The Chisungu Primary School Water and Sanitation project

Using urine to increase maize production at schools

Peter Morgan
and Annie Shangwa

Lets look at the picture again closely!

In the background are small maize growing on the poor soil in the school garden.

In the front - large maize growing on poor soil – treated with

URINE

Urine contains a lot of NITROGEN

It works the same as ammonium nitrate fertilizer

And maize plants like it

The more urine applied, the bigger the maize grows

Some years ago trials were made in Epworth with urine and maize planted on poor soils. The urine made plants greener and larger

The grain yield was doubled.

3 maize trials were carried out at the school.

Trial 1.

Holes were dug for the maize plants 30cm apart and in rows 90cm apart. Seeds were planted in each hole which was covered with soil. Two sections were planted. Urine was applied in one larger section and not in the smaller section.

Source of urine

At first the urine was derived from bottles filled by the boys in the urinal. Later a tank was built next to the urinal and urine fed into it through a trough from inside.

Neat urine was applied from a dispenser once a week to each plant in the treated area (about 120 plants) and water only in the untreated area (20 plants). The urine was applied to a hole scooped in the ground.

After a few week large differences were noted between treated and untreated areas. The natural rainfall was the source of water.

125mls of urine was applied to each plant once a week. In periods of low rainfall extra water was applied.

After about 4 months the maize cobs were harvested and measured from treated and untreated sections of the garden. Huge differences were recorded in the size of treated and treated plants.

Trial 2

50 holes were prepared for maize seedlings in another section of the garden. A tin full of compost was added to each hole later treated with urine.

Trial 2

40 holes were planted with maize seedlings for urine treatment and 10 holes remained for seedlings which were not treated with urine. These were all watered.

Urine treatment

2 litres of urine was mixed with 2 litres of water in a bucket and 125mls of this diluted urine was added to each treated plant followed by 400mls water.

Urine treatment

This treatment was carried out once a week. Natural rainfall watered the plants. If rainfall was low extra water was added. When the cobs started to form the urine treatment was doubled per plant. That is 250mls of diluted urine followed by 400mls water per plant per week.

Urine treatment

After about 4 months of growth the maize cobs were harvested and measured. Once again huge differences were observed between urine treated and untreated plants.

Trial 3

Two rows of 15 holes were prepared with a tin full (400mls) of toilet compost placed in each hole.

Maize seedling were planted in each planting station and watered. Then 125mls of diluted urine (1:1 with water) was applied to each plant followed by a tin of water (400mls) once a week

After a few weeks significant differences were noted in the growth of maize. The photo on the right shows the urine treated plants growing near maize planted earlier in an untreated section of the garden.

Once cobs started to appear the urine dosage was increased to 250mls of diluted urine per plant followed by 400mls of water.

Harvest day.

About 3.5months after planting the seedlings the maize cobs were harvested and measured. The urine fed cobs were compared with cobs grown nearby in the garden where no urine treatment had been given. The average weight of treated cobs was about 30 X that of untreated cobs.

Conclusions

In each of the trials a total of one litre of urine was applied in diluted form to each plant over the growing season. This total of one litre was made up of smaller quantities applied once a week.

The results show clearly the dramatic increases in maize production that can be achieved by using urine as a maize fertilizer