**Soil texture**

**Soil texture** refers to the proportion (percentage) of sand, silt and clay in a soil. Sandy soils are made up mostly of sand sized particles. Clay soils are made up of clay sized particles. Silty soils are made up of silt sized particles. A loam is a mixture of sand, silt and clay particles. Particle size is important, it affects how much air and water the soil will hold.

Soil texture can be determined **three** ways.

1. Texture by feel analysis
2. Texture triangle
3. Sedimentation

### **Sedimentation**

A measured sample of soil is put into a shaker and mixed with water. It is shaken vigorously until all particles have been separated. The particles are then left to settle and measurements recorded.

## **Example 1**

100mL of soil sample is shaken vigorously and placed in a measuring cylinder.

20mL clay 20 X 100 = 20%

100 1

40mL silt 40 X 100 = 40%

100 1

40mL sand 40 X 100 = 40%

100 1

Using the texture triangle the textural class of the soil can be determined.

**20% clay, 40% silt, 40% sand = loam**

**NB** % must add up to 100%

***Exercise***

### ***Example 2***

*50mL of soil sample is shaken vigorously and placed in a measuring cylinder.*

25ml clay 25 X 100 = 50%

50 1

15ml silt 15 X 100 = 30%

50 1

10ml sand 10 X 100 = 20%

50 1

*Use the texture triangle to work out the textural class for this soil \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

***Example 3***

*50mL of three soil samples are shaken vigorously and placed in measuring cylinders. Work out the textural class for each soil*

*1 2 3*

15ml clay

30ml silt

5ml sand

10ml clay

10ml silt

30ml sand

30ml clay

15ml silt

5ml sand

1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Exercise***

*1. Define soil texture.*

*2. Explain how soil texture influences the soil.*

*3. Can soil texture be changed?*

# USDA Soil Texture Triangle. | Download Scientific Diagram**Texture triangle exercises**

1. Given the sand, silt and clay percentages of the following soil determine their textural class.
   1. 30% sand, 45% silt, 25% clay \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. 15% sand, 50% silt, 35% clay \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. 55% sand, 5% silt, 40% clay\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. 40% sand, 25% silt, 35% clay \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Give three different textural make ups for a soil of the textural name
   1. Clay \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Sandy loam \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Loam \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Clay loam \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. Silt \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. *To find out the texture of a soil an agriculture student put a sample of soil into a measuring cylinder, added water then shake the mixture thoroughly. The mixture is left to settle in the measuring cylinder.*



*Describe the size of the particles in layers A, B and C and explain how they influence the*

*amount of air and water available to plants.*

|  |  |  |
| --- | --- | --- |
| Layer | Description of the size of particles | Explanation of how the particles influence the amount of air and water available to plants. |
| A |  |  |
| B |  |  |
| C |  |  |