



TRYRAC-Trypanosomosis Rational Chemotherapy Joint Mission Report FUB&VSF-B

Monitoring WP 4&5 activities in the Guraghe zone, Ethiopia
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Antje Hoppenheit¹, Déthié Faye²



Delivering extension messages in Wolaita © A. Hoppenheit

¹Institute for Parasitology and Tropical Veterinary Medicine, Berlin, Germany

²Vétérinaires sans Frontières Belgium, Brussels

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List of Abbreviations

AAT	African Animal Trypanosomoses
ARD	Global Programme on Agricultural Research for Development
BCS	Body Condition Score
CAHWs	Community-based Animal Health Workers
CBOs	Community-Based Organizations
DA	Diminazene Aceturate
DVO	District Veterinary Officer
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FUB	Freie Universitaet Berlin
EpG	Eggs per Gram faeces
EU	European Union
FECRT	Faecal egg count reduction test
<i>G.</i>	<i>Glossina</i>
ISM	Isometamidium Chloride
ITM	Institute of Tropical Medicine Antwerp
ITN	Insecticide Treated Nets
LUH	Leibniz Universitaet Hannover
NAHDIC	National Animal Health Diagnostics and Investigation Center
NARS	National Agricultural Research Systems
NICETT	National Institute for Control and Eradication of Tsetse and Trypanosomosis
PCV	Packed Cell Volume
RDU	Rational Drug Use
SOP	Standard Operating Procedure
STEP	Southern Tsetse Eradication Project
<i>T.</i>	<i>Trypanosoma</i>
TRYRAC	Trypanosomosis Rational Chemotherapy
VSF	Vétérinaires sans Frontières Belgium
WP	Work Package

1. TRYRAC-project background and objective

Trypanosomosis Rational Chemotherapy, TRYRAC, is part of the EU-funded initiative “Global Programme on Agricultural Research for Development” (ARD). TRYRAC is an international cooperation of academic, governmental and non-governmental organizations and has the aim of optimizing African Animal Trypanosomosis (AAT) management in western, eastern and southern Africa represented by Togo, Ethiopia and Mozambique. TRYRAC started in March 2012 with a total funding period of 5 years.

The major constraints to optimal AAT management are ineffective chemical treatments due to limited accessibility of quality trypanocides, gaps in smallholder knowledge and restrictions in the detection of trypanocide resistance to the only two available drugs isometamidium chloride (ISM) and diminazene aceturate (DA).

That is why the main objective of TRYRAC is to support livelihoods of resource-poor livestock producers in smallholder production systems in sub-Saharan Africa through improving the efficacy of trypanocidal drugs for the control of human and animal trypanosomosis. Specific objectives are 1) detecting trypanosome resistance 2) support drug quality control in African laboratories 3) improving the efficacy of trypanocides through promotion of rational drug use and development of adapted disease control methods.

2. Best-bet strategies for Ethiopia

Best-bet strategies are optimizing trypanocidal drug efficiency and the control of drug resistance [1]. They comprise the promotion of rational drug use (proper use of effective veterinary products, proper diagnosis, treatment of sick animals only), affordable vector control [2] and improving animal health conditions in general, for instance by introducing strategic deworming [3]. Supporting extension messages should be disseminated throughout the study area by national agricultural research systems (NARS) and private veterinarians. The most promising strategies are summarized in Figure 1 and they are planned to be implemented and monitored between February 2015 and October 2016 (18 months) in the vicinity of 4 communities: Misreta, Borer 4&5 and Wolaita. The villages Yameto Sefer and Yeshaheba of the Cheha district serve as control villages. Towards the end of the project, a socio-economic impact assessment is planned to be conducted by the Leibniz Universität Hannover (LUH).

