



Can tea help to understand climate?

Yes, but we need your help.

The TeaBagIndex research team is inviting GLOBE schools to join a real global experiment where researchers, schools and farmers reveal important processes in soils and create a global map of vegetative decay that will improve climate modelling and increase understanding of soil health. It's Teatime4GLOBE!

The background

A leaf falls from a tree, onto the ground and turns into soil. The soil provides nutrients to the tree, which thereby can form new leaves. The decay of plant material (decomposition), occurs in between, when the decomposers (fungi and bacteria in the soil) eat up the organic matter and turn it into nutrients for plants and carbon gasses. The greenhouse gas carbon dioxide is one of them. It is taken up again by plants, thereby closing the carbon cycle. However, carbon dioxide is a so called greenhouse gas, as it's concentration in the atmosphere is used for monitoring climate change. Decomposition is extremely sensitive to changes in environmental conditions, such as soil moisture and temperature.

To understand the global carbon cycle and the impact of (changed) local environmental conditions on soil, we need to study decomposition globally. Decomposition is measured as the weight loss of plant material, such as tea leaves, after a certain amount of time.

Tea bags are therefore a perfect way to measure the impact of climate conditions such as temperature, moisture and other soil conditions on decomposition, which will deepen our insight in the global carbon cycle and soil health.

The aim

In the teatime4science project we aim to create a global map of decomposition that can be used for climate modeling.

The method

We need your help to create this map. GLOBE schools, with their detailed measurements on environmental conditions will be able to give a significant contribution to the global map. In the Teatime4GLOBE project, students are asked to bury a few tea bags, wait three months, retrieve, dry and weigh the bags. Data can be submitted online, and you will be able to directly compare their results to others across the globe. More on the project you can read on

www.teatime4science.org

GLOBE measurements that you do during the months of waiting for the tea to decompose will complement the results. Some suggested protocols are Soil Characterization, Fertility, Infiltration, Moisture, and Temperature in addition to Air Temperature and Precipitation.

This project will open up the black box of soil science to students, and let them discover the impact of climate and vegetation on decomposition and that human influence can change soil health. Besides, student will participate in real science and thereby contribute to better understanding of our climate and of factors that determine soil health.

Interested?

All you need is a good metric scale (with 0.01 gram precision), something to dig with (e.g. a spoon) and about 6 hours of total time. The tea and other equipment will be sent to you. Joining is fun and free.

Send an email to Judith@decolab.org containing

- 1) The name of your school as it appears in <http://globe.gov>**
- 2) Your address**
- 3) The age range of your students**
- 4) The time period that would suit you for doing the experiment. Ex) May – July.**

The practical details

15 April: deadline for signing up.

1 May: sending out the material and lesson plan.

The start and end of the experiment depend on the growing season, and are thereby a bit flexible.

In general we recommend:

Week 21-23 (1 Jun) start of experiment for the northern hemisphere

Week 46-48 (15 Nov) start of the experiment for the southern hemisphere

We will provide webinars during this starting week that can be followed online.

The lesson plan aims for students age 9 to 15, and will provide the necessary information to successfully perform the experiment. It also gives suggestions how to adjust the level of difficulty and how to link this project to ecology and societal challenges such as waste management and food security.

Already 350 schools in several European countries have participated, and combined with the efforts of gardeners, researchers and farmers we have collected data from nearly 2000 locations globally.

With kind regards, and looking forward to working together!

On behalf of our research team,
Judith Sarneel.

