

# “Husbandry Practices and Egg production Performances of Exotic Chicken Breeds in Assosa Town, Beneshangul Gumuze Region, Ethiopia”



## Original Research Article

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## ABSTRACT

The study was undertaken during April up to June 2016 in Assosa town of Benishangul Gumuze regional state, Ethiopia. The aim of the study was to explore husbandry practices and egg production performance of exotic chicken in the study area. A cross-sectional systematic random survey of 34 households was undertaken by using semi-structured and pre tested questionnaire. Information on management practices (breeding, feeds, feeding, watering, housing, sanitation, disease and parasite control etc.), production systems, egg production performances (egg size, , age at first lay, number of eggs laid etc) and constraints of exotic chicken kept in Assosa town was generated by semi-structured questionnaire. The primary data collected from household survey was processed and analyzed by using statistical package for social science (SPSS) version 20.0 software. Descriptive statistics such as percentage, mean, ranking, standard deviation, and cross tabulation were used to analyze the data quantitatively. Data gathered through key informant interview, focus group discussion and personal observation were analyzed qualitatively to strengthen data obtained from household survey. Methods of triangulation were used to measure the validity of the data. It was found that large numbers (10.26±8.83) of exotic chicken were kept by the respondents in the study area. Due to its small space and lower initial capital requirement sample household's ranked chicken as the first important animals kept in the study area. The main purposes of keeping exotic chicken in the study area were for generation of income/sale which was followed by consumption. The most important feed resources of exotic chicken kept in the study area were feed obtained from scavenging, house hold wastes, market left over, and industrial by products and grain supplement. Majority of the households accommodated their exotic chicken in separate house constructed for confinement of the chicken. The higher mortality rate of exotic chicken in the study area was caused by disease, predator and injuries. The most commonly happening and economically important disease in the study area was Newcastle. The commonly observed predators in the study area were cat, dog and snake. Egg production performance of exotic chicken in the study area in general was a bit better than local chicken but not at its satisfactory level. Health and feed problems respectively were the first and the second constraint of exotic chicken production in the study area. Therefore area based development interventions could help to increase productivity of exotic chicken and thereby enhance the livelihood of small holders.

**Keywords:** Assosa, town, breed, management, exotic, chicken.

## I. INTRODUCTION

Ethiopia is the first in Africa and tenth the world in livestock populations. Poultry species are originated from south East Asia and domesticated from red jungle fowl [1]. Poultry include all domestic birds such as chickens, turkeys, ducks, geese, ostriches, guinea fowls, and pigeons. However, in Ethiopia except chickens the others are found in their natural habitat whereas geese and turkeys are not common [3]. Poultry contribute important socio-economic roles for food securities, generating additional cash incomes and religious/cultural reasons [4].

In Ethiopia chicken populations are estimated to be about 49.3 million [2]. Indigenous chickens are largely dominated flock size and have good potential to adapt different agro-ecologies through habitual management systems [3]. But, they are non-descriptive types and vary in body size, conformation, plumage color and other phenotypic characteristics [5]. Still these large population indigenous chickens are found in traditional production systems. However, they are well adapted to the tropics, resistant to poor management, feed shortages, tolerate to diseases and provide better test of meat and eggs than exotic chickens [6]. There is no well-developed breeding practice in chicken production in Ethiopia. However, farmers are in the view to increase meat and egg production by following their own breeding practice [7]. The breeding practices of farmers were allowing cocks and hens to mate indiscriminately without systematic mating. The other practice was the use of improved exotic breeds crossing with local ecotypes. Nevertheless, their effects on upgrading of the village chicken performances have been minimal. This is because the programs were usually planned without participation of farmers, with no parallel improvement of feeding, housing and health care and typically lasts for short time [8]. There has been number of reports on the constraints which played significant role in loss of poultry population. Among these are disease and predation [5] market system [8] management and production system [9]. Some researchers have made researches on chicken production systems, origin and associated constraints in different parts of Ethiopia.

The poultry sector is characterized by its industrialization, faster growth in consumption and trade than any other major agricultural sectors in the world. Worldwide, industrial systems now account for approximately two-thirds of egg and poultry meat production [10]. It has been reported by researchers that the main problem of indigenous chickens in the tropics is that they are poor producer of egg and meat [11] and [3]. But even if they show low productivity, they are well adapted to the tropics, resistant to poor management, feed shortages and tolerate some of the most common diseases and parasites. On the other hand, improved exotic chickens produce higher number of eggs and more meat than the indigenous chicken breeds, but tropical climate is a great challenge. In Ethiopia, chicken production plays a great role as a prime supplier of eggs and meat in rural and urban area and as a source of income, especially to women. [12] Reported also that the role of poultry in Ethiopia has been becoming more important over time. Attempts have been made to introduce different exotic poultry breeds to small holder farming systems of Ethiopia because of low performance of indigenous chicken. Therefore, the need of reviewing exotic chicken production trend, potential and constraints is a prioritized issue in the country. Moreover, reviewing the successful experiences of chicken production and its socioeconomics and thereby delivering synthesized form of information for beneficiaries is also another landmark for improving the production of poultry in the country.

