

Excursion

On Wednesday afternoon there will be an excursion to some interesting projects:

Use of faecal material and urine

This is a research project currently being undertaken by the Pollution Research Group of the University of KwaZulu-Natal and eThekweni (Durban) Municipality. Controlled semi-field trials are being conducted in which paw-paw trees (deep-rooted) and spinach plants (shallow-rooted) are being grown in individual containers. Some containers have a layer of faecal material, while others are used as a control. Soil and faecal layers were extensively characterised with respect to nutrient, chemical and microbiological characteristics prior to planting. Variables being monitored during the growth period include: growth of plants above the faecal layer relative to plants grown in the absence of this material; health-related microorganisms at the soil surface; and health-related microorganisms and nutrients in the leachate. At the end of the growing period, plants are harvested destructively and penetration of roots into the faecal layer assessed. Soil, faecal material and leaves are also characterised chemically.



Urine-diversion toilets currently implemented by eThekweni Municipality dispose of the urine via a soakpit. However, the nutrient potential of urine is well recognised. Pot trials are being implemented in which a range of above-ground vegetable crops are grown in soil amended with varying proportions of soil excavated from soakpits, and compared to plants grown in soil not exposed to soakpit contents. Plant growth, as well as microbiological and chemical quality of plants, soil and leachate, are being monitored.

The difference between the various plants in these two experiments is striking.



Greywater re-use

Preliminary community-based trials were conducted by eThekweni Municipality in which household greywater was used to grow above-ground vegetable crops. Plants showed good growth and the community reaction was favourable. This is being followed up by a controlled semi-field trial in which a range of above-ground and below-ground vegetable crops are being grown and the following variables monitored: growth and yield of greywater-irrigated plants relative to plants watered with potable (municipal) water and plants watered with nutrient solution; and levels of health-related microorganisms on plant surfaces, inside leaves and on soil. Typical greywater samples were subjected to comprehensive chemical and microbiological characterisation before initiation of irrigation. The field trial is being supplemented by an extensive community survey on generation, use and perceptions of greywater.



Cato Manor Urban Agriculture Initiative

The Cato Manor community, situated on the boundary of the University, is characterised by high unemployment, widespread poverty and poor food security.



Small groups of residents have intermittently attempted to maintain vegetable gardens to feed their families. These initiatives have typically foundered due to lack of training, lack of funding and lack of water for irrigation. The Cato Manor Urban Agriculture Initiative, based at an agricultural training centre situated near the university, provides residents with implements, seedlings and, most importantly, training in the cultivation of food crops and traditional medicinal plants (including endangered species). A central

core of community volunteers serves as trainers-mentors to ensure that training received at the centre is implemented in the community. One of the greatest problems encountered both at the training centre and by community gardeners is availability of water for irrigation. Greywater re-use and rainwater harvesting are being used as sources of irrigation water.

eThekweni Municipality water and sanitation project

The municipality has made excellent progress with eliminating the water supply and sanitation backlogs in its area of jurisdiction. Typically, twin-vault urine-diversion toilets are provided, while 200 litre tanks are filled with free water daily by means of electronic dispensing from supply pipelines. The particular project that will be visited is situated in the scenic Inanda Dam area, where good examples of these innovative technologies can be viewed.



This municipality is leading the field in South Africa, with about 20 000 families having been provided with free water and sanitation in the past two years.