

CASSAVA MEALYBUG (PHENACOCCLUS MANIHOTI) AND GREEN MITES  
(MONONYCHELLUS spp.) BIOLOGICAL CONTROL : AN EXAMPLE OF  
CLASSICAL BIOLOGICAL CONTROL FOR AFRICA

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SUMMARY

The cassava Mealybug (CM) and the Green Mite (CGM) complex have been first discovered in Africa in the early seventies. Having been accidentally introduced from South America into Africa, they spread rapidly over most of the cassava belt, leaving behind heavy losses, up to 80 per cent of root yield. They are now threatening the staple of 200 million people who depend for over 50 per cent of their caloric intake from this starchy crop. IITA has taken the lead in the biological control approach to solve the problems posed by these two pests and is training local entomologists in this aspect of pests control practices. Exploration in the area of the pests (South America) has yielded so far, 27 CM natural enemies species and 25 CGM predatory (phytoseiid mites). Seven CM and 3 CGM natural enemies have so far been introduced to Nigeria for detailed bionomic studies and experimental releases in the different ecological zones of the African cassava belt. One CM parasitoid, *Epidinocarsis lopezi* has been established in eleven countries and is spreading rapidly. Its impact is dramatic and chances of success very high. New species of CM and CGM natural enemies are being introduced for the establishment of an equilibrium situation in the African cassava agro-ecosystem.

RESUME

La cochenille du manioc et le complexe d'acariens verts ont été découverts tout d'abord en Afrique dans les débuts 1970. Ayant été introduits accidentellement d'Amérique du Sud en Afrique, ils se sont rapidement propagés dans la plupart des zones à manioc entraînant de lourdes pertes atteignant jusqu'à 80 pour cent des rendements en tubercules. Ils menacent maintenant l'alimentation de base de 200 million de personnes dont l'apport calorifique dépend pour plus de 50 pour cent

de cette culture vivrière. L'IITA a pris la tête de programmes de lutte biologique pour résoudre les problèmes de ces deux ravageurs et forme des entomologistes locaux aux pratiques de lutte contre ceux-ci. Les prospections dans les pays d'origine de ces ravageurs (Amérique du Sud) ont permis d'obtenir 27 espèces d'ennemis naturels pour la cochenille et 16 prédateurs pour les acariens (Phytoseiid). 6 ennemis naturels de la cochenille et 3 prédateurs des acariens ont été introduits au Nigeria pour des études biologiques précises et des lachers expérimentaux dans les différentes zones écologiques africaines de culture du manioc. Un parasite de la cochenille *Epidinocarsis lopezi* a été établi dans six régions et s'est rapidement répandu. Son action paraît importante et les chances de succès semblent très élevées. De nouvelles espèces d'ennemis naturels de la cochenille et des acariens prédateurs sont en cours d'introduction afin d'arriver à établir un équilibre biologique stable dans l'agro-écosystème du manioc en Afrique.

## INTRODUCTION

After their accidental introduction into Africa in the late sixties and early seventies, the Cassava Mealybug (CM) and Green Mites (CGM) have spread rapidly across the cassava belt, covering more than 75 per cent of its total area.

The severe root yield losses as well as the loss of leaves and planting material have prompted the development of a continent-wide strategy to bring the two pest under control.

IITA has therefore taken the lead in the development and implementation of the Africa-wide Biological Control Project (ABCP). This Project is carried out in collaboration with other international organizations, namely, the Centro Internacional de Agricultura Tropical (CIAT) in Cali, Colombia; the Commonwealth Institute of Biological Control (CIBC) in Trinidad and London; the Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA), Brazil, for the exploration and quarantine work; the Commonwealth Institute of Entomology (CIE) and the British Museum of Natural history in London for taxonomy work; the University of California, Berkeley, and the Federal Institute of Technology in Zurich for plant-pest interaction research, as well as many scientists from different continents and as many as 23 Institutions.

The ABCP is financed by a group of donors, among them the International Fund for Agricultural Development (IFAD) and the Aid Agencies of Switzerland, Austria, West Germany, the Netherlands, Denmark and Italy. The International Development Research Center (IDRC) is financing directly CIBC activities related to CGM biological control in East Africa (except quarantine).

The biological control approach has been chosen in view of the exotic status of the two pests. The feasibility study conducted by IITA between 1980 and 1984 has shown the