In Assosa town where a numbers of local chicken breeds are kept, there is deficiency of information on the existing situation of their management system and egg production performance. Therefore, this research work was initiated to

explore the existing situations of management practices and egg production performance of exotic chicken breeds in study area. The first consideration in planning and implementing any area specific poultry development intervention is to describe and understand the existing real constraints and performance levels of chicken under various husbandry practices and egg production performance in specific area of production, So that the result of the study will provide base line data that serve as an input for further area specific development interventions to be intended to undertake in the future. Besides, the research findings would be used as an information source for further research and policy makers both at regional and national levels.

## II. MATERILS AND METHODS

### Description of the study area

The study was conducted at Assosa town. Assosa is found in Assosa Zone, nearly around 660 km away from Addis Ababa. It is located between geographical coordinates of 9° 30'N to 11° 39'N latitude and 34° 20'E to 36°30'E longitude with altitude ranging from 1272 – 1573 masl [13]. Mean annual rainfall and temperature lies between 700 – 1450mm and 21 – 35°C, respectively [14]. Its altitude is 1,580-1,730 m above sea level; Mean Annual Temperature 22°C; Mean Annual Rainfall is 1200 mm. The six largest ethnic groups reported in this town were the Oromo (41.19%), the Amhara (29.93%), the Berta (17.39%), the Tigray (5.43%), the Sebat Bet Gurage (1.35%), and the Silt'e (1.29%); all other ethnic groups made up 3.42% of the population. Oromiffa was spoken as a first language by 44.42%, 31.53% spoke Amharic, 15.98% Berta, and 4.43% Tigrinya; the remaining 3.64% spoke all other primary languages reported. The majority of the inhabitants professed Ethiopian Orthodox Christianity, with 54.92% of the population having reported they practiced that belief, while 29.75% of the population said they were Muslim, and 14.89% were Protestant.

### Sampling techniques and procedure

The study was employed purposive sampling techniques. The sampling frame for household survey was people who live in the four (01, 02, 03, and 04) kebelles of Assosa town and possess exotic chicken breeds of different age and sex category. The result of preliminary survey indicated that exotic chicken breeds of this study area were only owned by 34 households. as a result total of 34 households (7 from 01-kebele, 5 from 02-kebele, 5 from 03-kebele and 17 from 04-kebele) who possess exotic chicken breeds of different age and sex category and who keep this chicken under different production system were purposively selected from each kebele of the town and interviewed with semi- structure questions. To strengthen the data collected from house hold survey focus group discussion that contains a total of 12 attendants (3 individuals in each kebele) was held. A total of 8 respondents who came from each concerned governmental and nongovernmental organizations were attended on key informant interview. The total sample size for this study was 54

### Data collection and management

The data input for this study was obtained from both primary and secondary sources. The major sources of secondary data were from governmental and non-governmental publications, annual and inventory reports, previous studies, internet sources and books. The primary data was collected from sample households, participants of Focus group Discussion and Key informant interviews which were made with urban Agricultural office experts, extension agents and farmers who owned and currently keep local chicken. In addition personal observation was used as another source of

primary data. Pretested and semi structured questionnaires were used for generation of both qualitative and quantitative data. Data on husbandry practice, egg production performance, and problems related to keeping exotic chicken breeds in the study area were gathered through different data collection methods. Thus, Household Survey, Focus Group Discussion, Key Informant Interview and Personal Observation was employed to collect primary data. Questionnaires were prepared in English and translated into Amharic, Shinashigna and Gumizgna to collect the data from the households. The HH survey was conducted by 5 recruited and trained enumerators, who were fluent in local Language (Shinashegn, Gumuzna) and Amharic with close supervision of the researchers. With regard to their educational status, the enumerators were Diploma holders from ATVET in animal science.

### Data processing and analysis

The primary data collected from household survey through semi-structured questionnaires was processed (data was checked for accuracy, data entries were coded, coded data were entered in to the computer and editing of the data were completed). Processed data were analyzed by using statistical package for social science [15] version 20.0 software. Descriptive statistics such as percentage, mean, ranking, standard deviation, and cross tabulation were used to analyze the data quantitatively. On the other hand, data gathered through key informant interview, focus group discussion and personal observation were organized according to themes and analyzed qualitatively to strengthen data obtained from household survey. On top of these, methods of triangulation were used to measure the validity of the data.

