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Research Article

Some Management Practices of SassoT44 Chickens under Traditional Production System

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Abstract

Background and Objective: SassoT44 chickens are classified under dual-purpose chicken. The study was designed to assess some management practices of SassoT44 chickens under traditional production system in north Shewa Zone, Amhara region, Ethiopia. **Materials and Methods:** The three districts were selected based on agro-ecology from north Shewa Zone. From these districts, a total of 9 kebeles were purposively selected. A simple random sampling was employed to select the respondents in each kebele who have four and above exotic chickens. Cross-sectional study design was used to assess the management practices of SassoT44 chickens. **Results:** The results revealed that 16.6% of the respondents used disinfectants to disinfect the chicken house after cleaning. Most (93.54%) of the respondents replied SassoT44 chickens got their feed through scavenging with little supplementation. The main feed supplement was maize (60.31%). The common source of water for chickens was river water (66.77%). The major disease reported in the study area was Newcastle disease (70.77%) due to less vaccination practice (27.69%) against the disease. Throwing (66.46%) of dead thicken were the main disposal method among others. **Conclusion:** The management practice has a gap in the study area. Therefore, giving of practical training focusing on best management practices is strongly needed to improve poultry production.

Key words: Disease, feed, management, vaccination, water

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Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Poultry production plays a vital role for food security and contributes to the country's economy¹. It demands small investment compared to other livestock species². Due to the high population growth, the demand for eggs and poultry meat has significantly increased in recent years across large parts of the country. In Ethiopia, there was also a strategy stated that the commercial production system of chicken be expanded to fulfill the increased demand for chicken meat and egg³, which is the major organization mandated with poultry extension work. Exotic chickens were facilitating proper management practice for good egg and meat production. Wilson⁴ suggested that provision of shelter, regular supplies of clean drinking water, care chicken health states and supplementary feeding would improve growth and reproductive rates and greatly increase survival of chicken production. Nutritional poultry feed ingredient used to improve poultry production and increase its efficiency as result, needs to focus on better utilization of available feed resources because of poultry feed cost accounts 60-70% of the total poultry production cost⁵. However, the consumption of poultry product in Ethiopia remained low: 0.4 kg eggs and 0.6 kg of chicken meat per annum⁶. Poultry production in Ethiopia commonly used low-input and low output poultry husbandry systems.

Moreover, there have been increase in the number of exotic breeds of chickens and at present it is estimated that the exotic breeds of chicken consists of about 6.45% of the national poultry population⁷. There has been a substantial

effort to introduce exotic chicken especially SassoT44 breed to the smallholder farmers under traditional management in north Shewa Zone of Amhara National Regional state. In the study area there is no any documented study focusing to the exotic chicken's management practice like feeding, watering, housing and chicken health condition. Hence, this study was designed to assess the sanitation and health status of SassoT44 chicken under traditional production system in the study districts of North Shewa Zone.

MATERIALS AND METHODS

Description of the study area: The study was conducted in North Shewa Zone, Amhara National Regional state which is located 130 km of northeast of Addis Ababa, altitude between 2800-2845 masl. The annual temperature is ranged from 5-23°C. North Shewa has three different agro ecologies i.e., high land, mid land and low land. This study was conducted in Tarmaber district as a high land, Ankober district as mid land and Kewet district as low land (Fig. 1).

Sampling procedure: The study districts were selected based on three agro-ecologies such as highland (>2500 masl), mid-land (1500-2500 masl) and low-land (<1500 masl)⁸. Based on this information Tarmaber, Ankober and Kewet districts were selected as highland, mid land and lowland, respectively. Three rural kebeles from each agro-ecology (a total of 9 Kebeles) were purposively selected based on accessibility and chicken rearing experience. The number of respondents in each Kebele was taken by using simple random sampling

