

Characterization of village chicken and egg marketing systems of Bure district, North-West Ethiopia

Fisseha Moges and Tadelle Dessie*

*Amhara Region Agricultural Research Institute (ARARAI), Andassa Livestock Research Center,
P.O.Box 27, Bahir Dar, Ethiopia*

fismog@yahoo.com

** International Livestock Research Institute (ILRI), Addis Ababa, Ethiopia*

tdessie@cgiar.org

Abstract

A study was conducted to assess the existing village chicken and egg marketing system of Bure district, North West Ethiopia. A participatory rural appraisal and a formal survey were used to collect all the relevant data, using a multi-stage sampling technique. Seven farmer kebeles (2 from high land, 3 from mid altitude and 2 from low land agro ecologies) and a total of 280 village chicken owner households were selected and considered for the study. In addition, 30 chicken and egg collectors (middle men) were interviewed using a structured questionnaire. All local and urban markets were visited once in a month in all seasons of the year.

The result of the current study revealed that there was no any formal chicken and egg marketing operation in the study district. The result showed that 69.3% and 99.6% of interviewed village chicken owners involved in marketing of chicken and eggs, respectively. Producer-Consumer, Producer-Middle men, Producer-Retailer, Middle men-Retailer, Middle men-Consumer were the prevailing chicken and egg marketing channels of the study district. According to the result of the study village chicken owners traveled, on average, a distance of 5.5km and 15.9km to reach to nearby local markets and urban markets, respectively. It is identified that the majority (59.3%) of chicken owners used both hand carrying (hanging birds with a piece of stick) and carrying birds with bamboo-made containers to transport live birds to markets. The result of the current study revealed that the price of chicken and eggs showed variation between months of the year. The percentage increase in market prices of chicken products at holyday market days, as compared to ordinary market days was 19.2% for cocks, 15.3% hen, 24.2% for pullets/cockerels and 16% for eggs. Some of the major marketing problems identified in this study were: low supply of marketable chicken products, presence of only few/limited market out-lets and lack of appropriate marketing information.

It is suggested that chicken and egg marketing of village chicken producers can be improved through development of market information system at farmer's level and strengthening of agricultural extension services, through trainings and advisory services.

Key words: Chicken and egg marketing system, marketing channel, village chicken

Introduction

Animal production in general and chickens in particular play important socio-economic roles in developing countries (Alders 2004; Kodombo 2005). Village chickens are also an integrated component of nearly all-rural, many peri-urban and some urban house-holds (Branckaert et al 1999). The rural chicken population accounts for more than 60% of the total national chicken population in most African countries (Sonaiya 1990). According to Robert et al (1992) and

Sonaiya and Swan (2005); small farming families, land-less laborers and people with incomes below the poverty line were able to raise chicken with low inputs and harvested the benefits of eggs and meat via scavenging feed resources.

In Ethiopia chickens are the most widespread and almost every rural family owns chickens, which provide a valuable source of family protein and income (Tadelle et al 2003). The total chicken population in the country is estimated to be 34.2 million (CSA 2008). The most dominant chicken types reared in this system are local ecotypes, which show a large variation in body position, plumage color, comb type and productivity (Teketel 1986; Tadelle 2003; Halima 2007).

Rural poultry in Ethiopia represents a significant part of the national economy in general and the rural economy in particular and contributes 98.5% and 99.2% of the national egg and chicken meat production, respectively (Tadelle and Ogle 1996; Aberra 2000). However, the economic contribution of the sector is not still proportional to the huge chicken numbers, attributed to the presence of many production, reproduction and marketing constraints.

Similar to the national system, the major proportion of chicken production (98%) in Amhara region (ANRS) is a traditional sector, at small holder level, from which almost the whole annual meat and egg production is produced. Most rural families in the region kept village chicken and it has an important position in the rural house hold economy, supplying high quality food and generating income for rural farmers (ANRS-BoARD 2006).

