

Chicken parasites and local treatments used against them in Mbeere District, Kenya

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Abstract

Poultry is the most kept livestock and almost every household in villages has about 5-20 indigenous chicken reared under free range management system. Seventeen (17) farmers in Mbeere District, Kenya were interviewed using questionnaire to evaluate constraints, types of parasites and local treatments used.

The main constraints were diseases (88.0%) and parasites (70.6%). Ectoparasites commonly encountered were ticks and fleas, at prevalence rate of 47.1% each; and mites and lice at 17.6% each. Endoparasites occurred at a rate of 29.1%. Majority (71.0%) of the farmers treated against endoparasites, using mainly piperazine citrate (35.3%). Others (82.4%) controlled ectoparasites using cabaryl (53.0%), cooking oil (11.6%), ectomin (11.6%), while 23.5% did not know the type of treatment they had given. Sixty five percent (65.0%) of the respondents used herbal medicine, such as Aloe-vera (29.4%), pepper (17.7%), ‘‘mikau’’ (11.7%) and ‘‘githongu’’ (*Solanum incanum*) (11.7%). Majority of the farmers controlled for ecto- and endo-parasites.

***Key words:* ecto- and endo-parasites, parasite control**

Introduction

Endo and ecto- parasites are common among indigenous chickens since they are kept outdoors where they scavenge and forage and in the process pick up the infective stages of the parasites. These parasites compete with the birds for nutrients; some suck blood causing anaemia, while others cause anorexia or death. Some ecto-parasites are important in transmission of certain pathogens, while others may cause disease such as scaly leg and depilating mange. Heavy parasite burdens have been recorded in indigenous chicken in Eastern Province of Kenya (Sabuni 2009). A study

carried out by Maina (2005) on indigenous chicken sold in markets in Nairobi reported high carriage of endoparasites. Tracing the birds to respective origins, Maina (2005) found that some of the birds were from Eastern Province, which encompasses Mbeere District. No previous studies have been carried out to document the methods and types of anti-parasitic treatments the farmers are using. It was found necessary to determine the parasite types and anti-parasitic treatments used against them in Mbeere District, Kenya. Results of this study will help in planning effective parasite control in Mbeere District in another study.

Materials and Methods

Study area

The research was conducted in Mbeere District in the Eastern Province of Kenya. The district has a total area of 2093 km² and lies between 0° 20' and 0° 50' South and longitude 37° 16' and 37° 56' East. It has a bimodal pattern of rainfall with long rains falling between mid March and June while the short rains occur from October to December. Most parts of the district receive less than 550 mm rainfall per year giving the area a marginal status. The temperature ranges between 20-30° C (Onduru et al 2002). The area has a high population of indigenous chicken, approximately 165,090 (KNBS 2009), and rearing of chicken is a major source of livelihood in the district. The study was conducted during the short rains - wet season (October, November and December) 2011.

Study design

The study was cross-sectional. Seventeen individual farmers in Mbeere District were selected and interviewed using a structured questionnaire. Selection of farmers was purposive where each farmer had at least 10 chicken reared under free range system. Sampling was based on farmers who were willing to be interviewed.

Data collection

The following type of data was collected; type of chicken kept, the major challenges they faced in poultry keeping (parasites, diseases, theft), symptoms of parasite infestations, types of drugs/herbs they used to deworm their birds, method of drugs/herbs administration, insecticides/drugs they used to control ectoparasites, how often they dewormed their birds, presence of other species of animals, age group mostly affected, type of housing.

Data analysis

Data was entered into Excel spread sheet and analyzed using GenStat 14th Edition for descriptive statistics.

Examination of ectoparasites

The ecto-parasites were morphologically identified using entomological keys of Soulsby (1982).

Results

Background information

Figure 1 shows the percentage of species of animals kept on the 17 study farms in Mbeere District. All the farmers interviewed kept local breed of chicken under the free range system.

Other than poultry, other animals kept included goats (71.4%), cattle (64.3%), dogs (35.7%), cats (21.4%), rabbits (14.2%) and donkeys (14.3%).

