2015

Assessment of Village Chicken Production Systems in Kambata Tambaro and Wolaita Zones, SNNPR, Ethiopia

Aman Getiso

Fitsum Tessema

Mesfin Mergia Mekonnen

Addisu Jimma

Bereket Zeleke

Global Journal of Science Frontier Research: D
Agriculture and Veterinary
Volume 15 Issue 9 Version 1.0 Year 2015
Type : Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4626 & Print ISSN: 0975-5896

Assessment of Village Chicken Production Systems in Kambata Tambaro and Wolaita Zones, SNNPR, Ethiopia

By Aman Getiso, Fitsum Tessema, Mesfin Mekonnen, Addisu Jimma & Bereket Zeleke

Southern Agricultural Research Institute, Ethiopia

Abstract- The study was conducted in four woredas (Damot Gale,Of a, Angacha and Hadero Tunto) the first two of them found in Wolaita zone and two of them in Kambata Tambaro Zone of SNNPR, Ethiopia respectively. A cross-sectional survey was conducted in the study areas to assess village chicken production systems, productive and reproductive performance of village chicken and identifying constraints to village chicken production. Stratified random sampling technique was used to select 240 farming households and administer a pre-tested and structured questionnaire. The results showed that the mean age of interviewed farmers was 37.8±9.3 years; average family size & chicken owned per household were 6.8±2.4 persons and 8.6±1.7 heads, respectively. There was no significant differences ($p \geq 0.05$) found among the four woredas in all the above traits. The average number of clutch and eggs per hen per year of local chicken in the study areas were 4±0.87 and 12.9±3.47 respectively.

Keywords: indigenous chicken, production systems, SNNPR, Ethiopia.

GJSFR-D Classification : FOR Code: 079999

Strictly as per the compliance and regulations of :

Assessment of Village Chicken Production Systems in Kambata Tambaro and Wolaita Zones, SNNPR, Ethiopia

Aman Getiso [α], Fitsum Tessema [σ], Mesfin Mekonnen [ρ], Addisu Jimma [ω] & Bereket Zeleke [¥]

Abstract- The study was conducted in four woredas (Damot Gale,Of a, Angacha and Hadero Tunto) the first two of them found in Wolaita zone and two of them in Kambata Tambaro Zone of SNNPR, Ethiopia respectively. A cross-sectional survey was conducted in the study areas to assess village chicken production systems, productive and reproductive performance of village chicken and identifying constraints to village chicken production. Stratified random sampling technique was used to select 240 farming households and administer a pre-tested and structured questionnaire. The results showed that the mean age of interviewed farmers was 37.8±9.3 years; average family size & chicken owned per household were 6.8±2.4 persons and 8.6±1.7 heads, respectively. There was no significant differences ($p \geq 0.05$) found among the four woredas in all the above traits. The average number of clutch and eggs per hen per year of local chicken in the study areas were 4±0.87 and 12.9±3.47 respectively. The major feed resource in the study area was scavenging feed resource with supplementation of grains(wheat and Maize grain) even though the adequacy is under consideration. The results also indicated that most of the chickens share their residence with their owners (perches in the house) (79.1%) and only few of the respondents (14.1%) have separate houses for their chicken. Respondents prioritized limited skill of management practices and low productivity of the local chicken as major constraints to chicken production. Thus, technical and institutional interventions are very vital to lessen the prevailing constraints and transform the existing traditional/subsistence chicken production system to semi-commercial production system in the study area.

Keywords: indigenous chicken, production systems, SNNPR, Ethiopia.

I. Introduction

Animal production in general and chicken production in particular play important socioeconomic roles in developing countries (Alders 2004; Kondombo 2005) and the importance of village poultry production in the national economy of developing countries and its role in improving the nutritional status and incomes of many small farmers and landless communities has been recognized by various scholars and rural development agencies for the last few decades (Aberra and Tegene, 2011). Results by CSA (2013) indicate there are about 50.8 million chickens in Ethiopia of which 96.9 are local chickens, highlighting the significance of indigenous chickens as potential Farm Animal Genetic Resources of the country. Village based chicken production requires less space and investment and can therefore play an important role in improving the livelihood of the poor village family (Samson and Endalew, 2010).

Despite its importance, village chicken production system in Ethiopia is generally characterized by poor performance of local chicken in terms of egg production, small egg size, slow growth rate, late maturity, an instinctive inclination to broodiness and high mortality of chicks (Aberra, 2000; Nigussie et al., 2003; Solomon, 2003). On the other hand, local chickens are known for their ability to resist disease, thermo-tolerance, good egg and meat flavor, hard eggshells, high fertility and hatchability (Aberra, 2000).

