

---

# ACACIAGUM

Innovative Management of *Acacia senegal* trees to improve land productivity and Gum Arabic production in Arid and Semi Arid Sub-Saharan Africa

---



NEWSLETTER No. 1/MAR 2009

---

---

Welcome to the second issue of the ACACIAGUM Newsletter.

In this newsletter there will be a summary of the ACACIAGUM meeting in Isiolo, Kenya in November 2008 and profiles of some of the Masters and PhD students on the ACACIAGUM Project. The rest of the students will be featured in our next newsletter.

---

Dear All,

It is my pleasure to introduce the second issue of the ACACIAGUM's Newsletter mainly dedicated to the presentation of part 1 of the students involved in the project. For the consortium, it is important to invest time and money on the training of young people through supervisions of MSc and PhD students in Africa and also in Europe. The project is facilitating the exchange between Europeans and Africans teams and most relevant is the experience in Senegal where Wageningen University has placed a MSc student in Senegal to work in close collaboration with Mrs Astou Sene, a PhD student, a researcher of ISRA-CNRF and Ms Gaudiose Mujawamariya. Gaudiose will visit the Senegalese team in the framework of the PhD she is undertaking. (Work Package 2). A similar arrangement will be made in Kenya in 2009 with KEFRI and Wageningen University and hope this will also be a success.

In November 2008, KEFRI organized the second annual meeting of the project out of Nairobi in the Isiolo District, where the production of gum arabic is very important. In addition, very few participants had been to East Africa, and those who have may not have been to Isiolo. A one-day field visit was therefore organized to provide the opportunity to see the 3 *Acacia senegal* subspecies naturally existing in Kenya; *A. s. subsp. senegal*, *A.s. subsp. keriensis* and *A.s. subsp. leiorachis*. This was a unique opportunity and was very interesting for both European and West African participants. However it was unfortunate that the team from Cameroon were not able to attend the meeting due to visa issues.

Wishing you the best for the upcoming year of activities and enjoy your reading. Best regards,

Didier Lesueur

Scientific Coordinator of the ACACIAGUM project

Annual meeting of ACACIAGUM Isiolo, Kenya, 2008.



The second annual ACACIAGUM meeting was held at Bomen Hotel Isiolo, Kenya from 25<sup>th</sup>-27<sup>th</sup> Nov 2008. Isiolo is a small town in the arid Northern part of Kenya 260 km from Nairobi and was selected so that the participants could see, during a one-day field visit to Isiolo and Meru Districts, the 3 varieties of *Acacia senegal* and experience the Kenyan drylands.

The meeting was opened by Dr. David Odee on behalf of the Director, KEFRI. Opening remarks were made by the CIRAD Representative in Eastern Africa, Dr. Denis Depommier. The Coordinator, Dr. Didier Lesueur then made a presentation on the overall and specific objectives of the project and outlined the expected results of 2008. The meeting was attended by 30 participants amongst them Kenyan MSc and PhD students representing all Work Packages and participating institutions in the ACACIAGUM project.

Presentations made by Work Package leaders and the researchers were very relevant and it was important to get comments from local stakeholders, farmer associations and the private sector working in drylands in Kenya and dealing with gum arabic. For the project it means that the scientific results obtained can be openly shared with all the stakeholders in the gum arabic sector.

All the Work Package leaders are in accordance with the timeframe described within the project. This is very important for the project because after the administrative problems during the start of project activities, all the participants at the kick-off meeting agreed that it was important to deliver the expected results in time. The annual report is being finalized and it is hoped that the Project Officer will be satisfied with the results achieved so far. At the end of the meeting, it was agreed that the next annual meeting will be held in Senegal in November 2009.

### Oumarou PALOU MADI

PhD: Introduction of gum producing acacias in farming systems in North-Cameroon, socio-economics constraints, University of Toulouse.