Figure 1: Different species of animals kept on 17 farms in Mbeere District

Management of poultry

Most of the farmers (90.0%) kept local breeds of chicken; almost all of them (92.9%) keeping the chicken under free range system. Ninety three percent (93.0%) of the farmers interviewed housed their birds, 47.1% in mud-walled houses, 35.25% in wooden houses, 5.88% in raft-walled houses, and 5.88% in iron-sheet houses (Figures 2, 3, 4, and 5).

Figure 2: Mud -walled poultry house

Figure 3: Wooden poultry house

Figure 4: Iron -sheet poultry house

Figure 5: Raft –walled poultry house

Majority of the farmers (87.7%) housed various age groups of chicken together while 14.3% kept different age groups in separate houses.

Table 1 shows percentage distribution of farmers who experienced various constraints in poultry production

Table 1: Types of constraints and percentage of chicken farmers who

| experienced various constraints in their chicken flocks in Mbeere District | |
|--|---|
| Constraint | Percentage of farmers experiencing the constraint in their chicken flocks |
| Diseases | 88.2% |
| Parasites | 70.6% |
| Predation | 52.9% |
| Accident | 11.8% |
| Insufficient feed | 17.6% |

The constraints experienced by the highest proportion of farmers were diseases (88.0%) and parasites (70.6%) in their chicken flocks.

Poultry parasites and their control

The most commonly encountered ecto-parasites were ticks and fleas with equal rates of occurrence (47.1%), and mites and lice (17.7%), while the endo-parasites were worms (29.1%). Majority of the farmers (64.7%) noted that all age groups of the chicken were commonly affected; 11.8% mentioned adults as being mainly affected, while 5.88% mentioned chicks as being mainly affected. A proportion of the interviewed farmers (17.7%), however, did not have any idea about the occurrence of these infections in different age groups of birds.

Farmers could identify symptoms of parasite infestations. For the ecto-parasites, 70.6% of farmers could identify fleas, ticks and lice on the skin of chicken. The signs that farmers associated with parasitic infections included scratching (17.6%), scale on legs (5.88%), while others (5.88%) could not tell any signs of infection. Similarly 47.0% of the farmers observed worms in faeces, 11.8% redness of faeces, 11.8% greenish diarrhoea and 11.8% mouth discharge, which they associated with disease.

Parasite control

Seventy one percent (71.0%) of farmers sought for treatment of birds against worms. Among these farmers, 12 (35.3%) used piperazine citrate, while 35.7% did not know the type of treatment used. The frequency of deworming varied with 29.4% saying they dewormed their chicken every three months, 17.6% when they saw worms in faeces, every six months and anytime; 52.9% could not remember or know how often they should deworm their birds.

Most farmers (82.4%) said that they controlled ectoparasites and they used various medications. Majority of the farmers (52.9%) used cabaryl (Sevin^R), 11.6% used both cooking fat and ectomin 11.6%; while 23.5% did not know the type of treatment given (Figure 6).

Figure 6: Drugs used against poultry ectoparasites

District

Of the 12 (70.6%) farmers who sought treatment, 52.9% administered the medicine themselves, 11.7% got help from animal health assistant, 5.88% from veterinarians and 23.5% did not have any idea how to treat their birds.

Sixty five percent (65.0%) of the respondents used herbal medicine, 29.4% used Aloe-vera, 17.6% used pepper, 11.7% used ‘‘mikau’’ and 11.7% used ‘‘githongu’’ (*Solanum incanum*). Twenty nine percent (29.4%) applied Aloe-vera in drinking water, 11.7% used it topically while 58.8% had no idea on how it is used.

Other control methods used by the farmers included paraffin oil (35.3%), improved hygiene (11.7%), while 52.9% had no other control method.

