

Prevalence of diseases and parasites of rabbits in Botswana

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Abstract

This paper reviewed diseases and parasites of rabbits in Botswana over a 10 years period, i.e., from 1998 to 2007. The present results showed that nutritional deficiencies followed by pneumonia and focalogranulomatous hepatitis were the most prevalent. Psoroptic mange (ear canker) was the most prevalent parasitic infection with 18 cases recorded followed by *Moraxella spp.*, *E. coli* and secondary bacterial infections with each recording two cases. The high prevalence of nutritional deficiencies in this study suggests that rabbits were fed poor quality diets. In addition, a large number of diseases diagnosed in this study indicate that health management was lacking due to unavailability of technical support from the extension services.

Keywords: Antibiotics, Biosecurity, Mange, Nutritional Deficiencies, Rabbit Farming

Introduction

In 2005, world rabbit meat production was estimated to be 1 400 000 tonnes with China, Italy and France being the major producers at 500 680, 225 000 and 87 200 tonnes, respectively. Egypt is the major producer in Africa and the fourth in the world with 77 280 tonnes (Szendro and Sendro 2008). Rabbit farming in Botswana is in its infancy and therefore the population of farmed rabbits is very small with nearly all rabbit farmers being at subsistence production. This could be associated with a number of factors including religious taboos and lack of knowledge on rabbit husbandry including diseases and parasites.

Like other animals, rabbits have diseases and parasites that interfere with their normal physiology which have in the past contributed to the reduction of populations, as well as, slowing the progress of rabbit farmers across the world. Lebas et al. (1986) stated that disease is almost always the result of poor surroundings and environment coupled with the onslaught of a pathogenic agent. The fact that the rabbit's body does not have an infinite capacity for specific defence or nonspecific defence (adrenaline discharge which mobilizes all body metabolisms and major functions such as breathing and blood circulation) makes the producer to have the responsibility of keeping it in conditions where it does not have to engage in a permanent struggle for survival (Lebas et al., 1986).

There is little information on diseases and parasites of rabbits in Botswana as rabbit production is in its infancy. Therefore, Botswana National Veterinary Laboratory (BNVL) reports from 1998 to 2007 were evaluated to ascertain diseases and parasites of rabbits in Botswana.

Disease and parasite prevalence

Data on cases of diseases reported, samples tested and those confirmed positive are presented in Table 1. According to the data, 109 samples were submitted for laboratory diagnosis, out of which 65 were found positive of either a disease (malnutrition or pathogenic agents), infestation of microorganisms (internal and external parasites), or conditions such as intestinal strangulation. As shown in table 1, the highest infectivity rates occurred in 2001 and 2005, and lowest in 2000. No samples tested positive in 2007.

Diseases and conditions

Diseases and conditions of rabbits are illustrated in figure 1. It is clear from figure that nutritional deficiencies posed the main challenge in rabbits in Botswana. Four positive cases of nutritional deficiencies were recorded and these were followed by pneumonia and focalogranulomatous hepatitis with three cases each; coccidiosis, abscess and helminthosis with two cases each, whereas others such as colisepticaemia, cannibalism, gastric rapture, peritonitis, cystitis, congestive cardiac failure,

septicaemia, severe haemorrhages, heat stroke, traumatic injuries, purulent arthritis, intestinal strangulation and vegetative endocarditis had one case each.

Table 1: Prevalence of diseases/conditions and parasites of rabbits in Botswana (1998-2007)

Year	Number of samples tested	Number of positive samples	Percent of cases that tested positive
1998	11	10	90.9
1999	8	5	62.5
2000	10	1	10
2001	4	4	100
2002	15	14	93.3
2003	19	14	73.7
2004	10	8	80
2005	7	7	100
2006	10	2	20
2007	7	0	0
Total	101	65	

Source: BNVL Annual Reports (1998-2007)

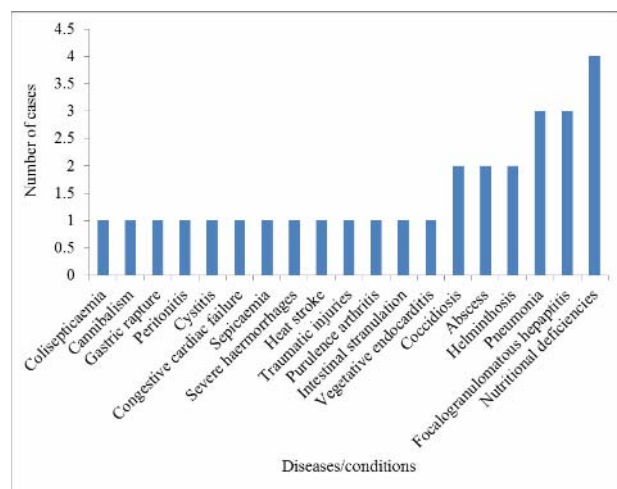


Fig. 1: Cases of diseases and conditions of rabbits in Botswana from 1998–2007

Two cases of coccidiosis were reported in 2002 and 2004 (Figure 1). Sulfadimethoxine is the most effective sulphur drug that can be tolerated by pregnant does at 0.5–0.7 g/litre of drinking water as a curative dose or at 0.25 g/litre drinking water as preventive dose. Formosufathiazole can also be used at 0.5–0.8 g/kg of feed as curative measure, or at 0.3–0.5 g/kg as preventive measure. The most common antibiotics used for rabbits are neomycin (0.1-0.4 mg/l of drinking water), colimycin (3-4.10⁵ IU/l) and the tetracycline group (0.2-0.3 g/l). However, antibiotics must be used

cautiously in treating rabbits because some (*e.g.*, ampicillin, lyncomycin, clyndamycin) may be toxic. Good hygiene is the proper way to prevent manifestation of the microbes. In addition, preventive medicine should be used to combat coccidiosis.

