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Survey on Indigenous Chicken Production and Utilization Systems in Southern Zone of Tigray, Northern Ethiopia

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Abstract
The survey was carried out in southern zone of Tigray to generate information on village based indigenous chicken production and utilization system. The results of the study showed that the dominant chicken production system of the study area was a backyard extensive system using majority of indigenous chicken (92.67%) managed mainly on scavenging with conditional feed supplementation. The mean chicken flock size per household of the study area was 7.91±0.4 chickens. The survey indicated that almost all farmers provided night shelter for their chickens. Broody hens were the sole means of egg incubation and chick brooding in the study area. The result also showed that the average age of male at firs mating and female at first egg were 6.23±0.06 and 6.74±0.05 months, respectively. The number of clutch per hen per year, eggs per clutch and total eggs produced per hen per year were 4.25±0.07, 14.9±0.32 and 63.2±1.75 eggs, respectively. The hatchability and survival rate of chicks were 84.22% and 58.71%. Most chicken keepers in the study area had the tradition of selecting chicken for replacement stock. Body size, plumage color, body conformation, comb type, egg production performance and responsiveness to predators were the major means of selection. Chicken diseases and predators were considered to be the largest threat to village chicken production. The survey indicated low productivity of indigenous chickens; hence appropriate interventions particularly on the improvement of breed, health care, housing, and feeding are required. Therefore, efforts need to be made to improve the productivity of village chickens in sustainable way through a holistic approach in services like health, husbandry, research, extension, training and credit interventions.
Keywords: Chicken disease, indigenous chicken, predators, productivity, scavenging

Introduction

Indigenous chickens in Ethiopia are found in large numbers distributed across different agro-ecologies under traditional scavenging management system indicating that they are important avian resources reared as a source of animal protein and income to many of the rural populations (Fisseha et al 2010b). Thus, their widespread distribution indicates their adaptive potential to the prevailing environment, disease and other stresses. According to CSA (2012), the total chicken population in the country is estimated to be 44.89 million of which 43.3 million (96.46%) are indigenous chickens, indicating the significance of local chickens as potential resource of the country. The total chicken egg and meat production in Ethiopia is also estimated to be about 78,000 and 72,300 metric tons respectively (Fisseha et al 2010b), from which, more than 90% of the national chicken meat and egg output is contributed by local chickens (Nigussie 2011). However; the economic contribution of the sector is not still proportional to the huge chicken numbers, attributed to the presence of many productions, reproduction and infrastructural constraints (Aberra 2000).

Furthermore, the indigenous chickens are good scavengers and foragers, well adapted to harsh environmental conditions and their minimal space requirements make chicken rearing a suitable activity and an alternative income source for the rural Ethiopian farmers. The indigenous fowl population also is considered as gene reservoirs, particularly of those genes (naked neck) that have adaptive values in tropical conditions (Horst 1988). In addition, the local chicken sector constitutes a significant contribution to human livelihood and contributes significantly to food security of poor households.

In Ethiopia lack of knowledge about poultry production, limitation of feed resources, prevalence of economically important diseases (Newcastle, Coccidiosis, Infectious Bursal disease (*Gumboro*), etc.) as well as institutional and socio-economic constraints remains to be the major challenges in village based chicken productions (Ashenafi et al 2004). Despite the important roles of chickens, rearing them is commonly considered as a sideline agricultural activity. There are many complex and varying constraints to chicken production systems, which in turn influence their production and reproduction potential. Hence, knowledge and understanding of the chicken production and utilization systems, opportunities and constraints are important in the design and implementation of village based chicken development programmes, which can benefit rural societies.

Therefore, the objective of the study was carried out to generate base line information on village based indigenous chicken production systems, utilization, opportunities and challenges.

Materials and Methods

Study Area

The study was conducted in Northern Ethiopia; southern zone of Tigray in randomly selected districts namely the Raya azebo, Endamehoni and Ofla. These areas are situated at the range of 12°15'N to 13°00'N and 39°10'E to 39°50'. It has an altitude ranging from 930 to 3925 m.a.s.l. The mean annual temperature varies from 9 ^{0}C to 28 ^{0}C. The coldest months are October, November and December and the mean annual rainfall ranges from 400 to 912 mm (SZT, 2012).