Discussion

This study showed that farmers housed their birds at night mainly using the mud walled type of housing. Mud walled houses are associated with majority of ectoparasites (Mungube et al 2008). Most farmers also housed different age groups of birds together; a practice that was likely to facilitate the spread of ectoparasites and endoparasites across the ages. Most of the farmers, however, were aware that all age groups of birds were at high risk of infections; chicks got infected at an early age resulting in stunted growth and poor production. The fact that majority of the farmers confined their birds during the planting season, worsened the situation; confinement introduced some kind of stress to the birds (Njagi 2008) and facilitated close interaction of birds, leading to transmission of ecto-parasites.

Among the constraints of poultry keeping reported were diseases, parasites, predation, insufficient feeds and accidents; diseases being quoted as the major constraint. This supports what was reported previously by Njagi (2008). The most common parasites were fleas and ticks. The farmers were able to note the presence of fleas and ticks on the skin of birds. These parasites are normally associated with poor hygiene in the farm/ chicken house and absence of parasite control practices (Mungube et al 2008). The occurrence of ticks and fleas was highest on farms with mud-walled type of housing where the ticks hide in the cracks and crevices.

Some farmers kept other types of animals particularly goats, cattle, dogs and cats which can also be parasitized by fleas (Gordon and Jordan 1982; Soulsby 1982). Some rodents, such as rats, usually hide in mud-walled houses and are alternate hosts for fleas. Ticks (*Argas persicus*) were rated at 47.1%. This is in contrast to 29.3% recorded by Maina (2005), who examined traded birds in Nairobi and 5.60% recorded by Sabuni (2010) who examined farm birds from Embu and Mbeere Districts, Kenya and 11.1% by Mungube et al (2008), who examined birds in Machakos District, Kenya. In Zimbabwe prevalences of 6% and 14% in young and adult chicken, respectively have been reported (Permin et al 2002). *Argas persicus* sucks blood from chicken which can result in anaemia and death of the birds. They also transmit *Borrelia anserina* that causes spirochaetosis and *Aegyptinella pullorum* which causes a rickettsial infection in fowl (Gordon and Jordan 1982; Soulsby 1982).

Echidnophaga gallinacea (stick tight flea) occurred in the chicken at rate of 47.1 % as farmers did not use insecticides as control methods. The prevalence was in contrast to

that recorded from previous findings in Kenya by Sabuni (2010) of 29.2% but lower than 50% reported by Maina (2005) and 76.7% reported by Mungube et al (2008). Mites and lice were present at each 17.6% which was lower than that of ticks (47.1%) and fleas (47.1%). The reason behind this is that lice run very fast in the skin and hence most farmers could not be able to visualize them.

Majority of the farmers were aware of treatments used against ectoparasites. Most of them used cabaryl (Sevin^R) which they dusted on the skin of the birds. A few people used ectomin that causes nervous toxicity (Permin and Hansen 1998). Other traditional control methods included usage of cooking oil, paraffin oil and even used engine oil. Paraffin oil and cooking oil were mainly used to cater for scaly leg mite where the oils are thought to cause suffocation of the parasites. Used engine oil was applied in poultry houses mainly in the cracks to cater for ticks.

Worms were also mentioned as being present, at 47.0%. Although most of the farmers believed that the drug, which they were using (piperazine citrate), worked, it had no effect on caecal worms and tapeworms which were later found to be very common in the area. Chicken in the area had minimal infection with *Ascaridia galli*, indicating that piperazine citrate had taken care of them. Most farmers had no idea of how often they should deworm their birds.

Other worm control methods given included herbal medicine, such as usage of Aloe-vera, pepper, ‘*mikau*’, ‘*githongu*’. The mechanism of the herbal medicines has not been evaluated.

Conclusions

- Most of the farmers used commercial drugs and herbal preparations to control ecto- and endo- parasites.
- The most commonly used commercial drug by the farmers against ectoparasites was cabaryl (Sevin^R).
- The most commonly used herbal preparation against ectoparasites was Aloe-vera. Other antiparasitic treatments in use included were used engine oil, ‘*Githongu*’ and cooking oil.
- The most commonly used commercial drug and herbal preparation against endoparasites was piperazine citrate (Ascarex^R) and Aloe vera respectively.

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