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Survey on the existing poultry feed, health technologies and ethno vet practices in Sheka, Bench Maji and Mejenger zones of south western Ethiopia

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The study was conducted in Sheka, Bench Maji and Mejenger zones of south western part of the country to assess the challenges on existing feeds, poultry health technologies and ethno-vet practices and farmers' trend on ethno-vet practices in the study area. Districts and respondents were randomly selected based on the potentiality of the areas and farmers experience. In the study area, a total of 140 households were selected. The questionnaire was developed; selected respondents were interviewed at their farm gate. According to this study, about 35.7% were kept their chicken sharing family house, of which 56%, 39% of the respondents managed the chicken by all family member and women, respectively. The major feed supplements for their chicken in the study area were maize (93%), household scraps (79%) and sorghum (66%). About 45.6% of the respondents were lost their chicken all in all due to the disease out breaks mostly during summer season. The main disease in the study area was gunfan (respiratory disease), Fengil (Newcastle), kinkin (penduculosis) and infectious coryza. To treat the infected disease, 32.4% of the respondents were applying traditional medicine while 52.9% of them were visit vet clinic. In the study area, the main traditional medicine (Plants) were Lemon juice, hot pepper (capsicum frutescens), coffee leaf, tobacco leaf (Nicotianatabacum L.), garlic (Allium sativum) and Moringa leaf (Moringaoliefera). In addition to these plants, in the study area, ash and 'arakie' (alcohol) were also used as a medicine for their chicken.

Key words:-Feed, Ethno vet, Health, Chicken.

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INTRODUCTION

Poultry farming is widely practiced in Africa. Almost every farmstead keeps poultry for consumption, cash income, religious and cultural considerations (Dwinger et al, 2003). Poultry production has an important socioeconomic role in developing countries (Alders, 2004).Poultry disease is one of the major causes of reduced productivity in Africa. In order to control the different poultry diseases and thereby prevent high

mortality rates, ethno veterinary practices are widely used by village farmers in Africa. Ethnovet Medicine is the only option for most of the communities as there are almost no veterinarians working in African rural areas (Gueye, 199).For many years, different social and ethnic groups of Ethiopia, the use of ethno-veterinary practices to treat and control livestock and human diseases is an old practice, particularly the marginal districts where animal health services are still poor (Winrock In., 2010).

Poultry production system in Ethiopia is indigenous and an integral part of farming system and predominantly prevailing in the country and it is characterized by small flock, minimal input and unorganized marketing system (Abera and Solomon, 2007). Ethiopia has large population of chickens estimated to be 50.38 million (CSA, 2013) with native chickens of non disruptive breed. With regard to breed, 96.9 percent, 0.54 percent and 2.56 percent of the total poultry were reported to be indigenous, hybrid and exotic, respectively. Ethiopian poultry production is characterized by primitive type with 5-20 birds per household, simple rearing in backyard with inadequate farming and health care with small flock numbers (Tadelle and Ogle, 2001).

Modern poultry production started in Ethiopia some years ago mainly in colleges and research station. The activities of these institutions mainly focused 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).

The low productivity in traditional systems is mainly due to high mortality, which is caused by mismanagement, diseases, lack of feed and predators. In most of the cases, disease is an important problem. In commercial production systems chickens are therefore routinely vaccinated against major diseases such as Newcastle Disease, Mareks Disease, Infectious bronchitis, Avian Influenza and others, depending on the specific situations and recommendations in each place. Diagnosis, treatment and/or prevention of diseases are of major important to any attempts to increase productivity.

However, Poultry production and management practices in sheka, Bench Maji and Mejenger Zones of southern part of Ethiopia can be characterized by extensive poultry production system and productivity of village chickens is low owing disease prevalence, predators and poor management activities. The production system is characterized by small size of unimproved indigenous flock per household.