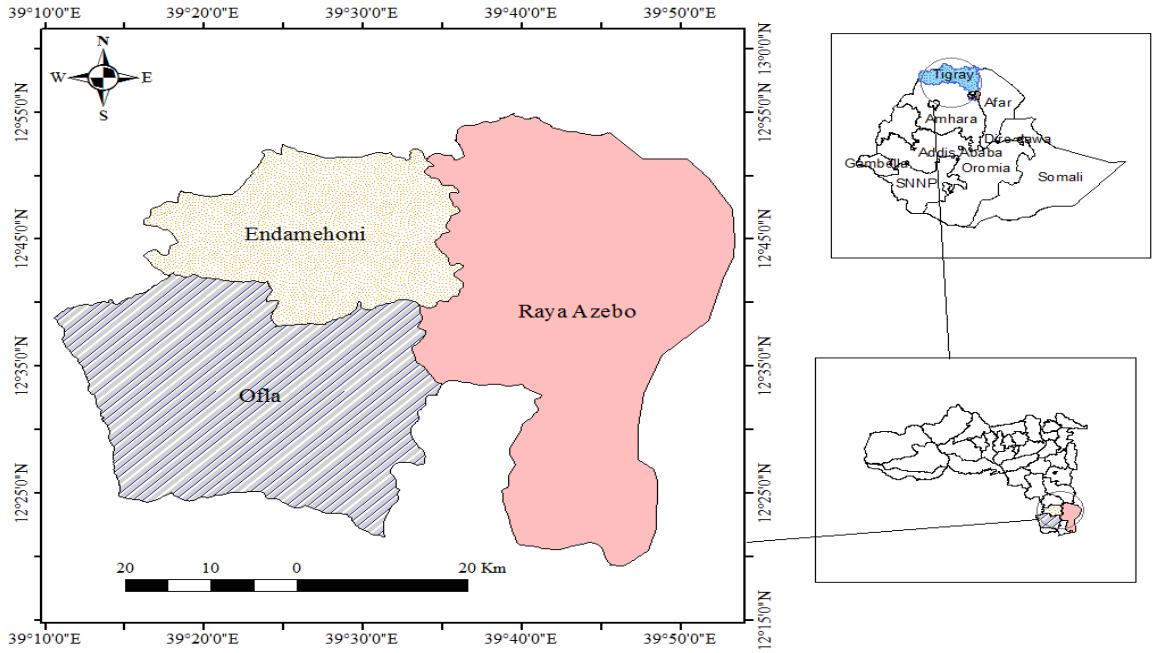

Figure 7. Map of the study area

Study Design

Questionnaire survey and focal group discussions in chicken production system were conducted in the three districts of southern zone Tigray. A total of two hundred ten households rearing indigenous village chicken were randomly selected and interviewed using structured questionnaire. Group discussions were made with focus group established at each PAs with group comprising 5 to 7 members. Members of the focal groups include people believed to be knowledgeable about past and present social and economic status of the area, community elders, women, children and extension agent. Accordingly, data on chicken husbandry, health managements, opportunities and major constraints and/or challenges of village poultry production in southern zone Tigray were collected.

Statistical Analysis

Descriptive statistics such as mean, range, frequency and percentage were used to analyze the data using SAS version 9.2 (2008). General linear model procedures (PROC GLM) of the SAS were employed for performance traits to detect statistical differences among sampled indigenous chickens in the three districts. Indexes were calculated to provide ranking according to a formula; Index = Σ of (3 for rank 1 + 2 for rank 2 + 1 for rank 3) given for an individual attribute (reason) divided by the Σ of (3 for rank 1 + 2 for rank 2 + 1 for rank 3) for overall attribute (reasons).

Results and Discussions

Household Characteristics and Respondents Profile

The survey results indicated that more than half (55.71%) of respondents were females. This shows the gender balance in house income distribution. The overall average ages of respondents were also 40.1 years. This average age indicates the presence of active labor forces, which has positive impact as its availability reduces the labor constraints faced in chicken production. Regarding educational level, the majority (68.57%) of the respondents found to be illiterate. This considerably high number of illiterates might influence the adoption of village chicken technology negatively. The number of illiterates observed in this study was higher than the reported 39.3% for Bure woreda of Northwest Amhara (Fisseha et al 2010a). However this is lower than 82.1% for North West Ethiopia (Halima, 2007).

