

Prescription of Best Periods for
Deworming Cattle against Fasciolosis
in Nigeria
(A tropical sub-saharan country with
dry and wet seasons)

Damwesh, SD
Nakam Memorial School, Nigeria

Introduction

- Cattle population in Nigeria is 14.65 million (Haruna & Muritala, 2005)
- 90% of the cattle population is concentrated in the North and constitute a major source of prode and livelihood (Akpabio, 2014)
- Fasciolosis is caused by the liver flukes- *Fasciola gigantica* and *Fasciola hepatica*

Fasciolosis has been recognized globally as the most destructive parasitic disease of farm animals which normally affect them at any stage causing:

- ◆ Extensive hemorrhage on the liver
- ◆ Decrease in weight gain
- ◆ Reduce milk production
- ◆ Unthriftiness
- ◆ Abortion
- ◆ Total liver condemnation
- ◆ Death and economic losses to farmers (Sewell, 1966; jemli et al., 1992; Ogunrinade & Ogunrinade, 1980; Fabiyi, 1980)s

How Big is the Economic Losses to Farmers?

Upto 700 million cattle are exposed to liver-flukes annually causing an economic loss of 3.2 billion US Dollars (WAAVP, 2005)

Are Human Beings at Risk Also?

Being a zoonosis, Fasciolosis constitute an important public health problem of increasing concern.

Between 2.4 and 17 million people are infected currently. 91.1 million are living at risk of infection (WHO, 1995; Lopez et al., 2004; Keiser & Ulzinger, 2005; Ashrafik, 2006; Lofty, 2015)

Problem of Diagnosis in Nigeria

Unfortunately, most of the diagnosis is done through the traditional/coprological method which involved eggcounting and has limitations such as low sensitivity, late detection, its also laborious and time wasting (Happich & Boray, 1969; Burger, 1992; Reichel, 2002)

Late Detection

- Fasciola eggs only appear on thr faeces between 77-84 days post infection. The immature flukes passing through the liver parenchyma do not lay eggs hence cannot be detected through egg count at that stage by coprology lading to late detection.
- The immature flukes are the most destructive (Jemli et al., 1992; Biffa et al., 2006)

Early Detection:

- Fasciola parasites can be detected as early as between 7 days-35 days post infection by means of ELISA (Sanchez et al., 2000)
- The ELISA screening method for Fasciolosis is hardly used in Nigeria. A few researchers have started employing the ELISA screening method for Fasciolosis but only recently

Seasonal Prevalence:

- In Nigeria this has been reported to be higher in the rainy season compared to the dry season
- Conversely, higher prevalence in the dry season compared to the wet season have also been recorded hence there are 2 peaks in the seasonal prevalence of Fasciolosis in Nigeria (Ogunrinade et al., 1981; Adeokun et al., 2008)

Treatment:

Treatment is still the main method for the control of Fasciolosis (Robert & Suhardonos, 1996)

Recommendations by some Nigerian researchers:

1. Cattle should be dewormed at least 2-3 times in a year: At the beginning of the rainy season, mid rainy season and at the start of the dry season (Fraser & Stamp, 1989)
2. Anthelmintic drugs should be administered as soon as signs of Fasciolosis show (Losos, 1995)
3. Cattle should be dewormed always (Aliyu et al., 2014)

AIM OF THE STUDY

- In line with research findings in Nigeria that seasonal prevalence of fasciolosis was found to be highest during the period immediately before and after the onset of rains and also towards the end and immediately after rainy season (Babalola et al., 1976); Schillhorn Van Veen et al., 1980 & Akpabio, 2014)
- And in view of the fact that repetitive treatment with efficient flukicides do not seem to lower the prevalence of the disease: This study aimed at identifying one important cause of the persistent high prevalence of Fasciolosis in Nigeria and recommending specific periods for deworming/treating the animals within the 2 seasons.

