

## Recommendations for the storage of urine:

- Direct use after collection or a short storage time is acceptable on the single household level
- For larger systems, urine should be stored before application for preferably longer than one month for fodder crops and six months for food crops
- Urine can be stored in bottles or plastic containers as they are used for water collection provided they are well capped and the ammonia is not allowed to escape

## Nutrients in urine:

The average concentrations of nitrogen, phosphorus, potassium and sulphur in one litre of urine are as follows:

4 - 5 g N / l

0.5 - 1 g P / l

1.5 - 2 g K / l

1.5 - 2 g S / l

It can therefore replace mineral fertilizers such as urea and DAP.



Depending on the crop, the maximum application can be approx. 120 kg nitrogen (N) per hectare and year. Thus, an amount of 2.5- 3 l urine per square meter can maximum be used for fertilisation.

## Urine is recommended for example for:

maize, tomatoes, teff, beans, pepper, eggplant, cotton, fruit trees, etc.

In general urine can be used as fertilizer for all plants with a high demand of nitrogen.



## Further uses of urine in agriculture:

- Urine as an “activator” for compost
- Urine as a medium for fermentation of plant residues



For further information refer to World Health Organisation (2006): “Guidelines for the Safe Use of Wastewater, Excreta and Greywater”.

## ROSA office Arba Minch

P.O.Box 40  
Arba Minch



Arba Minch University and  
Arba Mich Town Water Service

Telephone: +251-(0)46-8815115  
E-mail: kinfe\_k@yahoo.com  
Web: <http://rosa.boku.ac.at>



Resource-Oriented Sanitation concepts  
for peri-urban areas in Africa

# Use of urine for growing crops



## What is the purpose of using urine as fertilizer?

Urine is rich in nutrients necessary for plant growth. Plants differ in their requirements, but overall urine represents a very beneficial plant fertilizer. There is also financial benefit when using urine as fertilizer because it doesn't need processing.

## How to collect human urine?

Urine can be collected with a urine diverting toilet (which also collects faeces). Or you can use a urinal for men (bottles, plastics and other non metallic container) or an Ecolily for women.



Urinal



Ecolily



Urine diverting toilet

## Are there any harmful substances in the urine?

Crops fertilized with urine are safe for consumption. Almost all of the disease causing pathogens are contained in the faeces. Therefore, the entering of faecal matter into the urine pipe should be avoided. In addition, storage of urine will reduce the risk. HIV/AIDS cannot be transmitted by the use of urine. In areas where salinisation of soils is a problem, the salt content in urine can increase this risk.

## Recommendations for fertiliser utilisation:

- Stop fertilising with urine one month before harvesting
- Avoid the direct contact of urine and crops
- Avoid the contact of urine and the leaves of the plants
- In order to avoid ammonia losses try to avoid fertilising during the heat of the day
- Urine should be applied close to the ground to avoid aerosol formation and ammonia evaporation
- After fertilisation the urine should be incorporated into the soil
- In order to avoid nitrogen leaching don't overfertilise and don't fertilise during times of heavy rains
- Urine should not be used near fresh water bodies



## Recommendations for urine application:

First application: prior to sowing

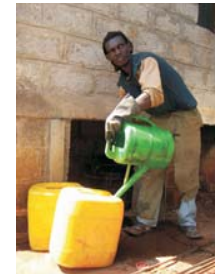
Depending on the crop a second or maybe a third application can follow.

Second application:

2 - 4 weeks after sowing

Last application:

4 weeks before harvesting (after 2/3 - 3/4 of the growing period)



## How much urine do I have to use for fertilisation?

The application rate depends on the nutrient concentration in the urine and the plant requirements.

If nutrient concentration in urine are not known the following recommendations can be applied as a rule of thumb:

- in general: 1-2 litre per square meter per cropping season
- 1/2 litre of urine per plant of cereals
- 1/4 litre per plant of vegetables
- 1-3 litre per month for small trees
- 3-6 litre per month for big trees