



**Follow-up mission in the framework of GRIPAVI**  
**« FSP Ecologie et épidémiologie de la grippe aviaire dans les pays du Sud »**

# Ethiopia

*16 March – 20 March 2009*

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**Résumé:**

La présente mission a été effectuée dans le cadre du projet «Ecologie et épidémiologie de la grippe aviaire dans les pays du Sud» visant à étudier les dynamiques des pestes aviaires – influenza aviaire hautement pathogène et maladie de Newcastle – et à renforcer les méthodes de surveillance et de contrôle de plusieurs pays africains. L’Ethiopie, bien qu’indemne de grippe aviaire hautement pathogène due au virus H5N1, est un haut lieu stratégique de surveillance de cette maladie du fait de la présence de nombreux oiseaux migrateurs dans les lacs de la Vallée du rift. L’aviculture villageoise en Ethiopie joue un rôle essentiel dans la réduction de la pauvreté et dans le maintien de la sécurité alimentaire des familles rurales. Ainsi l’introduction et/ou la diffusion de maladies aviaires hautement pathogènes dans un pays comme l’Ethiopie peuvent avoir des conséquences dévastatrices non seulement sur l’industrie de la volaille mais également dans le domaine de la santé publique.

Cette mission avait pour objectif double de tout d’abord préparer les conditions institutionnelles (lien avec le NAHDIC, le NVI) et matérielles de l’accès au terrain de Melle Vallée, (voiture, interprète, autorisation,...), et de finaliser les outils de collecte et de saisie des données (questionnaires, échantillonnage, base de données,...).

La deuxième convention, pour les activités de recherche du PhD et celle de l’étudiant en Master, a été discutée au cours de la mission et un accord a été trouvé. Il a été décidé que le NAHDIC co-encadrerait et donnerait son aide matérielle et scientifique, pendant une période de 3 ans, au Dr Hassen Chaka.

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**Key words** Ethiopia, HPAI, GRIPAVI, NCD

**Summary:**

This mission was realised within the frame of the project ‘Ecology and Epidemiology of Avian Influenza in Southern Countries’ which aims at studying the dynamics of avian diseases – Highly Pathogenic Avian Influenza and Newcastle disease - and strengthening the surveillance methods and the control strategies of several African countries. Although Ethiopia is free from HPAI H5N1, it represents a strategically important surveillance site for this disease, as it encompasses the Rift Valley lakes where lot of migratory birds is nesting during winter time. Poultry farming in Ethiopia of traditional low input systems which play an important part in the poverty reduction and food safety of rural families. Thus the introduction and/or the dissemination of highly pathogenic diseases in a country as Ethiopia could have devastating consequences not only on poultry industry but also on the field of the hunger relief and public health.

This mission had a double objective, first of all to prepare the institutional conditions (relationship with the NAHDIC, the NVI) and practical conditions of the access to the field of Miss Vallée, (car, interprets, authorization,...), and to finalize the tools of data collection and acquisition (questionnaires, sampling, bases data,...). The second convention, for the activities of research of the PhD student and the student in Master, was discussed during the mission and an agreement was found. The NAHDIC is committed to co-supervise and give material and scientific assistance, for a period of 3 years, to Dr HASSAN CHAKA

## Acronyms

CVO: Chief Veterinary Officer

FAO: Food and Agriculture Organisation

FVM : Faculty of Veterinary Medecine (Debre Zeit)

ILRI: International Livestock Research Institute

IFPRI: International Food Policy Research Institute

MoARD: Ministry of Agriculture and Rural Development

NAHDIC: National Animal Health and Disease Investigation Centre

NVI: National Veterinary Institute

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## Schedule:

### **16/03/09: Arrival at Addis Ababa – 19:10**

- Work planning preparation (F. Goutard & E. Vallée)

### **17/03/09: Addis Ababa – Sebata**

- Departure for Sebata
- Meeting with Dr M. Shale (NAHDIC)
- Discussion with Dr P. Caufour (CIRAD)
- Meeting with Dr M. Balcha (NAHDIC)
- Meeting with Dr H. Chaka (NAHDIC – PhD CIRAD)

### **18/03/09: Debrezeit**

- Field trip with E. Vallée (Master Student) in order to test questionnaire
- Visit of markets
- Visit of NVI, discussion with Dr Martha Yami (Director NVI)
- Work discussion with Dr H. Chaka, and E. Vallée about the research protocol

### **19/03/09: Addis Ababa**

- Meeting with Dr Gebreegziabher (CVO – Ethiopia)
- Meeting with Dr Ygezu (SPS-LMM – USAID)
- Meeting with Mr. Perron (SCAC)

### **20/03/09: Addis Ababa – Sebata**

- Departure for Sebata
- Debriefing of the mission with Dr M. Shale (NAHDIC)
- Work discussion with E. Vallée
- Departure

