

Successful sanitation promotion must recognize the use of latrine wastes in agriculture — the example of Viet Nam

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Introduction

To achieve the aims of the Millennium Development Goals, significant investments will be required to increase sanitation coverage and improve the management of human excreta. The United Nations Millennium Task Force on Water and Sanitation put forward 10 crucial actions that would be needed, and among these is a pledge for governments to support sanitation solutions that are technically, socially, environmentally and financially appropriate (1).

In eastern Asia one of the key aspects to be considered when promoting appropriate sanitation solutions and designing health education programmes is the use of human excreta as an agricultural fertilizer. The centuries old tradition of using human excreta on farmland has been abandoned in Europe, but is still widespread in east Asia, especially in China and Viet Nam. Although there may be negative health consequences of the use of excreta as fertilizer, it is argued here, in reference to the current situation in Viet Nam, that if this is a common practice among farmers, then sanitation programmes and hygiene campaigns must acknowledge its existence and design systems that allow for excreta to be used in the safest way possible.

Excreta reuse and health

From an agricultural point of view the use of human excreta is a sound practice for several reasons.

- It provides cheap fertilizer for crops and thus reduces imports of commercial fertilizer.
- It is a good soil conditioner.
- It is an integral part of nutrient recycling in different types of integrated farming systems.

However, depending on the standard of hygiene during the handling and composting of the faecal material, the use of excreta can have severe negative health consequences. These may affect farm workers who are directly exposed to the excreta; children playing in or near fields; and consumers of fertilized produce. In addition, pathogens may be transmitted to, and spread by, wild and domestic animals, having wider geographical health and hygiene implications.

More than 75% of the farmers studied in the Nghe An province in central Viet Nam were reported to use fresh or partly composted human excreta to fertilize their farmlands

or gardens (2). This continuous use of excreta in agriculture is likely to contribute to the very high rate of infection with intestinal parasites in Viet Nam. For example, it has been estimated that 22 million Vietnamese, or nearly 29% of the entire population, have hookworm infection. In some farming communities in north and central Viet Nam reported rates of hookworm infection were 70% or more of the entire population (3, 4). Furthermore, it is likely that the transmission of other important pathogens such as *Trichuris* spp., *Ascaris* spp. and *Taenia* spp. is favoured by the continued use of excreta. Similar problems are encountered in China where it is estimated that more than 530 million people are infected with *Ascaris* spp. (5).

The authorities in Viet Nam have recently revised the regulations on sanitation and hygiene promotion, including the practices for the handling of latrine wastes, with an emphasis on adhering to a minimum duration of composting of excreta before it is used as an agricultural fertilizer. This revision is partly a response to the continued widespread use of human excreta in agriculture. It is clear that excreta management systems will have to be put in place to tackle the significant public health problems associated with unhygienic management of excreta in the region. The question is, what systems will work?

Implementation problems

Evaluations from east Asia have shown that sanitation programmes often promote latrines that do not accommodate the practice of farming households collecting and using excreta in agriculture (6, 7). The types of latrine that have been promoted include the pour flush and septic tanks which are superior from a hygienic point of view to the traditional Vietnamese double vault composting latrine. However, it is important to bear in mind that the farmers see excreta as a valuable fertilizer and, therefore, favour latrines where they can store excreta and have access when needed for use in agricultural production (2, 7). There are instances of farmers forcing open the seal of latrines and/or septic tanks and breaking the latrines, to gain access to the excreta. In a sanitation project in Xom Ha province in Viet Nam, 30% of the latrines had been destroyed within two years because the farmers could not gain access to the excreta (7). Thus, it is clear that for sanitation and hygiene promotion programmes to be successful, legislation must acknowledge the practice of using excreta as fertilizer.

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Ref. No. 05-025130

Legislation on excreta and its use in agriculture

The authorities in Viet Nam do allow the use of composted hygienic safe human excreta as a fertilizer in horticulture. However, until very recently the definition of “hygienic safe human excreta” was based on composting time only, and the two main responsible ministries, the Ministry of Health and the Ministry of Agriculture and Rural Development, applied different standards for the minimum required composting time (three and six months, respectively). This lack of common standards hindered the promotion of safe practices. However, following recent revisions to the guidelines both ministries now recommend a composting time of six months for the production of hygienic safe excreta that can be used as fertilizer (8). This duration of composting for human excreta to be used as crop fertilizers is likely to protect human health, especially if the farmers continue with the common practice of adding kitchen ash and lime (calcium oxide) to the latrines, a practice that has been found to reduce the composting time needed to obtain hygienic compost (9). Even for *Ascaris* eggs a die-off of 97% can be expected after 6–8 months of composting without increasing pH (10). However, one problem in ensuring a sufficient composting time relates to the agricultural calendar, as the climatic belt of north and central Viet Nam accommodates three crops per year. Phuc (2) found that farmers applying human excreta paid more attention to the fertilizer needs of the plants than to the potential hygienic problems. Therefore, it is likely that farmers would remove the excreta from the latrines every fourth month during land preparation, regardless of regulations on the length of composting.

Future research and implementation needs

When considering previous experiences with sanitation in the east Asian region, it seems relevant that the new guidelines and promotional activities address the priorities of farmers and that applied research should focus on combining the sanitation and health objectives with the needs of the farmers for agricultural inputs. Important issues to be addressed in the planning and implementation process are discussed below.

Focus on the farmers' needs

In areas where use of human excreta in agriculture is common, farming households would probably accept sanitation technologies and hygiene promotional activities if they could be accommodated within the agricultural production system and be seen as offering an economic advantage. The focus should be on the development of sanitation systems that allow for the use of excreta as fertilizer rather than only on the need for improvements in hygiene.

Process development

One way forward may be to focus on making the composting process more efficient and shortening the composting time. Instead of focusing on a minimum safe composting time, the advantage of adding a sufficient quantity of lime to the excreta to accelerate the composting process so that it takes less than four months would be a better option. Another possibility would be to add carbon-rich material to the latrine waste, such as rice husk or straw materials, which may increase the temperature in the pit.

Interdisciplinary decision-making

The Vietnamese example shows that legislation should be based on multidisciplinary know-how. In the case of promotion of sanitation and hygiene, a single ministry will not have the specific expertise or awareness required to design sustainable programmes. Therefore, the emphasis should be on forming an interdisciplinary taskforce that would support and accommodate the different priorities of the health, agriculture and sanitation ministries.

Adaptation of technology

Caution is necessary when promoting a particular technology, such as the eco-sanitary latrines, also referred to as composting latrines, because they may not be sustainable and hygienically sound if the technology is not in accordance with the livelihoods and priorities of the local communities. The technology needs to be adapted through community involvement and people must see both the economic and health benefits of using the technology. ■

Competing interests: none declared.

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