Senior Fellowship for Dr. Hervé Bertin Bisseleua Daghela: Biological control of soil-dwelling pests in traditional cacao agroforests of Cameroon using encapsulated CO2 associated with endophytic fungi

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

We aim to explore the potential efficacy of a new control strategy, by using of endophytic and entomopathogenic fungi, isolated from cacao leaves, in combination with CO2 emitting capsules for termite control. We will determine whether subterranean termites are attracted to CO2 sources by behavioral observations in the laboratory and in the field. We will test the effect of a variety of CO2-generating sources on termites in the laboratory and in the field. We will explore the potential antagonistic activity of several strains of endophytic and/or entomopathogenic fungi against subterranean termites, aiming at elucidating their possible mechanism of antagonism in a two-step process using a non-destructive behavioral observation device: in step 1 we will quantify the distribution of subterranean termites to evaluate the attractiveness of CO2 emitting capsules. In step 2 we will assess the attract and kill strategy by combining CO2-emitting capsules with isolated strains of endophytic and/or entomopathogenic fungi to evaluate the potential of this approach to enhance the control efficacy of subterranean termites over conventional chemical treatments. We hypothesize that endophytic and entomopathogenic fungi may be good biological control candidates against termites when associated with CO2. We definitely expect that in case the system works for termites and cacao, it will work in other herbivorous pest species crops and other termite species as well. The project focuses on ecosystem services provided by endophytic fungi. This research supports an initiative aimed at establishing a certification scheme for cacao friendly production in rainforest buffer zones.

Projektbeteiligte

Prof. Dr. Hartmut Stützel
Universität Hannover
Naturwissenschaftliche Fakultät
Institut für Gartenbauliche Produktionssysteme
Abteilung Systemmodellierung Gemüsebau
Hannover

Dr. Herve Bertin Bisseleua Daghela
National Agricultural Institute
for Development (IRAD)
Cacao and Coffee Programme
Yaoundé
Kamerun (Cameroun)

Open Access-Publikationen

Agroforestry Management Systems Drive the Composition, Diversity, and Function of Fungal and Bacterial Endophyte Communities in Theobroma Cacao Leaves