Table 1. Outline of best-bet strategies

Demonstration Herds	
study and control groups in 3 – 5 herds per CBO	
Rational Drug Use	Targeted Spraying
Identification of quality drugs Application to clinically diagnosed animals Longitudinal biological Monitoring: thoracic perimetre, FAMACHA test, EpG Block treatment study at the end of the intervention phase	Establishment of crush pens and committees Spraying beginning at the onset of the rainy season at bi-monthly intervals Tick count pre-treatment and follow up 14 days post-treatment

CBO: Community Based Organisation, FAMACHA: Faffa Malon Chart [4,5], EpG: Eggs per Gram faeces

FUB, Vétérinaires sans Frontières Belgique (VSF-B) and the Ethiopian team (National Animal Health Diagnostics and Investigation centre=NAHDIC and the National Institute for Control and Eradication of Tsetse and Trypanosomosis=NICETT) invited stakeholders such as farmers, governmental/private vets and pharmacists to a meeting in Wolkite that took place in April 7/8 2014 [6]. There, outcomes of the so far conducted studies regarding drug quality tests, AAT prevalence, dissemination strategies and best-bet strategies were introduced to and discussed with the stakeholders. It was agreed to launch WP 4 activities in June 2014. Protocols for field interventions and monitoring were developed by the FUB team in close collaboration with ITM. Protocols and mission reports are available in the partner area of the TRYRAC website: <http://www.trypanocide.eu/>.

After implementation failed in June 2014, an extra Project Management Committee meeting was held in October 2014 in order to decide on how activities were to be continued in Ethiopia [7]. It was decided to initialise rational drug use of trypanocides, anthelmintics and insecticides in the study villages as soon as possible. However, Livestock Protection Fences were dropped from the agenda so the student could concentrate on the implementation of the other strategies and extension services.

Another training and implementation mission was successfully completed from February 23 until March 06, 2015 in order to treat, sample and analyse one or two study herds together with the NAHDIC/NICETT team to launch the best-bet protocol [8]. NICETT, the National Institute for Control and Eradication of Tsetse and Trypanosomosis replaced STEP (Southern Tsetse Eradication Project) as TRYRAC partners in Ethiopia.

From the end of February 2015 on, best-bet strategies are being implemented. Concurrently, extension material was developed and tested in collaboration with VSF Belgium and NICETT. Further training missions in July 2015 [9] helped to identify a 5% Deltamethrin-product that was used for targeting spraying of the study herds at the beginning of the rainy season on a trial basis. The producer Tagros India Ltd. agreed to send enough material to cover the herds for the duration of the project. Future import will depend on the results of this project. In terms of implementation, a VSF-B mission report from January 2016 stated some problems with material and farmers communication in implementing the targeted spraying [10].

Faecal Egg Count Reduction Tests [11] of locally available albendazole compared to a German product revealed albendazole as efficient whereas local products did not meet the standard. Thus, another product was identified (Vetoquinol: Analgon®) which is to be purchased and tested in future missions. Furthermore, WP 4 & 5 field activities are both to be carried out under the lead of the PhD student who requires additional advice from FUB and VSF-B.

3. Objective and schedule of the WP 4 and WP 5 implementation mission

- Monitor and optimize WP 4&5 field activities: targeted insecticidal spraying, delivery of extension messages, data collection, financial reporting
- Develop a schedule for the student of the last year
- Optimization and training of extension services (identification and training of another person to support the student, monitor the used material)
- Facilitate access to quality dewormers and a Deltamethrin-based insecticide/acaricide

Table 2. Schedule for the monitoring mission to Ethiopia (29.03.-07.04.2016)

Day	Date	Activity	Location
Monday	28 MAR 2016	Arrival Déthié Faye (VSF-B)	Addis
Tuesday	29 MAR 2016	WP 5: VSF-B meeting with NICETT on conducted activities, expenditures' justification, planning and budget from March to May 2016 Departure Antje Hoppenheit	Addis
Wednesday	30 MAR 2016	WP 5: Exchanges with NICETT to be continued Arrival Antje Hoppenheit (FUB) Meeting the PhD student Tilahun Tekle, heading to Wolkite	Addis
Thursday	31 MAR 2016	Visiting 2 villages /combine 2 villages for a workshop on best-bet strategies (focussing on insecticidal spraying) and extension; interviewing farmers and the spraying committee; training the student; monitoring extension material; visiting the public veterinary office in Wolkite	Wolkite
Friday	01 APR 2016	Visiting 2 villages /combine 2 villages for a workshop on best-bet strategies (focussing on insecticidal spraying) and extension; interviewing farmers; training of the student and the team leader of the public veterinary department Wolkite (Abraham)	Wolkite
Saturday	02 APR 2016	Visiting markets in Walga and Darge (both in the vicinity of the study villages) to look for veterinary products and speak with salesmen; return to Addis	Wolkite
Sunday	03 APR 2016	Meeting FAO representative Dr. Oumar Diall to discuss continuation of some activities in Wolkite within another project	Addis
Monday	04 APR 2016	Meeting Thomas Cherenet, the country coordinator; arranging reprints of extension material at the print shop; meet Dr. Eshetu Mengistu of Access Ethiopharm to enhance shipping of Analgon®; Departure Antje Hoppenheit	Addis
Tuesday	05 APR 2016	VSF-B meeting with the new NICETT director Meeting with EBC staff	

