



UNIVERSITY OF CAPE COAST

Cape Coast, Ghana

Integrating Faecal Sludge Management in CLTS in Ghana: Are composting toilets the way forward?

Simon Mariwah, PhD

**Department of Geography and Regional Planning,
University of Cape Coast**



- Community-Led Total Sanitation (CLTS) has gradually gained grounds as an effective approach in improving access to sustainable basic sanitation, especially in rural areas.
 - CLTS is practiced in 66 countries worldwide (Sigler et al 2014),
 - Many governments in Africa and Asia have officially adopted CLTS as their main approach for scaling up rural sanitation (Musembi and Musyoki, 2016).
- However, Faecal Sludge Management (FSM) remains one of the major challenge of CLTS, especially after the toilets get full.



Level	Status (Indicative Time Frame)	Minimum Indicators
1	ODF- Basic (2 Months)	No visible faeces accessible to humans, domestic and wild animals in the entire community
2	ODF (6 Months)	No visible faeces. 80% of households own and use improved latrines with handwashing facilities. All households have access to and use improved refuse management facilities.
3	Sanitised Community (12 Months)	No visible faeces. 90% of households have improved latrines with handwashing facilities. All structures (schools, market places, health centres, mosques, health posts etc) have improved latrines with handwashing facilities. Proper refuse management. Proper waste water management.
4	Sustainable Sanitised Community (36 Months)	Community has maintained its Sanitised Community status for three successive years

No faecal sludge management?



- According to Chambers and Myers (2016), when pits in rural areas are filling or full there are four options:
 - Stop using and dig another pit (“shifting shitting”).
 - Empty the pit (and dump where?).
 - Use sparingly (potential for open defecation).
 - Abandon and revert to open defecation.



- In Ghana, SNV (2014) found that 53.1% of households emptied excreta into a hole on the compound and just left open.
- There is therefore an urgent need for a sustainable solution to FSM in CLTS
- What options do we have?
- Are composting toilets an option on the discussion table?
- How do we make composting toilets socially acceptable?



- Rapid review (both peer reviewed and grey literature) was employed.
- This approach is a way of obtaining synthetic, rigorous but relatively quick knowledge and evidence on specific fields of inquiry (Khangura et al. 2012; Tricco et al. 2015).
- It provided the opportunity to examine the benefits, successes, and challenges of using composting toilets.



CLTS success in brief:

- CLTS has so far made strides in ending OD in most communities:
 - **Number of** communities triggered?
 - **Number of** communities verified?
 - **Number of** communities declared ODF?
 - **Number of** toilets built and used?

- **Urine-diversion toilets (UDTs)**
- The pedestal contains a separate area for urinating and defecating.