Changing production systems and unsystematic cross-breeding are the major treats to native breeds (Hunduma et al., 2010; Besbes,2009). Recently, efforts are being made to increase the productivity of indigenous chickens of Ethiopia through selective breeding (Nigussie et al., 2010). Success of such breeding programs on village chicken requires defining the production environment and identifying breeding practices, production objectives and trait of choice of rural farmers. Moreover, to design appropriate development intervention programs on village chicken production, characterization of the production system and understanding the socio-economic implications are crucial (Pedersen, 2002).

Due to poor agricultural extension service, however, there is no documented information pertaining to the resource base, productivity and management of the chickens and the constraints in the study area. The objective of the study was to assess production system, productive and reproductive performance of village chickens and to identify production constraints in the study Woredas.

II. Materials and Methods

a) Sampling and data collection

The study was conducted in four woredas Wolaita zone (Damot Gale, Ofa) and Kambata Tambaro

Author α σ ρ ω ¥: Southern Agricultural Research Institute, Areka Agricultural Research Center, P.O. Box -79, Areka, Ethiopia.
e-mail: aman.getiso@yahoo.com

(Angacha and Hadero Tunto) of SNNPR, Ethiopia. From each woreda and a total of eight kebeles were used for the survey. From each of the selected kebeles, 30 households were randomly selected. Accordingly, a total of 240 (30hhs x 2 kebeles x 4woredas) households were used in the survey.

Data were collected using multiple subject formal survey using a pre-tested, structured questionnaire. Data collected include: household characteristics (family size, farmland holding and chicken flock size per household); various productivity of chicken and flock performance (number of clutches per year, clutch length, eggs/hen per year and inter clutch); Chicken management practices including (housing, feeding (feed availability, types and frequency of feeding), culling practices) and diseases and health care practices (major types, occurrences, symptoms and severity of diseases, and coping mechanism). Qualitative and quantitative data sets were analyzed statistically using Statistical Package for Social Sciences (SPSS) software, version 20.

III. Result and Discussion

a) Production system parameters of indigenous chicken in the study woredas

i. *Socio-economic characteristics of the households in the study woredas*

The overall average family size in the study woredas assessed was to be 6.8±2.4 head per household and was not significantly different ($p \geq 0.05$) in all study Woredas(Table 1). The results of this study referring to the average family size are similar to the findings of Deneke (2013), Zemene (2011) and Fisseha *et al.* (2010), in Tiyo, Hetossa and Dodota woredas of Arsi zone of Oromia, Goncha Siso Enese woreda of Western Amhara region and in Bure woreda of North West Amhara of Ethiopia, respectively.

Results showed that from the total of 240 households' interviewed 70.8% were males and 29.2% were females. The average age of the respondents in the study woredas was 37.8±9.3years. Assessment of educational profile of the household heads indicated that the majority were grade 5–8, followed by high school (9-12) education, illiterate and those who attended formal elementary level (grade 1- 4) education.

The average chicken population in the study Woredas was 8.6±1.7 (Table1). This result was significantly lower than the study observed by Deneke (2013) and Solomen et.al. (2013) in Tiyo, Hetossa and Dodota woredas of Arsi zone of Oromia and in Metekel zone, Northwest Ethiopia respectively. But this result is in agreement with the findings by Mulugeta and Tebkew (2013) in Awi -administrative zone, Amhara Region, Ethiopia.

Table 1 : Socio-economic characteristics of households in the study woredas (Mean±SD and Frequency and Chi-square values)

Parameter (%)	Study woredas				Over all (N= 235hh)	χ^2
	Damot Gale (N=59hh)	Ofa (N= 60hh)	Angacha (N=56hh)	Hadero and Tunto (N=60hh)		
Age of respondents (year)	38.2±7.9	40.0±10.4	37.4±8.4	35.6±9.8	37.8±9.3	
Family size of respondents (persons)	7.1±2.5	6.2±2.4	6.7±2.6	7.2±2.2	6.8±2.4	
Livestock ownership Last year (head)						
Cattle	3.6±1.8	5.0±3.5	2.7±1.6	2.6±1.9	3.5±2.5	
Small ruminants	2.5±0.9	7.0±5.0	6.1±5.0	5.0±4.2	5.1±4.4	
No. Chickens	8.5±1.7	8.5±1.6	8.9±1.4	8.5±2.0	8.6±1.7	
No. Equines	6.0±0.0	6.0±0.0	6.0±0.0	5.5±1.4	5.9±0.7	
Sex of respondents						χ^2
Male	91.7	75.0	66.1	50.0	70.8	26.291
Female	8.3	25.0	33.9	50.0	29.2	
Educational profile of respondents						
Illiterate	25.0	30.0	8.9	30.0	23.7	19.667
Elementary (1-4)	8.3	13.3	8.9	11.7	10.6	
Elementary (5-8)	38.3	31.7	33.9	36.7	35.2	
High school 9-12)	23.3	21.7	46.4	20.0	27.5	
Religion of respondents						
Protestant	90.0	98.3	94.6	96.6	94.9	12.336
Orthodox	3.3	1.7	3.6	1.7	2.6	
Catholic	6.7	0.0	1.8	0.0	2.1	
Muslim	0.0	0.0	0.0	1.7	0.4	

