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Trends of Exotic Chicken Dissemination in North Western Amhara, Ethiopia: Challenges and Opportunities

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Abstract
This study was conducted in Banja and Burie districts of northwestern Amhara, Ethiopia to investigate the dissemination trends, challenges and opportunities of exotic chickens. Banja and Burie districts and six Kebeles (three/district) were purposively selected. A total 180 respondents were selected by systematic and simple random sampling techniques for the survey and data was collected using semi structured questionnaire. Chi-square test was employed for ordinal and nominal data. Bovans-Brown, Bovans-White (commercial layers) and Potchefstroom Koekoek (dual purpose) breeds are the most distributed exotic chickens in the both study areas. The results revealed that the majorities (91.12%) of distributed exotic chickens were kept in traditional/backyard production system. Exotic chickens in both study areas were exposed for high mortality due traditional farmers' management practice. Higher mortality of chicken was seriously affected the survival of these breeds and contribution of chickens to farmer households. The major causes for chick death survey study were NCD and predator. Egg productivity, fast growth, survival, disease resistance and egg hatchability with the overall index value of 0.27, 0.24, 0.09, 0.31and 0.10 were the first ranked traits, respectively. Supply of two and three months of pullet and cockerels rather than supplying day old chicks as an important option to enhance survival and growth of distributed chicks at farmer level. Due to lack of veterinary services and vaccine almost all exotic chicken owners have traditionally experienced to treat their sick chickens in both study areas. The productivity of disseminated exotic chicken was far below the possible expectations at smallholder farmer level in both study areas. The current result revealed that having a huge number of exotic chicken breed populations in the study areas generally in the region, but this situation was a paradox. The major challenges to chicken production in both study areas were disease, predator, poor extension services, feed shortage and house problem which need to be considered in development plan of the districts.
Keywords: Challenges, Genotype, management system, mortality

1. INTRODUCTION

In Ethiopia chickens are the most widespread and almost every rural family owns chickens, which provide a valuable source of family protein and income (Tadelle et al. 2003a). Distribution of pullets, cockerels, DOCs and fertile eggs, layers and duals breeds has been one of the poultry extension packages accomplished by the regional office of agriculture, since the last 20 years aiming at improving chicken production and productivity. Despite this large distribution of exotic chicken breeds, the contribution of exotic chicken in the current production system of the region like lack of knowledge on chicken husbandry, lack of complimentary inputs, lack of extension follow up, high disease prevalence and predation are the limited factors mainly due to high mortality rate of chicks (Hailemariam et al. 2006).

Most of the research work is still being carried out on intensive poultry production in Ethiopia, with modern housing and feeding systems but agro-ecologically based information on constraint of exotic chicken production is still scanty. Greater efforts have been made to transform the production system into a more commercialized and intensive large-scale system (Ashenafi, 2000). In addition, cross breeds and exotic breeds are multiplied in government owned poultry farms and distributed to individual farmers via the extension division of the Bureau of agriculture and rural development to be maintained and produced under the backyard management system. This is thought to improve the livelihood and nutrition of poor farmers and further to contribute to the national economy at large (Tadelle and Ogle, 2001).

Accordingly, Amhara National Regional State livestock Resource Development and Promotion Agency (ANRS LSRDPA) schemed poultry development strategy starting from 2010 (ANRS LSRDPA, 2007). During the periods of 2010 to 2015 over 219,939 different exotic chicken breeds in the Northwestern Amhara region were disseminated mainly (39215 day-old) chicks recently which were extensively disseminated in rural areas of Banja and Burie districts by GOs and different NGOs to farmers from poultry multiplication centers located at Andassa, Kombolcha, Gerado and Ethio-chick. The main purpose of the dissemination was to enable farmers to generate income through egg production (ANRS LSRDPA, 2007). The productivity of disseminated exotic chicken was far below the possible expectations at smallholder farmer level and the country as well as the region couldn't fulfill the national demand .Having a huge number of exotic chicken breed populations distributed in the region, but this

situation is a paradox. Therefore the objective of this paper was to study the dissemination trend, major challenges and opportunities of exotic chicken production at smallholder level

2. MATERIALS AND METHODS

2.1 Description of the Study Area

2.1.1 Banja district

Banja district is one of the administrative districts of Awi zone in Amhara regional state of Ethiopia. This district was characterized by a predominantly mountainous location with latitude of 10°57′N 36°56′E that bounded in the south by Ankesha and Gougusa Shikudad woreda, in the west by Guangua woreda, in the north by Fagta Lakeoma woreda and in the east by Sekele woreda. The area is part of the north-western part of Ethiopian highlands where 80% of the area is (highland), 20 % is (midland) (BDARDO, 2007). It has unimodal rainfall distribution pattern. The rainy season for the area starts in May and extends to the end of October. The district is located at latitude of 11° 10 north and longitude of 36° 15' east and 122km far from the regional city Bahir Dar to south and 447km north to Addis Ababa. The average elevation of the district is 2560 m above sea level (BDARDO, 2007). The district has a total of 26 Kebeles. Like other parts of the country agriculture is the main economic activity and livestock supports the crop production. The district is classified into one agro climatic zone, which is highland with wet and cool weather condition (BDARDO, 2007).

