

How does urine effect earthworm burrowing time?

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Abstract

Urea is toxic ammonia, urea comes from all animals and is excreted when you urinate. It is important that the worms and other insects do not get affected because worms help increase the amount of air and water that goes into the soil. Worms also break down and decompose dead bodies and organic matter which is rich in nutrients for the soil. In order to test our theory that urine has a negative impact on worms, we exposed different red worms to the urine with various amounts of exposure times and recorded how long it took them to burrow. We found out that the longer we exposed the worm to urea the longer it took for the worm to burrow. If urea gets out into the real world then crops and plants will not grow as well because the soil will not be rich enough in nutrients.

Introduction

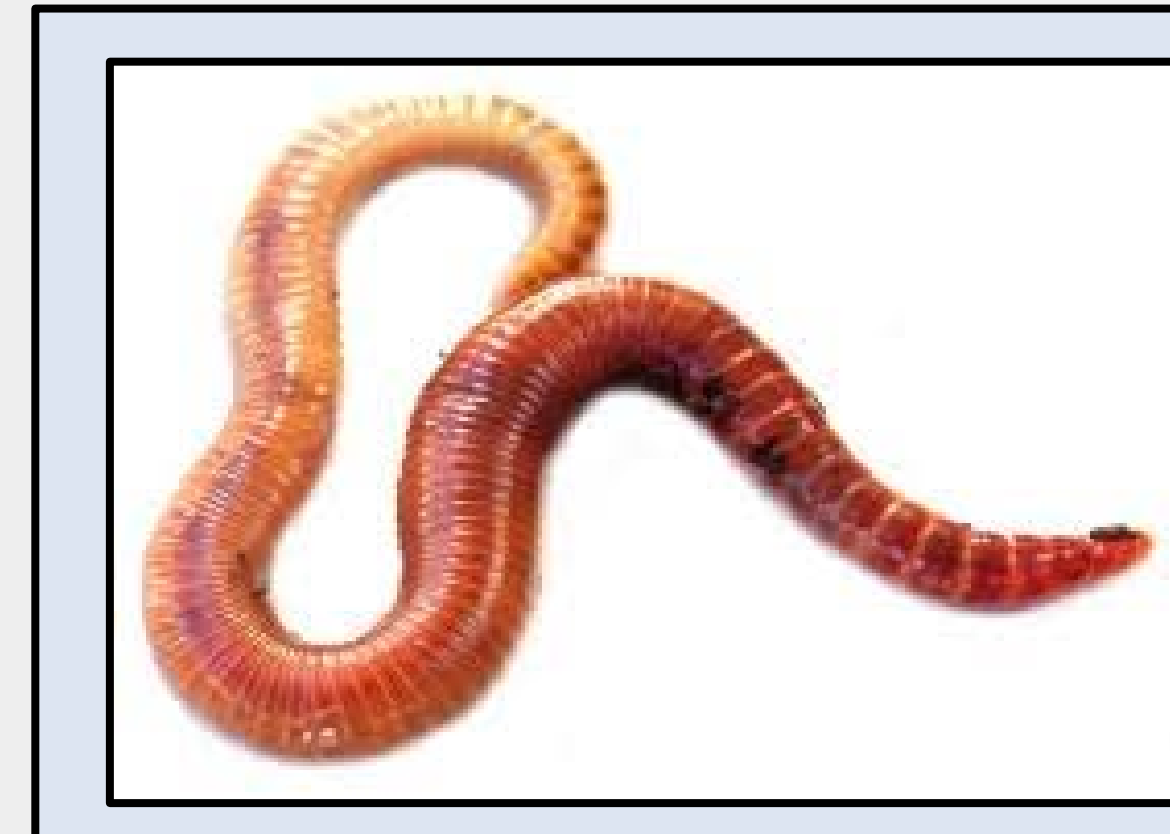
Urine contains a substance called urea, urea is a toxic ammonia. Also in urine is chloride, sodium, but urine is mostly made up of water. Urea is a white crystal compound that is produced in the liver and comes out when you excrete waste. Earthworms are annelids, earthworms live in the upper layers of the soil in the summer and lower layers in winter.

Materials

- Red solo cups
- Red Worms
- Soil
- Urine
- Filter paper
- Pipet
- Timer
- Gloves (optional)

Methods

- 1) Drop 2 mL of urine onto filter paper
- 2) Expose worms to urine for 0, 1, 5 and 10 minutes
- 3) Record the time it takes for the worm to burrow after the set exposure time.
- 4) Repeat steps 1-3 three times



Results

First, we didn't expose the earthworms to urine and it took the worms an average of 304 seconds to burrow. Then, we did expose the worm to urine for one minute and the average burrowing time was 370 seconds. Next, we exposed the worm to urine for five minutes and the average burrowing time came out to 727 seconds. Lastly, when the worm was exposed to urine for 10 minutes the average burrowing time was 900 seconds.

Discussion

In our experiment, we found out that as we let the worm be exposed to the urine longer, the longer it took for the worm to burrow. Our hypothesis was supported by the data that we collected. Our hypothesis was that if the earthworm was exposed to urine for a greater amount of time than the burrowing time will increase. If you check our graphs you will see that the longer the worm was exposed to the substance the slower the worm burrowed. If we were to change something in our experiment to get more accurate results then we would have decreased the 10 minute exposure time trials down to a smaller exposure time like seven minutes. After our experiment we came to a conclusion that you should not urinate in the outdoors or on worms because it is bad for the worms and also the environment.

Exposure Time to Urine and Earthworm Burrowing Time



(Figure 2)

Exposure to Urine and Earthworm Burrowing Time

Exposure Time	Trial #1	Trial #2	Trial #3	Average
0 min	188 seconds	240 seconds	300 seconds	243 seconds
1 min	450 seconds	384 seconds	219 seconds	351 seconds
5 min	900 seconds	495 seconds	900 seconds	765 seconds
10 min	900 seconds	900 seconds	900 seconds	900 seconds

(Figure 1)

Works Cited

- 1) Urea. (2008). In *UXL Science*. Detroit, MI: UXL.
- 2) Earthworm. (2018). *Funk & Wagnalls New World Encyclopedia*