Legend: TRYRAC-Trypanosomosis Rational Chemotherapy; VSF-B-Vétérinaires sans Frontières Belgium; Addis-Addis Ababa; FUB-Freie Universitaet Berlin; EBC-Ethiopian Broadcasting Company

Synopsis

In order to monitor the progress of implementation in the five study villages Misreta, Borer 4&5 and Wolaita in terms of following WP 4 protocol and delivery of extension material (WP 5) and to assess the overall acceptance of the project, visits were paid to Borer and Wolaita. There, farmers, including the crushpen committees, private and public veterinarians and “pharmacists” on the two public markets were interviewed. In the process, extension material such as brochures, leaflets billboards and posters were viewed and key extension people were sensitized and trained, respectively. In Addis, financial questions were clarified with Thomas Cherenet and the PhD student Tilahun Tekle. Also, the vetoquinol partner Dr. Eshetu Mengistu was met to facilitate the use of Albenol boli in the study cattle in July. Furthermore, a workplan was developed for the remaining time of the project in collaboration with the student.

All in all, execution of WP 4 protocol and extension messages warrant optimization: targeted insecticidal spraying is slowly being launched but the success is threatened by scarce field visits and thus lacking re-sensitization and also by the unprofessional use of presumably cheaper alternative drugs by the farmers. Also, the study herds were not optimally treated due to misunderstandings of the schedule. The extension material has reached the area. However, billboards have been brought up in mid-January but they have already decayed because of material deficiencies. The lack of follow-up visits prevented timely replacements.

The FUB and VSF-B representatives targeted the issues as follows:

1) The utter importance of field visits as crucial implementation elements were explained to the student; an optimized field schedule was then developed which includes bi-monthly extension visits and bi-monthly health check-ups for the study herds to be implemented asap.

2) It was stated that targeted spraying of the study animals and tick counts must be performed by the NAHDIC team. The spraying committee should handle private sprayings only. The committees must be trained to document sprayings with a registrar for instance. Therefore, extension services should emphasize community-based targeted spraying. Owners of the model herds should be sensitised to fully play their role by bringing their remaining animals (non-experimental animals) to be sprayed by the spraying committees.

3) For support of the student, the team leader Abraham Muanenda of the District Veterinary Post in Wolkite was assigned to carry out the bi-monthly field visits along with other stakeholders (District Veterinary Officer DVO, animal health assistant, private veterinarians and farmers’ leaders). He will be supported by the PhD student once a month. Abraham Muanenda will be provided with some templates for reporting and expenditures justification. On a fortnightly basis, NICETT will send to the District Veterinary Post the budget for a 5 days’ extension trip. This trip should be properly reported and justified before the next one.

4) The public veterinary service, which comes along on field visits with the TRYRAC team, should deliver services that comply with rational drug use principles. Treatments contrary to the project philosophy are disturbing the dissemination of the message.

5) Extension tools and material must be controlled immediately and faulty material has to be exchanged.

6) The deltamethrin-based product SMASH should be made accessible to the Ethiopian market; results of this project will be communicated to Tagros Ltd. in order to prove to them that there is a demand.

7) The albendazole-based product ANALGON[®] by vetoquinol should be tested in the study herds by via faecal egg count reduction testing [7]. Unfortunately, other locally available products were revealed as inefficient.

Further monitoring of WP4 field activities in Wolkite is planned for July 2016 and for the final biological evaluation of the best-bet strategies in October 2016 to be executed by the FUB.