2.1.2 Bure district

Bure district is located in the northern part of Ethiopia. The district has a total of 27 administrative Kebeles which 5 are urban and 22 are rural. Burie administrative and commercial center of the district is located 420 kms from Addis Ababa and 148 kms from Bahir Dar. The district has a total land area of 2207.2 km and the district has three agro climatic zones, 80%, w/Dega 10% Dega and 10% kola, respectively (BDARDO, 2007).

Table 1. Ecological characteristics, human and chicken populations of in the both study areas

District	Altitude	Annual RF	Mean Annual Temp	Human population	Total chicken Population	Indigenous chicken	Exotic chicken
Banja	1900-2700 Masl	2,200-2400 mm	12°-25°C	111,975	97497	78054	9443
Burie	700-2750 Masl	713-2832 mm	17-27°C	281,310	203079	183307	19772

Source: (BBDARDO, 2007)

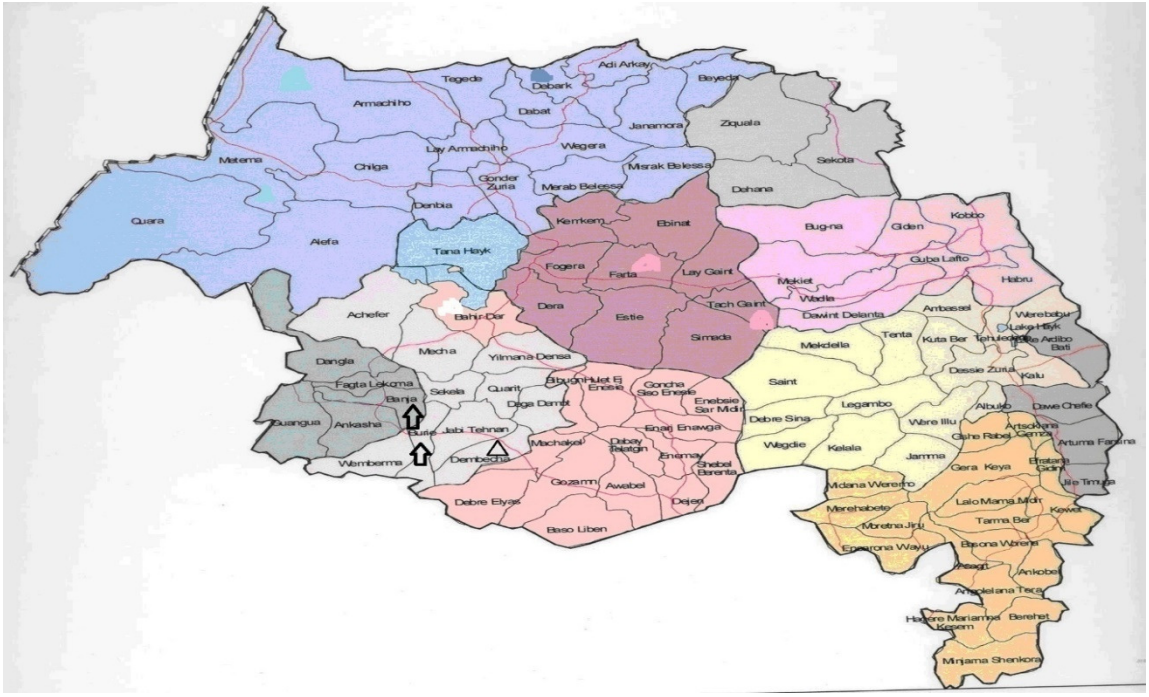

Figure 1 Map of the study districts are indicated by arrows

2.1.3 Study Population

The populations studied were three different exotic chickens distributed by the government (GOs) and different

non-governmental organizations (NGOs) in Banja and Burie districts, which are commercial layers (BB and BW) and dual purpose (PK) breeds.

Figure 2. Bovans Brown, Bovans White (commercial layers) and Potchefstroom Koekoek (dual)

2.2 Sampling methods

Two districts of Banja (highland) and Burie (midland) were purposively selected; six Kebeles which have been participating in improved poultry extension package were also selected purposively. The selection was done with the help of office of two districts agriculture livestock experts based on high potentiality of exotic chicken distribution from high and midland agro ecologies and 180 exotic chicken owner farmers were selected from household package beneficiary's registration book of each selected Kebeles were selected by using systematic and simple random sampling techniques for survey.

For the interview, a semi-structured questionnaire was prepared, pretested on two non random sampled households from each study sites during the rapid field survey and the interview was conducted with the household head. Enumerators were selected among the development agents of the agricultural office of the administration. Sampled respondents,' personal observations and informal discussions with the experts and key informants were carried out. In addition to, semi-structured questionnaire survey, focus group discussion (FGD) and monitoring work were employed to collect the required data. Experts from agriculture and rural development agents, extension staff, district administrators in both districts at each Kebeles also participate in the group discussions. Continuous supervision was considered to reduce error during data collection.

