

**Research article**

# Review on Productive and Reproductive Performance of Exotic Chicken Breed in Ethiopia

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Accepted 30 April 2020

According to many authors, there is a low productivity of local chicken breed and increment of demand of poultry, poultry product and by product in Ethiopia. To improve this problem, there are research activities on the breeding and nutritional improvement in the poultry sub sector of the livestock development. In case of breeding improvement, efforts are currently being made to alleviate this problem by introducing, evaluating, and identifying suitable high-performing exotic breeds that can adapt and to intensive and extensive management conditions in Ethiopia (Esatu et al., 2015; Ibrahim et al., 2018). Since 1950, there are a lot of exotic chicken imported in our country i.e layers, broilers and dual purpose chicken breeds. According to the findings of different research study, high egg and meat production can be obtained from different layers, dual purpose and broiler of exotic chicken breed in different agroecology of the Ethiopia. In addition to this, there are a lot of finding of reproductive performance parameters evaluation of exotic chicken (hatchability, average age of first mating of cockerels, average age at first egg and body weight and average number of clutches per year per hen) by different authors in Ethiopia. According to their report, exotic chicken breeds have better reproductive and productive performance than the local indigenous chicken breed. And also, there is a difference of performance within the particular chicken breed categories. So based on the findings of different authors, we should have to identify the breed and management to obtain high product from the exotic chicken breed. Additionally, the researchers should have focus on the full package of exotic chicken production industry rather than focus on the breed performance evaluation.

**Key words:** Exotic, chicken breed, Ethiopia, performance

**Cite this article as:** Ararsa B., Chala E (2020). Review on Productive and Reproductive Performance of Exotic Chicken Breed in Ethiopia. Acad. Res. J. Agri. Sci. Res. 8(3): 244-251

## INTRODUCTION

### Background

Family poultry contributes to good human nutrition by providing food (eggs and meat) with high quality nutrients and micro-nutrients. The small income and savings provided by the sale of poultry products is especially important for women, enabling them to better cope with urgent needs and reducing economic vulnerability (FAO, 2014). As in many developing countries, chickens are widely kept in Ethiopia (Hassen *et al.*, 2006), with total

population estimated to be about 60 million of which 90.8, 4.4, and 4.8% were reported to be indigenous, exotic, and crossbreeds, respectively (CSA, 2017). According to Paolo *et al.* (2008), up to the present, the domestic poultry sector has been dominated by traditional production practices, and local breeds represent almost 98% of the national poultry flock. In the past 20 to 25 yr, there has been a shift to commercial production with an increase in small- and medium-scale producers that exploit mainly urban markets. But the expansion of the commercial chickens' production in Ethiopia, and in similar developing countries, is limited by the shortage of adequate local

supply of high performing chicken stocks. Efforts are currently being made to alleviate this problem by introducing, evaluating, and identifying suitable high-performing exotic breeds that can adapt and to intensive and extensive management conditions in Ethiopia (Esatu *et al.*, 2015; Ibrahim *et al.*, 2018).

The international primary breeding companies tend to promote the breeds that are used under high-level management in developed countries, claiming that they are suitable for all environments (Pym, 2013). Hence, evaluation and introduction of such stocks are expected to enhance chicken productivity in developing countries. Genetically high-yielding specialized breeds of chickens have been bred exclusively for meat (broilers) or table-egg (layers) production, and they require high level inputs in terms of nutritional and health management, to fully express their genetic potential (FAO, 2014).

Dual-purpose chicken breeds aim at uniting both, i.e., the hens lay eggs and the cockerels produce meat, but it may require a compromise from both sides because laying more eggs is negatively correlated with gaining more meat. Recently, some primary breeding companies have attempted to achieve this balance by applying specific cross-breeding (Lohmann, 2016). These efforts aim also to address the current intensive ethical discussion of the practice of culling the day-old male brothers of the egg-type females. One solution to avoid this practice could be using dual-purpose production, where males are reared for meat and females used for egg production (Mueller *et al.*, 2018).

According to Matawork (2016), although traditional practices continue to dominate domestic poultry production in Ethiopia, there has been a shift to industrial production. Attempts have been made to introduce different exotic poultry breeds to small holder farming systems of Ethiopia because of low performance of indigenous chicken. So the aim of this paper is to review the productive and reproductive performance of exotic chicken in Ethiopia.