According to the recent agricultural census (CSA 2008); there were around 13.4 million chicken population in Amhara region, accounting to 31.3% of the national chicken population. West Gojam administrative zone, where the study district is found, accounts to 15% of the regional chicken population (CSA 2008).

Many study results indicated that research in promoting of village chicken production has concentrated on improvements in management while ignoring the potential role of socio-economic issues, such as marketing. According to Gausi et al (2004) small holder village chicken producers tend to ignore new technology even when it appears to be better than their current practices due to market limitations. This implies that that apart from meeting subsistence needs, engagement and level of investment of smallholder farmers in agricultural enterprises responds to existing market opportunities.

According to Gueye (1998) and Pedersen (2002); it is difficult to design and implement chicken-based development programs that benefit rural people with out understanding village chicken production and marketing systems. Hellin et al (2005) also reported that understanding of village chicken functioning and marketing structure are a prerequisite for developing market opportunities for rural households and could be used to inform policy makers and development workers in considering the commercial and institutional environment in which village chicken keepers have to operate. Efforts to improve management of village chicken should therefore be complemented by a supportive marketing system. The present study was therefore carried out to access and characterize the existing village chicken and egg marketing systems in Bure district, North West Ethiopia, with the following specific objectives:

- 1) To identify key players, marketing channels and marketing constraints in the village chicken marketing system of the district
- 2) To identify factors affecting chicken & egg selling decision at household level and
- 3) To suggest strategies and technological interventions that can be used to improve rural smallholder chicken and egg marketing system of the district.

Study methodology

Description of the study area

The study was conducted at Bure district, North West Ethiopia. Bure is found in West Gojam Administrative Zone of Amhara National Regional State (ANRS). According to ANRS-BoFED (2007), the district has a total human population size of 281,310 (141,683 males & 139,627 females). Bure, the administrative and commercial center of the district, is located 420 kms from Addis Ababa and 148 kms from Bahir-Dar (the regional capital city). The district has a total land area of 2207.2 km². The average altitude of the district is estimated to be 1689 m.a.s.l (ranged 728-2832 m.a.s.l). The average annual rain fall is estimated to be 1689.4mm (ranged 713-2832mm) and the average temperature is 18.97^oc (ranged 13-24^oc).

Sampling techniques, data collection and statistical analysis

A Multi-stage sampling procedure (purposive & random) was applied for the study, hence the study area was divided in to three agro-ecologies based on altitude as; highland (>2500masl), mid-altitude (1500-2500masl) and low-land (<1500masl). Then two farmer kebeles (the lowest administrative structure in the country) from the highland, two farmer kebeles from low-land and three farmer kebeles from mid-altitude were selected purposively. Therefore a total of seven representative kebeles were selected. Agro ecology representation, chicken production potential and market accessibility were the main criterion considered in the selection of study sites.

A simple random sampling technique was applied to choose 40 village chicken owner respondents in each of the selected kebeles. Hence, a total of 280 chicken owner households were interviewed using a pre-tested structured questionnaire. In addition, all chicken and egg traders (collectors/middle men) acting at the district were registered freshly and a total of 30 traders (>50%) were randomly selected and interviewed with a pre-tested structured questionnaire. All local and urban markets found in the selected areas were visited once in a month in all seasons of the year.

The qualitative and quantitative data sets were analyzed using appropriate statistical analysis software (SPSS 2002). The Duncan multiple range test and LSD were used to locate treatment means that are significantly different. More specifically descriptive statistics and General Linear Model (GLM) were used for this study. Tables and figures were used to present summary statistics such as mean, SD and percentages.

Result and discussion

Characteristics of chicken and egg markets

The result of the current study revealed that there was no any formal chicken and egg marketing operation in the district. Village chicken producers, consumers, middle men (collectors) and local restaurants/hotels were the main actors involved in the system. Marketing of village chicken and eggs in the district is accomplished in various places including farm gates, local markets and urban markets. Two types of market days namely; conventional (fixed) & non-fixed (random) were identified in the district. Saturday was known as a conventional market day in the district.