*hh = interviewed households; χ^2 = chi square; ** = significant $p \leq 0.01$*

b) Chicken husbandry practices

i. *Feeds and feeding*

Lack of feed supplementation is one of the char acteristics of a free-ranging backyard poultry production system (Gueye, 2003). Scavenging was the major feeding system in the study area. However, the farmers were found to supplement their chickens rarely with household refuse and grains (mainly maize, wheat, house hold scrubs and sorghum) (Table 2). Majority of the respondents provide supplementary feeds to the chicken on the bare ground followed by put in the feeder (Table 2). The results also indicated that most of respondents provide supplementary feeds by spreading the feeds simply on the ground for all chicken groups which leads to significant wastage of the feed while only a few respondents used feeder to provide supplementary. The present findings are in close accordance with the observations of Halima *et al*. (2007a) and Deneke (2013).

Even though all of the chicken owners provide supplementary feed to their chicken, it is not possible to say that it is adequate both in quantity and quality because they provide the feedstuffs without measuring. The observations are in agreement with the findings of Fisseha, (2008) and Deneke (2013). Spreading the feed on the ground for collective feeding, as was observed in the present study is in accordance with the observations of Zemene (2011) and Fisseha (2008).

Water is provided once, twice and thrice per day and *ad-libitum* to the birds all year round with particular emphasis during the dry season. The results of the study also indicated that majority of the respondents use plastic dish (mainly plastic pan locally called "*mastatebya*") (72.6%) while, some also use watering equipments made of clay (12.6%), wood trough (6.7%) and only 2.2% uses Nickel or iron dish.

Table 2 : Feed resources, feeding and watering of chicken in the study woredas

Parameter (%)	Study woredas					
	Damot Gale (N=59)	Ofa (N=60)	Angacha (N=56hh)	Hadero and Tunto (N=60hh)	Overall (N= 235hh)	χ^2
Types of supplementary feeds (%)						
Wheat grain	83.3	70.5	100	100	89.0	29.836
Maize grain	94.5	98.0	94.1	100.0	96.5	3.526
Barley grain	10.3	4.3	26.9	100	15.6	16.448
Sorghum grain	10.5	38.7	43.2	100.0	36.8	30.314
Oat grain	2.6	0.0	0.0	na	1.2	1.225
Cereal debris	69.6	68.9	77.5	100.0	78.5	15.885
Household scrubs	71.7	82.2	77.5	100.0	83.1	14.736
Bran	67.3	30.8	89.8	100.0	75.9	48.184
Cake	2.9	4.3	0.0	na	2.5	0.976
Bone meal	0.0	0.0	14.8	na	4.8	8.867
Meat meal	0.0	0.0	11.1	na	3.6	6.568
Salt	0.0	0.0	7.7	na	2.4	4.93
Sand/Bole	0.0	0.0	12.0	na	3.7	7.100
Method of feed provision (%)						χ^2
Put in feeder	52.8	16.7	50.9	46.2	42.2	43.882
On the bare ground	47.2	77.1	30.2	51.9	51.0	
Some times in feeder and on the bare ground	0.0	6.2	18.9	0.0	6.3	
Type of drinkers used (%)						χ^2
Plastic dish	71.2	66.7	78.2	74.6	72.6	32.990
Wooden Trough	9.6	1.8	0.0	15.3	6.7	
Clay made dish	17.3	14.0	10.9	8.5	12.6	
Nickel/iron dish	0.0	7.0	0.0	1.7	2.2	
Plastic and clay made dish	1.9	10.5	10.9	0.0	5.8	
Frequency of offering water per day(%)						χ^2
Once	19.2	43.9	30.9	22.0	29.1	25.75*
Twice	28.8	15.8	25.5	18.6	22.0	
Three times	25.0	8.8	16.4	30.5	20.2	
Every other day	5.8	7.0	0.0	0.0	3.1	
Adlib	21.2	24.6	27.3	28.8	25.6	

*hh = interviewed households; χ^2 = chi square; ** = significant p≤ 0.01 na= not available*

ii. *Housing and accommodation of chicken*

Housing is essential to chickens as it protects them against predators, theft, rough weather (rain, sun, cold wind, dropping night temperatures) and to provide shelter for egg laying and broody hen. Lack of construction materials (25.7%), lack of knowledge and awareness (35.1%), risk of predators (11.0%) and risk of theft (1.6%) were some of the major reasons mentioned by chicken owner farmers for not preparing a separate house for village chicken. And only 14% of the respondents constructed separate houses for their birds; the other 79.1% dwelling with their owners (perches in the house), 6% perches in the kitchen and 1.7% in the live stock house. Similar observations have also been reported by Deneke (2013), Mekonnen (2007) and Zemene (2011) from Arsi (Oromia), SNNPR and western Amhara areas of Ethiopia, respectively. From the result it could be understood that the housing management in the study area is not suitable for the well being of chicken and their products management, and thus it needs improvement. In support of this result, Melese and Melkamu (2003) reported that in some African countries, a large proportion of village poultry mortality accounted due to nocturnal predators because of lack of proper housing. This studies also indicated that majority of respondents encountered lack of knowledge (awareness) to separate poultry house (Table 3).