During a survey on women who pick gum in a village of North-Cameroon  
(In the Chief of village house)

#### Work completed:

- Selected sites of study
- Data-gathering on traditional knowledge of the *Acacia senegal* and gum Arabic uses,
- General characteristics of the actors and gum Arabic chains in Cameroon.

#### Theoretical work

- Bibliography carried out to 40%
- Protocol of research consolidated to 40%
- First presentation of work at the committee of thesis planned for December 2008

### Gaudiose Mujawamariya

Ph.D. The role of institutions in gum arabic supply chains performance in Kenya and Senegal. , Wageningen University

---



My research within the ACACIAGUM Project relates to the structure and performance of the gum arabic marketing networks and livelihood strategies of *Acacia Senegal* farmers. The aim of the research is to contribute to the sustainable management and use of natural *Acacia Senegal* tree resources. Three topics will be the focus of my research:

(1) property rights for the ownership, use and management of land and *Acacia Senegal* tree resources and their impact on gum production;

(2) producers' market behaviour and value distribution along the gum arabic supply chain, and  
(3) experimenting the implementation of quality standards at producers' level.

The next two years will be a time for fieldwork in Kenya and Senegal. Primary data will be collected to supplement existing databases on general livelihoods, and on gum arabic production and marketing. All these data will be analysed and results from the analysis are to be used to formulate appropriate policies.

The supervision at Wageningen University and collaborative partnership in Kenya and Senegal in particular and the ACACIAGUM Project Coordination in general will guarantee the successful conduct of the research.

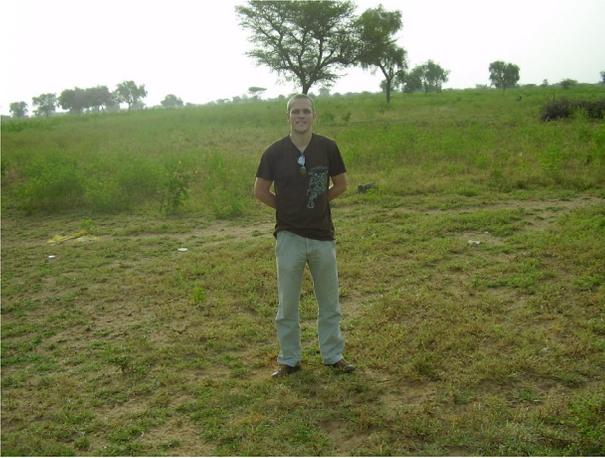
---



Joost Hamelink

Msc. Bargaining and coalition forming in gum arabic supply chain in Senegal ,  
Wageningen University

---



After several months of preparation for my internship, I arrived in Dakar in September. I'll spend six months in Senegal, collecting data for my MSc thesis. This thesis is the concluding part of my studies in International Development at Wageningen University in The Netherlands.

The objective of my research is to examine the bargaining process between producers and traders of gum arabic in Senegal. In particular, the research aims to study the effects of coalition forming on price negotiations. I also hope to gain additional insights on the process of coalition forming.

In October I had my first field trip to the Northern region of Senegal (near Dahra). I visited some villages in order to get to know the situation of gum arabic production and marketing. It was an opportunity to test my methodology; the next trips to the region will be related to intensive data collection.

---



*A. senegal* var. *leiorachis*, Kula Mawe, Kenya.  
One of the three varieties of *Acacia senegal* in Kenya

Stephen Fredrick Omondi

MPhil: Effects of genetic diversity in Kenyan population of *Acacia senegal* on gum arabic production, Moi University.

---



### General objective

To understand the extent of genetic diversity and population structure of the commercial gum arabic producing variety of *Acacia senegal* in Kenya and how this affects gum production to provide technical information for both conservation and improvement programs.