Although there is a huge potential of keeping poultry in the study area, the system of production is a traditional. As a result, chickens are exposed to challenges and also the production system in the area is not yet assessed and documented. Thus challenges of existing poultry health technology and ethno-vet practices in specific agro-ecological locations and their economic effects on poultry production need to be understood and assessed. Furthermore, baseline information is required for proper treatment and/or prevention of poultry diseases. Therefore, the objectives of the study were: - to assess the challenges on existing poultry feed and health technologies, assess farmers knowledge on ethno-vet practices and document farmers knowledge and experience for future work

MATERIALS AND METHOD

Description of the study areas

The study was conducted in Sheka, Benchi-Maji and Mejengerzones. Sheka zone has a total a total population of 198,406. Regarding the Agro – Ecology of the zone, out of the total land size 55.6% is kolla, 41.4% Weinadega and 3% Dega. The annual mean temperature ranges between 15.1-27.5 ^{o}C and the annual mean rainfall ranges 1201-1800mm SNNPRSIEMP (2011).

Bench maji zone has a total area of 19,965.90 sq. km. The zone has 10 Districts with a total population of 489,448.Regarding the agro-Ecology of the zone, out of the total land size 28.04% is kolla, 15.44% weinadega and 56.74% dega.

The annual mean temperature ranges between 15.1-27 °C and the annual mean rain fall ranges 400-2000 mm. SNNPRSIEMP (2011).

Godereworede was from part of the Mejenger Zone. Godere is bordered on the south and east by the SNNPR and on the west by Mengesh. Godere has a total population of 39,090 (10.9%) whereas Mengish has a total population of 24,587 (6.8% of the total population of the region).

Sampling and data collection

The interviewed respondents included in this study were smallholders, semi intensive and extensive poultry producers. Purposive sampling method was carried out to identify zones in which the study was conducted based on poultry production potential. To select Districts and individual respondents from each Peasant associations, random sampling method was followed. In the study area, a total of 140household respondents were selected. The questionnaire was developed and selected respondents were interviewed at their farm gate. Data were collected in formal survey using pre-tested structured questionnaires which include:-Socio economic characteristics of household, housing system, chicken ownership, feed supplementation, disease outbreak, available traditional medicines and predator effect. The secondary data were obtained from district and kebele livestock professionals. Procedures of coding, data entry

and data editing and data analysis was done using SPSS version 20.

RESULTS AND DISCUSSION

Socio economics characteristics of the respondents

The socio economics characteristics of the respondents are indicated in table 1. In the study area, the majority of the respondents were male (68.6%) and the rest were female. This finding was not agreed with the report of Meseret (2010) that about 70% of the interviewed farmers were females and 95.6% of the respondents were fully involved in farming activities as means of livelihood in Gomma district, Jimma Zone, Oromia Regional state. The educational status of the respondents indicated that 27.8% of the respondents were illiterates which higher than Ada'a district's (24.4%) and lower than Lume district's report (33.4%) in East shewa, Oromiya Regional state, Ethiopia Desalew *et al*. (2013).It was also lower than report of Wondu *et al*., (2013) in which 59% of respondents were illiterate in Northern Gondar Zone of Amhara Regional State. About 30.6 percent of the respondents were those attended five up to eight grades, while only 4 percent of the respondents were attended their education from nine up to twelve grade.

The average age of respondents in the study area was 35.6 ±13.4. The overall average family size per household was 5.8 head per household, which is higher than the national average of 5.2 (CSA, 2003) and also similar with the report of Birtukan, *et al.* (2014).For any development, education has great role especially for developing countries like Ethiopia. Out of such developmental activities, poultry production industry is the key activities that eradicate the poverty for the rural people (Wondu *et al*., 2013).

Housing system and chicken ownership

Housing is one of the essential issues in poultry production. One of the limiting factors in increasing productivity in traditional poultry is adequate housing. Chickens will roost in trees, kitchens, courtyards and in rudimentary houses (Winrock, 2010). Poor housing conditions are a major contributing factor to parasites and diseases. Producers lack the knowledge about appropriate styles of inexpensive housing. A program to make credit accessible to producers for housing would be important (Winrock, 2010). According to this study, about 35.7% of the respondents were housed their chicken sharing with family member (Table 2).