Table 3 : Night enclosure used and limitation to have separate houses in the study woredas

Parameter (%)	Study Woredas				Over all (N= 235hh	χ^2
	Damot Gale (N=59)	Ofa (N=60)	Angacha (N=56hh)	Hadero and Tunto (N=60hh)		
Night enclosure for chicken						
Separate shelter	5.1	0.0	30.4	21.7	14.0	62.166**
perches in the house	93.2	98.3	50.0	73.3	79.1	
perches in the kitchen	0.0	0.0	19.6	5.0	6.0	
Perches in livestock house	1.7	1.7	1.7	1.7	1.7	
Limitations to have a separate house						
lack of knowledge (awareness)	26.5	39.0	15.8	55.6	35.1	85.506**
lack of importance of poultry	0.0	0.0	2.6	0.0	0.5	
lack of construction materials	34.7	3.4	50.0	24.4	25.7	
Risk of predators	16.3	10.2	15.8	2.2	11.0	
Risk of theft	4.1	0.0	0.0	2.2	1.6	
Lack of construction material and risk of theft	0.0	1.7	7.9	2.2	2.6	
Lack of construction materials, risk of predator and risk of theft	6.1	1.7	2.6	0.0	2.6	
Risk of predator and risk of theft	10.2	28.8	2.6	2.2	12.6	
Lack of knowledge, lack of importance of poultry and lack of construction material	0.0	1.7	0.0	0.0	0.5	
lack of knowledge awareness and risk of predator	0.0	3.4	0.0	0.0	1.0	
Lack of knowledge (awareness) and lack of construction material	2.0	10.2	2.6	11.1	6.8	

*hh = interviewed households; χ^2 = chi square; ** $p \leq 0.01$*

iii. *Productivity of indigenous chicken in the study woredas*

The result of the study (Table 4) indicates that the average number of egg clutch and number of clutch per year of indigenous chicken was 12.92±3.47eggs and 4.05±0.87 respectively. This result was significantly lower than the result reported by Deneke (2013) in Arsi, Oromia. But, this result was in accordance with the result reported by Solomon et.al. (2013) in Metekel zone, Northwest Ethiopia. Moges et al. (2010) also reported similar values, 15.7, 13.2 and 14.9eggs/hen/clutch and total egg production/hen/year of 60, 53 and 55, in Bure, Fogera and Dale districts of Ethiopia, respectively.

The results presented in Table 4 also indicate that the majority of respondents (63.6%) commonly used clay as incubating materials while wood container (10.9%) and mud container (2.2%). Overall, 98.7% of respondents in the study woreds provide "*teff*" straw as bedding materials for incubation. The present finding is agree with the reports of Deneke (2013). In other parts of Ethiopia, clay pots, bamboo baskets, cartons or even simply a shallow depression on the ground were common materials and locations used for egg setting (Fisseha, 2008).

Table 4 : Productivity of indigenous chicken in the study woredas (Mean ±SD, frequency and Chi-square values)

Parameters	Study Woradas				Overall (N=231hh)	χ^2
	Damot Gale (N=58hh)	Ofa (N=60hh)	Angacha (N=55hh)	Hadero & Tunto (N=58hh)		
Average number of eggs per clutch (No.)	13.23±3.71	11.64±2.83	13.61±4.12	13.29±2.85	12.92±3.47	
Average number of clutches per hen per year (circle)	3.9±0.95	3.78±0.74	4.10±1.05	4.41±0.56	4.05±0.87	
Number of eggs /hen/month	12.9±3.3	11.4±2.5	12.5±2.2	13.3±9.1	12.5±5.3	
Frequency of incubation per hen per year (%)						
Once	0.0	6.8	1.8	0.0	2.3	38.323**
Twice	42.9	52.5	74.5	34.5	51.1	
Thrice	20.4	16.9	7.3	25.9	17.6	
Four times	36.7	22.0	14.5	34.5	26.7	
Five times	0.0	0.0	1.8	5.2	1.8	
Six times	0.0	1.7	0.0	0.0	0.5	
Materials in which the hens incubate (%)						
Mud container	2.0	0.0	5.5	1.8	2.3	59.898**
Clay	65.3	61.0	72.7	56.1	63.6	
Wooden container	12.2	8.5	3.6	19.3	10.9	
Mud and clay container	4.1	3.4	1.8	19.3	7.3	
Basket	4.1	22.0	5.5	1.8	8.6	
Mud, clay, wood container	2.0	1.7	0.0	1.8	1.4	
Plastic container	6.1	0.0	3.6	0.0	2.3	
Carton	4.1	1.7	7.3	0.0	3.2	
No container	0.0	1.7	0.0	0.0	0.5	
Bedding materials used during incubation						
Teff straw	100	96.7	100.0	98.3	98.7	4.812
Teff straw and old clothes	0.0	1.7	0.0	1.7	0.9	
Hay	0.0	1.7	0.0	0.0	0.4	