### Specific objectives

1. To survey microsatellite markers of close relatives of *Acacia senegal* for cross amplification
2. To assess genetic diversity in *A. senegal* variety *kerensis* populations in Kenya using microsatellite markers.
3. To determine the population structure existing in *A. senegal* variety *kerensis* populations in Kenya based on microsatellite markers.
4. To evaluate recent population bottleneck in the Kenyan populations of *A. Senegal* variety *kerensis*

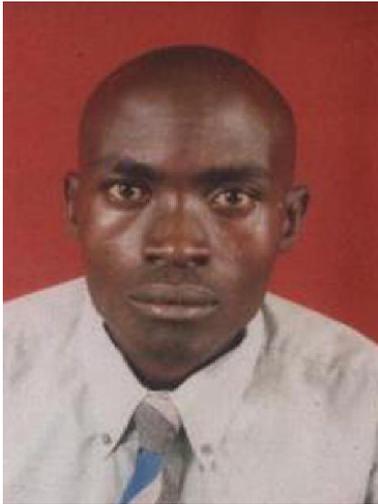
Work done: Genetic diversity and population structure of *Acacia senegal* in Kenya

Findings: Higher genetic diversity was realized in all the populations and no differentiation among the populations, suggesting random mating systems of individuals with high levels of gene flow.

## Chemuku Wekesa

Msc: Traditional Ecological Knowledge and The Effects of Tapping and Biophysical Environment on Gum Yield and Quality in Isiolo District, Kenya, Moi University.

---



### Specific Objectives;

1. To investigate and document traditional ecological knowledge systems in gum arabic production by the pastoral communities.
2. To determine the effect of soil water stress levels and temperature on the gum yield and quality.
3. To determine the effect of different tapping positions on gum arabic yield and quality.
4. To determine the flowering, fruiting and seeding patterns of the three varieties of *A. senegal*.

5. To make recommendations on enhancing Kenya's gum arabic yield and quality.

### Progress

Objective 1 already addressed and a technical report written. Preliminary data on objectives 2, 3 and 4 collected hence collection of data on the same objectives still an on-going activity.

---



*Acacia senegal* var *kerensis*, Isiolo, Kenya. The main gum arabic producing variety in Kenya.

M. Youssoupha Gueye IRD UCAD Dakar –  
Sénégal

---



M. Youssoupha Gueye is a Master student from the Biological Department at Cheick Anta Diop University (UCAD) Senegal. His Master research work is a part of the WP5 activities consisting of the improve of the understanding of the relationships between soil microbial communities involved in the N cycle and the capacity of *A. senegal* trees to produce gum-arabic.

The main focus of his research in this WP5 activities is on the characterization of the activities and the genetic structure of the heterotrophic microbial communities under *Acacia senegal* in Senegal before the inoculation of the mature trees.

His research investigates soil characteristics in association with *A. senegal* trees in plantations and natural populations of gum-producing *A. senegal* located in 2 different climatic regions.

He also has a particular interest in the study of the;

1. Soil chemical properties (pH, total C & N contents, total and available P contents)
2. Soil microbiological processes like the microbial biomass C, the microbial respiration, the potential net N mineralization, the potential Nitrification and the potential denitrification.
3. Genetic structure of the total bacterial community by targeting the *16S rDNA* gene, the diazotrophic community by studying the *NifH* gene and then the ammonia-oxidizing bacteria communities with the *amoA* gene.

M. Gueye will finished his Masters in February 2009.

---

The ACACIAGUM Newsletter will be published twice a year. If you have any pictures or articles on project activities kindly email [Info@ngara.org](mailto:Info@ngara.org)

For more information on ACACIAGUM contact:  
Didier LESUEUR (PhD)  
CIRAD, Dept PERSYST, UPR 80 "Ecosystems of Plantations"  
Tropical Soil Biology and Fertility Institute of CIAT,  
World Agroforestry Centre,

PO Box 30677, Nairobi, KENYA  
Phone: +254 20 722 4777  
Mobile: +254 723 916 767  
Fax: +254 20 722 4763/64  
[d.lesueur@cgiar.o](mailto:d.lesueur@cgiar.o)