Live birds and eggs are either sold directly to consumers or to middle men (intermediaries) for retail in the larger towns and cities. Although each location has its own local market (neighbors and village markets) where transactions take place, marketed produce finally flows to urban consumers. In all study sites, village chicken producers were also consumers. Therefore home consumption can be understood as one of the market outlets. Thus, producer households have a double role in the market chain and have to balance competing demands from household consumption and the buyers in the market place.

Chicken marketing in the district

The result of the current study indicated that 99.6% of interviewed village chicken owners involved in marketing of live chicken, since sale of birds as source of income is the major reason for them to keep chicken. The marketing of birds takes place in various places including: urban market (Bure), local markets (Kuch, Alefa and Derekua) and around the villages (farm gates). Bure open market is the only urban market available for chicken marketing in the district.

The result revealed that the major groups of birds sold in the village flock more frequently were; surplus males, old and non productive hens and some times sick birds. Young and productive birds were often sold just before the onset of high risk period of Newcastle disease, mainly during the start of the rainy season (April-June). The price of birds was not similar and fluctuated during the year, generally low in the rainy season and high in the dry season.

Women and children were the major members of the household involved in marketing of live birds. Urban market (Bure urban market) was the first priority place for most village chicken producers (64.7%) of the study area to sale live birds. Regarding the marketing channel of live birds, most chicken owners (37.9%) sold birds directly to consumers and middle men. The rest of the birds were usually sold to other urban and rural chicken producers and retailers (hotels and restaurants). Chicken collectors in turn sold birds either to consumers or to other relatively larger traders, who often found at important crossroads and well-known spots on main truck roads like Tillili town. Figure 1 showed the marketing channel of live birds and eggs in the district.

