

TEMPLATE FOR COMPLETION WHERE PhD/MSc PROJECTS CONTRIBUTE TO SWITCH DELIVERABLES

Name of SWITCH theme:

Theme: Urban Water Environments and Planning

Subtheme: Resource Recovery and Re use Urban Agriculture

Work package title and number: WP 5.2 Use of Urban Water for Urban Agriculture

Identification of Deliverable (name and number):

5.2.4 Ad4 / Ad2 Demonstration on Urine

Accra MSc research

Details of contributing PhD/MSc theses (including title, date, author, abstract, details of where thesis can be accessed):

MSc: **Patrick Koomson**

Title: **Perception and willingness of market actors on the use of human urine and vegetables produced from urine-based fertilizers in the city of Accra, Ghana.**

Date finalised: April 2011

Availability

Report Due

Abstract:

Urbanisation has left much demand on cities farmers to improve their agricultural produce to meet the growing needs. To maintain soil fertility for agricultural production in urban cities, farmers often use poultry manure and chemical fertilizers; however, the high cost of mineral fertilizers is a constraint to farming activities in the city.

However, international trends too suggest low-cost, ecologically suitable alternative fertilisers, such as human urine. The value of human urine as nutrient is well known and its application has been advocated on many platforms on sustainable sanitation worldwide. By harvesting and using urine for urban agriculture, a win-win situation can be achieved.

Purposive clustered sampling coupled with random sampling technique was used to select 315 market actors (90 farmers, 83 marketers and 142 consumers) within the Accra Metropolitan Area (AMA). Questionnaires were designed to interview them. The data were analysed using SPSS software to generate frequency and percentage distributions of perception statements. PCA was also applied on the perception statements to reveal the main factors that influence market actor's decision to use human urine on vegetables (farmers) or buy u-vegetables (marketers/consumers).

Human urine fertilizing experiments conducted revealed that the fertilising effect of human urine is similar to that of a nitrogen-rich chemical fertiliser. The purpose of this research was to assess the perception and willingness of market actors (farmers,

marketers and consumers) on the use of human urine and vegetables produced from urine-based fertiliser in the city of Accra, Ghana.

Contribution to Deliverable:

Comprehensive description of how the content of the PhD/MSc thesis contributes to achieving the goals/objectives of the Deliverable

The MSc research contributes to overall theme of 5.2, *Use of water for urban agriculture and other livelihood opportunities.*

Work package 5.2 aims to contribute to a paradigm shift in wastewater management and sanitation towards a recycling-oriented closed loop approach. Water, sanitation and food problems affect people directly, and call for sustainable management of urban resources. The aim of the work package is to effect significant improvements in agricultural production, processing and marketing, and other livelihood activities, using freshwater, storm and waste-water. Changes sought include positive actions (e.g. integrated planning) and mitigating actions necessary to reduce risks to the environment and health of producers and consumers. The work-package involves working in Accra, Beijing and Lima and (to a lesser extent in Hamburg) to start up multi-stakeholder processes for action research on productive use of water and wastewater.

In Accra research focused on the availability of water, and the (productive) use of waste-water by urban farmers. Research has been undertaken by two PhDs, and several MSc students who have contributed to demonstration area in Dzorwulu area and its watershed in Accra.

Under the Sub Theme of Resource Recovery and Reuse, joint studies have been undertaken with the Work package on Ecosanitation (4.1). The demonstration in Accra was a collaborative undertaking of both, WP 5.2 and 4.1.

This research is targeted at all stakeholders in the urban and peri-urban agriculture business in Accra particularly, farmers, marketers, policy makers and the general consumers of agricultural produce.

The purpose of this research are to:

Assess farmer's perception on the use of human urine for vegetable production, and examine the factors that will influence marketer's willingness to buy u-vegetables from farmers

Assess marketer's perception on the use of human urine for vegetable production

Assess consumer's perception on the use of human urine for vegetable production

Examine the factors that will influence consumer's willingness to buy u-vegetables from marketers

The impact of this study includes:

Creating awareness of farmers perception and about using urine as fertilizer on farms, and their willingness of doing so.

Informing about marketers and consumers attitudes and concerns towards buying and consumption of u-vegetables.

Identifying potential barriers that can impede the introduction of the use of human urine on vegetables

Results/Recommendations.

Some policy recommendations emerged from this study includes;

The acceptance and rejection of the urine fertilization for farming depends on the perceived health effects in consuming u-vegetables, religious influence and norm in the society. Part of the solution includes public education and awareness programmes for market actors on the benefits of urine use and the health effects associated with the consumption of u-vegetables.

Farmers need practical demonstrations on the safe use of human urine for food production to address issues related to the mode of application under different edaphic and climatic conditions, time of application, application rate on different crops and effects of continuous application on the soil.

The introduction of the urine technology should be in tandem with safety equipments to be embraced by the farmers.

Health protection measures are required to check the entrepreneur to reduce health risk on market actors. The measures could include setting of monitoring system by institutions to check the entrepreneur

Related products

(and deliverable number)