

## Farmer Knowledge, Attitudes and Practices of African Animal Trypanosomiasis on the Jos Plateau, Nigeria

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### Introduction

Animal African trypanosomiasis (AAT), also called Nagana is a parasitic disease of great economic importance. 50 - 70 million cattle are at risk and 3 million die every year. It restricts livestock production over 10 million km and is responsible for economic losses of up to \$4.75 billion a year (1). Infection with these trypanosomes causes anorexia, anaemia, diarrhoea, staring coat, excessive lachrymation, emaciation, weakness and eventually death (2). Over the past twenty years animal trypanosomiasis has re-emerged on the Jos Plateau (3), one of the main areas of intensive animal production in Nigeria, with consequent decline in the numbers and economic potential of cattle. As such, little is known about the habits and customs that could affect the epidemiology of the disease in this area. Participatory rural assessment was conducted in 30 villages across the Jos plateau to investigate the knowledge, attitudes and practices of farmers on animal health and husbandry in general and trypanosomiasis in particular.

### Materials and Methods

Focus group discussions were conducted guided by a questionnaire containing both open and closed ended questions. Information on knowledge, attitudes and practices concerning tsetse and trypanosomiasis was collected, as well as general animal husbandry, herd size and composition, disease and mortality, disease control strategies, transhumance and household income and expenditure. Information was collected on 30 study villages and 71 individual herds.

### Results

*Disease perceptions and priorities:* Liverfluke was considered the most important disease, being cited as a problem by 98.6% or all but 1 of the respondents and never ranked lower than 3<sup>rd</sup> in importance. Trypanosomiasis was the second most important disease, cited as a problem by 94% of respondents and ranked from the first to the fifth in importance. Foot and mouth was the third most important disease, cited as a problem by 46% of respondents and ranked from first to fifth in importance. Pneumonia was the 4<sup>th</sup> most

important disease, cited by 40% of the respondents and ranked from second to sixth in importance.

*Importance of trypanosomiasis:* All respondents recognised trypanosomiasis as a problem distinct from other diseases. When asked to rank trypanosomiasis for importance amongst the disease affecting their cattle, 9 villages (30% considered it the most important disease; 16 villages (53.3%) considered it amongst the top 3 diseases and 5 villages (16.7%) recognised it as a problem but did not consider it a priority.

*Disease control strategy:* The trypanosomiasis control strategy of all villages in the study was curative treatment. There were no instances of prevention or prophylactic treatment. Curative treatment was preferred by 22 villages (73.3%) because it was the most effective way to control trypanosomiasis; by 4 villages (13.3%) because it was the easiest; by 3 villages (10%) because it was the only available strategy and by 1 village (3.33%) because it was the cheapest.

29 villages (96.7%) in the study used drugs specifically to treat trypanosomiasis. 15 villages (50%) used Diminazine only; 1 village (3.3%) used Isometamidium only; 1 village (3.3%) used a mixture of Diminazine and Isometamidium; 11 villages (36.7%) used both drugs and 2 villages (6.7%) did not know the name of the drugs they used against trypanosomiasis. These drugs were purchased from agro-veterinary merchants by 20 villages (66.7%); from a veterinarian by 1 village (3.3%); from the National Veterinary Research Institute by 1 village (3.3%) and from both veterinarians and agro-veterinary merchants by 7 villages (23.3%) and from both NVRI and agro-veterinary merchants by 1 village (3.3%).

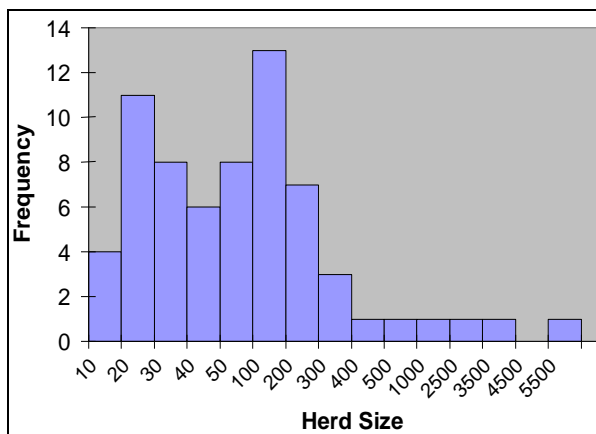
Trypanocides were diluted using bottled/package water only by 13 (43.3%) villages; using well/stream water only by 8 villages (26.6%) and by water from both types of sources by 7 villages (23.3%). Of the 15 villages using water from natural sources, only 7 villages (46.7%) boiled the water before use. Only 10 villages (33.3%) diluted trypanocides using the correct amount of water per sachet of the drug. Farmers treated their animals in all villages except one where a

veterinarian was called in to treat animals with trypanocides purchased by the farmers. All farmers dosed animals incorrectly.

