The Schools Ecological Sanitation Programme
5. Garden trials using urine as a plant food

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The recycling of human excreta in a safe and acceptable way forms part of the Schools Ecological Sanitation Programme.

Excreta in the form of urine or well processed toilet compost can increase the production of valuable food plants considerably.

But there is always reservation about using the method, even if commercial fertilizer is scarce.

Convincing people!

A good start in convincing people is to perform simple trials in the homestead or in the school garden to show the effects.

This power points gives a guide and shows what can be achieved in a very simple way

A little background

The value of urine!

Each of us produces about one litre of urine a day which goes to waste.

Urine contains a lot of nitrogen (increases plant growth) and useful quantities of phosphorus (helps root growth) and potassium (helps fruiting). Urine is ideal for speeding up the growth of many useful plants which include:

Rape, spinach, covo, cabbage, tomato, and onion. Also maize. And also trees like mulberry and banana.

Collecting the urine

Urine can be collected in bottles, Desert lilies (container and funnel) for boys and men, potties for girls and women and in urine diverting pedestals or squat plates.

Many valuable food plants can yield far more with urine treatment

What is important is to show people so they can see with their own eyes!

In other words:

SEEING IS BELIEVING!!!

You can do simple plants trials in:

1. 10 litre basins or buckets

2. Small round gardens (ring beam gardens)

3. Sections of existing or new vegetable gardens

Experiments basins and buckets are ideal to start because it is possible to select the soil and place this into two basins or buckets and then treat one with urine and one without.

Then the effect of urine treatment can be revealed in a few weeks.

This is a good start to convince people.

How to make simple trials in basins or buckets

You will need:

1. Two 10 litres buckets or basins
2. Plant seedlings
3. Urine and water
4. measuring devices
5. Urine dispenser : small watering can or bucket

1. Two 10 litres buckets or basins

(buckets should have holes drilled in the bottom. Basins can be plastic or concrete with holes drilled in the bottom.

2. Plant seedlings

(These can be rape, covo, spinach, cabbage, tomato, onion and many others)

3. Urine and water

Urine can be collected in bottles (boys and men), potties (girls and women) and in urine diverting pedestals or squat plates.

4. measuring devices

These can be made of pill bottles (100mls) or plastic jam jars (400mls).

5. Urine dispenser

Small watering can or bucket

Stage one

Fill each bucket or basin with the selected soil. This can be garden topsoil, or the soil in the backyard which needs more nutrients. Plant the selected type of seedlings in two buckets or basins. About the same in each. Water and let the seedlings establish for a week before applying the urine.

In this case Tsunga have been planted

Stage two – Start urine application

In the case of 10 litre basins or buckets add 400mls of water and urine diluted at 3 parts water to one part urine. That is 100mls urine to 300mls water using the measuring devices. If several basins or buckets are to be treated the 3:1 mix can be made up in a larger volume. This diluted urine can be added three times a week – Mondays, Wednesdays and Fridays.

400mls of urine added to each treated bucket or basin.

Stage three – cropping

After a month or two of treatment a large difference will be noted between the plants treated with diluted urine and those treated with water only as the following photos show.

Cabbage and Spinach after two months treatment.

ONION

Onion at an earlier stage and at cropping.

Tomato

Tomato's require more than extra treatment of urine alone, as this contains far more nitrogen than potassium. Potassium is required for good fruiting. This can be supplied by feeding with comfrey liquid feed.

In this case the young tomato were watered first, then treated with 400mls of 3:1, three times a week. After the first flowers appeared a liquid food made from comfrey was also added to supply extra potassium.

SPINACH and RAPE

In this photo the combined production of 8 basins of urine treated spinach and 8 basins water treated spinach led to a 3.4 increase in weight. 3 basins of urine treated rape produced 5X the weight of water treated rape.

Spinach and rape respond very well to urine treatment .

MAIZE

Maize is never grown in buckets, but the effect of urine can be well shown in buckets as these photos show.

The amount of growth is proportional to the amount of urine fed to the plant.

