

## Faecal sludge management — 1

BRAC WASH promotes the use of double-pit household latrines as they last longer and are safer than single-pit latrines, allowing human waste to decompose for a year in one pit while the other is in use.

Even double-pit latrines need to be emptied safely. Evaluation of the BRAC WASH programme identified pit emptying and the safe final disposal of sludge as a key ‘second generation’ challenge.

Faecal waste is rich in major nutrient elements and can have a beneficial effect on soil fertility. BRAC WASH conducted action research to answer questions on its safe reuse:

- Does faecal sludge comply with the WHO guidelines on microbiological quality after one year of storage?
- What is the nutrient content?
- Can organic fertiliser production be made commercially viable?

Laboratory results showed that human waste is not safe straight from the pit but is pathogen-free after 60 days of sun drying and complies with national fertiliser standards after the addition of rice husk and sawdust.

***BRAC WASH has concluded that there is a clear opportunity to develop a business model for organic fertiliser from human waste. To this end, BRAC has applied for an organic fertilizer permit from the Bangladesh Agricultural Research Council.***

## Double-pit success poses ‘second generation’ challenge

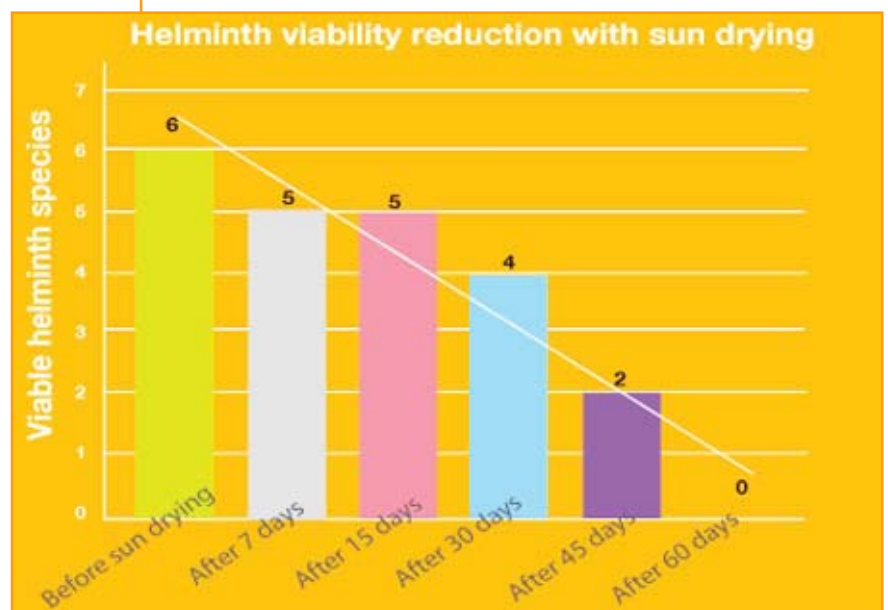


*Research focuses on the safe use of human waste when pits are full.*

## Faecal sludge management—2

### Main findings from laboratory testing

- **Faecal sludge meets the WHO standard for pathogens after treatment and sun drying**
- **Drying for seven days reduced the E.coli content to zero in all samples**
- **Drying for 60 days resulted in the complete removal of pathogens**
- **Dried faecal sludge meets the Bangladesh macro- and micro-nutrient standards for organic fertiliser**
- **Phosphorus (P) and Nitrogen (N) and other micro nutrient contents were up to the required standard**
- **Potassium (K) and pH were below stipulated values in most cases. However, the addition of ash will increase both the K and pH content**



## Faecal sludge management—3



*Reshma Khatun and Bablu Rahman from Jessore had success using compost from faecal sludge*

