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INSTITUT SENEGALAIS
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RESEARCH PROJEC

**DEVELOPMENT OF CONTROLLED POLLINATION TECHNIQUES
FOR ACACIA SENEGAL AND ZIZIPHUS MAURITIANA**

DIRECTION DES RECHERCHES SUR LES PRODUCTIONS FORESTIERES

RESEARCH PROJECT SUMMARY

TITLE : Development of Controlled Pollination Techniques
for *Acacia senegal* and *Ziziphus mauritiana*

1. SCOPE AND OBJECTIVES

The economic importance of *Acacia Senegal* (gum yielder) and *Ziziphus mauritiana* (fruit production) in the arid and semi arid zones of Senegal, gave the species high priorities for genetic researches. Thus, tree improvement programs have been developed involving the following activities : studies of natural variation and selection, seed orchard management, hybridization and vegetative propagation.

For *Acacia Senegal* and *Ziziphus mauritiana*, range-wide Provenance / Progeny tests are underway to provide the basis for selecting seed sources, and elite trees which then can be tailored, through hybridization and selection, to meet specific needs (increased productivity and quality, resistance to insect and disease, resistance to drought tolerance to salinity,...). However, hybridization, which is a key issue in all tree improvement programs, is largely dependent upon the reproductive systems of the species. Therefore, it is required to understand the reproductive strategies of forest species to develop efficient techniques of controlled pollination.

Since for *Acacia senegal* and *Ziziphus mauritiana* little is known about their reproductive systems, the objectives of this research project are :

1. To determine their flowering characteristics and physiological mechanisms of fertilization and fructification ;
2. To develop techniques of controlled pollination.

II. MATERIAL AND METHODS

Intra and intraprovenance materials from plantations and protected natural areas will be used for experimentations including :

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1. Biological and physiological studies of the reproductive systems , ie flowering characteristics, anthesis process, pollinator agents, ovular receptivity, fecondation mechanisms , and floral phenology .

2. Controlled pollination techniques. Research activities

Collection, germination and conservation of pollen ;

Isolation of flowers before avular receptivity ;

Pollination, fertilization and fructification processes ;

Studies of compatibility mechanisms in the species.

III. EXPECTED RESULTS

This project research will provide basic knowledge about floral phenology, pollination, pollinator agents and fertilization mechanisms of *Acacia senegal* and *Ziziphus mauritiana*. This information will be used to develop efficient controlled pollination systems providing individuals of known parentage and new genetic variation as well as information on compatibility mechanisms of the species.

IV. RESEARCH PROJECT IS PRESENTED BY THE TREE IMPROVEMENT PROGRAMME OF DRPF/ISRA* COMPRISING 3 RESEARCHERS

- . Pascal DANTHU - Physiologist
- . Abibou GAYE - Geneticist
- . Marie- H. CHEVALLIER - Geneticist

The collaborator institutes for this study are :

- Université de Dakar/dpt de biologie végétale
- Institut Fondamental d'Afrique Noire/dpt de botanique
- Office de Recherche Scientifique des Territoires Outre Mer (ORSTOM)

* DKPF = Direction des Recherches sur les Productions Forestières
ISRA = Institut Sénégalais de Recherches Agricoles.

B U D G E T

Equipement

- microscope.....	4 000
- camera.....	2 000
- small supplies	2 000
(bags, nets, chemical material,...)	
Labor....	2 500
Mileage.....*	1 500
Publication costs (including photographs & reprints)...	1 000
Miscellaneous.....	500
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Total.....	\$ 13 500