2.3 Data Collection Procedures

2.3.1 Questionnaire survey and group discussion

The questionnaire survey was conducted on different aspects of the backyard poultry production systems and its challenges and pre-tested before the actual data collection. Qualitative data of health care was the core points considered in the process.

Group discussions were made with focus group established from each Kebeles with group comprising 5 to 7 members. Members of the focus groups include people believed to be knowledgeable about past and present social and economic status of the area, community elders, women and extension agent discussions were focused on basic data on, type of management system of chicken (backyard and semi-intensive), and cause and rate of mortality, season of chicken mortality, occurrence and severity of disease outbreak and other important aspects in chicken production were collected through group discussion.

Ranking was considered to identifying the major constraints and farmer's perception on breed preference. So far participants were asked to rank their first, second, third and fourth of major constraints. Farmer's perception on breed preference and trait selection were analyzed and summarized by index method. Index was computed with the principle of weighted average according to the following formula.

Index =Σ (n x number of HHs ranked 1^{st}) + (n-1) x number of HHs ranked 2^{nd}) + …+ 1 x number of HHs ranked last) for one trait divided by the Σ (n x number of HHs ranked 1^{st}+ (n-1) x number of HHs ranked 2^{nd}+…. +1x number of HHs ranked last) for all traits, and where n = number of traits under consideration. The variable

with the highest index value is the highest economically important (Hunduma et al. 2010).

2.4 Data Management and Statistical Analysis

Data was managed both in hard and soft copies. All collected data were entered into Microsoft Excel computer program. An observation on mortality was analyzed using the frequency procedure of chi-square and for major constraints and farmers' perception used ranking index.

3. RESULTS AND DISCUSSIONS

3.1 Chicken Production System

3.1.2 Management system

About (91.12 %) of respondents were used backyard chicken management system in both study areas, whereas, (8.89%) of farmers were kept their chicken by semi-intensive management system (Table 2).According to the result obtained from group discussion, majority of the farmers kept exotic chickens extensively under traditional production systems. The reason might be created by poor awareness of farmers due to lack of strong extension service. This result is higher than with reported by (Ahmedin, 2014) in Gorogutu district (74.4%) extensively management practices. According to the previous report in the other parts of the study areas are similar to (Simegnew et al. 2015) in north western Amhara Region and (Addis and Malede, 2014) who stated that all most all interviewed farmers in the north Gondar zone were practiced extensive production system.

3.1.3 Feed and feeding practices

About (72.77 %) of the respondents were managed their exotic chickens under free scavenging system with no additional feed supplements (Table2). The reaming (27.22%) of the exotic chickens are managed under free scavenging with additional feed. This result is not in line with reports in East Shewa zone (2.2%) and (97.8%) by (Desalew, 2012) only scavenging with no additional feed supplements and scavenging with additional supplement for exotic chicken at village production system, respectively at improved feeding system and in Gorogutu district (4.4%) scavenging alone and (95.6%) scavenging with supplement by (Ahmedin, 2014) at village production system, respectively. The cumulative feeding frequency (67.78%) of the respondents feed evening and morning, whereas morning, evening and afternoon (4.44%), afternoon only (12.22%), morning only (8.34%) and (7.22%) no feeding practices in both agro ecologies. Whereas, (82.78%) and (17.22%) of the respondents throw on the ground and on feeding trough were the major feeding practices in the study areas. About (90%) of the respondent stated that the season of feed shortage serious was in rainy season in both agro ecologies All most100% of the respondents elicited that season of extra feed needs from Jun-sept (long-rainy) in both agro ecologies Feed scarcity as well as supplementation was mainly in long wet seasons. This report is in line with reported by (Leulseged, 2005) who reported that more scarcity of feed was in wet season. Availability of resources of feeds for the scavenging village chicken might be depending on season and backyard conditions.

