

MINISTERE DE **L'ENSEIGNEMENT** SUPERIEUR  
**ET** DE LA RECHERCHE SCIENTIFIQUE

MINISTERE DU **DEVELOPPEMENT** RURAL

SECRETARIAT D'ETAT A LA RECHERCHE  
SCIENTIFIQUE **ET** TECHNIQUE

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**CURRENT STATUS** OF ENTOMOLOGICAL **STUDIES** ON **CASSAVA** IN SENEGAL,  
LIKELY FUTURE **DEVELOPMENTS** AND SUGGESTED COLLABORATIVE  
**RESEARCH AND DEVELOPMENTAL NEEDS** <sup>1</sup>

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CILSS/FAO IPM PROJECT, B.P. 51  
BAMBEY, SENEGAL

Novembre 1982

INSTITUT SENEGALAIS DE RECHERCHES AGRICOLES  
(I.S.R.A.)

PROJET CILSS LUTTE INTEGREE  
COMPOSANTE NATIONALE DU SENEGAL

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I. INTRODUCTION

In Senegal, cassava was considered to be a most economic, low risk and important subsistence crop for small and marginal farmers in varied rainfall areas-low (rainfall - 300 to 500 mm ; distributed during three months in regions of Louga and Thies), medium (rainfall-500 to 800 mm ; distributed during four months in regions of Diourbel and Sine-Saloum) and high (rainfall - 800 to 1000 mm ; distributed during five months in region of Casamance). Until a few years ago it was frequently considered that cassava is generally free from insects and other pests in Senegal. As a result and also due to the subsistence nature of this crop it received a limited attention from the Entomologists. With the appearance of cassava mealy bug (considered to be Phenacoccus manihoti Mat. Ferr.) the production in Senegal has considerably reduced (Anonymous, 1981). However, the farmers continue to grow this crop with little or no pest management technology.

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Presented in "Workshop on Biological Control and Resistance Breeding to Control the cassava mealybug (Phenacoccus manihoti) and Green Spider Mite (Mononychellus tanajoi) in Africa". 6-10 December 1982, International Institute of Tropical Agriculture, Ibadan, Nigeria (West Africa).

## II. CURRENT STATUS OF ENTOMOLOGICAL STUDIES IN SENEGAL

The occurrence of cassava mealybug in Senegal was first recorded in region of Sine-Saloum, southern parts of Louga and western parts of region of Diourbel in October 1977. It is believed that mealybug infested plant material was accidentally introduced in Senegal from elsewhere in mid seventies. Subsequently the infestation spread in regions of Thies and Casamance. As a result, the national production which was estimated to be 75 111 tons in 1978 (Ministère du Développement Rural, 1978) has been considerably reduced. Though no systematic surveys on loss estimates have been made in Senegal, it is believed that in some farmers fields the losses caused by mealybugs are to the extent of 50.0-90.0 per cent. In the region of Thies the production in 1978 was reassessed to be 50 000 tons (68.0 per cent of the national production). Due to the mealybug devastations the current production levels are less than 10 000 tons (J.Y. Durand - personal communication).

Limited studies using various pre-planting insecticidal treatments to the planting material have been attempted in Senegal. Some insecticidal treatments resulted into phytotoxicity (Bill Settle, USAID Entomologist, Dakar - personal communication).

Keeping in view the economic importance and subsistence nature of this crop and due to the economic crop losses caused by mealybugs on cassava, a preliminary survey was initiated in Senegal in January 1982 in order to establish the range of insect species present with a particular emphasis on the status of the mealybugs and its natural parasites/predators/pathogens present. Besides this preliminary survey, the entomologists of the CILSS/FAO IPM Project in Senegal established contacts with the local authorities to understand the status of mealybugs on cassava. The current situation in Senegal is summarised below,

1. By far the most important pest on cassava in Senegal is mealybug. The exact identity of mealybugs in Senegal is however still unknown.
2. In low rainfall areas of regions of Louga and Thies the incidence of mealybugs was higher in some fields along the Niayes zone (North sea coast).
3. In the higher rainfall areas of region of Casamance severe damage to cassava occurs in fields near the Gambia river and in low lands of Casamance. In post-rainy season the mealybug infestation spreads east ward.

