
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. 1/2008

Welcome to the first issue of the ACACIAGUM Newsletter

ACACIAGUM is a regional project funded by the European Union INCO DEV 6th Framework Programme and implemented in four African countries namely; Cameroon, Kenya, Niger, and Senegal. The project provides a unique north-south collaboration where relevant expertise and resources are availed for addressing problems of food security and livelihood faced by developing countries. In addition, African scientists are combining their expertise in equal partnership with European counterparts to improve resource productivity and gum Arabic production resulting in a high quality multi-disciplinary research approach.

The overall objective of the ACACIAGUM project is to combine high gum quality with increased gum production and sustainable tree management for improved rural livelihood.

The specific objectives are:

- Documentation of traditional ecological knowledge on the management of *A. senegal* resources for various uses
- Identification of existing marketing networks and development of suitable trade chains for enhanced benefit sharing, especially among the target rural communities
- Understanding tree eco-physiology in relation to gum yield and quality
- Evaluation of genetic diversity in relation to gum yield and quality
- Understanding tree-soil interactions for improved gum quality and rehabilitation of degraded sites
- Dissemination of relevant information for informed decision making and better outcomes by target groups

The specific objectives are translated into 6 work packages implemented by participating institutions in Africa and Europe. The first five work packages (WP) are research based while WP6 ensures that existing relevant information and that generated by WP1-5 is properly packaged and availed to different stakeholders in a form that is appropriate to each of them.

The 6 Work Packages (WP) are as follows:

- WP1 Traditional ecological knowledge*
- WP 2 Marketing networks*
- WP 3 Tree eco-physiology*
- WP 4 Genetic and gum quality*
- WP 5 Tree-soil interactions*
- WP 6 Dissemination and transfer of technologies*

The Participating Institutions are:

- Departement PERSYST du Centre de Cooperation Internationale en Recherche Agronomique pour le Developpement (CIRAD), Montpellier, France
 - Kenya Forestry Research Institute (KEFRI)/The Network for Natural Gums and Resins in Africa (NGARA) Nairobi, Kenya
 - Wageningen University (WU), Wageningen, The Netherlands
 - Universite Abdou Moumouni (UNIAMEY), Niamey, Niger
 - Natural Environment Research Council, Centre for Ecology and Hydrology (CEH), Edinburgh, UK
 - Pôle de Recherches Appliquées au Développement des Savanes d'Afrique Centrale/ Institute of Agricultural Research for Development, North Centre, Agroforestry and Forestry Program (PRASAC/IRAD) Maroua, Cameroon
 - Universite Cheikh Anta Diop de Dakar (UCAD), Dakar, Senegal
 - Institut de Recherche pour le Developpement (IRD), Paris, France
 - Institut Senegalais de Recherche Agricole (ISRA), Dakar, Senegal
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A Kick off meeting for the ACACIAGUM project was held in Montpellier, FRANCE from 6-8 November 2007. There were different presentations including;

- Administrative and Financial Presentations
- Description of teams belonging to the Consortium
- Statement on the gum arabic production in Senegal, Niger, Cameroon and Kenya
- Description of Project Sites in Participating Countries
- Strategies for each Work Package including information on the students undertaking PhDs and Masters in each WP. (Detailed List given in Annex 1 of this Newsletter)



Montpellier, FRANCE, Nov 2007

Research work has begun in the different participating institutions under the respective Work Packages.

This Newsletter will feature a brief on activities of Work Package 6: *Dissemination and Transfer of Technologies*.