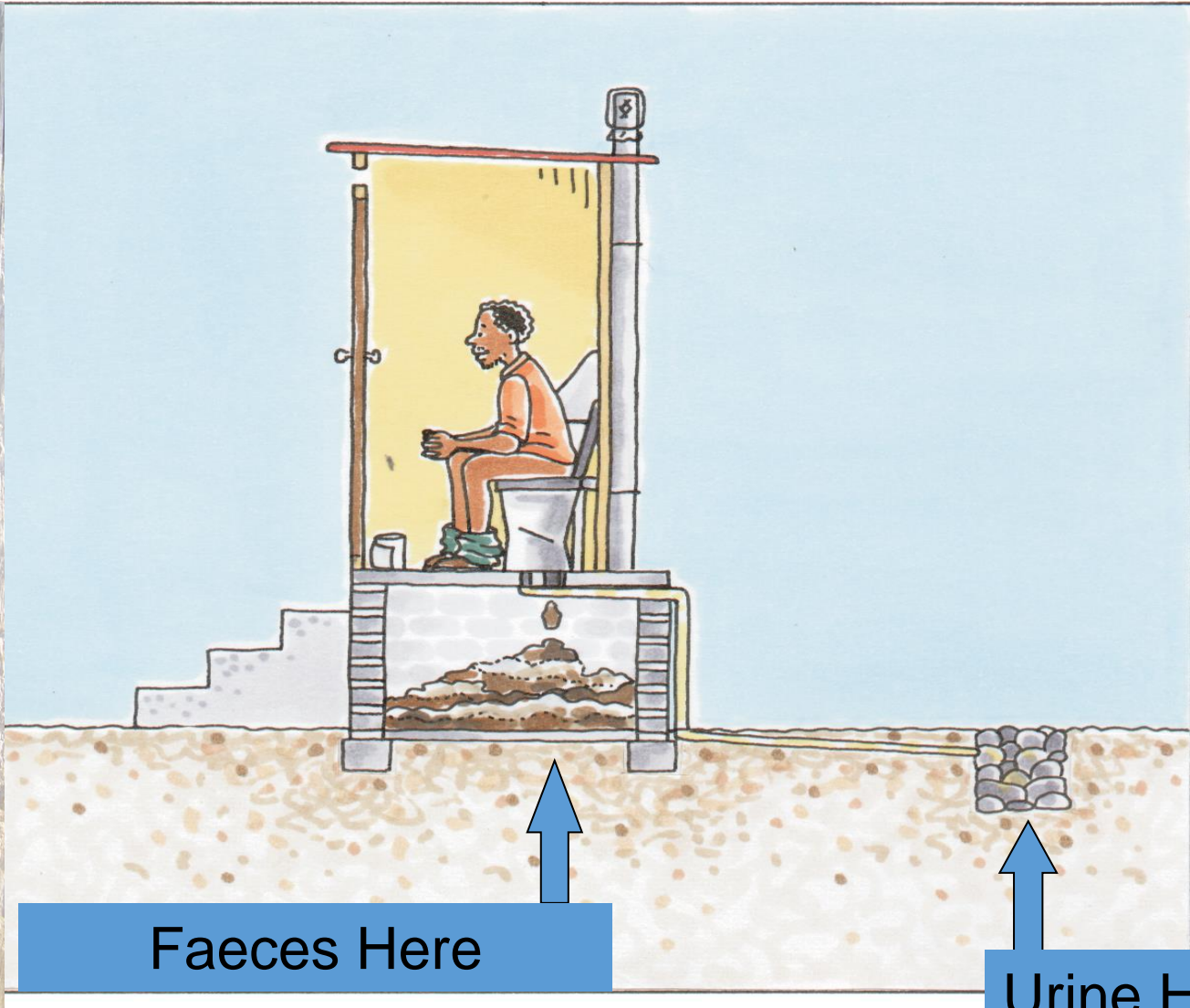
DEFACATING AREA



URINATE HERE ONLY



Composting Toilets



Faeces Here

Urine Here



Composting Toilets



Kimberley, South Africa



Tepoztlan, 2004



Harare, Zimbabwe, 2001



Photo: T-A Stenström

China