Socio-Economic Benefits

The survey indicated that chicken farming is commonly practiced as a sideline activity, and none of the respondents specialized in this activity. However, benefits of chicken farming in the context of smallholder farmers were multi-faceted (Table 2). The results of rankings had shown that sale of live birds as source of disposable cash income was the first most important function of rearing chicken followed by egg hatching for breeding stock and home consumption, egg production and use of chicken for cultural and/or religious ceremonies. Similarly, Fisseha et al (2010a) reported that the major purposes of chicken rearing in Bure district were: sale for cash income (51%), egg hatching for breeding/replacement stock (45%), home consumption (44%), egg production (40.7%) and use of chicken for cultural and/or religious ceremonies (36.4%) in the order of importance.

Management Practices in Village Chicken Production, Village Chicken Feed and Feeding

The results of the study showed that the dominant chicken production system of the study area is backyard extensive system using majority of indigenous chicken (92.67%) managed mainly on scavenging with conditional feed supplementation. However, all of the farmers practiced supplementary feeding system (Table 3) and used home grown crops such as maize, barley, wheat, sorghum and household scraps to feed their chickens. Among these sorghum, wheat and maize were used as the main supplement of chicken feed (Table 3). This is similar with the findings of Zemene et al (2012) who reported 100% chicken owners in West Amhara region provided supplementary feed and in agreement with the results of work done by Halima (2007) in Northern Ethiopia who reported that 96.8% of the farmers supplied partial supplementation of feeds and 95.5% of the feed was produced locally. All farmers provided water for their chickens, 74.76% providing adlibtum (offered freely throughout the day), 9.05% twice a day, 16.17% three times a day and the sources of water is 97.14% tap (hand operated) and 2.86% river water.

Table 1. Socioeconomic status of village chicken owners in the study districts

Variables	Districts			Grand mean
	Endamehoni	Ofla	Raya-azebo	
Average age of respondents (mean ± SE)	40.5±1.53	41.4±1.36	38.5±1.72	40.1±0.89
Sex of respondent (frequency, (%))				
Male	31(44.29)	29(41.43)	33(47.14)	93(44.29)
Female	39(55.71)	41(58.57)	37(52.86)	117(55.71)
Educational background of respondents (frequency, (%))				
Illiterate	45(64.29)	49(70.00)	50(71.43)	144(68.57)
Reading and writing	5(7.14)	10(14.29)	6(8.57)	21(10.00)
Primary education (1-8)	14(20.00)	9(12.86)	10(14.29)	33(15.71)
Secondary education (9-12)	6(8.57)	2(2.86)	4(5.71)	12(5.71)
Chickens holding/HH (Mean±SE)	7.93±0.72	6.91±0.44	8.89±0.83	7.91±0.4
Land holding/HH (Mean±SE)	0.45±0.02^{b}	0.45±0.01^{b}	0.73±0.05^{a}	0.54±0.02

^{a,b,c} means with different superscript letters across a raw are significantly different at $p<0.05$; HH=interviewed households

Village Poultry Housing

The survey indicated that all the farmers provided night shelter (Table 3) for their chickens in either part of the main house (61.95%), in the kitchen (9.05%), perch in veranda (1.9%), in shoat house (6.19%) and in separate shelter purposely made for chickens (20.95%). According to the survey 79.05% of the farmers reported to have no separate poultry house for which the farmers had various reasons in which risk of predators and lack of construction materials (availability and cost) were the major reasons (Table 3). This result is relatively lower than the case reported by Meseret (2010) and Eskinder (2013) who suggested 94.4% in Gomma woreda and 92.06% in both Horro and Jarso have no separate poultry house, respectively. However, the result contradicts with the reports of Halima (2007) and Bogale (2008) who evidenced that, significant size of the rural households (51%) of Northwest Ethiopia and 59.7% of Fogera woreda had separate sheds for their chickens, respectively.

