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Assessment of day old chick performance in Woreta town

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Abstract
Survey was conducted in Woreta town South Gonder zone, Amharam Regional state. A total of 20 day-old chick growers were involved of which 14 and 6 respondents were male and female participated in the surveying study, respectively. Respondents were selected by purposely based on their chick holding capacity. The objectives were to assess the day old chick performance in the study area. The simple statistical methods were used to analyze the data. The results of study Survey revealed that, 3233 (20.61%) chicks were with reduced performance by death 1811 (11.2%), disease influence 1330 (8.8%) and malformed physical state 92 (0.61%). From these 79.39% of day old chicks were survived to reach marketing age. This indicates chicks were lower in performance in the area. To reduce this problem proper chick husbandry practice must be conduct. The technical support should be providing for chick growing farmers. In addition, researchers will focuses on this field for more investigation.

Keywords: Day- old chick**,** performance**,** and woreta

Introduction
In Ethiopia chickens are the most widespread and available source of family protein and income [1] cited by [2]. The total chicken population in the country is estimated 56.5 million with native chicken representing 96.9%, hybrid chicken 0.54%, and exotic breeds 2.56% [3]. The most dominant chicken types reared in Ethiopia are local ecotypes, which show large variation in body position, plumage color, comb type and productivity [4]. However, the economic contribution of the sector is not still proportional to the huge chicken numbers, attributed to the performance of many production, reproduction like (less brooding ability, absence of scientific breeding) and infrastructural constraints such as electric city, road, potable water [4-5] cited by [2].

According to [6], cited by [2], the chicken production system in Ethiopia can be characterized by not market oriented, low input, scavenging and traditional management system consisting of local breeds. The indigenous breeds are small in body size and low producer of meat and eggs [7].

The most dominant (75%) chicken production system in Amhara region is free range/scavenging type/ using a majority (95.8%) of local chicken ecotypes, with seasonal feed supplementation, scavenging only (2.5%), scavenging with regular feed supplementation (21.9%) and intensive production system (0.63%) [8]. According to the recent agricultural census study, the total chicken population of the region is estimated to be 14.44 million, accounting to 33.3% of the national chicken population, and kept for both egg and meat production purpose. From this the day-old chicks has a vital role for replacing the flock and it is necessary to keep a good of its performance. Chicken production and consumption provide different function for producer as compared to the other livestock production. Among the different functions are immediate source of cash income, provide egg and meat for household consumption, contributes for food security and create employment, source of organic fertilizer, require low initial capital, require small land and low labor inputs, efficient feed converters and have a wide range of adaptability for different agro ecologies, and their product is acceptable by the most of the community and it contains a special protein. To get these functions in sufficient level for the demand, day-old chick performance improvement is very essential.

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Materials and Methods
Description of the Study Area
The study was conducted in Woreta town of the south Gonder administrative zone of Amhara regional state. Woreta located in east of Lake Tana, and south of Addis Zemen, this town has a latitude and longitude of 11°55'N 37°42E/11.917°N 37.700°E with an elevation of 1828 meters above sea level. It is the administrative center of FogeraWoreda.

Woreta appears in the Royale Chronicles during the first reign of Emperor Tekle Giyorgis (1779-1784), as the place whence Ras Hailu Eshte fled after escaping imprisonment in Gonder. Based on figures from [9], Woreta has an estimated total population of 26,317 of whom 13,044 were male and 13,273 were females.

Materials used
The following materials used in the study;
- Different books
- Different handouts
- Computer and different stationary are used to work.

Selection of the study area and sampling techniques
The survey was conducted in Woreta town in 20 chick growers' farm selected purposely from 27 based on their experience, number of chicks rearing and implementing modernised chick growing activities. Due to labour and financial limitation samples will be select to extract primary information.

Method of data collection
The study would give quantitative which can be measurable in number like flock size, chick mortality and number of deformed chicks, and qualitative which can't measure by number like feeding, housing, culling practice, chick's physical state and alertness information that would be obtained through literature review available records and questioners' survey.

Primary data collection
Primary data was collected intensively through house to house interviews using a well-organized and semi-structured questionnaire based on the objective of study which would been pre-tested, and translated into Amharic language. Enumerators (diploma holders in Animal Science), would train and well inform for one day before actual data collection. Quantitative and qualitative data from survey collected on chick management systems (feeding, housing, disease control, provision of water, extension and culling practices). Additionally, flock size, structure, constraints of chicken, production performance of chick and other related issue would assess with well-structured questionnaires.

Focus group Discussion
In the study we make a group discussion with day-old chick growers and their farm workers on the management and constraint of day old chick performance.

Key informant interview
We would interview the Woreta town animal science expert, DA and day-old chick grower who have a long period experience on this practice.

Secondary data collection
The secondary data collected from different sources reviewed of literature, published research work on the topic and related topics and other relevant data obtained from different sources.

