

## **Tropentag 2011**

International Research on Food Security, Natural Resource Management and Rural Development

### **Development on the margin**

Book of abstracts

**Editors:** Mathias Becker, Christine Kreye, Christina Ripken, Eric Tielkes

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### **Preface**

The annual Conference on Tropical and Subtropical Agricultural and Natural Resource Management (TROPENTAG) is jointly organised by the universities of Bonn, Göttingen, Hohenheim, Kassel-Witzenhausen, Hamburg, ETH Zurich as well as by the Council for Tropical and Subtropical Research (ATSAF e.V.) in co-operation with the GIZ Advisory Service on Agricultural Research for Development (BEAF).

The TROPENTAG has become the most important international conference on development-oriented research in the fields of food security, natural resource management and rural development in central Europe. Since 1999, it provides an international platform for scientific and personal exchange for students, junior and senior scientists, development experts and funding organizations together with their various international partner institutions.

The lead theme of the 2011 conference is “Development on the margin”.

### **The contributions and discussions focus in particular on the following areas:**

- Vulnerable people (Food security; Markets and consumption; Livelihood strategies; Social systems and rural services);
- Resource use and ecosystem services ((Agro)Forestry; Biodiversity; Soil fertility; Water management);
- Production systems on the margin (Crop and animal production systems; Product quality)
- Systems under stress (Land degradation; Climate change effects; Biotic and abiotic stresses);
- Resilience and vulnerability (Use or protection; Favourable or marginal environments; Collapse or re-organisation).

### **Message**

The *Tropentag* (Conference on Tropical and Subtropical Agricultural and Natural Resource Management) is a firmly established event in the agricultural research arena. It is an important international forum for the exchange of information, experience and knowledge among international development experts and researchers from a broad range of scientific institutions and disciplines.

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**Systems under stress**

**Effect of Soil Type and Moisture on some Biological Aspects of  
*Bactrocera invadens***

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The invasive fruit fly (*Bactrocera invadens*) was found in Sudan in 2004 as unknown species introduced into the country. In 2005, the pest was recorded and identified in Sri Lanka and a number of African countries. Recently, *B. invadens* has made a rapid expansion across several states in Sudan. Most of the fruit fly larvae pupate in the soil, but the influence of soil type and soil moisture on *B. invadens* pupal mortality is not known. Soil moisture is considered a major pupal mortality factor on other tropical tephritid species. In Sudan, all orchards are generally irrigated by surface irrigation system. Surface irrigation causes a high humidity in the orchards soil and consume large quantity of water. A laboratory trial was conducted to test the effects of soil type and soil moisture on the pupal survival through a factorial experiment, using three soil types (clay, sand and silt) and five levels of water (0, 5, 10, 15, and 20 ml). Each treatment was replicated three times. Each replicate (a plate, 9 cm in diameter) contain 50 g of soil. Twenty late, third-instars' larvae (reared from guava fruits) were added to each replicate. The three soil types were analyzed to determine the pH, EC, soil moisture and organic content, in addition to the classification of the soil type. Also, percentages of emerged and non emerged adults, deformed larvae and that of males and females were calculated. The results revealed highly significant differences between soil types and soil moisture. The results showed that, the soil moisture is an affecting factor on *B. invadens*. The results of this study also indicate that, the surface irrigation applied in orchards is an important factor determining the population density of the fruit fly during the season. The study suggested that, a change of this system of irrigation would be of value in controlling the invasive fruit fly. More investigations are needed on other factors affecting the fruit fly population.

**Keywords:** *Bactrocera invadens*, moisture, soil type, Sudan

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