COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

ASSESSMENT ON PRODUCTIVE AND REPRODUCTIVEPERFORMANCE OF SASSO CHICKEN BREED DISTRIBUTED IN CHEHA WOREDA, GURAGE ZONE, ETHIOPIA

A SENIOR RESEARCH PROJECT REPORT SUBMITTED TO DEPARTMENT OF ANIMAL PRODUCTION AND TECHNOLOGY FOR THE PARTIAL FULFILLMENT OF B. SC DEGREE IN ANIMAL PRODUCTION AND TECHNOLOGY

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Assessment onProductive and Reproductive Performance of Sasso Chicken Breed Distributedin Cheha Woreda of Gurage Zone, SNNPRs, Ethiopia

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DEDICATION

This work is dedicated to our families for their great sacrifice, ceaseless prayers, support and encouragements.

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LIST OF ABBREVATIONS

CSA	Central Statistical Agency
DZARC	Debre Zeit Agricultural Research Center
FAO	Food and Agricultural Organization
GDP	Gross Domestic Product
HH	House Hold
MOA	Ministry of Agriculture
ND	Newcastle Disease
NGOS	Non-Governmental Organization
RIR	Rhode Island Red
SNNPR	South Nations Nationalities and Peoples Region
SPSS	Statistical Package of Social Science
WLH	White Leg Horn

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ABSTRACT

A quick survey study was conducted with the objectives of assessing the productive and reproductive performances of Sasso chicken breed distributed in three kebeles ofCheha Woreda, Guraghe Zone, SNNPRs, Ethiopia. Totally, 60 purposively selected respondents (20 from each kebeles) were included in the study. The data collected was analyzed using SPSS version 20 (SPSS, 2017) using descriptive statistics. According to the respondents most of the farmers were currently rearing more Sasso breeds (8.6667±.12274)than their own local chickens(2.27±.247) in the study area. Current study exposed that most of respondents in all kebeles select Sasso for egg production, having large body size and producing high amount of meat. An average eggs laid/year/bird of Sasso (164.7500±2.33018) was higher than local chicken breeds (41.2167±.58420). Average age at first laying of Sasso (4.5667±.09009) was earlier than local chicken (6.8167±.13125) months. The current result also revealed that the slaughter age of Sasso(4.0167±.11763) is earlier than that of local chicken(7.2000±.14022).The result of study also indicated hatchability of Sasso(51.4137%) is lower than that of local chicken(82.2883%). They mentioned predators (45%), diseases (30%), feed shortage(20%) and lack of veterinary service (5%) were ranked as the first major chicken production constraints in Cheha woreda. There should be an experienced extension worker that informs farmers to construct predator proof and provision of current chicken management practices.

Key words: *Breed, Cheha, Chicken, Guraghe, Performance, Productive, Reproductive,Sasso, Woreda, Zone*

1. INTRODUCTION

1.1. Background of Study

Animal production in general and chickens in particular plays an important role in socio - economic development, providing delicious food for the rapidly growing human population, serve as source of an income and creating employment to many of the youths, particularly in Ethiopia (Alders, 2004; Salam, 2005).

Ethiopia is believed to have the largest livestock population in Africa According to CSA(2009),Ethiopia owns 57.71 million cattle 293,332,382 sheep,29,112,936 goats, 2,033,115 horses,7,428,037 donkeys, 400,329 Mules,1,264,106 Camels, 56,886,719 Chickens. A Central Statistics Agency (CSA) (2015) report revealed that 95.86% of the total chicken population comprises indigenous birds, while 2.79 hybrids and 1.35% are exotic breeds.Rural chicken 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 (Aberra, 2000).In most part of Ethiopia, village chicken represents a significant component of the rural household livelihood as a source of cash income for immediate house hold expenses and nutrition.The production of both egg and chicken meat has certainly assisted in reducing the gap in the supplies of animal protein for human consumption (Tadelle and Ogle,2001).

Many study result indicated that research in promoting of village chicken production has concentrated on improvement in management while ignoring the potential role of socio-economic issues, such as marketing.However, lack of recorded data on the performances of chicken and all aspects of management, lack of regular chicken health program and market information makes it difficult to assess the importance and contributions of the past attempts to improve the sector (Fisseha *et al.*,2010a**,**Mekonnen *et al.*, 2007).In the past years Sasso exotic chicken breed has been distributed to the different woredas of Guraghe zone as a remedy for series shortage of consumable eggs. After distribution it was observed that there is an increase in the price of an egg (Personal communication with zonal chicken expert, Mr Fikadu Desse). But there was no documented information on theperformances of high yielding layers like

Sassochicken breeds distributedand the major reasons for the high price of egg in Cheha woreda, in Gurage zone of SNNPR state.As a result systematic study was required to assess the productive and reproductive performances of Sasso chicken breed distributed in study area.Therefore, this piece of reaserch project was conducted with the following objectives:

1.2. Objectives of the Study

1.2.1. General Objective

- To assess the productive and reproductive performances of Sasso chicken breed distributed in Cheha Woreda, Guraghe Zone, SNNPRS, Ethiopia.

