Making links between sanitation, agriculture and the schools!

Many approaches to a varied need.

Peter Morgan

What ever the sanitation option chosen, excreta disposal has always been been the primary aim of sanitation programmes world wide.

Good toilets can make for a cleaner and more healthy enviromant.

But new approaches can add new vitality to existing programmes

These include

1. Making links to agriculture

2. Teaching the younger generation

1. Making links to agriculture

Even the simplest toilets can do a lot more than provide for excreta disposal alone.

They can also be used to enhance food and tree production.

There are many ways ways of doing this!

Basic methods of recycling excreta

- 1- Growing trees in shallow latrine pits

- 2 – Making compost by combining excreta with soil & wood ash etc in shallow pits & urine diverting vaults and secondary composting sites

- 3 – Using urine as a liquid plant food

The first method – planting trees on shallow eco-pits - is ideal where people have no wish to handle processed excreta and there is some space for the tree to grow!

Valuable trees of many types can be grown on toilet pits filled with a mix of excreta, soil and ash. This is a method which originates in traditional African culture. The Arborloo is designed specifically for linking the toilet with tree planting. The excreta is never handled in this method.

In practice many food plants can be grown on Arborloo pits – like those pumpkins growing in Ethiopia!

The Arborloo

The toilet that becomes a tree!

- *This is the simplest ecological toilet*
- *It is a toilet mounted over a shallow pit (1m deep)*
- *A mix of excreta, soil, ash and leaves are added to the pit during use*
- *Once nearly full, the structure and concrete cover slab are moved to a new pit site*
- *The near full pit is topped up with a layer of top soil and a young tree is planted in the soil, protected and watered.*
- *Tens of thousands of these are already operating in Africa*
- *The tree can also be planted next to the toilet at the same time as it is built and put to use!*

Usefulness of toilet compost

Toilet compost can also be dug out of shallow pit composting toilets like the **Fossa alterna** and mixed with topsoil to improve food production. Compost taken from urine diverting vaults can also be used in the same way.

Recycling toilet compost

The physical quality of toilet compost depends on what its constituents are. Excreta, soil, wood ash and leaves make a good mix! When toilet compost is mixed with an equal volume of poor soil, vegetable production can be increased significantly. Examples shown here are lettuce grown in a container and improved yield in a small vegetable garden.

Recycling toilet compost

Toilet compost can also be put into special “tree pits” in which trees or shrubs are planted. This is a “safe” way of using toilet compost if there are doubts about its safety

Usefulness of urine

Urine contains a lot of valuable nitrogen as well as other plant nutrients.

Urine can enhance the growth of green vegetables and maize considerably

Recycling- use of urine

When diluted urine (3:1) is used on vegetables and neat urine on maize output can be increased significantly. Below a spinach crop increased by over 3 times by use of diluted urine (3:1 added twice a week). A maize crop where the grain weight was doubled by the use of urine. A total of one litre urine was used per plant added in smaller doses over the growing period.

2. Teaching the younger generation!

(Schools Sanitation Programme)

Teaching school children about sanitation – how to build simple toilets, make simple hand washing devices etc

and how to grow healthy vegetabes and trees adds an exciting new dimension to sanitation promotion

Schools Sanitation Programme

An introductory lecture given by the instructor Annie Shangwa at the Chisungu Primary School (Epworth, near Harare) using a flip chart and models also includes a lesson on how to make simple hand washing devices. Hand washing devices should be fitted to every toilet if health improvement is expected.

Schools Sanitation Programme

Simple toilet construction.

School children can be taught how to make concrete slabs and ring beams and also toilet houses

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Here an Arborloo is being built

Schools Sanitation Programme

Simple toilet construction.

Digging the shallow pit inside the concrete "ring beam" which has been cast on the ground. The "ring beam" helps to stabilise the pit. Then the slab is added on top! Ring beams are used where the pit is shallow (down to 1.5m) and the soil moderately firm.

Schools Sanitation Programme

Simple toilet construction.

Building the toilet house

Many types of "superstructures" can be built over simple toilet pits.

Grass and poles may be the simplest!

Schools Sanitation Programme

Simple toilet construction.

Finishing off - make the toilet house, add the roof and hand washer – job done!

The children are proud – so are their parents!

The “Children’s Toilet.”

An interesting innovation introduced in Malawi is the “childrens toilet.”

A small slab (0.6m) is placed over a shallow pit and is used like an Arborloo by young children. When the pit is full, children help to plant the tree!

It cleans the environment, teaches children how to use a toilet and also new trees grow!

Schools Sanitation Programme

Brick toilet construction.

School children can also be taught how to build brick toilets

Dig the hole. Line the pit with bricks using a "corbelling" technique where the top is narrower than the bottom. Fit the slab. Pits of larger capacity can be built this way! Then build a brick house!

Schools Sanitation Programme

Brick toilet construction.

Make the structure in bricks linked to a door frame. With good instruction and encouragement primary school children can build a good brick toilet.

Schools sanitation Programme

Brick toilet construction.

Fit the roof (upgradeable), door (with car tyre hinges) and even a low cost vent pipe to make a VIP toilet! A great achievement for school children. Enthusiastic teachers also participate

Schools Sanitation Programme

Garden experiments

The usefulness of urine and compost can be taught in school gardens. The knowledge gained can then be passed on to the teachers and comunities. In this case small (1 metre diameter) "ring beam gardens" are used for trials!

Schools Sanitation Programme

Garden experiments

The effect of urine treatment can be shown in simple experiments using vegetables like rape and spinach and also maize.

Schools sanitation Programme

Garden experiments with urine

Diluted urine is applied to some small gardens and not to others so that comparisons can be made

Treatment per ring beam is about 3 litres of 3:1 water and urine, 3X per week + watering.

All ring beams are watered regularly

Quick results!

Garden experiments with urine on poor soil

After a month the influence of urine treatment can be clearly seen for rape (X7), spinach (X4) and maize!

Upper photos untreated, lower photos urine treated.






Schools Sanitation Programme

Garden experiments with urine

Recording the results - taking measurements!

Many types of food plant can be tested in this way!

Making Links!

These early programmes show that sanitation can be linked to agriculture.

They also show that school children can become enthusiastic about their sanitation and recycling programme. The school is a perfect place to pass on the knowledge of good sanitation, water supplies and hygiene and how to grow more food using simple and available means.

There is no limit!