Photo: B Vimmerås

Johannesburg, South Africa Peepoo bag, 2008



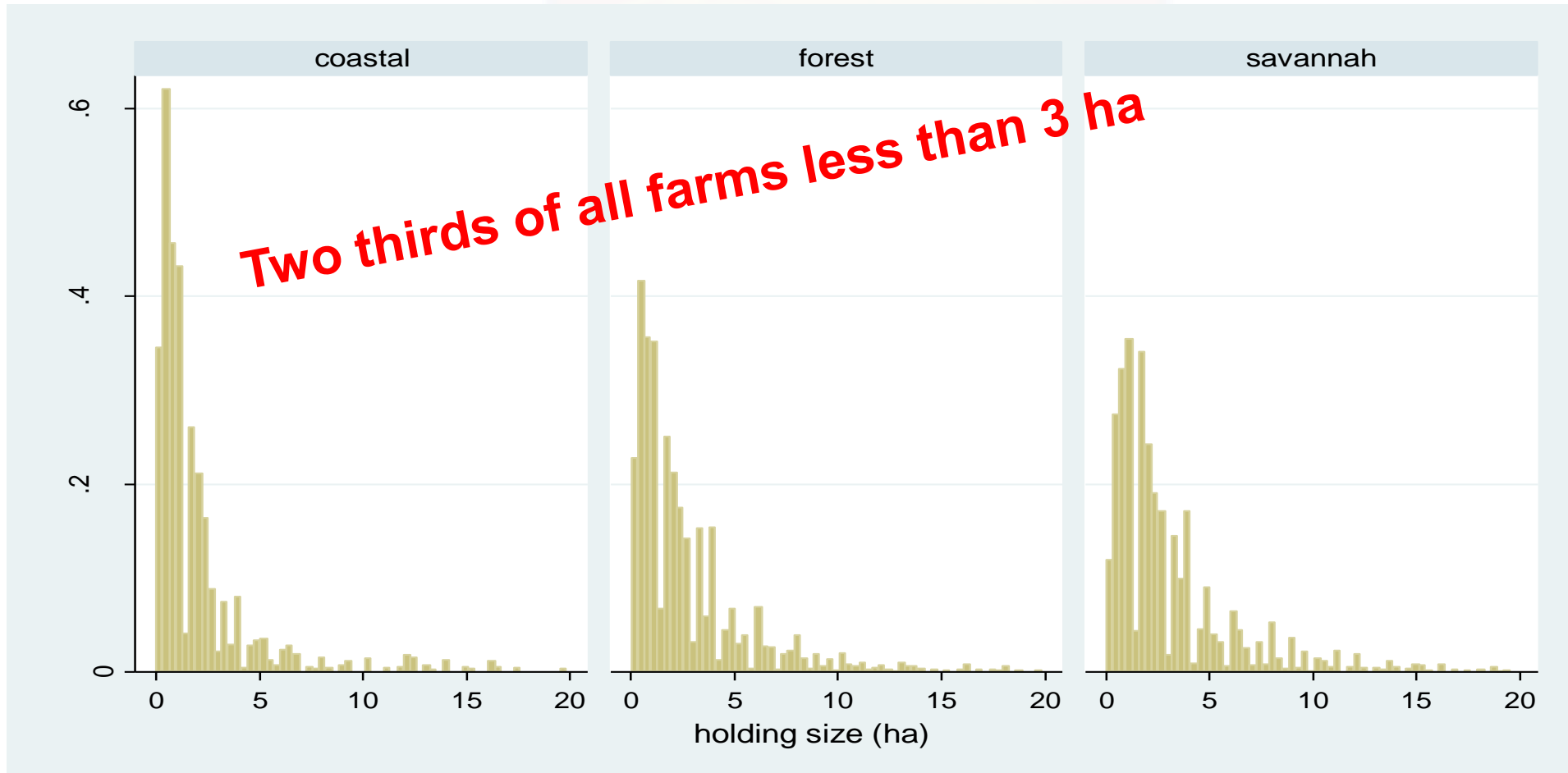
Different pedestals

Seats can easily be made by local artisans





Smallholders dominate agriculture in Ghana



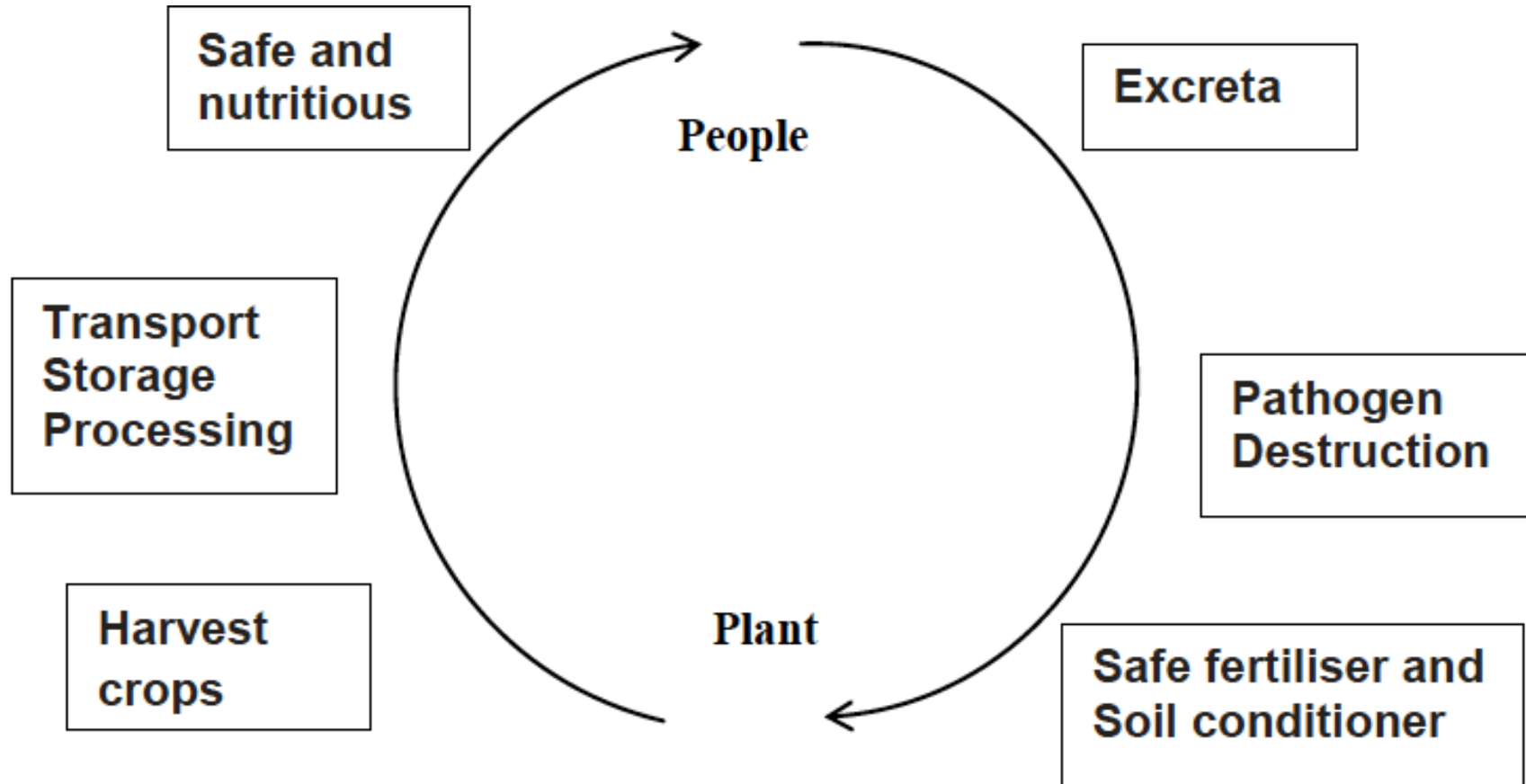


Smallholder crop portfolios

- Number of crops varies with farm size
 - < 2 ha: average of 3.1 crops
 - ≥ 5 ha: average of 5.0 crops
- Maize & cassava most important in smaller farms:
 - The *only* crops produced by 12% of households (median holding size 0.8 ha)