4. VSF-B and NICETT meeting on the ongoing partnership agreement and financial matters

The meeting was attended by VSF-B representative, NICETT Director and Tilahun Tekle, the TRYRAC PhD student. During this meeting, the partnership agreement between the 2 institutions was quickly reviewed and some specific points were raised. The main point was on the justification of expenditures. Indeed, during the last quarter of 2015, there were some misunderstandings in the justification of travel expenditures, by NADHIC and NICETT staffs, for the implementation and supervision of the extension activities. These misunderstandings have led to the rejection by VSF-B of expenditures equivalent to 9.000 Birr due to ineligibility. Following the exchange it was agreed that VSF-B will be informally informed by email about every mission planned in the framework of the extension activities. An order of mission should be prepared and signed by the NICETT Director before every trip to Wolkite and expenditures sheets provided by VSF-B will be used. A brief report based on a template provided by VSF-B will be produced at the end of every mission. Some budget lines (transportation, office supplies, and airtime) that were not used since the signature of the agreement was also discussed. It was agreed that these budget lines will be exhausted by the end of the agreement (end of May 2016).

Due to heavy workload of the PhD student it was discussed the need to find additional support for an efficient implementation of the extension activities.

During the meeting, NICETT reported that most of the billboards' posters have fallen down due to the bad quality of the glue used. Moreover, some billboards have also fallen down. It was therefore decided to meet the provider Company in order to discuss and solved these issues as soon as possible.

The budget and planning for the two remaining months (April and May 2016) were drafted by VSF-B representative and shared and validated with the PhD student. The budget was also explained line by line to NICETT account. Emphasis was put on the reporting and communication lines and the justification of the expenditures. For this purpose, VSF-B expenditures' sheets were shared with NICETT

The partnership agreement is ending in May 2016 and will be renewed. It has to be noted that Dr Cherenet has been appointed as adviser in the Ministry of Agriculture and is no longer NICETT Director. He remains TRYRAC focal point but the renewed agreement will be signed between VSF-B representative and the newly appointed NICETT Director.

5. Monitoring rational drug use, strategic deworming, targeted vector control and extension delivery in Guraghe

5.1 Monitoring spraying of the study animals and the crushpen committees

Borer and Hudad were visited on one day each to meet and inquire about the crushpen committees and for some extension delivery and to interview farmers about the general impression of the project and its contents.

In Borer, the crushpen committee of Borer 4&5 was met. It consists of Gadisa Deriba and Yirga Mekonne who are sprayers. Further members are the farmer leader Waltenege who is the chairman and Abdurahman Kemal who is the cashier. Spraying is being delivered at 5 Birr per animal. At the same time, the committee is in charge of spraying the study animals each 14 days at the beginning of July until mid-August. There are no records if the animals have actually been sprayed. The product SMASH seems to be used for the study animals

and the privately sprayed ones. The farmers understand well the system of revolving funds but an actual adoption of the system seems questionable which is also due to the fact that SMASH is not yet available on the market.

Clothing, insecticide and knapsack sprayer had been delivered to the committee, so that they are well equipped. The spraying itself was carried out technically correct. It was monitored on a training basis, where 20 litres of deltamethrin solution were applied to approximately 25 animals. Currently, insects and ticks were not perceived as a nuisance at the time of the visit because the short rainy season had just started.

Yet, farmers were reluctant to spray their animals in spite of a perceived tick and biting fly problem during the big rainy season. Although the farmers knew about targets which were supplied by previous projects that killed tsetse, the link between spraying the herds and protecting the watering sites is not yet made. This knowledge could be an opportunity to explain the effect of insecticide treated herds that act as living targets at the rivers.

However, this approach is threatened by a new development in the project region. Apparently, farmers purchase a product for 6 Birr on the market which they dilute and use for "many animals". But a spraying by the committee costs 5 Birr per animal at the moment. The other product is applied with a cloth to the legs and lower belly of the animals. Farmers reported a sudden reaction of ticks dying immediately after application. Such a product could not be found on the market because it seems only available during the long rainy season. It is suspected to be Amitraz according to the private veterinarian Yohannis. But Amitraz is not effective against flies; so its dramatic effect on ticks is threatening the approach of using deltamethrin-treated animals as targets.

