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Constraints and opportunities of village chicken production in debsan tikara keble at gonder zuria woreda, north gonder, Ethiopia

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ABSTRACT

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This study was conducted to identify the constraints and opportunities of village chicken production in Debsan Tikara Keble at three villages in Gondar Zuria Woreda by using semi structured questionnaire, field visit and interview from 150 randomly selected respondents. The result revealed that the main constraints were feed shortage (28%), predation (30%) and flock mortality (28%). Almost 58% of chickens share the same room with the main house. The farmers use traditional medicine to treat chickens (82%). Average age of first egg laying of chicken was 6 months, number of eggs per clutch was 13, the clutch size was 3 and hatchability percentage was 72%. The main opportunities for village chicken production was market access 36%, credit service 28%, training and extension service 16%, feed and water access 20%. From this study, constraints and opportunities of village chicken production was merely identified based on this result by improving the management practice, poultry breeds and educating the framers are viable options to improve the livelihood of the households.

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1. Introduction

Ethiopia has large population of chickens estimated about to be 48.89 Million (CSA, 2011) with native chickens of non descriptive breed representing 96.6% hybrid of chickens 0.55% and exotic breed of chickens mainly kept in urban and peri-urban areas 2.8% (CSA,2011). Village chicken production system in Ethiopia followed by primitive type with 5-20 birds per house hold simple rearing in backyard with inadequate : feeding and health care. However ; the population number of chicken flock is small (Tadelle and Ogle ,2001) such production system may result in slow growing and poor layer of egg .

Modern poultry production started in Ethiopia some year ago mainly in colleges and research stations . The activities of these institutions mainly produced on the introduction of exotic breeds to the country and distribution of these breeds to the farmers including management , feeding housing and health care practices Tadelle and Ogle ,2001). Poultry production and management practice in Gondar Zuria woreda, Debsan Tikara Kebele can be characterized by extensive poultry production system and the production and productivity of village chicken is low due to flock mortality by disease, predator and poor management practice . In the woreda; the poultry population approximately is 169,282. Even if the population is high, the farmers do not benefited the sector, because of traditional production system, predator challenge, disease prevalence, feed shortage and poor management practices (GZWADO, 2004). However, there is no enough information regarding with production challenges and opportunities of poultry production. Therefore this study was design to assess the challenges and opportunities of poultry production in the study area.

2. Materials and methods

2.1. Description of the study area

The study was conducted in Debsan Tikara Kebele , Gondar Zuria woreda of North Gonder zone of Amhara region , Northwest Ethiopia . The woreda contains 35 rural kebeles and 2urban Kebeles and it covers 142.08 Km² area with 209,000 human population and 169282 poultry population (GZWADO ,2012). The elevation of the study ranges from 1800-2700m above sea level and the total annual rain fall varies from 641mm – 1678mm. The maximum and minimum annual temperature for the study area was 26.4% and 12.7oc respectively (GZWADO, 2012).

2.2. Methods of data collection

The data was collected by using semi-structured questionnaire, field visit and interview from 150 randomly selected respondents in three villages(Village 1,Village 2 and Village 3). Major constraints and opportunities of village chicken production were collected. In addition to these, feeding system, housing condition, marketing, health care, production performance, credit and extension service etc was collected as a primary sources and secondary data was collected from different documents of Agricultural Development Office.

2.3. Data analysis and presentation

The data was analyzed by using statistical software through simple descriptive statistics like average, and percentage and presented in form of tabulation

3. Results

3.1. Supplementary feeding

The percentage of respondents that had given a supplementary feed for chicken were presented in Table 1.

The majority of respondents (50.67%) were depend on supplementing grains followed by kitchen waste (28 %) and only 21.33 % of respondents were provided food left over for their chickens. This implied that producers have awareness about feed supplementation. However the chicken production system is still traditional. The grain feed supplementation were different with seasonal conditions. This inline with the rapport of Roberts (1992) reasonable grain feed supplementations varied with cultivates. Feed supplements such as grains, food leftovers

and kitchen waste were offered once a day early in the morning. An average of 0.046 kg is given per day per hen as a supplementary in twice of a day (Table- 1). This result is disagreeing with Sonaiya et al (1999) report; 0.035 kg grain supplement is given to local chickens per day per hen in the free range system. The reason is maybe due to better feed availability and farmer's adoption in feeding of their chickens in the woreda.

Table 1

Supplementary feeds of village chicken.

Types of supplementary feed	No of respondents(Number)				Mean	SD	%
	Village 1	Village 2	Village 3	Total			
Grains	27	25	24	76	25.33	1.5	50.67
Food leftover	7	12	13	32	10.67	3.2	21.33
Kitchen waste	16	13	13	42	14	1.7	28
Total	50	50	50	150	50	0	100%
Amount of supplementation (Kg)	0.049	0.043	0.046	0.138	0.046	0.003	

3.2. Breed types and number of chickens

Breed types and number of chicken in the study area is presented in Table 2

Table 2

Breed types of chickens.