Methods of data analysis
The qualitative and quantitative data sets was analysed by using Statistical Procedures. Like Descriptive statistical tools such as mean, frequency and percentage were used and presented by tables. Collected data would analyze using like percentage, charts, graphs and some other statistical system based on the data collected to be compared the result obtained at the various level. To make the statistical analysis of the data, we followed the following procedures; Arrange /organize/ the collected data using interview structured and non-structured, Estimate data using qualitative and quantitative resource that is quantitative in number and qualitative in percent/ graph/, Arrange the result in different categories and make the rank according to the result and objective, Data presentation using table, charts and percent.

Result and Discussion
Demographic characteristics of respondents
The study result revealed that males, which accounted for 70% and Females, headed the remaining 30% of the total respondents. Socio-economic characteristics of the average house hold in the study area were shown in (Table 1). The largest proportion of the household heads 51.1% in mid land and 48.9% in low land were found in the age category of 31-40 years.

Table 1: Number of respondents with education level in Woreta town

Sex	Frequency	Percent
Male	14	70
Female	6	30
Total	20	100
Grade level	**Number**	**Percent**
Illiterate	1	5
Grade 1-4	3	15
5-8	7	35
Diploma	4	20
Degree	5	25
Total	20	100

In the area, Agriculture Office distributed day old chick breeds collaborating with producing company *Ethio* chicken to the growers. The survey shows that all chicks in the study area distributed were sosso44 breeds.

Housing and management system
In the study area, all chick growers run their activity in rented house to grow day old chicks. The house was not constructed for only chicks but for people living. This reduce the chick performance due to improper ventilation and too coolness. Birds cannot adjust well to extremes; therefore, it is very important that chickens be housed, cared and provided with an environment that will enable them to maintain their thermal balance. All 20 respondents in the area used litter on the floor, from those, 12 used rice straw and 8 was used shavings *sagatora*. As the survey shows that rice straw is better than shavings because of smoothness and more moisture absorbability. The chick brooding house could cleaned when wetness occurred in 13 chick growing

farms, in the other hand in 7 growing farms it could cleaned at chicks outgoing to market.

In the study area, all of the 20-day-old chick growers conducted semi-intensive management system. Never the less, every respondent varied with their farm size or number of chicks rising based on their ability to manage chicks. The number of day-old chicks purchasing for growing depends on the season. Based on the survey all grower initiate to hold large number of chicks to grow at the autumn. This is because of to reducing management cost for heat balancing and environmental impacts.

Feeding practice of day-old chicks
In the study area day old chicks fed balanced chicks diet and balanced feed mixed with homemade feeds. In addition, chicks feed purchased from the day-old chick incubation

centers. After chicks reach at average 30 days age, the balanced feed would finish in 11(55%) chick-growing farms. To solve this problem growers mix a balanced diet with locally made feed from maize. As the survey shows, in this case chicks more sensitive to disease and lower in body performance.

In Woreta town day old chick growers fed chick at the first day on the flat type feeder. As (Hon D. L. Campbell, 2012), Place dry mash on clean egg-case flats (cup type) or on clean cardboard, at several points around the brooder, with possibly a little cracked wheat or chick scratch grain sprinkled over the mash. After two or three days, when all the chicks have learned to eat, place the dry mash in self-feeders. From 20 of chick growers 14 (70%) accessed feed to their chicks three times a day, but 6 (30%) were accessed their chicks tow times a day.

Table 2: Types of feeds and frequency of accessing per day

Type of feed	Feeding frequency/day			Percent
	3 times	2 times	total	
Purchased balanced diet	4	5	9	45
Balanced diet mixed with cereals (homemade)	10	1	11	55
Total	14	6	20	100

Watering practice
In the study area all selected samples have, an adequate accessed to pure water for chicks and used plastic water through. All have an equal access to water without restriction, which means water provided for chick free access in a day. In the area, 10 (50%) day old growers clean the drinker one time per day. The rest 10 (50%) was clean three times per week.

Mortality and survival rate
In the study area, mortality of chicks was a major factor for day old chick growers. In 20 chick-growing farms 15089 chicks were hold, from this 1811 (12%) chicks were died. Moreover, 528 (3.5%) chicks were lower in performance.

Table 3: Mortality rate of chicks

Susceptible age group	Cause of mortality			Total	Percent
	Disease	Stress of malnutrition and injury	Predator		
1- 14 days	600	299	272	1171	64.66
15-21 days	201	268	17	486	26.8
22-45 days	112	29	13	154	8.5
Sum total	913	596	302	1811	100

As shown in the above table 1171 (64.66%) chicks died due to malnutrition stress & injury and predator, 299 & 272, respectively at 1-14 day's age. From chicks died 486 (26.8%) at the age 15 up to 22 days 201, 268 and 17 were by disease, malnutrition stress & injury and predator respectively. Chicks died at the age of more than 22 days 154 (8.5%) of these 112, 29 and 13 due to disease, malnutrition stress & injury and predator respectively.