Also, public and governmental veterinarians are aware of problems with a different SMASH product (Deltamethrin, unknown dilution): an experimental trial that took place some years ago resulted in hair loss and general poisoning in cattle. Thus, acceptance of the revolving funds system with the private vets as possible suppliers of the new SMASH product (5% Deltamethrin) will be a challenge. However, farmers are reporting that the calves that are treated and surveyed by TRYRAC are healthier and "free of ticks". Thus, in order to reach some sustainable impact, extension messages must make clear that such a product will not be efficient against tsetse.

In Misreta, three teams of two sprayers and one cashier each were met. They all share one chairman who coordinates the work between the communities Wolaita, Misreta and Wuhalamat. Abye Chane, Zewdu Gonfa, Mekonnen Gashaw, Tesfu Zigdi, Michael Mano and Tefkir Ayalew are sprayers, whereas Abebe Kasahun, Gebnet Gutema and Girma Kemaw are cashiers.

As in Borer, the health of the study animals was praised but sustainability is threatened by a lacking sensitization. Up to now farmers do not link the improved health of their animals to the implementation of rational drug use by skilled personal. They have not yet made the link to the efficiency of the approach which would also work independently of the project. According to the interviewed farmers the improved performance seems to be linked to the presence of NAHDIC/VSF and FUB.

The community expressed their need to protect donkeys from Trypanosomosis. Donkeys are used for water transport especially during the dry season when wells dry out. Usually donkeys are more resistant towards the disease but the exposure to infective tsetse bites is

increased during the dry season when rivers are used as water reservoirs where donkeys spent up to an hour waiting in the water until the barrels are filled. After the meeting some farmers had their donkeys sprayed by the crushpen committee to protect them against biting insects.

Figure 1 Spraying cattle in Misreta, April 2016



Also, farmers complained about the fact that they were left on their own for too long. This problem was tackled by the development of an improved treatment calendar (Table 3) which was developed in collaboration with the student and the public veterinarians. It was communicated that a correct execution of the best-bet strategies is the basis of following extension messages and that the implementation had to be executed by the Ethiopian team instead of the farmers to assure a correct implementation.

All in all, the program is just slowly starting to show effects and the remaining time between April and October 2016 and beyond should be used for intensive extension services in order to reach sustainability.

Table 3. The optimized prophylactic calendar

	TREATMENTS / VACCINATIONS / DEWORMING PERIODS														
	<i>SHORT RAINY SEASON</i>			<i>SHORT DRY SEASON</i>	<i>LONG RAINY SEASON</i>				<i>DRY SEASON</i>						
															
Treatment / Immunization / deworming	II February	III March	IV April	V May	VI June	VII July	VIII August	IX September	X October	XI November	XII December	I January	Explanations (not on print-outs)		
Curative treatment of trypanosomosis to sick animals only at 7 mg diminazene/kg															Curative treatment: treat sick animals only with an elevated dosage of 7 mg diminazene/kg), improved management
Vaccination against Lumpy skin disease															When cases occur
Vaccination against Blackleg															
Vaccination against Anthrax															When cases occur
Vaccination against bovine pasteurellosis															
Deworming															Deworming mainly at the beginning and the end of the long rainy season. Deworming also in the short rainy season only if it rains
Ectoparasites control (every 14 days at the beginning of the rainy season; spraying in the dry season helps to reduce tsetse at watering places)														Targeted spraying every 14 days at the beginning of the long rainy season (June and July). Animals at risk depending on contact with tsetse habitat should also be sprayed in other months (February, March, November, December, January)	

5.2 Monitoring the delivery of extension messages

All extension tools were printed in November 2015 and distributed to the different stakeholders. Billboards were produced but with the default that they had one face and not two as forecasted. Billboards were therefore repaired and placed in the 5 hotspots in January 2016.

During the mission it was noted that some extension tools are not properly exposed to contribute to the dissemination of messages. For instance, posters on prophylaxis calendar targeted spraying and formal drug use vs informal drug use were not placed in the clinic of the veterinarian in Walga, although he received them.

Some interviewed farmers declared to have listen TRYRAC messages on EBC radio while others did not hear them. The broadcasting frequency (once a week) does not seem to be appropriate to reach most of the farmers.

SMS messages were also sent by Ethio Telecom to 250 people including the student. The messages were sent in Amharic languages using English alphabet. However, it is too soon to assess the scope of this approach of dissemination of the best-bet strategies.