*hh = interviewed households; χ^2 = chi square; ** $p \leq 0.01$*

iv. *Indigenous Chicken culling practices in the study areas*

The result of the study (Table 4) also indicated that majority (65.2%) of the respondents experienced in culling of unwanted or less productive chickens from their flock. According to the respondent farmers, the basic reasons for culling of chicken include less productivity (8.8%), old age (5.4%) and old age and low production (59.5%) with an average culling age of 4.3 years and old age, low production and illness (25.7%). Most of the farmers (82.2%) sold the culled chicken for income generation purpose. In support of this study, Melese and Melkamu (2014) and Halima (2007) reported that about 74.7% of the reasons for culling of chicken in North West Ethiopia are poor productivity, old age and sickness as a whole.

Table 5 : Indigenous chicken culling practices in the study woredas

Parameters	Study Woredas				Overall (N=231hh)	χ^2
	Damot Gal (N=58hh)	Ofa (N=60hh)	Angacha (N=55hh)	Hadero & Tunto (N=58hh)		
Do respondents purposely cull their chicken at any time? (%)						
Yes	67.3	61.0	67.9	65.0	65.2	0.732
No	32.7	39.0	32.1	35.0%	34.8	
Major purpose of culling chicken (%)						
For consumption	2.9	0.0	2.6	5.6	2.7	17.162**
For sale (income)	94.3	91.7	74.4	69.4	82.2	
For consumption and for sale	2.9	5.6	23.1	25.0	14.4	
Major determinant factor for culling chicken (%)						
Old age	2.9	5.6	12.8	0.0	5.4	98.855**
Low production	8.8	13.9	5.1	7.7	8.8	
Bad temperament	0.0	0.0	2.6	0.0	0.7	
Old age and low production	85.3	72.2	74.4	10.3	59.5	
Old age, low production and illness	2.9	8.3	5.1	82.1	25.7	
Average culling age (mean ±Std)	4.3±1.5	4.5±1.2	4.5±0.9	3.6±1.0	4.3±1.2	

*hh = interviewed households; χ^2 = chi square ** $p \leq 0.01$*

v. *Diseases and health management of chicken in the study woredas*

The results referring to disease outbreak among the chickens in the studied woredas are presented in Table 5. Results indicates that majority of the respondents (84.4%) in the study areas experienced disease outbreaks. This indicates that disease is one of the most important constraints impairing the existing

chicken production system under farmer's management condition in the study area even though there were other constraints like lack of veterinary health service, traditional management system with limited feed supplementation, poor housing and no access of improved breeds with limitation of extension service. The major common disease observed in the study areas were respiratory disease (55.7%) followed by Newcastle disease (86.7%), Coccidiosis (39.2%) and Fowl cholera (20.2%).

This result is in line with the reports of Fisseha et al. (2007) who indicated that the major problem impairing the existing production system in Ethiopia is the high incidence of Newcastle disease. Aberra and Tegegne (2007) also indicated that Newcastle disease and fowl cholera are the major problems limiting chicken production in Ethiopia.

The results also indicate that the farmers use both traditional (ethno veterinary) and modern methods to treat the sick chicken. They use of traditional method includes using Casava leaf, Katicala smashed together, Bursa and Bisana leaf, Lemon, Timbaho, Bole, Tetracycline, Butter, Zinger, Pepper, Garlic, Tsid leaf, Misel and Mimi as a treatment. The use of ethno veterinary medicine as is being practiced is just by trial and error with no proper dosage and schedule.

