Experiments in buckets to show the effect of urine on maize

Peter Morgan

Experiment 1

Showing that diluted urine can increase the growth of plants like maize considerably

*Bucket A contains poor sandy soil
*Bucket B contains poor sandy soil
*Both buckets have been planted with a single maize seedling
*Bucket A has been watered only
*Bucket B has been fed with a 3:1 mix of water and urine twice a week (100mls urine + 400mls water)

Experiment 2

Showing that bacteria in the soil are important in the conversion of urine nitrogen into plant nitrogen (nitrate) which the plants can use.

**Buckets A and B contain road sand*

**Buckets C and D contain a 50/50 mix of road sand and toilet compost*

•All buckets have been planted with maize seedling

**Buckets A and C have been watered only*

**Buckets B and D have been fed with a 3:1 mix of water and urine twice a week*

Experiment 2

Showing that bacteria in the soil are important in the conversion of urine nitrogen into plant nitrogen (nitrate) which the plants can use.

WHAT DOES IT SHOW US

1. *Maize does not grow well on road sand*
2. *Adding urine to road sand does not help much*
3. *Mixing road sand with toilet compost helps a lot*
4. *Adding urine to a mix of road sand and toilet compost is best*

Experiment 2

Showing that bacteria in the soil are important in the conversion of urine nitrogen into plant nitrogen (nitrate) which the plants can use.

WHY?

1. Both road sand and poor sandy soil contain very few nutrients for plant growth.

2. Unlike road sand poor sandy soil does contain some soil bacteria which helps change the urine nitrogen into plant nitrogen

3. Hence adding urine to sterile sand does not help plant growth

4. The effect would be even better if the poor sand was mixed with toilet compost or fertile soil

Experiment 2

Showing that bacteria in the soil are important in the conversion of urine nitrogen into plant nitrogen (nitrate) which the plants can use.

Notes

Poor sandy soil is very common in many parts of Africa. Crops do not grow well on it.

However there are sufficient soil bacteria in poor sandy soil to convert urine nitrogen into plant nitrogen

Plants grow much better if the poor sandy soil is also mixed with fertile soil or compost.

The compost can be made in the garden or can be taken from toilets that make compost.

For many plants like maize and green vegetables, the growth of plants can be increased even further if the mixture of poor soil and fertile soil or compost is treated with diluted urine.

The urine contains much nitrogen but this urine nitrogen must be converted into plant nitrogen by soil bacteria before it can be taken up and used by the plants.

Experiment 3

Demonstrating the effects of urine and toilet compost on maize plants in small pots containing garden topsoil.

*All four small pots were filled with garden topsoil
*All four pots were planted with a single maize seedling
* The two pots on the left have been fed with 20mls (bottle cap full) a 3:1 mix of water and urine every other day.
* The two pots on the right have been fed with water only.

Experiment 3

Demonstrating the effects of urine and toilet compost on maize plants in small pots containing garden topsoil.

WHAT DOES IT SHOW US?

1. Even good soil can benefit from the use of diluted urine.

2. A maize plant can use up the food (nutrients) in a small volume of soil quite quickly.

3. Urine appears to provide the maize plant with all the food it needs.