MATERIALS & METHODS

- The study was conducted in 2 LGA's of Andamawa State (NE Nigeria) where the rainy season commences fully in May and terminates in October
- The wettest month is August while the dry season sets in fully by November through April (Adebayo & Tukur, 1999)
- The random sampling method (Plews, 1979) was used to collect blood samples from 225 field cattle.
- Sera samples were prepared from the blood and subjected to indirect ELISA screening test using the ELISA kit and protocol adopted by Institut-Pourquier from France. (Soule et al., 1989; Leveieux et al., 1992; Crowther, 2000)

RESULTS & DISCUSSION

Table 1: ELISA result showing the prevalence rate for September & October from 5 microplates (2010)

Month	Number of Animals examined	Number of positive cases	Average positive cases per plate	Prevalence rate
September	90	51	25.5	56.7%
October	135	111	37	82.2%
Total	225	162		72%

- The result is a confirmation that despite repetitive treatment of Fasciolosis with effective dewormers, the prevalence rate remains high (Maizels et al., 2014)
- This is a reflection of the situation in the whole country
- The incidence per plate at the end of October is higher (37) compared with the incidence per plate at the end of September (25.5). Prevalence rate is also higher in October (82.2%) compared with September (56.7%).
- This is in line with earlier findings that seasonal prevalence in Nigeria is highest towards the end of the rainy season (Babalola & Schillhorn Van Veen, 1976; Schillhorn Van Veen et al., 1980; Akpabio, 2014)
- This is because the availability of water in September and October supports the survival of more viable metacercarial cysts which are immediately ingested during feeding.

- This tendency is less in August (the wettest month) due to the availability of heavy rain and running water which helps to wash off viable metacercarial cysts from pasture.
- A paired sample t-test statistical analysis model showed a significant difference ($P < 0.05$) between the infection recorded in September ending and October ending
- The significant difference recorded is an indication of an increasing level of infection which shows increasing level of Fluke intake

- This implies that the safer period to deworm animals during the rainy season should be early September to early October and not in November as earlier recommended by Fraser (Fraser & Stamp, 1989)
- Deworming the animals before the end of the rains as recommended in this study is also partly contrary to the earlier recommendation that anthelmintic drugs should be administered as soon as signs of Fasciolosis show (Losos, 1995)
- Waiting until signs of Fasciolosis show before taking an action on the animal means delaying treatment until around November which will be late as irreparable damage might have occurred in the liver
- Cattle should rather be dewormed based on the period when these animals pick up the metacercarial cysts of fasciola so as to break the life cycle of the parasites and not at a period when the animals are already PREGNANT with flukes

For the dry season

- The period of intense scarcity of crop residues when most pastoralist often graze their animals in lowland/marshy areas in Nigeria in between January and March hence most cattle become infected with liver flukes especially around areas where they drink water.
- Hence it is recommended that cattle should be dewormed by January/February so as to break the life-cycle of the flukes by killing the immature parasites (the most destructive) in side the liver.
- This is also contrary to the earlier recommendation (Fraser & Stamp, 1989) that cattle should be dewormed at the beginning of the rainy season.

- When cattle pick up Fasciola parasites around January/February and they are dewormed in April/May (commencement of the rainy season):
- It will increase not only the tendency of contaminating pasture with fluke eggs but will also cause higher economic losses as it will increase the level of liver damage and condemnation
- Finally, another group of Nigerian researchers recommended that cattle should be dewormed regularly (Aliyu et al., 2014)
- The “Regularity” recommended here makes it impracticable as farmers would not like to feed their cattle with dewormers, which are also expensive.

CONCLUSION

- The use of ELISA screening method should be employed more often as it leads to early diagnosis of the parasites.
- Wrong timing for administering dewormers has contributed immensely to the lingering disease in Nigeria, so cattle should be dewormed at the right time:
- Before the beginning of the rainy season (BBRS), before the beginning of the dry season (BBDS) AND at any other time when the farmer suspects the presence of Fasciolosis.

Appeal: What specific role can OMICS International play to help enforce a change towards the eradication of Fasciolosis in Nigeria and other developing nations?

Thank you

Email: sila5damwesh@gmail.com

Phone: +2348064642606