

## Demonstration and Evaluation of Small-Scale Family Poultry (Bovans Brown Layers) at Wondogenet Woreda, Sidama Zone, SNNPR, Ethiopia

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### Abstract

The study was conducted at chuko 01 and kela 01 kebele in Wondo genet woreda, Sidama zone, SNNPR. 10 Participant farmers were selected purposively from both kebeles (5 from each kebele) on the basis of willingness to construct poultry house; to cover all the associated package costs and record the required data. Under each household 23 pullets or 45 day old Bovines brovine dual purpose chicken were distributed that purchased from Hawassa poultry production and multiplication farm and before the distribution of pullets training was given for those farmers about general management and introduction of breeds. The survivability of chickens under farmer's level averaged 98.26% to the age of 22th week or on set of egg lay observed. On average 1.74% mortality rate was occurred at 4th and 16th weeks of age and it was the disease and predatory cause. Generally 1.74% mortality rate or 98.26% survival rate was observed in this study. The average weight gain also recorded using sensitive balance to evaluate growth performance. As a result, there was increasing trend of weight gain starting from initial to onset of egg production. So, maximum average body weight gain of Bovines brovine dual purpose chickens was 1.36 kg at 22th week. Similarly, average egg weight has been increased averaged 55.68 gm around 22nd week of age. Finally, the Bovines brovine dual purpose chickens in all aspects of production and productivity were feasible to enhance family nutrition and income generating aspects, as a result has indicated on this study at wondo genet or mid land area and the same investigation should be done in other ecologies specially high and low lands of the region.

**Keywords:** Bovans brovine; Survivability; Mortality; Farmers' management

### Introduction

Demand for livestock products is increasing dramatically while the correspondence increment in supply stays at low level due to less productivity of animals. Due to human population pressure, agricultural intensification is becoming the best bet option to improve rural income of the smallholders. Women are the most vulnerable group in a community where food is insufficient. However, there are quite many alternatives to improve their income and empower them. Empowering women and landless youth in poultry production has been reported its criticality in improving livelihood of them.

Daghir 1995 indicated that native or indigenous chickens produce more than 50% of the poultry and eggs of tropical countries. Many of these breeds or strain must possess some tolerance to heat stress and adaptation to tropical countries. The challenge for breeders is to introduce heat stress tolerance while retaining and improving the wide array of other economic traits, needed in commercial and private poultry production. According to [1], chicken having 50% to 75% exotic blood level didn't show any sign of broodiness.

A recent study on adoption of poultry breeds in the highlands of Ethiopia indicated that adoption of exotic breed chicken has been limited by a set of factors such as, lack of strong extension follow up and complimentary inputs, diseases, unavailability of credit services and market problems. Besides, the numbers of breeds and birds included in the package were few [2]. This results to a huge gap between demand and supply of poultry products. According to Alemu and Tadelle [3], the per capita egg and chicken meat consumption was estimated to be 57 eggs and 2.85 kgs respectively. But in the current time it is less than one egg and a kilogram of chicken meat, which is very much less than a global average (153 eggs).

Therefore, to narrow the gap of the consumption of poultry meat and egg, dissemination of improved chicken breeds with alternative

interventions like feed and improve poultry house construction is necessary. So, this study was designed with following objectives.

### Objectives

- To introduce and evaluate layer chicken for their productivity under farmers' condition.
- To demonstrate and popularize dual purpose chicken in the area.
- To enhance farmer's household consumption and income by increasing poultry productivity.

### Materials and Methods:

#### Description of study area

Wondo Genet (also transliterated wendo Genet) is a resort town in Ethiopia. Part of Sidama zone located in the Great Rift Valley. Bordered on the south by Malga, on the west by Hawassa zuria and on the north and east by Oromia Region. Woreda is found at the latitude and longitude of 7°1'N 38°35'E/ 7.017°N 38.583°E N and elevation of 1723 meters. Areas receive annual rain fall of 1244 mm on a bimodal distribution and mean annual temperature varies between 17 and 19 degree Celsius.

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## Selection of kebele and farmers

Wondogenet woreda is one of woreda that has been supported by AGP-2 project, due to this the woreda was selected to demonstrate layer chicken breed. Two kebeles namely kela 01 and chuko 01 had been selected purposively based on potential on poultry production, and road accessibility for the follow up. Ten farmers (five from each kebele) had been selected purposively by their willingness to carry out all challenges, experience of poultry production and ability to record necessary data.

## House construction and preparation

Farmers had been trained on poultry house construction and general management of chicken before the commencement of intervention. Then farmers constructed house as they have been trained. Feederers and waterers were prepared by farmers before the introduction of chickens.

## Chicken distribution and management

A pullet of Bovans brown layers has been purchased from Hawassa poultry distribution center. Each household was given 23 birds with commercial pullets' feed. Birds fed commercial pullets' feed till the start of egg production and formulated locally available layers feed then after. Intensive follow up was done by DAs, woreda experts and researchers and technical assistants of Hawassa Agricultural Research center.