Traditional Methods of Breaking Broodiness

The survey indicated that broodiness characteristics in indigenous chicken flock were common in which 77.1%, 65.7% and 58.6% of the households in Raya-azebo, Endamehoni and Ofla practiced the traditional methods of breaking broodiness respectively, that a hen resumes laying of eggs in order to increase the number of eggs

obtained from a single bird in a certain period of time. This is in agreement with Tadelle (1996); Dereje (2001); Tadelle (2003) who reported that traditionally households attempted to break broodiness to resume egg laying with the final goal of increasing egg productivity. According to the report of respondents in Raya-azebo (28.57%), Endamehoni (27.14%) and Ofla (18.57%) taking to another/ neighborhood places was the main methods to break broodiness followed by tying wings (12.86%) in both Raya-azebo and Endamehoni and tying legs (17.14%) in Ofla (Figure 1).

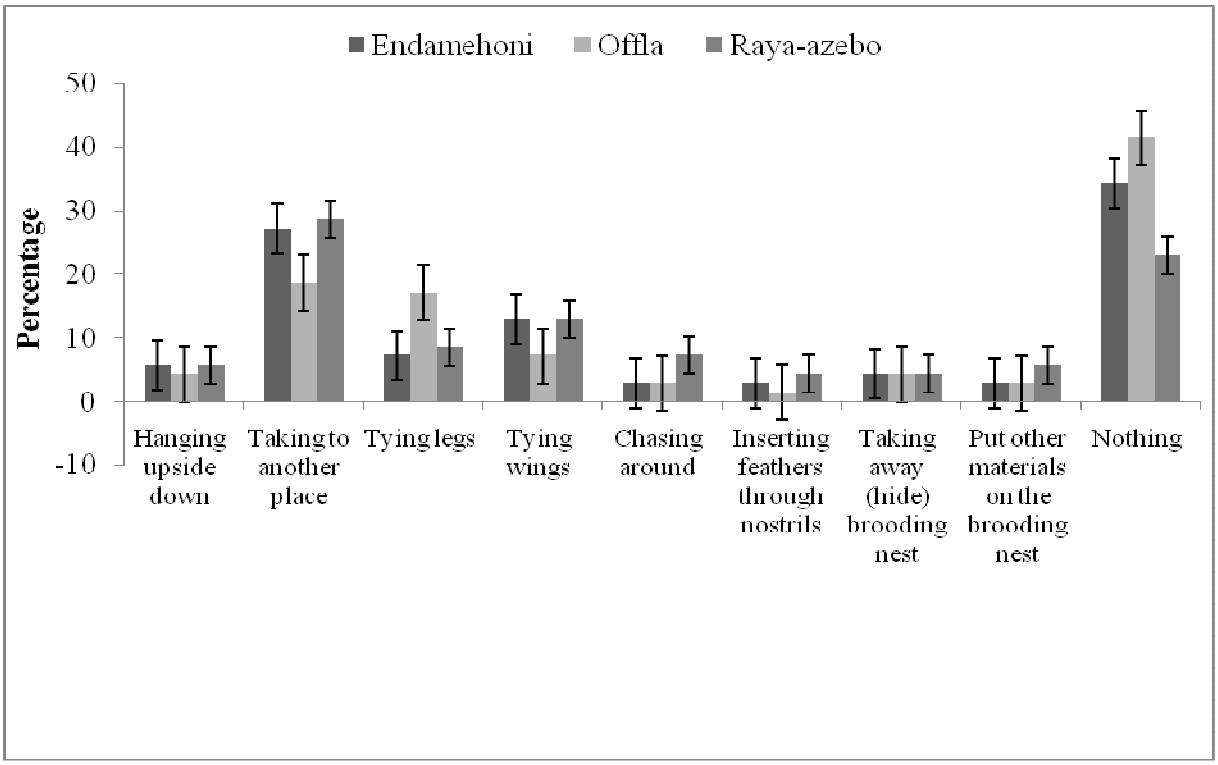

Figure 1. Traditional methods in breaking broodiness of indigenous chickens

Table 2. The purpose of village chicken rearing and eggs in the study districts

Districts	Purpose of chickens					Purpose of egg		
	Income	Breeding	Consumption	Egg production	Cultural/religious ceremonies	Hatching	Income	Consumption
Endamehoni								
Rank1	50	16	3	1	-	31	34	4
Rank2	6	21	30	13	-	28	15	11
Rank3	-	9	20	25	16	9	7	25
Index	**0.39**	**0.23**	**0.21**	**0.13**	**0.04**	**0.44**	**0.39**	**0.17**
Ofla								
Rank1	52	12	4	2	-	36	30	3
Rank2	13	22	20	12	3	19	36	9
Rank3	1	6	20	10	33	2	0	28
Index	**0.44**	**0.20**	**0.17**	**0.10**	**0.09**	**0.41**	**0.44**	**0.15**
Raya-azebo								
Rank1	41	7	17	5	-	42	16	11
Rank2	7	38	9	7	9	23	27	16
Rank3	5	12	22	11	20	0	0	32
Index	**0.34**	**0.25**	**0.22**	**0.10**	**0.09**	**0.46**	**0.27**	**0.26**

Table 3: Management practices in village poultry production in southern zone Tigray of Ethiopia

Supplementary feeds (Percent)	Districts			Overall mean
	Endamehoni	ofla	Raya-azebo	
Provision of Supplementary feeding				