3.1.4 Chicken house and watering practices of farmers

About (8.88%) of respondents were cleaning daily, while, (21.11%) of the respondents were reported of cleaning weekly as well as (65.56%) of the respondents were cleaning monthly and (13.33%) of the respondents did not use cleaning practices frequently in highland agro ecologies. Whereas (12.22%) of respondents were cleaning daily, (33.33%) of the respondents reported of cleaning weekly as well as about (43.33%) of the respondents were cleaning monthly and (11.11%) of the respondents were did not used cleaning practices frequently, respectively in high and midland agro ecology (Table 2). This result indicated that lack of frequent cleaning of chicken shelter can easily cause for infectious disease and increase mortality rate. From the total respondents (16.11%) of them kept their chicken at night sheltering place within separate shelter and in both agro ecologies, respectively. About (43.89%) of the respondents in the family house and the remaining (25%) separate house with other animal and in bamboo cage in both agro ecologies (Table 2). This result is not in line with finding of (Desalew, 2012) in East Shewa zone 95.6% constructed a separate house at village exotic production system and in Gorogutu district with overall (36.7%, 40% and 23.3%) separate house, different shelter during night and share the same room with family, respectively by (Ahmedin, 2014) at village production system. Similar research result was reported from north western part of Ethiopia (Halima, 2007) and from Fogera (Bogale, 2008) who revealed that 50.77% and 59.7% of farmers kept their chicken outside the house, respectively. The main reason for not constructing separate chicken houses in both agro ecologies was lack of awareness and risk of predators**.** Water plays an important role for feed digestion and metabolic activity of chickens. About (85.56%) from high and (88.89%) from midland agro ecologies respondents provide water once/ day at any time. Whereas, (14.44 %) from high and (11.11%) in midland agro ecologies provided water in twice/ day. This result is not in line with the result of (Desalew, 2012) in East Shewa zone (95.6%) free access under improved management system and with (Ahmedin, 2014) with the overall watering frequency (20%) twice/day and once/day in Gorogutu district, eastern Hararghe.

Table 2.Chicken management systems, feed and feeding practices in the study areas

	Agro ecology		
Management practices (%)	Highland % (N)	Midland % (N)	Cumulative % (N)
Backyard	95.56 (86)	86.67 (78)	91.12 (164)
Semi- intensive	4.44 (4)	13.33 (12)	8.89 (16)
Frequency of feeding (%)			
Morning, evening and afternoon	7.78 (7)	1.11 (1)	4.44 (8)
Morning and evening	66.67 (60)	68.89 (62)	67.78 (122)
Afternoon only	13.33 (12)	11.11 (10)	12.22 (22)
Morning only	12.22 (11)	18.89 (17)	15.56 (28)
Overall	100 (90)	100 (90)	100 (180)
Feeding practice (%)			
Throw on the ground	95.56 (86)	70 (63)	82.78 (149)
On feeding trough	4.44 (4)	30 (27)	17.22 (31)
Feed resources (%)			
From the house	94.44 (85)	87.78 (79)	91.11 (164)
Purchased	5.56 (5)	12.22 (11)	8.89 (16)
Type of feeding system (%)			
Only scavenging	72.22 (65)	73.33 (66)	72.77 (131)
Scavenging with additional feed	27.78 (25)	26.67 (24)	27.22 (49)
Season of extra feed (%)			
Long-rainy(Jun-sept)	100 (90)	100 (90)	100 (180)
Short –rainy (Apr-Jun)	NA	NA	NA
Season of feed shortage serious (%)			
Rainy season (Jun-August)	100 (90)	95.56 (86)	90 (176)
Dry season (Feb.-May)	NA	NA	NA
Hygiene status (%)			
Daily	8.88 (8)	12.22 (11)	10.55 (19)
Weekly	21.11 (11)	33.33 (30)	22.77 (41)
Monthly	65.56 (59)	43.33 (39)	54.44 (98)
No cleaning practices	13.33 (12)	11.11 (10)	12.22 (22)
Housing type (%)			
In bamboo cage	26.67 (24)	23.33 (21)	25 (45)
In the family house	47.78 (43)	40 (36)	43.89 (83)
Night separate shelter	4.44 (4)	27.78 (25)	16.11 (29)
Separate house with other animal	21.11 (19)	8.89 (8)	15 (27)
Watering practices (%)			
Once a day at any time	85.56 (77)	88.89 (80)	87.22 (157)
Twice/ day	14.44 (13)	11.11 (10)	12.77 (23)

NA=Not available

4. Exotic Chicken Breed Dissemination Trend in Amhara Region

Introduction of exotic breeds of chicken into northwestern part of Amhara Region have been conducted over the last two decades and the trend is increasing in the region (Figure 3). Such massive introduction of exotic genotypes was conducted via distribution of fertile eggs, day-old chickens, crossbred pullets and exotic cockerels. However, neither the exotic chicken breed/crossbred increased in sizes nor the egg production in the areas distributed **(**Figure 3).

Accordingly, the Bureau of the Amhara National Regional State of Agriculture and Rural Development (BoARD) schemed poultry development strategy starting from 2010 **(**Figure 3). The main purpose of the strategy was to enable farmers to generate income through rearing day-old chickens of three exotic breeds, Bovans-Brown (BB), Potchefstroom Koekoek (PK) and Bovans white breeds (BW) which were hatched and distributed from poultry multiplication centers located at Andassa, Kombolcha and Ethio-chick. During the periods of 2010 to 2016 over 32,134,426 (31,319,335 day-old chickens, 642378 two month pullets and cockerels and 172713 fertile eggs) were distributed to in the region **(**Figure 3).