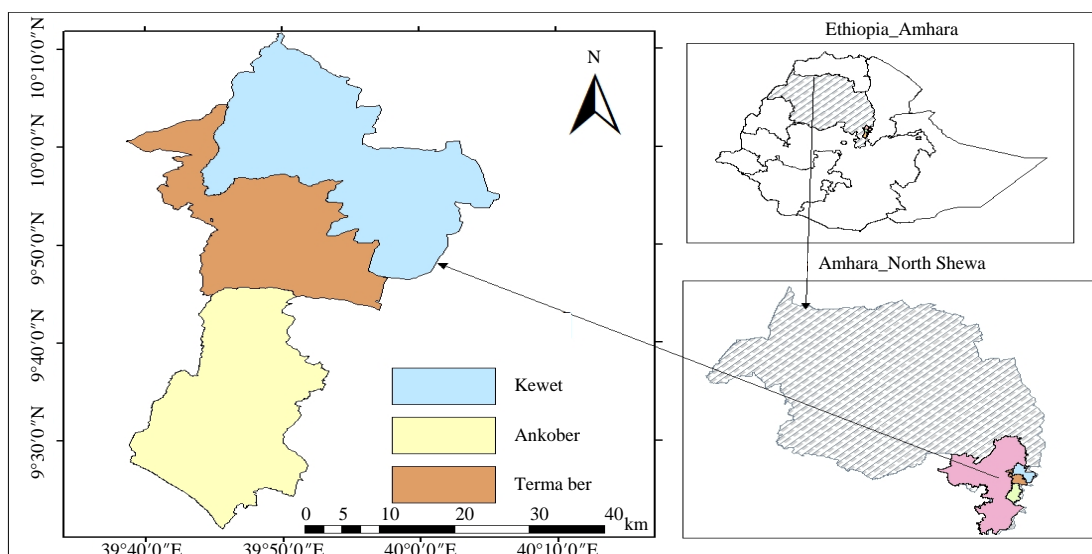


Fig. 1: Map of Ethiopia and north Shewa zone

technique from a respondents who have at least four SassoT44 chicken. The total household heads in the study area was determined by the equation given by Yamane⁹ with 95% confidence level:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = Sample size

N = Population size

e = Desired level of precision

Based on this formula, a total of 325 respondents were selected and interviewed using a structured questionnaire.

Method of data collection: The primary data was collected from household using structured questionnaire through face to face interviews, field observation, focus group discussion and key informant interviews. Secondary data was collected from district and Zonal Agriculture Offices like, poultry population and way of chicken management system by reviewing different document.

Methods of data analysis: The data were analyzed by using Statistical Package for Social Sciences (SPSS version. 20). The statistical tools such as mean, frequency and percentage were used and present by tabulated form. Chi-square test was employed to know the association of categorical data in this study.

RESULTS

Hygiene and sanitation of poultry house: The hygiene and sanitation of the poultry house is presented in Table 1. About 55.4% of the respondents cleaned their chicken's house in different times such as daily (12.9%), weekly (26.8%) and monthly (15.7%). About 16.6% of the respondents disinfected the chicken house to destroy any micro-organisms found in the chicken house.

Feed and feeding system: The feed and feeding system SassoT44 chicken is presented in Table 2. Majority (93.54%) of the respondents replied that the chicken has got their feed in scavenging with little supplementation. The most common supplementary feeds for chicken were maize (60.31%), wheat brain (14.15%), sorghum (8.31%), wheat (6.46%) and barley

Table 1: Hygiene and sanitation of poultry house in the study districts

Study districts Parameter	Tarmaber (H)		Ankober (M)		Kewet (L)		Total (%)	Test χ^2	p-value
	N	%	N	%	N	%			
Cleaning practice of chicken house									
Yes	72	55.4	60	57.7	48	52.7	55.4	4.80	0.091
No	58	44.6	44	42.3	43	47.3	44.6	2.910	0.233
Chicken house cleaning interval									
Daily	17	13.1	12	11.5	13	14.2	12.9	1.00	0.607
Weekly	36	27.7	28	26.9	23	25.3	26.8	2.966	0.227
Monthly	19	14.6	20	19.3	12	13.2	15.7	1.00	0.607
Disinfecting the chicken house									
Yes	21	16.2	18	17.3	15	16.5	16.6	1.00	0.607
No	109	83.8	86	82.7	76	83.5	83.4	6.339	0.425

χ^2 : Chi square, N: Number of respondents, H: Highland, M: Midland, L: Lowland

Table 2: Feed and feeding system in the study districts

Study districts parameter	Tarmaber (H)		Ankober (M)		Kewet (L)		Total (%)	Test χ^2	p-value
	N	%	N	%	N	%			
Feeding system									
Scavenging only	8	6.1	6	5.77	7	7.69	6.46	0.286	0.867
Scavenging with supplement	122	93.9 ^a	98	94.20 ^a	84	92.30 ^b	93.54	7.289	0.026
Most common supplement feed									
Maize	75	57.7	65	62.50	56	61.50	60.31	2.765	0.251
Wheat	12	9.2 ^a	5	4.80 ^b	4	4.40 ^b	6.46	8.316	0.016
Barley	8	6.2	4	3.80	2	2.20	4.31	4.00	0.135
Sorghum	4	3.1	11	10.60	12	13.20	8.31	4.222	0.121
Wheat brain	23	17.7 ^a	13	12.50 ^b	10	11.00 ^b	14.15	6.043	0.049
Feeding practice									
On feeder	42	32.4	27	26.00	28	30.80	29.85	4.351	0.114
Spreading on the ground	80	61.5	71	68.20	56	61.50	63.69	4.261	0.119