## III. RESULTS AND DISCUSSION

### Demographic characteristics

Majority of the respondents in the study area are women and this shows that more women are engaged in chicken rearing than men. This has an implication that more or equal emphasis has to be given to women in extension works of modern poultry keeping. Majority of the respondents (88.2%) were married and the rest were single. This could indicate that poultry keeping in the study area is mainly for family consumption. Only few (2.9%) respondents were illiterate and majority of them had an education level of high school and above. This shows that education might be an important factor to adopt exotic chickens. The mean age of respondents in the study areas is 34.4 years. This shows that respondents engaged in rearing exotic chicken are under active age and this could be an opportunity for further modernizing of the exotic chicken production in the study area. Average number of family size in the study area was 4.4 of which average number of males in the family was (2.5) and females in the family were (2.2). Some demographic characteristics of households in the study area were indicated in Tables 1 and 2

**Table 2: Sex, marital status and education level of sample respondents in the study area**

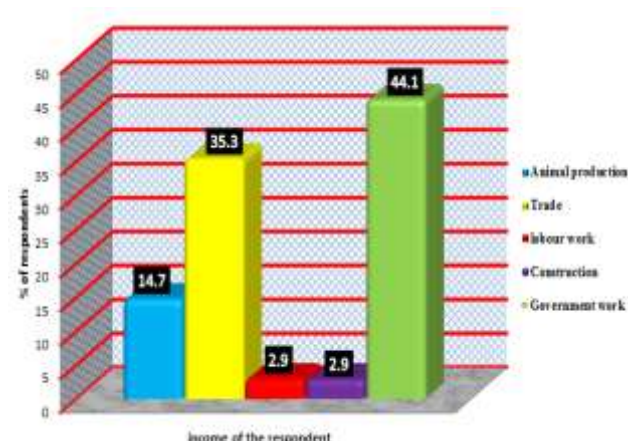
Parameters	N	%
Sex		
Male	16	47.1
Female	18	52.9
Marital Status of HH		
Married	30	88.2
Single	4	11.8
Educational status		
Illiterate	1	2.9
Elementary	9	26.5
High school	10	29.4
Diploma	9	26.5
Degree	5	14.7

**Table 1: Age of household head and family size of the sample respondents.**

Household history	N	Mean	Minimum	Maximum	SD
Age of HH head (years)	34	34.4	20.0	60.0	10.1
Family size					
Male	34	2.5	1.0	7.0	1.4
Female	30	2.2	1.0	4.0	1.0
Total	34	4.4	1.0	11.0	2.1
Children					
Male	26	1.9	1.0	5.0	1.1
Female	22	1.6	1.0	4.0	0.9
Total	30	2.8	1.0	9.0	1.7

### Sources of income for households

The main income sources of the sample households in the study area were indicated in Figure 1. The majority of the respondents (44.1%) livelihood was depended on the government work this shows that majority of exotic chickens in the study area were reared by government workers and this might be in connection with higher education level of government workers that could help them to manage exotic chickens.



**Figure 1: The main income sources of the sample respondents in the study area**

Rearing exotic chickens needs some technical and practical knowledge to be more productive followed by trade (35.3%). The lower percentage of respondents (14.7%) depends on animal production as a main income source. Of the total income generated from animal production, (35.3%) was contributed by exotic chicken in the study area. This shows that exotic chickens were reared not only for consumption but also for the purpose of income generation.

### Livestock holding

The average number of chicken reared in the study area was 13.3 and from this majority (10.0) of them are exotic chickens. However, there was high variability in chicken possession among the sample respondents which is revealed by higher standard deviation. The higher variability in number of chickens among the households could be associated with wealth and objectives of keeping chickens. That means wealthier family could possess more number of chickens than that of poor households. In the same manner, households keeping chicken for commercial purpose will possibly possess higher number of chickens than those keeping chickens for home consumption. The livestock structure in the study area is indicated in Table 3.

**Table 3: Number of livestock possessed by the sample households in the study area**

Households livestock number	N	Mean	Minimum	Maximum	SD
Number of exotic chicken	34	10.0	1.0	50.0	10.7
Number of local chicken	25	6.0	1.0	15.0	4.3
Total number of chicken	32	13.3	1.0	50.0	10.0
Ox	34	0.6	0.0	1.0	0.2
Cow	34	0.2	0.0	3.0	0.7
Heifer	34	0.0	0.0	0.0	0.0
Bulls	34	0.0	0.0	0.0	0.0
Sheep	34	0.0	0.0	0.0	0.0
Goat	34	1.1	0.0	35.0	6.0
Donkey	34	0.0	0.0	0.0	0.0

Very few numbers of other livestock species possessions were recorded in the study area. This result shows that as compared to other livestock species higher number of chicken were kept in the study area. The lower number of other livestock species, especially cattle, could be associated with shortage and waste management problems of feeds, the high prevalence of trypanosomiasis which is a rampant disease of the region and easy management and lower space requirement of chickens than other livestock species.

#### Livestock preference and purpose of keeping exotic chickens.

About 94.1 % of the sample respondents preferred keeping chicken to cattle and the rest (5.9%) preferred rearing cattle to chicken. The highest preference of chicken to cattle by the respondents indicates that chicken production is more suitable for urban agriculture than cattle. This could be in connection with cost of production and land requirement. Rearing exotic chickens is cheaper than cattle as it needs low initial capital, small land and easy for management. Majority of the sample respondents (64.7%) keep exotic chickens primarily for home consumption and some (35.3%) as additional household income. This shows that exotic chickens are important protein sources for family consumption in the study area.