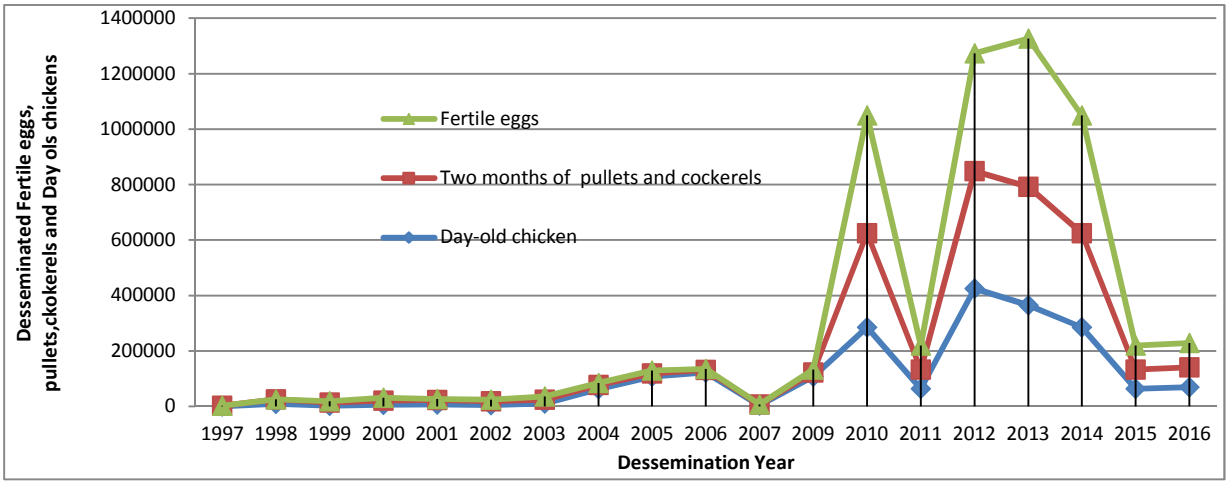

Figure 3. Trends of exotic chicken distribution in Amhara region

According to the (CSA, 2015/16); there were around 18 million chicken populations in Amhara region, accounting to 2.9% of the national chicken population. Distribution of pullets, cockerels, day-old chickens and fertile eggs, layers and duals purpose breeds, has been one of the poultry extension packages accomplished by the Regional Office of Agriculture, since the last 20 years, aiming at improving chicken production and productivity. The highest chicken population of the region (total chicken population of the region is 18,031,121 (206 200, 513705 and 17311216 exotic, hybrid and indigenous, respectively is found in Amhara region (CSA, 2015/16) (Figure 4).

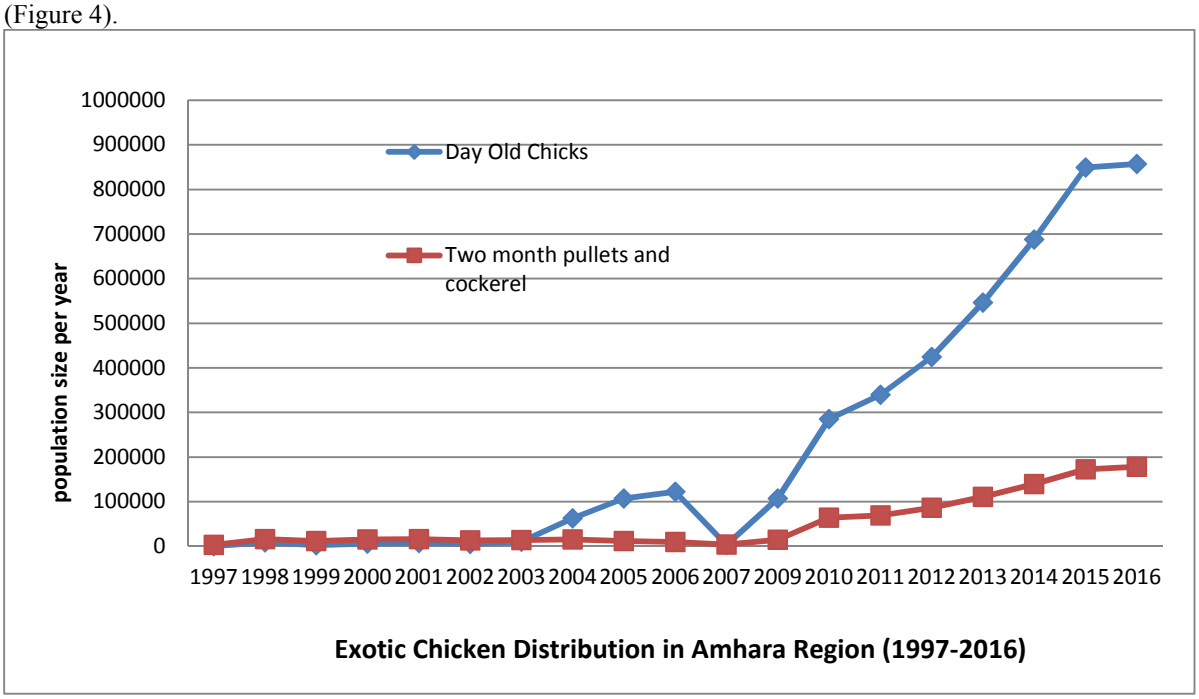

Figure 4. Trends of exotic Chicken distribution in Amhara region (1997-2016).