## LITERATURE REVIEW

### Introduction of Exotic Breed in Ethiopia

Introduction of exotic chicken into Ethiopia goes back to 1950s in the research areas of Ethiopian higher education institution like Jimma, Alemaya, Shashemane and Debre Ziet (Solomon D, 2019, unpublished data). The most important inputs have been the introduction of improved (exotic) breed, (Tamirat D, 2015). Even if there is no recorded or evidence indicating the exact time and locations of introduction of the first batch of exotic breeds of chickens into Ethiopia for genetic improvement, it is widely believed that the importation of exotic breeds of chicken goes back to the early 1950s (Avery A, 2004). The past genetic improvement efforts of the Ethiopian village

chicken via exotic chicken extension was constrained by lack of comprehensive poultry technology package extension to the end users (Tekelewold H, 2006) and Reta D, 2009). Adoption of improved poultry production practices may involve the transfer of appropriate new technologies and local experiences to be used in improving productivity of the stocks (Tekelewold H, 2006). Currently, one of the extension options to attempt is the use of full packages jointly with improved exotic breeds that are better in terms of productivity.

The Extension Department of the Ministry of Agriculture (MoA) of Ethiopia has shown more preference and interest in the use of the Rhode Island Red (RIR) breed that could serve as a dual-purpose for egg and meat production. Additionally, Fayoumi breed has been imported with the expectation of better productivity, adaptation and disease resistance than the other exotic breeds in rural setting of Ethiopia (Wilson R, 2010). According to Haftu K (2016), this introduction of exotic breeds can be occurred through importing Day-old chicks (DOC) which were either imported from Egypt, Germany, Holland and other countries, pure exotic pullets, Cockerels, Fertile eggs to farmers from abroad as well as to poultry breeding and multiplication centers. The common exotic breed may use as pure and/or for cross breed.

### Exotic chicken breeds in Ethiopia

According to Van Eekeren N, et al (2006), commercial breeds are developed based on the demand of consumers. Currently the commercial breeds are either layers or broilers. There are also pure, exotic breeds but currently they are not available in the commercial markets of Ethiopia. Formerly Rhode Island Red and White Leghorns were available in Ethiopia. We can roughly divide commercial breeds according to their main production aim as egg laying, mainly with lightweight laying breeds or layers; meat production, mainly by heavy weight breeds or broilers; both egg-laying and meat production by so called dual-purpose breeds. In Ethiopia there are a lot of exotic chicken imported for genetic improvement of indigenous chicken breed and commercial purpose. Breeds of chicken introduced include, Rhode Island Red (American dual purpose breed), New Hampshire (American breed), Australorp (English breed), White Leghorn (Italian egg type breed), Brown Leghorn (Italian egg type breed), Sussex (English), Egyptian breed (Fahomi), Commercial breeds (Isa Brown), Bovan Brown and Sasso T44. According Solomon D., 2019 (unpublished data) In 1950 - 1980s contribution of exotic chicks was about 1% and the current contribution of exotic chicken breed is almost 2.18%

### A) Layers chicken breed

These breeds are used primarily for egg production. Most of the time, the eggs of the parent stock are imported. Then the generations are used for their egg production while the parent stock is used for hatchery purposes. Previously, several layer breeds were imported to Ethiopia, but currently there are just three of them used for egg production (USAID, 2015).

According to national poultry research strategy (2016-2030), layer farming is the raising of egg laying chicken egg production. Layer chickens start laying eggs commercially before they reach 18 weeks of age and continue to they reach 72-78 weeks of age in most cases. In a highly commercialized poultry producing countries

egg layers are kept to 13 months in production. The breeds are regarded as efficient by producing a kilogram of egg with a feed not more 2.5 kg. There are two types of egg layers: the white and the brown egg laying hens. The white egg laying types of hens are comparatively smaller in size, relatively eat less food, and the color of egg shell is white. The brown egg laying hens are relatively larger in size; eat more foods, compared to white egg layers, lay bigger eggs than other laying breeds and lay brown shell colored eggs. The annual estimated production of eggs in Ethiopia is 41 thousand tons, which is by far below and contribute 0.1% share of the global production and 9.7% of East Africa. As showed in Table 1 since 2000, there have been varying egg productions over time.