Benefits of Composting Toilets

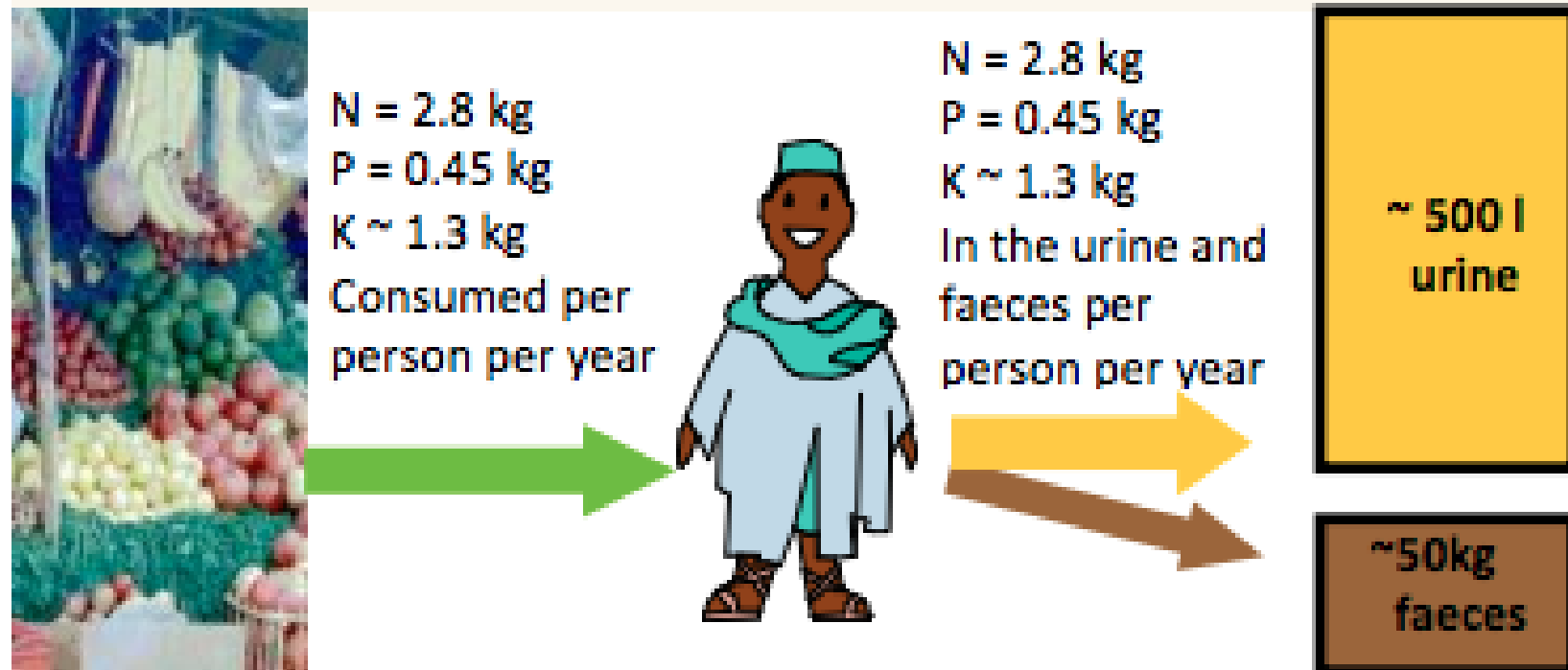


Closing the nutrient loop through composting toilets

Source: Boot (2007)