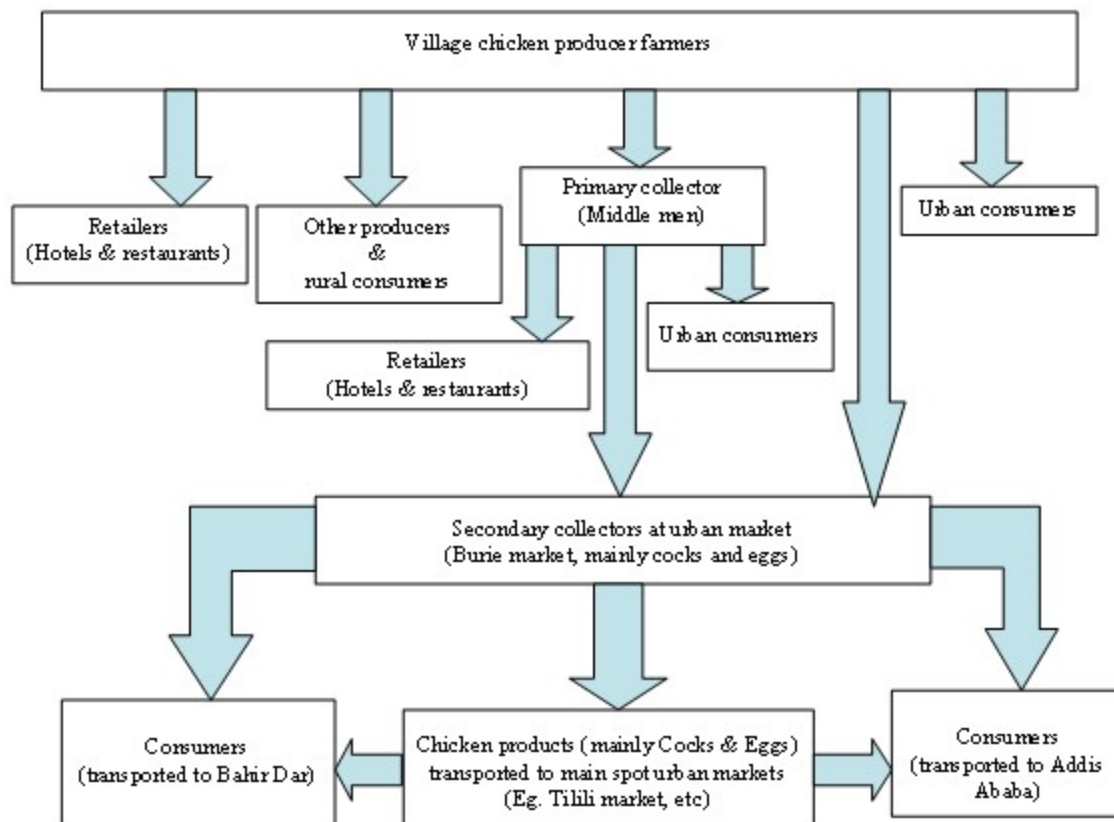


Figure 1. Marketing channel of chicken and eggs in Bure district, North West Ethiopia.

Concerning means of transportation, it is identified that the majority of village chicken owners (59.3%) used both hand carrying (hanging birds with stick) and carrying birds with bamboo-made containers to urban and village markets.

The result of the current study revealed that village chicken producers traveled, on average, a distance of 5.5 km (ranged 2.5-15 km) and 15.9 km (ranged 3-35 km) to reach to nearby local markets and urban markets, respectively (Table 1). Access to markets, which greatly influences the chicken marketing system of the district, was mainly determined by distance to the market.

Table 1. Average distance traveled by chicken owners to reach market places (N=280)

Variables	Agro-ecology			Grand mean, %
	High-land (N=80)	Mid-altitude (N=120)	Low-land (N=80)	
Average distance travel (kms) to reach the nearby local markets (Mean±SD)	4.5 ±1.5 ^a (5.5)*	5.0 ±1.7 ^a (9.5)	7.3±3.7 ^b (12.5)	5.5 ±2.6
Average distance travel (kms) to reach Burie urban market (Mean± SD)	14.7 ±3.8 ^b (15)	7.9 ±2.7 ^a (12)	29.0±3.1 ^c (10)	15.9 ±9.3

^{a,b,c} Least square means with different superscripts within a row are significantly different ($P < 0.05$); * Numbers in bracket are range values

Egg marketing in the district

The result of the current study indicated that 69.3% of interviewed village chicken owners of the study area involved in selling of eggs. Similar to chicken marketing, egg marketing takes place in various places including: urban markets, local markets and farm gates. Women & children were also the most important members of the household that involved egg marketing.

Urban market was the first priority place for most chicken owners (70%) to sell eggs followed by nearest local markets and farm gate sales. The price of eggs, like that of birds, was not similar during the year; generally low during the Orthodox Christian fasting months. Similarly, the supply & demand of eggs were not similar throughout the year, generally higher in dry seasons and relatively low in rainy season.

The marketing of eggs in the study area followed a similar route (channel) to that of the chicken marketing. Most village chicken owners (45%) sell their eggs directly to consumers and/or local egg collectors. Retailers, mainly involved in hotels and cafeteria services, were also involved in marketing of eggs, as indicated in Figure 1.

Majority of interviewed chicken owners (66.4%) used hand carrying (using piece of cloths with grains/straw) to transport eggs to markets. The grain/straw is used to protect eggs from breakage during transportation. Egg collectors/traders used big cartons and bamboo-made containers (locally called 'kirchat') to collect eggs from markets and transport to its final destination.

Prices and factors that affect the price of chicken products

The result of the current study revealed that the price of chicken and eggs varied between months of the year and were determined by a number of driving factors. Some of the identified factors affecting prices of chicken products in the district were; demand and supply of chicken products, agro-ecology (market access), product type (sex, age, breed, comb type, etc), season of the year (dry and rainy), market type (urban vs local markets), market day types (holyday vs ordinary market days) and fasting seasons (for example, Pre-Easter fasting season).