**Table 1.** Production status of annual poultry egg

Number	country	Production tons	Ethiopia % share
1	Ethiopia	41,000	-
2	East Africa	420,850	9.7%
3	Africa	3,082,367	1.3%
4	World	68,262,486	0.1

Source: (FAOSTAT, 2016)

Even if there is no recorded evidence indicating the exact time and locations of introduction of the first batch of exotic breeds of chickens into Ethiopia for genetic improvement, it is widely believed that the importation of exotic breeds of chicken goes back to the early 1950s. Yet with large poultry population (more than 60 million) (CSA, 2016), Ethiopian layer industry remain highly undeveloped and unorganized with annual egg production not more than 96 million (CSA, 2016). Attempts have been made to introduce different exotic layer breeds to small holder farming systems of Ethiopia because of low performance of indigenous chicken with the aim of improving poultry productivity, different breeds of exotic chickens (Australorp, New Hampshire, White Leghorns) since the 1950"s.

Up until now there is no layer strains developed specific to egg laying capacity rather indigenous breed improvement program started very recently at Debre Zeit Agricultural Research Center (DZARC) since 2008. Starting 2008 the research center introduced three layers strains (Lohmann silver from Germany, dominant CZ from Czech and Bovans brown from the Netherlands) testing their performance both under research station and village production environments.

The Lohmann Silver did not well adapt to the village production system (Wondmeneh *et al.*, 2011). In 2010 again a layer grandparent (GP) breed was imported and tested for the first time. The layer grandparent was generally found to be adaptive and suitable under on station conditions at Debre Zeit. In 2015, more exotic breeds known for their wider adaptation and high performance were tested at DZARC. Three layers

(Lohmann brown, dominant Sussex and Novo brown) breeds are being kept at the center and being evaluated for one and half years under research station and on farm conditions. The on farm test on those different lines will be performed in different agro-ecologies and management conditions. Cross breeding will also be conducted among the strains in a bid to identify the best cross for future use in Ethiopia.

#### Bovans Brown

This breed was formerly known as Bovans Goldline and is a hybrid of Rhode Island Red (cock) and Light Sussex (hen). Bovans Brown is a brown feathered, brown egg layer which can meet the expectations of a variety of egg producers with different objectives. It is the bird of choice for today's egg farmers who expect high egg numbers and a forgiving bird essential ingredient to keeping business profitable. It not only performs well for the egg producer with traditional production facilities but is very docile making it's the perfect bird for alternative production methods as well.

#### Issa Brown

Like Bovans Brown, Issa Brown is also available in Ethiopia. This layer is a hybrid of Rhode Island Red (hen) and Rhode Island White (cock) . It is known for its high egg production of approximately 300 eggs per hen in the first year of lying.

They are easy to rise and prolific producers of large richly

colored brown eggs of excellent shell quality. They are quiet and friendly and easily trained to lay in their nest (Fulas H, *et al*, 2018).

### White Leghorn

White Leghorns are known for laying lots of white eggs. They need less feed, due to their small size. White Leghorns are therefore Very efficient layers. At the end of the laying period they give relatively little meat (Haftu K, 2016).

## B) Broilers chicken breed

Broilers are chickens raised specifically for meat production. Modern commercial broilers are specially bred for large scale, efficient meat production and grow much faster than egg laying hens or traditional dual-purpose breeds. They are noted for having very fast growth rates, a high feed conversion ratio, and low levels of activity. Broilers often reach a harvest weight of 4-5 pounds dressed in only five weeks, although slower growing free-range and organic strains reach slaughter weight at 12-16 weeks of age. Typical broilers have white feathers and yellowish skin. This cross is also favorable for meat

production because it lacks the typical "hair" which many breeds have that necessitates singeing after plucking. Both male and female broilers are slaughtered for their meat.

Broiler products dominate the international poultry trade (Moore and Morgan, 2006). Trade in poultry meat is projected to increase at a faster rate than production and consumption (FAO, 2007). Almost all of the broiler breeds are imported from abroad as parent stock. Small scale commercial broiler farms source day old broiler and grow them for the period of about two months. The annual estimated production of poultry meat in Ethiopia is 61,840 tons, which also represent represents 0.1% share of the world production and 11.7% of East Africa (Table 2). Ethiopian Livestock Master plan set a great plan to increase chicken meat production to 164,000 tons and eggs to 3.9 billion by the year 2020 through improved family poultry (IFP) and expanded specialized poultry. Different institutions including EIAR and large commercial private poultry farms are importing broiler breeds. Some of the imported breeds adopted in our countries are Hubbard-JV, Hubbard-classic, Rose-308 and Cobb-500. There is no any broiler breeds improved and developed in the country. The country spends huge amount of hard currency for importing grandparent and parent breeds of broilers.