5. Perceptions of Farmers on day old chick Distribution and Management

Farmers' breed and traits preference of exotic chicken in the study area are presented in (Table 3). From the result obtained from key informants during group discussion, among Bovans white, Koekoek and Bovans Brown breeds with the index value of 0.23, 0.22 and 0.20 were more preferred breeds by farmer's as first, second and third ranked, respectively in highland and with the index value of 0.25, 0.19 and 0.21 for Koekoek, Bovans Brown and Bovans white were preferred breeds as ranked first and second, respectively in midland (Table 3). The merits mentioned by farmers for their breed preference were like egg productivity, fast growth, survival (adaptability), disease resistance and egg hatchability with the overall index value of 0.27, 0.24, 0.09, 0.31and 0.10 were the first ranked traits, respectively. Whereas, Bovans white, Koekoek and Bovans Brown were first, second and third more adapted breed types ranked by farmers with index value of 0.34, 0.33 and 0.22, respectively in highland ,while, with the index value of 0.30, 0.23 and 0.22 for Koekoek, Bovans Brown and Bovans white breeds ranked as the first, second

and third adapted breeds, respectively in midland Bovans Brown, Bovans white and Koekoek were more egg preferred breed type by farmers with the overall index value of 0.26, 0.25 and 0.22 ranked as the first and second, respectively in both agro ecologies. The reason for egg preferred trait were egg size and egg color preferred by farmer respondents with the overall index value of 0.35 and 0.34 ranked as the first and second, respectively in both agro ecologies (Table 3). Bovans Brown chicken was least preferred breed by farmers because of its poor productivity during feed shortage (high feed consumption requirement and poor scavenging ability) and low resistance to disease.

According to farmer's perception on adaptability of distributed exotic chicken breeds during group discussion stated that almost all farmers did not like distribution of day old chick in both agro ecologies. The reason might be associated due to poor adaptation to the new production environment. This result is in line with the result reported by (Hailu et al. 2012) in Amhara regional state, Northwest Ethiopia and (Simegnew et al. 2015) study indicated that out of 100% respondents elicited that only 7.98% out of distributed day old chicks reached to young chickens (to pullet age) at smallholder level in North Western Amhara region. The farmer respondents were consider that supply of three month chick rather than supplying day old chicks as an important option to enhance survival and growth of distributed chicks.

According to the Amhara Regional Agricultural Office, in Amhara Region attempts have been made at various times to improve local chicken production through introduction of exotic chicken breeds (Simegnew et al. 2015). Distribution of pullets and cockerels has been one of the poultry extension packages accomplished by the Regional Agricultural Office for long periods. However, the method creates a challenge in addressing many areas in short period of time and this method of distribution failed to address the goal of the government as well as interested areas of the region. Thus, the Regional Agricultural Office forced to search a new method of distribution to address wider area which is day old chicks (DOCs) distribution .Despite the huge effort to address wider area using day old chick's distribution, the method is highly criticized by smallholder poultry producers (Simegnew et al. 2015).

The source of these layers distributed for smallholder farmers in the region were from Andassa and Kombolcha poultry multiplication. Exotic chicks are carefully selected and specialized solely for the production of either meat or eggs, unsuitable for breeding purposes, especially for mixing with local village chicken and have very low mothering ability and broodiness (Sonaiya and Swan, 2004). Thus, supply of day-old chicks/pullet chain continues based on the interest of farmers every year to replace aged layers at village. The adaptation period helps the chick to grow at some level, in which able to scavenge their own feed at the village and protect from predators.

Table 3. Farmers' perception and index with rating of trait of categories

Parameters	Agro ecology		Overall index
	Highland	Midland	
Farmers breed preference			
Bovans Brown	0.20 (3)	0.21(2)	0.23 (2)
Koekoek	0.22 (2)	0.25 (1)	0.33 (1)
Bovans white	0.23 (1)	0.19 (2)	0.26 (1)
Criteria for preference			
Egg productivity	0.41 (1)	0.38 (1)	0.27 (1)
Fast growth	0.25 (2)	0.27 (3)	0.24 (1)
Body weight	0.11 (2)	0.11 (4)	0.11(3)
Survival(adaptability)	0.11 (4)	0.17 (3)	0.31 (1)
Disease resistance	0.09 (6)	0.07 (5)	0.09 (1)
Egg size	0.35 (1)	0.26 (2)	0.16 (3)
Hatchability	0.26 (6)	0.37 (1)	0.10 (1)
Adapted breed			
Bovans Brown	0.22 (3)	0.23 (2)	0.22 (3)
Koekoek	0.33 (2)	0.30 (1)	0.27 (2)
Bovans white	0.34 (1)	0.22 (3)	0.35 (1)
Egg preferred breed type			
Bovans Brown	0.29 (1)	0.30 (1)	0.26 (1)
Koekoek	0.27 (2)	0.26 (2)	0.22 (2)
Bovans white	0.28 (1)	0.27 (1)	0.25 (1)
Reason of egg preferred			
Egg size	0.35 (1)	0.34 (1)	0.34 (1)
Egg color	0.37 (1)	0.33 (2)	0.35 (2)

Index=sum of [3 for rank 1 + 2 for rank 2 + 1 for rank 3] for particular trait divide by sum of [3 for rank 1 + 2 for rank 2 + 1 for rank 3] for all traits.

