

Improving Agricultural Productivity in the Rural-Urban Interface through Recycling of Urban Waste

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Extended Abstract

Urbanization is a rapidly accelerating process in developing countries. It has been estimated that, between 2015 and 2020, urban population will exceed rural for the first time and will continue to escalate sharply while rural numbers remain more or less static (UN, 2002). Rural-urban migration is one of the factors contributing to this growth. As population grows, so is the demand for urban infrastructure and food. Some of the consequences of this urban influx include the overloading of water and sanitation facilities, higher demand for food in the cities as well as increased number of urban poor (urbanization of poverty). Currently, two million tons a day of human waste are disposed of in water courses (WWAP, 2003). In addition, functional engineered landfill facilities are lacking and solid wastes (SW) are often found littering the streets. The attendant health implication of poor environmental sanitation is great. Over 50 communicable diseases are associated with poor sanitation and they bring untold suffering and premature death to millions of people every year (UN 1993). Ensuring food security and environmental health in the fast expanding cities is of paramount importance.

In another scenario, farming within the rural-urban interface is increasing in response to the daily demand of teeming urban populations, and this involves continuous and intensive use of environmental resources to produce, process and market food products. Such peri-urban agriculture helps to ensure urban food supply and reinforce income benefits at the individual and household levels. In general, urban and peri-urban agriculture (UPA) has a niche in the production of highly perishable market products – such as leafy vegetables for cash crops (Dreschel and Kunze 2001; Cornish et al. 1999). A comparison of twelve cities across SSA showed that 20 - 45% of urban households are involved in farming within or close to urban centres (Cofie et al, 2003). However, the intensive production requires adequate supply of inputs such as water and nutrients among others. One means of ensuring urban food security and better environmental health is by recycling the readily available urban liquid and solid wastes into agriculture thereby improving the productivity of the farming systems. This requires scientific monitoring through research.

In the past few years, the International Water Management Institute (IWMI), Ghana office together with research partners have worked extensively on options for recycling municipal organic waste in Ghana drawing from extensive field surveys and lessons learnt during study visit to related projects in W.Africa. Results gathered during this time indicated that there is potential for reuse of recycled waste. The

farming systems involved in UPA in West Africa and the demand and willingness to pay for compost in Ghana in particular have been documented (Danso et al, 2002). The institutional and economic aspects of composting have also been assessed (Vasquez et al 2002, Drechsel, et al 2003) and the results are generic for West Africa. Information gathered to date revealed that although there is generally high demand for compost, the amount that potential end users are willing to pay varies depending on localities and availability of cheaper alternative nutrient sources. Untreated waste (septage or partially decomposed refuse) are used by the farmers to enhance productivity and soil quality, leading to a possible health risk due to spread of excreta related diseases and chemical contamination of the food chain. The extent of health risk from the direct use of human waste in Ghana is not yet known. From irrigated UPA production analysis of sampled vegetables carried out by IWMI (Unpublished), Mensah *et al.* (2001), and Armar-Klemesu *et al.* (2000) in Ghana show levels of faecal bacteria contamination in lettuce and cabbage leaves varying from 1000 to over 30,000 in number. Besides E.coli, epidemiological problems are related to nematode eggs, which have been detected in sampled water bodies including hand-dug wells (Cornish *et al.*, 1999). There is need to devise participatory low-cost and low-risk strategies to minimize the risks involved in the use of polluted water.

More research is needed to develop the potential for safe, productive and sustainable recycling of nutrients and water from liquid and solid wastes for use in peri-urban agriculture and produce appropriate tools and guidelines for planners, policy makers, farmers, communities and other relevant stakeholders. Improved productivity will ensure urban food security, safeguard farmers' livelihood while contributing to better clean environment. Recycling of urban liquid and solid waste could be a win-win for farmers and also for planners involved with environmental management

Recognising the importance of UPA, many international initiatives are promoting the concept of UPA.

Introducing RUAF: Resource Centre for Urban Agriculture and Food security

Objectives

The objectives of RUAF are:

- To enhance awareness regarding the potentials (and risks) of urban agriculture
 - to facilitate its recognition as an area of government intervention
- To facilitate access of local stakeholders to documented experiences, in order to enable practical policy and technology interventions
- To support local capacity development and networking regarding urban agriculture.
- To facilitate the formulation and implementation of policies and action programmes on urban agriculture with active involvement of all stakeholders

Activities

- The (co-)organisation of international *workshops and electronic conferences*
- *Support to local and regional networks*
 - *Organisation of Stakeholder Platforms* on Urban Agriculture at city level
- *Support to local policy formulation and preparation of action programmes,*
- The publication of the *Urban Agriculture Magazine* on the Internet as well as regional hardcopies in 5 languages (English, Spanish, French, Arabic and Chinese).

