

PREVALENCE OF POULTRY DISEASES AND PARASITES IN BOTSWANA

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ABSTRACT: This paper reviewed literature on the prevalence of diseases and parasites of poultry in Botswana over a five year period i.e., from 2006 to 2010. Coccidiosis was the most prevalent disease in poultry species except for ostriches which were mainly affected by colisepticaemia. The highest prevalence of diseases and parasites was recorded in 2007 with fowl pox, coccidiosis, salmonellosis and helminthiasis being the main contributors. Fowl pox was prevalent in family chickens which are reared under free range. Poultry diseases were mainly prevalent in Gaborone, Mochudi, Francistown and Molepolole districts with 225, 168, 148 and 135 cases, respectively. Newcastle disease was sporadic throughout the study period. In the present study, the common parasites of poultry were mites, fleas, lice, ticks and helminths, and helminths were the most prevalent followed by mites. Of all species, chickens were affected most by parasites followed by guinea fowl. These results suggest inadequacies in health management, indicating that strict biosecurity measures should be put in place in order to reduce mortalities. There is also a need for extension service to train farmers on health management.

Key words: Biosecurity, coccidiosis, diseases, Newcastle disease, parasites, salmonellosis

INTRODUCTION

The poultry industry in Botswana has grown rapidly since its inception in the 1970s. According to Poultry Annual Report (2010), the industry employs about 4050 people the majority of whom are women. Moreki (2011) reported that Botswana is nearly self-sufficient in chicken meat and table eggs. However, Botswana imports further processed chicken meat, turkey, duck, quail, guinea fowl and pheasants from South Africa. The *per capita* consumption of poultry meat and eggs are estimated to be 42.6 kg meat and 66 eggs per person per year, respectively (Poultry Annual Report, 2010).

World-wide, two main poultry production systems exist and these are free range (also known as village or family poultry) and commercial systems. Family poultry production system uses mainly the indigenous chickens which scavenge around homesteads for food. On the other hand, the commercial system uses imported high yielding bird strains. In family poultry, shelter is seldom provided resulting in birds sleeping in tree tops during the night to prevent predation (Mushi et al., 1999). Furthermore, Mushi et al. (2000) reported that *Tswana* chickens are mainly raised under free range or semi intensive systems where vaccinations against poultry diseases such as Newcastle disease (NCD), Infectious Bursal Disease (IBD) and coccidiosis are not carried out. Instead, traditional herbal remedies were used to treat sick chickens. On the other hand, commercial chickens are provided with housing and adequate nutrition, and are vaccinated against diseases.

Some of the major constraints in the poultry industry in Botswana are limited feed resources and diseases. Modification of the production systems from free range to intensive systems has contributed to the vulnerability of poultry to diseases resulting in poor bird performance including reduced feed intake, feed poor conversion ratios and poor growth rates.

Despite the rapid growth of the industry, there is little documentation of poultry diseases in Botswana. Therefore, this paper reviews the prevalence of poultry diseases in Botswana over a five year period, i.e., from 2006 to 2010. Data used in this review were obtained from the Botswana National Veterinary Laboratory (BNVL) reports and database.

POULTRY DISEASES AND PARASITES

REVIEW ARTICLE

Figure 1 shows the number of confirmed cases of poultry diseases and parasites in Botswana from 2006 to 2010. These confirmed cases included viral, fungal, bacterial, parasitic and non-specific causes which include *inter alia* nutritional factors, trauma, stress and injuries. According to Figure 1, the cases of diseases and parasites increased from 2006 to 2007 and thereafter declined. In general, diseases and parasites declined over time, indicating improvement in farmers' health management practices.

