



STUDY ON CHICKEN HUSBANDRY PRACTICE AND CONSUMPTION TRADITION OF POULTRY PRODUCTS IN DEBRE MARKOS TOWN

^{1,*} Mebratu Yigzaw, ² Kabtamu Takele and ³ Zomanesh Mulat

¹Injibara University, College of agriculture, Climate and Food Science, Injibara, Ethiopia

^{2,3} Debre Markos Town Agricultural Office Markos, Ethiopia

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Abstract

The survey was conducted in Eastern Gojjam Zone of Amhara regional state, North Ethiopia from December to May, 2018 to assess chicken husbandry practice and consumption pattern of poultry products. A structured questionnaire related to rural poultry production was used to collect primary data. Using simple random sampling technique one hundred twenty households (thirty from each Kebeles) were included in the study. SPSS version 20 software was employed to analyze the data. The average family size and age of respondents in the study area were 4.7 persons and 37.4 years, respectively. The average cattle holdings like sheep, and chickens were found to be 1.8, 2.57 and 6.63, respectively. Only 30% of chicken producers in Debre Markos Town constructed separate house for their chicken. The rest 26.7%, 20% and 23.3% shared family house, kitchen and under basket, respectively. Almost all of chicken producers in the study area supplement their chicken where 64.4% and 35.6% of the respondents provided the supplemental feed by broad casting on the ground and using feeder, respectively. Maize and kinche (10%); sorghum, wheat and kinche (13.3%); wheat and maize (60%) and wheat, maize and kinche (16.7) were the main supplementary feed. The majority respondent (88.2%) reported that the source of supplementary feed was farm produced. The water source given to chickens is pipe (83.3%), pond (16.3%). the common type of drinkers were plastic (66.6%) clay made (30 %) and wooden made (3.33%). Disease was reported to be the major problem and according to majority of the respondents, the common season of disease outbreak is wet season (73.3%). About 96.7% of the respondents consume chicken products. The average yearly egg productions of local and cross breeds were found to be 40.02 and 102.5, respectively.

Keywords: Husbandry practice, Consumption, Poultry production extension interventions and households.

INTRODUCTION

Poultry production is an important economic activity in Ethiopia. Besides to its economic and social values, it occupies a unique position in terms of high quality protein food contribution to rural smallholder farming families in Africa and particularly in Ethiopia (Sonaiya *et al.*, 1999; Tadelle and Ogle, 2001). Both poultry egg and meat enrich and contribute to a well-balanced diet to satisfy human needs. An average adult human needs about 65g of protein/day, of which only 10% needs to be protein of animal origin (Tadelle *et al.*, 2003a). Approximately 20% of protein consumed in developing countries originates from poultry (Askov and Dolberg, 2002). The total population of chicken in Ethiopia is about 50.38 million comprising cocks, cockerels, pullets, laying hens, non-laying hens and chicks (CSA, 2012/13). Of which, 96.9%, 54% and 2.56% were reported to be indigenous, hybrid and exotic breeds, respectively. Despite the high number, their contribution to farm households and national income is still very low (2-3%) and the annual growth rates in egg and meat output were estimated about 1.0 and 2.6% as compared to the sub Saharan Africa countries, 5.7 and 6.8%, respectively (Negussie, 1999). This might be due to shortage of poultry feed and nutrition under both rural smallholder and large-scale systems in the country (Tadelle *et al.*, 2003b). Moreover, the productivity of birds under the rural production system is very low in terms of egg production, size of eggs,

growth rate and survivability of chicks (Teketel, 1986). Although large number of chicken were recorded in East Gojjam Zone, which is about 1.15 million (CSA, 2016/17), their current husbandry practice and consumption tradition of their products has not studied and documented yet and their attributes are unknown by stalk-holders. Therefore, the current study is designed with the objective of assessing chicken husbandry practice and consumption tradition of poultry products in Debre Markos town.

MATERIALS AND METHODS

Description of the study area

The study was conducted in Debre Markos town of East Gojjam Zone, Amhara Regional State. Debre Markos town is located in the North West of the capital city, Addis Ababa, at a distance of 300 and 265 km from Addis Ababa and Bahir Dar, respectively. Its geographical location is 1020'N and 3743'E latitude and longitude with an elevation of 2446 meters above sea level and 15-22 O° maximum and minimum temperatures, respectively. The mean Annual Rainfall is 1380 mm and the existing wind direction is from north to south. Debre Markos town has an area of 6160 ha having an oval shape and contain seven (7) Kebeles. According to CSA (2017), the population projection figure of the town had been estimated to be 38,291 males and 41,689 females. Mixed crop-livestock production system is a common agricultural practice in the area and Smallholder traditional poultry production is practiced in each village and household level.

