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COMMUNITY PERCEPTION OF ANIMAL TRYPANOSOMOSIS IN DURBI VILLAGE,  
JOS EAST LOCAL GOVERNMENT AREA OF PLATEAU STATE, CENTRAL NIGERIA.

PERCEPTION COMMUNAUTAIRE DE LA TRYPANOSOMOSE ANIMALE DANS LE VILLAGE DE  
DURBI A JOS DANS L' ETAT DU PLATEAU AU CENTRE DU NIGERIA

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**Résumé**

La perception locale de la trypanosomose animale a fait l'objet d'une étude dans le village de Durbi, à Jos dans l'Etat du Plateau au Nigeria. Le manuel des discussions de groupes préparé par l'équipe de projet a été distribué aux éleveurs, aux chefs d'unité et de section et au directeur du Département des services agricoles du Conseil local de Jos East. Les résultats obtenus indiquent que les animaux et les volailles les plus couramment élevés dans la région sont les bovins, les caprins et les ovins puis les dindons et les poulets respectivement. Ces animaux et volailles sont élevés séparément. Les raisons évoquées pour leur élevage sont, entre autres, la génération de revenus, les activités sociales et le fumier. La trypanosomose animale figure au premier rang des maladies animales les plus courantes dans la région. Les signes et les symptômes utilisés pour le diagnostic de la maladie comprennent les habitudes d'absorption de sable, l'amaigrissement, l'anémie, la perte d'appétit, l'inflammation du foie visible à l'abattage, la dureté des poils, le larmolement et la nonchalance au pâturage. Les causes généralement connues de la maladie sont la consommation des eaux des ruisseaux, les piqûres des mouches, la fatigue due aux restrictions pendant la saison des pluies et pendant la période d'activités agricoles. Les autres causes évoquées comprennent la trop forte quantité de pluies au cours d'une année donnée et un agent inconnu qui cause la maladie entre août et septembre tous les ans. Toutes les personnes interviewées ont signalé que la trypanosomose animale est constamment présente chez leur troupeau tout au long de l'année. La prévalence de la maladie est cependant minimale pendant la saison des pluies, mais très forte pendant la saison sèche. L'importance de ces résultats dans l'élaboration d'un programme approprié de lutte intégrée pour les communautés a été abordée dans la présente communication.

**Summary**

Local perception of animal trypanosomosis was studied in Durbi village, Jos East Local Government Area (LGA) of Plateau State, Nigeria. Focus group discussion (FGD) guide, prepared by the Project Team, was administered to herd owners, Unit and Sectional heads and the Director in the Agricultural Services Division, Jos East Local Government Council. Our findings indicated that the common livestock kept in the area were mainly cattle, goats, sheep, turkey and chicken. These were separately reared from each other. Reasons given for keeping the animals included economic, social activities, and for animal manure. Animal trypanosomosis ranked highest among the perceived common diseases of livestock in the area. Signs and symptoms used in the area for diagnosis of the disease include sand- and rag-eating behaviour, emaciation, anaemia, loss of appetite, liver inflammation observable at slaughter, roughness of body hairs, eye discharge and sluggish movement during grazing. Their perceived causes of the disease were drinking stream water, fly bites, tiredness due to restraining during the rainy season and farming period. Other perceived causes included too much rainfall for any year and an unknown agent that caused the disease between August and September, each year. All those interviewed reported that animal trypanosomosis was present in their herd throughout the year. It was however, minimal in the rainy season, but has a high incidence in the dry season. The significance of these findings in the development of appropriate integrated disease control programme for the community is discussed.

