THE PROGRAMME AGAINST AFRICAN TRYPANOSOMIASIS

REPORT OF THE THIRTEENTH PAAT ADVISORY GROUP CO-ORDINATORS MEETING

LUANDA, ANGOLA

27-28 SEPTEMBER 2007

Food and Agriculture Organization of the United Nations
Inter-African Bureau for Animal Resources of the African Union
International Atomic Energy Agency
World Health Organization of the United Nations

Acronyms

AAT	Animal African Trypanosomiasis
AfDB	African Development Bank
ARI	Advanced Research Institute
AU	African Union
BMZ	German Federal Ministry for Economic Cooperation and Development
CIRDES	Centre International de Recherche-Développement sur l'Elevage en Zone Subhumide
COCTU	Coordinating Office for control of trypanosomiasis in Uganda
CTVM	Centre for Tropical veterinary Medicine
ESTA	Ethiopian Science and Technology Agency
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environmental Facility
GFAR	Global Forum on Agricultural Research
GIS	Geographic Information Systems
HAT	Human African Trypanosomiasis
IAEA	International Atomic Energy Agency
IBAR	Interafrican Bureau for Animal Resources
ICCT	Institute for the Control of Trypanosomiasis
ICIPE	International Centre of Insect Physiology and Ecology
IFAD	International Fund for Agricultural Development
IFAH	International Federation for Animal Health
IGAD	Inter-Governmental Authority on Development
ILRI	International Livestock Research Institute
IPM	integrated pest management
IPVM	Integrated Pest and Vector Management
IRD	Institut de Recherche et de Développement (formerly ORSTOM)
ISCTRC	International Scientific Council for Trypanosomiasis Research and Control
ISO	international standard
ISRA	Institut Sénégalais de Récherche Agricole
ITC	insecticide-treated cattle
ITM	Institute of Tropical Medicine
KARI-TRC	Kenya Agricultural Research Institute- Trypanosomiasis Research Centre
LCCS	land cover classification system
LPI	Livestock Policy Initiative
LRE	Laboratoire Régional de l'Elevage
MoU	Memorandum of Understanding
NARS	National Agricultural Research Systems
NGO	Non-governmental Organization
OIE	Organisation International des Epizooties
PAAT	Programme against African Trypanosomiasis
PAG	PAAT Advisory Group Coordinators
PATTEC	Pan-African Tsetse and Trypanosomiasis Eradication Campaign
PCMU	Project Coordination and Management Unit
PCR	polymerase chain reaction
PPLPI	Pro-Poor Livestock Policy Initiative
PROCORDEL	Programme de Recherche et Développement
SARD	Sustainable Agricultural and Rural Development
SAT	Sequential Aerosol technique
SIT	Sterile Insect Technique
STEP	Southern Tsetse Eradication Project
T&T	Tsetse and Trypanosomiasis
TPU	tsetse production unit
TTI	Tsetse and Trypanosomiasis Information bulletin
UCLT	Unité Centrale de Lutte contre la Trypanosomiase
UNIDO	United Nations Industrial Development Organization
UNTFHS	United Nations Trust Fund for Human Security
UTCC	Uganda Trypanosomiasis Control Council
WHO	World Health Organization
WMS	Web Mapping Service

FOREWORD

The thirteenth PAAT Advisory Group (PAG) Coordinators' meeting was held in Luanda, Angola, 27-28 September 2007.

The meeting was hosted by the Ministry of Agriculture and Rural Development. Mr A.A. Ilemobade, chairman of PAAT, chaired the meeting which saw in attendance 26 participants from international organizations (FAO, IAEA, WHO), African-based (ILRI, ICIPE, CIRDES) and European-based (IRD, ITM) research institutions and representatives of ten African countries (Angola, Benin, Botswana, Burkina Faso, Ethiopia, Ghana, Kenya, Mali, Uganda, Zimbabwe), including National PATTEC Coordinators. Representatives of the International Scientific Council for Trypanosomiasis Research and Control (ISCTRC) Secretariat and Executive Committee were also in attendance.

The meeting was officially opened by the Vice-Minister of Agriculture and Rural Development, in the presence of the Vice-Minister of the Ministry of Health, the Representative of FAO and the Representative of WHO in Angola.

The importance of Human African Trypanosomiasis (HAT) and of African Animal Trypanosomiasis (AAT) as major hindrance to the development of agriculture in Africa in general, and in Angola, in particular, was highlighted. Angola is one of the three countries in sub-Saharan Africa where still more than 1 000 cases of HAT are detected per year. The vice-minister called for "speaking less and doing more" in the fight against trypanosomiasis and hoped that the PAG meeting would contribute in this regard.

In his address, Mr A.A. Ilemobade illustrated the focus of PAAT to reduce rural poverty and hunger, improve livelihoods, to ensure food security and sustainable agriculture and rural development (SARD). The PAG meetings have to be seen as moments of reflection and opportunities for setting priorities and measures to assist Africa Union Member States to overcome the scourge of tsetse and trypanosomiasis (T&T), thus promoting poverty reduction, enhance food security and ensure healthy livelihoods for African people. Also, PAAT provides the international catalytic environment to promote beneficial interactions between policy advisors, planners, researchers and field workers for an increased coordinated and harmonized action against African trypanosomiasis.

The Vice-Minister of the Ministry of Agriculture and Rural Development officially declared the meeting officially opened.

ACKNOWLEDGEMENT

The PAAT Advisory Group Coordinators express their thanks and appreciation to the Government and people of Angola for the warm hospitality extended to the participants and for the excellent facilities placed at the disposal of the meeting.

TABLE OF CONTENTS

Report of the
13th PAAT Advisory Group (PAG) Co-ordinators Meeting
held 28-28 September 2007
in Luanda, Angola

Recommendations

1. On guidelines for (i) collection of entomological baseline data, (ii) mass rearing of tsetse fly, (iii) socio-economic and environmental base-line data. PAG recommends:
   - To circulate among PAG members developed guidelines for possible comments and refinement.