χ^2 : Chi square, N: Number of respondents, H: Highland, M: Midland, L: Lowland. Letter of different superscript in same row did differ significantly

Table 3: Watering system in the study districts

Study districts parameter	Tarmaber (H)		Ankober (M)		Kewet (L)		Total (%)	Test χ^2	p-value
	N	%	N	%	N	%			
Source of water									
River water	90	69.2 ^b	63	60.6 ^c	64	70.30 ^a	66.77	6.479	0.039
Tape water	40	30.8	41	39.4	27	29.70	33.23	3.389	0.184
Frequency of watering									
Free access	107	82.3	92	88.5	88	96.70	88.31	2.098	0.350
Morning	2	1.5	1	0.9		0.92	0.333	0.564	
Morning and afternoon	21	16.2 ^a	11	10.6 ^b	3	3.30 ^c	10.77	13.943	<0.001
Type of water trough									
Plastic made	101	77.7	83	79.8	79	86.80	80.92	3.133	0.209
Wood made	17	13.1	18	17.3	10	11.00	13.85	2.533	0.282
Stone made	12	9.2	3	2.9	2	2.20	5.23	10.706	0.05
Practice of cleaning the watering trough									
Yes	35	26.9	26	25.0	28	30.80	27.38	1.506	0.471
No	95	73.1	78	75.0	63	69.20	72.62	6.517	0.38
Frequency of cleaning water trough									
Once a day	3	2.3	1	0.9	3	3.30	2.15	1.143	0.565
Once a week	21	16.1	19	18.3	16	17.60	17.23	0.679	0.712
More than once a week	11	8.5	6	5.8	9	9.90	8.00	1.462	0.482

χ^2 : Chi square, N: Number of respondents, H: Highland, M: Midland, L: Lowland. Letter of different superscript in same row did differ significantly

Table 4: Chicken disease prevention and treatment method in the study districts

Study districts parameter	Tarmaber (H)		Ankober (M)		Kewet (L)		Total (%)	Test χ^2	p-value
	N	%	N	%	N	%			
Chicken disease outbreak									
Most common type of chicken disease	89	68.5	70	67.3	71	78.00	70.77	2.983	0.225
Newcastle disease	89	68.5	70	67.3	71	78.00	70.77	2.983	0.225
Measures taken when chicken sick									
Treat by own	31	23.9	32	30.8	37	40.70	30.77	0.620	0.733
Call vet doctor	26	20.0	17	16.4	15	16.50	17.85	3.552	0.169
Kill them immediately	5	3.8	8	7.7	11	12.00	7.38	2.250	0.325
Treat by own and call veterinarian	27	20.8 ^a	13	12.5 ^b	8	8.80 ^c	14.77	12.125	0.002
Method of dead chicken disposal									
Throwing away	81	62.3	66	63.5	69	75.80	66.46	1.750	0.417
Burrying	8	6.2	4	3.8	2	2.20	4.31	4.00	0.135
Type of traditional medication									
Garlic+lemon+cress	36	27.7	24	23.1	29	31.90	27.38	2.449	0.294
Tetracycline+lemon+garlic	10	7.7	3	2.9	11	12.10	7.39	4.750	0.093
Pepper+lemon+garlic	9	6.9 ^a	1	0.9 ^c	5	5.50 ^b	4.62	6.40	0.041
Zewodarem+endod leaf	3	2.3 ^b	17	16.4 ^a		6.15	9.80	0.002	
Not common	72	55.4	59	56.7	46	50.50	54.46	5.729	0.057
Practice of chicken vaccination	38	29.2	27	26.0	25	27.50	27.69	3.267	0.195

χ^2 : Chi square, N: Number of respondents, H: Highland, M: Midland, L: Lowland. Letter of different superscript in same row did differ significantly

(4.31%) in the three districts. Among this 63.69% of the respondents offered feed for chicken by spreading on the ground and the rest respondents (29.85%) practiced feeding by feeder (feeding trough).