**Introduction**

Trypanosomosis affecting both man and animals is peculiar to the African continent. It is estimated that about 50 million people and 48 million cattle are at high risk of the diseases (TTIQ, 2002). Animal trypanosomosis has remained the bane of the livestock industry in Nigeria and other endemic parts of sub-Saharan Africa (Makumi et al. 2000; Muangirwa et al. 2001; Magona et al. 2001; NITR, 2001; Njoku & Halid, 2003). Animals in tsetse infested and trypanosomosis endemic areas have low calving rates and milk yields

There is reduced work efficiency in plough oxen, cattle generally show high calf mortality and the cost of chemotherapy and chemoprophylaxis is very high (NITR, 2001). Animal trypanosomosis consequently, adversely affects herd size and movement. The general social and economic benefits of livestock farming are badly

reduced. It influences the movement of the livestock farming community in Nigeria (Njoku & Halid, 2003a). The disease has been incriminated as a major hindrance to the proper development of the livestock sub-sector of the Country's agriculture (Njoku, 1995; Njoku *et al.*, 1996; 1998; Njoku & Halid, 2003a).

Unfortunately reports from NITR indicates that animal trypanosomiasis is on the increase in Nigeria. This has been attributed to the menace of tsetse flies, drug resistance and the presence of other biting flies (NITR, 2001). Furthermore, frequent changes in Government, changes in policies and priorities, poor political will and very low funding have immensely contributed to the pandemic state of the disease in Nigeria (Njoku *et al.*, 1996; 1998; Njoku & Halid, 2003a). At present, well over eleven million heads of cattle are at risk. To save the lives of these animals and stem the current trend, a proper appreciation of the people's perception of and attitude to the disease will be most desirable. It will be necessary to find out how seriously they take the disease. Their attitude to the disease should be in relation to other social and economic problems in the community. This is necessary if control/eradication and surveillance programmes will be locally acceptable, successful and sustainable (Njoku *et al.*, 1996; 1998).

## Material and method

### Study Area

The study was carried out in Durbi village, Jos East Local Government Area (LGA) of Plateau State, central zone of Nigeria. The detailed descriptions of the zone and the State have been given by Njoku and Halid (2003a). Durbi is on the high Jos plateau.

### Study Instrument

Focus group discussion guides (FGD) were prepared by the Project Team. The guides were for the herd owners, Unit and Sectional Heads and the Director in the Agricultural Services Division, Jos South Local Government Council (LGC). The FGD was aimed at finding out the common livestock kept in the LGA. The discussion was also focused on the reasons for keeping the animals and the common diseases observed in them. The Team further sought to find out the signs and symptoms they use in recognising the diseases, with special reference to animal trypanosomiasis. They were asked their perception of the cause(s) of animal trypanosomiasis.

### Result

The respondents' mean age and domiciliation are shown in Table 1. All the Livestock owners have lived in Durbi village since birth. The Unit and Sectional Heads and the Director of the Agricultural Services Division of the LGC have lived in the village for between 1 and 4 years. Table 2 shows the respondents' literacy level and occupation. None of the livestock owners had any form of formal education. Their primary occupation was crop farming, with livestock rearing as the secondary occupation. Common livestock kept in the area are shown in Table 3. Table 4 contains the respondents reasons for keeping livestock.

**Table 1: Respondents' mean age and domiciliation in Durbi village.**

Focus Group	Mean age in years $\pm$ SEM	Mean domiciliation in years $\pm$ SEM
Livestock owners	49.33 $\pm$ 5.35	49.33 $\pm$ 5.35
Unit Head in the Agric Serv. Division	35.33 $\pm$ 2.08	3.66 $\pm$ 0.29
Sectional Heads in the Agric Serv. Division	41.23 $\pm$ 1.58	2.57 $\pm$ 0.34
Director, Agric Serv. Division	49.0	1.0

**Table 2: Respondents' literacy level and occupation**

Focus Group	Literacy level			Occupation	
	1°	2°	3°	1°	2°
Livestock owners	-	-	-	Farming	Livestock rearing
Unit Heads in the Agric Serv. Division	+	+	+	Civil Servant	Farming
Sectional Heads in the Agric Serv. Division	+	+	+	"	"
Director, Agric. Services Division	+	+	+	"	"

*Note: 1° - primary; 2° - secondary; 3° - tertiary.*

**Table 3: Common livestock kept by residents in the village in order of importance**

Focus Group	Livestock kept in order of importance
Livestock owners	a) Muturu (cattle) b) White fulani cattle c) Goats d) Chickens e) Dogs
Unit Heads in the Agric Serv. Division	a) Cattle b) Goats c) Sheep d) Chickens e) Turkeys
Sectional Heads in the Agric Serv. Division	a) Cattle b) Goats c) Sheep d) Turkeys e) Chickens
Director, Agric Services Division	a) Cattle b) Goats c) Sheep d) Chickens e) Dogs.