Yes	100	100	100	100
No	-	-	-	
Type of supplementary feeds[a]				
Maize	67.14	62.86	61.43	63.81
Sorghum	5.70	72.86	100	59.52
Wheat	95.70	95.70	20.00	70.47
Barley	37.14	17.14	12.86	22.39
Household scraps	38.57	31.43	27.14	32.38
Provision of water to birds				
Yes	100	100	100	100
Source of water for chickens				
Pipe water (hand operated)	97.14	98.57	95.71	97.14
River	2.86	1.43	4.29	2.86
Frequency of watering				
Once a day	-	-	-	-
Twice a day	11.43	2.86	12.86	9.05
Three times a day	12.86	20.00	15.71	16.19
Adlibtum (offered freely)	75.71	77.14	71.43	74.76
Housing				
Separate shelter	17.14	20	25.71	20.95
Perches in the main house	62.86	67.14	55.71	61.9
Perches in kitchen	11.43	7.14	8.57	9.05
Perches in the veranda	-	-	5.71	1.90
Perches in shoat house	8.57	5.71	4.29	6.19
Reason not having separate shelter				
Risk of predators	53.45	60.71	48.08	54.22
Lack of construction material (availability and cost)	24.14	17.86	25.00	22.29
Lack of knowledge (awareness)	6.90	5.36	7.69	6.63
Less attention given to birds	8.62	10.71	11.54	10.24
Lack of time and labor	6.90	5.36	7.69	6.63

[a]=Percentages do not add up to 100% since respondent's selected more than one feed type

Incubation, Hatching and Chick Survival in Village Poultry Production

From the survey it is observed that exclusively natural incubation and hatching is practiced and 79.05% of the respondents incubate chicken eggs at dry season while 20.95% of the respondents incubate chicken eggs at any time. The average number of eggs incubated using a broody hen was 12.6 out of the average 14.9 eggs laid/ clutch/hen. On average relatively high number (10.5) chicks were hatched. However, the average survival rate of chicks to eight weeks age was 6.23 which is low indicating high mortality of chicks (Table 4). This was because of the fact that artificial chick rearing was not practiced and hens were left to roam with chicks, exposing them to cold weather, predators and diseases. This shows that there is a need to put effort on reducing chick mortality of the local ecotypes.