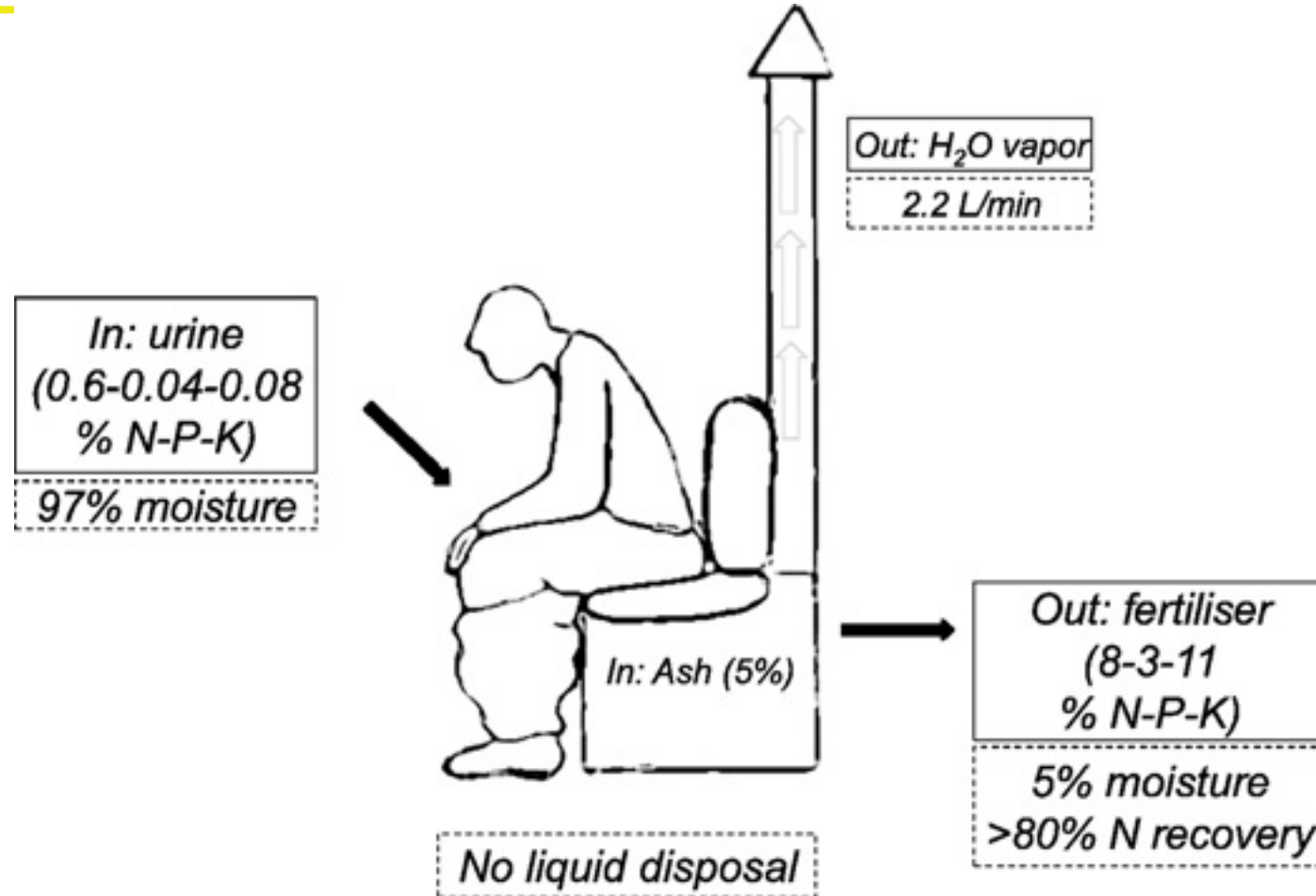


Benefits of Composting Toilets



The average annual fertilizer production per person
Source: Dagerskog & Bonzi (2010)

Benefits of Composting Toilets



Urine dehydration in ash

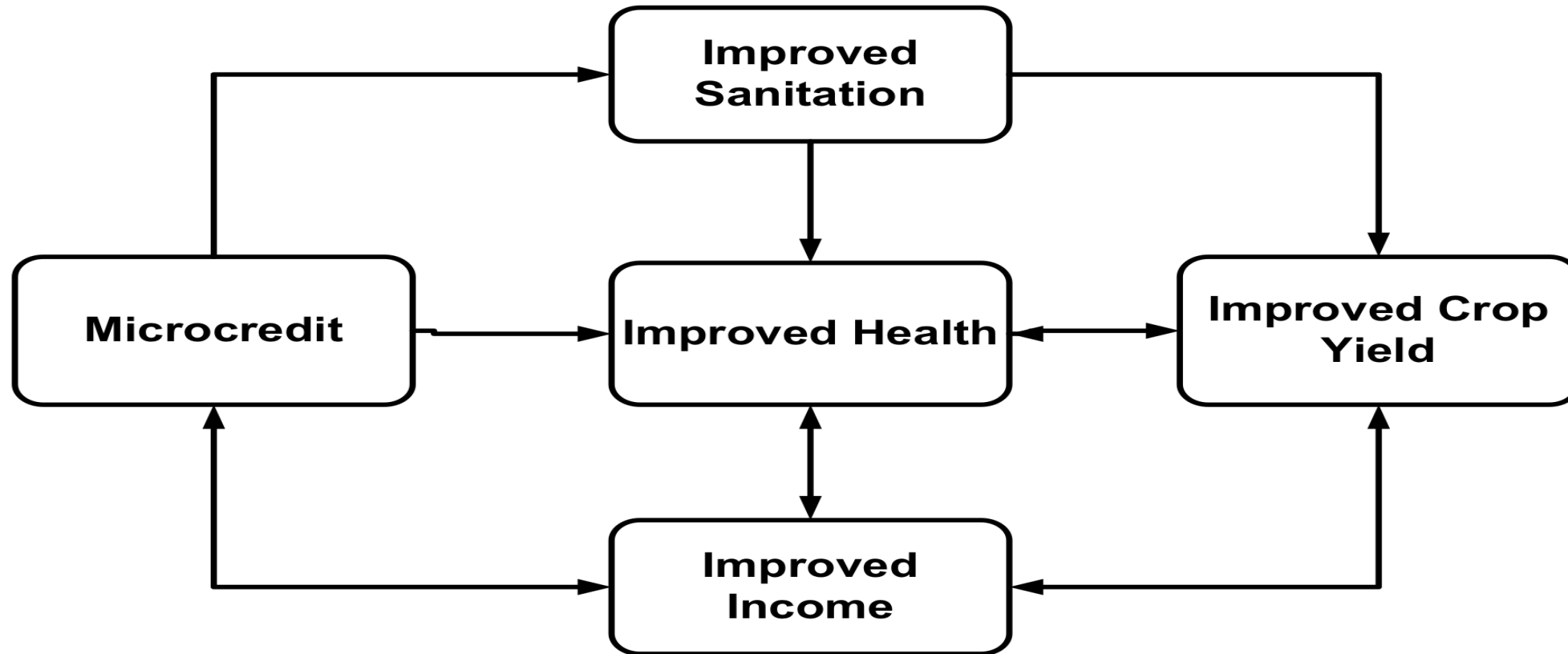
Source: Senecal & Vinneras (2017)