As shown in Figure 1, peritonitis was diagnosed in the current study though less prevalent. The first signs and symptoms of peritonitis include loss of appetite, nausea, vomiting and abdominal swelling. The most common type of treatment for peritonitis is surgery. Surgery can also be used to drain off excess fluid in the abdominal cavity and locate the exact source of the infection. Antibiotics are also commonly used in the treatment of peritonitis. These medications are used to kill the bacteria in the body, inhibit the spread of infection, and ward off further infection.

Colisepsicaemia was diagnosed in 1997 and 1998 (Figure 1). In addition, septicaemia, cystitis and congestive cardiac failure cases were diagnosed in 1998. Treatment of these diseases may be by antibiotics that are safe to use in rabbitries. Prevention is by cleaning of cages to reduce build-up of microbes in hidden places such as cage corners.

A case of focal granulomatous hepatitis was diagnosed in 2002. As shown in figure 1, helminthosis was diagnosed in 2002 and 2004. These cases were associated with coccidiosis cases. This disease is caused by internal worms (tape worm) and dewormers such as mebendazole may be used as a treatment measure. Exclusion of wild rodents and arthropod vectors and insects from rabbit colonies is important and as such feed and bedding should be clean, and dogs and cats in the immediate area of rabbits should be treated for tape worms.

Abscesses are very common in rabbits and develop very quickly without any apparent change in the animal's health. There are two preferential sites in does: the sub-maxillary area and the teats. Foot pad abscesses are very common to all breeders and chronic abscesses are far more frequent under the hind paws. They start as barely visible swelling which can be felt by palpating and may be limited to the cutaneous and conjunctive tissues the skin becomes thick and scabby (Lebas et al., 1986). Common causes are *Pasteurella multocida* or uncommonly *Staphylococcus aureus* although other bacteria, such as *Fusobacterium spp.* may be involved occasionally (Ward et al., 1981). Treatment may be by general antibiotics or remedies that are specific for the causative agent. Culling of affected animals is recommended for prevention of further outbreaks. Cleaning of the environment and regular disinfection of cages and houses is also necessary to keep rabbits healthy as well.

Traumatic injuries and severe haemorrhages observed in this study are associated with inappropriate handling and restraining of rabbits as slippery surfaces

in the rabbitry. Information on handling and restraining of rabbits is therefore fundamental and must be acquired by aspiring rabbit producers and those already in production as this could sensitize them on the fragility of the rabbit's body. Lebas et al. (1986) stated that cannibalism is an exceptional abnormal behaviour in the doe. The female usually feeds on only those young, which are already virtually dead but still warm. This may happen a few hours or days after parturition and it is caused by insufficient drinking water after parturition (Lebas et al., 1986). Cannibalism can be prevented by providing nutritious feeds to rabbits, especially pregnant ones, as well as, provision of sufficient clean water daily.

High prevalence of nutritional deficiencies in this study (Figure 2) indicates that rabbits are fed low quality feeds such as kitchen and garden wastes. Nutritional deficiencies can be prevented by feeding complete diets to rabbits. Water must also be provided at all times in rabbitries. Also, rabbitries must be situated in areas where air circulation is at its maximum such that ammonia and other toxic gases may escape thus reducing microbial infestation of air borne pathogens.

Heat stroke was diagnosed in 2002. This condition usually occurs in hot and humid environments where there is usually little ventilation. It may also be a result of over exposure to heat. Well ventilated houses and cages are required such that heat from the animal's body is well dissipated.

Parasitic infections

Data on parasitic infections of rabbits are presented in Table 2. *Moraxella (P. cuniculi)*, Psoroptic mange (ear canker), *Bordetella bronchiseptica*, enterobacteria, *pasteurella*, *klebsiella*, *ornithonyssus*, *A. hebraeum* (tick), *H. truncatum* (tick), *E. coli*, and *Staphylococcus aureus* were isolated from rabbit samples. The majority of cases (18) were positive of ear mange (canker) whereas many other parasites had one case each. Ear mange or mite infection is a common infection caused by *Psoroptes cuniculi*. In the present study, it seems that mange occurred between May and July.

Table 2: Number of rabbit samples positive samples

Parasitic infections	Number of positive cases
Psoroptic mange	18
Moraxella species	2
E. coli	2
Miscellaneous infections	2
Others	9
Total	33

Source: BNVL (1998 to 2007)

Rabbits that are affected with mange should be treated with organophosphates (e.g., malathion) (Lebas et al., 1986). Furthermore, glycerine, iodized oil or

cresyl oil (effective with frequent applications) are recommended. Ivermectin is reported to be effective against mange (Pandey 1989; Curtis and Brooks, 1990; McKellar et al., 1992; Bowman et al., 1992).

Conclusions

1. Pneumonia and focal granulomatous hepatitis were the most common diseases whereas ear mange (canker) is the most common parasite affecting rabbits in Botswana. The fact that a number of samples tested and samples found with microbial/parasitic infection has diminished over the years could indicate that farmers are taking precautionary measures.
2. Technical support to the rabbit farmers may be inadequate given that rabbit farming is a relatively new in Botswana.

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