Production and Reproduction Performance

According to the survey chickens from Endamehoni and Ofla had significantly higher values which is 6.97 and 6.89 months for mean age at first lay, and 6.43 and 6.37 months for mean age at first mating, respectively, whereas in Raya-azebo had lower values which is 6.37 months for mean age at first lay and 5.9 months for mean age at first mating (Table 4). This shows pullets and cockerels found in Raya-azebo relatively matured faster than birds of the other districts. The overall mean age at first lay (6.74 months) recorded in this study was similar with Tadelle et al (2003) who reported 6.8 months of mean age at first lay and longer than 5.35 and 5.5 months reported by Mammo (2006) and Halima (2007), respectively, for village chickens. Similarly, the number of eggs/clutch/hen was significantly higher (16.3) in Raya-azebo than both Ofla and Endamehoni. Generally the number of eggs/clutch/hen found in this survey agreed well with the reported 15.7 and 14.9 eggs in Bure and Dale woredas, respectively (Fisseha et al 2010b) and lower than Tadelle (2003) who reported 17.7 average eggs per clutch per hen for five regions in Ethiopia. The survey indicated variation in local chicken performance which might be associated to many factors, mainly variations in management practices between households, the availability of feed resources for scavenging and supplementation or breed difference.

Table 4. Production and reproduction aspects of indigenous chickens

Traits (Mean ± SE)	Districts			Grand mean
	Endamehoni	Ofla	Raya-aebo	
Average age of cockerels at 1st mating (month)	6.43±0.10[a]	6.37±0.09[a]	5.90±0.10[b]	6.23±0.06
Average age of pullets at 1st egg (month)	6.97±0.10[a]	6.89±0. 09[a]	6.37±0.09[b]	6.74±0.05
Number of clutches/hen/year	3.97±0.10[b]	4.11±0.13[b]	4.66±0.12[a]	4.25±0.07
Average number of eggs/clutch	14.10±0.47[b]	14.30±0.49[b]	16.30±0.64[a]	14.9±0.32
Estimated total egg production/ hen/year	55.98±2.50[b]	58.77±2.74[b]	75.96±3.35[a]	63.20±1.75
Frequency of egg set to broody hen/year (Mean±SE)	2.47±0.06[ab]	2.34±0.06[b]	2.59±0.06[a]	2.47±0.03
Average number of eggs set to broody hen (Mean±SE)	12.00±0.30	12.60±0.35	13.40±0.34	12.60±0.19
Average hatch rate (Mean±SE)	10.00±0.26	10.6±0.28	10.90±0.31	10.50±0.16
Percentage of hatchability (%)	84.09	86.37	82.21	84.22
Survival rate of chicks to 8 weeks age (Mean±SE)	6.17±0.25	6.09±0.27	6.43±0.35	6.23±0.17
Percentage of Survival rate of chicks to 8 weeks age (%)	60.68	57.06	58.40	58.71

[a,b] means in the same row with different superscripts are significantly different ($P < 0.05$); SE=Standard error

Trait Preference for Hens

The survey indicated that majority of farmers were select breeding hens for traits, such as egg production, good sitter and brooder (mothering ability), hatchability, large body size, plumage color and comb type (Table 5). The results in ranking of trait preference in hens revealed that farmers in all district gave more emphasis to reproductive traits than monogenic qualitative traits and adaptive traits. Consequently, all farmers gave highest emphasis to egg production and good sitter and brooder (mothering ability) rather than large body size, body plumage color and comb type. Egg production was appeared to be the most preferable trait because of the obvious benefits of selling eggs, consumption and hatching for replacement stock. This result is in agreement with Bogale (2008) who indicated that most of the respondents (66.7%) selected hens based on egg production in Fogera. Nigussie et al (2010a) also reported egg production as the most important selection criterion in different parts of Ethiopia.

Trait Preference for Cocks

Similar to hens farmers practiced selection on breeding cocks for five trait categories; plumage colour, large body size, comb type, response to predator and '*qumena*' (Table 5). Farmers in Raya-azebo and Ofla districts gave the highest emphasis for plumage color and double comb while large body size was the most preferable trait in Endamehoni district. This shows farmers in Raya-azebo and Ofla district traditionally attached their preference to plumage color and comb type. Generally the survey showed that trait preference for cocks were mainly limited to trait categories which influenced consumer and market preference due to this reproductive traits like libido and early maturing was not considered by the respondents in both districts, even though it has an implication in the future production performance of chickens.