As discussed above the price, demand and supply of chicken products were highly related with religious festivals, mainly Christian festivals. For instance; the price, supply and demand of live birds increased in the high-sale periods like Easter ('*Fasika*') and Christmas ('*Gena*'). On the other hand periods of low prices coincided with times of low sales (demand) such as, the pre-Easter fasting period. The percentage increase in market prices of chicken products in festival/holyday market days as compared to ordinary market days was presented as follows; 19.2% for matured male birds, 15.3% for matured female birds, 24.2% for pullets/cockerels and 16% for eggs. Table 2 showed the average price of chicken products during ordinary market days and on eves of festivals/holydays for the year 2007/2008.

Table 2. Mean prices of chicken and eggs in ordinary market days and on eves of festivals at Bure district, Ethiopia in the year 2007/2008, (N=280).

Market time	Price in birr of birds (by age and sex) and eggs (No of eggs/1 birr)			
	Mature male (mean ± SD)	Mature female (mean ± SD)	Growers (mean ± SD)	Eggs, No of eggs/ 1 ETB
Ordinary weekly market days	21.8±3.3 ^a (14)*	17.9±3.1 ^a (15)	13.3±2.7 ^a (13)	2.4±0.4 ^b (1)
<i>Market days of eves of festivals</i>				
Eth. new year (Sept 12)	27.5±2.7 ^e (9)	21.9±3.1 ^f (11)	17.6±2.7 ^f (11)	2±0.2 ^a (1)
Meskel (Sep. 30)	25.6±3.1 ^c (12)	20.7±2.9 ^d (11)	16.4±2.5 ^d (11)	2±0.2 ^a (1)
X-mass (“Gena”)	25.8±2.9 ^{dc} (12)	20.4±3.0 ^{cd} (11)	16.2±1.8 ^{cd} (11)	2±0.2 ^a (1)
Easter (“Fasika”)	26.7±2.6 ^f (12)	21.3±2.6 ^c (12)	16.8±2.1 ^c (11)	2±0.2 ^a (1)
Muslim holydays	24.3±2.1 ^b (9)	19.2±2.6 ^b (13)	15.6±1.8 ^{bc} (11)	2.1±0.2 ^a (1)
Festival mean (Birr)	26±1.2	20.7±1.02	16.5±0.74	2±0
Overall mean (Birr)	25.3±2.02	20.2±1.46	16±1.47	2.1±0.16
Mean increase of prices in festival markets, %	19.2	15.3	24.2	16

^{a,b,c,d,e,f} Least square means with different superscripts within a column are significantly different ($P < 0.05$), using LSD. * Numbers in bracket are range values

· 8.60 Eth. Birr was equivalent to 1 USD (ETB = Ethiopian birr)

Relating to season, lower prices of chicken products were recorded in rainy seasons as compared to that of dry season. This was highly correlated with the demand and supply of chicken products in different seasons. Due to the impact of diseases and predators, the supply of chicken products during the beginning of the rainy season was very high and that reduces the demand and the price. The result of the current study showed that productive birds and fertile eggs were also involved in the marketing system. The price of fertile eggs was higher than that of table eggs, mostly doubled. The marketing of fertile eggs was usually pre-arranged between the buyer (other producer) and seller for timely collection and proper storage and mostly done at the farm gate. The result of the study revealed that intermediaries were not involved in fertile egg marketing.

Table 3 showed the effect of season on prices of chicken products.

Table 3. Effect of season on prices of chicken products in different agro-ecologies of Bure district, North West Ethiopia. (2007/2008) (N=280).

