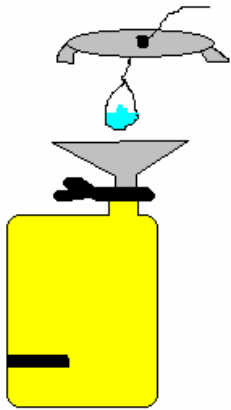
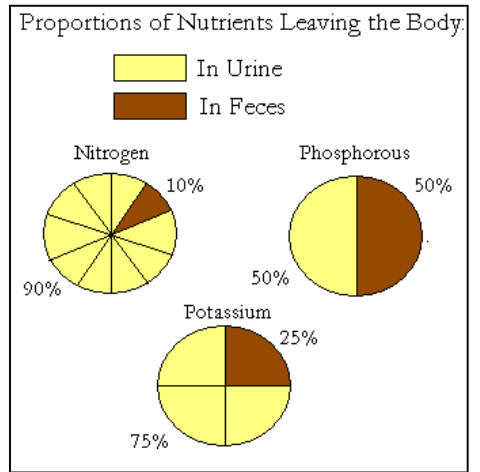


## STARTING TO USE URINE AS FERTILIZER

People have used animal and human feces to fertilize crops for centuries because manure contains many vitamins that plants need. What most people don't know is that the majority of beneficial nutrients leave human and animal bodies through urine rather than through feces, and the majority of urine is pathogen-free. People in the developed and developing world are beginning to use this untapped nutrient potential to fertilize crops with great success. It's currently being tried all over West Africa. This paper will teach you how to collect urine in modified jug and turn it into fertilizer in a safe and cheap manner.

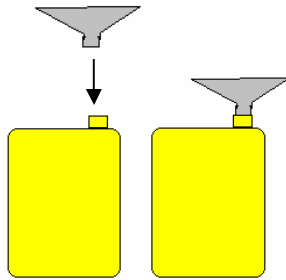


### The Urine Collector

We can't apply urine directly on plants because it's too acidic and will burn the roots of our plants. We need to collect the urine and dilute it.

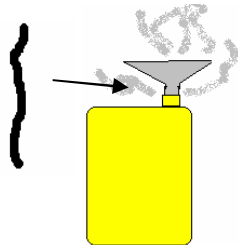
Start by getting a 20 L yellow jug (not green because we need to see the liquid level inside). Cost: 400-750 CFA

Buy a large mouth funnel that can fit tightly into the jug opening. The stainless steel funnels made locally are best. If possible, have the funnel maker add a screen to block debris from falling in.



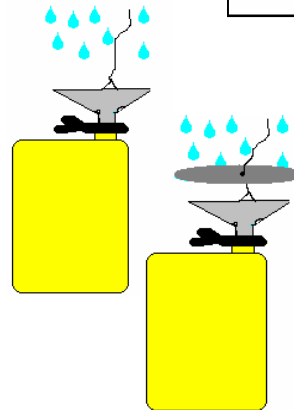
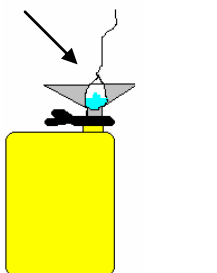
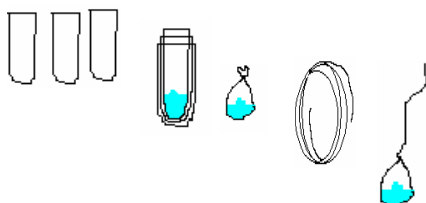
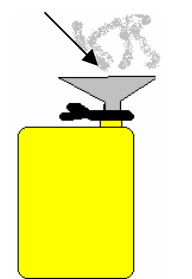
Cost: 500-1000 CFA

We need to make the jug air-tight. Otherwise it's going to stink, and that stink will mean a lot of precious nitrogen is leaving as ammonia. First, we tie a piece of rubber cord where the jug and the funnel meet to seal any air gaps.



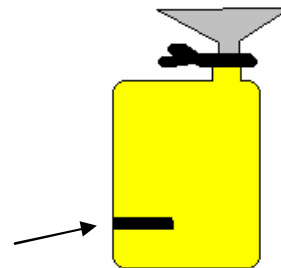
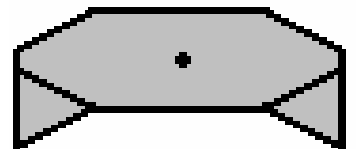
Cost: 0-100 CFA

Next, we're going to make a seal for the mouth of the funnel. Put 3 old plastic bags one inside the other and fill the inner most bag part way with water. Push the air out and tie the bags up top so it swims. Now tie it to a string. Cost: 0-50 CFA



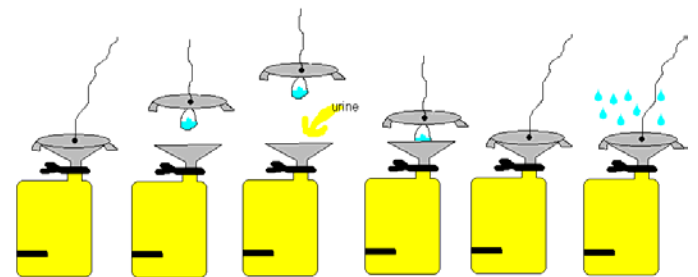
If your latrine doesn't have a roof, you need a cover to keep rain out during the wet season to avoid over-diluting the nutrients in the urine. You can use anything that can sit over the funnel. Put a small hole in the middle and loop your string through. Cost: 0-350 CFA

Ask the funnel makers if they can make a nice cover like this out of sheet metal. Ours did for 350 CFA.