1.2.2. Specific Objectives

- To assess the productive performances of Sasso chicken breed in the study area.
- To assess the reproductive performances of Sasso chicken breed in the study area

1.3. Significance of the Study

The significant of this study was to generate base line information on the productive and reproductive performance of Sasso chicken breed in cheha woreda and to indicate gaps for the improvement of chicken sector in the study area. Information on production and reproduction performances of chicken, constraints and opportunities will be identified and documented. Appropriate recommendations and directives suggested for possible further interventions will be forwarded. In addition, this work is also typical on its contribution for Academic purpose, research organization, NGOS, Ministry of organization and research Development in the country.

1.4. Scope and Limitation of the Study

This study was focused on assessment of the productive and reproductive performance of Sasso chicken breed distributed in Cheha Woreda. Due to the possible shortage of time, resources, and finance (money), the study was limited only in one woreda and small numbers of chicken raisers who had/has Sasso chicken breeds.

1.5. Research Questions

- What is the current productive performances of Sasso chicken breed in the study area ?
- What is the current reproductive performances of Sasso chicken breed in the study area?

2. LITERATURE REVIEWS

2.1. Productive Performances of Exotic Chicken Breeds in Ethiopia

Chicken production performance is affected by factors such as breed and strain of chicken used, environmental conditions in chicken house, management practices and feed and feeding management (Bell and Weaver, 2002).The knowledge of performance of economic traits in chicken is important for the formulation of breeding plans for further improvement in production traits. Growth and production traits of a chicken indicate its genetic constitution and adaptation with respect to the specific environment (Ahmed and Singh, 2007). In Ethiopia, the production performance of exotic chickens needs regular monitoring to identify their potential productivity of the birds. According to Fisseha *et al.* (2010a) lack of recorded data on the productive performance of chicken at village levels makes it difficult to assess the importance and contributions of the past attempts to improve the sector. However, some finding indicates the performance of exotic chickens under intensive and scavenging production systems.The productive performance of exotic chickens are high, which includes egg production,clutch number, average number of eggs laid per clutch, average days per clutch, average number of eggs per hen per year, slaughter age and weight of chickens compared to that indigenous chickens.

2.1.1. Egg Production

Exotic chickens' produces large number of eggs and is large in size than indigenous chickens.The egg production potential of exotic breeds of chicken kept under intensive condition produces around 250 eggs /year/hen with an average egg weight of 60gm (Haftu, 2016). In Tigray, exotic hens produce three times more eggs than the local hens both in intensive and scavenging production systems (Gebreselassie *et al.*, 2015). The egg production performances of the Egyptian Fayoumi, Rhode Island Red (RIR) and White Leghorn (WLH) reported in Northern Ethiopia were 156,185 and 176 eggs/hen/year with average egg weight of 43, 52.5 and 52.1gm, respectively under smallholder farmers (Abraham and Yayneshet, 2010). Similarly, Tesfa *et al* (2013) reported that, the egg weight of Fayoumi chicken under Adami Tulu Research center was 44.3gm.

Aman *et al*(2017a) reported that, the average annual egg production of Sasso breed were 229.14 eggs/ hen/ year in SNNPE. In Adaʻ'a and Lume districts of East Shewa, the average annual egg production of Potchefstroom Koekoek under smallholder farmers, were reported 187.04 eggs / hen / year (Desalew *et al.,* 2013). The average egg weight is 55.7gm and the color of the eggs is brown (Ramsey *et al.*, 2000). This breed is one of the most promising breed, second to white leghorn and Fayoumi in terms of hen-housed egg production and hatchability (Grobbelaar *et al.*, 2010). The Egg production potential of improved Horro chicken breed was increased from 34 eggs/hen/year to 79 eggs/year within eight generations of mass selection at DZARC (Fasil *et al*., 2016).

2.1.2. Clutch Number

The clutch numbers of chickens in Ethiopia is different at different production and management systems. According to CSA (2016) report the national average clutch number of Ethiopia indigenous chicken was 4 per year. The number of clutch periods showed by local hens per year is 3.8, 2-6 and 3.7 in Bure, Fogéra and Dale, respectively (Fissaha *et al.*, 2010).

Average number of eggs laid per hen per clutch was 13.6 for local hens ranged from 9 to 18 eggs, 25.7 for cross breed hens ranged from 15 to 35 eggs and 44.4 for exotic breeds ranged from 30 to 65 eggs (Alem, 2015). The average number of clutches per year per he was 3.2 for local hens ranged from 2 to 5 with an average clutch length of 21.6 days ranged from 15 to 28 days, 3.1for cross breed hens ranged from 2 to 4 with an average clutch length of 31.6 days ranged from 18 to 40 days and 3.2 for exotic breeds with average clutch length 44.4 days (Alem, 2014). Relatively small number of clutch per year (2 to 3) but longer clutch size (69 days) was reported (Kugonza *et al*., 2008) in Eastern Uganda. In addition 4 cycles of broodiness were recorded per year in hens with an average duration of 12 to 15 days per clutch in Kashmir (Iqbal *et al.*, 2008).

