

STUDENT WorkSheet 1

SOIL TESTING

Suitable for
AGE 10+

AN CHOILL
BHEAG

Name: _____ Class: _____ Date: _____

It is important to audit and assess the soil of the land. Some trees prefer dry conditions (Holly and Hazel) and some prefer wet conditions (alder, willow, birch).

We will carry out 2 investigations:

1. Soil Test - PH and Jam Jar Test:
2. Plant, tree and biodiversity audit

1 Soil Investigation:

To measure PH of Soil - to find out if soil is Alkaline or Acidic

NOTE: PH scale - 0-14 - Ideal soil is 6.5 - 7PH:

1-7=acidic _____ 7=neutral _____ 7-14=alkaline

Instructions:

1. Follow instructions in PH soil test kit
2. Dig up some soil, remove stone and return any insects/worms carefully back to soil
3. Put powder from capsule in narrow chamber
4. Put a small bit of soil in narrow chamber
5. Add water up to line (try to use spring or bottles water so that it does not affect reading)
6. Replace lid and shake well
7. Leave to sit for 10 minutes
8. Compare colour against chart
9. Record results
10. Repeat experiment in 2-4 different areas

PH Soil Test Results:

Location and Sample Site Number:	Observations
Example - School grounds Area 1	PH=6 = slightly acidic

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2 Soil Investigation:

Jam Jar Test – to find out % of different layers

Equipment

Soil	Plastic tub with lid (with holes in)
If possible, have other soil to compare with – bog, clay and compost samples from the locality	White paper
Glass jars	Pencils/sticks
Magnifying glasses	Invertebrate identification guide

Method

Hand round sample of each soil type one at a time; discuss what the soil looks like and smells like. Pour a small amount of soil onto a piece of white paper and look through it closely using magnifying glass.

Observations:

Observe the layers as they settle, identify gravel, sand, humus, clay and by subtraction, you can determine the thickness of the main layers and so identify the general soil type:

Sum	Soil layer	Result
C - B	Layer of clay	
B - A	Layer of silt	
A	Layer of gravel and sand.	

Note: *Sand grains* are the largest so they will settle to the bottom. *Silt grains* are smaller, so they will create the next layer. *Clay grains* are smaller again, so they will settle on top. If there is a dark layer on top of the sand layer, this is called *humus*. Particles floating in the water can be bits of leaves, wood, etc. This is called *organic matter*.

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Courtesy of Homesteading [facebook.com/homesteady](https://www.facebook.com/homesteady)

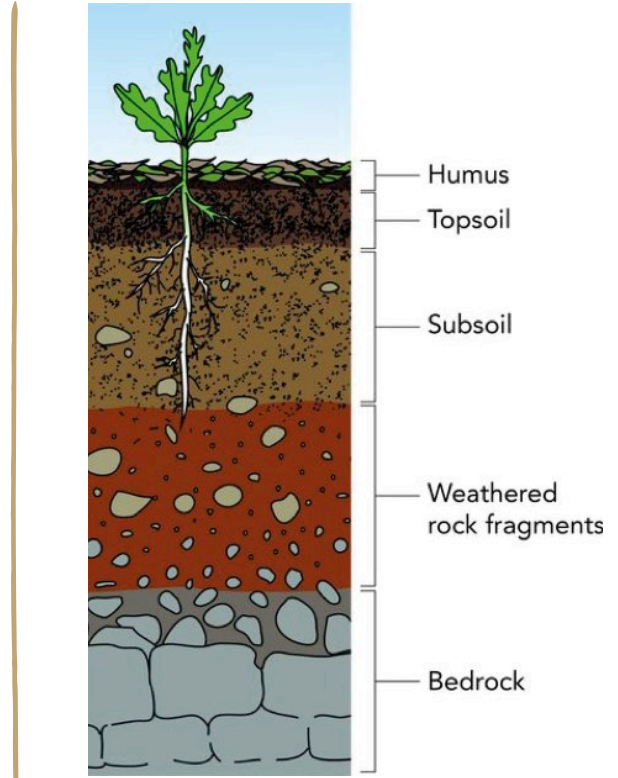
JAR TESTING FOR SOIL TYPE



SAND	SILT	CLAY
0 - 10% clay	10 - 30% clay	50 - 100% clay
0 - 10% silt	30 - 50% silt	0 - 45% silt
80 - 100% sand	25 - 50% sand	0 - 45% sand

1. Fill a large clear glass jar halfway with your soil sample.
2. Fill the remaining half with tap water, leaving 1" of air.
3. Attach the lid, then shake the jar vigorously until you have broken up any clods in the soil.
4. Put the jar in an out of the way place so that it can rest undisturbed overnight.

After 24 hours, your jar's contents will have settled into distinct layers, SILT, CLAY, and SAND. By examining the relative proportions of these layers, you can gain a sense of which type of soil you have.



Resource: Look up GLOBE SOIL sites
<https://www.globe.gov/web/phenology-and-climate>

SOIL TYPES

Soil is a combination of broken down rocks, minerals and organic matter, all mixed together by worms and bugs. It forms at the surface of land and provides plants with an anchor for roots and enough nutrients for growth.

Clay soil

- Lumpy and sticky to touch when wet but rock-hard and smooth when dry
- Slow draining soil, therefore holds more nutrients
- Rich in plant food for better growth
- Slow to warm in spring
- Heavy to cultivate, especially when it gets dry

Sandy soil

- Dry and gritty to touch
- Unable to retain moisture due to particle size
- Water drains rapidly, therefore plants are unable to make full use of nutrients contained within the soil
- Warm up quickly in spring
- Tends to dry out in summer

Silty soil

- Smooth to touch and when moist, has a soggy like consistency
- Retains moisture longer than sandy soil therefore is richer in nutrients and more fertile
- Easier to cultivate than clay
- Due to moisture retention, this soil type is cold and drains rather poorly
- Soil structure is easily compacted
- A good soil if well managed

Peaty soil

- Dark in colour and soft to touch
- Rich in organic matter but low in nutrients
- Warm up quickly in spring
- Highly water retentive and may require drainage if the water collects near the surface
- Main benefit is ability to hold water in dry months and protect roots during wet months
- Good for plant growth

Chalky soil

- Gritty and dry to touch
- Alkaline, stony and free draining
- Often overlays chalk or limestone bedrock
- Minerals, such as manganese and iron, will quickly drain from the soil, causing poor growth and yellowing of leaves
- This can be remedied by adding fertilisers

Loamy soil

- Soft, dry and crumbly to touch
- The perfect, well balanced soil
- Made from a mix of clay, sand and silt
- Retains moisture but drains well
- Full of nutrients
- Easy to cultivate
- Air moves freely between soil particles and down to roots
- Warm up quickly in spring and doesn't dry out in summer