#### IV. EXOTIC CHICKEN PRODUCTION SYSTEM

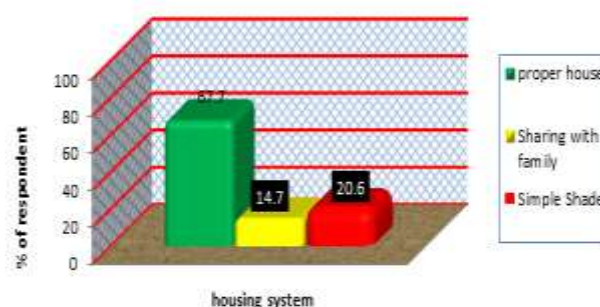
##### Source and breed of exotic chicken

In the study area the respondents keep both the local and the exotic chicken breeds. (64.7%) of the respondents prefer to keep local chicken. this is due to their adaptation to the environment, resistant to disease, low feed utilize, non-selective to feeds, low management, keep under simple shade, more scavenging, local availability and low cost to purchase. (35.3%) of the respondents were interested to keep exotic breeds due to their high productivity. According to [16] the egg production potential of local chicken is 30-60 eggs year<sup>-1</sup> hen<sup>-1</sup> with an average of 38 g egg weight under village management conditions, while exotic breeds produce around 250 eggs year<sup>-1</sup> hen<sup>-1</sup> with around 60 g egg weight in Ethiopia. Of 34 households participated in this study, 33 (97.1%) have got exotic chicken breeds by purchasing from governmental and private organizations. As indicated by the information obtained from chicken owners, office of urban agriculture; GOs obtain exotic chicken breeds from Pawi pure chicken breed multiplication center and sell to producers/farmers. NGOs and Private organizations obtain exotic chicken breeds from Tigrai, Bahirdar, Kombolcha, and sell for producers. In both cases the selling price of exotic chicken to producers was 60-110 ETB. Price difference was due to difference in the body size of the

chicken. Only 1 respondent (2.9%) used his own hatchery as a chicken source. Majority of the respondents did not know the exact name of the chicken breed, but about 41.2 of respondents mentioned that they used to rear RIR chicken breed (Fig. 3). This has an implication that any governmental or private organizations engaged in exotic chicken multiplication should come up with full information about the breed and the end users (chicken producers) should be well trained about its management practices. Besides, during group discussion, it was noticed that some agricultural experts and key informants have little or no information about the exotic breeds that has been distributed so far. It was also hard to find adequate and well organized secondary information about the breeds from agricultural offices due to poor data record system. Thus, data recording offices should be improved and accessible. According to observation of the researcher, RIR (Rhode Island Red) Bovines, and Cocook were the most commonly used exotic chicken breeds in the study area.

#### Housing system

The types of chicken house used and associated proportion of respondents in the study areas are indicated in Figure 5. Majority of respondents (64.7%) used proper separate chicken house followed by simple shade (20.6%), and the least percentage of sample respondents (14.7%), used their family house sharing with chicken. Though majority of the household used separate house for exotic chicken production, the houses were not constructed considering the space requirement per a chicken and not hygienic. Moreover it was observed that the houses lack some internal facilities like egg laying nests and feeders. This indicates that there is a huge knowledge gap among the producers about the modern chicken production and it needs a due attention by concerned bodies to create awareness. The houses were built from locally available materials such as bamboo, wood, mesh wire, thatch grasses and corrugated iron sheets. The few respondents who are sharing their home with chicken indicated that the main reason for sharing is small number of chicken, lack of awareness, shortage of land and construction materials. This has an implication that it could harm human health and also leads reduction of production and bio-security of exotic chickens. This result is in agreement with [10] who reported that majority of village chicken producers use separate shelter for chicken production in Benshangul-Gumuz and [6] who reported that about 51% of farmers kept their chickens in separate shelter in north western Ethiopia; but it is in contrary to findings of [11] who reported both in Ethiopia and Kenya, the majority of chickens are housed either with family or in kitchen. All respondents' clean chickens' house, but cleaning interval and quality of cleaning differ from one respondent to another (personal observation). Majority of the respondents (82.4) used to clean chicken house on daily basis and some (17.6) in weekly basis. Taking care of chicken in the study area was done by mainly women (70.6%) followed by men (17.6%) and children (11.8%). Only 26.5% of the sample respondents use litter in the chicken house. Straw and 'sagatura' were commonly used litter types.