Table 4: Reasons for keeping livestock.

Focus Group	Reasons for keeping livestock
Livestock owners	a) Ready source of money for medication, food and other needs of the family b) Source of manure for crops c) I grew up and saw my parents keeping them. d) They have been very useful. e) Animal traction (cattle)
Unit Heads in the Agric Serv. Division	a) Economic reasons (ready source of money) b) Sacrifice and meat for social activities – festival marriages, etc. c) Manure for plants
Sectional Heads in the Agric Serv. Division	a) Social activities b) Ploughing their farms c) Manure for their crops d) Easy conversion to cash
Director, Agric Services Division	a) Social reasons b) Manure for their crops c) Money to solve other family problems d) Ploughing their farmlands.

The community's perceived common livestock diseases, their local names and their perceived signs and symptoms for identifying animal trypanosomosis are shown in tables 5 and 6. Tables 7 and 8 show the people's perceived causes, prevalence and periods/seasons of the year when the disease is most prevalent.

Table 5: Respondents' perceived common livestock diseases and their local names in order of importance

Focus Group	Disease	Common local name
Livestock owners	a) Progressive emaciation (Trypanosomosis?) b) Lacrimation ( " ?) c) Liver disease d) Kidney disease e) Gall bladder inflammation	Samore? Samore? Ciwon hanta Ciwon koda Ciwon madachi
Unit Heads, Agric Serv. Div	a) Trypanosomosis b) Babesiosis c) Contagious bovine pleuropneumonia CBPP d) Liver disease e) Chickens disease	Samore Fitsarin jini  Ciwon huhu Ciwon hanta Ciwon kaji
Sectional Heads, Agric Serv. Div	a) Trypanosomosis b) CBPP c) Liver diseases d) Babesiosis	Samore Ciwon huhu Ciwon hanta Fitsarin jini
Director, Agric Serv. Division	a) Trypanosomosis b) Rinderpest c) Babesiosis d) Anthrax e) Poultry diseases	Samore Boru Fitsarin jini Harbindaji Ciwon kaji

**Table 6: Perceived signs and symptoms of animal trypanosomosis**

Focus Group	Perceived signs and symptoms
Livestock owners	<ul style="list-style-type: none"> <li>a) Loss of appetite</li> <li>b) Rough body hair</li> <li>c) Loss of weight</li> <li>d) Anaemia (from eye observation)</li> <li>e) Lacrimation</li> <li>f) Eye discharge</li> <li>g) Sand-and rag-eating behaviour</li> <li>h) Liver inflammation (at slaughter)</li> <li>i) Slow to sluggish movement</li> <li>j) Limping during rainy season.</li> </ul>
Unit Heads Agric Serv. Div.	<ul style="list-style-type: none"> <li>a) Ocular discharge</li> <li>b) Loss of appetite</li> <li>c) Slow movement during grazing</li> <li>d) Loss of weight (definitive)</li> <li>e) Death</li> </ul>
Sectional Heads Agric Serv. Div.	<ul style="list-style-type: none"> <li>a) Lacrimation</li> <li>b) Anaemia</li> <li>c) Loss of appetite</li> <li>d) Sluggish movement</li> <li>e) Wasting</li> <li>f) Death</li> </ul>
Director, Agri Serv. Div.	<ul style="list-style-type: none"> <li>a) Loss of appetite</li> <li>b) Loss of weight</li> <li>c) Sluggish movement</li> <li>d) Anaemia</li> <li>e) Eye discharge</li> <li>f) Death.</li> </ul>