   Action: FAO/IAEA, ILRI.

2. On the use of Sequential Aerosol Technique (SAT) for tsetse suppression, PAG recommends that:
   - Those countries that have experience with SAT should provide input on proposed position PAAT paper on this technology. Emphasis should be placed on new technological development and environmental impact assessment. The document "Tools and strategies for area-wide tsetse suppression", that was prepared by IAEA, should be used as basis for the position paper.

   Action: FAO/IAEA.

3. On PAAT position paper for declaring an area free of T&T, the PAG recommends:
   - To include simplified guidelines that will enable decision makers to make informed decisions based upon a logical sequence of steps.

   Action: PAAT and mandated organizations.

4. On Sleeping Sickness (SS) interventions, the PAG recommends:
   - To involve as many health systems as possible (in particular primary health care systems) in the surveillance and control of HAT. Sleeping sickness national programmes or specialised bodies at national level should be maintained to monitor and provide appropriate support to the integration process.

   Action: WHO and member states.

5. On collection of essential baseline data, the PAG recommends:
   - To take into account historical data sets. For those areas where recent data are not available, detailed work plans/action plans should be developed in order to enable the implementation of grid-based surveys using the representative sampling approach.

   Action: PATTEC Countries.

6. On regional training, the PAG recommends:
   - To develop and organize regional training courses on the use of GIS, Web-GIS, Data Base Management Systems (DBMS), GIS data and metadata sharing tools (e.g. GeoNetwork open source). Countries that have initiated T&T intervention,

within the PATTEC initiative, should make efforts to make their GIS data sets available on the web for sharing with other member states.

Action: PATTEC Coordination Office, PATTEC countries, PAAT.

7. On standardization and harmonization of T&T intervention(s), the PAG recommends:
   - That all steps of T&T intervention(s), i.e. entomological, parasitological, socio-economic, environmental baseline data collection and monitoring, land cover mapping should be standardized.

   Action: PAAT and PATTEC countries.

8. On regional approach for intervention, the PAG meeting recommends:
   - Ongoing national T&T interventions in West and East Africa should adopt a regional approach. This should be reflected in common, standardized country reports, coordinated actions, more frequent technical meetings and increased use of available data sharing tools, i.e. PAAT website.

   Action: PATTEC countries involved in ongoing T&T interventions.

9. On modifications/adaptation of ongoing T&T intervention work plans, the PAG recommends:
   - That those countries that have ongoing T&T interventions, funded by AfDB and within the framework of the PATTEC initiative, and wish to adapt their working plan to the field situation should coordinate their request and approach to AfDB as united group.

   Action: PATTEC and PATTEC countries with ongoing AfDB funded T&T interventions.

10. On the effects of climate change on the T&T problem. The PAG recommends:
    - To further pursue studies on climate change on T&T.

    Action: PATTEC and PAAT.

1. Review of the last PAG meeting report and adoption – A.A. Ilemobade

The PAAT Chairman reviewed the report of the past PAG meeting, held in Kasane, Botswana, October 2006. The report was adopted unanimously. Consequently, the conclusions and recommendations of the last meeting, held in Addis Ababa, Ethiopia, September 2006, were discussed and endorsed.

2. Report of the PAAT Secretariat and FAO/PAAT activities – R.C. Mattioli

The participants were informed on the FAO and PAAT activities since the last PAG meeting. Normative, technical and logistic assistance has been provided to PAAT partner countries.

FAO has initiated a study concerning mapping the benefits of tsetse and trypanosomiasis intervention in East Africa. This study completes a similar one carried out in West Africa. At the national level, FAO/PAAT contributed to the PPLPI study titled "Comparable costings of alternatives for dealing with tsetse: estimates for Uganda", and the PPLPI Policy Brief "Choice of techniques for creating tsetse-free zones in Africa: the cost dimension". Additional normative work related to the development of guidelines to assess the feasibility of creating T&T free zones (FAO/IAEA), provision of harmonized spatial datasets for the management of the trypanosomiasis problem from an environmental perspective. In an advanced stage is the study which includes and links sustainable human and animal African trypanosomiasis control with rural development strategies. Another in-progress normative initiative is a paper on "Guidelines for declaring areas free of tsetse flies and tsetse-transmitted trypanosomiasis". Sections of this paper deal with entomological and parasitological/serological sampling and surveillance criteria. The "FAO/IAEA Standard Operating Procedures for mass rearing of tsetse flies" were finalized as a folder that permits exchanging chapters in case technical developments necessitate updates. The PAAT Technical and Scientific paper No. 8 "Standardizing land cover mapping for T&T decision making" has been finalized and will be published in 2008. The paper provides methodologies and tools to assist T&T affected countries through the process of customization of readily available, high resolution land cover datasets (FAO Africover project). The customized land cover datasets for eight East African countries were made available for downloading through FAO-GeoNetwork, where also an interactive Web Mapping Service (WMS) was created. The work was presented as a poster at the GISVET 2007 Conference, Copenhagen, Denmark, August 2007, where it was awarded the prize for "The most interesting poster".

As part of its contribution to the Millennium Development Goals (MDGs), PAAT has finalized a brochure entitled "On target Against Poverty – The Programme Against African Trypanosomiasis 1997 -2007". The brochure highlights the role and contribution of PAAT to support the eight Millennium Development Goals.

FAO organized an Interactive Training Workshop on "Harmonization of GIS-based decision support systems and information systems in T&T intervention" and participated in the Regional Meeting of National Coordinators held in July 2007 in IAEA HQs. The meeting focused on reviewing progress made by Burkina Faso, Ethiopia, Ghana, Kenya, Mali and Uganda in the implementation of AfDB funded projects, strengthening regional coordination and improving the implementation of the above-mentioned projects. FAO, together with IAEA, continued to provided assistance and guidance to the Ethiopian Government and the

STEP project for the implementation of the UNTFHS funded project (GCP/ETH/072/UNJ) in the Southern Rift Valley of the country. During technical visits made by FAO to the six AfDB beneficiary countries, it came out very clearly that an area of major training is to increase African capacity building and analysis on the use of GIS/RS as tool for T&T decision making process/support.