6. Challenges and opportunities of exotic chickens

Challenges

Under farmer management poultry production, the most respondents frequently mentioned diseases were as the first ranked chicken production problem in both agro ecologies followed by poor extension services was ranked as the first in highland, whereas, improved feed shortage as the second and fourth in mid and highland, respectively. while, predator was ranked as the second and third chicken production constraints in high and midland, respectively (Table 4) as it is common problem in other parts of Ethiopia such as central highlands of Ethiopia (Tadelle and Ogle, 2001) and North western Ethiopia (Fessiha et al. 2010a). This result is supported by others findings in Ethiopia such as (Bogale, 2008) and (Meseret, 2010) who reported that the main constraint of traditional chicken production system is disease and by (Solomon, 2007) who reported that the bio-security of the backyard poultry production system is very poor and risky, since scavenging birds live together with people and other species of livestock. As the key informants indicated that during group discussion; the reason might be due lack of inputs like vaccine and poor attention for chicken health care, lack of modern chicken rearing (feeding, house construction and cleaning) knowledge through extension service and training was the other constraint in both agro ecologies as it is also reported by (Fessiha et al. 2010a) in Ethiopia and (Khandait et al. 2011) in India. Significant number of respondents consider as an option to get regular vaccination of chicks against important diseases at village level for increasing the productivity and profitability of their chicken, as it is suggested by (Tadelle and Ogle, 2001). In addition, respondents seek to get adequate training on different aspects of modern chicken rearing.

Exotic chickens are poor scavengers as well as foragers and have low levels of disease tolerance, possess poor maternal qualities and are poor adapted to harsh conditions and good quality feeds as compared to the local breeds. Lack of knowledge about poultry production systems and management (Hagos et al. 2004) remains to be the major challenges in village based chicken productions.

Table 4. Major challenges of chicken production in the study area

	Agro ecology		
Major constraints	Highland	Midland	Overall index
Poor extension services	0.29 (1)	0.25 (3)	0.26 (2)
Disease	0.23 (1)	0.32 (1)	0.3 (1)
Formulated feed shortage	0.06 (4)	0.29 (2)	0.16 (3)
Predator	0.28 (2)	0.16 (3)	0.3 (1)

Index=sum of [3 for rank 1 + 2 for rank 2 + 1 for rank 3] for particular trait divide by sum of [3 for rank 1 + 2 for rank 2 + 1 for rank 3] for all traits.

6.2 Chicken Diseases and Control measures

The result obtained from key informants during group discussion and farmers responded similarly in symptom and name of disease occurrence in the area. About (70%) NCD (local name: Wararshe or Fengel (“kofis”), (4.44%) fowl pox (local name: Wotete) and (4.54%) coccidiosis (local name: maze) from highland. Whereas, about (46.67%) NCD (Wararshe or Fengel (“kofis”), (28.89%) fowl pox (Wotete) and (3.33) Coccidiosis (maze) from midland were type of common disease, respectively (Table 5). Disease symptoms described by farmers for these diseases (4.44%), (91.11%) and (4.72%) from highland and (52.22%), (33.33%) and (14.44%) in midland diarrhea, dropping of wings and heads and circling and paralysis were chicken disease symptom, respectively. As key informants explained that the reason is associated to be lack of attention and effect of poor extension and veterinary services of woreda agriculture office. Even if not mentioned by respondents based on clinical sign but veterinary expert discussions other disease like Marek and fowl typhoid were other existed chicken diseases in both study areas. As (Halima, 2007; Bogale, 2008 and Hailu et al. 2012) reported that the major cause of chicken death is seasonal outbreak of NCD. This survey result showed that about (93.33%) and (61.80%) in highland, whereas,(6.67 %) and (7.87%) from midland of the respondents stated that early rainy (March-Jun) and rainy season (Jun-Aug), respectively were season of chicken mortality due to disease out brake. This reason associated to poor coverage of veterinary services in both agro ecologies. As the interviewed farmer respondents elicited that about (80%) and (60%) due to disease were caused for chicken death in high and midland agro ecologies, respectively. The reason might be due to lack of pre -vaccination. Whereas, (20%) and (8.89%) due to predator were main causes for chicken death in high and midland, respectively. This could be due to free-scavenging production system exposed for predator. About (96.67% and 86.67%) from highland and in midland (3.33% and 13.33%) of chicks and layers were affected age groups by disease and predator, respectively. According to (Serkalem et al. 2005) also reported that NCD is one of the major infectious diseases affecting productivity and survival of village chicken in the central highlands of Ethiopia. Information obtained from farmers during survey and group discussion that due to lack of veterinary services almost all exotic chicken owners have traditionally experienced to treat their sick chickens in both agro ecologies. Provision of lemon, fetto, areki and onion to sick chicken were the widely used traditional treatment in both agro ecologies. Further, in highland some plant materials (like semeza) used for treatments. This result indicated that poor coverage of veterinary services might be

negatively affected the production and productivity of exotic chicken breeds in both agro ecologies