## Detailed report on the mission

### **1. GRIPAVI: appraisal of activities**

- The NAHDIC produced the details records and original receipts for the payment of the last 20% of the previous specific agreement. The documents will be transmitted to the financial department of CIRAD.
- The second specific agreement of 50 700 Euros has been discussed in depth with Dr Melesse and Dr Mesfin. Several points were agreed:
  - Dr HASSAN CHAKA will be involved in the activities described in this document. The PhD student will be a NAHDIC employee during the project implementation period (3 years) and has to be fully dedicated to GRIPAVI activities.
  - The project will cover i) Dr HASSAN CHAKA allowance and ii) a receiving fee during the period of effective presence in Ethiopia without any other justification. Contributions to core budget and/or top up salary are not allowed by the funding agency and NAHDIC will manage on its own and sole discretion these issues with the related total contribution.
  - NAHDIC will provide Dr HASSAN CHAKA under the receiving fee with an equipped office and will cover its running costs (electricity, communication, stationary...). The research costs themselves (in the field and for diagnostic purpose) will be covered separately by the project.
- Dr MELESSE BALCHA has been designed as coordinator of the project for NAHDIC. His main duties will cover:
  - Facilitate the work of Dr HASSAN CHAKA
  - Facilitate the implementation of activities which are not going to be directly implemented by the PhD student (organisation of technical missions of CIRAD, longitudinal follow-up of markets, financial and technical reports)
  - Responsibility to clear out or facilitate the early clearing out of materials from the airport and Custom's authority
  - Coordinate and lead the laboratory tests being done at NAHDIC as part of the GRIPAVI research activities and will submit the report on the findings on time

The coordinator is expecting to spend at least 1 day per week to the project coordination and to the follow up of laboratory analysis.

- In order to facilitate the field work the NAHDIC will assure the reparation and the maintenance of a second vehicle belonging to the NAHDIC. Dr HASSAN CHAKA will use the NAHDIC vehicle for his field study, all the vehicle running costs (fuel, maintenance, repairs, tyre) will be cover on real cost basis. A register describing the destination, the mileage covered the name of the driver and the purpose of the trip has to be filed for any trip under the project activities.
- A vehicle and a driver have been assigned to Dr Goutard and E. Vallée for the duration of the mission.

### **2. GRIPAVI: PhD student**

- To do this, the NAHDIC is committed to co-supervise and give material and scientific assistance, for a period of 3 years, to Dr HASSAN CHAKA, during the whole duration of his PhD with effect from December 1<sup>st</sup>, 2008.
- NAHDIC will provide Dr HASSAN CHAKA under the receiving fee with an equipped office and will cover its running costs (electricity, communication, stationary...). The

- The related tuition fees for the registration of Dr HASSAN CHAKA at Pretoria University, the insurance costs as well as additional training modules in epidemiology and all other related costs during his stay abroad will be taken in charge by the project
- Dr Chaka is registered at the faculty of Pretoria since January 2009..

### **Objectives of his PhD:**

Identification of the most important factors influencing the spread of NCD infection between backyard chicken in Ethiopia and developing simulation model of transmission which could be used to improve control programme in case of NCD outbreaks and in case of H5N1 introduction in Ethiopia.

- To estimate the prevalence of NCD at backyard production level and at market level (cross-sectional survey)
- To identify risk factors for NCD at the farm level (case-control, repeated cross sectional survey or cohort);
- To identify the role of market in the diffusion of the disease and develop a meta-population model of the between-flock (village) transmission of NCD.

### **GRIPAVI: Master student**

- A master degree student, E. Vallée, will in Ethiopia for 5 months to undertake a study on poultry trade. The title of her study is: **“Exploring trade patterns and contact structure of poultry movement in Oromia Region, Ethiopia, to determine potential role of markets in the spread of NCD between villages”**.
- Dr Goutard is her direct supervisor and she will be supervised by Dr Duboz for the modeling aspect of her study. For NAHDIC, as a GRIPAVI coordinator Dr Melesse, will be her supervisor for the duration of her field study in Ethiopia.
- The objectives of this training are to describe poultry flows between markets and some villages.
- The data that she will collect will be used to make a study using Social Network Analysis approach. This method, which is quite new in epidemiology, was used to describe contact structure and spread of STDs. It is based on a network approach, considering links between individuals which are seen as “nodes”. This network is then used to calculate some parameters which can give information on how the nodes are connected, the intensity of the connection, etc. In animal epidemiology, we use this network considering a disease, and a link symbolizes an infecting contact between two animals or group of animals. Thus, if we know all this contact, we can model how the disease could spread, using S-I-R models. We can also identify premises or animals with many links, on which the surveillance must be targeted. It could also be useful to make a link between this network and the prevalence of a disease in each node, to know more about the disease spread and its epidemiology. She will work in the same area than Hassan Chaka for his PhD. Markets and villages will be selected using snowball sampling
- Calendar: Her work will be separated between field work and review work. The first part of field work will begin as soon as possible after Tuesday, March 24<sup>th</sup>, and will finish on June 5<sup>th</sup>. She will be in Addis Ababa between June 6<sup>th</sup> and June 22<sup>nd</sup>, for review, and to give a first feedback on my work to NAHDIC. Then she will finish the field study between June 22<sup>nd</sup> and July 17<sup>th</sup>. Then she will be back to Addis Ababa to write my training report and to give a final restitution of my work, before going back to France on the 31<sup>st</sup>.