**Table 2.** Production status of poultry meat production

Number	country	Production tons	Ethiopia % share
1	Ethiopia	61,840	-
2	East Africa	527,002	11.7%
3	Africa	4,731,771	1.3%
4	World	96,141,163	0.1

Source: (FAOSTAT, 2016)

Population growth, urbanization and life standards of the society resulted in increasing demand of broiler meat. Therefore, adopting best performing broiler breeds of chicken need to be considered while, focusing more on genetic improvement of our indigenous chicken breeds of meat type in the long term

### Babcock

This is the chicken breed that is currently imported in Ethiopia and used for fattening purpose (McKay J , 2008).

### Hubbard Jv

It is an exotic breed of broiler chicken imported to DZARC from France.

## C) Dual Purpose chicken breed

Dual purpose chickens were well adopted under small

holder farmer conditions. They are most appropriate for poultry producers who are interested in both egg and growth traits equally. Their better adaptations to wider agro-ecologies and less management requirement made them the right choice in villages.

### Rhode Island Red (RIR)

The most widely used dual purpose chicken in Ethiopia was RIR. It was used as paternal line with ISA brown layers to produce a cross bred with both traits.

### Fayoumi

There are chicken breed that is imported to Ethiopia from Egypt for trial purpose namely Fayoumi breed. They are known for their best adaptability in the harsh, hot and arid environment of Egypt and they have been in trial in lowlands of Ethiopia by Ethiopian Agriculture Research Institute.

They are breeds of dual purpose and can be used both for egg production and meat. Since it is a short time they are introduced and still going on, there is no clear information about their performance in Ethiopia and they are only distributed in trial bases.

### **Koekoek**

It is an exotic breed of dual-purpose chicken imported to Debreziet Agricultural Research center (DZARC) from South Africa. After they had evaluated both on station and on farm by national poultry research, they are now a time demonstrating their package is going on throughout the country.

### **Horro chicken breed**

There is also an effort done for dual purpose indigenous Horro breed improvement through a mass selection (Wondmeneh *et al.*, 2015)

### **Crossbreed/ hybrid**

Hybrids or cross-breeds result from combining special lines or strains of chickens developed for this purpose. An ongoing cross breeding experiment is being conducted with the objective of producing dual purpose synthetic chicken for village poultry production in Ethiopia.

The two exotic chicken breeds used were the Fayoumi (F) and Rhode Island Red (R) as dam line, whereas the two indigenous chicken breeds used were the Naked neck (N) and local Netch (W); a white feathered chicken.

### **Productive and reproductive performance of Exotic chicken**

#### **Productive performance of exotic chicken**

##### **A) Egg production**

According to Alganesh *et al.*, (2003) the egg production potential of local chicken kept under village management conditions, is 30-60 eggs/year/ hen with an average egg weight of 38g while exotic breeds of chicken kept under intensive condition produce around 250 eggs /year/hen with average egg weight of 50-56g. The egg production performance the Egyptian Fayoumi, Rhode Island Red and White Leghorn was reported to be 156, 185 and 176 eggs/year respectively (Abraham and Yayneshe, 2010). Alem (2014) reported that average egg production per clutch per hen of exotic chicken (RIR) was 38.5 and 45.2 in lowland and highland agro-ecological zone of central Tigray, respectively.

Lemlem and Tesfaye (2010) reported 173 eggs, 185 eggs and 144 eggs /year/ hen for White leghorn, Red Island Red and Fayoumi chicken under village household condition. Demeke (2004) also reported 82 eggs/hen for White leghorn under rural household condition with

supplementary feeding. Geleta *et al.* (2013) indicated that egg weight of Fayoumi chicken under Adami Tulu Research center (44.3 g) was similar to Fayoumi (43 g) but lower than egg weight of Rhode Island Red (52.5 g) and White Leghorn (52.1 g) as reported by Abraham and Yayneshet (2010). Solomon (2004) reported that, there was no significant difference between Leghorn and local pullets assigned to household condition with or without supplementation in rate of maturity as measured by age at first egg. Under household conditions local hens produced 69% of the egg production of Leghorn layers.

