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Possibilities for the Natural Adjustment of the Millipedes Exemplary of *Spinotarsus caboverdus* Pierrard on Cape Verde

BEATA NASCIMENTO, HELGA SERMANN, CARMEN BÜTTNER

Humboldt-Universität zu Berlin, Institute for Horticultural Sciences, Section Phytomedicine, Germany

Abstract

The eating activity of the millipedes *S. caboverdus* on Cape Verde has been observed all year round and leads to serious damage of many cultivated plants important for the nutrition of the inhabitants (e.g. corn, shrub beans, potato, sweet potato, cassava, papaya, mango, bread fruit, cabbage, pumpkin). Briefly, when rain is forecasted the Diplopoda crop up in huge crowds. They appear on their nocturnal migration locally and even populate residential areas.

Substantial chemical measures (e.g. seals with Unden 75 WP) which were tested years ago gained only a short term success but hardly influenced the weak ecological equilibrium of Santo Antao. Therefore non-chemical protection measures including natural opponents have to be developed and established to combat the pest.

First of all biological and behavioural studies have to be carried out to get basic information on the life cycle of the millipedes. Field evaluations and inquiries regarding the population's division in different locations, the animal's pattern of life and daily rhythm on-site were carried out in combination with laboratory surveys on reproduction and egg deposition. Deductive procedures are worked out for sustainable support of the natural limitations of the pest's life expectancy. These procedures also include the cultivation technology for example the soil structure and use of resistant potato varieties.

The spectrum of natural opponents in the field has proved to be very small. Predators disdain the millipedes and hardly be considered as active biological control agents.

Micro-organisms for example *Acremonium* sp., *Aspergillus* sp. and *Paecilomyces* sp. were isolated in a limited circumference from adults and eggs of *S. caboverdus* in irrigation areas. Under laboratory conditions the application of selected entomopathogenic fungi as there are *Beauveria bassiana*, *Paecilomyces fumosoroseus* and *Metarrhizium anisopliae* showed fundamental pathogenic effects on adults and older juveniles of *S. caboverdus*. An application strategy using these fungi is suggested to obtain a lasting adjustment of the millipedes.

Keywords: Entomopathogenic fungi, millipedes, natural adjustment, *Spinotarsus caboverdus*