2.1.3. Slaughter Weight

Bogale (2008) indicated that the meat production ability and growth performance of indigenous chicken are limited and local males may reach 1.5kg live weight at 6 months of age and females about 30% less. Teketel (2004) reported that the local stocks reached 61 % and 85 % of the body weight of White leghorn (WLH) at 6 months of age. Moreover, Abebe (2006) reported that local chicken in Eastern Ethiopia attained 71.5 % of the body weight of WLH at 6 months of age.On the contrary, Solomon (2003) reported that there was no difference between White Leghorn and indigenous chickens raised under scavenging condition in mean daily body weight gain at 2 months of age.

Sasso is a commercial breed originated from France and it has distributed to different regions of Ethiopia (Fasil *et al.,* 2016).Aman *et al.* (2017a) reported that, mature body weight of Sasso hens and cocks of the breed were 2.73 kg and 2.98 kg respectively, in SNNPE. (Nigussie *et al.,* 2011) reported that, improved Horro female chickens were 388.3gm and 572.7gm at 12 and 16 weeks of age and males were 428.0 gm and 620.9 gm at 12 and 16 weeks of age.

2.2. Reproductive Performances of Exotic Chicken Breed in Ethiopia

Reproductive cycle takes longest time for indigenous than exotic chickens because they require long time to reach sexual maturity age and replace parent stock by traditional broody hens which require long time to recover the reproductive cycle.

2.2.1. Age at Sexual Maturity

Age at the first egg lay or age at sexual maturity is an important trait in egg producing strains. The average age of sexual maturity of cockerels was 25.2wks and the average age of pullets at first lay was 25.4 wks for exotic breeds under backyard chicken production system in the central zone of Tigray (Alem, 2015).Sasso is a commercial breed originated from France and it has distributed to different regions of Ethiopia (Fasil *et al.,* 2016). Aman et al.(2017a) reported that, age at sexual maturity of the female Sasso breed were 4.76 months. Improved Horro chickens attained sexual maturity at an average of 190 days (Nigussie, 2011).Demeke (2004& 2008) reported that the Sexual maturity of White Leghorn under intensive and extensive management ranged from 149-169 days.

2.3. Major Constraints of Exotic Chicken Production and Reproduction Performances

2.3.1. Diseases and Predators

According to Moges *et al.* (2010) and Mengesha *et al.* (2011) under farmer management poultry production, prevailing disease, predators and veterinary services were reported as the major constraint. Moges *et a*l (2010) suggestion improvement in veterinary and advisory service could help to achieve control of diseases at village level. According to Besbes and B., (2009) as well as Halima and H., (2007) high incidence of chicken diseases, mainly (NCD) is the major and economically important constraints for village exotic chicken production systems. High mortality of chicks under village chicken production in the central highlands of Ethiopia was due to diseases, parasites, predation, lack of feed, poor housing and insufficient water supply (Tadelle and Ogle, 2001).

2.3.2. Lack of Feed Availability

According to Demeke (2004), Dessie *et al* (2013) and Mazengia *et al* (2012) poultry feed and nutrition is one of the most critical constraints to poultry production under both the rural small holder and large-scale systems in Ethiopia. The problem is mainly associated with lack of processing facilities, inconsistent availability and distribution and sub-standard quality of processed feeds. Regular availability of good quality feed ingredients and a fully balanced complete feed are essential for efficient poultry production. Grains, cereal by-products, oil seed cakes and meat and bone meal are obtained locally.The shortage in the supply of grains especially corn is improving due to the increase in the production of corn in recent years. The most serious problems arise from the unavailability of suitable micro-nutrient sources: vitamins and minerals.

2.3.3. Lack of Proper Housing

According to Dwinger *et al* (2003) lack of housing is one of the constraints of the village exotic poultry production systems. In some African countries, a large proportion of village poultry mortality accounted due to nocturnal predators because of lack of proper housing. Some research works also indicated that the mortality of scavenging birds reduced by improved housing.

3. MATERIALS AND METHODS

3.1. Description of Study Area

This study was conducted in Cheha district of Guraghe Zone, Southern Nations, Nationalities and Peoples Regional State (SNNPRS) of Ethiopia. The capital of the district, Endbir, is located at 188 km south of Addis Ababa on the way to Wolkite town, the capital of the Zone. The district was classified in to Degas, Woina degas and Kola agro climatic zones. The geographical location of the study area extends from 8° 00' 18.9" to 8° 15' 28.53" N and 37° 35' 46.48" to 38° 03' 59.59" E at an elevation ranging from 900 to 2812 meters above sea level (Cheha woreda agricultural office, 2019). It has a total area of 57313.85 ha of which 40190 ha is cultivated. The district constitutes 38 rural kebeles. As it is true to the other parts of Ethiopia, rainfall and temperature conditions depend on elevation. The average annual rain fall of the area is about 1268.04 mm and the average maximum and minimum temperature in the study area is 24.97 ^{o}C and 10.69 ^{o}C, respectively. In cheha about (155,107) populations, which 76,002 and 79, 105, male and female, respectively (Cheha Woreda Health Office, 2019).

3.2. Data Sources and Methods of Data Collection

In order to achieve the objectives of the studyused both primary and secondary sources of data were used. Primary data was collected through interview and personnel observation during data collection andsecondary data was collected from published and unpublished documents.