This report was in agreement with the report of Letebrhan *et al*. (2015) in which about 76.9% of respondents were kept their chicken sharing with main hous and. There were also, the respondents who housed their chicken in simple shade (29.3%) and proper chicken house (22%).This report was not agreed with report of Matiwos*et al*.(2013) that, there is no separate poultry houses for night enclosure and the chickens spent more of their times on scavenging in the vicinity of human dwellings. According to the report of Alemayehu*et al*., (2013), the considerable proportion of the sample respondents did not have separate shelters for their chicken which was mainly attributed to the lack of awareness on the importance of separate shelter while in this survey report ,the high percent of the respondents were housed their chicken sharing with family.

The chicken production management such as feeding, watering and others management activities were highly owned by all family members (56%) and women (39%) in the study area. This indicates that village poultry rearing is mainly managed by females which agreed with Melese *et al.* (2014) and Birtukan *et al*.(2014) in which women were majorly engaged in poultry management in east Gojam zone, Amhara Region and in Ethiopia respectively. The children had fewer roles to own the chicken in this study.

Feed supplementation

For the local chicken in extensive poultry production system, supplementation of feed is the most important that help the producers to obtain high production from their chicken. So according to this survey, chickens were managed mainly on free ranging, utilizing various feed sources searching by their own in the field, with conditional feed supplementation. This report was similar with the report of Melese (2014) and Matiwos *et al.* (2013) in East Gojam zone and Western Welloga, Ethiopia, respectively. About 74% of the respondents were not practiced the purposeful feeding their chicken while the rest were practiced purposeful feeding in the confinement (97.8%) (Table 3). According to this study, about 93%, 79% and 66% of the respondents were using maize, household scraps and sorghum respectively. In agreement with this report, Birtuken *et al*. (2014) in Ada'a and Lumewereda, above 94% respondents provided maize and wheat as additional supplements three times a day.

As this result indicated, most of the respondents (42.16%) provided supplementary feeds two times per day (morning and evening).This result was in line with the report of Addisu.*et al*. (2013) in which about 42.6% respondents in North Wollo zone had a practice of providing supplementary feeding with scavenging production system. The major objective of providing supplementary feed was to increase egg production (30.4%) and both meat and egg yield (34.1%). Similarly,

Table 1:-Socio economics characteristics of the respondents

Variables	Sheka	B/Maji	Mejenger	Overall mean %
Sex of respondent (%)				
Malehh head	63	76.2	52	68.8
Femalehh head	37	23.8	48	31.2
Educational status (%)				
Illiterate	22	25	41	27.8
Read and write	7.4	3.6	4	4.4
1-4 grade	22.2	32.1	15	27
5-8 grade	37	26.2	37	30.6
9-12 grade	11.1	13.1	4	10.2
Age of respondents (Yrs)	39.8±15.2	35.6±13.2	31.8±11.3	35.6±13.4
Family size(X±S.D)	5±2	6±2.5	5.4±1.6	5.8±2.2

Table 2: Housing system and chicken ownership

Variable	Sheka	B/Maji	Mejenger	Overall %
Housing system				
Simple shade	11.1	35.7	29.6	29.3
Proper chicken house	33.3	17.9	25.9	22.1
Sharing with family	55.5	46.5	44.4	48.6
Chicken ownership				
Male	7.4	21.4	18.5	25
Women	37	30	48.1	67.9
Children	3.7	8.3	4	6.4
Family	52	40.5	26	0.7

Table 3:- Feed supplementation

Variable	Sheka	B/Maji	Mejenger	Overall percent (%)
Purposeful feeding in confinement (%)				
Yes	37	24	7.4	26
No	63	76	92.6	74
Additionalsupplementation(%)				
Yes	92.6	95.2	100	97.8
No	7.4	4.8	0	2.2
Type of feed used to supplement their birds (%)				
Balanced ration	15	3.6	0	5
Wheat grain	33.3	24	30	27
Maize grain	96.3	92	96.3	93
Barley grain	7.4	22.6	4	15
Cereal debris	37	55	52	50
Household scraps	70.4	80	4	79
Bran(maize,wheat,etc)	22.2	83	89	64
Sorghum	52	64.3	89	66