Brief on Activities of Work Package 6 (May 2008)

The Network for Natural Gums and Resins (NGARA) is implementing activities of WP6. The following activities have been undertaken;

- Developed a Dissemination Plan for WP6 which is being further refined and will be the guiding document for Work Package 6 activities for the project and will be shared with all other Work Packages
- ACACIAGUM Flyer designed and produced in English available on the website
- ACACIAGUM Logo designed in consultation with graphic designer in May 2008



- Visit to project sites and gum arabic stakeholders in both Kenya and Niger in May 2008;
 - Kenya 12-18th May 2008
 - Niger 19 – 24th May 2008

The above Mission had the following objectives:

- i. Discuss and finalise the draft ACACIAGUM/NGARA WP6 Dissemination Plan
- ii. Based on Dissemination Plan, map out a Dissemination Strategy for the 4 participating countries
- iii. Visit project sites and stakeholders in both Kenya and Niger, document findings and share with relevant stakeholders

A report was written for the above mission by the mission team and submitted to the WP6 Team Leader for wider circulation to various stakeholders. Other missions are planned to visit Senegal and Chad at the end of the year.



Mr. Maisharou with gum trader, Josephine Muli in Ngare Mare, Isiolo, Kenya



Women sorting gum Arabic, Gum Arabic Store, Niamey, Niger

The mission was successful in both Kenya and Niger as the team was able to meet stakeholders in the gum Arabic sub sector and also visit the ACACIAGUM project site. A summary of the major issues and research issues in Kenya and Niger are as follows:

Major issues – Kenya

- Need training in areas such as harvest and post harvest handling, book and record keeping.
- Proper selection of stakeholders to receive training so as to select the right and deserving people to benefit especially at community level

- There is need to provide access to micro credit support both for the buyers and collectors.
- Exchange visits should be organized
- Need a body to champion the cause of gum Arabic both locally and internationally especially to build importer confidence. Therefore need to strengthen the existing national organization Gums and Resins Associations of Kenya (GARA).
- Need to register more Producer Associations eg Daaba, Garbatula and Sereolipi and strengthen existing ones
- Need for capacity building of producer associations and linking them to markets through establishment of Market Information Systems
- Establishment of more storage facilities for the gum arabic and gum resins
- Level of awareness on the importance of gums and resins still low so there is need to create awareness especially among local leaders, government officers and community leaders
- Form links with the newly formed Ministry of Northern Kenya
- Need an organised marketing system
- Data Collection to feed into Market information system and NGARA database
- Train collectors on storage and packaging of gum resins to reduce loss of volatile essential oils

Researchable Issues - Kenya

- Tapping of *Acacia senegal* var *senegal* (Ntumburi site)
- Compare the yields and chemical composition of white and black frankincense and advice the collectors accordingly so that they can maximize on the production and collection of white incense which fetches a higher price

Major Issues – Niger

- Lack of credit facilities for local producers and buyers;
- Existence of residual insecurity in the production areas;
- Lack of transport facilities;
- Need to establish storage facilities at the production areas;

- Need for capacity building for producers and strengthen the existing producers associations;
- Need to support the Market Information Systems already put in place by other projects in order to conduct annual data collection on the production and the marketing of gum Arabic in Niger;

Researchable Issues – Niger

- Need to carry out genetic studies to determine if the two morphologically different species of *Acacia senegal* var *senegal* are the same.
- Need to study the dynamic of gum Arabic stands as related to climate change and other environmental factors;
- Need to study the response of *Acacia senegal* to cutting at breast height level as a measure to refreshing to the plantations or the natural stands.

It is very important to include the views and needs of all stakeholders so as to develop “community driven research” that will have a positive impact and improve the livelihoods of the communities.

It is also important to note that while aspects of research into improvement of gum Arabic production are on going, important issues that were identified in both Kenya and Niger should be addressed. These include;

- Streamlining the gum Arabic marketing chain,
- Sustainable supply,
- Micro credit,
- Storage facilities and transport.