3.3. Sampling Size and Sampling Techniques

From the total of 38 kebeles found in Cheha district; only three Kebeles namely, Yerezeb, Grarna Yefermaze and Endebera kebele were purposively selected based on their experience with Sasso chicken breed and their accessibility to main road. Purposive sampling was also used to select 20 HHs from each kebele based on their experiences with Sasso breed. A total of 60 HHs were used for this study.

3.4. Methods of Data Analysis

All collected data were subjected to statistical analyses with the help of SPSS version 20 (SPSS, 2017). Next to this, the data was analyzed through using simple descriptive statistics like mean; percentages and standard error were used to present the results.

4. RESULTS AND DISCUSSION

4.1. Demographic Characteristics of the Respondents in the study area

The general household characteristics of respondents were distributed by sex, marital status, religion and educational status was presented in table 1 below. From the total interviewed respondents, the majority (91.7%) of the respondentswere females while the remaining were8.3%of them males. The educational level attained by the majority of the household heads in the study area were elementary school (70%) followed by write & read(18.33%) and illiterate (11.7%). The result of the current study on illiteracy was lower than the finding of Getachew (2014) who reported 26.67% of the respondents in Bench Maji zone were illiterate and Fayera (2016) who reported 29.6% of the respondents in Western Oromia were illiterate.Concerning the religious status of respondents, about 25%, 50%, 10% and 15% were Muslim, orthodox, protestant and catholic, respectively.Among respondents from all district 100% were married.

Table 1. Demographic Characteristics of the Respondents in Cheha District

Characteristics		**Study Kebele**			
	Variables	**Yerezeb (N=20hh)**	**Grarna yefermaze(N=20hh)**	**Endebera (N=20hh)**	**Overall (N=60hh)**
Sex of the respondents	Male	0%	25%	0%	91.7%
	Female	100%	75%	100%	8.3%
Educational status of respondents	Write and read	15%	15%	25%	18.33%
	Elementary(1-8)	70%	75%	65%	70%
	Illiterate	15%	10%	10%	11.7%
Religious of respondents	Muslim	15%	20%	40%	25%
	Orthodox	60%	60%	20%	50%
	Protestant	5%	15%	10%	10%
	Catholic	20%	5%	30%	15%
Marital status of respondents	Married	100%	100%	100%	100%
	Single	0%	0%	0%	0%

4.1.1.Age and Family Size of the Respondents in the study area

Age and family size of respondents were summarized in figure 1 below. The majority age of the respondents in the study area ranges between 30- 40 years. The average age of the interviewed respondents was about 35.6 years equally in the study area. The overall average family size in the study woredas was assessed to be 6.4833head per household.The results of this study pertaining to the average family size is similar to the findings of Zemene (2011) and Fisseha *et al*. (2010), in Goncha Siso Enese woreda of Western Amhara region and in Bure woreda of North West Amhara of Ethiopia, respectively.

