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Parasitic Infestation and Reproductive Wastages in Goats at Sabon-Wuse Nigeria

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ABSTRACT

High death rates, poor reproductive performance, poor growth and high rates of neonatal goat mortality characterized traditional goat production in the study area and this is the reason why this study examined levels of parasitic infestation in goat under traditional management as part of efforts to identify potential causes of reproductive and productive wastage in the area because the situationis causing great economic loss and a potential threat to public health because of possible products contamination in consumers and danger of epizootic outbreak. Some goat owners were interviewed and a brief examination of faecal and blood samples obtained from goats under free range management was carried out as well as evaluation formicroscopic sensitivities of the parasites to some antibiotics available in Nigeria markets. The outcome of the interview showed Age at first kidding is 14 months, Abortion rates 11%, Kidding intervals 9 months, Pre-weaning mortality 26% and Adult goat mortality 10%.Faecal samples were obtained from fields where goats scavenge in different parts of the rural community while blood samples were obtained from goats at kraal built to house them in the night and against hot sun during the day by their owners. The study revealed 42.11% (Ova of hookworm), 15.78% (Cyst of E. histolitical), 15.78% (Flagellates of Trichomonas), 21.05% (Ova of Strongiloides) and 5.26% (Ova of Trichorus) in the collected faecal samples while cultures of blood obtained from all the animals yielded Coliform bacilli. All the parasites identified were positive to antibiotics including ciprofloxacin, erythromycin, chloramphenicol, gentamycin, ofloxacin, pefloxacin, septrin, nitrofuratol, and levofloxacin. The study concluded that a mix of these antibiotics should be incorporated into treatment of goats under free range in the study area.

Keywords: *Reproductive wastage, Goat, parasites, blood culture, stool examination, antibiotics.*

INTRODUCTION

Traditional livestock production systems in Nigeria is characterized by small ruminant animals such as goats scavenging around neighborhood of their owners; in this system animals are rarely cared for and/or hardly provided with nutrients balanced diets. In this type of production system, there is poor productivity and unthrifthness in livestock. Parasitic diseases are among major factors responsible for poor productivity and other associated economic loss (Ahmed *et al*, 1993).

Goats as small ruminant animal stand important positions in production of food for human consumption than monogastric animals because, apart from production of meat and milk for immediate consumption; they convert poor feed resources and agro-industrial by-products into high quality protein for human consumption. Unlike monogastric animals, they are not competitors for human food such as grains that are major foods for man in under-developed and developing countries of the world. In the study area, goats are life bank for women who seldom sell them any time they are in need of money for other activities and this currently gaining leading prominence because of the proximity of the area to Abuja which is a major consumers market in Nigeria.

Shortfall of improved production and management of goats is common in Nigeria because its major production is confined to rural areas where there is ample production of goats especially the West African Dwarf goats, which are most common goats in the study area. This lack of improved management affect

performance characteristics of goats under traditional production systems in this area has led to under-production of goats, non-commercial goats farming, under-utilization of feed resources and deaths of goats as well as human contamination through consumption of goat meat. Therefore, this study was carried out to contribute to health and production management practices that reduce parasitic infestations in free range goats in the study area.

MATERIALS AND METHOD

This study was carried out in Sabon Wuse which is headquarter of Tafa Local Government area of Niger State in Nigeria. The area is within the Southern Guinea Savanna zone of Nigeria and goat is the most predominant small ruminant animal being kept on free range within the rural area. Some goat owners were interviewed to obtain information about goat production management. Faecal samples were obtained from the ground where the goats graze extensively on daily basis using stainless steel teaspoon to put the material into specimen bottles containing normal saline solution (0.85 % NaCl). Each sample solution was washed and filtered through fine grades of mesh sieves sized 90, 60 and 30 into sieve tubes to prevent loss of adult parasites and ova. The filtered solution was poured into centrifuge tubes and centrifuged for 5 minutes at 1500 rpm using an electric centrifuge. The supernatant was then poured off leaving behind the sediments, after which 1 or 2 drops of the sediment were placed on a glass slide and viewed under a light microscope for identification of ova, larvae and adults helminth parasites. 5ml of blood samples was obtained from each of the goats early morning 06:00hrs through their jugular veins into EDTA anti-coagulant bottles kept and transport to the laboratory for further analysis.