Since December 2015, only 2 extension missions were conducted by the multidisciplinary team (student, DVOs, private vets and farmers' leaders). Things were not forecasted as such and this scarcity of extension missions will not contribute to an effective appropriation of the best-bet strategies by farmers. Insofar as the student said that he is overloaded, it was agreed to give more responsibility to the district for the dissemination of the best-bet strategies. A meeting was therefore organised with the team leader of the district (Abraham Muanenda) to discuss their potential support for the dissemination of the best-bet strategies. Following the exchanges, it was agreed that Abraham will be the field coordinator of the extension activities in Wolkite, under the support and supervision of the student. The extension team will also be extended to the Animal Health Assistant based in Hudad and Borer for more sustainability.

During this mission, two extension meetings were conducted in Borer and Hudad in the presence of the district veterinarians and the student. The mobilisation was not very successful because farmers were informed one day before the meeting and the 2 private vets did not show up. Farmers' Knowledge and practices on trypanosomosis management were firstly assessed, particularly in Borer, before starting the extension activities. It was noted that the farmers are very well aware about the disease insofar as they have collaborated with several projects under ILCA (a former project by ILRI which included distribution of insecticidal pour-ons to the farmers) or other institutions. However their way to control the disease (purchase of drugs from the marketplace, treatment by themselves...) is not in adequacy with the best-bet strategies promoted by TRYRAC. The picture box was then used to sensitise them on the pillars of the best-bet strategies: rational drug use, vector control by a targeted spraying and disease control in general through strategic deworming, vaccination and so on. The extension strategy used is to let them give at first their own interpretation of the pictures, page by page, before giving them the extension messages. They were also allowed to ask any question or to bring some contributions or issues. The extension meetings were facilitated by VSF-B representative and the student in Borer and Hudad respectively and in the presence of district representatives.

During the visits in Borer and Hudad, it was noticed that 3 billboards fell down 2 months after their placement. This is due to the fact that, following the repairing made in December 2015; the boards are now too heavy and cannot be supported two legs which are also too tall. The posters

also fell down. A meeting was therefore planned with the provider “Timber Company” to solve these issues.

5.3 Meetings in Addis Abeba

a) Dr. Eshetu Mengistu of Access EthioPharm was re-introduced to the student for purchasing ANALGON[®], the vetoquinol albendazole product. The product has been ordered but is currently held back due to country-wide shortages of foreign currencies. This is a common procedure and the product should be available by mid-April. The student will purchase this product for the field mission in July 2016. Another egg-count-reduction test [9] will be performed on 50 animals of the study herd.

b) Dr. Oumar Diall of the FAO was met to discuss possible continuation of the TRYRAC activities within a pilot project of the FAO and the Ethiopian government for which the design is ongoing and intervention areas have not been selected yet. A potential support from FAO to implement Pastoral Field Schools in the framework of TRYRAC’s dissemination of best-bet strategies has also been discussed. The willingness of VSF-B and FUB and FAO to collaborate with TRYRAC for sustainability reason was assured and all parties agreed to elaborate discussions with NICETT.

c) Manager of Timber Company

The manager of Timber Company was met twice to discuss issues related to fallen billboards and posters. He agreed that the glue used to fix the posters on the billboards was of bad quality. He agreed to reprint the 20 posters and fix them at his own expense. The manager requested more money to repair the billboards what VSF-B found illogical and unacceptable since they did not stand more than 2 months. Considering all the troubles we have gone through, NICETT decided to hire someone else to repair the billboards as soon as possible. However the posters will still be reprinted by Timber Company for free.

d) Ethiopian Broadcasting Company (EBC)

Two EBC staffs were met to discuss about the partnership between the company and TRYRAC for the broadcasting of extension messages. The cost of broadcasting interviews (20 min) and short messages (5 min) was discussed and was found very expensive by VSF-B. Indeed, no matter the duration (20 min or 5 min) the broadcasting cost is 4,600 birr (around 191 EUR for one broadcast). It was therefore decided to only keep the interviews’ broadcastings.

e) A debriefing with Thomas Cherenet, the country co-ordinator was held in order to discuss the outcomes and recommendations after the field trip to Wolkite. The team discussed the new field calendar, the identification of Abraham Muanenda as field coordinator of the extension activities and the improvement of billboards. Also, the FAO project was discussed.