**Figure 2: Type of chicken house used by respondents in the study area**

## Feeds and feeding system

The major feed sources of exotic chickens in the study area were feeds and other non-feed substances obtained from scavenging (worms, insects, green leaves, weed seeds, crop seeds, sand and calcium carbonate), homemade wastes, market left over, grain supplements (maize, sorghum, and rice), industrial by products (oil seed cake and wheat bran). All respondents supplement their exotic chickens. Cereals and household wastes are the main feed sources being supplemented by the sample respondents. Sorghum, maize, wheat and rice are common cereals used for supplementation. However, in some occasions few respondents did use formulated rations and wheat bran to supplement their exotic chickens. Ration formulation from the available feed ingredients was unknown by majority of the respondents (94.1%) and only few (5.9%) used to formulate ration. This shows that feeding system of the area is traditional and should be improved through awareness creation. It is known that regular availability of good quality ingredients and a fully balanced complete feed are essential for efficient poultry production. Regarding frequency of feeding of exotic chickens, 88.2% the respondents provide feed on daily basis/once per day, but about 11.8% of the respondents provide feed supplements on weekly basis/ once per week. Majority of the respondents (76.5%) supplement layers, whereas about 23.5% of the respondents used to supplement growers. However, during farm visit it was noticed that some of the owners provided feed/grain for their chicken by spreading on the ground where as some others were observed while they provide feed for their chicken by using dirty feeders. So, it is critical to create awareness among the producers about the importance of an appropriate Feeder and waterer in relation with chickens' health. Majority of the sample respondents (64.7%) indicated that feed scarcity is not a major problem for exotic chicken production in the study area, but about 35.3% of the respondents mentioned it as a serious problem. From the total respondents, about 20.6 % indicated that feed shortage occurs in wet season. Their further explanation indicated that during this time the grass grows vigorously and covers the ground. Feeding system and the major feed sources of exotic chickens in the study area are indicated in Table 5.

**Table 5: Type of feeds and feeding system of exotic chickens in the study area**

Feeding and feed sources	N	%
Source of feeds		
Ingredient	33	97.1
Processed	1	2.9
Apply ration formulation		
Yes	2	5.9
No	32	94.1
How is the price of processed feed supplement		
Did not used	32	94.1
Medium	2	5.9
Quality of processed feed supplement		
Did not use	32	94.1
Very good	2	5.9
Feeding frequency		
Daily	30	88.2
Weekly	4	11.8
Category of feeding		
Layer	26	76.5
Grower	8	23.5
Chickens feed scarcity		
Yes	12	35.3
No	22	64.7
Season of feed scarcity		
No feed scarcity	22	64.7
Dry season	5	14.7
Wet season	7	20.6

When the ground is covered by the grass it creates inconvenience for birds to move freely and scavenge at the back yard. Any kind of seed that chicken get during scavenging at dry season is not accessible at wet season because it germinates. About 14.7% mentioned it occurs in dry season. To cope up with the problem of feed shortages that occur both in dry and wet season it is better to supplement chicken by industrial by products, grains and homemade fresh wastes. This result is in agreement with [17] who reported severe scarcity of scavenging feed resource during wet seasons indicating that availability of scavenging feed resource basis depends on seasons and backyard conditions. Less importance of feed scarcity for feeding exotic chickens in the study area was possibly related with better income of the respondents.

## Water and watering system

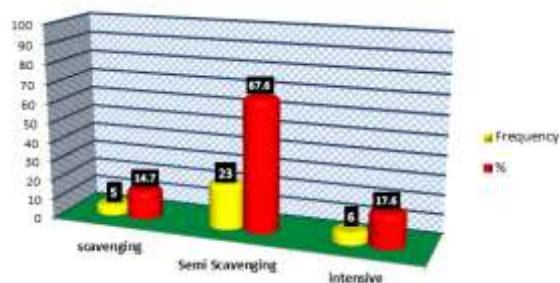
As has been known water plays an important role for feed digestion and metabolic activity of chickens. Almost all of the respondents in the study area provide water for their chickens and they entirely use pipe water. As it was noticed during farm visit, almost all materials used by the sample respondents for providing water for chickens were not cleaned and dirty. This needs due attention since unhygienic conditions might lead to disease because exotic chickens are sensitive to disease than local chicken breeds. Thus, concerned bodies should provide intensive trainings for producers on the concerns of chicken bio-security. According to all respondents, the distance between home of the house hold and source of water was less than one kilometer. (82.4%) of all respondents provided water ad libitum, whereas (14.7%) provided three times per day and the remaining (2.9%) offered two times per day. according to all respondents majority of chicken management activities which include feeding, watering and cleaning of chicken house are done by women in the study area.

**Table 4: Watering of exotic chicken in the study area**

watering of Exotic chicken	N	%
Access of water		
Yes	34	100.0
Source of Water		
Pipe	34	100.0
Distance of water source in KM		
Less than one KM	34	100.0
Frequency of water		
Twice	1	2.9
Thrice	5	14.7
Ad libitum	28	82.4

## Exotic chicken production systems in the study area

Majority of sample respondents (67.6%) use semi-intensive production system of rearing exotic chickens, thus in this system chickens are allowed to scavenge around their house and supplemented by cereal crops. About 16.7% of respondents reported that they use intensive production system so that chickens are confined in their house providing all necessary feeds and water. Some other respondents (14.7) reported that they use scavenging system to rear exotic chickens.



