SOIL EROSION

"Stop Soil Erosion, Save our future!"

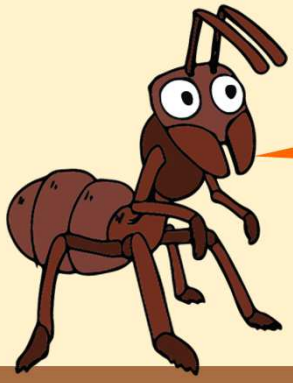
SECS
SOCIEDAD ESPAÑOLA
DE LA CIENCIA DEL SUELO

VNIVERSITAT POLITÈCNICA VALÈNCIA

We would like to guide you in the knowledge of **soil erosion**. We live on the soil so we know what happens to it ...

Louise, why doesn't the soil you are on have trees or shrubs?

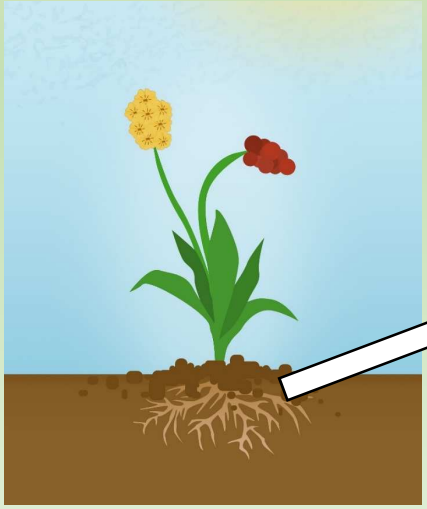
DID YOU KNOW THAT ...?



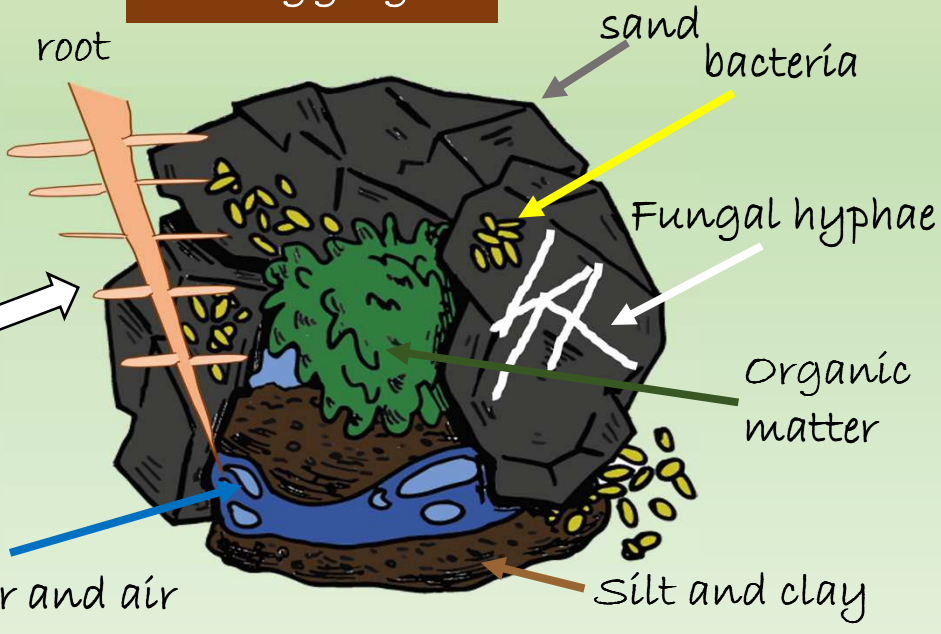
Before we begin to see what erosion is, let's see what soil is

Soil is ... a natural body composed of mineral particles, organic matter, water, air and living organisms.

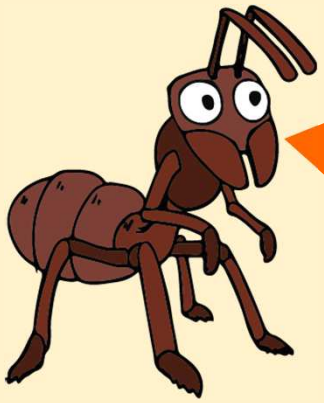
- It is a living system which supports plant life, visible animals (macro-organisms) and microorganisms.
- It is a dynamic system that arises and evolves.
- It is an organized system: if we make a vertical cut, we find different layers with distinct properties called horizons.



