

Typical main drain running through residential areas in Accra



Margaret Armat-Klemesu

Balancing the Positive and Negative Health Impacts

Urban agriculture can have both negative and positive effects on the health and environmental conditions of the urban population. Previous reviews or studies of health issues have tended to highlight the health risks of urban and periurban agriculture (e.g. Birley and Lock 1999). This has served to reinforce the perceptions of many governments and municipal authorities that urban agriculture is a (marginal) activity that has substantial health risks and should not be supported.

- ❖ improved nutrition;
- ❖ income generation and poverty reduction;
- ❖ improved sanitation solutions and waste recycling;
- ❖ improved physical and psychological health due to increased physical activity.

It is essential to address the health risks associated with urban agriculture not only to protect consumers and agricultural workers, but also to secure the support of

The benefits of urban agriculture have often been ignored

municipal and national authorities for sustainable urban food production.

The main health risks associated with urban and periurban agriculture:

- ❖ contamination of crops with **pathogenic organisms** (e.g. bacteria, protozoa, viruses or helminths), due to irrigation by water from polluted streams, or inadequately treated wastewater or organic solid wastes;
- ❖ human diseases transferred from **disease vectors** attracted by agricultural activity;

Editorial

In some countries, health and other concerns have led authorities to refrain from the planning and development of agriculture within city limits. There is often little dialogue between the health and agricultural sectors. Few health professionals are actively involved in agriculture, while agricultural practitioners do not normally consider health as a primary concern.

In this ongoing debate on the health effects of agriculture, policy-makers have often ignored the benefits urban agriculture can produce. These benefits to health and well-being are wide-ranging and include the reduction of urban food insecurity and improved nutrition of the urban poor.

Major health benefits of urban and periurban agriculture:

- ❖ increasing urban food security;

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- ❖ contamination of crops and/or drinking water by residues of agrochemicals;
- ❖ contamination of crops by uptake of heavy metals from contaminated soils, air or water;
- ❖ transmission of diseases from domestic animals to people (zoonosis) during husbandry, processing or meat consumption;
- ❖ human diseases associated with unsanitary postharvest processing, marketing and preparation of locally produced food;
- ❖ occupational health risks for workers in the food-production and food-processing industries.

Many of these issues are discussed within this edition of the UA-Magazine. Pederson and Robertson, in their article, discuss the health benefits of urban agriculture and its role in urban food policies. The range of potential health risks of urban and periurban agriculture was discussed in the recent electronic conference on “Urban and Periurban Agriculture the Policy Agenda” organised by FAO and ETC-RUAF. A brief summary of the session on health and environment is given in the article by Lock and de Zeeuw. The health risks associated with use of agrochemicals, from occupational handling to contamination of crops or water, are well known. The article by Gaynor explores the implications for food safety and the health risks of soil contamination by organochlorine insecticides in Australia. The article also raises questions

about the responsibility of local authorities in informing urban growers of former land uses and the implications for their crops, livestock or consumers. Two articles explore the health risks of urban livestock and fish farming. Zoonoses of dairy cattle are discussed in the article by Muchaal, which underlines

that Bovine Tuberculosis and Brucellosis are often ignored as urban human health issues in Africa. Edwards discusses both pathogenic and chemical health risks from aquaculture in Asia. Recommendations are made to safeguard public health and to promote fish farming as a safe urban food source.



Pesticide Soil Contamination: A Case Study from Perth Western-Australia

The safety of food produced in urban agriculture depends on a number of factors, including the history of persistent toxic chemicals applied to an area. Using the application of organochlorine pesticides in Perth, Western Australia as a case study, this article examines the problems that can arise when urban agriculture is scattered throughout a metropolitan area, and carried out by people who often have little detailed knowledge of how land in the area has historically been treated, and therefore what kinds of soil contamination might be present.



Food Policies are Essential for Healthy Cities

Food production and its retail sales are increasingly perceived to be presenting risks to society in Europe. Consumers are concerned, and have lost trust and confidence in their food supply. Policies are therefore needed to limit the risks and to promote the assets of different means of food production and distribution, as well as to restore consumer confidence.