The mortality from hatching to maturity is higher 22-45 (41.6%) and 1-14 days of age (31.5%) than 15 to 22 days of age (26.8%). Disease (50.4%), malnutrition (32.9%) and predators (16.7%) mostly cause this. From this it is suggested that as the age of chicks increase their adaptability and capability to their environment and resistance to disease are respectively so that they can scope from predators easily. This result is in line with [10]; local chickens are superior health status and survival rate, well adapted to the local environment. Though this is true, there is a great loss (mortality) yet. From the total chicks, 11.2% died and 88.8% survive.

Disease outbreak
In the study area, 56.6% chicks of total respondents have

Encountered most disease outbreak, which affect performance of chicks. All respondents reported that, they have experience of disease outbreak in rainy season in their flock.

In dry season, bloody diarrhea, poor appetite and ruffled (erect) feather were the symptom observed. However, poor appetite and ruffled feather are common symptoms for most diseases; bloody diarrhea is characteristics of coccidiosis infestation. The disease affected all classes of chick and killed all birds while in time provision of local treatment may reduce mortality.

Table 4: Disease outbreak and susceptible classes of chicken

Parameter	Number of chicks	Frequency of Respondents		
		Male	female	Total
Season				
Rainy	577	14	6	20
Dry	753	13	6	19
Sum	1330			
Susceptible age				
1 up to 14 days	719	14	6	20
15 up to 21 days	476	11	3	14
22 up to 45 days	171	14	6	17

In majority of cases, neem leaves and lemon formed the major constituents of medicine for treating the birds. The bio active ingredients of neem were reported to be widely used in fields of public health and agriculture. Women were better perform in utilization of traditional treatments.

Physical status of day old chicks
In the study area the physical condition of chicks differ, 0.36% chicks were deformed of leg and 0.25% were wing and abnormally beaked. Totally, 0.61% of total chicks were malformed in physical appearance. Although malformed chicks were distributed, culling did not practice in the area. However, 0.23% day old chicks have too small boy size with up to their marketing age as compared to others.

Problems of chick growing in the study area
Major constraints of chick growing in the study area were presented. Based on their perception, about 14 percent in of respondents' ranked lack of appropriate working and market site was as the most important constraint followed by disease 6.04 percent. In addition breed 2.5%, capital 2%, and predator 2% ranked third, fourth and fifth in the area.
In the study areas, shortage of chicks feed considered as substantial problem in all chick grower. Particularly scarcities were increase when chicks were grown.

Table 5: Major constraints of chicken production in the study area

Constraints	Rank	Level of occurrence
Lack of working and marketing site	1	14%
Disease	2	6.04%
Breed	3	2.5%
Capital	4	2%
Predator	5	2%

Opportunities of day old chick growing
An opportunity of chick growing in the study area like governmental focus, technical support and personal interest were existed. Based on the survey the demand for growing chick in the surrounding was increase time to time this is major opportunity to improve chicken production. Both sexes consider the major opportunities in the area were market accessibility for growing chick to dual purpose breeds.

Conclusion and Recommendation
Conclusion
The study was conducted in Woreta town, with the objectives of assessing of day old chick performance. Samples were selected purposively based on number of chicks rearing and the experience of growers. The study revealed that in 74 percent of day old chick growers were growing chicks at the same time in the area. However, most growers 55% access chicks to feed mixed with homemade. Due to this, the physical growth of chicks was retarded. Known feed is a major to the performance of chicks.
The study shows that the mortality rate was reach at 12% of total chicks. Disease, stress and malnutrition stress and predator attack were a major reason for reducing chick performance. Beyond to these the disease prevalence reduces the performance of day old chicks at rainy and dry season. In the study from the total number of 15098 chicks reared by 20 respondents 3233 (20.61%) chicks were reduced performance by death 1811 (11.2%), disease influence 1330 (8.8%) and malformed physical state 92

(0.61%). From these 79.39% of day old chicks were survived to reach marketing age.
The survey result has revealed that, the day old chicks were low performance in Woreta town. In the area inappropriate chick housing, feeding practice, and poor cleaning of materials in the house are major reasons for disease occurrence and chick mortality. Chicks in the area were sales for dual purpose for both meat and egg production. Although the demand for growing chicks in the area was, increased absence of marketing area existed. Disease prevalence was a treat in all day old chick growing farms.

Recommendation
- Chick grower should be focusing on hygiene and cleaning of the brooding house to reduce favorability to disease causes.
- Extension education on aspects of day old chick growing should be give and as the women play the major role in chick rearing, the day old chick managing extension activities need to be target towards women.
- Practical possibility of construction of proper chick brooding house using cheap, durable and locally available materials need to be exploiting in view of high mortality due to predators and disease encountered in the study area especially for the baby chicks.
- Governmental concerned body should be allocate appropriate market for chicks.
- Researchers should be focuse on this study area to investigate more advanced results.

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