**Figure 1: Production systems of exotic chickens in the study area.**

### Production performance of exotic chicken breeds in the study area

Of the total respondents, 97.1% were interested in rearing exotic chickens than rearing local chickens. Exotic chickens were preferred due to their higher egg production performance than local chickens. The respondents rated the performance of exotic chickens as very good (52.9%), well (14.7%), not well (8.8%) and the rest 23.5% have no idea about the performance of the exotic breeds because their chickens have not started production. About 73.5% of respondents reported that egg size of exotic chicken was larger than the indigenous breeds. The measurement value indicated that egg size for RIR breeds was 65.75g whereas egg size for indigenous breeds was 21.71g. Number of eggs lay per annum per RIR hen as estimated by respondents was 155. According to all respondents' exotic chicken (RIR) attain the first laying stage at average age of 5.14 months. Estimated weight at first lay for RIR breeds was 1.15 kg, for bovine chicken breeds was 0.675kg and for Cocook breeds was 1.7kg. Previous studies show that exotic breeds produce around 250 eggs /year/hen with around 60 g of egg weight, whereas local chickens produce only 50-60 eggs/year/hen with egg weight of 38 g under village management of Ethiopia [16] [18] also indicated that majority of imported breeds performed very well under intensive condition in Ethiopia. However, production performance of exotic birds in Ethiopian condition needs to be monitored regularly to provide guidelines for policy makers. Lack of recorded data on the productive performance of chicken makes it difficult to assess the importance and contributions of the past attempts to improve the sector [19] (Moges *et al.*, 2010).

### Utilization of eggs produced per households

The survey result indicated that sample respondents utilize egg produced primarily for home consumption (41.2%), for sale (29.4%) and some others (2.9%) for hatchery purpose. About 26.5% of the sample respondents did not harvest eggs from exotic chicken breeds because chicken were not yet attained laying age. This result is in agreement with [20] that in rural areas of Benishangul-Gumuz region smallholder farmers primarily produce chickens for home consumption. This study implies that commercial chicken production is not yet widely practiced in this study area as result the cost of egg and chicken was expensive in Assosa town as compared to other areas of the country. Higher demand of chicken products in the town cannot be satisfied by low level of production and, thus commercial chicken production systems should be promoted. Increasing population size, booming economic developments and being a tourist destination due to proximity to the renaissance dam of Ethiopia, there is high need for chicken products in Assosa town.

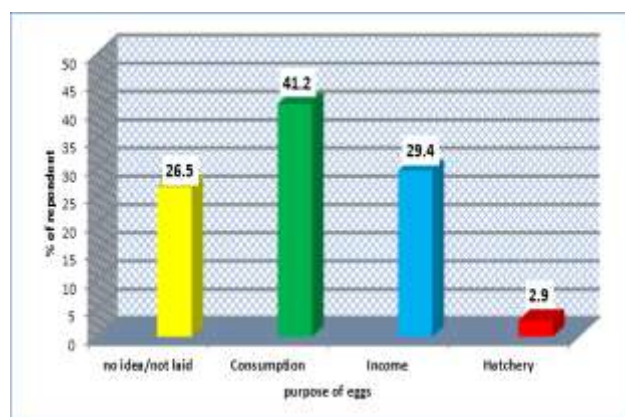


Figure 2: Utilization of egg produced by exotic chickens in the study area

### Occurrence of disease, predators and parasite in the study area.

#### Diseases of exotic chicken

According to the researches assumption, the economic losses due to diseases in smallholder poultry cannot be accurately calculated. In the study area all respondents believed that all chicken diseases were considered as Newcastle disease (NCD). They further assumed that it was the most prevalent and economically important disease that destroys poultry population. [15] also reported that the major cause of death for all type of poultry is seasonal outbreak of Newcastle disease (NCD). Of all respondents (73.5%) reported occurrence of disease in their farm, whereas the rest (26.5%) of the respondents revealed that there is no occurrence of disease in their farm, they further explained that they do not observe disease in their farm because of that they keep their chicken under confinement and good management situations. Based on the information obtained from veterinarians that attend focus discussions and disease symptoms revealed by respondents. Majority of the respondents and veterinarians indicated that Newcastle "Wararshen" (Fengel) Symptoms were (Head and wing dropping and sleeping and sometimes diarrhea, weakness, fluid in mouth and eye, reduce feeding and watering, don't move). This result indicated the disease might probably be Newcastle (Wararshen/Fengel). During group discussion and key informant interview livestock production and health experts reported that occurrence of disease in the farm reduced number of exotic chicken, their productivity and income of the respondents. Frequent occurrence of disease in the farm might be due to lack of attention, effect of poor extension and limitation of veterinary services. Thus, it needs deep discussion between agricultural experts and poultry keepers. As reported by [21] NCD is one of the major infectious diseases affecting productivity and survival of village chicken in the central highlands of Ethiopia. The information obtained from animal production and health experts during focus group discussion indicated that the most commonly occurring chicken diseases in the study area were Newcastle diseases, coccidiosis, Gomborodisese, Marekes disease, and other respiratory diseases.

#### Season of disease occurrence in study area

Respondents indicated that the major causes of losses in the study area were disease. (61.8%) of the respondents indicated that the severity of the disease was higher during dry season. according to (23.5%) of the respondents chicken disease occurs in wet season. According to respondents, the common signs of disease frequently occurred in both seasons were watery and yellowish diarrhea, closing of eyes, head hangs down, high level of morbidity, depression or 'sleeping', droppings of wings, nasal discharge, twisting of head and neck, loss of appetite and mass death. According to the all respondent disease of chicken most commonly occur in the dry season when mango was blooming and the fruit is attaining the ripening/ consumption stage. During wet season the rain starts to fall and the environment becomes very wet. Wet season was also characterized by feed shortage in the study area. The wet environmental conditions together with feed shortage that occur during wet season affect resistance of chicken to disease at wet season as compared to dry season. According to remaining (14.7%) of respondents there were no diseases that occur in area. During focus group discussion and key informant interviews veterinarians and animal production experts reported that awaking of poultry keepers, identifying Season of disease severity, Provisions of medicine for sick birds, vaccination of the flock and improving of all management systems were remedial actions to be taken to protect disease in the study area.

