

Water Supply and Urban Agriculture in Bulawayo

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Irrigation with municipal wastewater is practised in many urban and periurban areas of developing countries. In Zimbabwe this has largely been restricted to pasture irrigation (Chimbari et al., 2003). Wastewater is increasingly being used for irrigation in urban and periurban agriculture, thereby supporting the livelihoods of (particularly poor) farmers. There is a need to identify practical, affordable health safeguards that do not threaten the livelihoods of those dependent on wastewater.

Bulawayo water

Bulawayo is the second largest city in Zimbabwe. The city has a population of approximately one million inhabitants. Situated in a dry part of the country, Bulawayo receives less than 800 mm of rainfall every year in the summer season, (from November to March). Maintaining a sufficient water supply has always been a challenge. The city's supply dams rarely fill up, and water levels go down during the dry season, making them insufficient to meet demand. Therefore, municipal authorities usually put water rationing measures in place to limit the residents' water usage. The city's average water demand per day is 150,000 cubic metres, while the dams are currently only able to supply 130,000 cubic metres. Domestic plots, for example, receive 450 litres of water per day from the local authority. In 2007 rotational water cuts were also put into place, whereby a suburb's water supply could be cut off for a period of time.

Boreholes around Bulawayo
Photo: MDPESA



Maintaining a sufficient water supply has always been a challenge Bulawayo
Photo: MDPESA

The city provides wastewater for irrigation

Urban agriculture

The city has resorted to using various sources of water for urban agricultural purposes. These include boreholes and treated wastewater. The city has a policy that guides use of clean water, stating that the primary use of water in the city is for domestic use. This applies especially to borehole water. Where a borehole is made available, the first priority is for domestic uses such as cooking, bathing, and drinking. Other uses such as watering of plants and animals are secondary. The boreholes are locally managed by the communities in which they are situated.

The city council has been able to provide treated wastewater to a number of farmers in various locations. At a pilot project site at the Gum Plantation, RUAF has provided funding for improving the water supply through lining of the main irrigation canal to avoid water losses through seepage.

Nine garden allotments, which are managed by the social services office in the Department of Housing and Community Services, use treated wastewater. The beneficiaries are mostly the elderly and the destitute, who grow vegetables mainly for domestic



Beneficiaries harvest enough for household consumption
Photo: MDPESA

consumption and sometimes for sale to generate income. The city also manages the Gum Plantation Allotment, a massive community garden project on an estimated four and a half square kilometres. This allotment receives the bulk of the treated wastewater. Beneficiaries are drawn from several high-density suburbs in the city, and each beneficiary household is allocated six long-beds. The city provides wastewater for irrigation. The beneficiaries' allotments have been divided into blocks. Each block is given one day during the week when it irrigates its crop. The council employs two extension officers who help the residents with sound advice on farming practices and measures that they can take to protect the environment. With the availability of water, beneficiaries are able to practice year-round agriculture. They grow vegetables, sugar beans and maize.

Farmers who use treated wastewater need training in handling the water

Council officials estimated that beneficiaries harvest enough for household consumption and earn an average of US\$ 70 a month from selling the surplus from their allotments. It is also estimated that 60 percent of the vegetables from the Gum Plantation Allotment are sold in the city, while the balance is exported to Francistown in neighbouring Botswana. While at the site, the author of this paper witnessed scores of vegetable buyers driving trucks with trailers from Botswana loading vegetables for resale in their country.

Apart from the community projects the council manages, it has its own urban agriculture projects in and around the city. For example, at the Gum Plantation Allotment, the council keeps horses that are used for mounted patrols and for the Mazwi Nature Park, which is an eco-tourism project. Situated to the north of the city, Aisleby farm is another council urban agricul-

ture project, with 2000-2500 head of cattle. In winter the council also grows wheat. Both the wheat and the pastures for the animals are irrigated using wastewater.

Awareness on using wastewater

The farmers who use the treated wastewater have not been trained in handling the water. A baseline survey conducted in 2005 amongst urban farmers in the city revealed that most of the farmers (62 percent) had been using wastewater for more than six years. The majority (89 percent) were comfortable using wastewater and it was their only source of water for irrigating. Those who preferred using wastewater (62 percent), chose it because they recognised that the water is fertile and there would be no need to buy fertilisers; while those who were not comfortable with wastewater (11 percent) preferred to have another source of water which they can also use to drink and grow a wide range of other crops that are not restricted. In terms of the health risks associated with using wastewater, 70 percent were aware of the risks but could not enumerate the type of infections they might get. Knowledge on what types of crops could be grown using wastewater appeared to be high (74 percent).

Sixty-two percent of the farmers felt there was sufficient support from the local authority in the form of the land and water, which they were getting for free; whilst the rest felt local authorities were not doing enough to support them. The local authority, on the other hand, questioned the feasibility of sustaining the service of supplying and pumping the wastewater because it was becoming too costly. In addition, although support was seen as necessary, it should be guided by policies and by-laws. To ensure sustainability of the service, the farmers were willing to pay (91 percent) for the services of supplying wastewater and maintenance of the system.

The local authorities are key stakeholders in urban agriculture and their engagement and participation are crucial. They can help farmers in ensuring that water for urban agriculture is available, be it treated wastewater or other forms like borehole water. They can also play an important role in addressing the negative effects of wastewater use through extension services to and training of farmers.

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References

1. Bulawayo City Council (2000). Urban Agriculture Policy Guidelines.
2. Bulawayo Core Team and ISWD (2005). Bulawayo Urban Agriculture Baseline Survey.
3. Ndebele, JJ (2005). Urban agriculture in Bulawayo – Paper presented at Policy and Legislation Workshop on Urban Agriculture, Harare.
4. Chimbari, M,J; Madyiwa, S; Mukaratirwa, S and Musesengwa, R. (2003). Pollution Implications of Disposing Wastewater on Pastureland. Final Project report. WARFSA