RESULTS

The outcome of the study showed gross reproductive wastages in the goats and loss due to inability of the goat owners to manage the situation. Table 1 below summarized main reproductive wastages in the goats as revealed by interview carried out for the goat owners in the study area:

Table1. *Reproductive wastages in free range goats in Sabon – Wuse*

Reproductive Parameters	Values
Age at first kidding	16 months
Abortion rates	20 %
Kidding intervals	9 months
Pre-weaning mortality	30 %
Adult mortality	20 %

(**Source:** *Field Survey, 2016*).

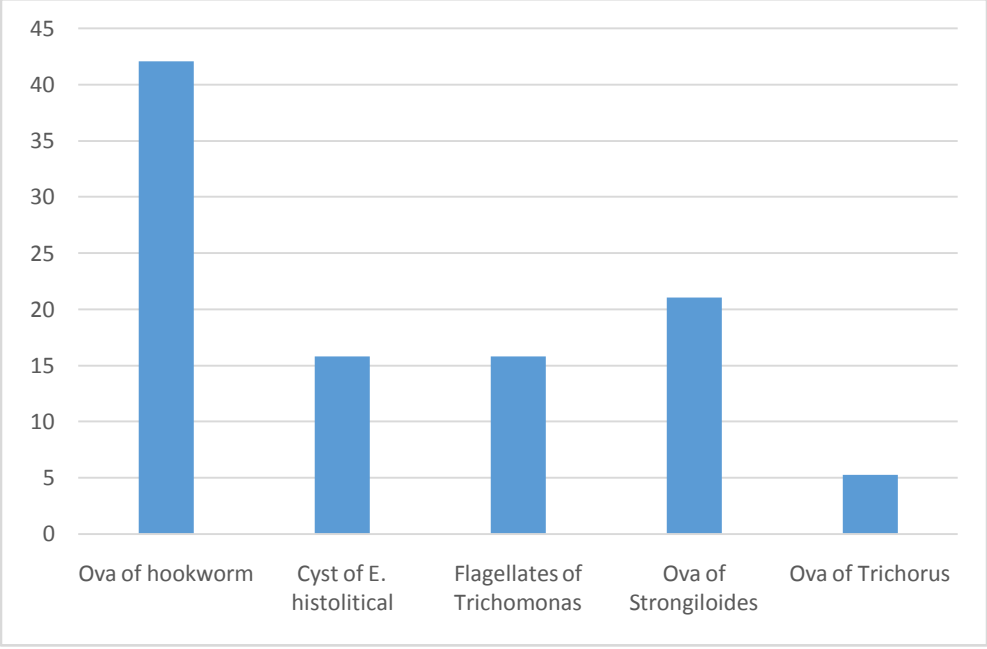

Fig1. *Prevalence of ova and larvae of parasites in examined goat stools (%)*

Table2. *Stool microscopic culture sensitivity of the free range goats in Sabon-Wuse Nigeria*

Samples No	Nature of parasites	Positive to
1	Ova of hookworm	Ciprofloxacin, erythromycin, chloramphenicol and gentamycin
5	Ova of hookworm	Ciprofloxacin, erythromycin, chloramphenicol and gentamycin
10	Ova of hookworm	Ciprofloxacin, erythromycin, chloramphenicol and gentamycin
15	Ova of hookworm	Ciprofloxacin, erythromycin, chloramphenicol and gentamycin
16	Ova of hookworm	Ciprofloxacin, erythromycin, chloramphenicol and gentamycin
17	Ova of hookworm	Ciprofloxacin, erythromycin, chloramphenicol and gentamycin
19	Ova of hookworm	Ciprofloxacin, erythromycin, chloramphenicol and gentamycin
20	Ova of hookworm	Ciprofloxacin, erythromycin, chloramphenicol and gentamycin
Samples No	**Nature of parasites**	**Positive to**
2	Cyst of *E. histolitical*	Ofloxacin, pefloxacin, septrin, chloramphenicol, erythromycin, nitrofuratol, ciprofloxacin and gentamycin
6	Cyst of *E. histolitical*	Ofloxacin, pefloxacin, septrin, chloramphenicol, erythromycin, nitrofuratol, ciprofloxacin and gentamycin
12	Cyst of *E. histolitical*	Ofloxacin, pefloxacin, septrin, chloramphenicol, erythromycin, nitrofuratol, ciprofloxacin and gentamycin
Samples No	**Nature of parasites**	**Positive to**
3	Flagellates of *Trichomonas*	ciprofloxacin, gentamycin, levofloxacin and septrin
8	Flagellates of *Trichomonas*	ciprofloxacin, gentamycin, levofloxacin and septrin
14	Flagellates of *Trichomonas*	ciprofloxacin, gentamycin, levofloxacin and septrin
Samples No	**Nature of parasites**	**Positive to**
4	Ova of *Strongiloides*	ciprofloxacin, gentamycin, levofloxacin and septrin
9	Ova of *Strongiloides*	ciprofloxacin, gentamycin, levofloxacin and septrin
13	Ova of *Strongiloides*	ciprofloxacin, gentamycin, levofloxacin and septrin
18	Ova of *Strongiloides*	ciprofloxacin, gentamycin, levofloxacin and septrin
Samples No	**Nature of parasites**	**Positive to**
11	Ova of *Trichorus*	ciprofloxacin, gentamycin, levofloxacin and septrin

