

LTER-EDU Global Monitoring Project

Protocol for measuring the rate of litter decomposition

1. The rate of plant litter decomposition is measured using an indirect method that gauges the reduction in the weight of litter placed in fiberglass net bags **with the dimensions 20 x 20 cm**. The bags are made by folding strips of fiberglass net with a **width of 20 cm and a length of 43 cm** into two (3 cm are left for closing the bag after the litter is placed inside it). Ten net bags should be placed in each monitoring area, after being filled with plant litter, as follows:
2. Go out to the monitoring area and collect a large quantity of plant litter that has accumulated under trees and bushes (without stones or soil). Place the litter in paper bags. Place the bags in a drying oven for at least 24 hours at a temperature of 55°C (**if litter is collected from the field before the first rains, oven drying can be skipped**).
3. In the class/laboratory, place the litter on a large tray and separate into the different components: Leaves; branch parts; flowers, seeds and fruit. Record the following details on an aluminum/plastic tag: Date, name of group representative, and bag number (from 1 to 10). Record the relevant details on the **Monitoring Form for Litter Decomposition Rate**.

Place a similar “dose” of litter, with a total weight of **3 grams (closer to 5 grams if possible)**, in each net bag. Attach the appropriate tag to the bag, fold at the end, and staple shut.

4. Go out to the monitoring area and choose a tree or dense bush that has sufficient open space underneath. Clean the surfaces of vegetation, stones, etc., and place the ten net bags in pairs. Fix the bags to the ground with nails – one nail at each corner of each bag.
5. Leave the bags in the field during the monitoring period. On each of the five monitoring dates, one pair of net bags should be collected from the field. Gently remove the nails from the corners of the bag, clean off soil and extraneous material on the outside, and place the net bag in a paper bag (to prevent loss of material during handling).
6. In the class/laboratory, gently open the net bags, and empty the contents onto a tray (separately for each bag). Remove all items that are not the original litter placed in the bag. Transfer the clean litter into a small paper bag, and record all the identification and other details on the bag. Place the paper bags with their contents in a drying oven for at least 24 hours at a temperature of 55°C.
7. After drying, transfer the contents of each paper bag into an appropriate container and weigh them. Calculate the “loss” – subtract the weight of the litter remaining in the bag from the weight that was placed inside at the beginning of the experiment to calculate the “missing” quantity of litter. In effect, this is the quantity of litter that has decomposed. Record the details on the **Monitoring Form for Litter Decomposition Rate**.

See also: http://www.ramathanadiv-edu.org.il/Lter/LterEng/Lter1_6.asp?FID=129705&ASP=402