The egg production of Leghorn and local layers increased by 46% and 15% as a result of supplementation with a daily ration of 60 g/head, respectively. These results clearly showed that Leghorn layers kept under rural household conditions were superior in egg production to local layers kept under similar conditions and found to be more responsive to supplemental feeding than local hens.

In contrast Hailemariam (1998) and Abera *et al.* (2005) showed that the overall performance of the crossbreeds was better than either the native or the exotic parents under the existing management condition.

The average length of egg-laying period/hen was also determined in breeds and environmental managements systems of which estimated numbers of days were 21, 36 and 105 days for local, hybrid and exotic breeds, respectively (CSA, 2011). Demeke (2004 & 2007) reported that the Sexual maturity of White Leghorn under intensive and extensive management ranged from 149-169 days.

##### **B) Meat production**

Poultry meat is relatively cheap and affordable sources of protein for most consumers compared to other animal products such as beef. Consumption of poultry products is more common in urban than in rural areas. Poultry consumption in Ethiopia is commonly high during holiday periods.

The national poultry meat consumption is estimated, on an average to be 77,000 tons per annum (ILRI, 2000). According to Dagher (2009) the current growth of poultry production and consumption makes a good case for the need and desire for future growth of the poultry industry.

#### **Reproductive performance of exotic chicken breed**

##### **Hatchability of Exotic chicken breed**

According to the report of Birhane Gebremariam, *etal*, 2017, the mean mortality of exotic chicks ( $38.12 \pm 1.50$ ) is higher than the Rhode Island Red chicken breeds ( $33.3 \pm 8.25\%$ ) but lower than White Leghorn ( $48.8 \pm 8.75\%$ ), Yarkon (53%) and Fayoumi chicken breeds ( $67.9 \pm 6.52\%$ ) (Addis and Malede 2014). The finding of Birhane Gebremariam, *etal*, 2017, the mean mortality rate of grower chickens is ( $26.71 \pm 1.56$ ) higher than Yarkon (14%) and Fayoumi ( $22.4 \pm 4.81\%$ ) chicken

breeds but lower than White Leghorn (48.5±6.45%) and Rhode Island Red (27.3±6.08%), and the mean mortality rate of mature chickens (19.73±1.59) is higher than Yarkon (14%) and Rhode Island Red (16.3±5.69%) but lower than White Leghorn (21.3±6.03%) and Fayoumi chicken breeds (35.3±4.50%) reported by the same authors.

Similar to this research finding the major causes of chicken losses in village chicken production were mortality due to disease, predator and nutritional stress (Samson and Endalew 2010; Moreki 2010). The variation in survival rate of chickens relative to other studies could be due to the variation in breed type, agro-ecological differences, chicken health management and prevalence of predators.

**Table 3.** Hatchability and survival rate of exotic chickens

Hatchability and survival traits (Mean ± SE)	Agro-ecological zones			Overall mean
	Low altitude	Mid altitude	High altitude	
Number of day old chicken disseminated	15.66±1.98 <sup>a</sup>	12.95±1.98 <sup>a</sup>	12.85±1.98 <sup>a</sup>	13.82±1.14
Number of chicks weaned (8weeks)	9.96±1.59 <sup>a</sup>	8.35±1.59 <sup>a</sup>	8.25±1.59 <sup>a</sup>	8.85±0.92
Survival rate of chicks in percent	62.20±2.59 <sup>a</sup>	61.78±2.59 <sup>a</sup>	61.64±2.59 <sup>a</sup>	61.87±1.50
Number of grower chickens (8-20 weeks)	8.16±1.46 <sup>a</sup>	6.25±1.46 <sup>a</sup>	6.31±1.46 <sup>a</sup>	6.91±0.84
Survival rate of grower chicken in percent	77.16±2.70 <sup>a</sup>	73.90±2.70 <sup>a</sup>	68.79±2.70 <sup>a</sup>	73.28±1.56
Number of mature chickens (>20 weeks)	7.01±1.34 <sup>a</sup>	5.23±1.34 <sup>a</sup>	5.25±1.34 <sup>a</sup>	5.83±0.77
Survival rate of mature chickens in percent	82.73±2.76 <sup>a</sup>	79.36±2.76 <sup>a</sup>	78.69±2.76 <sup>a</sup>	80.26±1.59
Overall survival rate of chickens in percent	44.97±2.55 <sup>a</sup>	50.15±2.55 <sup>a</sup>	42.77±2.55 <sup>a</sup>	45.96±1.47

Source: Birhane Gebremariam et al,2017

**Table 5:** Reproductive performance of exotic chicken

Item	Traditional	Commercial	Breeding & multiplication centers
Chick mortality%	40	5-10	5-6
Hatchability%	70	80	65
Age at first egg(days)	180	145	150

### Average age at first mating of cockerels

According to T.Alem(2014),the average age at first mating of cockerels in the Tigray region is 26 weeks for local,24.9 weeks for cross and 25.2 weeks for exotic chicken breeds.

