Modeste L. Kinané
Arlette Tougma
Denis Ouédraogo
Moise Sonou

Urban Farmers' Irrigation Practices in Burkina Faso

Farmer using watering cans for irrigation
Photo: Sangare Drissa

Many studies have pointed out the health risks associated with inappropriate use of untreated wastewater or polluted water for both consumers and farmers in urban vegetable production in Burkina Faso. But this is a reality in daily life, and at this point understanding farmers' strategies is critical for implementing measures to make irrigation practices safer.

Together, Ouagadougou and Bobo-Dioulasso comprise about one quarter of the total urban population of the country. Since the 1960s the number of sites on which exotic vegetables are grown has increased in the city of Ouagadougou alone from just a few to more than 50, representing about 2500 ha, to meet the growing demand of urban consumers. Quite a number of studies have been carried out on various health and environmental risks associated with the inappropriate use of untreated wastewater or polluted water in these cities. However, implementation of various recommendations for safer irrigation practices has been extremely slow or almost nonexistent. To learn more from urban farmers and their irrigation systems, information was collected from 570 vegetable farmers on 13 sites in Ouagadougou and Bobo-Doulasso during the dry season in 2006 and 2007.

Who are the water users?

Almost all vegetable farmers are men with an average age of 37 years. Most of them are not educated and they have been using water for vegetable production for an average of 13 years. For most of the farmers, vegetable production is their main or secondary source of income, which helps them take care of an average of 7 people (in their households or families). They grow vegetables (mainly lettuce, carrot, cabbage and onion) on small plots of 0.12 ha to 0.35 ha that have been informally inherited, borrowed or donated.

The urban environment is very unstable

Origin and use of water

The farmers usually get their main irrigation water from shallow wells, dugouts or rivers located less than 50 m from their farms. In Bobo-Dioulasso, more than one third of the farmers use the Houet River as their main source of irrigation water all year round, while in Ouagadougou farmers mostly use water from shallow wells and dugouts. Especially during the dry season, when the study took place, farmers use several different sources for water.

Houet River
The name of the Houet province, in which Bobo-Dioulasso is the biggest city, comes from the river that crosses this city. Upstream, water from this river is used for washing clothes (especially by women), for gardening, etc. Downstream the water is used mainly for vegetable production. The Houet River also carries liquid and solid wastes from riverside households and the abattoir. Apart from microbiological contaminations, the water from this river sometimes contains high concentrations of hazardous chemicals. (Tarnagda et al., 2001; Toe et al., 2004).

Four irrigation systems were identified (see table).

Main irrigation systems

	Sources of water (*)	Fetching and transportation	Application	percentage
System 1	Shallow wells or dugouts	Watering can	Watering can	63
System 2	Shallow well or river	Motor pump and storage in a reservoir	Watering can	13
System 3	Drain or river	Motor pump	Water hose or furrow	2
System 4	Drain or river	Watering can	Watering can	14

*) Farmers use one or more sources of water. For this study we considered the main source during the dry season. Source: Author

Some of the farmers (around 25 percent) perceive that poor quality of irrigation water could pose health risks to both themselves and consumers. However, water quality was not mentioned as a cause of disease amongst farmers. Health-related issues from the use of untreated wastewater are complex in urban areas especially among poor people. What does irrigation water quality mean in a context where some of the farmers do not have potable drinking water for themselves? Moreover, some farmers complain that generalisations are being made about the quality of their irrigation water:

During an informal discussion, the oldest farmer at the "boulmiougou" site in Ouagadougou (who has been producing vegetables on the site for almost 35 years) mentioned: "If this water was not good we would have died first, before the vegetable consumers. Many civil servants and expatriates are my clients. I never ask them to come back, they do it voluntarily".

In Ouagadougou, farmers prefer systems 1 and 2, while systems 3 and 4 are used more often in Bobo-Dioulasso. These cities face different land and water constraints. Pressure on land resources is greater in Ouagadougou than in Bobo-Dioulasso, and water is more available year round in Bobo-Dioulasso. The use of a particular irrigation system is also based on the type of crop grown and availability of labour. For instance, when a farmer increases the area allocated in his farming system to cabbage and lettuce, using system 2 becomes a constraint. System 2 is mostly used by older farmers (generally autochthons), while system 1 is mostly used by young migrants or newcomers into the sector. Farmers also prefer system 1 when they have a positive perception of the availability of water, and when they are involved (or not?) in a farmers' organisation. When a farmer has a larger number of people from his household involved in marketing and production, systems 2 and 3 are dominant (the motor pump, because of funds available?). Interestingly, land tenure security does not affect the adoption of these systems. These irrigation systems seem to be already adapted to the uncertain urban environment in which vegetable farmers operate.

The urban environment

Most of the farmers agree that the urban environment is very unstable especially in terms of prices (for both inputs and outputs) and land tenure. In Ouagadougou, land tenure insecurity ranks among the most important sources of uncertainty for 53 percent of the farmers while in Bobo-Dioulasso the main source of uncertainty is market prices. Climate and sanitary risks are cited as major sources of uncertainty by fewer than 10 percent of the farmers in both cities. Farmers have developed few strategies to cope with these sources of uncertainty, like mixing crops in different cycles in the farming system, and to maintain a continuous flow of income so that unexpected social events and celebrations can be tackled. An important strategy is to maintain good relationships with the traditional chief of the area, the oldest on the site and with people living around the site. They also try to keep the site clean from solid wastes, generally in their plots and on a radius of 5 metres around the plot.

Supporting these farmers

The urban vegetable farmers are among the poorest socioeconomic groups in Bobo-Dioulasso and Ouagadougou. Irrigation practices in these cities depend on both socioeconomic and environmental factors, and are already adapted to land tenure insecurity in these cities. These farmers could be assisted by:

- Training in safer and more efficient water use management, without changing the existing irrigation systems too much (otherwise land tenure will become an important constraint);
- Strengthening the operational capacity of local authorities in integrated urban (waste)water and sanitation management, for instance by limiting and reducing as much as possible sources of chemical pollution;
- Facilitating a constructive dialogue of urban farmers' organisations with local authorities.

Modeste L. Kinané, FAO RAF, Accra, Ghana
Email: Modeste.Kinane@fao.org
Arlette Tougma, IDR, Bobo-Dioulasso, Burkina Faso
Denis Ouédraogo, IDR, Bobo-Dioulasso, Burkina Faso
Moise Sonou, FAO RAF, Accra, Ghana

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