Types of breeds	Number of chicks				Total	Percentage (%)
	Village 1	Village 2	Village 3	Total		
Local breed	1442	1459	1466	4367	93.9	
Cross breed	55	65	69	189	4.06	
Exotic breed	30	31	33	94	1.9	
Total	1527	1555	1568	4650	100%	

The majority of chickens in the study area were raised from local breeds 93.9% followed by cross breed and exotic Rhode Island Red breed 4.06% and 1.9% respectively. This approximately similar with report of CSA (2009). Poultry production in Ethiopia is large with 96.6%, 2.8% and 0.6% of local, exotic and cross breed respectively. This is because of the low accessibility of improved breeds and low awareness of the producers to use improved breed widely.

3.3. Housing System of Village Chickens

The housing systems of village chicken is presented in table 3

Table 3

Housing system of village chickens.

Housing system	No respondents				Mean	SD	%
	Village 1	Village 2	Village 3	Total			
Share the room with perch	29	31	27	87	29	2	58%
Different shelter in the same room	16	14	15	45	15	1	30%
Building house	5	5	8	18	6	1.7	12%
Total	50	50	50	150	50	0	100%

The majority of farmers were housed their chickens by sharing the same room with perch i.e 58%. The rest 30% and 12% respondents were used different shelter in the same room with the families and separate building house respectively. Even if; the farmers were used the same room with and without perch to housed chickens, they can produce low amount of products. However they were constructed chicken houses to protect chickens from predators, rain and wind during night time. These agree with report of Kitalyi (1998); majority of chicken producers housed chickens by sharing the same room with people particularly over night time than day time in Ethiopia.

3.4. Causes of chicken lost

Main causes of village chicken lost in the study area is presented in Table 4

Table 4

main causes of chicken Lost.

Causes of Mortality	No of respondents						%
	Village 1	Village 2	Village 3	Total	Mean	SD	
Predators	26	27	25	78	26	1	52%
Diseases	21	22	22	65	21.7	0.6	43.4%
Animal trampling	3	1	3	7	2.3	1.2	4.6%
Total	50	50	50	150	50	0	100%

The result revealed that 52% of the death were due to predators which followed by different diseases such as new castle disease (NCD) and coccidiosis was 43.4%. Whereas minimum death was observed by animal trampling effects was 4.6%. This disagree with the report of Serkalem (2005), as reported that NCD is one of the major cause of death of village chicken mortality in central high land of Ethiopia. This may due to scavenging feeding system and comfortable area for predators.

3.5. Health Care mechanism

The health care mechanism of village chicken is presented in Table 5

Table 5

Health Care Mechanism of Chicken.

Types of Medicine	No of respondents						%
	Village 1	Village 2	Village 3	Total	Mean	SD	
Traditional medicine	42	40	41	123	41	1	82%
Modern medicine	8	10	9	27	9	1	18%
Total	50	50	50	150	50	0	100%

Health care is one management aspect of village chicken production. To improve the productivity of chicken should kept healthy. As indicated in the above table 5, the majority of farmers 82% were used traditional medicine to cure chickens when they infected. Farmers used traditional medicine such as simza, fito, and garlick with feeds. On the other hand; 18% of respondents were applied modern medicine that given by veterinarian. Farmers were used modern medicine were small 18%, because low veterinarian accessibility, lack of awareness and unadaptability to use modern medicines. In the study area health care practices such as avoiding feed contamination and water and cleaning of poultry house were not performed well. In addition these were no any vaccination. Therefore; chicken health care was one of constraints of village poultry production. In village chicken production system, periodic devastation of flock by disease is very high. This study agrees with report of Mammo (2006), Fisseha (2009) and Nigussie et al, (2010) which reported that disease is the major factor the los of the flock in village poultry production system.

3.6. Production and reproduction performance

The average production and reproduction performance of village chicken is illustrated in Table 6.

Table 6

Production and reproduction performance of village chicken.

Characteristics	Village 1	Village 2	Village 3	Total	Mean	SD
Average age at first egg laying (Month)	6	6	6	18	6	0
Number of egg clutch per hen	15	10	14	39	13	2.6
Number of clutch hen per year	3	3	3	9	3	0
Number of egg set per clutch	12	8	10	30	10	2
Hatchability (%)	73	71	72	223	72	1

The above table indicates that village chicken in the study area attain sexual maturity and laying first egg at an average 6 months of age. The hen lays about 13 eggs /hen/ clutch and the size is three times per year with 72% of hatchability on the average 10 number of egg settled per clutch. Age of 1st egg laying of village chicken is disagree with the report of Sonaiya et al (1999) seven months, this variation is may due to free water availability and feed supplementation of village chicken in the study area.

3.7. Marketing of village chickens and their eggs

Marketing of village chicken and eggs is presented in Table 7.

Table 7

Chickens and egg price in the study area.

