

Annex 4 Study Area 4 (Ka River, Nigeria) Report

Programme Against African Trypanosomosis

Options For Tsetse Fly Eradication in the

Moist Savannah Zone of West Africa:

Technical and Economic Feasibility Study,

Phase 1 (Ka River, Nigeria)

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1. INTRODUCTION.

As a result of the renewed interest in large-scale tsetse eradication in Africa, the experience of Nigeria's early programme in tsetse reclamation provides a good source on which to build any future large-scale eradication in Nigeria, and of course in West Africa and probably in other parts of Africa. This is more so because of the varieties of ecological zones that exist, the varied agricultural practices and the demographic pressure present in the country to drive the development process following tsetse eradication. Therefore, some of the "Shadow Projects" which were designed to compare the economic benefits of tsetse eradication and ensuing agricultural development, derivable from the level of scales, be it small (20,000 sq. km), medium (200,000 sq. km) or large (600,000 sq. km) were to be tested in Nigeria. As a starting point, however, it was decided to use the small-scale approach and build on that later.

1.1. Geography.

Nigeria lies between longitudes 2 and 15 degrees East and Latitudes 4 to 14 degrees North, occupying a land surface area of some 924,000 sq. kilometers. It covers seven widely varied ecological zones which range from swamp vegetation in the South to the Sahel in the North. The varied ecological conditions are reflected in the different systems of agriculture practised throughout the country, from arable to pastoral. All the ecological zones, except the Sahel and high plateaux of Jos and Mambila, support the existence of tsetse fly (*Glossina sp.*), the vector of animal and human trypanosomosis. Thus, animal trypanosomosis is fairly widespread in the country. Following the large-scale tsetse reclamation programme executed in the 60s and 70s, against particularly the Savannah tsetse, arable farmers have moved in to take advantage of the resulting opportunity. This has led to increased agricultural activities coupled with in-migration to the cleared areas, particularly along river basins when onchocerciasis became less of a threat. Most of the tsetse infestations that still persist, however, are found along river courses especially in the riparian vegetation and these are the riverine species (*G. palpalis palpalis* and *G. tachinoides*).

1.2. Study Areas

Two Study Areas in Nigeria were selected based on the PAAT-GIS, using the 1991 map of *Glossina* distribution and reclaimed areas, produced by the Federal Department of Livestock and Pest Control Services, and other parameters. Since the map was last updated, however, several developments have taken place including the changing patterns of tsetse distribution and agricultural activities, which are revealed in this study.

The first project area covering a total of 13,161 sq. km is along the River Ka on the Niger River System in the North-Western part of Nigeria and lies mainly in Kebbi State, projecting into Zamfara State. The area was chosen because of "the persistence of riverine species at the ecological limit, the high demographic pressure and a high level of resource exploitation".

The second project area covering a total of 19,858 sq. km is at the foot of the Mambila Plateau in the mid-North-Eastern part of Nigeria located in Taraba State. It was chosen "to represent particular land use and socio-economic aspects of the area". Other factors were the pressure on cattle in transit to the Mambila Plateau and the expansion pressure for cultivation from areas associated with the Benue River System, mainly River Donga which runs throughout the project site.

In the case of Study Area I, it was found that there was no apparent tsetse problem as confirmed by the livestock personnel as well as pastoralists in the area. However, there were some cases of cattle trypanosomosis which were apparently contracted while cattle were in the dry season grazing areas to the south of the study area and showed up on return to their wet season grazing areas. Once treated, the animals appeared free of trypanosomosis until the following season. It would appear therefore, that tsetse have disappeared autonomously from the area following agricultural activities. Spot checks

will still need to be done to confirm this assumption. However, because tsetse did not appear to constitute a threat to livestock in this area, it was not considered worthwhile to pursue the study further. The results are given in tables 1 - 7..

Table 1. Demography and Human Diseases, Study Area 4.

Local Govt Authority. (LGA) **	Population		Onchocerciasis	Sleeping Sickness foci
	1991	2000		
Dandi	101,919	132,008	None	None
Suru	116,971	151,503	None	None
Maiyama	113,072	146,453	None	None
Sakaba	197,993	256,445	None	None
Anka*	72,846	93,972	None	None
Total	604,792	782,381		

*Except Anka, LGA which is in Zamfara State, all others are in Kebbi State

**The LGAs in Kebbi State constitute 29.8% of the land area of the State

Table 2. Land Use and Natural Resources, Study Area 4

Local Govt. Authority. (LGA) **	Land Use	Soil Type	Crop Index	Risk Index
Dandi	Agropastoral	Yellowish sandy loam	7	6**
Suru	Agropastoral	Yellowish sandy loam	7	5
Maiyama	Agropastoral	Yellowish sandy loam	6	6**
Sakaba	Agropastoral	Yellowish sandy loam	7	4
Anka*	Agropastoral	Yellowish sandy loam	6	5

*All LGAs in Kebbi State, except Anka in Zamfara State

**Risk due to seasonal flooding

Table 3. Range of Crops Grown and Productivity, Study Area 4

Crops	Yield/Ha (Tonne)		Price \$/100 kg	Input	% Cultivated	Diseases*	Control
	1992	1998					
Maize	1.092	1.703	25.2	Chemical fertilizers and herbicides	3.5	Maize streak virus etc.	Pesticides application and cultural practices
Sorghum	0.087	1.236	25.2	-do-	26.2	Smuts etc.	-do-
Groundnut	0.822	1.068	43.2	-do-	5.4	Rosette virus	-do-
Cowpea	0.563	1.159	29.0	-do-	26.4	Pod borer etc.	-do-
Rice	1.224	2.035	50.4	-do-	4.6	Rice blast	-do-
Millet	0.832	1.089	28.8	-do-	34.0	Downing mildew	-do-

*List of complete crop diseases can be given if desired.

US\$1 = Naira 112

Table 4. Animal Productivity in Study Area 4

Breed	Herd Size	Calving %	Oxen %	Herd Growth	Offtake		Mortality	Movement
					Milk (l)	Animal Sale		
White Fulani, Sokoto, Gudali	52.5 (25–80)	25	8 -10	25	400	12%	12%	Mostly sedentary

Table 5 Livestock Diseases – Study Area 4

LGA	Trypanosomosis	Prevalence	Year	Vector	Other diseases	Year	Parks
Dandi	Suspected	-	2000	None detected	Helminthosis, Piroplamosis, CBPP, Dermatophilosis	2000	None
Suru	None	-	-	-	-do-	2000	None
Maiyama	None	-	-	-	-do-	2000	None
Sakaba	Suspected	-	2000	None detected	-do-	2000	None
Anka	None	-	-	-	-do-	2000	None

Table 6. Use of Animal Traction, Study Area 4

LGA	No. of trained oxen	% Household using animal power for cultivation	% Household using animal power for transport
Dandi	172	57	51
Suru	168	54	48
Maiyama	172	56	51
Sakaba	118	28	19
Anka	121	29	17

Table 7 Range of Crops Grown in Study Area 4

CASH CROPS	FOOD CROPS	HORTICULTURAL CROPS
Groundnut Cotton Wheat Sugar cane Tobacco	Rice Millet Sorghum Maize Potato Cowpea Cassava	Onions Pepper Guava Pawpaw Banana Cashew Gum Arabic