Table 4: Chicken disease out break

Variable	Sheka	B/Maji	Mejenger	Overall Percentage%
Is there any disease problem in your area?				
Yes	100	98.8	92.6	97.9
No	0	1.2	7.4	2.1
Measures that takenduring poultry disease outbreak				
Visit vet clinic	55.6	58.3	48	52.9
Apply traditional medicine	18.5	33.2	52	32.4
Sale infected chickens	3.7	0	0	0.7
Other	18.5	9.6	0	11.4
Effectiveness of traditional medicine				
Excellent	0	1.2	0	0.08
Good	30	26.2	50	38
Moderate	15	32.1	37.5	40.8
Poor	22	40.5	12.5	16.9
Have you lost all of your chicken due to disease outbreak?				
Yes	74	34	52	45.6
No	26	66	48	54.4
Season of disease outbreak				
Wet	96.3	84.3	96	88.3
Dry	3.7	15.7	4	11.7

Addisu *et al.* (*2013*) reported that the main reason of feed supplementation was to increase egg yield (33.99) and increase meat yield (31.70%) in North Wollo, Amhara Region.

Disease outbreak

Disease outbreak is the major constraint in poultry production by losing large flock once at time in different production system of poultry industry. As this study indicated, the main diseases were *gunfan* (respiratory disease), *Fengil*(Newcastle), *kinkin* (penduculosis) and infectious coryza. About the 98% of the respondents were responded as the disease problem was there in their area while the rest said no (Table 4). This report was higher than the report of Letebran *et al*. (2015) which reported that about 65.6% of the respondents confirmed the presence of serious disease outbreak in Gontaafeshum district of Eastern Tigray, Ethiopia. The local chicken were more disease tolerant than the exotic breed and their crosses. About 53 % and 32.4% of the respondents were taken their chicken to vet clinic and apply traditional medicine to their chicken, respectively. About 45.6% of the respondents were lost their chicken due to these disease outbreaks. During the disease outbreak occurrence, 35.7% of the respondents treat all their chicken while 55.7% treat only sick chicken.

Concerning the effectiveness of traditional medicine, about 40.8% and 38% of the respondents said the traditional medicine was moderate and good in its effectiveness, respectively. In fact, using the indigenous knowledge and supporting it by scientific idea is the main solution for the production and productivity of the chicken in our country. As the report of this survey indicated, 45.6% of the respondents were lost all of their chicken due to disease outbreak. This indicates, disease outbreak need special attention to control before they disseminated to the whole areas. In this study area, disease outbreak was observed mainly in the summer season (88.3%). This may be related with high distribution of the microorganisms those cause the disease due to the availability of high humidity and high temperature, suitable condition for microorganisms multiplication and also it may be related with scarcity of feed in quality and quantity during wet season.

Available traditional veterinary medicine

As in other countries, in Ethiopia, traditional veterinary medicine involves the work of bone-setters, midwives, religious healers and people who claim the ability to communicate with devils (Mesfin*et al.*, 1994).According to this survey, there were different traditional veterinary medicine ingredient that used to treat the infected chicken. These locally available traditional medicine was summarized in table 5. So as this survey indicated,in the study area ,mixture of cabbage leaf(*BrassiccOleraceacapitota L.)* and lemon juice, coffee

Table 5:- Traditional medicine for chicken in the study area.

