

LeaPPS Uganda Learning for Practice and Policy on Household and School Sanitation & Hygiene

LeaPPS Information case- 2010

PRODUCTIVE SANITATION

A case of improving livelihood of a local farmer using urine as fertilizer

Compiled by Brenda Achiro and
Michael Jonga, NETWAS Uganda

Reviewed by Cate Zziwa Nimanya, Orishaba Grace,
NETWAS Uganda and Jo Smet, IRC

Background

Coming from a family of 9 children, Miss Kairu Agnes traces her farming experience to her childhood in the rural village Kasayi village in Kyampisi Sub-county, Mukono district about 10km from Mukono town. Her parents had a farm from which they derived a livelihood. They used to grow beans, cassava, and maize, which they consumed at home as well as coffee to the market for an income.



A happy Agnes shares her experience on using urine in her garden

As a child, Agnes recalls that food was not bought from the market but supplied from the family garden. By then her parents used expensive fertilizers Nitrogen, Phosphorus and Potassium (NPK) that were applied in the garden. They later started using animal waste as fertilizer in their cassava and maize plantations.

Now as an adult, Agnes has her own garden from which she gets an independent income to provide for her own family. She has been farming using urine from an Ecosan toilet since September 2007 to date.

First Encounter with an Ecosan Toilet

Agnes first heard of an Ecosan toilet in her childhood when her auntie from Ibanda district broke the news of a new type of toilet to her mother. The story was told of an Ecosan Toilet, from which urine is collected and applied onto a banana plantation, resulting to a healthy bananas plantation. An EcoSan mason was introduced

to the family and he constructed the first EcoSan in the home.

After seeing this EcoSan at her parents' home, Agnes thought it a good idea to have one constructed for her in Mukono district at her farmhouse.



Agnes standing next to her Ecosan latrine

Agnes learnt to collect and mix urine with water at a ratio of either 1:4 or 1:3, and spray the urine on the crops. In addition, she also learnt how to make compost manure by decomposing animal waste mixed with green organic matter.

She is currently practising small-scale farming but with great hope of going commercial with a pineapple project.

Access and Application of urine

Urine is collected from Biina Primary School in Luzira and from the Faculty of Technology, Makerere University where she purchases a 20-litre jerry can of urine at UGX 5,000 (some US\$ 2.30).

The farmer uses only urine now, but has plans of using faecal matter to improve soil composition. She applies urine three times before planting as a way of getting rid of pests.

The urine is applied in the gardens using a nap sack pump to spray. Before application, urine is stored in containers for about 1 week.

She has applied urine to pineapple, cassava, matooke (plantain), avocados and orange gardens, which have all had good yield.

Animal dung is composted and used to supplement urine application.

LeaPPS Uganda Learning for Practice and Policy on Household and School Sanitation & Hygiene



One of the passions fruit stems in the garden

Effect of urine application on crop yield

During one of the harvesting season in March 2009, after Agnes had applied urine to her garden for the first time, she harvested about 200kg of maize, 85 kg of beans from 1 acre of land, and she was happy with the harvest.

Agnes experimented planting potatoes without urine application and her experience was that the yield was so poor and had been infested with worms. She then left the land to rest and later sprayed with urine. She then planted peas - *gobbe* - on that same piece of land and the results were good – with no worm Infestation. She attributes this to urine application.

In the past, her garden had anthills all over the place. However she testifies: *“All the anthills have disappeared and I spent less money on purchasing pesticides because urine has done it all.”*



Agnes plucks a weed out of her 'gobbe' garden



One of the workers demonstrates how to use the suction pump for urine application

Cost Implications

The two stance EcoSan toilet on Agnes' farm cost some UGX1 million (some US\$ 450).

A 20-litre Jerry can of urine is bought at UGX 5,000 (about US\$ 2.3) from the Faculty of Technology Makerere and Biina Primary School, Luzira. Transportation cost of urine from the school to her garden is UGX 20,000 (about US\$9).

The spraying pump cost UGX 300,000 (about US\$135), heavy-duty gloves UGX 4,000 (\$2) and gumboots UGX 35,000 (\$16). These are used to avoid direct body contact with faeces and urine.

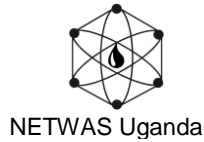
Training in EcoSan

Agnes had no training in handling and use of Ecosan by products. She learned from experience (learning-by-doing) and from what she heard and observed from how her parents were using and applying it. For instance the dilution ratio of 1:3 or 1:4, or as deemed appropriate. She also confesses using a higher ratio for fruits of 1:2, which produces good results.

Relevant information and technical advice has always been availed by Micheal Oketcho from the Ministry of Water and Environment.

Success stories

The month of August 2009 was a very sunny month. However, the farmer boasts of a good yield of beans and maize. No matter the heat, a harvest yielded 170kg of maize flour and 70 kg of beans from half an acre, a much better harvest compared to the first harvest. She attributes this to the use of urine. During the month of July/August 2010, Agnes harvested 2 trucks of pineapples that is a total of 4000 pineapples. She sold that to a private juice company, and a total of UGX 2.6 million (\$1,200) was received. She looks forward to the second harvest in October 2010.



LeaPPS Uganda Learning for Practice and Policy on Household and School Sanitation & Hygiene



Pineapples ripening for the next harvest

There is still need for technical support on issues of right urine ratios for specific crops and safe handling of by products.

References/ Materials Used and Info Sources

Resource persons: Agnes Kairu, Mukono, Uganda

For further information contact the Information Officer:
netwasuganda@gmail.com - phone 0414 577 463

Information materials on EcoSan – see also
LeaPPS Info Cases 2008-2 and -3

<http://www.watsanuganda.watsan.net> &
<http://www.irc.nl/page/38717>

Bill-of-Quantities Arborloo and Fossa Alternata
<http://www.watsanuganda.watsan.net/page/563> and
<http://www.irc.nl/page/44050>.

And visit www.watsanuganda.watsan.net
And www.irc.nl/page/38717

Challenges

One of Agnes' challenges is that she has limited access to water for dilution purposes. The nearest water source (spring) is 2km from her farm, which is quite a long distance on foot.

There is competition for nutrients between weeds and crops in the urine sprayed fields.

There are limited sources of urine, which the farmer can access; only 2 sources are available now, which are not enough for large-scale farming. This forces her to use high dilution ratios of 1:4 so as not to waste the urine.

She still has a fear that probably hepatitis E, which is a sanitation-related disease, can easily be transmitted through handling these by-products. And so she emphasizes use of heavy-duty gloves during application.

It is expensive to transport the urine from the source (schools) to her farm because of the distance.

Technical knowledge on appropriate application for the different crops is still lacking.

What others say about the Ecosan technology

Neighbours have appreciated the Ecosan toilet in her farm, but are not yet convinced of the benefits. Some people still look at it as something dirty. About the buyers of her pineapples she said, *"I do not think that they would have a problem with the product as long it is big and sweet"*.

Way forward

The farmer is looking forward to training other neighbouring households, family members, her workers` and other interested villagers.

She has plans to tile the floor of her Ecosan latrine and make it more user-friendly and attractive.