Soil aggregate



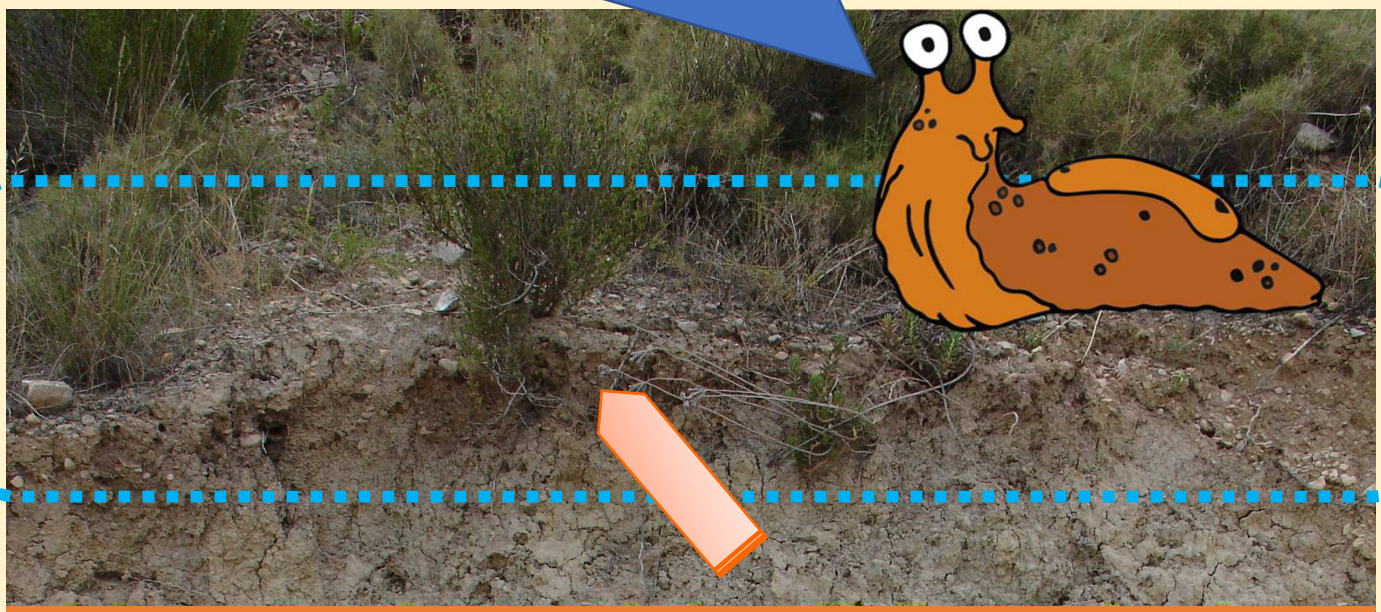
WHAT IS SOIL EROSION?



The erosion process entails the los of soil due to the action of rainwater (water erosion) and wind (wind erosion). Although it is a natural phenomenon, which has occured since the Earth was formed, human activity can accelerate it.

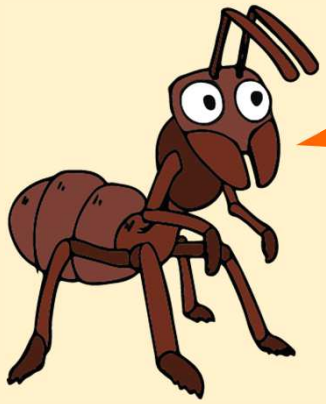
Eli and Gus, look at the soil around you

