



Integrated Management of Major Insect Pests and Diseases of Cashew in East and Western Africa

The International Centre of Insect Physiology and Ecology (ICIPE)

Country/Region:	Tanzania, Benin
German participation	University of Goettingen
Leading scientists:	Dr. Nguya K. Maniania
Duration:	March 2009 - February 2012

Initial situation

In sub-Saharan Africa (SSA), cashew is an important source of livelihood, food security and income for more than 5 million smallholder farmers. Drought tolerance and ability to grow in poor soils, makes cashew an attractive commercial crop grown by the smallholder and contributes 50-90% of their total farm income. It is the



second major source of foreign exchange next to cocoa butter in SSA with exports worth \$414 million. Cashew production in Africa crashed from a global share of 70% in 1970 to 17% in 1990 due to a combination of biological, agronomic and socio-economic factors. Among the biological constraints, damage by the mirid bugs, *Helopeltis* sp., the coreid coconut bug, *Pseudotheraptus wayi*, and the powdery mildew (PMD), *Oidium anacardii*, can lead to 60-100% yield losses. In addition to the mirid pests, a complex of stem borers also severely hampers production and greatly reduces the income of smallholder farmers, especially in West Africa.

Approach of the project

The project seeks to develop, validate and implement sustainable cashew IPM technologies that minimizes the use of hazardous pesticides and enhances productivity and quality of cashew apples and nuts. Strategic research focuses on understanding the bio-ecology of the key insect pest complex and their natural enemies in diverse habitats and landscapes. Potential natural biological control agents such as entomopathogenic fungi and waiver ants will be identified and methods for their conservation and augmentation will be developed. Strategies that minimize or eliminate negative use of excessive sulphur dust for PMD management based on eco-friendly alternatives will be pursued and the effects of such alternatives on beneficial insects like pollinators, and natural enemies and the productivity of the crop will be developed and evaluated. The project further



seeks to build capacity through training of MSc and PhD students in the region and disseminate IPM strategies to smallholders in partnership with the national agricultural research system (NARS).

Major results achieved

Surveys carried out in Tanzania have confirmed the presence of all cashew key pests (*Helopeltis* sp., *Pseudotheraptus wayi*, *Pseudococcus longispinus* and *Mecocorynus loripes*) and diseases (PMD and leaf and nut blight) in all



cashew growing agro-ecological zones. *Acrocercops syngamma* (= ? *Eteoryctis gemoniella*), *Apate terebrans* and *Helopeltis* sp. were identified as the three major pests of cashew in Benin. Cashew nut production is highly

influenced by cross-pollination. For example, flowers that received multiple visitations had the highest chance of producing nuts (44.2%) as compared to those with single visit (19%) and no visit (0%). Colonies of *Helopeltis* sp. and *Pseudotheraptus wayi* have been successfully established in the laboratory, thus allowing the screening of entomopathogenic fungal isolates and semiochemical activities. A stakeholders' workshop on assessment of current pathways of cashew production and marketing information and ex ante impact assessment of potential cashew IPM strategies was organized in Tanzania.

Expected impact

Cashew production and quality increased significantly by reduction of insect pests and diseases through effective control strategies that are environmentally friendly; increase farm income and improved livelihoods, and build capacity in cashew integrated pest management.

Collaborating Institutions: Mikocheni Agricultural Research Institute (MARI), Tanzania; Naliendele Agricultural Research Institute (NARI), Tanzania; Georg-August-University, Göttingen, Germany; International Institute of Tropical Agriculture (IITA), Cotonou, Benin; University of Parakou, Faculty of Agronomy, Parakou, Benin; National Museums of Kenya, Centre for Bee Biology and Pollination Ecology.

The Advisory Service on Agricultural Research for Development (BEAF) manages Germany's contribution to international agricultural research. Instruments for implementation are project funding, postdoc funding, small grants and liaising between German and international researchers. BEAF is part of GIZ and acts on behalf of the Federal Ministry for Economic Cooperation and Development (BMZ).

Imprint

Published by:
Deutsche Gesellschaft für Internationale
Zusammenarbeit (GIZ) GmbH
Advisory Service on Agricultural Research
for Development (BEAF)

Dag-Hammarskjöld-Weg 1-5
65760 Eschborn, Germany

T +49 61 96 79-3347
F +49 61 96 79-803347
E beaf@giz.de
I www.giz.de/agricultural-research

Dahlmannstr. 4
53113 Bonn

T +49 228 24934 231
F +49 228 24934 215
E judith.jansen@giz.de

Photo credit:

p.1, above title: © James Egonyu/ICIPE
p.1, left: © Dr. Bonaventure Agboton/ICIPE
p.2, left bottom: © Dr. Bonaventure Agboton/ICIPE
p.2, left above: © Alexis Onzo/IITA

Contact:

Dr. Nguya K. Maniania: nmaniania@icipe.org