*Corresponding Author: Mebratu Yigzaw

Injibara University, College of agriculture, Climate and Food Science, Injibara, Ethiopia.

Data collection and sampling procedures

Both primary and secondary data was collected. The primary data was collected using structured questionnaires and interviewing poultry keepers. The questionnaire focused mainly on chicken husbandry practices, flock production performances, consumption tradition of products, problems prevailing in chicken production. Secondary dates, like type of disease and population size of chicken were collected from the respective Agricultural and Rural Development Office. Debre Markos town has 7 Kebeles from which 3 were selected purposively based on their accessibility and their potential for chicken production. Thirty respondents were selected from each kebele and a total of 120 respondents were selected from the three Kebeles. Data collected from survey was analyzed using SPSS software version 20 (SPSS 2001) and descriptive statistics such as average, percentage, Mean.

RESULTS

Respondents profile

The overall average family size in the study kebeles were 4.73 persons per household. The average age of the respondents was 37.4 years. About 53.3% of the respondents were females, while the rest 46.7% males. With regard to their educational background, about 50% were illiterate. Among the literate about 6.67% can read and write, 13.3% of the respondents attended grades 5-8, whereas 26.7% attended 9-12 and the rest 3.33% were attending higher education. The majorities (93.3%) of the respondents were married and the rest 6.67% were single.

Livestock holding of the study area

The average livestock holding per household was 6.63, 1.87, and 2.57, for chickens, cattle, and sheep, respectively.

Husbandry practice

Housing: Only 30% of chicken producers in the study area constructed separate house for their chicken. The rest 26.7%, 20% and 23.3% of the respondents reported that they shared family house, kitchen and under basket, respectively. Such a situation might be attributed to the fact that women own and manage rural household poultry whereas construction of poultry house is the job of husbands in those Kebeles. Among the households who have no separate poultry houses, about 30%, 10% and 20% of the respondents from kebele 01; 30%, 40% and 10% of the respondents from kebele 02 and 10%, 10% and 50% of the respondents from kebele 07 reported that they keep their chicken in the kitchen, under basket and family dwelling during night time, respectively.

Feeding practice: The overall feed resources and feeding practices of the study area is presented in Table 2. Almost all chicken producers in the study area supplement their chicken whereby 70%, 26.7% and 3.33 of the respondents provided supplemental feed by broadcasting on the ground, using feeder and both, respectively. From feeds 56.7%, 40% and 3.33 were reported to be unprocessed, processed and both, respectively. As far as the type of feeder is concerned, 6.67%, 10, 10 and 3.33% used clay made, plastic made metal (tin) and wooden

made type of feeder, respectively. Processing of feed for chicken is common in most of the study area. Spreading the feed on the ground may result in feed wastage as some of the grains may be lost in cracks or mixed with dusts. In addition, the feed will be subjected to contamination as it may come in contact with pathogens from the earth. The main supplementary feed in the study area were wheat, maize and kinche (16.7%), sorghum, wheat and kinche (13.3%) and wheat and maize (60%). The respondents reported that the source of the above mentioned supplementary feed for chicken was from the farm (88.2%), purchased from market (6.96%) and others (4.80%).



Figure 1. Housing (left) and drinker (right) in the study area

Water Provision

According to this study the source of water given to chickens was from (pipe 83.3%), (pond 16.3%). Regarding the drinking materials, 66.6% and 30% of the respondents used plastic and clay made containers, respectively.

Table 1 Water sources, provision and drinker equipments used for chickens in the study area

Variables	Kebele01 (nhh= 30)	Kebele02 (nhh=30)	Kebele07 (nhh=30)	Overall (Nhh=120)
Source of water for chickens (%)				
Pipe	90	90	70	83.3
Pond	10	10	30	16.3
Drinkers used (%)				
Plastic made	40	90	70	66.6
Clay made	50	10	30	30
Wooden material	10	-	-	3.33

