

An agricultural answer to nature's call

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Can two problems equal a solution? Molly Theobald from the Worldwatch Institute thinks so. Poor sanitation and toilets in many African countries, coupled with the lack of nutrient-rich soil has lead to a clever agricultural innovation, using human waste.

It's just one story that the Worldwatch Institute's [Nourishing the Planet](#) team have collected. They travelled to 25 sub-Saharan African nations -- the places where hunger is greatest -- and uncovered a treasure trove of agricultural innovations from farmers' groups, private voluntary organisations, universities, and even agribusiness companies. These innovations offer global benefits -- from the continent's role in preventing disastrous climate change to the way urban farmers are feeding people in cities.

In conjunction with the Food, Agriculture and Natural Resources Policy Analysis Network, the Worldwatch Institute will be publishing the book *State of the World 2011: Innovations that Nourish the Planet*, which assesses the state of agricultural innovations from cropping methods to irrigation technology, to agricultural policy with an emphasis on sustainability, diversity, and ecosystem health in the hope of guiding governments, foundations, and concerned citizens in their efforts to eradicate hunger and poverty. Read an excerpt from the book.

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It's hard to believe, but an estimated 2,6-billion people in the developing world still lack access to basic sanitation services. This presents a significant hygiene risk, especially in densely populated urban areas and slums, where contaminated drinking water can spread disease rapidly. Every year, some 1,5-million children die from diarrhoea caused by poor sanitation and hygiene.

It is in these crowded cities, too, that food security is weakened by the lack of clean, nutrient-rich soil as well as growing space available for local families.

But there is an inexpensive solution to both problems. A recent innovation, called the Peepoo, is a disposable bag that can be used once as a toilet and then buried in the ground. Urea crystals in the bag kill off disease-producing pathogens and break down the waste into fertiliser, simultaneously eliminating the sanitation risk and providing a benefit for urban gardens.

After successful test runs in Kenya and India, the bags were being mass-produced in 2010 and sold for 2c to each, making them more accessible to those who will benefit from them the most.

In post-earthquake Haiti, where many poor and homeless residents are forced to live in garbage heaps and to relieve themselves wherever they can find privacy, SOIL/SOL -- a non-profit organisation working to improve soil and convert waste into a resource -- is partnering with Oxfam to build indoor dry toilets for 25 families as well as four public dry toilets. The project will establish a waste composting site to convert dry waste into fertiliser and nutrient-rich soil that can then be used to grow vegetables in rooftop gardens and backyards.

In Malawi, Stacia and Kristof Nordin's permaculture project uses a composting toilet to fertilise the crops. Although these units can be expensive to purchase and install, one company (Rigel Technology) manufactures a toilet that costs just \$30 and separates solid from fluid waste, converting it into fertiliser. The Indian non-profit Sulabh International also promotes community units that convert methane from waste into biogas for cooking.

On a larger scale, wetlands outside of Kolkata, India, process about 600-million litres of raw sewage delivered from the city every day in 300 fish ponds. These wetlands produce 13 000 tons of fish annually for consumption by the city's 12-million inhabitants.

They also serve as an environmentally sound waste treatment centre, with hyacinths, algal blooms, and fish disposing of the waste, while also providing a home for migrating birds and an important source of local food for the population of Kolkata.

Aside from cost and installation, the main obstacles to using human waste to fertilise crops are cultural and behavioural. Unicef notes in an online case study that a government-run program in India provided 33 families in the village of Bahtarai with latrines near their houses. But most villagers still preferred to use the fields as toilets, as they have been accustomed to doing their whole lives. "It is not enough just to construct the toilets," said Gaurav Dwivedi, Collector and Bilaspur District Magistrate. "We have to change the thinking of people so that they are amenable to using the toilets."

The book is due to be launched on Thursday April 21 in Pretoria and will take place at 9am at Pretoria's Agricultural Research Council Institute in Silverton. Find more details [here](#).

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