**Table 7: Perceived causes of animal trypanosomosis**

Focus Group	Perceived Causes
Livestock owners	<ul style="list-style-type: none"> <li>a) Tiredness due to restraining during the rainy season</li> <li>b) Fly bites</li> <li>c) Drinking stream water</li> <li>d) An unknown agent causing an increase in incidence between August and September each year.</li> <li>e) When the rains are too much</li> <li>f) We don't know precisely.</li> </ul>
Unit Heads, Agric Serv. Div.	<ul style="list-style-type: none"> <li>a) Tsetse bites transmitting <i>Trypanosoma vivax</i> and <i>Trypanosoma brucei</i></li> <li>b) Don't know</li> </ul>
Sectional Heads Agric. Serv. Div.	<ul style="list-style-type: none"> <li>a) Transmission of trypanosomes through tsetse fly bites.</li> <li>b) Through blackfly bites</li> <li>c) It's not my area of study and/or work</li> <li>d) Don't know.</li> </ul>
Director, Agric Serv. Div.	<ul style="list-style-type: none"> <li>a) Trypanosomes introduced into the animals when tsetse flies bite them.</li> </ul>

**Table 8: Respondents' perceived prevalence of animal trypanosomosis within the periods/seasons of the year**

Focus Group	Perceived	Period/Season of the year
Livestock owners	<ul style="list-style-type: none"> <li>a) Very prevalent</li> <li>b) The disease is always with us</li> </ul>	<ul style="list-style-type: none"> <li>a) Most noticed in the dry season (March to April)</li> <li>b) Minimal in the rainy season.</li> <li>c) High incidence in dry season</li> </ul>
Unit Heads, Agric Serv. Div.	<ul style="list-style-type: none"> <li>a) Highly prevalent</li> <li>b) A few animals are usually infected</li> </ul>	<ul style="list-style-type: none"> <li>a) The disease is seen mostly during the dry season</li> </ul>
Sectional Heads, Agric. Serv. Div.	<ul style="list-style-type: none"> <li>a) High prevalence rate</li> </ul>	<ul style="list-style-type: none"> <li>a) Observed more in the dry season</li> </ul>
Director, Agric Serv. Div.	<ul style="list-style-type: none"> <li>a) I have not noticed any case here since I assumed duty.</li> </ul>	

**Discussion**

After several years of research into methods of control/eradication of tsetse and trypanosomosis, it has become increasingly clear that what is required in Nigeria is a combination of several methods in an integrated disease control programme (Njoku & Halid, 1992; Njoku *et al.*, 1996; 1998; Njoku & Halid, 2003 a; b). It is however, very important that the control programme is desirable by the endemic community. It should further be environmentally safe, efficient, economically feasible, socially acceptable and easily sustainable (Njoku *et al.*, 1998; 1999; Njoku & Halid, 2003a). In this regard, all relevant social and economic information/data on the disease will be essential (Njoku *et al.*, 1998). Furthermore, the importance of public enlightenment and health education packages on the disease can never be over-stressed (Njoku *et al.*, 1996; 1998; Njoku & Halid, 2003). A good appreciation of the local perception of the disease will therefore be very vital. This will vary within and between communities (Njoku & Halid, 2003b).

Common livestock kept in Durbi village, Jos East LGA of Plateau State, Nigeria, include cattle, goats, sheep, dogs, turkeys and chickens. This observation has been made on the livestock population in Plateau State, Nigeria (Njoku & Halid 2003a). Our respondents in this study reported that they keep livestock for social and economic reasons. The animals are slaughtered during social activities like festivals, marriages and for sacrifice.

Economically, they are ready sources of money for the various needs of the family. They are further used for animal traction and manure for their crops. Similarly, livestock owners in the Mara Region, north western Tanzania stated that they keep cattle for wealth, ploughing and as a bank (Muangirwa *et al.*, 2001).