Take a closer look at this photo



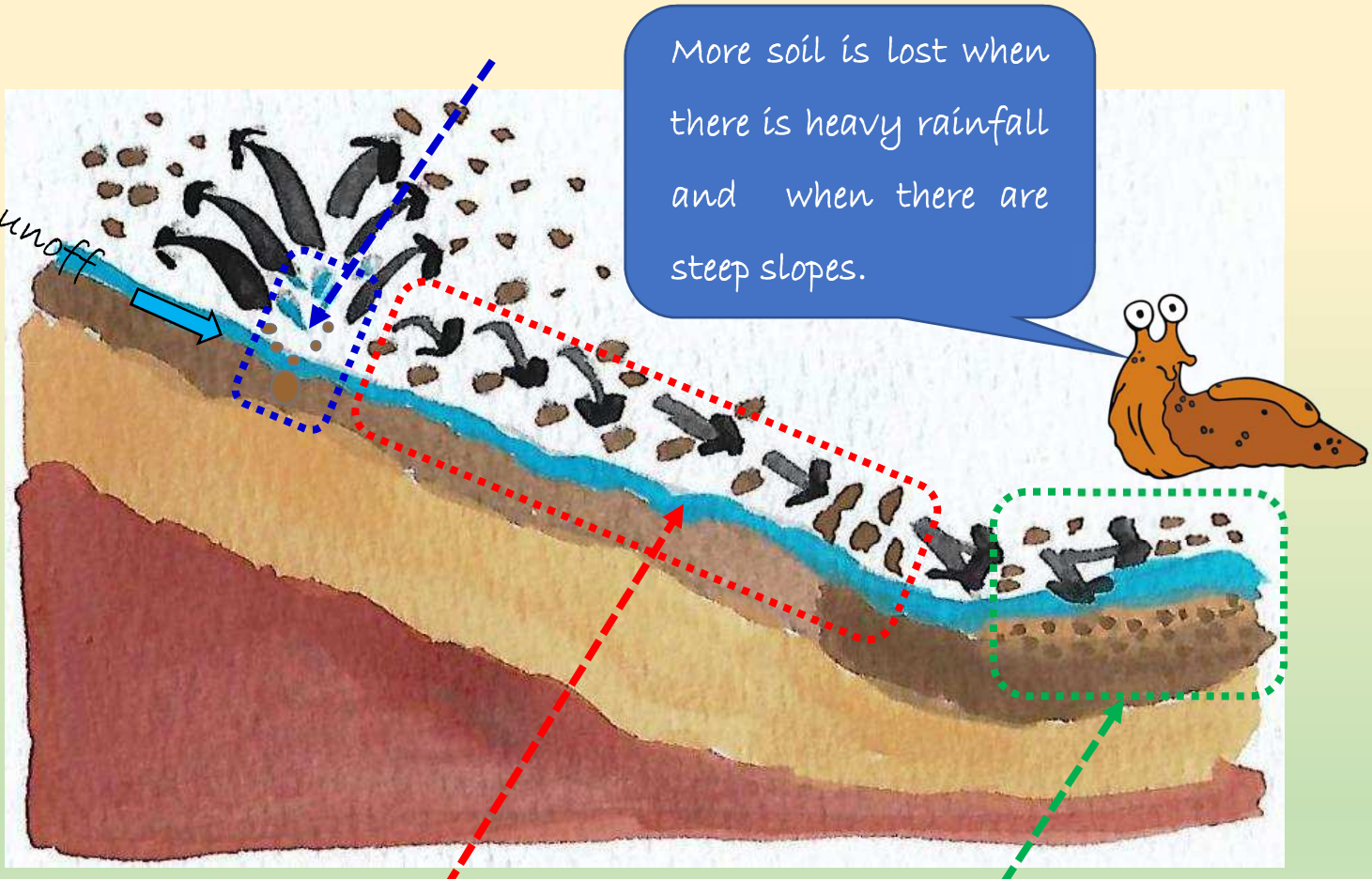
We can see a dark color which is due to an accumulation of organic matter. The decomposition of organic matter will provide nutrients to the soil from which plants will be nourished.

Here, the most fertile layer of soil has been lost through erosion. With no nutrients, plants cannot grow. When this happens on farming land, production decreases.



Water erosion involves three actions: detachment, soil movement and deposition elsewhere.

Detachment: The impact of the raindrop can cause particles that are part of the soil aggregates to be loosened. Among these particles are sand, silt, clay and organic matter.



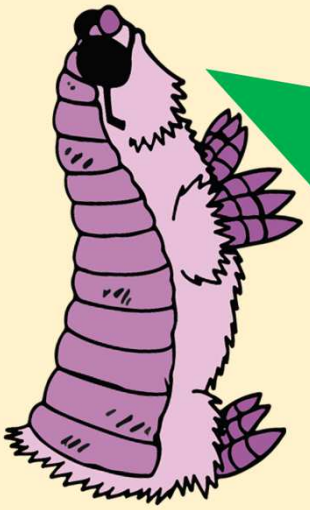
Movement: Particles that have been releases can move upwards or downwards and can be carried away by runoff water.