Table 6 : Diseases and health management of chicken in the study woredas

Parameters	Study Woredas				Overall	χ^2
	Damot Gale (N=60)	Ofa (N=59)	Angacha (N=56)	Hadero & Tunto (N=60)	(N=235)	
Experience of chicken disease outbreaks (%)						9.167*
Yes	88.9	89.5	88.0	71.9	84.4	
No	11.1	10.5	12.0	28.1	15.6	
Poultry vaccination Campaign in the past 12 months						17.27**
Yes	17.0	0.0	20.4	27.6	16.2	
No	83.0	100.0	79.6	72.4	83.8	
Actions taken when chicken get sick						85.98**
Treat them myself	36.4	75.0	67.5	81.4	65.4	
Call in veterinarian	4.5	5.8	2.5	11.6	6.1	
Cull/kill them all immediately	25.0	0.0	0.0	0.0	6.1	
Sell them all immediately	0.0	1.9	2.5	0.0	1.1	
Treat them myself and call in veterinarian	22.7	7.7	7.5	4.7	10.6	
Treat them myself and take to veterinary clinic	11.4	0.0	12.5	0.0	5.6	
Treat them myself and sell healthy birds	0.0	3.8	0.0	0.0	1.1	
Keep them until cured or die	0.0	3.8	0.0	0.0	1.1	
No treatment	0.0	1.9	0.0	0.0	0.6	
Take to veterinarian	0.0	0.0	7.5	2.3	2.2	
Common chicken disease encountered in the study areas (%)						
Respiratory disease						
Yes	80.4	84.3	92.9	100.0	55.7	5.54
No	19.6	15.7	7.1	0.0	13.3	
Newcastle disease						31.82**
Yes	30.8	58.0	60.6	100.0	86.7	
No	69.2	42.0	39.4	0.0	44.3	
Coccidiosis						7.02*
Yes	24.4	42.3	55.6	na	39.2	
No	75.6	57.7	44.4	na	60.8	
Fowl cholera						8.52*
Yes	17.9	21.2	14.3	100.0	20.2	
No	82.1	78.8	85.7	0.0	79.8	
Local treatment used by farmers						157.6**
Casava leaf and caticala smashed together	15.4	0.0	0.0	0.0	1.9	
Casava, bursa and Bisana (Chroton megala) leaf	69.2	2.5	5.1	0.0	11.5	
Casava, timbaho leaf and mitmita smashed together	7.7	7.5	0.0	0.0	3.8	
Lemon, Bole, tetracyclin and butter	0.0	50.0	28.2	16.7	31.7	
Zinger, paper, sensel, gas, butter and garlic	0.0	0.0	23.1	8.3	9.6	
Lemon, casava, TTC and garlic	7.7	17.5	2.6	0.0	8.7	
Tsid leaf	0.0	5.0	0.0	0.0	1.9	
Grawa, mitmita and sensel smashed and mixed with water	0.0	0.0	17.9	0.0	6.7	
Peper with water	0.0	0.0	5.1	0.0	1.9	
Misel + butter	0.0	0.0	2.6	0.0	1.0	
Hebicho + tetra	0.0	0.0	0.0	8.3	1.0	
Tetra + garlic + lemon	0.0	0.0	2.6	25.0	3.8	
No treatment is given	0.0	10.0	7.7	16.7	8.7	
Tetra and lemon with butter	0.0	2.5	0.0	25.0	3.8	
Mimi + lemon + tetrea	0.0	5.0	0.0	0.0	1.9	
Timbaho with water	0.0	.0	5.1	0.0	1.9	

Poultry vaccination campaign held in the study areas					17.27**
Yes	17.0	0.0	20.4	27.6	16.2
No	83.0	100.0	79.6	72.4	83.8

*hh = interviewed households; χ^2 = chi square; ** = significant p≤ 0.01*

vi. *Predation (impact of predators)*

Predation was the other economically important constraint for village chicken production system of the study area. Halima (2007) also reported that predation was one of the major village chicken production constraints in North-West Ethiopia. Bell and Abdou (1995) also reported that a large proportion of village birds were being lost due to predators in some African countries.

The respondents (96.1%) of the study areas also emphasized that predators were the second most constraints of the chicken improvements. According to village chicken owners, fox were the first major and dangerous type of predators (92.1%) affecting village chicken in the study area. The attack of wild birds was very serious on young chicks (73.2%). In addition to fox, wild cats (89.4%), wild cat locally known as "Usua" or "Shelemetma" (86.6%), Hawk locally known as "Geche" or "Chilifit" (81.6%) , wild bird (kite) "Tinglie" or "Amora" (67.2) and Leopard locally known as *"Aner"* (59.8%), were the other economically important predators affecting village chicken production in the study weredas'.

The results of a study by Mekonnen (2007) in SNNPRS and Zemene (2011) from Amhara region indicated that predators are the major constraints in chicken production in their study areas. Similar results have also been reported by Conroy *et al.* (2005) from India. Scavenging chickens are vulnerable to predation as they need to leave the family dwelling to scavenge for feed (Solomon, 2008).