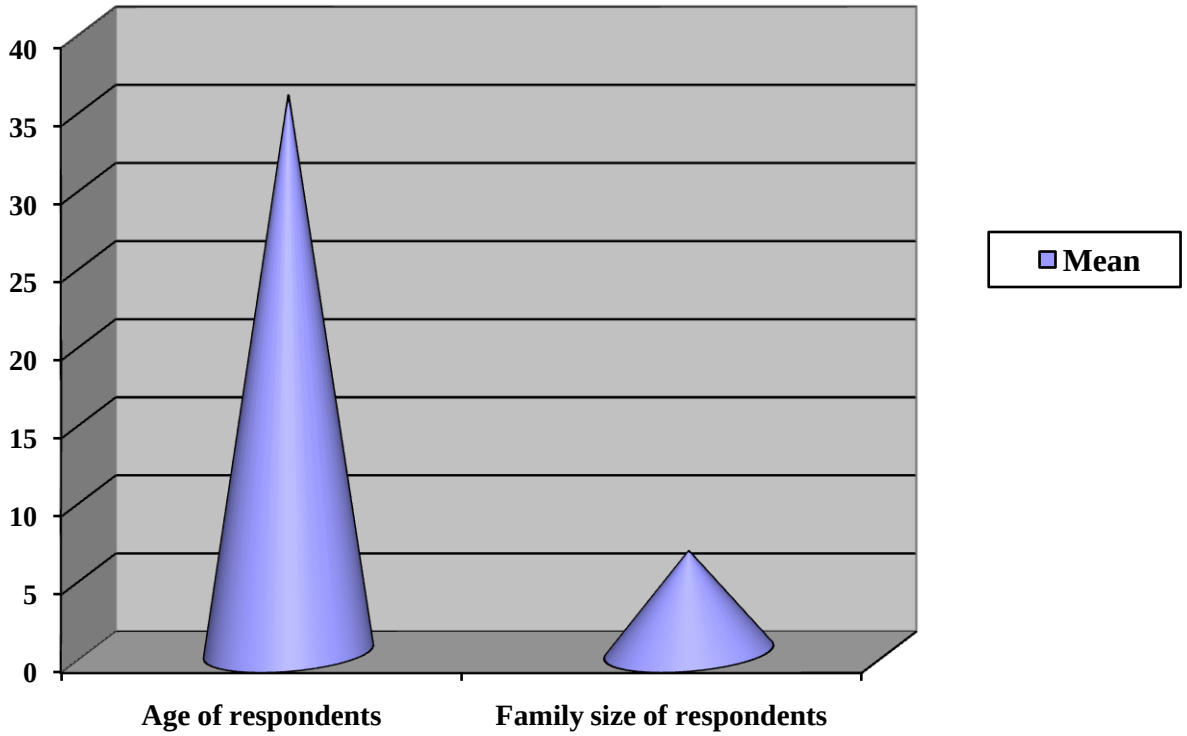

Figure 1. Age and family size of respondents in the study area

4.2.Chicken holdings and ownership patternsin Cheha district

Based on the information gathered from farmers interviewed most of the farmers obtained Sasso breed chickens by gift fromNGOS (95%)and purchasing from government about(5%)in the form of cockerels and pullets (42 days age).Those who had local chickens were about 76.67% and remaining had no local chickens (23.33%).

Table 2. Chicken holdings and ownership patterns in Cheha district

Parameter	Study kebele			
	Yerezeb (N=20hh)	Grarna yefermaze (N=20hh)	Endebera (N=20hh)	Overall (N=60hh)
Sasso chicken breed				
Yes	100%	100%	100%	100%
No	0%	0%	0%	0%
Local chicken breed				
Yes	65%	75%	90%	76.67%
No	35%	25%	10%	23.33%
Source of Sasso				
Purchased from GOV.T	0%	15%	0%	5%
Giftfrom NGOS	100%	85%	100	95%

4.3. Flock size and Composition of the two Breeds

The overall flock size of respondent farmers in the study districts were 2.27chickens per household for local chicken and 8.67for Sasso chickens per household(Table 3).The current flock size was lower than the study by Mammo (2006) for local chicken and higher for Sasso reported the overall flock sizes in Jamma Weredaas 4.17and 1.08 for locals and exotics, respectively.The flocks were dominated by Sasso chicken breeds (8.6667).Farmers had the interest for Sasso chicken breed withaverage future flock size of17.267Sasso breeds.

Table 3.Flock Size and Composition of two Breeds

Parameters	Endebera(N=20)	Yerezeb(N=20)	Grarna yefermaze(=20)	Total(N=60)
	Mean	Mean		Mean
Number of local chicken	2.9	2.35	1.55	2.27
Number of Sasso chicken	8	10.	8	8.67
Flock size of interested Farmers for future expansion	17.3	18	16.5	17.267

4.4.Productive and Reproductive Performances of different Breeds in the study area

The productive and reproductive performances of different breeds in the study area were summarized below (Table 4).Information on egg production performance of different types of chicken reared in Cheha district was different in many criteria: Breed, health of chicken, feed and water availability were the most determinant factors for the chicken productivity. The average egg per hen per year of Sasso chicken were reported in the studyarea was about 164.7500±2.33018.The result of current study was lower than Aman *et al*.(2017a) who reported that the average annual egg production of Sasso breed were 229.14 eggs/ hen/ year in SNNPR.

Age at first egg lay or age at sexual maturity is an important trait in egg producing strains from the economic standpoint.Average age at first egg of Sasso in the study area was reported as 4.5667±.09009 months. The current result was relativelybetter than Aman et al.(2017a) who reported that age at sexual maturity of the female Sasso breed was 4.76 months.The result of current study was also better than result of Desalew (2012) who reported age at first lay of Sasso breed was 21.40 weeks. Average number of egg per clutch of Sasso in the study site were reported as 42.5167±.68498.The result of current study was lower than (Alem,2015) who reported that an average of 44.4 eggs for exotic breeds per clutch with a ranged from 30 to 65