For the full report email info@ngara.org

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

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Annex 1: List of Students and Subjects

Institutions	Master students	PhD students
Institut Senegalais de Recherche Agricole	<p>Mamadou M. MBAYE (UFR SADR of the Thies University) <u>Subject:</u> Systems of production in harvest areas: case study of <i>Acacia senegal</i> <i>Work Package 1 & 2</i></p> <p>Mame Sokhna SARR (University Cheikh Anta Diop, Dakar) <u>Subject:</u> Dynamic and gum arabic production within natural stands of <i>Acacia Senegal</i> <i>Work Package 3</i></p> <p>One Master student has to be identified for working in the <i>Work Package 4</i></p>	<p>Astou SENE (University of Laval, Canada) <u>Subject:</u> Supply chain of gum arabic in Senegal: Dynamic and perspectives. <i>Work Package 1 & 2</i></p>
Universite de Niamey	<p>Ibrahim AMANI <u>Subject:</u> relationships between the environmental conditions and the genetic variability of <i>Acacia senegal</i> and consequences for the production of gum arabic in Niger <i>Work Package 3 and 4</i></p> <p>Abdou Maman MANSSOUR <u>Subject:</u> Impact of the <i>Acacia senegal</i> trees on the soil fertility in Niger <i>Work Package 5</i></p> <p>Rekiatou HAMADOU <u>Subject:</u> to be defined <i>Work Package 5</i></p>	<p>Aichatou ASSOUMANE <u>Subject:</u> Genetic characterization of the natural stands of <i>Acacia senegal</i> in Niger in relation with the production of gum arabic. <i>Work Package 4</i></p>
Universite Cheikh Anta Diop de Dakar		<p>Fatou NDOYE <u>Subject:</u> Genetic diversity of the indigenous arbuscular mycorrhizal fungi associated to <i>Acacia senegal</i> and impact of the rhizobial inoculation of <i>Acacia senegal</i> mature trees. <i>Work Package 5</i></p> <p>Niokhor BAKHOUM <u>Subject:</u> Influence of both soil and environmental characteristics on the genetic diversity of nitrogen-fixing bacteria associated to <i>Acacia senegal</i> trees: effects of the rhizobial inoculation on the soil fertility and gum arabic sustainability in Senegal <i>Work Package 5</i></p>

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Institutions	Master students	PhD students
Institut de Recherche pour le Developpement	<p>Youssoupha GUEYE Subject: Activities and genetic structures of microbial communities under Acacia senegal trees in Ferlo (Senegal) Work Package 5</p> <p>To select Subject: Activities and genetic structures of microbial communities under Acacia senegal trees in Senegal Oriental (Senegal) Work Package 5</p> <p>To select Subject: Activities and genetic structures of fungal communities under Acacia senegal trees in Ferlo and Senegal Oriental (Senegal) Work Package 5</p>	
Kenyan Forestry Research Institute	<p>To select Subject: Investigations on the relationship between eco-physiological characteristics of Acacia senegal (3 sub-species naturally present in Kenya) and both tapping and tree management strategies Work Package 3</p> <p>To select Subject: Achievement of range-wide coverage for genetic and morphological variation in Acacia senegal by sampling existing natural stands across Kenya Work Package 4</p>	<p>Joseph MACHUA Subject: Diversity of microbial populations associated with Acacia senegal and the impact of microbial inoculations growth and gum arabic production Work Package 5</p>
Wageningen University	3 students should be involved (subjects to define)	<p>Gaudiose MUJAWAMARIYA Subject: Sustaining a performing supply chain of gum arabic in Kenya and Senegal Work Packages 1 and 2</p>
Centre de Cooperation Internationale de Recherche Agronomique pour le Developpement	<p>Laetitia HERRMANN Subject: Assessing the impact of the rhizobial inoculation of mature trees of Acacia senegal on the associated both microbial and fungal rhizospheric communities Work Package 5</p>	

	<p>To select Subject: Characterization of both microbial and fungal communities naturally present in the rhizospheric area of Acacia senegal natural stands in Kenya Work Package 5</p> <p>To select Subject: Characterization of both microbial and fungal communities naturally present in the rhizospheric area of Acacia senegal natural stands in Niger Work Package 5</p>	
Institut de Recherche Agronomique pour le Developpement	<p>To select Subject: to communicate Work Package 3</p>	<p>Oumarou PALOU Subject: to communicate Work Packages 1 & 2</p>
Centre for Ecology and Hydrology	No information so far!	No information so far!
TOTAL	17 Master students should be trained through ACACIAGUM	7 PhD students should be trained through ACACIAGUM