During the discussion it was pointed out that a comprehensive summary document of various baseline data manuals would be useful. In this respect, it was proposed to establish a committee to develop such document. Another point of discussion was the necessity to develop a simplified version of the position paper "Criteria to declare the status of eradication of T&T". Discussed was also the issue of which authority (the country, international bodies such as OIE) should declare status of eradication achieved. Further consultations are needed on this matter.

3. Report from IAEA – M. Vreysen

Mr Vreysen of the Joint FAO/IAEA Agricultural Programme presented an overview of the activities of IAEA in support of the PATTEC Plan of Action and major achievements in the three main areas (normative activities, research and development, and technical cooperation) were highlighted.

During the period 2006-7, three workshops on the development of a detailed action plan for the collection of essential entomological baseline data in Uganda, Burkina Faso and Senegal were held. In August 2007, IAEA participated in a stakeholders meeting in South Africa where a feasibility study document for T&T intervention in the country and the Southern part of Mozambique was endorsed.

Regarding technical cooperation, IAEA continued to provide technical support to the STEP project in Ethiopia, particularly in the field of tsetse mass rearing and the use of the Sterile Insect Technique (SIT). Additional technical cooperation activities, developed under the United Nations Fund for International Partnership and USA, concerned the development of GIS based maps related to T&T, generating standardised entomological baseline data, designing tsetse-mass rearing facilities and development of subregional intervention strategies.

Training is a major activity of the Joint FAO/IAEA Programme. The Agency produced a computer-based training package on GIS with a set of "flash" presentations demonstrating the use of various software applications including GIS and database and focusing on pest management projects. IAEA co-sponsored a PATTEC/FAO/IAEA Regional Training Course on Standardised Collection and Processing of Tsetse Flies for Population Genetics Studies and Morphometrics, to be held in Tororo, Uganda, November 2007. Several other regional training events are already planned in the course of 2008.

Regarding publications, in June 2007 IAEA published a new textbook on Area-wide control of insect pests. From research to field implementation", based mainly on papers presented at the 2nd international conference on area-wide control of insect pests, held at IAEA HQs, Vienna. The text book aims at being a compilation of the various components of AW-IPM, i.e. basic research, modelling and methods development, feasibility studies, commercialization and regulatory issues, pilot and operational programmes. The book's final chapter provides an analysis of the lessons learned.

In relation to research activities, the focus has been on improvement of tsetse holding and feeding units, improved tsetse diet, the use of X-rays as an alternative to gamma rays for sterilisation of flies, better understanding the Salivary Gland Hypertrophy Virus, assessing the impact of antiviral drugs on the virus and the use of UV light to sterilise the blood diet. In addition, Coordinated Research Projects on (i) the use of GIS and population genetics as a tool for better planning AW-IPM programmes, (ii) tsetse symbionts and pathogens, and (iii) improved harmonized control quality for expanded tsetse production, sterilization and field application, were initiated or further implemented.

4. Report from WHO – P. Simarro

Main activities of WHO related to HAT are summarized as follows:

- supporting control activities in active foci;
- gathering historical HAT data and updating historical foci;
- updating distribution of disease data;
- improving reporting; and
- defining population at risk.

The increased HAT surveillance, from 1.3 million people screened in 1997 to more than 3 million in 2006, resulted in a decrease of number of positive HAT cases reported, i.e. from 36 000 in 1997 to 11 868 cases in 2006. Out of 36 tsetse affected countries, no cases are reported from 16 countries, 12 countries reported less than 100 cases, five countries between 100 and 1 000 cases and only three countries (Angola, Democratic Republic of Congo and Sudan) reported more than 1 000 cases (exhaustive list available with WHO).

There are a number of challenges remaining: (i) maintaining support using existing tools, (ii) support each country with cost-effective surveillance and control methods, (iii) set up efficient evaluation and monitoring systems, (iv) improve the knowledge about disease burden and distribution, (v) maintain awareness of the problem of HAT, (vi) increase coordination of all actors, and (vii) facilitate links between control and research activities. The inefficiency of controlling the disease in the 1970s was mainly due to the failure to integrate the vertical approach (surveillance and control) with the primary health care systems. With the new approach, the elimination of the disease appears feasible, provided that the trend in the reduction of the number of cases is maintained and that surveillance and control measures are sustainable, cost-effective and adapted to each specific epidemiological situation.

As for AAT, also for HAT the issue of climate change and its effect on the disease and vector is a factor that merits due and serious consideration.

WHO expressed its will to continue to support PAAT and to co-fund part of the PAAT Information System activities.

5. PAAT Information System update: harmonization and standardization for decision making – G. Cecchi

Recent PAAT Information System (PAAT IS) developments concerned mainly (i) web mapping services for PAAT IS GIS datasets, (ii) collaboration WHO-FAO/PAAT IS on mapping HAT, and (iii) the development, in collaboration PPLPI FAO project, of livelihood zones and profiles of countries of the IGAD region. Livelihood zones and profiles are areas

within which people share broadly the same pattern of livelihood, i.e. same production system (e.g. agriculture or pastoralism) and the same patterns of trade and exchange. Livelihood analysis can be regarded as the "lens" through which to interpret a number of questions ranging from emergency response to disaster mitigation or long term development. Hence, mapping the livelihood and associated production systems provide a support for socio-economic assessments and project impact evaluation and eventually leading to strategic decision making (e.g. selection of intervention areas).

The new structure and functionalities of the PAAT IS were presented:

- PAAT web site;
- PAAT Technical and Scientific Series;
- Tsetse and Trypanosomiasis Information (TTI) bulletin;
- FAO GeoNetwork;
- Network and harmonization.