eggs.The number of days per clutch of Sassobreed in the study site were reported 47.6500±1.03138. The current result was disagreed with (Kugonza *et al.*,2008)who reported longer clutch size (69 days) in Eastern Uganda. The slaughter age of Sasso breed in the area was about 4.0167±.11763months.The current result is earlier than the finding of Desalew (2012) who reported that Sasso female at 20 week in SNNPR, Ethiopia.The length of productive (months)age ofSasso breed in the study site were 20.5667±.18620 in study area. The majority of the respondents said that an average of (41.2167±.58420,6.8167±.13125,11.2667±.19144,23.7667±.88406,7.2000±.14022,24.2000±.11837) in egg per hen per year,age at first egg, number of egg per clutch, number of days per clutch,age for slaughter and length of productive (month) for local chicken, respectively. The current results were lower than that ofAman *et al.,* (2017a) who reported 54.96±15.65 eggs per hen per year of local chickens in SNNPR, Ethiopia.Age at first lay for the current study were similar with (Adem and Teshome, 2016) who reported that an average age of indigenous chickens for their first egg laying was 6.8 months with mean clutch cycle per year of four, in Southwestern Ethiopia.The current number of egg per clutch in the study area was lower than Yadessa *et al.,* (2017) who reported that 14.3 small eggs per clutch in Mezhenger, Sheka and Benchi -Maji zones of south western Ethiopia.An average number of clutches for current study were longer than that of Alem, (2014) who reported that,an average number of clutches for local hens had an average clutch length of 21.6 days which ranged from 15 to 28 days. The slaughter age for local chickenswere earlier than that of Zereu and Lijalem(2016) who reported that indigenous male chickens of Wolaita zones in southern Ethiopia requires 8.6, 9.4 and 8.9 months to reach slaughter at highland, midland and lowland areas, respectively.Therefore, the egg production performances of Sasso(164.7500±2.33018) were higher than local chickens(41.2167±.58420) due to breed difference.Age at first lay forSasso were earlier than local with an average of 4.5667±.09009 and 6.8167±.13125 respectively.Number of egg per clutch of Sasso were higher than local chicken with a mean of 42.5167±.68498 and 11.2667±.19144 eggs per clutch. The number of days per clutch of Sasso were affected by management which means if chicken gets available feed they will continually lay egg. From our result Sasso had longer clutch size than local chickens with a mean of 42.5167±.68498 and 23.7667±.88406 days per clutch of Sasso and local chicken breeds, respectively.Slaughter age of Sasso were earlier than local chicken witha mean of 4.0167±.11763 and 7.2000±.14022 month

for Sasso and local chicken breeds respectively.Indigenous chickens had longer length of productive month than Sasso breed because they lay small number of eggs per clutch than Sasso chicken breed. The length of productive (month) of indigenous chickens and Sasso with a mean of 24.2000±.11837 and 20.5667±.18620, respectively.The mean hatchability percentage from Sasso breed (51.4137±4.50222) were lower than indigenous chicken (82.2883±.80737) due to breed difference.In generally, all respondents were mentioned Sasso chicken were more egg production than local chickens due to breed difference.

Table 4.The productive and reproductive performances of different breeds in the study area

Total kebeles(N=60HH)

Parameters	**Sasso Chicken Breed**	**Local Chicken Breed**
	Mean±SE	Mean±SE
Egg per hen per year	164.7500±2.33018	41.2167±.58420
Age at first lay egg	4.5667±.09009	6.8167±.13125
Number of egg per clutch	42.5167±.68498	11.2667±.19144
Number of days per clutch	47.6500±1.03138	23.7667±.88406
Age for slaughter of (month)	4.0167±.11763	7.2000±.14022
Length of productive (month)	20.5667±.18620	24.2000±.11837
Hatchability(%)	51.4137±4.50222	82.2883±.80737

4.5. Incubation of Eggs in the study area

Types of incubation, egg setting materials, egg storage material, selection of egg color, selecting size of broody hens, reason for selecting bigger size of hens, source of eggs, experience of incubated egg (Sasso) and experience of poor hatchability are summarized in table 5 below. All (100%) respondents were practicing incubating eggs by using broody hens.

Clay pot with teff straw bedding and Teff straw placed on the ground were identified as the major egg setting materials by 56.67% and 43.33% of respondents in the study area, respectively. Basket (*in local name Krichat*) and cartoon were also identifies as the major egg storage materials by 75% and 25% of the respondents in the study district, respectively.

Regarding duration of egg storage, it was observed that 100% of village chicken owners in the study wereda stored eggs until the hen finished laying and start showing the characteristics of broodiness.

Table 5. Incubation of eggs in the study area

Variables	**Study kebele**			
Types of incubation	**Yerezeb (n=20hh)**	**Grarna yefermaze (n=20hh)**	**Endebera (n=20hh)**	**Overall (N=60hh)**
Broody hens	100%	100%	100%	100%
Artificial	0%	0%	30	0%
Egg setting materials				
Clay pot &teff straw bedding	40%	60%	70%	56.67%
Teff straw placed on the ground	60%	40%	30%	43.33%
Egg storage materials				
Basket(*krichat*)	70%	85%	70%	75%
Cartoon	30%	15%	30%	25%
Selection of egg color				
Yes	0%	10%	20%	10%
No	100%	90%	80%	90%
Selecting size broody hens				
Yes	95%	15%	75%	61.67%
No	5%	0%	0%	1.67%
Don’t consider	0%	85%	25%	36.66%
Reason for selecting bigger size of hens				
High holding capacity of eggs	95%	15%	20%	43.33%
Provision of enough heat to the eggs	0%	0%	5%	1.67%
No selection	5%	85%	75%	55%
Source of egg for incubation				
Laid at home				
Experience of incubated egg from Sasso	100%	100%	100%	100%
Yes				
No	100%	60%	35%	70%
Experience of poor hatchability	)%	40%	65%	30%
Yes	95%	60%	35%	63.33%
No	5%	40%	65%	36.67%

From the above table 7 most (90%) proportion of respondents in the study wereda didn't select the color of egg for incubation but and smaller proportion (10%) of respondents were practicing selecting brown colored eggs for incubation.About 61.67% of the survey members in the study area had the experience of selecting broody hens based on their size. And about 36.66% of the respondents haven't consider size for selecting broody hens for incubation. High eggs holding capacity (43.33%) and provision of enough heat to the eggs (1.67%) were identified as the major reasons for selecting bigger sized broody hens for incubation. However, more than half (55%) of the respondents didn't experience selecting broody hens based on their size. The result obtained from the current survey showed that all (100%) respondents said that the source of egg for incubation were eggs that were laid at home.