Body Plumage Color and Comb Type Preference

The survey indicated that morphological traits such as body plumage color and comb type were also found to have significant aesthetic and economic values as well as cultural values, such as sacrifices and/or healing ceremonies beside other quantitative traits related to growth and egg production. Results of the rankings (Table 6) showed that red and white body plumage color in both sexes were identified as the first and second most preferable body plumage, respectively. Respondents of the study area recognized only two types of combs, comb type: "Netela" meaning Single and, "Dirib" that actually comprised all comb types other than "Single" (i.e., rose, pea walnut, duplex, and cushion combs). Accordingly the survey indicated that all respondents preferred "Dirib" comb type.

Health Management and Disease

The survey indicated that 57.14% village chicken owners experienced chicken disease outbreaks in the last 12 months. During the interview and farmer group discussions (FGD), the major disease easily recognized by the villagers was Newcastle disease (*fingile)*. The survey showed that all of interviewed village chicken owners had no culture of vaccinating birds against diseases. Lack of awareness about the presence of chicken vaccines, lack of attention to village birds, low availability of vaccines and absence of small doses of vaccines for small number of flocks were the major reasons mentioned by the participants for lack of vaccination against diseases.

The survey also indicated that a traditional treatment (ethno-veterinary) was the major type of treatment

used by majority of village chicken owners. Accordingly provision of local alcohol ('*Katikala'*), 'Holy soil /*Emenet*', 'lemon' (*citrus limon*), '*Feto'* (brasica spp), hot pepper (Capsicum frutenscens), garlic (Allium sativum), and human antibiotics like tetracycline mixing with feed and/or drinking water and bleeding of wing veins of sick birds against NCD were the most widely used type of traditional treatments. Similarly, for external parasites cleaning and/or smoking of perches using local leaves called "*chiendog"* and "*saerisaero"* local name, insecticide spray (Roach killer/*finit*), applying kerosene (*Nech gas*) and different ointments like butter and liquid paraffin on infected body were the major treatments. However, the effectiveness of these treatments is not scientifically proved and should be subjected to future research.

Table 3. Trait preference of farmers for breeding hens and cocks in the study districts

Districts	**Traits**									
			Egg production	Good brooder	Hatchability	Plumage color	body size	Double comb	body conformation	Responsive to predator
Endamehoni	Female	Rank1	37	15	5	4	9	-	-	-
		Rank2	13	15	12	7	19	3	-	-
		Rank3	-	8	12	16	7	19	-	-
		index	**0.33**	**0.20**	**0.13**	**0.10**	**0.18**	**0.06**	-	-
	Male	Rank1	-	-	-	34	34	2	-	-
		Rank2	-	-	-	9	16	27	4	2
		Rank3	-	-	-	3	6	4	9	7
		index	-	-	-	**0.35**	**0.39**	**0.18**	**0.05**	**0.03**
Ofla	Female	Rank1	39	10	7	9	5	-	-	-
		Rank2	6	17	10	11	13	13	-	-
		Rank3	6	20	10	5	-	8	-	-
		index	**0.34**	**0.21**	**0.13**	**0.14**	**0.10**	**0.08**	-	-
	Male	Rank1	-	-	-	28	29	17	3	3
		Rank2	-	-	-	17	16	29	5	3
		Rank3	-	-	-	5	4	4	7	13
		index	-	-	-	**0.32**	**0.24**	**0.30**	**0.07**	**0.07**
Raya-azebo	Female	Rank1	33	11	9	8	7	2	-	-
		Rank2	11	19	13	10	9	8	-	-
		Rank3	3	10	8	22	10	17	-	-
		index	**0.30**	**0.18**	**0.15**	**0.16**	**0.12**	**0.09**	-	-
	Male	Rank1	-	-	-	31	26	12	1	-
		Rank2	-	-	-	13	7	36	9	4
		Rank3	-	-	-	10	-	6	10	12
		index	-	-	-	**0.33**	**0.24**	**0.30**	**0.08**	**0.05**