Table 5. Cause of deaths, disease symptoms and local name of chicken disease in Banja and Burie districts through survey

Parameters	Agro ecology		Cumulative % (N)
	Highland % (N)	Midland % (N)	
Local name of disease (%)			
NCD (local name: Fengel)	70 (63)	46.67 (42)	58.33 (105)
Fowl pox (local name: Wotete)	4.44 (4)	28.89 (26)	16.66 (30)
Coccidiosis (local name: Maz)	4.54 (4)	3.33 (3)	3.88 (7)
Mortality in age group (%)			
Chicks<2 month	96.67 (87)	86.67 (78)	91.67 (165)
Layers	3.33 (3)	13.33 (12)	8.33 (15)
Cause of death (%)			
Disease	80 (72)	60 (54)	70 (126)
Predator	20 (17)	8.89 (36)	7.22 (54)
Disease symptom (%)			
Diarrhea	4.44 (4)	52.22 (47)	28.33 (51)
Dropping of wings and heads	91.11 (82)	33.33 (30)	62.22 (112)
Circling and paralysis	4.72 (4)	14.44(13)	9.44 (17)
Season of chicken mortality (%)			
Early rainy(March-Jun)	93.33 (84)	61.80 (55)	77.56 (139)
Rainy season (Jun-Aug)	6.67 (6)	7.87 (7)	7.22 (13)

Opportunities

The first critical step is the encouragement of farmers to change their attitude towards poultry keeping that includes introduction of regular watering and feeding, supplementation with quality feeds, cleaning the bird's night shelter and taking care of the young chicks. Such changes in the management of village chicken production system could discourage getting broody and bring about significant improvements in the productivity of local birds (Dwinger et al. 2003).In the village chickens, it is clear that one of the major problems to be solved will be the feeding as the system is mainly based on scavenging. Scavenging feed resources do not lead to an efficient village chicken production (Dwinger et al. 2003).

The main opportunity to increase chicken production and productivity is selection of indigenous chicken ecotypes and crossbreeding or upgrading by introduction of cocks, pullets and /or fertile eggs of high egg producing strains. Designing appropriate production system in respective urban, per-urban and rural areas would increase production and productivity. Improvements of the genetic potential of the local chicken have done through selection within and/or up grading with exotic breeds (exchange of cockerels from selected strain or breed could improve the performance of local chickens). The intention of this scheme was to enable farmers to handle pure breeds as well as crossbreed chicken. Generally, the productivity of scavenging village chicken could be enhanced by relatively simple changes in management techniques (feeding, housing and health care) that promote improvement in productivity and reduction in mortality. A little technical support to farmers' experience or knowledge of supplementary feeding and watering would substantially improve productivity of local chicken (Halima et al. 2006).

7. CONCLUSION AND RECOMMENDATIONS

Bovans-Brown, Bovans-White (commercial layers) and Potchefstroom Koekoek (dual purpose) breeds are the most distributed exotic chickens from Banja and Burie districts of high and midland agro ecology, in addition to their production constraints are identified. From the current result indicated that having a huge number of exotic chicken breed populations distributed in the region, but this situation is a paradox. Majority of distributed exotic chickens were kept in traditional/backyard production system with low inputs in both study areas. This study revealed that exotic chickens in both study areas were exposed for high mortality due traditional farmers' management practice. Moreover; higher mortality of chicken was seriously affected the survival of these breeds and contribution of chickens to farmer households. Disease, predator, feed shortage and poor extension services were the major barriers for distributed exotic chicken production in both study areas. Due to low supply of inputs like veterinary service (vaccine) almost all exotic chicken owners have traditionally experienced to treat their sick chickens in both study areas. The major causes for chick death during survey study were NCD and predator. Lack of disease resistance ability and sensitivity for feed shortage and distribution of best performing genotypes are future directions that might be studied. Hence, it is important that research and development initiatives in the future should emphasize on exotic chicken disease and predator control activities and proper management strategies are highly recommended so as to be successful to maximize productivity of exotic chicken and farmers in the village

will economically benefit. The study districts should set pre-vaccination scheduled program in chicken before and after distribute of DOCs to backyard producers to reduce the mortality rate. Designing appropriate production system and management in respective urban, per-urban and rural areas could help so as to increase production and productivity of exotic chickens.

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