Dear Readers

Urban agriculture is practised to a substantial degree in many cities in the world. In discussions on a sustainable development of urban agriculture the positive and negative relationships play an important role, whether based on facts or on prejudice. Health is a major issue in this. There is indeed an obvious relationship between urban agriculture on the one hand, and the health and environmental conditions of the urban population on the other. This third issue of the *UA-Magazine* focuses on the relationship between urban agriculture and health.

Once again, the number of articles submitted to the magazine was high. We offer you ten articles on a diversity of topics surrounding the theme; food security, food policies, use of waste and wastewater and zoonoses. Unfortunately, a contribution on food security and nutrition was withdrawn at the latest moment. In order to fit into the magazine, some articles had to be cut down from the original. Only two- or three-page articles (1,700-2,500 words) are placed in the hard copy of the *UA-Magazine*. The RUAF website provides more room for longer articles, while also contributions that could not be included in this hard copy issue are shown on www.ruaf.org.

The guest editor for this issue was Karen Lock, from the European Centre on the Health of Societies in Transition, at the London School of Hygiene and Tropical Medicine. Karen was also involved in the Electronic Conference, on which she reports together with Henk de Zeeuw. Further support was received from Marianne Lindner, from the ETC Health Group, who recently finished an analysis of key issues in urban health and health-care in developing countries.

No articles were submitted on how urban agriculture can increase the risk of malaria. This topic created a lively debate in the framework of the E-conference, in which it was felt that urban agriculture initiatives should be co-ordinated with malaria control efforts in order to encourage sound environmental management practices. In relation to this important subject, we suggest that you read about the CGIAR System-wide Initiative on Malaria and Agriculture (SIMA) in the section on Networking. Malaria causes considerable adverse impacts on the population health and development of many countries, especially in Africa. A summary of opportunities for the reduction of malaria risks through agricultural-based interventions, proposed by SIMA is given on page 11.

One of the major concerns among urban agriculture practitioners, is the health risk linked to the use of wastewater and solid waste. Five

articles address these issues from different perspectives. Furedy discusses solid waste re-use practices, and argues that self-help projects are the major answer to minimizing health risks, because of the apparent lack of interest and capability by authorities to intervene at a policy level. Blumenthal et al. discuss an institutional approach to reducing pathogenic risks of wastewater re-use and propose new wastewater treatment guidelines for agricultural use. They advocate using the guidelines not as absolute standards, but as a guide for decision-makers on which water treatment processes, crops and irrigation methods are appropriate for safe production. The authors present an adapted version of the WHO guidelines of 1989. Two articles from Africa, one by Sonou on Ghana, and the contribution by Diop Gueye and Sy on Senegal, show the important contribution that wastewater irrigation makes to agricultural production in African cities. Both

Public Health Issues of Wastewater-fed Aquaculture

Fish farmed in wastewater-fed ponds provide nutritious and relatively safe food for the urban poor. In spite of most systems being developed by farmers with limited attention to either wastewater treatment or to public health, potential threats from disease-causing organisms and chemical contaminants from industrial effluents are mitigated by various

mechanisms. Recommendations are made to further safeguard public health.



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Starting in 2001, the *UA-Magazine* is translated into French and Spanish, and is distributed through the RUAF Regional Focal Points in Asia, Africa and Latin America. This makes the readership substantially higher than the originally registered readers at RUAF in Leusden. At the moment we send the *UA-Magazine* to about 4,000 addresses.

You are invited to contribute to future issues of the *UA-Magazine*. Firstly, please note the call for contributions to the next two issues, at the end of this magazine. Secondly, any suggestions you might have for topics for 2002 are welcome.

Issues that are thus far being considered for 2002 are:

- ❖ Economic and marketing aspects of urban agriculture;
- ❖ Transition to ecological urban farming;
- ❖ Rural-urban linkages (nutrient cycles, transportation, etc.); and
- ❖ Training in urban agriculture.

Submitted articles should be written in such a way that those working with farmers would readily be able to understand them. Articles would ideally be up to 2,500 words in length, and preferably accompanied by illustrations (digital if possible), references and a good abstract. Articles will be examined for selection by the editorial team consisting of the responsible editor and the external scientific advisor/co-editor.

Looking forward to hearing from you.

