

Biological control of major insect pests in mango and cashew trees: The role of the weaver ant, *Oecophylla longinoda* Latreille (Hymenoptera: Formicidae)

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Abstract

Weaver ants *Oecophylla* spp. are highly efficient pest controllers able to reduce pest numbers and their damage and in this way increase yields and quality in multiple tropical crops. They provide a rare example of documented efficient conservation biological control. In this study we investigated the role of African weaver ants in improvement of mango and cashew production in Benin through several field experiments.

Firstly, an inventory of insects related to mango and cashew crops was done during one year and has conducted to identification of main insect pests of mango and cashew. Insects were collected by hand or with nets, or using a hoover and traps. Taking into account insect pest damage importance, it emerged that fruit flies are the major insect pest in mango crop whereas branch borer, leaf miner, sap sucking bugs and thrips are responsible of the main damages in cashew crop.

Secondly, weaver ant abundance and nest number were monitored and analyzed in both crops to identify on one hand suitable method for evaluation of ants density in a tree and one the other hand host plant species and management measures effects on weaver ants performances (ant abundance and nests number). Method developed by Peng & Christian (2004) was indicated at low ant abundance level or to check whether ant abundance is adequate to achieve effective biological control while Peng et al. (2005) and Offenbergs & Wiwatwitaya (2010) indices can be used in most situations. Moreover, it appears that: the weaver ants perform better on mango than on cashew trees; feeding ants with sugar may increase their number and spot application of Spinosad in the form of GF-120 do not affect the development of weaver ants.

Lastly, *Oecophylla* ant effect in reduction of main insect pest damage on mango and cashew crops was assessed in two years study. In mango, ants significantly reduce damage caused by

fruit flies. So was the case for cashew insect pest damages except thrips which affect nut quality. However, when weaver ants were combined with Spinosad in an IPM program cashew nut quality was improved and nut yield increased by 150% compared to control trees.

Key words: *Oecophylla* ants, mango, cashew, production, Benin