rural areas of Tigray are farmers and more than 50% of the farmers are categorized under poor and very poor wealth status (Livelihood profile, 2015). On the other hand, more than 70% of chicken owners in rural areas of sub-Saharan Africa are women. Women in Tigray region are estimated to represent about 51% of the entire population and, as is the case in most developing countries, are the worst victims of poverty. In terms of households, over 30 percent of the populations are estimated to be female headed households (Fiona, 2004). In most cases, female headed households are believed to lack basic assets that could help them survive through harsh living situations (Mirutse et al. 2006). Therefore, farmers in the rural areas of Tigray have limited capital to fulfill the required facilities like feeding and housing facilities for poultry production. For instance about 60% of the households in lowland and 37.5% households in midland

did not construct separate poultry house except for night sheltering (Atsbeha, 2013). A study in the rift valley of Oromiya showed that only 14% of the respondents have separate sheds for chickens.

The common housing facilities for chickens in this area were cartoons (pasteboard) and baskets made of bamboo or round stick placed in the main house and perch, which account for 58% and 26.6% respectively (Dinka et al., 2010). According to Halima (2007), in North Western of Gojam a small poultry house is constructed with simple materials like stick wood, bamboo, corrugated iron sheet and simple rudimentary mason provided as a shelter for the birds during the night. Moreover, 77.5% of the households in Haramava district, keep poultry in the same room with human being during night time (Bosenu and Takele, 2014) This is mainly due to lack of capital. Similarly, Shishay et al. (2014) reported that capital scarcity is among the most important chicken production constraints in both midland and highland agro-ecological zones of Western Tigray. This constraint hinders the farmers from constructing standard poultry house. Farmers also lack the capacity to buy housing facilities like lighting and ventilation equipments as well as formulated feeds. The situation can worsen by lack of electric access in rural areas of Ethiopia.

Traditional feeding management

There is no purposeful feeding of rural chickens in Ethiopia and the scavenging feed resource is almost the only source of feed (Bosenu and Takele, 2014). That means, they are maintained under a scavenging system, consists of household waste, anything edible found in the immediate environment including termites, snails, worms, insects, sown grain, harvesting by-products, seeds, grass, fodder tree leaves, waterplants and non-traditional feed materials. They are free to go everywhere around their vicinity in search of such food with little supplements of grain provided by the producer (Dessie and Ogle, 2001). The amount of feed supplemented is not known. There is no any tradition of measuring supplementary feed for chickens the in Central zone of Tigray (Atsbeha, 2013). Depending on their availability, most of the supplements are grains such as sorghum, wheat, maize. Such grains without any formulation or adding premix and additives cannot address the nutritional requirements of the birds. As a result, the productivity of the chickens can be limited.

Breed and genetic constraints

There are many constraints in the development of smallholder poultry production that need to be addressed (Mack *et al.*, 2005). Local chickens are present in almost every household in rural areas of Ethiopia although their egg and meat production is not proportional to their high numbers. Chicken populations are estimated about 49.3 million (CSA, 2011), out of these 97.3% are indigenous and only 2.32% are exotic. Indigenous chickens are non-descriptive types and vary in body size, conformation, plumage color and other phenotypic characteristics (Tadelle, 2003b). Poor reproductive performance, poor growth rates and unsuccessful brooding are some of the major constraints in smallholder chicken production that reduces the efficiency of the system (Mapiye and Sibanda, 2005).

These have been compounded by the use of adaptable, but low performance breeds. Indigenous chickens are poor in productive and reproductive performance which are characterized by small sized eggs (Bogal, 2008), slow growth rate, late maturity, slow age at first mating, small clutch size, broodiness and high mortality of chicks (Meseret, 2010). For instance, average annual egg production potential of indigenous chicken at Wolita agricultural development unit ranged between 30-60 eggs/hen under rural poultry production systems (Fisseha *et al.*, 2010). According to Bogale (2008), a hen lays about 36 eggs in three clutches and 12 to 13 eggs per each clutch per year. Likewise, Fisseha (2009), discovered that the average egg production of local birds was 34 eggs/hen/year with average weight of 38g. When we see growth and maturity, village chickens in North Gonder attain sexual maturity and first laying at an average of 6 months (Melkamu and Wube, 2013). Adult live body weight of indigenous chickens is also reported as 1.6 kg for male and 1.3 kg for females (Nigussie, 2011).