Detailed explanations of each of the above sections were illustrated to the audience, with emphasis on Web GIS in PAAT IS and the FAO GeoNetwork for the PAAT community. Concerning the FAO/WHO collaboration on HAT data management and mapping, the aim is to improve the management of HAT datasets, with focus on the spatial component for better targeting interventions. The proposed database is designed to map HAT occurrence in space and time. The database can be directly linked to the GIS databank available at WHO HQs for mapping purposes.

Another initiative undertaken within the PAAT IS relates to global datasets for the management of the trypanosomiasis problem from an environmental perspective. This initiative provides a review of state-of-the-art global data sets relevant for T&T intervention and available in the public domain. Sample analyses and applications are depicted/displayed.

6. Update on the guidelines for assessing the feasibility of creating tsetse and trypanosomiasis (T&T) free zones – M. Vreysen

This presentation emphasised the complexity of Area-Wide Integrated Pest Management (AW-IPM) projects and their intensive management requirements. However, important benefits can be derived from these projects, AW-IPM programmes can be successful if a certain number of prerequisites are met. These are:

- the availability of a set of accurate, recent baseline data that are needed to develop an appropriate intervention strategy adapted to local conditions;
- in case the SIT is a component of the integrate approach, optimal competitiveness of the sterile insect is required with strict quality control procedures in place, both the rearing facility and in the field;
- an autonomous and independent management structure needs to be put in place;
- strict continuity in the implementation of all project components;
- full commitment of all stakeholders;
- adequate funding, personnel and logistics; and
- regular independent peer reviews of the programme.

The phased conditional approach and the flow chart on the project feasibility were presented and discussed.

7. Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Burkina Faso – I. Sidibe

The report focused on activities of Phase 1 of the AfDB funded project and the current ongoing activities of Phase 2, e.g. development of a detailed plan of action for the collection of entomological baseline data, establishment of field teams and the development of detailed maps of vegetation.

Concerning data collection, it was reported that standardized methodologies have been developed and agreed among the six countries benefiting from AfDB funds for T&T intervention for collection of parasitological, socio-economic, environmental, entomological and land use data. Background studies have been conducted with the support of FAO and IAEA to select priority areas using the PAAT-FAO/IAEA criteria. The national plans of action under the AfDB funds aim at initiating tsetse eradication on about 40 000 km^2 out of 100 000 km^2 of the total intervention area. The area has been sub-divided in blocks and baseline data collection started in Block 1, the northern limit of the tsetse distribution in Burkina Faso. Sleeping sickness survey is also carried out in the same area by a joint CIRDES/IRD/PATTEC team.

Factors contributing to possible successful T&T campaign in the intervention area can be listed as follows:

- the area has high potential for crop production and livestock development (mixed farming is already increasing);
- the north limit of tsetse distribution is seasonally favourable for suppression and final eradication;
- national facility and efforts have been concentrated in the intervention area;
- human activities are developing and would eventually serve as natural barriers (cotton fields, utilization of pesticides).

Various agreements have been signed with concerned national institutions to obtain support and collaboration on land use / natural resource management, environmental impact survey, information and sensitization of local communities.

A short term consultancy is planned to assess the feasibility to apply SAT for tsetse fly suppression for the creation of T&T free zone.

8. Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Ghana – C. Mahama

The presenter illustrated the tsetse fly situation and distribution in Ghana and the statistics of the T&T project area intervention. This has a surface of 20 000 km^2 with a human population of, approximately, 200 000 (70 percent) engaged in agricultural activities. Cattle, pig and small ruminant populations are estimated, respectively at 300 000, 700 000 and 800 000. The production system is classified as low input with less than one USD per day. Three tsetse species are present (*Glossina palplais gambiensis*, *G. tachinoides* and *G. morsitant submorsitans*): prevalence of bovine trypanosomiasis (parasitological diagnostic test – buffy coat technique) is between 5 and 25 percent. Baseline studies that are ongoing concern collection of additional epidemiological data, socio-economics, data on environment and land cover/land use. Formats for data collection at the various levels of implementation have been developed and indicators have been fine tuned during the Monitoring and Evaluation activity.

Also, a matrix for outputs and outcomes, including output indicators, has been produced. The T&T intervention strategy has been discussed and harmonized with Burkina Faso and Mali.

The National Parliament has approved the loan agreement with AfDB for the sum of USD11 million and has endorsed, in principle, the extension of Phase 2 and Phase 3. The Government has assured mobilisation of resources from the Poverty Alleviation Fund and from Ghana's traditional development partners for subsequent phase. However, the continued support from the Government is subject to the success of Phase 1.

9. Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Mali – A. Djiteye

In Mali, 2.5 people and 2.7 million cattle are exposed to the risk of trypanosomiasis. More than one million trypanocidal treatments are administered every year. Trypanocides represent more than 50 percent of sales of all veterinary drugs.

Mali has an historical tradition in tsetse and trypanosomiasis intervention and the relatively new AfDB funded project is a continuation of previous tsetse control campaigns. The project has an area of 37 000 km^2: 15 000 km^2 in the Niger river basin, the peri-urban area of Bamako and 22 000 km^2 in the Bani river basin from the northern limit of the tsetse distribution to the border with Burkina Faso. The eradication concerns 15 000 km^2.

Good quality data have been collected in the river Niger basin in the past five years, while in the Bani river basin data are lacking. The Niger river basin suffers from tsetse reinvasion; therefore 3 900 insecticide impregnated traps were re-deployed resulting in 91 percent reduction of flies over four months. Additional actions for planning T&T intervention include the involvement of farmers' communities, the private sector and training of farmers and field technicians. Data on socio-economics and environmental impact assessment will also be collected.

Under the AfDB funded project (loan USD10.5M and grant USD422 000) is foreseen the establishment of a colony of *G.p.gambiensis* with the aim at of producing males for an SIT campaign is foreseen. Location of the facility is still under discussion. The financial contribution of the Malian Government to the T&T intervention is approximately USD1.7M.

10. Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Kenya – P. Olet

The tsetse infested area covers 25 percent of the total country area (587 000 km^2). Five main tsetse belts have been identified: (i) Lake Victoria, (ii) Rift Valley, (iii) Coast region, (iv) Central region, and (v) Eastern region. Eight tsetse species are distributed over these five regions. In tsetse infested areas over 52 percent of the total of Kenya's livestock is present (23 percent of the national cattle population estimated at 13 million head). Calf mortality ranges between 10 to 40 percent. Approximately five million Kenyans live in sleeping sickness foci areas. It is estimated that in tsetse infested areas, food security is reduced by 40 to 50 percent. More than USD3.5M is spent by the Government to import trypanocides. At homestead level, 25 percent of income derived from milk sale is used to purchase trypanocidal drugs.

Large amount of data and work has been done in the past in the Lambwe Valley and this knowledge should not be lost. All activities would need to be more focussed and comprehensive.

The AfDB loan provided to the Kenyan Government for T&T intervention amounted to USD11M, with a grant of about USD480 000. However, a total amount of USD45M is estimated to be necessary to achieve the goal of T&T eradication from the envisaged area. Main activities foreseen in the action plan focus on (i) strengthening surveillance, (ii) community training, (iii) baseline data collection, and (iv) sensitization of rural communities. A main concern for the eradication of T&T in Kenya is the fact that the tsetse populations in targeted areas (e.g. Ruma National Park identified as Zone 1 of the project area) might not be isolated. Concern was expressed regarding the need for high quality sterile flies for tsetse eradication. In addition, available funds are not sufficient to cover the cost for baseline data collection in the project area of Zone 2. On this issue, it was commented that the USD11M provided by AfDB would be sufficient to apply SAT over the entire project area of 24 000 km^2 (cost estimate for SAT application USD7.5M). Kenya was urged to use available funding for feasibility study for SAT application.

11. Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Uganda – L. Semakula

A comprehensive plan of action for collection of baseline data has been developed and current activity are focussing on Block one of identified priority area. The Government of Uganda has expressed its intention to allocate USD3M for the use of SAT. The National PATTEC Coordinator (Mr L. Semakula) suggested using part of 4.2M of the AfDB loan (foreseen to purchase sterile flies from Ethiopia) for SAT. This would bring the total amount available for SAT to USD6M and would leave USD1.2M for the construction of the first two modules for the production of sterile flies in Uganda. The main challenge remains the approval of the AfDB for this change in budget line allocation and the endorsement of the Uganda Government for the use of SAT. It was suggested that the six countries benefiting from AfDB loans and grants use a unified strategy to approach AfDB to request changes in various project components and budget lines. This would be a much better approach than each country negotiating individually with AfDB.

On this proposal the attention of PAG was drawn to consider country specific issues, i.e. different countries deal with different tsetse species, different geographical settings and agro-ecological zone(s). In addition, the data available and progress made in data collection are at different stages in different countries. Therefore, the need for increasing coordination and harmonization (hence, more regional concertation) was reiterated and more detailed work plans, including detailed budgeting for the various project components are needed.

12. Human and Animal Trypanosomiasis in Angola – T. Josenando

In Angola both human and animal trypanosomiases are endemic.

Sleeping sickness cases have been recorded in seven provinces where approximately one third of the total population is at risk from contracting the disease. Therefore, a national institution – Institute for the Control of Trypanosomiasis (ICCT) was created with the aim of setting and implementing human national trypanosomiasis control measures. The six pillars on which HAT control strategy is based are:

- surveillance and monitoring;
- treatment;
- follow up;
- tsetse fly control;
- information, education and communication;
- training and supervision.

In 2007, out of 134 000 persons examined 428 (0.3 percent) were found to be positive.

Animal trypanosomiasis is concentrated mainly in the southern part of the country where about 70 percent of the total national cattle stock lives. Disease prevalence data are not reliable or absent. Hence, it is envisaged, with the assistance of the international community, to conduct a survey in this respect. However, preliminary data in the Bengo province indicated an annual mortality rate of about 15 percent in cattle population due to the disease.

Various international, regional and national partners are supporting field activities related to T&T intervention(s) in Angola. These are WHO, AU-PATTEC, IAEA, NGOs and the Portuguese Institute of Preventive Medicine. Research institutes are also providing scientific assistance.

The implementation of T&T intervention field activities faces some difficulties. The past civil disturbance has brought consequences for accessing infested/endemic areas. In addition, paucity of funds has consequences on the whole chain of field actions. However, the National Reconstruction Programme provides good hope for an improvement of the current situation.

13. Capacity of PAAT partners (research and scientific organizations/institutes) to support national and regional ongoing and future interventions (CIRDES, ICIPE, ILRI, and ITM)

CIRDES – I. Sidibe

The Centre, based in Bobo Dioulasso, Burkina Faso, covers seven West African countries (Benin, Burkina Faso, Côte d'Ivoire, Guinea Bissau, Mali, Niger and Togo). The current research activities focus on:

- regional epidemiology of trypanosomiasis (AfDB funded project within the PATTEC initiative);
- tsetse fly control, including tsetse population genetics, and control of sleeping sickness (funded by EU);
- vector-based control of HAT using bait technology allied to a better understanding of vector population structures (funded by the Bill Gates Foundation);
- landscape fragmentation in the Mouhoun river: impact on tsetse habitats (funded by the Wellcome Trust);
- quality control of tsetse and sterile males (funded by IAEA);
- utilisation of a tsetse production unit (TPU) 3 for mass production of tsetse flies (funded by IAEA);
- improving the management of trypanocide resistance in the cotton zone of West Africa: a coordinated regional study (funded by BMZ/ILRI).

