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“Competition for Resources in a Changing World:
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**Integration of Calneem Oil and *Habrobracon hebetor* (Say)
(Hymenoptera: Braconidae), a Parasitoid of Pyralid Moths, against
Corcyra cephalonica (Stainton) (Lepidoptera: Pyralidae) in Stored
Rice**

CHARLES ADARKWAH¹, CHRISTOPH REICHMUTH², CARMEN BÜTTNER¹, SABINE PROZELL³,
MATTHIAS SCHÖLLER³, MORDEN SHOPNA⁴, DANIEL OBENG-OFORI⁵

¹*Humboldt-Universität zu Berlin, Institute for Horticultural Sciences, Germany*

²*Federal Biological Research Centre for Agriculture and Forestry (BBA), Germany*

³*Biological Consultants Ltd., Germany*

⁴*Caldor Trading Ltd, NIA, United Kingdom*

⁵*University of Ghana, Crop Science Department, Ghana*

Abstract

The worldwide growing demand for 'clean food' and better ecological approaches to pest control has been the stimulus for further research into the use of neem extracts to control stored pests. Calneem is a new commercial product that was extracted from the neem tree (*Azadirachta indica*). It is an oil extract from pure neem seed kernels collected, crushed and used in Ghana against stored product pest insects. Calneem is a biopesticide produced and marketed in Ghana by AQUA AGRIC Community Projects (AACP). Experiments were carried out in the laboratory to assess the compatibility of calneem oil and the parasitic wasp *Habrobracon hebetor* against *Corcyra cephalonica*. 50 ml of cracked rice were placed in 1 l glass jars and 20 last instar larvae of *C. cephalonica* were added. 10 freshly emerged adults of *H. hebetor* were introduced into all the glass jars. Treatments comprised control grain without neem, grain treated with only neem, grain treated only with *H. hebetor* and grain treated with neem and *H. hebetor*. The calneem oil was applied as mixture in which the oil was dissolved in water using soap as emulsifier. It was applied at four contents (0.5 % v/v, 1.0 % v/v, 2.0 % v/v and 3.0 % v/v) Each treatment was replicated four times. The openings of the glass were sealed with a piece of cloth and rubber band and then placed in a growth cabinet (temperature 25°C and 65–70 % relative humidity). Progeny emergence was recorded in all the different treatments after 3 weeks. In the samples that were not exposed to neem and *H. hebetor*, out of the 20 larvae of *C. cephalonica* almost all developed into adults. The calneem dosages and *H. hebetor* significantly reduced the emergence of *C. cephalonica* in all the treatments compared to the control. Generally, the combination of neem and parasitoids was not more effective compared to one of these two treatments alone. The scope of the presented results will be discussed.

Keywords: Calneem oil, *Corcyra cephalonica*, rice, stored product pests