Most (70%) of respondents were practicing the experiences of incubating eggs obtained from Sasso breed but only 30% of remaining have not experiences of incubating eggs obtained from Sasso chicken breed. The majority (63.33%) of the respondents from the study woreda had the experience of poor hatchability but 36.67% of them didn't have the experience of poor hatchability of eggs from Sasso breed.

4.6. Hatchability of Eggs in the study area

Table 6 shows comparative hatchability of eggs from Sasso and local chicken breeds in study woreda.Accordingly the mean total number of set eggs, the mean total number of hatched chicks and the mean hatchability percentage from local breed were 12.4667±.12457, 10.2167±.12141 and 82.2883±.80737, respectively. This is in line with the reported 82.6% hatchability for local eggs in Bure wereda (Fissehaet *al.,* 2010). The current study result is lower than the report by Kugonza,*et al.* (2008) who reported that 90% of egg hatchability in Eastern Uganda and by (Mwalusanya *et al*., 2004) who documented 83.6% hatchability in Tanzania but higher than the report made by (Tadelle *et al*., 2003b), (Abera, 2000), (Aganga, 2000) and (Iqbal and Pampori, 2008) who reported 70.5%, 78.6 %, 61.8% (Botswana), and the hatchability ranged 77% to 81% (India) from local breeds, respectively.

Similarly from the same table it can be seen that the mean total number of set eggs, the mean total number of hatched chicks and the mean hatchability percentage from Sasso breed were 5.2833±.45603, 3.8833±.34370 and 51.4137±4.50222, respectively. It can be conclude that the

egg obtained from local chicken have high hatchability percentage thanthe eggs obtained from Sasso chicken breeds and this might be due to breed difference.

Table 6. Hatchability of eggs fromSasso and local chicken in the study area

Parameters	**Endebera(N=20)**	**Yerezeb(N=20)**	**Grarna yefermaze(N=20)**	**Total(N=60)**
	Mean±SE	**Mean±SE**	**Mean±SE**	**Mean±SE**
Total number of set eggs from local birds	12.3000±.21885	12.8500±.15000	12.2500±.25000	12.4667±.12457
Total number hatched chicks	10.2500±.16018	10.2000±.15560	10.2000±.29558	10.2167±.12141
Hatchability % of local birds	83.6560±1.49558	79.3720±.79990	83.8370±1.58857	82.2883±.80737
Total number of set egg from sasso	3.8000±.87539	7.6000±.13377	4.4500±.84752	5.2833±.45603
Total number of hatched chicks from sasso	2.7500±.64431	5.9500±.11413	2.9500±.57800	3.8833±.34370
Hatchability (%)of sasso	35.5880±8.30328	78.4185±1.33659	40.2345±7.74329	51.4137±4.50222

4.7. Major Constraintsof Chicken Production in the Study Area

Major Constraints of chicken production in study area were mentioned in table7 below. The most common predators mentioned by the farmers were Wild cat (15%) and Shelmetmet (30%), Diseases (30%), Shortage of feed (20%) and Lack of veterinary service (5%) were identified as the major constraints of chicken production in Cheha woreda. Theyrevealed that predators were the most important problem affecting chicken productivity which accounts about 45% which was caused by lack of proper housing. Moges *et al* (2010) and Mengesha *et al.* (2011) under farmer management condition prevailing disease, predators and veterinary services were reported as the major constraints of poultry production. In addition according to Dwinger *et al* (2003) lack of housing is one of the constraints of the village exotic poultry production systems.Besbes and B. (2009) as well as Halima and H. (2007) reported that high incidence of chicken diseases, mainly (NCD) is the major and economically important constraints for village exotic chicken production systems.Desalew (2012) revealed that the disease was the most important problem affecting chicken Productivity in Duguna Fango Woreda, southern Ethiopia. Accepted according to Demeke (2004), Dessie *et al* (2013) and Mazengia *et al* (2012) poultry feed and nutrition is one of the most critical constraints to poultry production under both the rural small holder and large-scale systems in Ethiopia.

Table 7. Major Constraints of chicken production in the study area

Major Constraints	**Variables**	**Overall (N=60hh)**
Predators	Wild cat	15%
	Shelmetmet	30%
Diseases	-	30%
Shortage of feed	-	20%
Lack of veterinary service	-	5%

5.CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

The study was conducted with totally 60 respondents were purposively selected based on their experience with Sasso chicken breed**.**Current study exposed that most of respondents in all kebeles select Sasso for egg production, having large body size and producing high amount of meat than local chickens.

An average eggs laid/year/bird of Sasso (164.7500±2.33018) was higher than local chicken breeds (41.2167±.58420). An average age at first laying of Sasso (4.5667±.09009) was earlier than local chicken (6.8167±.13125) months. Average number of egg per clutch of Sasso (42.5167±.68498) in the study site was better than that of local chicken (11.2667±.19144).