Table 6. Body plumage color preference in the study districts

District			Body plumage color								
			Ambesuma[1]	Black	Brown	Gebsima[1]	Libework[1]	Kuarichama[1]	Red	Teteruma[1]	White
Endamehoni	Female	Rank1	-	4	13	-	2	-	29	-	22
		Rank2	-	9	17	-	7	-	15	5	17
		Rank3	-	14	15	-	14	-	5	13	9
		index	-	**0.10**	**0.21**	-	**0.08**	-	**0.30**	**0.05**	**0.26**
	Male	Rank1	-	-	-	3	-	-	64	-	3
		Rank2	3	-	-	12	-	-	5	-	49
		Rank3	3	-	-	43	-	3	0	-	5
		index	**0.02**	-	-	**0.19**	-	**0.01**	**0.50**	-	**0.29**
Ofla	Female	Rank1	-	12	5	-	-	-	25	7	23
		Rank2	-	9	3	-	2	-	17	25	16
		Rank3	-	12	9	-	12	-	10	10	12
		index	-	**0.16**	**0.07**	-	**0.04**	-	**0.28**	**0.20**	**0.25**
	Male	Rank1	-	-	-	-	-	-	65	5	-
		Rank2	5	-	-	-	-	3	5	21	36
		Rank3	15	-	-	15	-	5	-	-	15
		index	**0.06**	-	-	**0.04**	-	**0.03**	**0.51**	**0.14**	**0.22**
Raya-azebo	Female	Rank1	-	17	10	-	3	-	21	-	19
		Rank2	-	12	8	-	21	-	16	-	13
		Rank3	-	12	20	-	17	-	7	-	14
		index	-	**0.21**	**0.16**	-	**0.16**	-	**0.24**	-	**0.23**
	Male	Rank1	-	-	-	-	-	-	66	-	-
		Rank2	-	-	-	22	-	9	-	-	35
		Rank3	-	-	-	27	-	13	-	-	17
		index	-	-	-	**0.18**	-	**0.08**	**0.51**	-	**0.23**

Ambesuma = Grayish yellow with varying mixture; Gebsima = Grayish with varying mixture; Kuarichama = white with red strips; Libework = White with golden breast color; Teteruma = Red with white or black spots, or white with black or red spots, or black with white or red spots

[1]Names of plumage colors are in Amharic, Official Working Language of Ethiopia.

Challenges of Village Chicken Production System

The survey indicated that disease and predator were the major and economically important constraint for the existing chicken production system (Table 7). Shortage of feed (both in quality and quantity), poor production performance of local chickens, lack of housing, lack of proper extension services, poor chicken management, external parasite and lack of medicines were also mentioned by the respondent's as an important constraints of

village chicken production system beside disease and predators. The group discussion result revealed that wild birds of prey (locally called *"chilfit")*; mongoose, cats (both domestic and wild), dogs, hyenas and monkey were the predators which attack birds. Similarly, the results of a study by Mekonen (2007) in southern region of Ethiopia; Halima (2007) in North West Ethiopia and Zemene (2011) from Amhara region indicated that predators are the major constraints in village chicken. Scavenging chickens are vulnerable to predation as they need to leave the family dwelling to scavenge for feed (FAO 2008).

Table 7. Constraints of chicken production in the study districts

Districts	Challenges						
	Disease	Predator	External parasite	Feed shortage	Lack of medicine	Lack of housing	Low productivity
Endamehoni							
Rank1	37	24	-	5	-	3	1
Rank2	9	14	2	12	2	11	6
Rank3	2	6	7	7	4	9	7
Index	**0.36**	**0.29**	**0.03**	**0.13**	**0.02**	**0.11**	**0.06**
Ofla							
Rank1	17	39	-	3	1	4	1
Rank2	20	19	-	8	2	9	6
Rank3	1	2	-	9	5	13	9
Index	**0.26**	**0.43**	**-**	**0.09**	**0.03**	**0.12**	**0.07**
Raya-azebo							
Rank1	43	16	1	3	2	3	1
Rank2	11	36	6	9	1	4	2
Rank3	4	6	12	3	5	10	5
Index	**0.40**	**0.32**	**0.07**	**0.08**	**0.03**	**0.07**	**0.03**

CONCLUSION

Village chickens are found to play an important role in supplying of high quality protein to the family food balance and providing small disposable cash income in addition to the socio-religious functions in peoples of the study area. Therefore, focus should be given on village-based chicken production system to effectively utilize the resource.

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