Sold variables	Price					
	Village 1	Village 2	Village 3	Total	Mean	SD
Cock	80	85	75	240	80.00	5
Hen	75	75	75	225	75.00	0
Cockerel	60	55	65	180	60.00	5
Pullet	45	40	45	130	43.30	2.9
Egg	2.00	1.75	1.75	5.5	1.80	0.1

There were high chicken and egg price variation due to festivals based on their coat cover of the bird. The average price of cock, cockerel, hen and pullet were reached 80, 75, 60 and 43.30 respectively; and the price of egg was reached 2 birr during non fasting period and festival time, so the producers were fetched good price during that time. There is no any market problem in the study area because of good infrastructures like transportation facilities and the proximity to Enfrance and Maksegnit town; moreover, different traders were came from Metema and Sudan to bought chickens and their products. Keeping village chicken by small holder for cash income to purchase food items and to cover other family expenses as the report of Halima (2007), small holder village chicken owners found in different part of the country sale chickens and eggs to cover school fee, to purchase improved seed and to get cash for grain milling services.

3.8. Training and extension service

Training and extension service that was done in the study area was presented in Table 8

Table 8

Training and credit service for village chicken producers.

Services	No of respondents					Mean	SD	%
	Village 1	Village 2	Village 3	Total				
Credit	20	21	22	63	21	1	42%	
Training	6	7	8	21	7	1	14%	
Credit and training	13	12	11	36	12	1	24%	
Not got both	11	10	9	30	10	1	20%	
Total	50	50	50	150	50	0	100%	

Training and extension services held in the study area were other determinant factor to improve village chicken production. Gondar Zuria Woreda Agricultural Office had provided training and Amhara credit and saving institution had given credit for many farmers, As shown in the above table, producers have gotten agricultural and extension services through training, credit and training and credit service 14%, 42% and 24% respectively; to improve poultry management and enhance village poultry sector for better benefit of farmers. Only 20% of respondents had no gotten training extension services. This implies that the majority of respondents 80% had gotten training and credit service, and additional extension agents work with the famers. This may one important prospect to improve village poultry productions.

3.9. Constraints of village chicken production

The major constraints of village chicken production is presented in table 10.

During this study ,the farmers were listed the major limiting factors of poultry production in the area. The primary problem cited were predation , feed shortage , flock mortality and low prediction performance .

Table 9

Constraints of village chicken production.

Constraints	No of respondents						%
	Village 1	Village 2	Village 3	Total	Mean	SD	
Predation	15	14	16	45	15	1	30
Feed shortage	15	15	12	42	14	1.7	28
Flock mortality	10	11	15	36	12	2.6	24
Low production performance	10	10	7	27	9	1.7	18
Total	50	50	50	150	50	0	100

This result revealed that predator constraints (30%) identified as the major problem. Farmers had suffered serious losses due to predation. This may due to extensive /scavenging/ feeding system of chickens and suitability of the area for presence of predators. The other constraints 28%, 24%and 18% were feed shortage, flock mortality and low production performance of village chickens respectively. This implies that the constraints are almost nearly similar , so the farmers give attention for all the problems. This in line with finding of Tadelles and Ogle (2001) those reported that the predator include primarily bird of prey such as vultures, which prey chickens ,and wild mammals such as cats and foxes which prey mature birds.

3.10. Opportunities of village chicken production in the study area

The major opportunities of village chicken production is presented in table 9

Table 10

Opportunities of village chicken production.

Opportunities	No of respondents						%
	Village 1	Village 2	Village 3	Total	Mean	SD	
Training and extension	7	9	8	24	8	1	16%
Market	19	17	18	54	18	1	36%
Credit service	14	13	15	42	14	1	28%
Feed access	10	11	9	30	10	1	20%
Total	50	50	50	150	50	0	100%

Even if; there were many problems in the study area there were also some opportunities to improve village chicken production and productivity for the future such as market availability credit service , feed access and training and extension service. In the above table, market was the primary opportunities (36%) for the sector improvement followed 28%, 16% and 20% of opportunities for chicken production credit, training and feed access respectively .

4. Conclusion

Village chickens are raised under traditional management practice with many problems such as low production performance (18%), feed shortage (28%), predation (30%) and flock mortality (24%) . on the other hand; Market availability (36%), credit service (28%), training and extension service (16%) and water access (20%) were some of the opportunities identified in the area. Better understanding and modulation of these constraints and good prospects of village chicken production is important to improve food security and improves the standard of living condition of the farmers. The incidence of predation in the area was about 52% and most of the farmers were used traditional medicine (82%) to treat chicken. Chickens share the same room with the family was 58% and they reach to lay first egg at an average age 6 months and the hatchability of chickens was 72% and about 28% of respondents were obtained credit service. The farmers should reduce free ranging feeding system to reduce flock mortality by predators. The farmers should pay strong attention for appropriate intervention in

disease and predator control to improve chicken product and productivity. The producers should provide adequate quality and quantity of feeds in regular manner for better production performance of chickens and less prone to disease. The agricultural office and producers should work in collaborating way in the area of diseases and predator control, feed and breed improvement and other management aspects. Design and implement more research, educating farmers, improve breeds and all managements aspects to solve the existing village chicken production are viable options.

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