The current result also revealed that the slaughter age of Sasso (4.0167±.11763) is earlier than that of local chicken (7.2000±.14022). The result of study also indicated hatchability of Sasso (51.4137%) is lower than that of local chicken (82.2883%) due to breed difference.In addition to this, the Sasso breeds currently distributed to the farmers were low productivity due to the following constraints like predators, disease, feed shortage and lack of veterinary service.

5.2. Recommendations

The following recommendations are suggested based on the result of the current study:

- Farmers should have got continuous training to improve the current management practices (feeding, housing and health management) to increase chicken production potentialin the study area.
- Farmers should provide available feed, provision of good health management and proper housing is important to improve chicken production and productivity.
- The problem of predators could be reduced by convincing farmers to construct predator proof' and separate chicken houses and housing birds, especially during the night.
- As most of village chicken production activity of the study area is managed by women, provision of successive trainings on modern chicken husbandry practices to women would be essential for the improvement of chicken production and productivity.

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7. APPENDIX

Annex-1 :Questionnaire for the Production and Reproduction Performances of Sasso Chicken Breed distributed in Cheha*Woreda* of Guraghe Zone, SNNPRS, Ethiopia.

A. Demographic Characteristics of the Respondents

1. Farmer's Name _____ Region _____ District_____.*Kebele* _____
2. Enumerator's Name _____. Date of interview _____
3. Sex of the respondent a). Male b). Female
4. Age of the respondent _____
5. Educational status of the respondent
   a). Can`t read and write b). Read & write
   c). Elementary (1-8) d). First cycle secondary (9-10)
   e). Second cycle secondary (11-12) f). Above secondary
6. Religious status of the respondent _____
7. Marital status of the respondent _____.
8. Family size of the respondent _____

B. Productive and Reproductive Performances

1. Do/did you have local chickens? a). Yes b). No
2. If 'Yes', how many local chickens did/do you have? _____
3. If 'No', why?

_____

_____

4. Have you received Sasso chicken breed? a). Yes b). No
5. If 'Yes', where did you get (source (s))? _____
   a). Government b). NGOs C. Other, specify_____
6. When did you receive Sasso chicken breeds? _____
7. How did you get? a). Purchased b). Inherited c). Hatched d). Other, specify _____
8. How many Sasso chicken breeds have you received? _____
9. The type of Sasso chicken breeds received

a). Chicken (DOC) b). Pullets c). Cockreles .d). Cocks e). Layers (hens)

10. Which one do you think more productive (egg production)? (Rank)

a. Local Chicken breed _____

b. Sasso Chicken breed _____

11. Compare the following parameters for the different chicken breeds

Parameter	**Breed**	
	Local	**Sasso**
Egg per hen per year		
Age at first egg (month)		
Number of egg per clutch		
Number of days per clutch		
Age for slaughter (month)		
Length of productive (month)		

C. Incubation

1. Incubation of eggs 1) broody hens 2) Artificial 3) Any other_____

2. What do you use as egg setting material_____?

a) Clay pot & straw bedding b) clay pot only/without bedding

c) Teff straw d) wheat straw e) other (Specify)_____

3. How long do you store eggs before incubation? _____

4. Where do you store eggs before incubation? _____

5. Do you select eggs at a time or before incubation? 1) Yes 2) No

6. If yes to question 10 state the criterion of selecting eggs for incubation

1st _____ 2nd _____

3rd _____ 4th _____

7. Do you select any specific colour of eggs for incubation? 1) Yes 2) No

8. If 'Yes' which colour do you prefer? a). Brown b). White c). Others _____

9. Do you practice any special treatments of eggs before incubation? 1) Yes 2) No

10. If 'Yes', how do you treat?

i. Wash with cold water ii. Wash with warm water iii. Test fertility

iv. Clean using cloths or other materials v. Other_____

11. Do you select size of hens for brooding? a) Yes b) No c) Do not consider the size since any hen that manifested broody behaviour is allowed to bath

12. If 'Yes', which one do you prefer? a) Bigger b) Medium size c) Smaller

13. Why bigger, medium and smaller?

_____

_____

14. Do you have the experiences of incubating eggs obtained from Sasso breed?

a) Yes b) No

15. If 'Yes' for question 14, compare the hatchability for the following two breeds

Breeds	**Total Number of Set Eggs**	**Total Number Hatched Chicks**	**Hatchability (%)**
Local			
Sasso			

16. Have you experienced poor hatchability? a). Yes b). No

17. The answer for 16, is 'Yes' what do you think the major causes for failure of hatching in order of importance

1st _____ 2nd _____

3rd _____ 4th _____ Other, _____

18. Sources of eggs for incubation

i. Purchased from market ii. Purchased from neighbour

iii. Laid at home iv. Other, _____

19. If you purchased incubated eggs from market, have you tested the fertility of the purchased eggs? a) Yes b) No

20. If 'Yes' to question19, how did you test?

_____

D. Other General Issues

1. Do you intend to expand poultry production as a business? a). Yes b). No

2. If 'Yes', indicate flock size of your interest _____

3. What are the possible constraints of poultry production in your locality?