The livestock owners in this study listed some signs and symptoms indicative of animal trypanosomosis as the most important diseases in their livestock. However, all the other respondents in the study indicated that animal trypanosomosis ranks highest among the common livestock diseases in the community. Ngare and Mwendia (2001) have reported similar findings. Among the most common diseases of livestock listed by farmers in Osupuko and Mara Division of Narok District, Kenya, animal trypanosomosis ranked top. The disease has also been reported to be a major problem to livestock farmers in the north western parts of Tanzania (Muangirwa *et al.*, 2001). Reports from Nigeria and other parts of sub-Saharan Africa contain similar information (Njoku *et al.*, 1995; 1996; 1998; 1999; Bengaly *et al.*, 2001; Magona *et al.*, 2001). The results from our study appears to indicate that occupation of the respondents may have influenced their observation. Age, domiciliation and literacy level did not seem to affect this. Most of the signs and symptoms listed by the livestock owners in Durbi village are known for animal trypanosomosis. Some of these include, loss of appetite, rough body hair, weight loss, anaemia and lacrimation. Others include sand- and rag-eating behaviour, eye discharge and sluggish movement. Holmes *et al.* (2000) have observed that some of the pathophysiological features of animal trypanosomosis include anaemia, pyrexia, body weight changes, reduced feed intake and diminished productivity. Similar observations have been made in previous reports (Njoku *et al.*, 1995; 1996; Njoku & Halid, 2003a).

Furthermore, livestock owners in Durbi village perceived that animal trypanosomosis is caused by tiredness due to restrains, fly bite (none specific fly) and drinking stream water. Muangirwa *et al.* (2001) reported that cattle are exposed to tsetse bites while drinking water along rivers during the dry season. Similar findings have also been reported by Njoku & Halid (2003a), and Bengaly *et al.* (2001). Some of them incriminated an unknown agent causing an increase in the incidence between August and September each year and too much rainfall. Makumi *et al.* (2000) observed that rainfall is a significant predictor of the incidence of animal trypanosomosis in endemic areas. A few of the respondents did not seem to know the cause of the disease. Among the officials of the LGC, Agricultural Services Division interviewed, area of training appeared to influence their perception of the cause of animal trypanosomosis. Only those who had some training in animal science/animal health and husbandry had a correct knowledge of the cause(s) of the disease. The others implicated other biting flies. Their ignorance was attributed to their field of specialization. Fulani herdsman in Bassa LGA of Plateau State, Nigeria, had reported that animal trypanosomosis is caused by the poison injected into animals when flies (mainly horse and tsetse flies) bite them (Njoku *et al.*, 1996). Furthermore, Njoku and Halid (2003a) have reported that the perception of the people in endemic communities in Nigeria, range from total lack of knowledge to gaps in their knowledge.

On the perception of the people in Durbi village on the prevalence of the disease, most of those interviewed reported that the disease is highly prevalent. Others noted that only a few animals in their herd are often affected, but that the disease is always with them. Almost all the respondents in the Durbi village study agreed that animal trypanosomosis is most prevalent during the dry season. Bangaly *et al.* (2001) had similarly reported that trypanosomes are transmitted during the dry season. In the rainy season tsetse flies disperse and infect cattle in the village. Other workers have made similar observations (La Rocque *et al.*, 1999). These and other information and data will be needed to develop appropriate health education and public enlightenment packages for and adequate integrated disease and pest management (IDPM) Programme.

In Nigeria, the magnitude of the problem presented by tsetse and animal trypanosomosis is colossal. Before now, so many methods have been used to control the disease and establish the livestock sub-sector of the countries economy. Some of these methods include chemotherapy with trypanocidal drugs, use of trypanotolerant breed of cattle, insecticide against the tsetse vector and the sterile-insect technique (SIT). These methods have been employed on their own with little or no sustained success. Integrated disease and pest management is now the most viable option to the control or eradication of tsetse and trypanosomosis in Nigeria (Njoku, 1995; Njoku, *et al.* 1996; 1998; Njoku & Halid, 2003). This should be carried out on a large scale. In Nigeria it should cut across local Government Areas (LGA) and States.

Pockets of control programmes in the past have only led to failures and disappointments. The larger the control area, the more effective will be the programme. This will require more advocacy, to change positively, the perception and attitude of people in the endemic communities, relevant Local, State, and Federal Government Officials including International Organizations, towards control or eradication and surveillance. This should be on the disease and the vector. We further recommend the establishment, reinforcement and co-ordination of the



activities of Scientists and other workers on tsetse and trypanosomiasis within Nigeria. This will make for the development of more appropriate and efficient IDPM programme.

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