

Urban waste – a challenge for policy makers

Solid waste is a major headache for most towns and cities throughout the world. The collection of refuse from households, commercial properties, markets and street sweepings is just one problem, what to do with it once it has been collected is another. In the developed world legislation and its enforcement has seen the disposal of most municipal waste into sanitary landfill sites and incinerators, and the setting up of specialist treatment facilities that can separate waste into useable and economically viable products. But in the developing world the dumping of solid wastes on the outskirts of towns and cities continues and is becoming a serious hazard both to the environment and to public health. Even legislation cannot help, as there is often a lack of an effective administration, willingness and resources to implement it.

WASTE NEED NOT BE A PROBLEM

But solid waste need not always be a problem. It can provide substantial benefits for some. In most developing countries, municipal waste has a high organic matter content and is a valuable nutrient and soil ameliorative resource for farmers. Around the Indian twin-city of Hubli-Dharwad, farmers have used municipal solid waste for many years as a soil conditioner. The waste is taken to one of the two dumpsites on the outskirts of the city and some is sold to farmers for an agreed price. Dharwad dumpsite consists of 372 pits and, until 1997, under the management of the local authority, a number of pits would be auctioned off to farmers each year. This was an ideal way of getting rid of waste. But the auction system has not been used since 1997 because of a lack of dumpsite staff to



prepare the pits. Farmers can still buy waste though on a more ad hoc basis, by approaching the managers of the dumpsites to buy a tractor load or more. Increases in contamination from plastic and glass and rising labour and transport costs have, however, reduced demand, particularly by smaller farmers and those from villages more distant from the city. So what are the ways forward that can benefit both small farmers and the municipality?



There is a growing awareness of the problems faced by small farmers who rely on organic urban waste

Very little research has been undertaken into how collection, disposal and treatment of urban waste can benefit small farmers. Interestingly, farmers are not usually considered as stakeholders when such issues are being examined. To improve knowledge and understanding a project was set up to examine these issues in and around Hubli-Dharwad. It focused on the present and past use of urban waste as a compost by near-urban farmers and used on-farm trials to pilot test the use of sorted and treated waste with the aim of generating information to feed into future policy recommendations.



BUYING MUNICIPAL WASTE

Following a Supreme Court ruling in 1997, allowing municipalities to lease land to firms for waste treatment activities and to allow experimental trials to take place, Hubli-Dharwad Municipal Corporation decided to put the provision of waste treatment facilities out to private tender. The winning company now produces high quality compost, which is a mixture of waste and animal manure. But the cost of this is much greater and although farmers are buying it, they tend to be the wealthier commercial growers who rely on cash cropping. These tend to be in other parts the State and in neighbouring States. This is potentially a source of future conflict with poorer, local farmers who cannot afford the high quality product but rely on buying waste from the same source. At present there is plenty for everyone as commercial production is on a relatively small scale. But if this increases, shortages will inevitably arise and important decisions will have to be made about how waste is to be sold and at what price.

IN THE VILLAGE

Farmers on the edge of cities grow a varied mixture of crops. Rice is one of the staple crops with potatoes, groundnuts and mungbeans grown for both local consumption and for cash. Soils too are varied and solid waste is only used on land to the east of the city, where there are heavy black vertic soils, which benefit from improved workability.

Municipal waste is not generally used on the red alfisols, to the west of the city, as the soils have less need for amendments to improve workability and many of the crops grown on these soils are for subsistence and local markets. Accessibility of the dumpsites is also a factor.

One farmer has used municipal waste for over 20 years to grow potatoes and he believes it is deteriorating in quality. The high level of contamination in the waste from plastics, glass and hospital materials now means that he has to employ seven labourers per load to help him separate out the organic matter on his farm. He pays Rs30 for a load of waste, Rs200 per load for tractor hire and Rs60 per load for labour. He used to hire labourers to separate waste at Dharwad dumpsite and load it onto tractors but the higher level of contamination means that this is not economically viable any longer. The result is higher costs and contaminated waste piling up on his farm.

In one village where urban waste has been used for many years, waste pickers go to the fields and take out plastic which was not sorted before spreading. Some farmers, with their own vehicles, have even started to collect waste directly from houses and roads to avoid contamination.



Chemical fertilizers can compensate for reductions in compost but farmers are reluctant to use them. They feel that the soil can become too adjusted to chemical fertilizers, making the soil 'hard'. When mixed with urban waste, however, they believe that fertility improves, the soil becomes more 'soft' and more moisture is retained. Farmers say they would buy more if the quality improved even though it may be more expensive. Many were concerned about the private sector role and sought reassurance from the local authority that access to waste by farmers would continue.

ON FARM TRIALS

Part of the research programme involved field trials. Four villages were involved in this participatory research which first explored people's preferences regarding soil amendments and then identified potential small farmers to take part in on-farm trials. These were set up to examine four treatments, namely, sorted waste on its own, waste mixed with distillery sludge, waste mixed with cow dung and vermiculture (worms) and waste mixed with night soil. The selection of these treatments came from previous composting trials and on comments made by farmers at a stakeholder workshop. The results were ranked in their effects, so as to avoid the problems of obtaining quantitative results from plot experiments on real farms on a limited time scale and budget. In broad terms:

- The results supported the use of waste as a soil amendment, although analysis of the waste-derived composts did not point to any one as the best.
- The waste-nightsoil compost performed best in the trials based more on its role as a soil amendment rather than its nutrient analysis. This compost does, however, pose potential health risks.
- Many farmers preferred organic soil amendments to artificial fertilisers. Their residual effects last longer and they are better for soil structure and moisture retention.
- Farmers are concerned about the availability of animal manure. Mechanisation on farms is causing a decline in the number of draught animals.

CHANGING WASTE POLICY MEASURES

The issues involved in this research go well beyond on-farm agronomic trials and touch on many aspects of the waste management cycle from collection to disposal as a soil amendment. It is a complex socio-economic problem as well as a technical one but there are important



conclusions that can be drawn from the work. The most important outcome is the growing awareness in Hubli-Dharwad that near-urban farmers, who rely on organic urban waste, may lose out by being ignored as new waste policy measures are developed.

Many cities in the developing world have undertaken initiatives to increase the use of urban organic wastes in farming. But they have often failed to take account of existing users of wastes and the high quality products that usually result have tended to be too expensive for small farmers. Hubli-Dharwad may be unusual in that local farmers still use urban wastes, but increasing labour and transport costs, as well as the increasing contamination of municipal waste, are reducing this use. If access to organic urban waste is to be a means of alleviating poverty through increased agricultural productivity, then policy interventions will need to be well informed about all the users and carefully targeted to overcome the main problems that have been identified.

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