



ECONOMY AND ENVIRONMENT PROGRAM FOR SOUTHEAST ASIA

POLICY BRIEF

A PESTICIDE TAX FOR VIETNAM?

The judicious introduction of a tax on agrochemicals could reduce the negative impact of pesticide use in Vietnam, according to a recent study undertaken by a team of economists from Ho Chi Minh City.

The study was undertaken by a research team led by Nguyen Huu Dung and Tran Thi Thanh Dung from the Environmental Economics Unit (EEU) from the Department of Economics, Vietnam National University. It looked at how agrochemicals affect both the profitability and the health of rice farmers in the Mekong Delta.

Its main conclusion was that misuse of pesticide is harming farmers' well being and saddling them with health costs of over 90,000 VND each per rice crop. It also shows that a tax could optimize the level of pesticide use and so improve the health and economic welfare of farmers - while reducing environmental problems.

The study was undertaken against a background of steadily increasing agrochemical use and paddy cultivation in Vietnam. This has polluted drinking water and aquaculture and had a significant impact on the health of rural people. So far, however, little research has been done on the economic impact of this problem. The need for information on how health costs were impacting on paddy profitability was therefore urgent.

The study, which was carried out in early 1997, involved a detailed four-month field survey of 180 farmers. This was undertaken in six villages in the Mekong Delta - the biggest cultivated region in Vietnam, which accounts for more than half of the country's paddy rice production. The study sites were chosen because they exhibited a representative cross-section of cultivation levels and pesticide use. Moreover, Integrated Pest Management (IPM), an

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important mechanism for reducing pesticide inputs, is practiced by about 30 percent of the farmers in the survey area. This allowed the researchers to make a comparison of IPM with more pesticide-intensive approaches.

Using questionnaires, the researchers gathered information about pesticide use and the frequency and scale of pesticide exposure. They also recorded details of health problems experienced by farmers during the 1996/97 Winter-Spring season and investigated farmers' perception of the dangers of agrochemical spraying. In order to get a feel for the impact of prolonged pesticide exposure, details of expenditures on pesticide-related illness between 1992 to 1996 was also gathered. Farmers' personal characteristics, and details about the economic performance and management of farms, were noted for cross-reference.

From these findings, the health costs of pesticide use were determined by calculating how much income farmers had lost while they were recuperating from being poisoned and adding this to their direct medical costs. Related research from the Philippines was also analyzed to cross-check the findings. The researchers then calculated the 'optimal' level of pesticide input which would most profitably balance rice production levels with chemical input costs. They also assessed how pesticide demand fluctuates according to price. From this they worked out the level of agro-chemical taxation that would encourage optimal pesticide usage levels amongst farmers. By combining their analyses, they then calculated how this would impact on health costs and profitability.

The survey showed that farmers used 75 types of fungicides, insecticides and herbicides. Many of these fall under World Health Authority categories I and II, which are classified as moderately and extremely hazardous, respectively. Not surprisingly, the amount of pesticide applied by IPM farmers (883.9 grams/ha) was lower than that applied by non-IPM farmers (1,081 grams/ha).

Interviews with direct sprayers showed evidence of eye, skin, cardiovascular and neurological effects due to pesticide use. Many experienced multiple acute poisoning symptoms at one time. While more than 95% of farmers thought that long-term application of pesticide affected their health, only 33% used protection equipment like caps, masks or special clothing when spraying, citing cost and discomfort as the reasons.

Statistical analysis showed that multiple health impairments were linked to total doses of herbicides and fungicides as well as to the number of contacts with insecticides, herbicides and fungicides. Drinking habits were shown to significantly exacerbate problems. Health costs due to this exposure was calculated to be between 89,310 VND and 94,129 VND per farmer per hectare.

When pesticide costs were balanced against income from higher yield, the researchers calculated that farmers were overusing pesticides by about 270 grams per hectare and were losing over 100,000 VND per hectare because of this. To eliminate this excessive amount of pesticides, the researchers calculated that a tax level of about 33% should be imposed

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on current pesticide prices. This would decrease rice yields but lead to significant savings on inputs and reductions in health costs. In all, the researchers calculated that such a tax would bring a net benefit to farmers of over 56,000 VND per hectare. It would also result in a transfer of about 95,000 VND per hectare from farmers to the government.

In light of their findings, the researchers concluded that the problem of farmers' health is an important concern for policy makers concerned about the economic efficiency of rice production. They recommended that a tax should be implemented to reduce the use of pesticides. They also highlighted the effectiveness of Integrated Pest Management and recommended that it should be diffused more widely.

In addition, they underlined the fact that farmers need more information on the health impact of pesticide use and that safety training needs to be improved. Finally, they suggested how their pricing policy recommendations could be linked to improvements in safety procedures by proposing that some of the revenue from the pesticide tax be "recycled" to subsidize the cost of protective equipment to farmers.

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Note: 13,000 VND = 1 USD

The full text of this study is available as an EEPSEA Research Report:
Economic and Health Consequences of Pesticide Use in Paddy Production in the Mekong Delta, Vietnam - Nguyen Huu Dung & Tran Thi Thanh Dung.

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