*Tsetse flies:* Flies were cited as a problem by 23 villages (76.67%) and tsetse flies were specifically mentioned as a problem by 20 (66.67%) of the 30 villages in the study. Farmers in all 30 villages (100%) knew about tsetse flies whilst those in 24 villages (80%) knew that they caused animal trypanosomiasis. Farmers in 22 villages (73.33%) were able to identify tsetse flies. 17 villages (56.67%) employed some sort of protection for their cattle against tsetse flies. Of these 17, 8 villages (47.06%) used commercial pour-on products; 3 villages (17.65%) used smoke from fires lit with aromatic leaves/wood; 3 villages (17.65%) sprayed their animals with herb tinctures; 2 villages (11.76%) moved their animals to avoid tsetse flies and 1 village (5.88%) used a commercial insecticide spray. Individuals from 2 villages were able to name the pour-on used as Cypermil, a 5% Cypermethrin product.

*Mortality:* A total of 568 deaths were recorded by respondents. 197 (33.62%) of these were due to liverfluke, 194 (33.11%) were due to trypanosomiasis, 44 (7.51%) to pneumonia, 16 (2.73%) to foot & mouth and 135 (23.04%) to other causes. Average mortality rate was 9.9% per herd

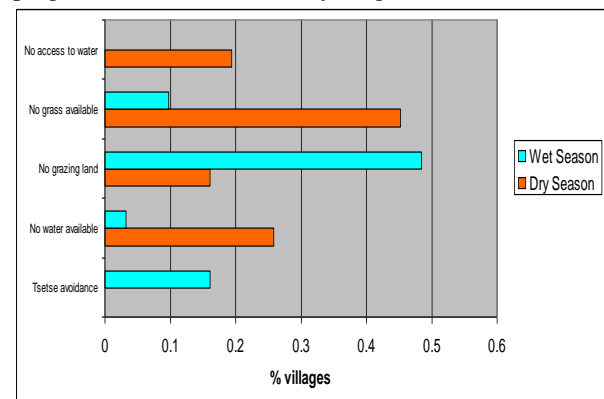
*Herd Size:* Herd size was very variable, with a range of 7 – 5,500. The most common herd sizes were 20-30 cows (15%) and 100 – 200 cows (18%).



**Figure 1** Histogram of herd sizes

*Migration:* Three patterns of mass cattle movement were observed across the plateau: Dry season migration in search of adequate pasture and water for large herds, practiced by 55% of study villages; Wet season migration in avoidance of tsetse/biting flies and in search of unused land and water for pasture, practiced by 65% of study villages; 87% of study villages have migratory cattle from other areas passing through their lands as one of the major cattle highways of West Africa stretching from Sudan to Mali crosses the Jos Plateau. During these migrations, most of the herd is

taken away by the young herders, usually to a fixed destination that they return to every year. The rest of the family remains in the home village with any sick or pregnant cows or those with young calves



**Figure 2** Reasons for Migration

*Discussion:* Trypanosomiasis is an important disease, well recognised by farmers on the Jos plateau. They are aware of the animal health and production disadvantages associated with it and make considerable efforts to control it, along with other livestock diseases. However, they lack the adequate knowledge to do effectively control these diseases themselves and there are gaps in veterinary service provision, leading to mistrust between veterinarians and farmers and underuse of the few services that are available. Farmers are also well informed about tsetse flies and their association with trypanosomiasis. Efforts are made to control tsetse flies but again, professional assistance is required and the gaps in veterinary service provision must be addressed. Herd sizes are large but mortality is also high at 9.9%. Dry season migration to cope with the harsh climatic considerations has long been a way of life for pastoralists in Northern Nigeria but is not without its costs – the stress of long journeys, aggravation of sub clinical infections, security risks and disease encountered en route. The phenomenon of wet season migration however is a new development. Due to agricultural expansion by arable farmers, land and water resources are no longer enough to go round and to avoid conflict, pastoralists have been asked to remove their cows from villages during the planting season.

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