To improve the performance of indigenous chickens and the productivity of poultry in general, governmental and nongovernmental organizations have been tried to introduce exotic chickens. Several layers and dual purpose exotic chicken breeds have been introduced into the country at different times (Fisseha et al., 2010). For instance, Ministry of Agriculture initiated importation and distribution of cockerels to be used as breeding males in villages. Small number of Rhode Island Red, White-leghorn, New Hampshire, Cornish, Australoup, Lohmann brown exotic breeds and their crosses are being used by smallholder poultry producers in rural areas of Ethiopia (Berihun, 2007). However, all alternatives do not attain the intended objective of the government because farmers are unwilling to remove their local cocks and the exotic cocks failed to adapt in the village environments (Nigussie, 2011). In contrast, indigenous chickens are better in adapting harsh environment, disease tolerant and broody but poor in reproductive performance. On the other hand, exotic breeds require high input (Nigussie, 2011). However, transport facilities, veterinary products and timely availability of replacement new stock using high-yielding breeds are the major limitations and cannot be a sustainable option for improving village poultry in the country. Therefore, an integrated approach is required to promote the Ethiopian poultry sector.

Poultry extension Service and facilities

Agricultural extension service in Ethiopia is said to have started in 1953 with the establishment of the then Imperial Ethiopian College of Agriculture and Mechanical Arts (IECAMA), currently known as Haremaya University (Berhanu et al., 2006) aiming at transferring local research outputs and technologies to farmers, and importing technologies and improved practices from abroad and introducing them to farmers (Mohammed, 2004). The current extension services revolve around providing farm households a choice from a menu of technology packages centered on a principal component such as water harvesting, dairy, apiculture and horticultural production (Berhanu, 2006). This implies that separate poultry extension service is not run independently; rather it is handled as subcomponent of the overall extension program. The effectiveness and efficiency of extension service is contingent upon the overall policy environment for agricultural development. Availability of credit and input supply services and availability of stock of appropriate technologies can be limiting factors for agricultural development (Berhanu, 2006).

Specifically in Ethiopia, poultry extension service is focused only on distribution of exotic chickens. Moreover, the number of chickens in one package and its coverage is limited to specific areas and gender. According to Berhanu (2006), although the role of women in agricultural production and marketing has been well recognized, there is gender bias in the service, whereby the majority of the beneficiaries are male. Poultry extension package also rarely includes vet service in Southern Ethiopia (Getahun, 2012) and in Amaro district of southern Ethiopia majority (85.1%) of the producers have not got any improved management practices together with exotic breed distribution such as improved feeding, housing and diseases control (Matiwos *et al.*, 2015). Therefore, poultry productivity improvement package must be focused on input supply such as balanced commercial feeds, improved housing and health control together with exotic bird distribution. **Conclusion**

From this review we can understand that rural poultry has a fundamental role in poverty alleviation, food security, capital build up, poverty reduction for the resource poor households and promotion of gender equality in Ethiopia. Almost all farmers keep poultry which are dominated by indigenous breeds but the productive performance of local chickens is disproportional with their size and their low performances have masked their potential to boost the living standards of their owners. This has been attributed to their low genetic potential, prevalence of diseases and limited feed resources. Constraints related to lack of capital, insufficient extension service, poor facility and limited skill are also among the critical challenges that hinder the development of the sector. Therefore, rural poultry production needs greater attention from government, research and development organizations. Full extension package including technical skills need to be considered at both farmers and extension officer levels aimed at improving rural poultry production.

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