

## **Senior Fellowship for Dr. Henri Tonnang: Improved application strategies for entomopathogenic fungi (EPF) as biological control agents in integrated pest management (IPM) of agricultural pests**

Initiative: Wissen für morgen – Kooperative Forschungsvorhaben im subsaharischen Afrika (beendet)

Ausschreibung: Postdoctoral Fellowships "Resources, their Dynamics and Sustainability - Capacity-Development in Comparative and Integrated Approaches"

Bewilligung: 23.07.2014

Laufzeit: 3 Jahre

Projekt-Website: <https://portal.volkswagenstiftung.de/search/projectDetails>

Entomopathogenic fungi (EPF) are naturally occurring insect pathogens that have the potential to be used for pest control. Different isolates of EPF kill specific range of insect pests. In spite of the importance of their application as biopesticides in integrated pest management (IPM), few studies have proposed models for the study of their dispersal abilities and provide epizootiological knowledge about their transmission and dynamics. Furthermore, no specific software exists for: i) developing temperature dependent models for the virulence of EPF isolates, ii) linking virulence models to regional and continental climate data for spatial mapping of the potential zones of efficacy for pests control under current and future climatic conditions, and iii) measuring the dispersal for optimized application within the context of IPM. Over the years, ICIPE has identified potent EPF isolates for insect pests management that have no adverse effects on parasitoids and predators. We will make use of this information and conduct additional experiments for innovative modelling approaches to predict the potential ecological fitness with the aim of optimizing field application for efficient use against agricultural pests. With Eclipse, R and Java computing approaches we will implement a time-dose-mortality model builder, which will be linked to an open source system for mapping the regions of efficacy of EPF. Another module that will assess their patterns of dispersal through auto-dissemination will be developed. All modules will be embodied in a stand-alone tool to yield open source EPF application (EPFA) software.

### **Projektbeteiligte**

#### **Prof. Dr. Hartmut Stützel**

Universität Hannover

Naturwissenschaftliche Fakultät

Institut für Gartenbauliche Produktionssysteme

Abteilung Systemmodellierung Gemüsebau

Hannover

**Dr. Henri Tonnang**

African Insect Science for Food and

Health (icipe)

Modelling

IPM cluster

Research and Development

Nairobi

Kenia

**Open Access-Publikationen**

**Future Risks of Pest Species under Changing Climatic Conditions**

**Modeling the risk of invasion and spread of Tuta absoluta in Africa**

**Advances in crop insect modelling methods towards a whole system approach**

**Decision Support System for Fitting and Mapping Nonlinear Functions with Application to Insect Pest Management in the Biological Control Context**

**Optimizing spatial positioning of traps in the context of integrated pest management**