Agro-ecology	Price in Birr of birds (by agro-ecology, season, age and sex of birds) and eggs (No of eggs/1 birr)							
	Matured male bird (Cocks)		Matured female bird (Hens)		Pullets and Cockerels		Eggs, No of eggs/1 ETB	
	Marketing season		Marketing season		Marketing season		Marketing season	
	Dry (mean±SD)	Rainy(mean±SD)	Dry (mean±SD)	Rainy (mean±SD)	Dry (mean±SD)	Rainy (mean±SD)	Dry (mean±SD)	Rainy (mean±SD)
High-land	25.6 ±3.2 ^b (14)*	21 ±2.6 ^a (14)	22.4 ±2.7 ^b (11)	16 ±1.5 ^a (10)	15 ±1.9 ^b (9)	10 ±1.6 ^a (9)	3 ±0.2 ^b (1)	2 ±0.2 ^a (1)
Mid-altitude	25.7 ±3.4 ^b (16)	20 ±3.7 ^a (18)	22.8 ±3.2 ^b (15)	16 ±2.4 ^a (15)	14 ±2.9 ^b (14)	10 ±2.7 ^a (12)	2 ±0.3 ^a (1.5)	2 ±0.3 ^a (1.5)
Low-land	24.6 ±3.7 ^b (15)	19.7 ±3 ^a (14)	21 ±3.5 ^b (17)	15 ±1.9 ^a (10)	14 ±2.4 ^b (9)	10 ±1.9 ^a (9)	2 ±0.3 ^a (1)	2 ±0.3 ^a (1)
Total (Study area)	25.4 ±3.4 ^b (19)	20.2 ±3.3 ^a (18)	22.2 ±3.3 ^b (17)	15.9 ±2.0 ^a (15)	14.2 ±2.5 ^b (14)	10.2 ±2.2 ^a (12)	2.4 ±0.3 ^b (1.5)	2 ±0.3 ^a (1.5)

^{ab} Least square means with different superscripts within a row of each product type are significantly different ($p < 0.05$)

* Numbers in brackets are range values; 8.60 ETB was equivalent to 1 USD

The study indicated that 85% of chicken producers in the study area obtained market information from other farmers (neighboring farmers). All village chicken owners reported that the price of chicken products was doubled over those ten years and they also explained that the price trend was still increasing.

Effects of plumage color and comb type of birds in chicken marketing

As discussed above, chicken type (sex, age, color and comb type) played an important role on market price of live birds. In addition, most interviewed village chicken owners considered plumage color and comb type as main determinant factors in selection of birds for production, consumption and marketing purposes. Red & white plumage colors were most preferred and demanded highly in the chicken marketing system of the district. The selection of plumage colors was attributed to attractiveness by the public and high sale price in marketing. Regarding comb type, double (rose) comb was more privileged than single comb types in terms of preference, market price and demand.

Concerning price of birds with related to color & comb type, the average market price of red and white color local cocks was estimated in different market days. The result revealed that red and white colored matured cocks having a double (rose) type of comb fetched the higher market price as compared to cocks with single type of comb, as indicated in table 4.

Table 4. Market prices of matured male cocks with red and white plumage colors and different comb types in ordinary market days and market days on eves of festivals in Bure, Ethiopia (2007/2008) (N=280).

Type of matured male (cock)		Price in Eth. Birr of male mature birds (by market type, plumage color and comb type)					
		Ordinary market days (mean ± D)	Market days of eves of festivals				
Plumage color	Comb type		Eth. New year (mean ± SD)	Meskel (Sep. 30) (mean ± SD)	X-Mass (mean ± SD)	Easter (mean ± SD)	Muslim holyday (mean ± SD)
Red ('Key')	Double	24.7±2.9 ^a	29.3±2.7 ^f	27.8±2.9 ^d	27.7±2.9 ^{cd}	28.4±2.7 ^c	25.5±2.1 ^b
	Single	21.8±2.9 ^a	25.4±2.6 ^f	24.5±2.7 ^c	24.4±2.7 ^{dc}	25.2±2.4 ^{ef}	22.6±2.3 ^b
	Mean (ETB)	23.25	27.35	26.15	26.05	26.8	24.05
White ('Nech')	Double	24.8±24.8 ^a	29.8±2.5 ^f	28.4±2.8 ^d	28.3±2.8 ^{cd}	28.9±2.7 ^{cd}	25.6±1.7 ^b
	Single	22.3±2.9 ^a	25.8±2.4 ^f	25.1±2.4 ^d	25.0±2.4 ^{cd}	25.6±3.7 ^{ef}	22.9±2.0 ^b
	Mean (ETB)	23.55	27.8	26.75	26.65	27.25	24.25