The Editor

contributions acknowledge the health risks associated with wastewater use, and propose locally appropriate health-protection measures, including increased farmer education and training. Finally, Esrey and Andersson explore the potential of ecological sanitation as a local approach to

solid waste re-use. Wider social acceptance of this prac-

tice has not yet been clearly demonstrated, but it is a good example of a process that explores sustainable solutions which attempt to protect both the environment and human health.

Although the majority of contributions of this edition focus on health risks, the intention is to present a balanced view of the positive and negative health impacts caused by the practice of urban and periurban agriculture worldwide. Despite prohibitive laws, agriculture is practised in most cities in developing and transition countries. Although some of the articles discuss ways of mitigating health risks, the debate about the underlying reasons that people currently do not practice safer agriculture needs to be taken further. For instance, whether

practitioners have access to adequate information on safer practices, and whether they would be helped by appropriate education schemes; or are poverty and lack of resources the main limiting factors? Or, is it possible that people grow certain crops for cultural or other reasons even if the health risks are known? Until we can elucidate some of the underlying reasons why people continue with farming practices that increase health risks, we may not be able to provide effective solutions at a local or national level.

This appears to be an important area that needs further research.

The risks of urban agriculture should be addressed both in self-help schemes at a community level, and also in municipal or national policies and programmes that actively seek to reduce the negative health impacts while promoting good health. There does not appear to be an obvious mechanism of securing the support of policy-makers to implement these solutions. Urban agriculture practitioners need to find ways of

Tools to improve integration and participation are needed

RUAF

The Resource Centre on Urban Agriculture and Forestry (RUAF) aims to facilitate the integration of urban agriculture in the policies and plans of city authorities and to facilitate the formulation of projects on urban agriculture, with active involvement of all local stakeholders.

The RUAF programme is administered by IDRC (within its 'Cities Feeding People Programme'). The leading implementing organisation is ETC International, based in Leusden, the Netherlands.

ETC co-ordinates the activities of four regional focal points, TUAN, City Farmer Network and other organisations participating in the Programme. Agreements have been established with the following **Regional Focal Points on Urban Agriculture:**

- ❖ **Latin America and the Caribbean:** the Urban Management Programme (*UMP-LAC*) in Ecuador
- ❖ **Western Africa:** the Institut Africain de Gestion Urbaine (*IAGU*) in Senegal
- ❖ **Eastern and Southern Africa:** Management Development Programme (*MDP-ESA*), in Zimbabwe
- ❖ **South-East Asia:** the International Board for Soil Research and Management (*IBSRAM*), in Thailand
- ❖ **Middle East:** TUAN has taken the initiative to start up the process (see networking section in this issue).

These institutions will initiate activities, be responsible for the distribution and translation of the *UA-Magazine*, and participate in further activities under RUAF.

RUAF maintains close *working relations* with other networks and relevant international programmes. The duration of the RUAF project is five years, having started in October 1999.

For more information, visit the RUAF website: <http://www.ruaf.org>, or contact Ir. Henk de Zeeuw, RUAF Co-ordinator. Address: ETC, PO Box 64, 3830 AB Leusden, the Netherlands. e-mail: RUAF@ETCnl.nl, phone: +31-33-4943086 fax: +31-33-4940791

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REDUCING THE HEALTH RISKS OF USING WASTEWATER IN AGRICULTURE

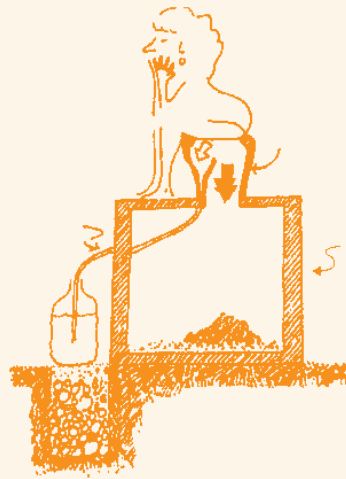
Urban agriculture depends on water supplies for the irrigation of crops. Water is often extracted from rivers,

and these may be contaminated with wastewater, discharged into the river with little or no prior treatment. In some areas, untreated wastewater is used for irrigation directly. Use of both can increase the risk of diseases for farm workers and their families, and for the consumers. Policy makers and farmers need to know what quality of water they can use.



