Tropentag, October 11-13, 2006, Bonn

"Prosperity and Poverty in a Globalised World—
Challenges for Agricultural Research"

Effect of Ants in Biological Control of Cassava Green Mite in Africa

Bonaventure Vidjinnagni Agboton[1,2], Rachid Hanna[2], Agnes Thomas Odjo[3], Georg Goergen[2]

[1] *Georg-August University of Goettingen, Institute of Plant Pathology and Plant Protection, Germany*
[2] *International Institute of Tropical Agriculture, Biocontrol Center of Africa, Benin*
[3] *Université National Bénin, Département des Sciences et Techniques de Production Végétale, Benin*

Abstract

Interactions between ants and phytoseiid mites have been rarely studied. On cassava plants in Africa, the predatory mite, *Typhlodromalus aripo*, introduced from Brazil to Africa for the biological control of the cassava green mite, *Mononychellus tanajoa*, is frequently found sharing cassava plants and their extrafoliar exudates with several species of ants. That *T. aripo* and ants share space and food on cassava plants may result in interactions that could lead to both direct and indirect effects on their respective abundance and the biological control of *M. tanajoa* by *T. aripo*. As a first step in determining the effects of the presence of ants on *T. aripo* and *M. tanajoa* abundance on cassava, we conducted a series of surveys in 18 farmer-managed cassava fields in southern-Benin where we determined densities of ants, *T. aripo* and *M. tanajoa* on 30 cassava plants in each field. In addition, we conducted a factorial experiment in which we simultaneously manipulated ant and *T. aripo* densities on cassava plants and recorded ant, *T. aripo* and *M. tanajoa* densities. Survey results showed that several ant species in the genus *Camponotus* were most common on cassava plants in southern-Benin. Ant abundance was highest in cassava fields bordered by forest or dense vegetation and when fields were 'weedy', while *T. aripo* was least abundant in weedy cassava fields compared with relatively well-weeded fields. Overall, increasing ant abundance in cassava fields was associated with lower *T. aripo* abundance and higher *M. tanajoa* densities. In the on-station manipulative experiment, ant exclusion had no effect on *T. aripo* and *M. tanajoa* abundance, probably due to low density of the same *Camponotus spp* during the period of the experiment. The failure to show an effect of ant exclusion on *T. aripo* and *M. tanajoa* abundance notwithstanding, the two studies underscore the complexity of trophic interactions in the cassava food web and suggest the need for greater understanding of the interactions between ants and *T. aripo* and the effect of these interactions on biological control of cassava green mite.

Keywords: Ants, biological control, interaction, Mononychellus tanajoa. , Predator mite

Contact Address: Bonaventure Vidjinnagni Agboton, Georg-August University of Goettingen, Institute of Plant Pathology and Plant Protection, Grisebachstraße 6, Goettingen, Germany, e-mail: bagboton@yahoo.com