### Average age at first egg and body weight

According to the result of Daselew Tadesse, *et al*,2013,mean age at first laying were 160.5 ± 13.5, 165.5 ± 13.2 and 153.3 ± 6 days for IB, BB and PK, respectively. As the above authors said that there was no significant difference between IB and BB strains on age at first laying. However, PK was observed to be significantly early maturing type layers than IB and BB under village management condition. This observed difference in age at

first egg of three strains under the present study could be due to genetic and environmental differences, which is in agreement with the reports of Demeke (2004), Fassill et al. (2010) and Lemlem and Tesfaye (2010).

The adult female body weights were 1.54, 1.55 and 1.64 kg for IB, BB and PK chicken groups, respectively(Daselew T.,etal,2013). According the findings of Daselew Tadesse,there was no statistically significant difference among the three layer hens in adult live body weight. As the laying hen body weight increased, egg production decreased and egg weight and feed consumption increased, because heavy birds consume more feed and lay larger eggs with large egg yolk than light hens (Leeson et al., 1997).The average age at first egg in the Tigray region is 27.2 weeks for local chicken breed,25.7 weeks for cross chicken breeds and 25.4 weeks for exotic chicken breeds(T.Alem,2014).

**Table 4:** Mean age at first laying and mature hen body weight of exotic chicken (Ada'aa and Lume Districts)

Improved chicken	N	Age at first laying (days) Mean $\pm$ SD	Mature Hen body weight (kg) Mean $\pm$ SD
IB	86	160.5 $\pm$ 13.5 <sup>a</sup>	1.54 $\pm$ 0.17
BB	69	165.5 $\pm$ 13.2 <sup>a</sup>	1.55 $\pm$ 0.26
PK	25	153.3 $\pm$ 6 <sup>b</sup>	1.64 $\pm$ 0.31

Source: Daselew T., et al, 2013

### Average number of clutches per year per hen

According to T.Alem (2014), the average number of clutches per year per hen is 3.1 days for cross breed and 3.2 days for exotic chicken breed. According to the finding of Alem Tadesse (2015) the average number of clutches per year per hen 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, 3.1 for 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.

### CONCLUSION AND RECOMMENDATION

The small income and savings provided by the sale of poultry products is especially important for women, enabling them to better cope with urgent needs and reducing economic vulnerability (FAO, 2014). As in many developing countries, chickens are widely kept in Ethiopia (Hassen *et al.*, 2006), with total population estimated to be about 60 million of which 90.8, 4.4, and 4.8% were reported to be indigenous, exotic, and crossbreeds, respectively (CSA, 2017). According to many authors, there is a low productivity of local chicken breed and increment of demand of poultry, poultry product and by product in Ethiopia. To improve this problem, there are research activities on the breeding and nutritional improvement in the poultry sub sector of the livestock development. In case of breeding improvement, efforts are currently being made to alleviate this problem by introducing, evaluating, and identifying suitable high-performing exotic breeds that can adapt and to intensive and extensive management conditions in Ethiopia (Esatu *et al.*, 2015; Ibrahim *et al.*, 2018).

Since 1950, there are a lot of exotic chicken imported in our country i.e layers, broilers and dual purpose chicken breeds. According to the findings of different research study, high egg and meat production can be obtained from different layers, dual purpose and broiler of exotic chicken breed in different agroecology of the Ethiopia. In addition to this, there are a lot of finding of reproductive performance parameters evaluation of exotic chicken (hatchability, average age of first mating of cockerels, average age at first egg and body weight and average

number of clutches per year per hen) by different authors in Ethiopia. According to their report, exotic chicken breeds have better reproductive and productive performance than the local indigenous chicken breed.

Based on the reviewed findings, investigating and preparing the full package of exotic chicken breed that appropriately much with the local management (feed and feeding, husbandry) and environmental condition rather than focusing on specific activities and demonstrating the breed.

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