



Pesticide Use and Farmers' Health Costs in Cashew Production Systems in Nghia Trung Village

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Introduction

The cultivation of cashew in Nghia Trung village has been intensified over time with increasing use of inorganic fertilizer and pesticides. Pesticide use however pose threats to the environment, including adverse health effects on farmers and others, and pollution to the watershed. Therefore, it is vital to know how current pesticide use endangers farmers' health and whether the marginal gain from reduced pesticide use could surpass the marginal loss in cashew productivity and farmers' benefits.

Objective

This study was conducted to determine the impact of pesticides on cashew yield and estimate the health costs caused to farmers by pesticide use.

Methods

- The Cobb-Douglas function was employed to examine pesticide productivity on cashew production.
- A health cost model was applied to quantify the health impairment of farmers with respect to personal characteristics of the farmers and their use of pesticides.
- Data for estimating pesticide productivity was generated from the survey of 80 randomly-selected cashew farmers for the year 2005, 2006 and 2007.
- Farmer's health costs related to pesticide use was gathered from the surveyed farmers for the year 2006.

Common practice



Preventive spraying is the main method



Many farmers have poor or no protection

Estimated Production Function for Cashew

Independent variable	Coefficient	Standard error
Intercept	6.469	0.342
Log of labor use	0.022	0.030
Log of total herbicides	0.039	0.015**
Log of total insecticides	-0.001	0.017
Log of total NPK	0.025	0.009***
Log of number of tree	0.107	0.054**
Log of tree age	0.025	0.057
Dummy for year 2006	0.070	0.057
Dummy for year 2007	0.221	0.058***
Dummy for eroded soil	-0.511	0.068***
Nr of observations	240	
R ²	0.35	

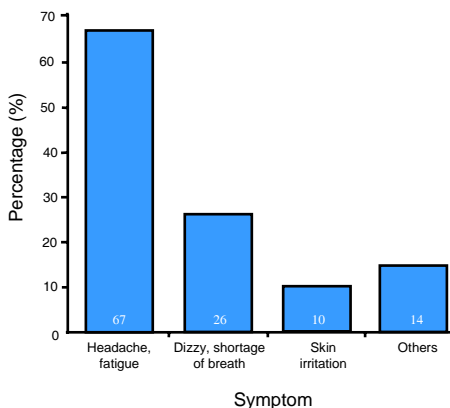
***, **, * Statistically significant at the 1%, 5%, and 10%.

Estimated health cost to farmers from pesticide exposure

Independent variable	Coefficient	Standard error
Intercept	12.772	1.334
Log of total dosage	0.161	0.060***
Log of number of applications	0.193	0.091**
Log of age	0.196	0.098*
Log of weight by height	-0.643	0.376*
Dummy for smoking	0.222	0.056***
Dummy for drinking	0.232	0.060***
Nr of observations	72	
R ²	0.63	

***, **, * Statistically significant at the 1%, 5%, and 10%.

Cases of health impairment among farmers



Results

- Preventive spraying is the main pest management method among cashew farmers.
- Insecticides however do not have significant impact on cashew yield.
- Herbicide use has significant effect on cashew yield but it is still not clear whether yield increase is mainly due to reducing weed competition or from preventing harvesting losses.
- Total pesticide dose and number of times the farmers had contact with pesticides significantly influence their health costs.

Conclusions

These findings indicate that promoting sustainable pest management practices in a cashew-based vegetable agroforestry production system will reduce production and farmers' health costs.

Acknowledgements

The authors acknowledge the USAID funded SANREM - CRSP 'Agroforestry and Sustainable Vegetable Production in Southeast Asia Watersheds' program for funding this research. Special thanks to Luong Thi Bich Van, Cao Thi Cai, and Pham Thi Nhung for their help with the data collection.