Tropentag, October 9-11, 2007, Witzenhausen

"Utilisation of diversity in land use systems:
Sustainable and organic approaches to meet human needs"

Economics of Biological Control in Cabbage Production in Two Countries in East Africa

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Abstract

A major constraint of cabbage production in Kenya and Tanzania are insect pests, especially the Diamondback Moth (DBM), which is resistant to almost all commonly used pesticides. In 2001, the International Centre of Insect Physiology and Ecology released an exotic parasitoid, which had been highly successful in control of the pest in Asia, for classical biological control of the pest in East Africa. This paper supplements existing *ex ante* impact assessments, conducted during the pilot phase of the project, by presenting the results of a medium term ex post economic impact assessment. Data were collected in two surveys in 2004/2005 in Central Province, Kenya, and Northern Zone, Tanzania; two major production areas. The two survey waves were conducted in both dry and rainy season to capture the seasonal variation. The analysis is based on a cross section of 1,291 randomly selected households from both countries. The study used a two-stage damage control production function framework, which treats both pesticide and the presence of biological control as damage abatement agents taking into account the endogeneity problem.

Results demonstrate that farmers producing cabbage in areas where biological control is present use significantly less pesticide compared to farmers from areas without biological control. Farmers in Kenya use a higher amount of pesticide than farmers in Tanzania. Pesticide use is negatively correlated with pesticide price, while it is positively correlated with a pest pressure above normal level. Surprisingly, the damage control function shows that farmers from areas with biological control have significantly lower cabbage revenue than farmers from areas without biological control, although a positive impact of biological control on yield was found. However, decreased pesticide use resulted in health benefits for farmers with biological control. Overall, the results support the notion that introduction of classic biological control as a pest control strategy in the two Eastern African countries does not lead to higher net income, but has positive effects on environmental and farmer's health.

Keywords: Biological control, horticulture, Kenya, pesticide, productivity, Tanzania

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