

## LETTER TO THE EDITOR

### FERTILIZERS FROM URBAN WASTES

The article by Sridhar and Adeoye in the *Nigerian Field* 68: 91-111 (October 2003) reminds me that when I was Federal Forest Research Officer at Enugu in the early 1960s we successfully used municipal compost as fertilizer in our forestry nursery, without other addition. It was obtained from the Municipality and was a loose blackish material, said to be made with a machine, which we purchased by the lorry load. There were occasional "foreign bodies" in it, which we sieved out—such as old flashlight batteries or dolls' eyes. Plastic bags were then unknown and town rubbish mainly consisted of wrapping leaves (normally from species belonging to the family *Marantaceae*) with some waste food. For people without W.C.s a separate system of bucket collection would have been used for human excreta, and this may have been incorporated in the compost.

In 1963 I transferred to Ibadan in Western Nigeria where municipal compost was not available and there were considerable difficulties with potting mixtures and sustaining fertility of nursery beds. One of my first tasks here was to develop a satisfactory potting medium—which consisted of builders' sand with which were mixed 1 kg each per cubic metre of sand of granular superphosphate together with bonemeal and ground hoof and horn acquired from the slaughterers in Dugbe. All our tree species grew well in this mixture.

When I enquired in Enugu after the Civil War, I was told that the composting machine had broken down and the method was no longer in use. During the 1950s I was a Northern Region Forest Officer. In Kano the surrounding farmlands were cultivated more or less continuously. This was possible because of their still-surviving traditional method of utilising "nightsoil" (human excrement). Processions of donkeys carried it in paniers as dried powdery material from the city to the farms. On the return journey they brought back bundles of firewood from the farmlands into the town—a system that probably had operated successfully for centuries. It broke down for two reasons: the first was the use of lorries or kitcars to carry firewood; the second was the introduction of artificial fertilizers. This made the old methods uneconomic. More general use of cess pits and water closets would be another factor. This failure to utilise human wastes properly gives cause for concern anywhere. Soil fertility and structure depend on maintaining the organic matter content of the soil, especially for tropical soils, and this is not supplied by artificial fertilizers.

In Britain, although sewage is collected and treated, it formerly contained substantial quantities of heavy metals from industrial waste, which were not separated from human sewage. Not unusually it was dumped at sea; but if used too often on the land it can poison the soil and also livestock feeding on vegetation growing there! Over much of Nigeria, as a consequence of customary forms of land tenure, farmers often hold land in scattered plots. Organic manure, including human wastes, can be used on compound farms (near the house) but not on more distant "bush farms" – because of the problems of transporting manure which might need to be headloaded in order to get there, or their own waste would have

been sufficient for all their plots. Farmers usually still depend on traditional methods of fallowing under bush regrowth in order to restore soil organic matter and soil fertility. For subsistence cropping, land was generally cultivated for 2 or 3 years, and then fallowed—in western Nigeria for about 7 years, and on sandy soils in the midwest and east for about 15 years. Nowadays, due to development of extensive arable cash cropping, there is shortage of farmland; fallow periods are commonly reduced to as little as 2 or 3 years, with associated reduction in soil fertility and crop yields. Enhanced food production depends on introduction of systems of continuous cultivation. This will not occur without using substantial quantities of organic manure.

It will also require concomitant changes in the system of land tenure. The 1978 Land Use Decree gave State Governments control over land in place of the traditional authorities. What could be worse? Conversion to freehold tenure is essential. This gives individuals (almost) complete control over use of their land, and also the right to buy and sell it at their own discretion. It also allows land to go to its most economic use, which in some areas may be tree crops. In Europe the change occurred mainly in the 19th century, in my own locality in England in 1829. This allowed the evolution of new farming systems which could feed the industrial revolution. It was achieved, parish by parish, by dividing up and re-allocating the land (as blocks) in proportion to the traditional rights held by each person in the land, and was initiated by the community itself. Commissioners (usually three) were employed by the parish, and were trusted men of integrity usually with surveying skills. They pegged out the lines for boundary hedges and demarcated access roads so that every part of the land could be reached. The task normally took between 18 months and three years, and was financed by selling a portion of the land. The only African country where I know that conversion to freehold tenure has been occurring is Kenya, where technical support is given by government—and with considerable success. But development of systems of permanent cultivation depends on production and use of cheap organic manure.

Since retiring to England we grow about three quarters of our own needs for vegetables and fruit. Our vegetable garden measures about 100 m<sup>2</sup>, and fruit trees occupy about 300 m<sup>2</sup> of lawn. I am about to enlarge our vegetable area by a third. The fertility of our vegetable patch is entirely maintained by the use of compost from garden and household waste and lawn cuttings, on which urine is poured to help it rot. Each year the compost is dug into the beds and the soil turned over, so that we have little problem with weeds. This progressively deepens and improves texture of the topsoil. I also burn hedge cuttings and tree prunings on the vegetable beds and dig in the ash. Our crops grow luxuriantly (better than our neighbours') but I have never used artificial fertilizer on the beds—except once of Epsom salts to correct magnesium deficiency shown by leaf discoloration. Because we grow our different crops intermixed, and rotate them round the garden, we have not had to use pesticides for several years. I do occasionally fertilize and lime the lawn around the fruit trees.

—R.G. Lowe, 17th February 2004