## Data Collection and Management

### Data collection

Data on the body weight at monthly basis, mortality and cause of mortality, age at the start of egg lay, body weight at the start of egg lay, weight of egg at the egg lay start and peak production period and laying ability has been taken by respective researchers and technical assistants of Hawassa Agricultural Research Center.

### Data management

All collected data was spread out on the Microsoft office excel 2007. SPSS (version 20.0) was used to analyze data. **Cross-cutting issues:** The project realizes participation of women farmers and increases nutritional value and income of households.

## Results and Discussion

### Mortality and survivability of birds

As shown in the above Tables 1-3, the highest mortality rate of Bovans Brown layer chicken breed was recorded at the first four weeks of the introduction (8.69%) or two chickens. The reason for that death was the disease and predator which means one was dead by diarrhea and other by predator so called fox. Overall mortality of bovans brown chicken breed at Wondogenet woreda was recorded as 1.74% until the start of egg production. This was highly lower than the result (8.51%) that was presented by Gezahegn T 2017 on the same breed. On the other

HH I.D	Birds given	No at 4 <sup>th</sup> wk	Mortality rate	No at 8 <sup>th</sup> wk	Mortality rate	No at 12 <sup>th</sup> wk	Mortality rate	No at 16 <sup>th</sup> wk	Mortality rate	No at 22 <sup>nd</sup> wk	Mortality rate
1	23	23	0	23	0	23	0	23	0	23	0
2	23	23	0	23	0	23	0	23	0	23	0
3	23	23	0	22	4.5	22	0	22	0	22	0
4	23	23	0	23	0	23	0	23	0	23	0
5	23	23	0	23	0	23	0	23	0	23	0
6	23	23	0	22	4.5	22	0	22	0	22	0
7	23	21	8.69	21	0	21	0	21	0	21	0
8	23	23	0	23	0	23	0	23	0	23	0
9	23	23	0	23	0	23	0	23	0	23	0
10	23	23	0	23	0	23	0	23	0	23	0
Overall	230	228	0	226		226	0	226	0	226	0

Table 1: Mortality and survivability of chicken.

Farmers' ID	Average age of birds at egg onset (in week)	Average body weight of birds at egg onset	Average egg weight
1	21	1.125	60.14
2	22	1.335	54.8
3	21	1.066	56.4
4	20	1.236	61.33
5	24	1.456	57.9
6	21	1.342	54.7
7	23	1.366	54.84
8	22	1.695	58
9	20	1.363	53
10	21	1.628	45.77
Average	21.5 weeks	1.3612	55.68

Table 2: Age, average body weight and average egg weight of birds at first egg lay.

No	Constraints	Percent	Rank
1	Feed shortage	45	1 <sup>st</sup>
2	Disease	35	2 <sup>nd</sup>
3	Predator	20	3 <sup>rd</sup>

Table 3: Poultry production constraints during demonstration (n=10).



Figure 1: Improved locally made chicken house at beneficiary farmer.

way survivability of Bovans Brown chicken breed was high (98.26%) start from the pullet to egg production at Wondo genet area. This indicates that survivability of bovans brown chicken breed at mid land showed a promising result to enhance production and productivity of dual purpose chicken. Similar result was also obtained (94%) survivability of bovans brown chicken breed was around Dessie town Amhara National Regional state Solomon T et al. [4].

### Age, body weight and egg weight of birds

Present study revealed that average age of Bovans Brown chicken breed at the onset of egg production was 21.5 weeks. This result had some difference with the report of Gezahegn et al. [5] who have reported an average age at the onset of egg production of koekoek and Bovans Brown chicken breed as 27.4 weeks. Average body weight of birds at the onset of egg production was 1.3612 kg. This was higher compared with the results 0.930 kg for supplemented and 0.783 kg for non supplemented bovines brovine chicken breed, [5]. Average egg weight of Bovans Brown chicken breed at present study was recorded as 55.688 gram. This was higher result when compared with 53.3 gram of egg weight which was presented by Gezahegn T [5] on the same breed at Amhara region Dessie area.

### Constraints of poultry production

Present study shows that feed shortage, disease and predator were economically important challenges in the study area. Similarly Fisseha et al. [6] reported that disease was major economically important challenge for village chicken production system. Predation is one of the major economically important challenges at northwest Ethiopia, [7].

Also Salo et al. [8] reported that disease, feed shortage, predators and poor housing condition are constraints of chicken production in Lemo District, Hadiya Zone.

Demonstration of bovans brown chicken breed have got high acceptance due to their better survivability under farmers' condition. Farmers were pleased by the breed and decided to improve poultry production system and some of them began improving housing system by their own will as you have seen at Figure 1 above.

### Conclusion

Bovans Brown chicken breed show better performance for environmental survivability at their growing period. So, it could concluded that Bovans Brown chicken breed are good survivals at midland climatic condition. The breed got high acceptance among farmers due to its disease resistance, rapid sexual maturity and ability to lay eggs with high weight. Feed shortage, disease and predators are main economically important challenges in the study area. Therefore, appropriate veterinary and advisory services, training on improved poultry house and formation of poultry feed suppliers are necessary to overcome the challenges.

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