Ecological Sanitation: Closing the Loop

Ecological sanitation, through urine diversion, may contribute to food security, less pollution, better resource management of water, nutrients and soil. It is likely that it can also contribute to health and well-being in two direct ways: less transmission of disease, by killing pathogens at the source, and increased food security, by increasing nutrient intake. It is far more feasible financially and ecologically than conventional approaches.



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actively engaging and working with governments and municipalities in a better, planned way. A Health Impact Assessment is an evidence-based, decision-making tool that could help (Lock 2000). It has been used in other policy sectors including urban planning, water resource management, and transport, to involve stakeholders in a process with authorities to promote health.

Health Impact Assessment has been proposed as a prospective method for assessing and improving the health consequences of projects and policies in non-health sectors, such as agriculture. It aims to influence the decision-making process in an explicit, structured way by balancing objective evidence and subjective opinion. It is a multidisciplinary process, and promotes community participation in decision-making. Potential health impacts identified by an assessment are analysed and used to influence the decision-making process (Lock 2000, Birley 1995).

The principles of Health Impact Assessment are similar to environmental impact assessment. But, although many countries have legal requirements for carrying out Environmental Impact Assessment, very few environmental assessments explicitly consider human health. Health Impact Assessment has been developed as an independent tool for promoting public health in policies and projects.

Several countries have established policy frameworks for Health Impact Assessment, such as The Netherlands, Canada and Australia. In developing countries, Health Impact Assessment has mainly been developed as a rapid appraisal tool for environmental development projects (Birley 1995). The likelihood of specific health risks related to a project is considered and risk reduction strategies are proposed.

Health Impact Assessments have been used in various projects including those of the World Commission on Dams (agricultural and water resource development projects for donor agencies) to mitigate health risks to the affected population (Konradsen et al. 1997). Guidelines and training have been developed by some international organisations including the Asian Development Bank and the World Bank (Asian Development Bank 1992, World Bank 1997).

Most of the recommendations of Health Impact Assessments that have been implemented have resulted in improvements both to the environment as well as the population. The wider implementation of health impact assessment has been slow because of the lack of political will in making health an important focus in decision-making. There are still some limitations to the methodology. Practitioners should be aware that there is not one 'gold standard' and that the methodology for Health Impact

Assessment is still in the process of being developed and evaluated. An assessment can also be limited in the certainty of its findings due to the lack of good quality evidence to support some of the possible health impacts. The evidence base for Health Impact Assessment is continually being built up. Despite these limitations, Health Impact Assessment has proved to be a powerful lobbying and decision-making tool at the local and national policy level.

Those involved in the development of urban agriculture should continue to work towards local, low cost solutions to protect consumers and agricultural workers against possible health risks. It is equally important to engage policy-makers at a municipal and national level. Health Impact Assessment is one multisectoral tool that can be used in urban planning to bring health professionals, agriculture practitioners and municipal planners together for integrated solutions.

REFERENCES

- Birley MH and Lock K. 1999. The Health Impacts of Periurban natural resource development. Liverpool: Liverpool School of Tropical Medicine. (Short version available at <http://www.liv.ac.uk/~mhb/publicat/pubs1.htm>)
- Lock K. 2000. Health Impact Assessment. British Medical Journal 320: 1395-1398. <http://www.bmj.com/cgi/content/full/320/7246/1395>
- Birley MH. 1995. The Health Impact Assessment of development projects. London: HMSO. <http://www.liv.ac.uk/~mhb/publicat/pubs1.htm>
- Konradsen F, Chimbari M, Furu P, Birley MH &, Christensen NO. 1997. The use of health impact assessments in water resource development: a case study from Zimbabwe. Impact Assess 15: 55-72.
- Asian Development Bank. 1992. Guidelines for the health impact assessment of development projects. Environmental Paper no. 11. Manila: ADB.
- World Bank. 1997. Health aspects of environmental impact assessment. Environmental assessment sourcebook update 18. Washington DC: World Bank.

Continue to work towards local low cost solutions



RUAF is a global initiative of the Support Group on Urban Agriculture, co-ordinated by ETC