nhh = number of the households

Table 2. Feed Resources and Feeding Practices of chicken in the study area

Variable	Kebele01 (nhh=30)	Kebele02 (nhh=30)	Kebele07 (nhh=30)	Overall (Nhh=120)
Feed provision method %				
Both	10	-	-	3.33
Using Feeder	-	40	40	26.7
Broadcast	90	60	60	70
Processing of feed				
Both	10	-	-	3.33
Processed	20	70	80	56.7
Not processed	70	30	20	40
Feeder Type				
Wooden made	-	10	-	3.33
Clay made	-	-	20	6.67
Metal(tin)made	10	10	10	10
Plastic made	-	20	10	10
Supplemental feed				
wheat, maize and kinche	20	10	20	16.7
Wheat and maize	70	60	50	60
Maize and kinche	-	10	20	10
Sorghum, wheat and kinche	10	20	10	13.3
Supplement feed Source				
Market	7.50	6.70	60	6.96
Farm	89.5	84.6	10	88.2
Both	3.00	8.70	30	4.80

nhh= numbers of househplds

Table 3. Consumption Pattern of Chicken Product (%)

Variable	Kebele01 (nhh=30)	Kebele02 (nhh=30)	Kebele07 (nhh=30)	Overall (Nhh=120)
Do you eat chicken				
Yes	90	100	100	96.7
No	10	-	-	3.33
Chickens consumption time				
Ceremonies times	80	80.0	100	86.7
At any time when needed	10	20.0	-	10
Preferred color				
Both	-	-	40	13.3
Red	30	30	40	33.3
White	10	10	10	10
Any ones	50	60	10	40
Preferred breed to consumption				
Both	10	-	10	6.67
Local	70	80	90	80
Exotic	10	20	-	10
Age group to consumption				
Cock and pullet	-	-	10	3.33
Cock	60	80	60	66.7
Hen	10	-	-	3.33
Hen and cock	30	-	30	20
Pullet	-	20	-	6.67
Total chicken consumption/year	3.8	4.2	3.1	3.7
Total eggs consumption/year	16	20	21	19

Nhh= numbers of house hold

The remaining 3.33% use wooden drinking materials. Almost all respondents use water for drinking water could be promising as all of the farmers provided water for their

chickens. The farmers must take care quality of the water as they have been placed anywhere in an open place.

Disease and Predation: The results of this study tend to indicate those poultry disease were widely spread in the study area. About 83.3% of the respondents confirmed that occasional and serious disease outbreak results in complete devastation of the flock when accrued and the remaining 16.7% of respondents were non experience about serious disease outbreak. About 73.3% of the respondents reported that ground serious disease outbreak mainly prevalent during rainy season (Keremit) and the remaining 10% in dry season (Bega). The fate of sick in the study area were (50%), (3.33) and treated by the owners themselves, slaughtered for consumption respectively. Only 23.3% of them had access to veterinary services from the weredas Agricultural and Rural Development Office (ARDO) and 6.7% calls DA. To treat their sick chickens, most of the farmers used traditional remedies, which were usually administered through cutting of black side part of wings and then the blood removes, whereas few use or treated by veterinarian access medicine. Predation is a number one and accounted 20% and 36.7%, cats and eagles, for loss of chicken in the study area, respectively.

Table 4. Reproductive and productive performances of the village chicken in the study area

Variables		Kebele01 (nhh=30)	Kebele02 (nhh=30)	Kebele07 (nhh=30)	Over all (nhh=120)
Age of cock at 1st mating					
	Local	5.9	5.5	6.3	5.9
	Cross breed	5	5	-	5
Age of pullet at 1st laying					
	Local	5.5	5.4	6	5.63
	Cross breed	5.2	5	-	5.1
No of clutch/year					
	Local	3.2	3.4	3.5	3.37
	Cross breed	5	4	-	4.5
No of eggs/clutch					
	Local	16.2	15.3	16.2	15.9
	Cross breed	25	20	-	22.5
Egg production/year/breed					
	Local	51.84	52.02	56.1	40.02
	Cross breed	125	80	-	102.5
No of egg incubated/clutch		7.73	10.4	8.90	9.01
No of egg hatched/incubation		6.13	5.73	8.26	6.70
No of survived to market age		3.20	4.40	5.90	4.50
Age of layer (year)		2.46	1.93	1.73	2.04
Age of cock (year)		1.96	1.90	2.53	2.13