Table 7 : Poultry predator and control Strategy

Parameters	Study Woredas				Overall (N=232hh)	χ^2
	Damot Gale (N=59hh)	Ofa (N=60hh)	Angacha (N=54hh)	Hadero & Tunto (N=59hh)		
Presence of predators						4.17
Yes	100.0	96.7	94.4	93.2	96.1	
No	0.0	3.3	5.6	6.8	3.9	
Werekena (fox)						10.44*
Yes	83.3	96.8	91.3	100.0	92.1	
No	16.7	3.2	8.7	0.0	7.9	
Aja (Wild dog)						12.55*
Yes	69.8	100.0	0.0	100.0	75.8	
No	30.2	0.0	100.0	0.0	24.2	
Usua (wild cat)						19.1**
Yes	69.6	88.9	96.0	100.0	86.6	
No	30.4	11.1	4.0	0.0	13.4	
Zuresa (leopard)						31.46**
Yes	28.2	75.0	95.7	100.0	59.8	
No	71.8	25.0	4.3	0.0	40.2	
Geche (Hawk)						42.25**
Yes	52.9	94.9	91.4	100.0	81.6	
No	47.1	5.1	8.6	0.0	18.4	
Tinglie (kite)						14.29**
Yes	60.5	36.4	100.0	100.0	67.2	
No	39.5	63.6	0.0	0.0	32.8	
Abyssinian cat						12.15**
Yes	80.7	80.0	100.0	100.0	89.4	
No	19.3	20.0	0.0	0.0	10.6	
Control strategy of Werekena						55.37**
Look after	80.0	0.0	0.0	23.8	20.3	
Keep under basket	0.0	14.8	0.0	0.0	6.2	
Keep in the fenced compound	10.0	7.4	16.7	14.3	10.9	
Keep in the house	0.0	7.4	0.0	0.0	3.1	
Chasing and/or killing	10.0	29.6	83.3	4.8	23.4	
No control	0.0	40.7	0.0	57.1	35.9	
Control Strategy of Geche						74.55**
Look after	100.0	0.0	0.0	9.5	10.5	
Keep under basket	0.0	45.5	70.0	4.8	31.6	
Keep in the fenced compound	0.0	0.0	0.0	14.3	5.3	
Keep in the house	0.0	0.0	30.0	0.0	5.3	
No control	0.0	54.5	0.0	71.4	47.4	

*hh = interviewed households; χ^2 = chi square; ** = significant p≤ 0.01*

IV. Conclusion and Recommendations

Chicken production is an essential part of livestock production system and the results of the present study show that village chicken plays a significant role in the livelihood of the farming community in the study areas. Almost every farmer in each village practices chicken rearing to fulfill various household needs.

Newcastle disease followed by predator attack was the major constraints to chicken production in the study area. Other constraints included lack of capital and credit service to expand their chicken production, poor management practices on feeding, housing and disease control, lack of technical information and low productivity of the local chicken. Together, these factors resulted in low level of productivity and decreased the direct benefit of the farmers.

Therefore, appropriate intervention should be in chicken disease and predator control activities., breed improvement strategies, providing frequent extension services interims of regular training to farmers focusing on disease prevention, improved housing, feeding and watering of chicken, product handling and proper marketing are highly recommended so as to improve productivity of chicken and being benefited from the existing market and high demand of products. Control of diseases, mainly ND, could be achieved through improvement in veterinary and advisory services. The problem of predators could be reduced by convincing farmers to construct predator-proof separate chicken houses, especially during the night. Young chicks needed to stay in protected areas for the first 4–5 weeks of life, as this is the time when they are most vulnerable to predators and other accidents. Introduction and utilization of locally made hay−box brooders should be encouraged to provide extra care for young chicks and to reduce mortality.