Experiments in Ring beam gardens

The ring beam garden is a miniature garden surrounded by bricks. The bricks can be laid on existing topsoil, or the soil inside the ring beam can be dug out and replaced with other selected soils. The diameter is about one metre.

The ring beam garden can be planted with a single type of vegetable or a combination of vegetables, as in the right photo where cabbage, tomato and garlic have been planted.

Urine treatment of ring beam garden

The ring beam garden can accept more diluted urine than the 10 litre basin or bucket. A successful dose is about 3 litres of diluted urine (3:1) three times a week. This can be made up by diluting 800mls of urine (2 X 400mls) with 2400mls (6 X 400mls) water in a small watering can or small bucket. This is applied to the soil surrounding the plants after the first week after planting the seedlings. The ring beam can accept at least 3 doses a week interspersed with normal watering.

Spinach planted on poor soil and treated with water (left) and diluted urine (right) over the course of a month. The increase in weight was 7 times.

Urine treatment of Covo in ring beam garden

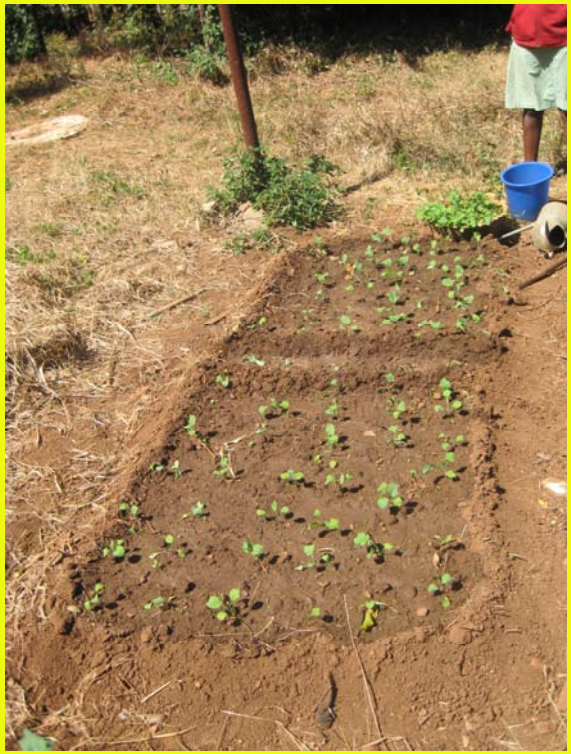
Covo were planted in poor soil within 2 ring beam gardens. The increase in production of the urine treated covo was five times that of the water fed covo.

Production in ring beam garden

This single ring beam produced 26 kg of spinach in a year when fed with diluted urine.

Experiments in vegetable garden - RAPE

Most trials will take place in sections of established vegetable garden in practice.



3 litres of diluted urine (3:1) was added with a small watering can to the treated area, three times a week. This led to considerable growth of rape in the established section of vegetable garden. After 4.5 weeks the average weight of plants had increased by over four times.

Experiments in vegetable garden - TSUNGA

Growth of tsunga in established section of vegetable garden. After 4.5 weeks the average weight of plants had increased by 3.6 times.

Once these trials have taken place and good results have been attained, then confidence is gained to try the same methods in outreach programmes surrounding the school.

Some food plants respond to urine treatment better than others.

The effect of urine treatment also depends on the type of soil in which the plants are being tested. The greatest differences are noticed where the soil is poor and has few nutrients.

What is important is:

1. That there is confidence that the recycling method will work in practice.
2. That the increase in production can be seen to be effective
3. That the increase in production is worth the effort.
4. That food grown with the help of urine tastes good and is safe.

How to begin:

Rape and spinach are good plants to start off with since they respond well to urine and the reaction is quite fast. The effect of urine on the leaves will take about a week in most green vegetables.

The urine nitrogen cannot be used directly by plants and must be converted in the soil by bacteria into a form of nitrogen (nitrate) that can be used by plants.

Where the trials take place on existing vegetable gardens there may be much variation in the type of soil present, even within a single bed. So the result will depend on the nature of the soil as well as the effect of urine.

Now go and try!