^{a,b,c,d,e,f} Least square means with different superscripts within a row are significantly different ($P < 0.05$), using LSD

· 8.60 Eth. Birr was equivalent to 1 USD, ETB= Ethiopian Birr

The highest market prices were recorded in red and white color cocks with double type of comb during Ethiopian New Year and Easter Holydays. It was attributed to the high demand of those types of cocks by consumers and producer farmers.

Chicken and egg marketing constraints of the district

The result of the current study indicated that religious/cultural holydays were highly associated with chicken and egg consumption and marketing of the district. Accordingly, fluctuation (seasonality) in prices of chicken products was the most prevailing chicken and egg marketing constraint in the study area. Other chicken and egg marketing constraints identified in the study district were the following:

- Low supply (output) of chicken products due to disease outbreak, predator attack and low productivity of local chicken eco-types.
- Presence of only few/limited market out-lets, especially on lowland agro-ecologies.
- Lack of appropriate chicken and egg marketing information to producer farmers.
- Lack of enough space for chicken marketing in urban markets, Bure market.
- Lack of credits and capital to expand chicken production marketing activities.

Roles of middle men (chicken and egg collectors) on the marketing system

According to the result of the current study the role of middle men was significant in the chicken and egg marketing system of the district. Depending on the location of the farm dwelling, village chicken owners sold their chicken and eggs either to middle men or consumers. The result of the current study revealed that the average age of the chicken and egg collectors involved in the marketing system of the study area was 22.8 years (most are young students). In addition, most of the traders (60%) were educated (grade 1-6). Some of the traders were involved in either chicken or egg marketing and others involved in both egg and chicken marketing. Most chicken

and egg collectors (68.7%) used the activity as part time work to get additional income and purchased chicken and eggs twice per week in all formal & informal market days. According to interviewed chicken and egg collectors, the average profit that they made on selling of one matured cocks/hens and pullets/cockerels were Eth. Birr 4.25 and 3.88, respectively. It is identified that there were special places for marketing of chicken products in each of the available local and urban markets of the district. However interviewed traders declared that these special market places were not large enough for proper chicken and egg marketing.

Summary and recommendations

The result of the current study showed that there was no formal type of chicken and egg marketing system in the district. In the study area chicken and eggs were often used for source of cash income, consumption and religious ceremonies. The following recommendations are suggested based on the result of the current study:

- As most of the chicken and egg marketing activity of the district is managed by women, provision of successive trainings on modern chicken husbandry and marketing practices to women would be essential for the improvement of chicken production and marketing.
- Planning of village chicken production with careful consideration of high demand seasons could be very important to solve the seasonality of chicken and egg prices. If village chicken production could be carefully planned and managed to match the fluctuating market demand, economic benefits of the sector might be higher. Formation of marketing plan could be implemented by planners and village chicken owners by identifying where and when chicken products would be sold to receive reasonable prices.
- Development of market information system at farmer's level and strengthening of agricultural extension services, through trainings and advisory services, to village chicken owners could also be important to alleviate the above mentioned chicken marketing constraints, which in turn resulted in improvement in village chicken production sector of the district.
- Provision of credit facilities to producers and linking the production with marketing could encourage chicken owners and contribute to the improvement of the sector.
- Provision of appropriate marketing information to chicken producers could be important for the improvement of chicken and egg marketing system of the district.

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