Human resource development and capacity building is another key activity of the Centre. In 2006, CIRDES organized eight training courses for a total of 47 participants from nine West African countries and France. In 2007, eight technicians from Senegal and four from Mali were trained on T&T control techniques. Diagnostic techniques (i.e. ELISA) have been transferred to national laboratories (e.g. Burkina Faso, Mali, Ghana). The Centre also provides expert services to member and associated countries on matter related to vector (ticks and tsetse flies) and parasite control technologies. On request, it also provides tsetse flies for the application of SIT and targets for tsetse suppression.

ICIPE – R. Saini

ICIPE representative highlighted the strategic current and future research plans, which focus on five main research areas:

- vectors of trypanosomiasis, both human and animal, and tick-borne diseases;
- extension of research to other arthropods of medical and zoonotic importance in order to develop technologies for integrated management of these vectors and the diseases they causes;
- use of genomics and bio-informatics, and behaviour and chemical ecology for technology development and implementation;
- investigations of the effects of climate changes on the range and efficiency of vectors;
- development of holistic, site specific packages for sustainable animal health management and production, and test packages at farmer level in different production systems and agro-ecological zones for adoption and wider dissemination.

As a general approach, the Centre is developing more holistic projects in collaboration with other ICIPE divisions and collaborators in order to catalyse sustainable agriculture and rural development, improve livestock and human health, food security and reduce poverty. The Centre's strategy also includes increased capacity building activities with a view to create cadres of research, vector control specialists and managers in livestock Integrated Pest and Vector Management (IPVM). The human resource development action embraces also the technical empowerment of communities to ensure sustainability of control efforts.

Current projects and new initiatives are:

- Development of baits for riverine tsetse species, vectors of human trypanosomiasis (funded by the Bill Gates Foundation);
- Tsetse/trypanosomiasis rollback initiative in Ethiopia – Sustainable community-based management of T&T using strategic deployment of improved odour baited monitoring and control traps (funded by the Swiss BioDivision foundation);
- Community based tsetse control in the interface between agriculture land and game reserve (Mwea) in Kenya in order to reduce human-wildlife conflicts through effective tsetse control and improvement of livestock health and productivity (funded by the Swiss BioDivision foundation);
- characterisation of odour binding proteins and receptors of tsetse for optimizing existing baits and for development of new ones (funded by WHO-TDR);
- further optimisation and validation of the repellent technology developed by ICIPE: development of dispensers for the identified waterbuck repellent blend in order to evaluate the belt's efficacy and to transform cattle into animals with 'waterbuck clothing' (funded by IFAD).

ILRI – J. Maitima

The Centre's mandate is to reduce poverty and make sustainable development possible through livestock-related research and innovation in research to improve food security in Africa. ILRI's research themes focus on:

- enhancing access to market opportunities;
- securing assets through biotechnology;
- production systems (people, livestock and the environment).

Specific research on T&T concerns:

- trypanocides resistance in cotton zones of West Africa (Mali, Guinea, Ghana and Benin) and evaluation of trypanosomiasis control strategies in the context of drug resistance;
- molecular genetics and breeding in cattle (production traits in N'Dama cattle, Ethiopian Sheko zebu and conservation of endemic breeds in Guinea, Mali, Senegal and Gambia);
- community-led livestock disease control (promotion of animal health cooperatives, farmer to farmer knowledge transfer);
- socio-economics and environmental monitoring of T&T control projects;
- sustainable land management of tsetse areas;
- impact of climate changes on tsetse systems.

ILRI has developed an "Environmental and socio-economic impact assessment framework and guidelines" for integrated impact assessment of trypanosomiasis intervention. The framework and guidelines include a selected set of indicators and type of data to be collected for impact assessment. Diagrams of relationships and interactions, and methods for impact analysis are illustrated. Another initiative concerns the development of a dynamic ecological simulation model of tsetse transmitted trypanosomiasis in Kenya. Research actions within this initiative focus on the analysis of spatial and temporal trends in climate variables and the responses of people, livestock and wildlife to changes in rainfall and temperature. The aim is to analyze the linkages between climate, land use cover and tsetse-trypanosomiasis dynamics.

ITM – S. Geerts

Research and teaching (training) are the two main activities at the Institute for Tropical Medicine. Research related to T&T concerns drug resistance and development of collaboration with African based research institutes, like CIRDES and ITC. Teaching activities focus on (i) module "Vector-borne diseases" and (ii) Web-based module "Tsetse and trypanosomiasis".

Investigations on drug resistance revealed the phenomenon is rapidly expanding in many African countries and tsetse infested areas, with populations/strains of trypanosomes possessing a multi drug resistance trait. Tests used to detect drug resistance are based on conventional methods (test in ruminants, mice, field test or block treatment) and molecular tools (PCR). Through the application of molecular technology, the Institute has been able to identify trypanosome genes responsible for drug resistance in *Trypanosoma brucei* and *T.congolense*. In addition, it appears that drug resistance mechanisms are not uniform but differ in different trypanosome populations. Once the molecular tools for drug resistance are

validated, they will provide the opportunity, *inter alia*, to develop better strategies to delay the development of drug resistance.

Collaboration with CIRDES concentrates on a new project "Strengthening of CIRDES as a regional reference centre for the diagnosis and control of trypanosomiasis and trypanocidal drug resistance". This cooperation implies the transfer of technology from ITM to CIRDES and training of technicians and PhD students.

The Belgian Government and ITM have strongly supported ITC both financially and scientifically. ITC is now in a difficult financial situation and actions have been taken by the Council to reduce expenditures and running costs. It is almost a general opinion that a merger of CIRDES and ITC is necessary in order to create a stronger livestock research centre for West Africa. The challenge ahead of ITC is to ensure core funding for maintaining a unique breeding stock of global significance, keeping a critical mass of qualified human resources and progressing with the restructuring process. ITC hosts the AfDB-GEF funded project "Sustainable management of endemic ruminant livestock in West Africa" covering Mali, Gambia, Senegal, Guinea. The project is executed by ITC and ILRI and has a budget of US$42 (GEF USD10M over 10 years; AfDB 30M over six years).