Nhh= numbers of household

Consumption Pattern of Chicken product: About 96.7% of the chicken owners consume chicken meat in the study area. The remaining 3.33 % of them were not adapted to the eat meat consumption due to their personal feelings as we gathered from the some respondents particularly in first kebele study area. The majority (86.7%) of the households eats chicken meat during holiday time such as, Easter, New Year and wedding and (10%) households consume poultry products at any time when needed for them. Egg is also consumed in the study area. The total numbers of chicken and egg consumed per year in the study area were 3.7 and 19 respectively suggesting that farmers do not consume enough amounts of poultry products even if they are the producer. There was some

plumage color preference of meat consumption in the study area and 40%, 33.3%, 10% and 13.3% any color, red, white and both consumed by the respondents in the study area of, respectively. The majority (80%) of the respondents reported to have preferred local breed for the meat consumption due to less productivity of the local birds and they are available in the area. The remaining 10% and 6.67% of the respondents preferred to eat culled improved birds and both local and improved respectively. As far as the age group preference is concerned 3.33%, 66.7%, 20% and 6.67% of cock and pullet, cock, hen and cock and pullet, respectively

Production Performance of Village Chickens: Over all age at sexual maturity of male of village chickens in the study area was 5.9 months and 5 months for local and cross breeds, respectively. And age at first laying in the study area was 5.63 months and 5.1 months for local and cross breeds, respectively. The production age of layer and cock was 2.04 years and 2.13 years, respectively. The overall average number of clutches per year result from the study area was 3.37, and 4.5 were local and cross breed, respectively. Mean annual egg production/year/breed in the study area was found to be 40.2 and 102.5 for local and cross, respectively. The overall average number of eggs per clutch study area was 15.9 and 22.5 local and cross breed, respectively. The overall average number of eggs incubated per clutch was 9.01, out of which only 6 chicks were hatched with an average hatchability were 6.7. However, among the hatched chicks, only 4.5 chicks grow to market age suggesting that there is high number of chick mortality.

DISCUSSION

Husbandry practice

Housing: Our result is disagreed from Worku et. al.(2012) reported that 12% of chicken producers in west Amhara region constructed separate chicken house. Likewise Meseret (2010) reported that about 94.4% of the chicken owners in Gomma wereda have no separate poultry house.

Feed Resources and Feeding Practice: The result of the current study is similar to Hassen et al. (2007) reported that only 3.4% of chicken owners in North-west Ethiopia provided supplementary feed using feeders while the remaining spread the feed on the ground. The main supplementary feed in the study area were maize (68.9%), sorghum (18.2%) and wheat (12.8%). In agreement with the present study, Hassen et al. (2007) reported that the majority of the farmers used maize, barley, wheat, finger millet and household waste products as a source of supplementary feeding to their chickens. The respondents reported that the source of the above mentioned supplementary feed for chicken was from the farm (88.2%), purchased from market (6.96%) and others (4.80%). Likewise, Worku et.al. (2012) reported that for about 87% of households in west Amhara the supplemental feedstuffs were farm produced.

Water Provision: According to the current study the source of water given to chickens was from (pipe 83.3%), (pond 13.3%). This is similar to the finding of Mekonen (2007) who reported that water for chickens in southern Regional State of Ethiopia

was drawn from pipe (36%), river (35%) and pond (28%). Similarly Worku et.al (2012) reported that chicken producers in west Amhara area used different sources of water such as spring (60.2 %), pipe 21.4%), (12.2%) and pond (6.2%). Regarding the drinking materials, 66.6% and 30% of the respondents used plastic and clay made containers, respectively. The remaining 3.33% use wooden drinking materials. Almost all respondents use water for drinking water could be promising as all of the farmers provided water for their chickens. The farmers must be take care quality of the water as they have been placed anywhere in an open place. Our result was related to Worku et al. (2012) who about 62% of households use wooden made drinking equipment (locally called Genda (rectangular) while 20.4%, 10.7% and 7.1% of them utilize plastic made, clay made and stone made drinkers, respectively. In agreement with the current results, Hassen et al. (2007) reported that 27.9%, 37.3% and 34.8% of chicken owners in North West Ethiopia used plastic made, wooden made and clay made drinking materials for their chickens, respectively.