4. Infestation levels have been higher in region of Thies than in the region of Sine-Saloum, A very high incidence of mealybugs was observed in some fields in region of Thies - upto 85.0 per cent plants attacked in April 1982.

Usually older plants carried a higher mealybug infestation e.g, in February a 18 month old crop was severely infested (70.0 per cent). By end of April the corresponding figures rose to 80.0 and 25.0 per cent, respectively. This was in contrast to the situation in fields in the region of Sine-Saloum (Sokone, Gossas and Nioro-du-Rip), where either very little (5.0 per cent plants attacked) or no infestation of mealybugs was observed during January - May 1982. A partial and subsequent defoliation occurred in several plants with heavy infestations in March - April in region of Thies. This resulted into drying of plant tissues and obviously meant loss of planting material and loss in yield, The defoliated plants usually formed new buds which were soon badly attacked.

5. In region of Thies the mealybug populations and the infestation build up during post rainy season, particularly during February-April when the population builds up very rapidly, By end May - early June it reaches to 'self - destructive' phase.
6. Samples of cassava plant material with mealybug infestations collected from region of Thies during February - April have yielded two hymenopteran (Encyrtidae), one coccinelid and a spider species. No estimates on parasitism or predation levels were made in these preliminary surveys. However, the levels appears to be very low. The identification of these parasites/predators is awaited.

### III. LIKELY FUTURE DEVELOPMENTS AND SUGGESTED COLLABORATIVE RESEARCH AND DEVELOPMENTAL NEEDS <sup>2</sup>

Preliminary surveys have, to some extent, helped to clarify the status of mealybugs on cassava in only a limited cassava growing areas in Senegal. Future surveys on status of native parasites/predators/pathogens is obviously important.

It is essential that surveys in different ecological and rainfall areas are immediately intensified since ecological studies, including those on identity and pest/Parasitoid relationships are crucially important in understanding the pest related constraints and to pin point the reason as to why this pest has been so severe on cassava in Senegal,

The surveys will have to be extended not only to different ecological and rainfall zones but also in important cassava based crop systems since cassava is often intercropped with cereals and legumes in Senegal. Sole crop fields are needed to regularly monitor differences in status of mealybugs and its natural enemies, if they exist and comparisons made with inter - and/or mixed crop situations. Subsequently, possibilities of utilising the native and/or other exotic parasites/predators/pathogens in future 'on-farm CIBC/IITA/CILSS/FAO collaborative biological control/pest management project' at two or three different 'hot - spot' locations needs to be explored. Being a long season crop cassava is perhaps ideally suited for biological programme in Senegal,

Various cultural practices both in existing (traditional) and proposed (improved.) cassava based crop systems and cassava cultivars are major factors in both mealybug and its parasite build up and will need attention and investigations. Subsequently, studies relating to effects of already known and recommended control measures in a package, especially the effects of recommended or resistance cultivars, recommended pre-planting insecticidal treatments, and/or releases of exotic natural enemies in a collaborative project will be vital for the formulation of future integrated pest management program on cassava. IPM Project in Senegal will be in a position to participate in a multi - location exotic parasite species for different rainfall areas will be needed for such evaluations. The suggested work needs to be initiated in collaboration with national coordinated research (ISRA)\* and developmental (SODEVA and SOMIVAC)\* agencies.

There is a specific need for a much closer collaboration with the scientists and agents engaged in production oriented research and extension work on cassava in Senegal for a realistic multi-disciplinary research, survey and developmental approach to realise the economic, simple and practical solutions acceptable to the farmers. There are no short cuts.

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\* ISRA - Institut Sénégalais de Recherches Agricoles.

SODEVA - Société de Développement et de Vulgarisation Agricole,

SOMIVAC - Société de Mise en Valeur Agricole de la Casamance.

#### IV. REFERENCE

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