The study revealed 42.11% (Ova of hookworm), 15.78% (Cyst of *E. histolitical*), 15.78% (Flagellates of *Trichomonas*), 21.05% (Ova of *Strongiloides*) and 5.26% (Ova of *Trichorus*) in the collected faecal samples (fig. 1) while cultures of blood obtained from all the animals yielded *Coliform bacilli*.

All the parasites determined were positive to antibiotics including ciprofloxacin, erythromycin, chloramphenicol, gentamycin, ofloxacin, pefloxacin, septrin, nitrofuratol, and levofloxacin in both stool and blood culture samples. The parasites in stool sample 1 was resistant to pefloxacin and septrin while stool sample 3 was resistant to ofloxacin, augmentin, chloramphenicol, erythromycin and nitrofuratol.

DISCUSSION

Hookworm which is the most prevalent parasite in the study area is nematode worm which inhabit the intestine of human and animals. It has hook-like mouth part with which it attaches itself to the wall of the gut, puncturing blood vessels and feeding on the blood. Hookworm infestation result into severe anemic condition in humans and animals; this is the reason why most of the goats were anemic in the study area. Centre for Diseases Control of United States of America reported that there is an estimated 576 to 740 million people worldwide infested with hookworm especially in the developing countries of tropics and sub-tropical regions of the world.

Since these goats are scavengers in search of food prevalence of helminths ova, cyst, and larvae in the faecal and blood culture samples is possible; however, considering importance of goat products especially meat in Nigeria, discovery of such number of helminths in the surveyed animal is dangerous considering that majority of the products goes into direct consumption by consumers in the federal capital city of Nigeria. The benefits of livestock production in the study area is huge especially in meeting the demand for essential animal protein in the growing population of the federal capital city, it is then important to note that helminth zoonosis is a major health problem that require prevention right from the production level. Since the study area supply goats and other livestock to the city; treatment against these helminths will not only convey economic benefits to livestock owners through increased productivity but also contribute to public health of Nigeria capital city Abuja.

Fecal and blood examinations are fairly routine tests that can be use to confirm physical

examinations or diagnosis of animals under free range management such as the animals in this study since there is no record keeping practices by the owners of these animal and they hardly practice any form of improved management. These examinations checked for bacteria and other pathogenic organisms in the animals and how best to combat them. The sensitivity test in this study help to determine which type of antibiotics capable of killing the pathogens (Brian, 2012). The blood culture test performed was necessary ordinarily a blood sample apart from showing blood composition will not show if there is infestation by pathogenic organisms; with the test however, the blood culture test showed that there is presence of pathogenic bacteria in the blood (WebMD, 2014).

Coliform bacilli was the pathogenic organism found in the blood culture; it is a pathogenic organism of genus *bacillus*, rod-shaped bacterium. It is a gram negative bacilli found in the intestinal tract and it resemble *Escherichia coli* particularly in the fermentation of lactose with gas. *Coliform bacilli* are many including *Pseudomonas mallei*, *Mycobacterium leprae*, *Legionella pnuemophila*, *Mycobacterium tuberculosis* and *Salmonella typhi*. *Coliform bacilli* are pathogenic organism that are commonly found in the environment and infest all warm blooded animals and humans. Because of relative expensive cost associated with identification of all individual bacteria affecting animals; a general evaluation which yielded detection of the *Coliform bacilli* in this study has led to minimize cost and gave a list of antibiotics that are positive to many bacteria that can commonly contribute to poor goat productivity and performance in the study area.