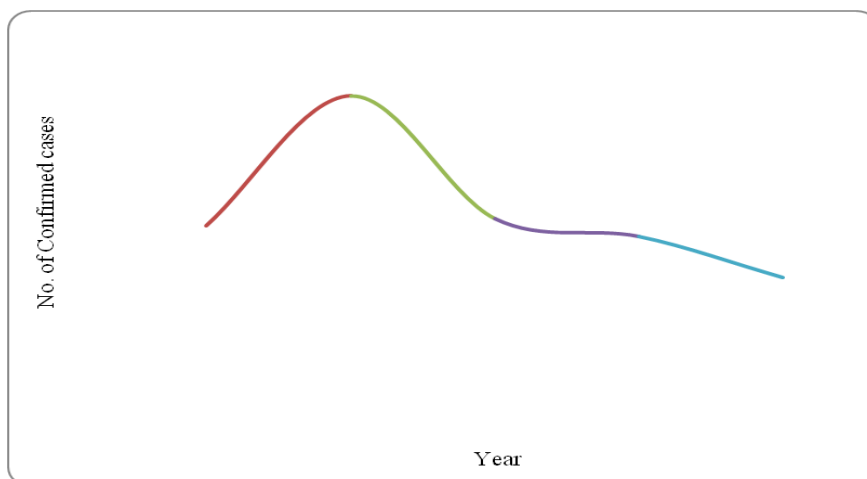


Fig. 1. Number of confirmed cases of poultry diseases and parasites (2006 to 2010)

This current study identified the diseases and parasites of chickens, ostriches, guinea fowl, ducks and turkeys. For this reason, the discussion is centred on diseases and parasites of these five poultry species.

Chickens

Table 1 shows the prevalence of chicken diseases across the districts from 2006 to 2010. It is clear from Table 1 that the highest number of confirmed cases was recorded in Gaborone, Mochudi, Molepolole, Francistown and Mahalapye with 225, 167, 148, 135 and 118 cases, respectively. These five districts are the main producers of poultry in Botswana. As shown in Table 1, the highest number of positive cases was recorded in 2007. Thereafter, a decline in cases was observed, indicating that farmers had adopted sound disease preventative measures.

The common diseases and conditions of chickens are presented in Table 2. It is clear from Table 2 that coccidiosis and fowl pox were the two most prevalent diseases of poultry. Fowl pox occurred mainly in family chickens. Diseases of less prevalence were IBD and NCD. According to Table 2, the highest prevalence was recorded in 2006 and 2007 and the lowest in 2008. During the study period only nine cases of mange were recorded in chickens. According to Office International des Epizootics (OIE) (2008), mange is a contagious skin disease that is characterized by crusty, pruritic dermatitis and hair/feather loss, is caused by a variety of parasitic mites burrowing in or living on the skin. Acaricides are used to control mange.

Table 1 - Positive cases of chicken diseases across the districts						
Districts	2006	2007	2008	2009	2010	Total
Francistown	4	38	31	43	19	135
Gaborone	31	53	62	37	42	225
Gantsi	0	6	5	5	2	18
Jwaneng	0	13	4	4	4	25
Kanye	12	23	20	20	19	94
Kasane	0	4	4	4	3	15
Lethakane	5	32	4	5	1	47
Lobatse	1	40	16	17	16	90
Mahalapye	8	43	31	28	8	118
Maun	0	22	6	3	7	38
Mochudi	32	48	39	31	17	167
Molepolole	27	55	33	20	13	148
Palapye	1	5	14	19	9	48
Selebi Phikwe	0	13	8	12	5	38
Serowe	1	10	7	17	12	47
Tsabong	0	4	2	2	2	10
Total	122	409	286	267	179	1263

Source: BNVL Annual Reports (2006-2010)

Table 2 - Ten most common chicken diseases in Botswana from 2006 to 2010

Year	Coccidiosis	Newcastle disease	Salmonellosis	Fowl pox	Colisepticaemia	E-coil	Nutritional deficiencies	Avian mycoplasma	Infectious Bursal Disease	Pediculosis	Total
2006	82	6	32	24	0	0	14	19	1	3	181
2007	58	4	28	36	0	27	25	39	0	25	242
2008	64	0	1	29	10	0	3	7	3	2	126
2009	40	2	6	25	40	0	5	2	1	8	131
2010	38	1	7	28	11	7	4	5	5	4	114
Total	282	13	74	142	61	34	51	72	10	42	781