Disease and Predation: The results of this study tend to indicate those poultry disease were widely spread in the study area. About 83.3% of the respondents confirmed that occasional and serious disease outbreak results in complete devastation of the flock when accrued and the remaining 16.7% of respondents were non experience about serious disease outbreak. About 73.3% of the respondents reported that ground serious disease outbreak mainly prevalent during rainy season (Keremit) and the remaining 10% in dry season (Bega). Poultry disease is widely distributed in Ethiopia and Newcastle disease (ND) is the most important cause of economic loss in poultry production in the country (Nasser et al., 2000). The fate of sick in the study area were (50%), (3.33) and treated by the owners themselves, slaughtered for consumption respectively. Only 23.3% of them had access to veterinary services from the weredas Agricultural and Rural Development Office (ARDO) and 6.7% calls DA. To treat their sick chickens, most of the farmers used traditional remedies, which were usually administered through cutting of black side part of wings and then the blood removes, whereas few use or treated by veterinarian access medicine. Predation is a number one and accounted 43.3%, 16.7% and 36.7%, monkey, cats and eagles, for loss of chicken in the study area, respectively. Our result was similar with Girma et al, (2004) in Awassa Zuria who reported that out of the total loss of 130 Fayoumi birds, 104 (80%) were eaten by fox. Thus, it is apparent that for young chickens, predation by birds, fox and wildcat (Shelemtemat) contribute to substantial losses of the flock

Consumption Pattern of Chicken Meat: The total numbers of chicken and egg consumed per year in the study area were 3.7 and 19 respectively suggesting that farmers do not consume enough amounts of poultry products even if they are the producer. This finding is in line with ILRI (2000) who reported that in the mid-1990s, the per capita egg and poultry meat consumption in Ethiopia was estimated at 57 eggs and about 2.85 kg, respectively.

Production Performance of Village Chickens: The current study is not completely related to Meseret (2010) reported that mean sexual maturity expressed in terms of age at first egg was reported to be 6.33 months. Similarly Worku et al. (2012) reported age at first egg and at sexual maturity (male) of

village chickens in west Amhara to be 6.6 and 6.1 months, respectively. The production age of layer and cock was 3.7 years and 3.79 years, respectively. Mean annual egg production/year/breed in the study area was found to be 40.2 and 102.5 for local and cross, respectively. The overall average number of eggs per clutch study area was 15.9 and 22.5 local and cross breed, respectively. This finding was related to the national average (12.92) as reported by CSA (2003). Fisseha *et al.* (2010), reported that the average number of eggs/hen per clutch is 15.7, 13.2 and 14.9 in Bure, Fogera and Dale woredas, respectively and the total egg production/hen per year of local hens, under existing farmer management condition, is estimated to be 60, 53 and 55 in Bure, Fogera and Dale woredas, respectively. The overall average number of eggs incubated per clutch was 9.01, out of which only 6 chicks were hatched with an average hatchability were 6.7. The current study result was related similar to the findings of Pedersen (2002) who found that the number of eggs incubated per clutch was 10.6 with an average hatchability of 73%.

Conclusions And Recommendation

This research was aimed at characterizing chicken husbandry practice and consumption tradition of poultry products in Debre Markos Town, East Gojjam Zone. Poultry production in Debre Markos town is a chain of interrelated economic activities undertaken within a social context. These activities can range from the raising of poultry to the buying and selling of poultry and poultry products. Understanding the scenario of poultry production and consumption pattern in the dynamics within the system will be crucial to develop strategies and improve the system. Thus, 120 households owning chickens were interviewed to assess the husbandry practice and consumption tradition of poultry products. The chicken are confined within the family dwellings during night time and released for scavenging early in the morning. The majority of the chicken owners in the study area supplement the chicken with cereal grains such as maize, kinche, sorghum and wheat. While they are providing the feed many of the owners broadcast the feed simply on the ground which leads to wastage of feed, feed contamination and it also increases feed competition among the flock where only the strong ones are benefited. Pipe and pond were the main source of water for the chickens in the study area and water is provided by different drinkers such as clay made, plastic made and wooden made. Disease and predator were the common challenges to chicken production in the study area. The outbreak of disease was manifested during wet season because of the suitability of temperature for disease causing micro-organisms. When chickens are sick majority of the chicken owners treat the birds by themselves using local remedies such as cutting the wings and then avoid black blood, whereas, some others consult veterinarians and DAs. Apart from disease predators such as cat and eagles are the most common problems for chicken rearing in the study area. Generally, the results of this study showed that the overall mean pullet age were 5.63 months and 5.1 months for local and cross breeds, respectively. Moreover, nearly all households provided supplementary feed and water to their chickens, and this could be considered as the strength of the sector. This is perhaps considered as an opportunity and potential for poultry production and development activities in the study area.

- Finally, technical support to farmers' experience or knowledge of supplementary feeding, watering and

entrepreneurship would substantially improve productivity of local chicken;

- There is a strong need for appropriate intervention in disease, mainly NCD and predator control activities so as to reduce chicken mortality and improve productivity.
- More detailed studies should be carried out to investigate the disease problems prevailing in the study area that would help develop a sustainable strategy of disease prevention and control.

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