Many of the goats from which the blood samples obtained were diarrheic which the local who own them attributed to mild problem due to moisture levels of the grasses and other plants they consume; but this can better be linked with *Escherichia coli* because one of its sign of infestation in animals is diarrhea due to production of enterotoxins. If left unchecked and the animals get into consumption line; this can lead to serious public health problems which is one of the reason why livestock products in Nigeria are not safe for human consumption. Therefore, this study has provided clues to goat health management practices that guarantee human safety in the study area. Considering the fact that majority of goat produce in this area get into meat consumption chain of Abuja which is the Nigeria capital city maintenance of meat safety is very necessary.

Heavy parasites infestation in the goat examined can be linked to high reproductive wastage and poor reproductive performance as well as neonatal mortality of goat kids which is very common in the area. The parasitic infestation is a threat to optimum use of feeds and scarce supplements available for the goats in the area and hence limit their potential to reproduce. These positions are in line with observations of (Preston and Allon by 1979; ILCA 1988; ILCA 1989; ILCA 1990) which opined inadequate nutrition coupled with high levels of parasite infestation as major contribution to high reproductive and productive wastage in small ruminant herds regardless of size and production system. The mechanism of these parasitic infestation is reduced nutrient utilization by the goats hence leading to poor reproductive performance and inability to produced milk in sufficient quantity and quality for consumption of young goat kids a factor causing high neonatal mortality of goats, poor pre-weaning weight gain as well as pre-weaning mortality of the goat kids. Parasitic infestation also weaken goat dam immunity and as such the goat will unable to transmit immunity to during pregnancy to the offspring and hence the goat kids are given birth to with impaired capacity to survive harsh environmental conditions by dying pre-maturely.

CONCLUSION

The study established that there is high reproductive wastages in goats under free range in the study are, it also established that there is high presence and prevalence of helminths infestation in the faecal and blood samples of goat under free range management in the study area; the condition currently causing economic loss due to death of goats and poor reproductivity and productivity. Parasitic infestation in the goats also pose potential public health hazards to consumers; therefore in order to promote profitable goat production and safe-guard public health of the society it is recommended that a mix of the antibiotics to which the samples positively sensitive to for prevention and treatment of goats in the study area to increase productivity of the goats and prevention of helminths zoonosis.

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REFERENCES

[1] Amuta E.U., Omudu E.A., Ahmed A.S. (2004). Bacteriological and parasitological evidence of soil contamination in relation to sanitary facilities in selected schools in Makurdi. *Nigeria Journal of Pest, Disease and Vector Management*. 5: 337–347.

[2] Brian Kraus (2012). Blood culture. www.healthline.com/health/blood-culture as accessed on 02-07-2016.

[3] ILCA (International Livestock Centre for Africa). 1988. *ILCA Annual Report 1987*. ILCA, Addis Ababa, Ethiopia. 105 pp.

[4] ILCA (International Livestock Centre for Africa). 1990. *ILCA Annual Report 1989*. ILCA, Addis Ababa, Ethiopia. 144 pp.

[5] Ogbaje C.I., Lawal I.A. and Ajanusi O.J. (2011). Infectivity and Pathogenicity of Sokoto (Northern Nigeria) Isolate of *Trypanosomaevansi* in West African Dwarf Goats. *International Journal of Animal and Veterinary Advances* 3(3): 117-124, 2011. Maxwell Scientific Organization.

[6] Okeyo A.M., Inyangala B.A.O., Githigia S.M., Munyua S.J.M., Wanyoike M.M., Gachuiri C.K. & Okomo M. (1994). Reproductive performance and level of gastro-intestinal parasite infestation in goats on-farm and on-station at Machang'a, Embu, Kenya. University of Nairobi, Faculty of Veterinary Medicine. P. O. Box 29053, Nairobi, Kenya

[7] Omudu E.A, Amuta E.U. (2007). Parasitology and urban livestock farming in Nigeria: prevalence of ova in faecal and soil samples and animal ectoparasites in Makurdi. *Journal of the South African Veterinary Association* (2007) 78(1): 40–45.

[8] Preston J.M. and Allonby E.W. 1979. The influence of breed on susceptibility of sheep to *H. contortus* infection in Kenya. *Research in Veterinary Science* 26:134-139.

[9] Useh N.M, Ajanusi O.J., Lawal I.A., Adamu S., Agbede R.I, Esievo K.A. (2006). Haemoparasites of goats reared on free range in Zaria, Nigeria. *Nigerian Journal of Parasitology* Vol. 27 2006:pp. 54-57.

[10] WebMD (2014). Blood culture. www.m.webmd.com as accessed on 02-07-2016.

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