Deposition: If eroded soil reaches water sources, it can contaminate water because of the fertilizers and pesticides that are transported with soil, it can also bury small seedlings, etc.

The fertile layer of soil has been transported to another place by the action of the wind. There are places where the wind is very strong and carries away soil particles such as silt, clay and organic matter

12 % of the total European area is affected by water erosion, and approximately 4 % by wind erosion.

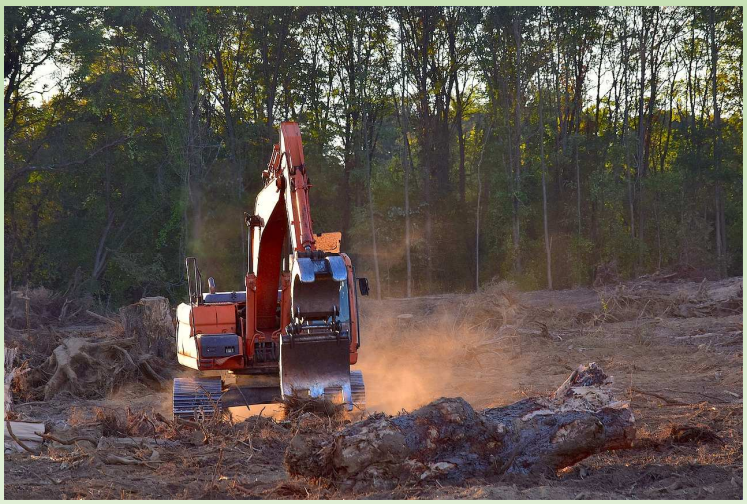
SOIL CONSERVATION MEASURES THAT REDUCE SOIL EROSION



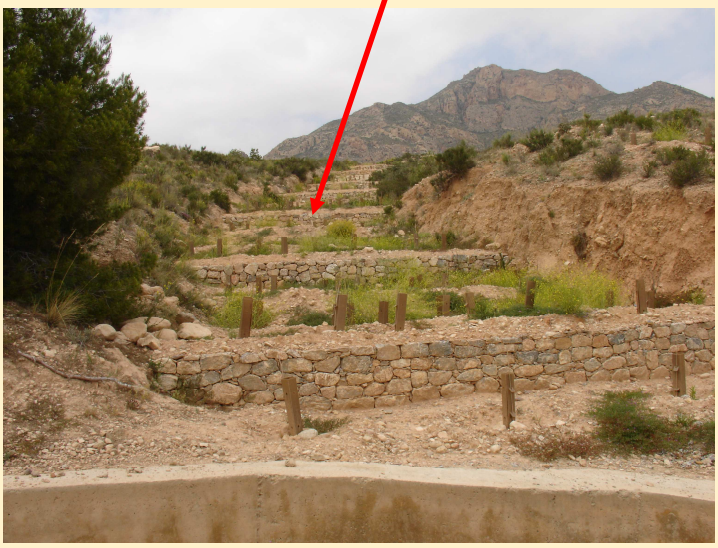
Conservation measures seek to protect the soil from the erosive power of rain, improve the infiltration capacity of the soil or decrease the erosive energy of runoff.

One way we can protect soils is by covering the soil surface with vegetation so that the land is not bare.

Another measure is to avoid deforestation since the roots of the trees retain the soil. In addition trees intercept part of the rain.

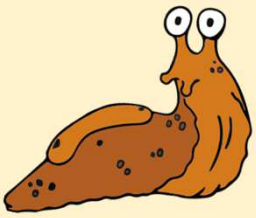


We can also reduce the steepness of a slope by building structures.



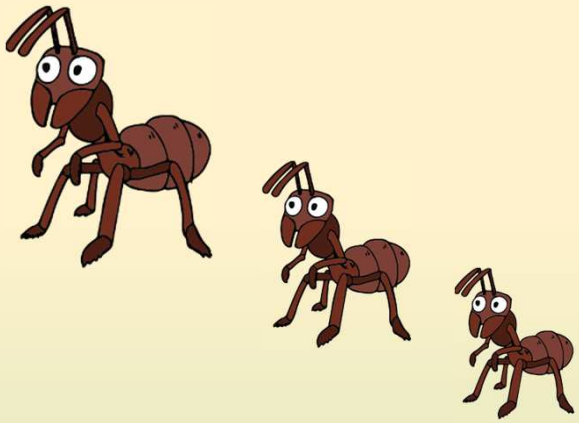
Furthermore, we can add organic matter to the soil, as this helps to form stable aggregates, which are not easily to broken down by the water.