### Treatment and controlling methods of disease in study area

Some of the respondents revealed that due to lack sanitation and contamination the incoming infected flocks became the main sources of chicken disease. These respondents couldn't identify sick animals from health once. (47.1%) of the respondents treated only when chicken get sick. (35.5%) of all respondents treated both sick and healthy chicken and the remaining (17.6%) didn't face and treat disease. for (64.7%) of the respondent's treatment of exotic chicken was done by animal health professionals, (23.5%) of the respondents treat their exotic chicken by themselves. and (11.8%) no disease. According to (47.1%) of the respondents after the treatment their chicken recovered from disease, (38.2%) of the respondents will not treat their chicken when they get sick. (14.7%) of the respondents didn't observe disease and treat birds. According to the information obtained from the respondents both scientific and traditional methods were used to control the disease of exotic chicken in the study area. (29.4%) of the respondents implemented scientific disease controlling techniques. they reported that they take their chicken to the nearby veterinary clinic as soon as they observe disease symptoms. (11.8%) of the respondent used traditional methods for controlling disease they explained that they treat sick birds by administration of lemon, garlic, local alcoholic drinks "areke", spice "tinadam" by adding with feed and water. They further revealed that utilization of traditional methods provided good result for controlling disease. (14.5%) of the respondent use both the traditional and scientific methods for controlling of disease in the study area. The rest (44.1%) of the respondents will not face and control disease in study area. all of the respondents discussed that Poor distribution of veterinary service centers in all kebelles of the town has negative impact on controlling of disease and development of poultry production in the study area.

### Predators of exotic chicken

Cat for (41.2%) of the respondents as well as dog and snack for (2.9%) of the respondents were predators that most commonly occur and attack chicken in the study area. (52.9%) of the respondents did not observe predator problems. Respondents explained that they practiced different means of controlling of predators that attack different age classes of chicken. To protect their chicken from predator attack (35.3%) of the respondents kept the chicken in the house, (5.9%) of the respondents theater/ tie their chicken and control their movement, whereas (5.9%) of the respondents use mesh wire. According to (52.9%) of the respondents predator controlling practices was not done.

### External parasite of exotic chicken in the study area

External parasites are one of the enemies that affect Exotic chicken that occurs when the house of poultry was not clean. (61.8 %) of the respondents reported that external parasites were occurred in their farm. As mentioned by the respondents the types of external parasites were "kinkin", "kimazhir", "shikin", "kimach". The only controlling method that they perform was cleaning the exotic chicken house and perch. (38.2%) of the respondents revealed that there was no parasite occurred in their farm.

### Provision of Extension services for improvement of exotic chicken production

There was low extension support from responsible bodies and this is in agreement with [22] low supply of exotic breed and limited credit for poultry production, lack of appropriate chicken and egg marketing information to producer farmer and lack of enough space for chicken marketing in urban markets. According to the survey results (61.8%) the respondents were accessible to extension service. Around (38.2%) the respondent

didn't get any service in the study area. So, due to lack of extension service the production performance of exotic chicken was low and it became difficult to improve the performance of exotic chicken breeds in the study area. During group discussion and key informant interview attendants explained that there was no relevant extension services provided to exotic chicken keepers in the study area. They further clarified that there was poor access to vaccines, veterinary services and other poultry production technologies that contribute for development of poultry farming in the study area. According to our observation the relationship/linkage between exotic chicken keepers and the extension service providers was very weak in the study area. There was high (1-10km) distance between extension service provision center and exotic chicken keeper's house. The distance between (32.4%) of the respondent house and extension service provision center was 1-2km, the distance between (23.5%) of the respondent house and extension service provision center was 2-3km, the rest distance between (14.7%) respondents house extension service provision center was 3-10km.

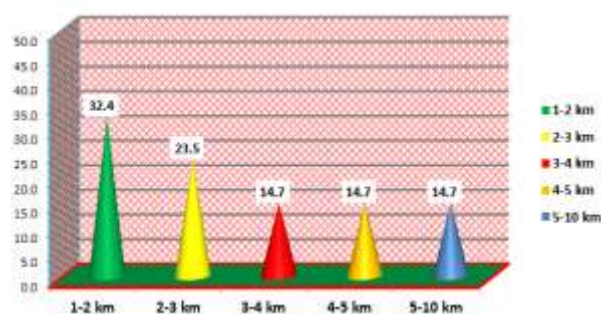


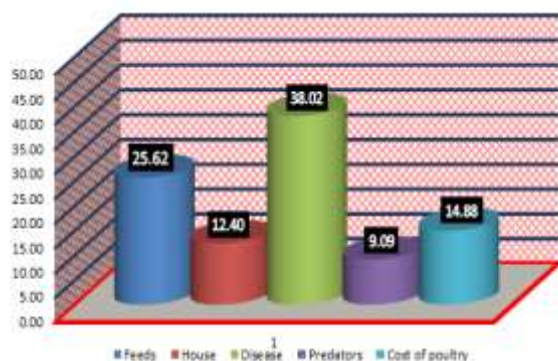
Figure 3: Distance of extension service from respondent house