- Bibliographical work, the exploratory interviews and investigations carried out during the mission made it possible to specify the necessary data to build our indicators and consequently to adapt the questionnaire which had been preestablished in Montpellier. The questionnaire thus worked over again was validated by Nahdic (Hassen Chaka) at the end of the mission.

### **Conclusion: schedule of next activities**

End of March:

- Finalization of the second agreement and signature
- Starting sampling at markets

June:

- Registration of Dr H. Chaka to the international congress ISVEE in Durban
- Mission of Dr Goutard to supervise the work of E. Vallée

July:

- Going on with the market field study
- Restitution of the work of E. Vallée at NAHDIC
- Invitation letter for South Africa and France

August:

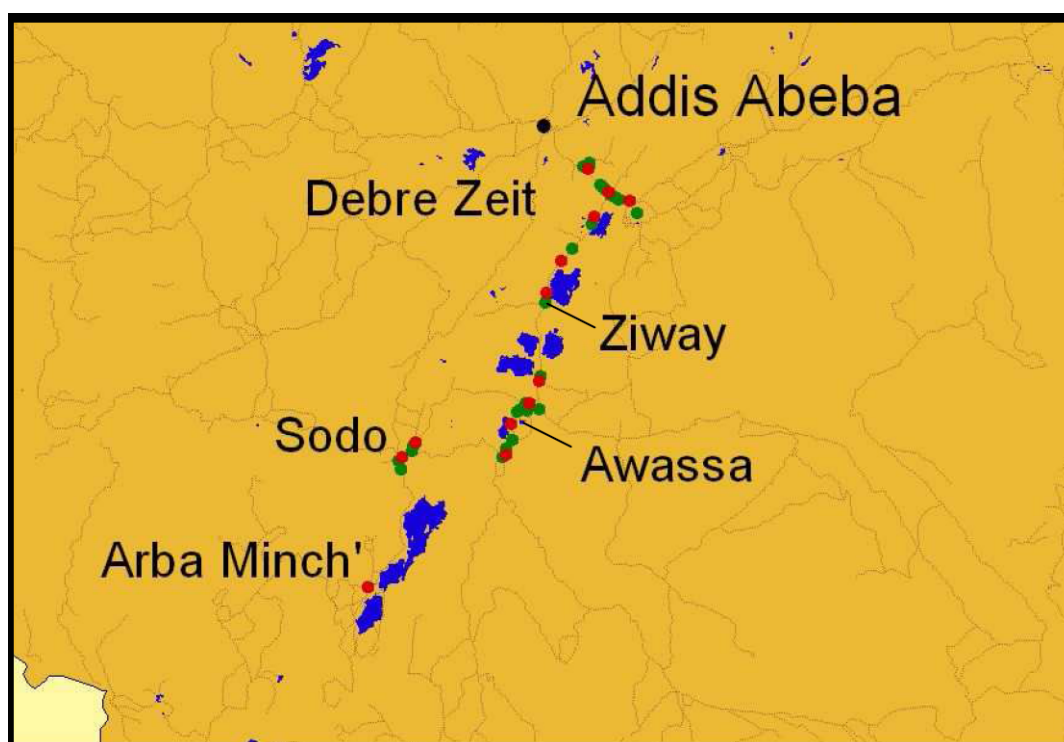
- Going on with the market field study
- ISVEE – Durban



## AREA of Research Activities – GRIPAVI - ETHIOPIA

Zone	Woreda	Ville
Addis Abeba City	Addis Abeba City	Merkato, Shola/Yeka, Gergi, Kotebe, Kera, Saris, Asko, Ferensay <i>Legasione</i> , Zenebe Work, Akaki, Roupphaël, Tcharkos, Aware, Addisu Gebeya, Efoyita Gebeya
East Shewa	Adama	Adama
	Ada'a Liben Chukala	Debre Zeit
	Lome	Mojo
		Koka
	Dugda Bora	Meki
	Adami Tulu Jido Kombolcha	Ziway
	Arsi Negele	Arsi Negele
Shashemene	Shashemene, Alelu Ilu	
Sidama	Shebedino	Leku
Awassa Municipality	Awassa Municipality	Awassa
Welayita	Sodo Zuria	Sodo
	Damo Gale	Boditi
Gamo Gofa	Arba Minch' Zuria	Arba Minch', Chano Mile

Markets visited by Marie-Marie Odile in 2007



Map of the visited markets and villages

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