14. Needs assessment for comprehensive training and capacity building in support of PATTEC projects – R. Saini

National systems lack capacity at all levels to undertake large scale integrated disease and vector control programmes; reduced funding and relatively poor infrastructure are further limitations to build the necessary human capacity. Given the magnitude of the T&T problem and its interdependency with different related special fields, multi-disciplinary teams of trained manpower are required. Strategic investments in strengthening capacity of African countries and institutions are therefore of highest priority.

A training questionnaire was developed to identify targeted training needs. A training survey was conducted in Burkina Faso, Mali, Ghana, Ethiopia, Uganda and Kenya. Analysis of questionnaire led to the identification and prioritisation of the critical areas in which capacity is lacking and the determination of the number of cadres and technical expertise that need training. This training need assessment exercise allowed also to develop and establish an integrated data information management system (including GIS) in each country, identify sub-regional training facility centres and needs for their rehabilitation, strengthen national and regional capacities in T&T intervention and for environmental audit.

Identified training priorities were:

- GIS, data base management and networking;
- project planning, development and management;
- basic tsetse biology and ecology, and baseline entomological survey;
- environmental/land cover baseline survey and land use impact assessment,
- socio-economic baseline survey and analysis including T&T elimination impact;
- mass rearing of tsetse and SIT, including sterilization and release;
- community empowerment on T&T management;
- HAT surveillance, diagnostic and treatment;
- animal health providers, extension staff, veterinary officers training.

The foreseen goal and objectives of capacity building activities should enhance the scientific and technical capacities of mid-level personnel in T&T affected countries to enable them to plan, implement, monitor and evaluate the implementation of T&T projects/interventions. More specifically, training should concentrate on:

- Training of project managers in planning and executing the programmes;
- Training and sensitisation of communities and extension workers and their empowerment in T&T control and management issues;
- Promotion of cooperation and networking among affected countries;
- Production of training manuals and related information materials to be used at the continental scale.

The training implementation plan foresees that training sessions will be held over a five-year period with trainees (about 24 trainees per course) selected from different ongoing projects and geographical areas. As it is impossible to meet the entire capacity strengthening demands of all countries, emphasis will be on training of trainees who, in turn will return to their national systems and train other staff. Since new training needs may arise from unforeseen developments while implementing the projects in the field, flexibility in the course curricula will be used. Training material (e.g. manuals) should be bilingual (English and French) and addressed to technical staff rather than scientists. Two specialized workshops per year (one in French and the second one in English) should also be held with maximum 20 participants per workshop. Suggested topics include:

- Integration of T&T control within the framework of other national and regional development strategies for reducing poverty and enhancing food security and rural development;
- Specific programme/project review workshops;
- Public relations, public awareness and sensitisation/information flow to all stakeholders and donors.

Implementation and coordination will be ensured by the PATTEC Coordination Office, where a Training Coordination Unit will be established. Training centres will be identified in West and East Africa taking advantage of already existing infrastructures and advanced laboratories. Resource persons will be from ICIPE, CIRDES, ILRI, KARI-TRC, and other mandated organization as FAO, IAEA and WHO.

Annex 1

13th PAG MEETING

Luanda, Angola

27-28 September 2007

LIST OF PARTICIPANTS

Giuliano Cecchi
Consultant FAO/AGAH
FAO
Viale delle Terme di Caracalla
00153 Rome, Italy
Tel: +39 06 4382335
Email: giuliano.cecchi@fao.org

George Chizyuka
Animal Health Officer
FAO Regional Office for Africa
P.O. Box 1628
Accra, Ghana
Tel: +233 (21) 7010930
Email : george.chizyuka@fao.org

Victorin Codja
Responsible for Animal Health
Institut National de Recherches Agricoles du Benin
03 BP 2036
Cotonou, Benin
Email : vcodjia@lelaland.bj
vcodjia@hotmail.com

Oumar Diall
Project Coordinator
ILRI-ICRISAT-Mali
P.O. Box 320
Bamako, Mali
Email: o.diall@icrisatml.org

Aligui Djiteye
National PATTEC and PAAT Coordinator
P.O. Box 9125,Sotuba
Bamako, Mali
Tel: +223 224 01 43
Email: addjiteye01@yahoo.com

Balbina Felix
Disease Prevention and Control-DPC Officer
WHO Office in Angola
178 Rua Major Kanhangulo
Luanda, Angola
Email: felix@ao.afro.who.int

Stanny Geerts
Professor
Institute of Tropical Medicine
Nationalestraat 155
2000 Antwerp, Belgium
Email: sgeerts@itg.be

Solomon Haile-Mariam
Consultant
AU-IBAR
Box 7417
Addis Ababa, Ethiopia
Email: Rambes66@yahoo.com

Albert Ilemobade
PAAT Chairman
P.O. Box 1308
Akure, Ondo State, Nigeria
Tel: (+234) 34-242600
Email: albert.ilemobade@urfoundation.org
aailemobade@yahoo.com

Theophile Josenando
General Director of ICCT
ICCT-MOH
168 Kwenia, Ingombota
Luanda, Angola
Email: josenandot@yahoo.com

Jordão Kussonga
Head, Department of DNADP-MINADEV
Ministry of Agriculture and of Rural Development
C.P. 798
Luanda, Angola
Email: kussongajord@hotmail.com

Charles Mahama
PATTEC Coordinator
Veterinary Services
Ministry of Food and Agriculture
P.O. Box 97
Pong-Tamale, Ghana
Email: cimahama@yahoo.com

Joseph Maitima
Scientist
ILRI
P.O. Box 30709
00100 Nairobi, Kenya
Tel: +254 20 422 3000
Email: j.maitima@cgiar.org

Alfredo Armando Manuel
Professor, Faculty of Sciences
University Agostinho Neto
Avenida 4 de Febereiro, no. 71
Luanda, Angola
Email: alfredo-manuel60@hotmail.com

Raffaele Mattioli
PAAT Secretariat Focal Point
Animal Health Officer
FAO
Viale delle Terme di Caracalla
00100 Rome, Italy
Tel : +39-06-57056078
Email : Raffaele.Mattioli@fao.org