- The development and maintenance of an online *bibliographic database* (partly annotated)
- The development and maintenance of an online *contacts database* with information on resource persons and organisations
- The operation of the *website* www.ruaf.org that provides access to information

RUAF Partners and focal points

ETC Foundation – coordination and focal point for Europe

UMP (Urban Management Programme), Quito *Latin America and the Caribbean:*

IAGU (Institut Africain de Gestion Urbaine), Senegal - *West and Central Africa*

(Francophone):

IWMI-West Africa (International Water Management Institute), Ghana - *West-Africa*

(Anglophone):

MDP (Municipal Development Partnership), Zimbabwe - *Eastern and Southern Africa:*

CEDARE (Centre for Environment and Development in the Arab Region and Europe), Egypt

• *North Africa & Middle East:*

IWMI-S-E Asia (International Water Management Institute), India - *South and South East*

Asia:

Other partners in the RUAF programme are:

City Farmer (website)

www.cityfarmer.org

TUAN (Liaison for USA and Canada), USA

Introducing: Training Course on Urban Agriculture for Anglophone Africa
Nairobi, Kenya
8– 26 March, 2004

Organised by:

“Cities Feeding People” programme of the International Development Research Centre (IDRC-CFP, Canada),
Urban Harvest programme of the CGIAR,
Resource Centre on Urban Agriculture and Food Security (ETC/RUAF),
Urban Management Programme (UMP/UN-HABITAT) of HABITAT,
Municipal Development Partnership (MDP-Zimbabwe),
Ministry of Planning of the Government of Kenya,
International Water Management Institute (IWMI-Ghana),

Background

Urban Agriculture (inclusive of Peri-urban Agriculture) is a new area of knowledge. All the organisations leading the course are involved in developing such knowledge, exploring its dimensions and promoting awareness of and action on it at international, regional, and municipal levels. Developing an approach to training is part of this process.

Course outline and objectives

The course offers an outstanding opportunity for staff of development and local government organisations, as well as researchers and civil society organisations, to improve their understanding of Urban Agriculture (UA) in its various forms, and to prepare for effective participation in processes of multi-stakeholder policy development, research, action planning and implementation in the field of UA.

During the course, the teams from up to seven cities will:

- Discuss, develop, and evaluate proposals for action-research and intervention in UA
- Deepen their knowledge on the concept and nature of different UA crop production and livestock systems
- Gain a greater understanding of the role and impact of UA policies and practices related to other components of urban management and local sustainable development (including environmental management, solid and liquid waste management, health and land use planning)
- Improve their skills in understanding, assessing, sharing experiences and intervening locally in UA-related development and management issues
- Participate in field visits within the Nairobi area

There will be seven learning modules:

1. **UA History, Concepts and Dynamics**
2. **Health Impacts of UA**
3. **UA Crop Production Systems**
4. **UA Animal Husbandry**
5. **Solid Waste Management and UA**
6. **Waste Water Re-Use in UA**
7. **Integration of UA into Urban Planning**

Gender issues will be addressed within each module.

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An urban farming technology that involves the large-scale agricultural production in the urban surroundings is the vertical farming (VF) or high-rise farming technology. It enables fast growth and production of the crops by maintaining the environmental conditions and nutrient solutions to crop based on hydroponics technology. UA has been claimed to contribute to urban waste recycling, efficient water use and energy conservation, reduction in air pollution and soil erosion, urban beautification, climate change adaptation and resilience, disaster prevention, and ecological and social urban sustainability. Therefore, UA contributes to the sustainability of cities in various ways—socially, economically, and environmentally. Agriculture in the City: How Urban Is It? FIGURE. 5 Intra-urban/peri-urban character of location: By far the element most common to reviewed definitions is location "in (within) and around" cities or urban areas (e.g. Ganapathi, 1983; Sawio, 1993; Smit et al., 1996b; COAG/FAO, 1999). This element is probably the biggest source of contention, which is why it will be discussed more at length than other elements. Most UA field studies have been carried out in large urban centers, national capitals or secondary cities; thus, few can be assumed to have largely dealt with agriculture located in rural areas "typical" of the respective countries. urban waste and the catering to the daily urban demand; this adds to the locational feature. of earlier definitions an urban input-urban output loop. Urban-rural linkages are particularly intense in the peri-urban interface, characterised by constant flux, complex social structures, fragmented institutions and shifting focus. Different policy solutions are clearly needed for peri-urban areas to those advanced for rural or urban areas. Allen, Adriana with Nilvo L. A. da Silva and Enrico Corubolo (1999) - Environmental Problems and Opportunities of the Peri-Urban Interface and their Impact Upon the Poor - DPU / PUI [pdf]. The objective of this document is to provide an overview of the problems and opportunities of the peri-urban interface (PU HomeHELP library Improving Agricultural Productivity in the Rural-Urban Interface through Recycling of Urban Waste. Share. Tweet. More research is needed to develop the potential for safe, productive and sustainable recycling of nutrients and water from liquid and solid wastes for use in peri-urban agriculture and produce appropriate tools and guidelines for planners, policy makers, farmers, communities and other relevant stakeholders. Improved productivity will ensure urban food security, safeguard farmers'™ livelihood while contributing to better clean environment.