6. Recommendations & Outlook

- Field visits have to be executed as indicated in the prophylactic calendar.
- The study herds have to be treated by the team and the PhD student Tilahun Tekle and not by the farmers.
- The farmers and veterinarians should be sensitized twice per month in training missions conducted by a multidisciplinary team.
The DVO's team leader Abraham Muanenda will lead the missions and he will be supported by the student once a month. The team has to make sure that farmers are informed well before the meeting by involving the village administrator so as to increase attendance.
- All Billboards should be replaced / repaired as soon as possible. This is to do as soon as possible before the fallen ones rot.
- Billboards' posters should be reprinted by Timber company at their own expense
- The revised prophylaxis calendar should be reprinted in sticker form and placed into the pictures' box
- The small poster should be properly placed in the partners offices (District veterinary offices, vet drugs store, village administration offices...) to contribute to the dissemination of messages

Further WP 4 missions are planned for April and July of this year. More extensive visits for bi-monthly targeted spraying, following tick counts and another egg count reduction test for the new albendazole product will take place in July. The last field visit is scheduled for biological evaluation of the program is planned.

7. Acknowledgements

We would like to thank everyone who facilitated this mission. First of all we are grateful for the help of Thomas Cherenet and Tilahun Tekle who organized the mission at field level and who mobilized the farmers for meetings. We also like to thank the DVO of Wolkite and his team leader Abraham Muanenda for supporting TRYRAC in Wolkite for providing their hard work. Also the support of the two private veterinarians Yohannis in Darge and Tesasu in Walga is highly appreciated. After all, this mission would not have been possible without the eager support of the farmer leaders, the newly established crushpen committees and all of the farmers of our study villages in Abeshege who never fail to listen to and discuss with us.

8. Reference list

1. Mungube EO, Diall O, Baumann MP, Hoppenheit A, Hinney B, et al. (2012) Best-bet integrated strategies for containing drug-resistant trypanosomes in cattle. *Parasit Vectors* 5: 164.
2. Bauer B, Amsler-Delafosse S, Clausen PH, Kabore I, Petrich-Bauer J (1995) Successful application of deltamethrin pour on to cattle in a campaign against tsetse flies (*Glossina* spp.) in the pastoral zone of Samorogouan, Burkina Faso. *Trop Med Parasitol* 46: 183-189.
3. Zinsstag J, Ankers P, Dempfle L, Njie M, Kaufmann J, et al. (1997) Effect of strategic gastrointestinal nematode control on growth of N'Dama cattle in Gambia. *Veterinary parasitology*, 68(1-2):143-153.
4. Bath GFM, F.S; van Wyk, J.A. The "FAMACHA" ovine anaemia guide to assist with the control of haemonchosis; 1996; Port Elizabeth, South Africa.
5. Grace D, Himstedt H, Sidibe I, Randolph T, Clausen PH (2007) Comparing FAMACHA eye color chart and Hemoglobin Color Scale tests for detecting anemia and improving treatment of bovine trypanosomosis in West Africa. *Vet Parasitol* 147: 26-39.
6. Hoppenheit, A; Delespaux, V. (2014) Training WP 4 activities in the Guraghe zone, Ethiopia. June 10- 17 2014. mission Report
7. Delespaux V (2014) Extraordinary PMC meeting Antwerp.protocol
8. Hoppenheit, A; Delespaux, V. (2015) Training WP 4 activities in the Guraghe zone, Ethiopia February 22- March 6, 2015. mission report
9. Hoppenheit, A; Bauer, B; Delespaux, V. (2015) Implementing WP 4 activities in the Guraghe zone, Ethiopia. July 06-10, 2015. mission report
10. Faye, D. (2015) Supervision and support mission of TRYRAC best bet strategies' dissemination activities in Ethiopia, 22th to 28th November 2015.mission report
11. Coles GC BC, Borgsteede FH, Geerts S, Klei TR, Taylor MA, et al. (1992) Methods for the detection of anthelmintic resistance in nematodes of veterinary importance. *World Association for the Advancement of Veterinary Parasitology (WAAVP): Veterinary Parasitology*. pp. 35-44.