Pamela Olet
PATTEC Coordinator-Kenya
Ministry of Livestock & Fisheries Development
Department of Veterinary Services
Private Bag 00625
Kangemu, Nariboi, Kenya
Email: polet@pattec.co.ke
pamaolet@yahoo.com

Francis Oloo
ISCTRC Secretary
AU/IBAR
P.O. Box 30786
Nairobi, Kenya
Email: francis.oloo@au-ibar.org

Kgosietsile Phillemon-Motsu
Deputy Director
Department of Veterinary Services
Private Bag 0032
Gaborone, Botswana
Email: kphillemon-motsu@gov.bw

Rajinder Saini
Principal Scientist & Head of Animal Health Division
ICIPE
P.O. Box 30712
00100 Nairobi, Kenya
Email : rsaini@icipe.org

Lawrence Semakula
Executive Director
Coordinating Office for control of Trypanosomiasis in Uganda (COCTU)
P.O. Box 16545 Wandegeya
Kampala, Uganda
Tel: +256 41 250726
Email: coctu.maaif@yahoo.com
ldmsemakula@yahoo.com

William Shereni
Deputy Director of Veterinary Field Services and Tsetse control
P.O. Box CY 52
Causeway, Zimbabwe
Email: shereni2005@yahoo.com

Issa Sidibe
Scientific Director of CIRDES
National PATTEC Coordinator - Burkina Faso
CIRDES
01 BP 454
Bobo Dioulasso, Burkina Faso
Email: sambo@fasonet.bf

Pere Simarro
Head HAT Control Programme
WHO
Appia Avenue
1211 Geneva 27, Switzerland
Tel: +41 22 7911345
Email: simarrop@who.int

Philippe Truc
Researcher, IRD/ICCT
French Embassy
31/33 Rua Reverendo Pedro Neto
CP 584
Luanda, Angola
Email: truc@ird.fr

Virgilio Silva
Institute of Veterinary Services
MINADER, Edificio B No 55.56
B.P. 10578
Luanda, Angola
Email: dnap@ebonet.net

Marc Vreysen
Entomologist
FAO/IAEA Division of Nuclear Techniques in Food and Agriculture
P.O. Box 100
A-1400 Vienna, Austria
Email: m.vreysen@iaea.org

Annex 2

13th PAG MEETING

Luanda, Angola

27-28 September 2007

AGENDA

Opening address and introduction - H.E. Vice Minister of Agriculture and Rural Development. Address of Prof. A.A. Ilemobade, PAAT Chairman

1. Report of the PAAT Secretariat and FAO/PAAT activities (R.C. Mattioli)

2. Report from IAEA (M. Vreysen)

3. Report from WHO (P. Simarro)

4. PAAT Information System update: harmonization and standardization for decision making – G. Cecchi

5. Update on the guidelines for assessing the feasibility of creating tsetse and trypanosomiasis (T&T) free zones (M. Vreysen)

6. Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Burkina Faso (I. Sidibe)

7. Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Ghana (C. Mahama)

8. Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Mali (A. Djiteye)

9. Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Kenya (P. Olet)

10. Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Uganda (L. Semakula)

11. Human and animal Trypanosomiasis in Angola (T. Josenando)

12. Capacity of PAAT partners (research and scientific organizations/institutes) to support national and regional ongoing and future interventions (CIRDES, ICIPE, ILRI, ITM)

13. Needs assessment for comprehensive training and capacity building in support of PATTEC projects (R. Saini)

14. Conclusions and Recommendations. Next meeting.

15. Closure – H.E. Vice Minister of Health

Annex 3

13th PAG MEETING

Luanda, Angola

27-28 September 2007

TIMETABLE

Thursday, 27 September

09:00 – 09:30
Opening address and introduction (H.E. the Vice Minister of Agriculture and Rural Development and A. Ilemobade)

09:30 – 10:11
Report of the PAAT Secretariat, including FAO/PAAT activities (A. Ilemobade and R.C. Mattioli)

11:00 – 11:30
Coffee break

11:30 – 11:45
Report from IAEA (M. Vreysen)

11:45 – 12:00
Report from WHO (P. Simarro)

12:00 – 12:30
Discussion (A.A. Ilemobade, moderator)

12:30 – 14:00
Lunch break

14:00 – 14:45
PAAT Information System update: harmonization and standardization for decision making (G. Cecchi)

14:45 – 15:15
Update on the guidelines for assessing the feasibility of creating tsetse and trypanosomiasis (T&T) free zones (M. Vreysen)

15:15 – 16:00
Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Burkina Faso (I. Sidibe)

16:00 – 16:30
Coffee break

16:30 – 17:15
Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Ghana (C. Mahama)

17:15 – 18:00
Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Mali (A. Djiteye)

18:00 – 18:45
Discussion (A.A. Ilemobade, moderator)

18:45 – 20:30
Gathering together

Friday, 28 September

09:00 – 09:45
Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Kenya (P. Olet)

09:45 – 10:30
Field experience in applying the guidelines for assessing the feasibility of creating T&T free zones in Uganda (L. Semakula)

11:30 – 11:00
Coffee break

11:00 – 11:45
Human and animal trypanosomiasis in Angola (T. Josenando)

11:45 – 12:45
Capacity building of PAAT partners (research and scientific organizations/institutes) to support national and regional ongoing and future T&T interventions (CIRDES, ICIPE, ILRI, ITM)

12:45 – 13:00
Discussion (A.A. Ilemobade, moderator)

13:00 – 14:30
Lunch break

14:30 – 16:00
Needs assessment for comprehensive training and capacity building in support of PATTEC projects (S. Saini, followed by discussion, S. Geerts moderator)

16:00 – 16:30
Coffee break

16:30 – 17:30
AOB, Conclusions and recommendations
Next meeting

17:30 – 18:00
Closing ceremony (H.E. Vice Minister of Health)