Watering: In the study districts, all chicken owners (100%) provided water for their chicken (Table 3). The water was provided for chicken in free access (88.31), morning and afternoon (10.77%) and morning (0.92%). Majority (80.92%) of the respondents used plastic made water trough than wood

made (13.85%) and stone made (5.23%) across the three districts. Cleaning of the watering trough was being done (27.38%) regularly in the three study districts.

Chicken health condition: The most common (70.77%) prevalent disease in the three study districts was Newcastle disease (NCD) outbreak (Table 4). Farmers treated their chicken in different techniques. Most (30.77%) of the respondents has treated their chicken by their own, 17.85% of them call veterinary experts to treat, while 14.77% of the

respondents has treated by own and call veterinary experts and the other 7.38% killed their chicken immediately when diseased in the three districts. The respondents also used traditional medicine to treat their chicken.

DISCUSSION

Majority of the respondents had lack of awareness in cleaning and disinfecting the chicken house regularly. However, about 55.4% of the respondents cleaned the chickens' house and disinfect it by using of disinfectants (16.6%). As a result, SassoT44 chicken was easily attacked by different disease and parasite which leads to irregular production and increase death rate in the study area. The result is nearly similar to Yitbarek *et al.*¹⁰, 67.3% of the producers cleaned the floor of the house at once at the end of production cycle; however, 22.4% of the producers had cleaned once per week. This result contradicted to the reports of Birhanu *et al.*¹¹, about 88% of the farms disinfect the poultry houses in small holder farmers.

Most (93.54%) of the respondents has released their chicken outside for scavenging, however little supplementary feed were provided. This indicated that supplementation of feed for chicken required for sustain the production and productivity. The result of this study was in line with the report of Birhanu *et al.*¹¹ and Salo *et al.*¹², 95.6% and 95.1% the respondents provided supplementary feeds for their chicken in addition to scavenging, respectively. The majority of the respondents offered feed for chicken by spreading on the ground, which might be unhygienic way of feeding and creates competition of the flock. All chicken owners (100%) provided water for their chicken. This finding had similarity with the study of Salo *et al.*¹² which reported that all chicken owners (100%) could be providing water for chickens. The highest (88.31%) proportions of the respondents provided free access of water for the chicken than morning and afternoon (10.77%) and morning (0.92%). The current study was comparable with the report of Abadi¹³, 96% of the respondents provided water for chicken with free access. In agreement with the present study, Mekonnen *et al.*¹⁴ reported that almost all materials used by the sample respondents for providing water for chickens were not cleaned and dirty as it was noticed during farm visit. The unhygienic watering troughs had shown in different chicken production system, which indicated that the chicken owners had no any awareness about the cleaning practice of the water trough.

According to agricultural experts and veterinary expert's response, the most common prevalent disease in the three study districts was Newcastle disease (NCD) outbreak. The present study was in agreement with the finding of Mekonnen *et al.*¹⁴, who reported about 73.5% of the respondents reported that the most common exotic chicken disease was Newcastle disease. Most of the sick chickens were treated by own, call veterinary experts, treat by own and call veterinary experts in the three districts. However, Yitbarek *et al.*¹⁵ reported that prevention and treatments were the major mechanisms for controlling measure of the disease.

CONCLUSION

Some management practices undertaken in the study area were feeding of birds, provision of water, provisions of housing, controlling diseases and keeping the hygiene and sanitation of the chicken house. Majority of the farmers were provided supplementary feed in addition to the scavenging system. The most common supplement chicken feeds were maize, wheat brain, sorghum, wheat and barley. The water was provided in free access and the common sources were river water, which was provided by plastic, stone and wood made of water trough. The viral disease was considered as the frequent occurrence of disease in SassoT44 chicken under traditional production system in three districts of the study area. The most common prevalent disease of chicken in north Shewa Ethiopia was Newcastle disease (NCD). In general, the undertaken management practices of Sasso T44 chicken in the study area has a pronounced gap, therefore, giving of practical training focusing on best management practices is strongly needed for poultry producers to improve the existing poultry production.

SIGNIFICANCE STATEMENT

This study discovers some management practices of SassoT44 chicken under farmers' condition. It helps to show the management gaps during the production process. Based on the observed management gaps, subsequent practical oriented training will be given to improve the existing management practices of poultry production to increase the productivity under traditional production system.

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