Now draw a line at the 5 liter level (1/4 up from the bottom). This is for our dilution of 1 part urine, 3 parts water.

Tada! A beautiful jug ready to collect urine. The rope is attached to the latrine wall. When you want to add urine to the jug, pull the rope up. The bag and cover will rise. Add urine and place the cover once more. The jug is now airtight and rain proof.

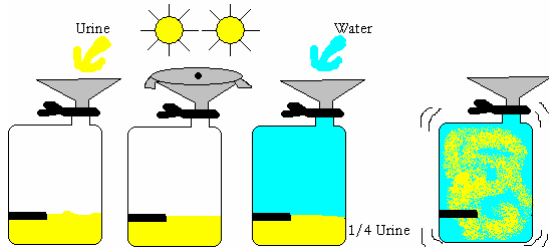


NOTE: Women and small children can add urine to the funnel using a cup. Sit a cup or old can in the latrine. People can urinate into the cup and dump it into the collector afterwards.

## Collecting and Diluting Urine

We want our fertilizer to be 1 part urine, 3 parts water: That means we need 5 liters of our 20 liter jug to be urine. Here's what we do:

1. Add **ONLY URINE** to the 5 liter line. This usually takes 4 or 5 days.
2. **STOP** adding urine at the 5 liter line. Now 1/4 of the jug is urine.
3. Let the jug sit for 2 days. This will kill any schistosomiasis in the jug.
4. Take the jug to your chosen garden or field.
5. Now top off the jug with water and mix it a little.



The jug is now 1/4 urine (5 L) and 3/4 water (15 L). Tada! You just made urine fertilizer, and it's ready to fertilize!

## A Note on Diseases

Only diseases of the urinary tract are transferred through urine. The most common is schistosomiasis, which we kill during collection. Other urinary tract infections are rarely spread through contact with urine, so even though we will take precaution, there is no need to be afraid of the urine.

## Application Rate

**Fields: 2 Liters of Mix per 1 Square Meter of Field Crops each Week**

**Gardens: 4 Liters of Mix per 1 Square Meter of Garden Crops each Week**

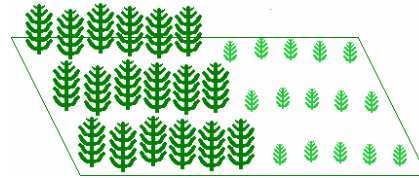
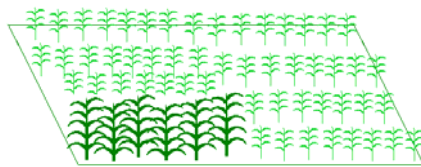
**Trees: 2 Liters of Mix per Tree each Week**

NOTE: These are strong doses that will produce a visible increase in most crops. Once people are convinced the urine fertilizer works, we can use more efficient nutrient application rates for specific crops.

## Prepare an Application Area

We want to see that there is a difference when urine is used, so it is best to choose an area we can split in two. We put urine fertilizer on one portion and none on the other. We'll be able to see the difference with urine and non-urine crops next to each other. Use sticks to mark off the area where urine will be used.

With field crops, choose a small section of a larger field and consistently apply the fertilizer to that area.



For garden plots, split each in half and fertilize the same half with urine each week.

## When to Apply

START APPLYING URINE at the time of planting.

STOP APPLYING URINE one month before harvest. Old plants cannot use extra vitamins efficiently, so the urine is best used elsewhere or saved for later use. This also adds a level of precaution against any microbes that may have been in the urine. The vast majority of microbes in urine die off in one month.

## How to Apply Urine

1. Find something to measure out the desired dose.
2. Pour the fertilizer near the ground to prevent urine from getting on the leaves.
3. Wait until the fertilizer seeps into the ground.
4. Now, water the area with pure water. Recall that the nitrogen in urine turns into a gas and escapes (and stinks!). This water pushes the urine into the ground to keep the nitrogen (and smell) there.

For more information, please contact Peace Corps Mali or e-mail [rpslaw@mtu.edu](mailto:rpslaw@mtu.edu)

## What to Fertilize with Urine

**BAD FOR:** Flooded Rice, because we don't want that urine sitting in pooled water.

**LITTLE EFFECT ON:** Legumes, Beans, and Peanuts, because they already fix nitrogen.

**BEST ON:** Corn, Millet; Sorghum, Salads, Spinach, and other Greens because the nitrogen in urine is especially great for growing bigger leaves and lots of seeds.

**BUT GREAT ON:** Everything Else (Onions, Tomatoes, Potatoes, Eggplant, Bananas, Peppers, Garlic, Cucumber, Melons, Squash, Okra, Cabbage, Sweet Potatoes, Cassava...)