References Références Referencias

1. Aberra M (2000). Comparative studies on performance and physiological responses of Ethiopian indigenous ('Angete-melata') chicken and their F1 crosses to long term heat stress. PhD thesis. Martin-Luther University, Halle-Wittenberg, Berlin, Germany. 182 pp.
2. Aberra Melesse and Tegene Negesse, 2011. Phenotypic and morphological characterization of indigenous chicken populations in southern region of Ethiopia. Animal Genetic Resources, 2011, 00, 1–13. © Food and Agriculture Organization of the United Nations, 2011 doi:10.1017/S2078633611000099
3. Alders R. 2004. *Poultry for profit and pleasure.* FAO Diversification Booklet 3. FAO (Food and Agriculture Organization of the United Nations), Rome, Italy.
4. Bell JG, Abdou I (1995). Dynamics of village poultry production in the Keita region of Niger. Nig. J. Anim.Prod., 22:141-144.
5. Besbes B (2009). Genotype evaluation and breeding of poultry for performance under suboptimal village conditions. World's Poultry Sci. J., 65:260-27.
6. Conroy, C., N. Sparks, D. Chandrasekaran, A. Sharma, D. Shindey, L. R. Singh, A. Natarajan and K. Anitha, 2005. The significance of predation as a constraint in scavenging poultry systems: some findings from India. Livestock Research for Rural Development, 17 (6). http://www.lrrd.org/lrrd17/6/conr17070.htm. (Accessed on July 10, 2010).
7. Deneke Negassa,2013. Production system and morphological characterization of indigenous chicken in tiyo, hetossa and dodota woredas of arsi zone, Oromia, Ethiopia. MSc. Thesis. Hawassa University, Ethiopia.
8. Fisseha Moges, 2008. Studies on production and marketing systems of local chicken ecotypes in Burie district of North West Amhara. MSc thesis. Hawassa University, Hawassa, Ethiopia.187p.
9. Fisseha Moges, Aberra Melesse and Tadelle Dessie, 2010. Assessment of village chicken production system and evaluation of the productive and reproductive performance of local chicken ecotype in Bure district, North West Ethiopia. African Journal of Agricultural Research Vol. 5(13), pp. 1739-1748, 4 July, 2010 Available online at http://www.academicjournals.org/AJAR.
10. Halima Hassen, F.W.C. Neser, E. Van Marle-Koster and A. De Kock, 2007a. Village-based indigenous chicken production system in north-west Ethiopia. Tropical Animal Health Production 39:189–197.
11. Hunduma D, Regassa C, Fufa D, Endalew B, Samson L (2010). Major constraints and health management of village poultry production in rift valley of Oromia, Ethiopia. American-Eurasian J. Agric. Environ. Sci., 9:529-533. Addis Ababa, Ethiopia.
12. Kondombo SR. 2005. *Improvement of village chicken production in a mixed (chicken–ram) farming system in Burkina Faso.* PhD thesis. Wageningen Institute of Animal Sciences, Animal Nutrition Group, Wageningen University, The Netherlands. 208 pp.
13. Mekonnen G/Egziabher, 2007. Characterization of smallholder poultry production and marketing system of Dale, Wonsho and Loka Abaya Weredas of Southern Ethiopia. MSc. (Animal Sciences) Thesis. Hawassa University, Awassa, Ethiopia. http://www.ipms 41ethiopia.org. (Accessed: 12 November 2011).
14. Melese Gashu and Melkamu Bezabih, 2014. Assessment of Chicken Production under Farmers Management Condition in East Gojam Zone,

Amhara Regional State, Ethiopia. Debre Markos University, College of Agriculture and Natural Resources, Department of Animal Sciences, Po.Box, 269, Debre-markos, Ethiopia. Greener Journal of Animal Breeding and Genetics.pp0-10.

15. Moges F, Azage T, Dessie T (2010). Indigenous chicken production and marketing systems in Ethiopia: Characteristics and opportunities for market-oriented development. IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 24. Nairobi, Kenya, ILRI.
16. Mulugeta Ayalew and Tebkew Adane, 2013. Evaluation of indigenous chicken productivity by using a questioner survey, in selected Chagni town, Awi -administrative zone, Amhara Region, Ethiopia. World Journal of Agricultural Sciences Vol. 1(1), pp. 026-035.
17. Nigussie D, Alemu Y, Tadelle D, Samuel W (2003). Onstation and on-farm evaluation of the 'hay-Box chick brooder' using different insulation materials at Debre Zeit Agricultural Research Center and Denbi village, Adaa woreda. In: Proceedings of the 10th annual conference of the Ethiopian Society of Animal Production (ESAP), August 21-23, held in Addis Ababa, Ethiopia. pp. 211-216.
18. Nigussie D, Van der Waaij LH, Dessie T, Van Arendonk JAM (2010). Production objectives and Trait preferences of village poultry producers of Ethiopia: implications for designing breeding schemes utilizing indigenous chicken genetic resources. Trop. Anim. Health Prod. 42:1519-529.
19. Pedersen C (2002). Production of semi-scavenging chickens in Zimbabwe. PhD thesis. Royal Veterinary and Agricultural University, Copenhagen, Denmark. 213pp.
20. Solomon D (2003). Growth performance and survival of local and White Leghorn chickens under scavenging and intensive systems of management in Ethiopia. Livestock Research for Rural Development (15)11 www.lrrd.org/lrrd15/11/deme 1511.htm.
21. Solomon Demeke, 2008. Poultry sector country review. FAO, Animal Production and Health Division. Emergency Centre for Transboundary Animal disease, Socio-economics, Production and Biodiversity Unit. Jimma, Ethiopia.
22. Solomon Zewdu, Binyam Kassa, Bilatu Agza and Ferede Alemu, 2013. Village chicken production systems in Metekel zone, Northwest Ethiopia. Ethiopian Institute of Agricultural Research (EIAR), P.O. Box -2003, Ethiopia. Wudpecker Journal of Agricultural Research Vol. 2(9), pp. 256 - 262.
23. Zemene Worku, 2011. Assessment of Village Chicken Production System and the Performance of Local Chicken Populations in West Amhara Region of Ethiopia. MSc thesis submitted to Hawassa University college of Agriculture. 118 pp.

This page is intentionally left blank