### **Faecal compost field trial**

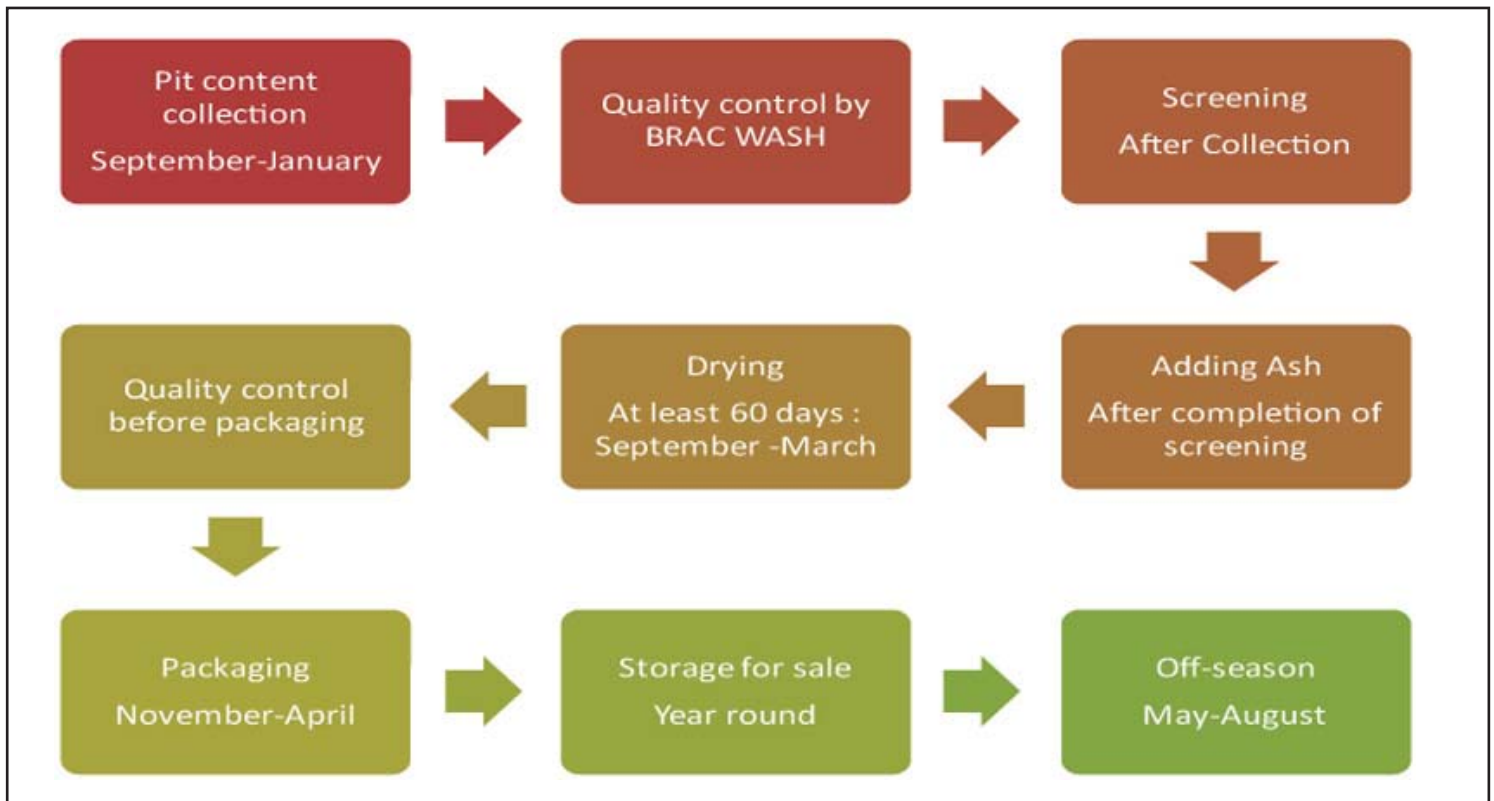
#### **10% higher rice yields with organic compost**

- *Fields fertilised with the faecal sludge-based fertiliser gave higher yields than traditional practices*
- *Rice grown with faecal sludge showed a 10% increase in yield over crops grown with chemical fertiliser*
- *Disease and pest control were the same as for other organic fertilisers*

#### **Findings from market survey**

- *Farmers want organic fertiliser but say commercial products are low quality and expensive*
- *Fertiliser dealers and pit emptiers have expressed an interest*
- *Some farmers use raw faecal sludge to get higher yields*
- *There is a need to generate awareness among farmers and consumers*

## Faecal sludge management—4



*As drying can only be done at certain times of year, a strict timetable will be necessary.*

## Marketing and quality control for viability

### The way forward

Farmers and the public need to be sure that the product is safe and affordable. Pathogen control at local level will be important.

Fertiliser sellers emphasise the need for farmer awareness and an effective supply chain. Farmers emphasise the need for consumer acceptance of crops grown with the product.

The next steps will be:

- Research and development to ensure quality
- Marketing the fertiliser among consumers
- Piloting micro-entrepreneurship

Action research (led by the University of Leeds) has also been conducted into safe use of faecal material from single pit latrines and (led by Biosol Energy Europe) into large scale conversion of pit latrine materials into commercially viable fertiliser, biogas and electricity.