Fertilizer	N (kg)	P (kg)	K (kg)
Urine and faeces from ten people in one year	28	4.5	13
50 kg of urea and 50kg of NPK (14-23-14)	30	4.9	7

The annual quantity of nutrients in the excreta from 10 persons compared with chemical fertilizer in Burkina Faso

Source: Dagerskog & Bonzi (2010)



Framework for analysing microcredit for sanitation

Source: Mariwah, 2017



Emptying composting toilets in Durban, South Africa

Source: Mariwah (2009)



Urine transport and application in Burkina Faso
Source: Dagerskog & Bonzi (2010)



Applying urine on lettuce in Sweden

Source: Mariwah (2008)



Applying urine on potatoes in Rwanda

Source: Mtombia (2006)



Faecal Compost from a demonstration site in Sweden

Source: Mariwah (2008)



Maize farms with and without faecal compost in Rwanda (on the same plot)

Source: Mtombia (2007)



Maize root, stem and cob sizes with and without faecal compost in Rwanda

Source: Mtombia (2007)



- Negative attitudes and perceptions are the main challenges for the adoption of composting toilets. For example:
 - In a peri-urban community in Central Region, Ghana, “*residents admit that excreta can be used as fertilizer, but they are not willing to use it on their own crops or consume crops fertilized with excreta*” (Mariwah and Drangert, 2011)
 - Drangert (2004:11) reports that some people in Manyatta, Kenya feared that “*tomatoes [may] smell like faeces and taste like urine*” if fertilized with excreta.
 - In a community in the Greater Accra Region of Ghana, a headmistress of a local basic school refused to be connected to biogas facility built to provide energy to her apartment, because *the gas generated from a toilet facility may pollute her food* (Mariwah, 2017).



- **Ignorance**
 - Low premium on organic compost
- **Over-emphasis on chemical fertilizers**
 - Free distribution of chemical fertilizers by government and NGOs
- **Poor communication of scientific research**
 - Most research findings remain on library selves.



- As agriculture is the main occupation of most rural dwellers, composting toilets will serve their dual needs of sanitation and fertilizers.
- With the strong behaviour change communication (BCC) approach inherent in CLTS, it is argued that the negative perceptions associated with composting toilets can easily be overcome.
- **Behaviour change is evolutionary, NOT revolutionary.**
 - **So don't be in a hurry for immediate results.**



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Thank you for your attention

Questions and comments welcome!

0204417444

smariwah@ucc.edu.gh