Study zone	Name of traditional medicine	Used to treat	Ways of preparation	Ways of administration
Bench Maji	Garlic, Hot pepper("*Mitmita*"), lemon fruit	Diarrhea, coughing	Mixing with water	Drenching
	Tobacco leaf	Coughing and other respiratory problems	Its juice	Drenching
	Lemon juice +'*arakie'*(Alcohol)	Coughing	Mixture	Drenching
	'Arakie'	Sneezing	Mixing with feed or water	with feed and water
	Lemon+*arakie'*+garlic+ "*Mitmita"*	Respiratory disease	Mixing of all ingredients	with feed, water and via drenching
	Cabbage leaf + lemon juice	Coughing	Juice	Drenching
Sheka	Coffee leaf	Coughing	Juice	Drenching
	Lemon juice	Coughing	Juice	Drenching
	Pepper	Coughing	Mixing with water	Drenching
Mejenger	Lemon	Coughing	Juice	Drenching
	Ash	Diarrhea	Mixing with water	Drenching
	Moringa leaf	Diarrhea	Juice of its leaf	Drenching

Table 6:-Predators attack

Types of attached chicken	Sheka	Bench Maji	Mejenger	Over all%
Chicks affected	18.85%	61.5%	19.67%	33.34
Adult affected	11.45%	67.7%	20.8%	33.3
White color chicken	21.3%	64%	14.67%	33
Gebsima color chicken	11.3%	69.8%	18.87	33.3
Red color chicken	15.5%	64.3%	20.2%	33.3
Black color chicken	12.2%	63.4%	24.4%	33.3

leaf, lemon juice, pepper mixing with water were used to treat coughing while mixture of lemon,'*arake*', garlic (*Allium sativum L.*) and hot pepper (*capsicum frutescens*) and tobacco (*Nicotianatabacum L.*) leaf's juice used to treat respiratory disease. This report is in line with the report of Yibrah (2014) in which the medicinal uses of *Nicotianatabacum L.*to treat a leech infestation inTigray region, Northern Ethiopia, and tick infestation in South Omo, Southern Ethiopia. The mixtures of garlic (*Allium sativum L.*), Hot pepper (*capsicum frutescens*) and lemon fruit, ash and moringa leaf juice were used to treat diarrhea. Addisu*et al*. (2013) also reported in North wollo the rural communities used different local veterinary medicines such as alcohol ("*Arekie*") , "*damakasie*" , lemon and white onion to treat sick chicken . This result is also in line with the findings of Fisseha (2009) in which farmers in Bure district treated the sick chickens against Newcastle disease by using locally made alcohol ('*Arekie*'), lemon and onion , plant materials (like "*semiza*" & "*endod*). Even though such traditional medicines were used in the study area, there was no clear amount of dosage of application of the specific medicine for specific disease. And also this needs the scientific justification to recommend these medicines as modern medicine for poultry producer.

Predator attack

Because of high vegetation coverage, predator is one of the constraints of poultry production in the study area. According to this study, in Bench Maji, most of the chicks (61.5%) and adult (67.7%) were affected by predator as

compared with the rest of study areas. This report is similar with report of Nebiyu *et al.* (2013), one of the major cause of losses was the effect of predator in the Halaba district of southern Ethiopia. Chicken having gebsima (69.4%), red (64.3%), white (64%) and black (63.4%) color were more affected in Bench Maji zone than the others study zone. Addisu *et al*. (2013) and Fisseha *et al*. (2014) also indicated as predator was the major constraint of village poultry production in North Wollo zone of Amhara Region. Similarly Hunduma *et al.* (2010) reported that predator was the major poultry production constraints in rift valley of Oromia Regional state, Ethiopia.

CONCLUSION AND RECOMMENDATION

- Most respondents kept their chicken sharing with the main house.
- Scavenging was the main feed resource for the chicken production in the study area.
- Chicken management (feeding, watering and others) was mainly owned by women.
- The main feed supplements were maize, household scraps and sorghum scavenging.
- The main objective of the supplementation was for the increment of egg and meat.
- Coughing, diarrhea, sneezing and other respiratory problems were the main clinical sign in the study area.
- The ethno vet medicinal plants that used to treat chicken's disease were Lemon juice, hot pepper(*capsicum frutescens*),coffee leaf, tobacco leaf(*Nicotianatabacum L.*),garlic (*Allium sativum*) and Moringa leaf(*Moringaoliefera*)**.**Therefore, the following recommendation was suggested:-

✓ In order to assess and utilize the existing traditional knowledge and traditional medicines in the study areas, it should be supported by scientific knowledge and researcher.

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