### Constraints of exotic chicken production in the study area

According to the calculation of ranking index shown in figure: 7, the most important constraints of exotic chicken production in the study area were disease (0.36) (38.2%) (1<sup>st</sup> rank), feed (0.26) (25.62%) (2<sup>nd</sup> rank), cost of poultry (0.12) (14.88%) (3<sup>rd</sup> rank), house (0.12) (12.4%) (4<sup>th</sup> rank), Predators (0.10) (9.9%) (5<sup>th</sup> rank). regarding the constraint ranked above in the study area the main problems raised by respondents were disease and feed. Under farmers management condition poultry production, prevailing disease, predators, market problem, lack of water, lack of proper health care, poor feeding and extension together with veterinary services were reported as the major constraint by [19], [23],[24] and [25]. The same as the study conducted in Fogeraworeda[18] reported that the two major constraints of poultry production were disease and shortage of feeds which were more or less similar with the present results.

Table 6: index value of constraints ranked by respondents in the study area

Constraints	Rank-1	rank-2	Rnak-3	Rank-4	Result of index value
Feeds	6	13	9	3	0.261682
House	3	4	7	1	0.121495
Disease	15	10	6	15	0.364486
Predators	5	3	2	1	0.105919
Cost of poultry	4	4	1	9	0.121495
Land	1	0	0	0	0.012461
water	0	0	0	4	0.021622
thieves	0	0	0	0	0
Total	34	34	25	33	1.009161



**Figure 6: Constraint ranked by respondents in the study area**

## V. CONCLUSION

The study was undertaken during April up to June 2016 in Assosa town of Benishangul Gumuz regional state, Ethiopia. The aim of the study was to explore husbandry practices and egg production performance of exotic chicken in the study area. It was found that large numbers ( $10.26 \pm 8.83$ ) of exotic chicken were kept by the respondents in the study area. Due to its small space and lower initial capital requirement sample household's ranked chicken as the first important animals kept in the study area. Most exotic chicken rearing in the study area were carried out by women. The main purposes of keeping exotic chicken in the study area were for generation of income/sale which was followed by consumption and replacement of the flock.

The most important feed resources of exotic chicken kept in the study area were feed obtained from scavenging, house hold wastes, market left over, and industrial by products and grain supplement. Majority of the households accommodated their exotic chicken in separate house constructed for confinement of the chicken. The higher mortality rate of exotic chicken in the study area was caused by disease, predator and injuries. The most commonly happening and economically important disease in the study area was Newcastle. The commonly observed predators in the study area were cat, dog and snake. Egg production performance of exotic chicken in the study area in general was a bit better than local chicken but not at its satisfactory level. Health and feed problems respectively, were the first and the second constraint of exotic chicken production in the study area. The two problems were followed by lack of veterinary health service, implementation of traditional /poor management techniques; poor feed supplementation process, poor housing and sanitation of the chicken farm, limited access to chicken production technologies and extension service centers, high incidence of predator and poor egg handling practices. The attention given to exotic chicken, particularly in breeding management, supplementary feeding, health care and housing practices, was very low in the study area. Hence better breeding management, improving the health of poultry, practicing Supplementary feeding could increase the productivity of birds.

Poultry keepers in the study area have limited knowledge on improved and effective exotic chicken production practices, hence continuous training and awareness creation should be done on feeding, housing, health and breeding management of poultry so as to enhance the productivity and bring meaningful change in the livelihood of small holders by exploiting the existing exotic chicken resources of the area. To solve the problem of feed shortage, efforts should be made to promote access to industrial by products and production of grains. Establishing animal health clinics and equipping them with the necessary facilities, drugs and animal health professionals could be important to identify, control and monitor poultry diseases in the study area.

Generally in the study area large scale commercial exotic chicken production has not yet developed. In the short term this is an opportunity for small holders to apply poultry without much competition. In the long term small holders might need to integrate free range resources and also increase productivity by slowly intensifying their production systems in order to remain competitive with commercial poultry producers. The survey presented in this study has produced a range of insights use fully for further research and development activities. More generally the finding of the study indicates options for up scaling and intensification of exotic chicken production in the study area. For higher returns there should be more use of inputs (Feeding, housing and disease controlling practices).

Overall, the study showed the presence of different preference for keeping exotic chicken in the study area. It also identified the main challenges that hinder the success of keeping exotic chicken in Assosa town. This implies that any area specific development interventions aiming to improve the productivity of exotic chicken and thereby enhance the livelihood of small holder farmers should be planned and implemented in relation to the felt need of the farmers.

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