Source: BNVL Annual Reports (2006-2010)

Ostriches

Helminthiasis, trauma, colisepticaemia and salmonellosis cases were recorded in ostriches and helminthiasis was the most prevalent. Like chickens, the highest number of cases (5) of ostrich diseases was observed in 2007 followed by 2009 with four cases. The low prevalence of ostrich diseases in this study could be attributable to low numbers of farmed ostriches in the country, and also to adoption of strict biosecurity measures on farms. Traumatic injuries reported in this study could be attributable mainly to fright, or fighting of birds, especially during the breeding season. No case of NCD was recorded in ostriches in the present study. According to European Commission (2001), the last case of NCD was reported in ostriches in Botswana in 1993.

Guinea fowl

Prevalence of guinea fowl diseases in Botswana is shown in Table 3. Similar to chickens and ostriches, a higher number of confirmed cases (38) of guinea fowl diseases were observed in 2007 followed by 2010 with 25 cases. Of all the diseases, coccidiosis and helminthiasis were the most prevalent. Bonkoungou (2005) in Burkina Faso reported that guinea fowl are more tolerant to common viral and bacterial diseases that occur in poultry but are intolerant to internal and external parasites because of their scavenging behaviour under semi-intensive production systems. In Botswana, guinea are reared mainly under semi-intensive systems.

Table 3 - Number of confirmed cases of guinea fowl diseases (2006 to 2010)

Year	Helminthiasis	Coccidiosis	Hardware disease	Pediculosis	Trauma	Salmonellosis	Colisepticaemia	Total
2006	1	1	0	0	0	0	0	2
2007	17	16	1	1	2	1	0	38
2008	9	10	0	0	0	1	0	20
2009	9	7	0	0	0	1	5	23
2010	8	12	0	1	0	2	2	25
Total	44	46	1	2	2	5	7	108

Source: BNVL Annual Reports (2006-2010)

Ducks

As is the case with turkeys, duck production in Botswana is practiced at subsistence level. The highest number of cases of diseases and parasites of poultry were recorded in 2007. Four diseases of ducks were recorded and these were *Vibrio fluvialis* (5), fowl pox (1), helminthiasis (1) and colisepticaemia (1). It is apparent that *Vibrio fluvialis* was the most prevalent.

Turkeys

In Botswana, turkey production is mainly practiced at subsistence level; hence the low number of cases of disease cases reported in the present study. As in other poultry species, high prevalence of diseases was observed

in 2007. Coccidiosis and blackhead were the only diseases that affected turkeys, and the most prevalent was coccidiosis.

Parasites and parasitic diseases of poultry

The parasites of chickens, ducks, guinea fowl, ostriches and turkeys are presented in Table 4. It is clear from Table 4 that helminths and mites were the most prevalent parasites of poultry. Helminths were more prevalent in chickens than in other poultry species. This finding points to inadequacies in health management practices, especially in *Tswana* chickens, which do not receive adequate technical support from the extension service. In the present study, only ostriches were not affected by helminths probably indicating that farmers had adopted sound and effective health management programs.

Species	Mites	Fleas	Lice	Ticks	Helminths	Total
Chicken	34	0	3	0	129	166
Ducks	0	3	0	0	1	4
Guinea fowl	35	8	0	0	26	69
Ostriches	0	2	0	2	0	4
Turkeys	0	0	0	0	14	14
Total	69	13	3	2	170	257

Source: BNVL Annual Reports (2006-2010)

CONCLUSION

In this study, the highest prevalence of diseases and parasites was observed in 2007. Coccidiosis was the most prevalent disease in chickens, ducks, guinea fowl and turkeys, and colisepticaemia in ostriches. Fowl pox was prevalent in *Tswana* chickens due to inadequacies in health management. In order to reduce mortalities due to managerial factors such as diseases, it is necessary that strict biosecurity measures should be put in place. In addition, there is need for extension service to intensify farmer training on health management.

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