Finally, we can raise public awareness of the serious damage to ecosystems that is caused by fires. Fires leave the soil bare and burn any organic matter in the soil.



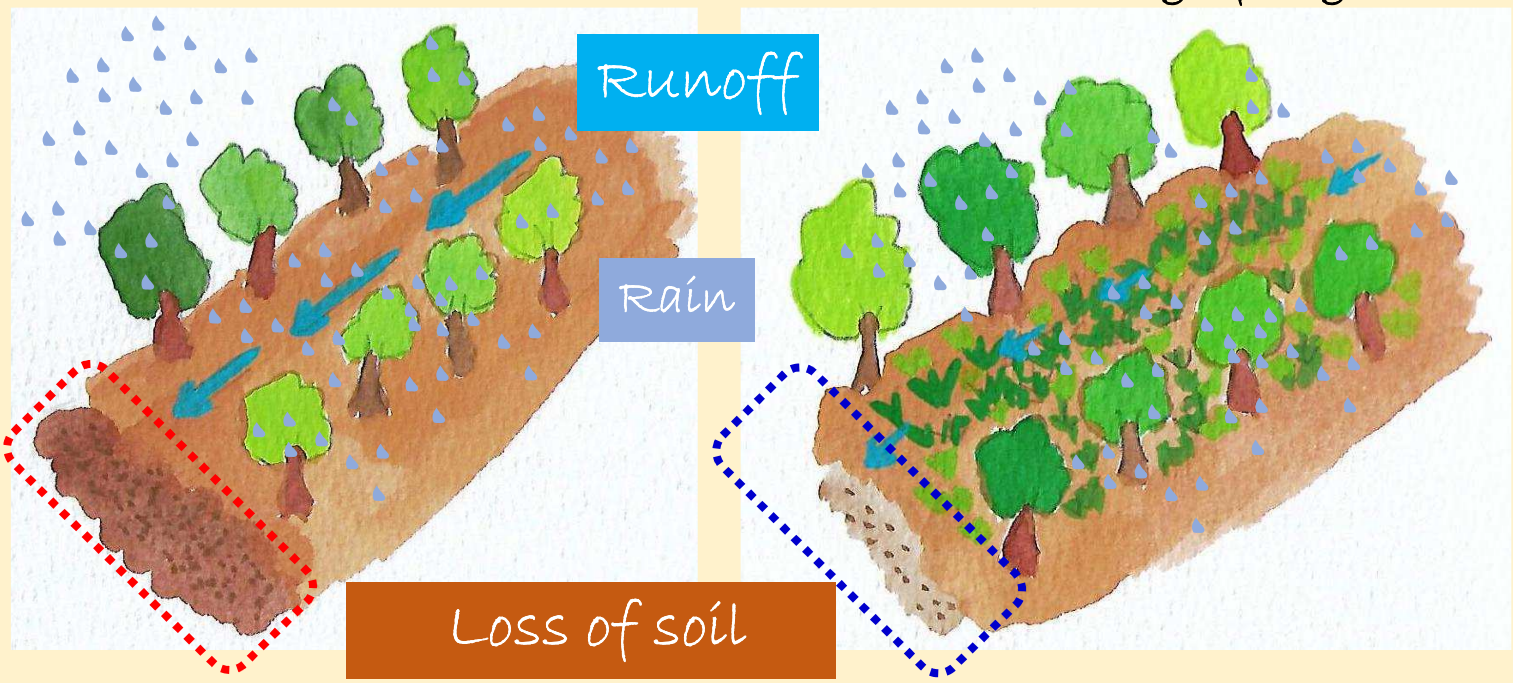
IT'S TIME TO REVIEW WHAT WE HAVE LEARNED

On the lower part of the hillside I can see that fine elements of the soil have accumulated, which have dried and formed a crust on the surface of the soil. Can a plant grow from a seed buried in this soil?

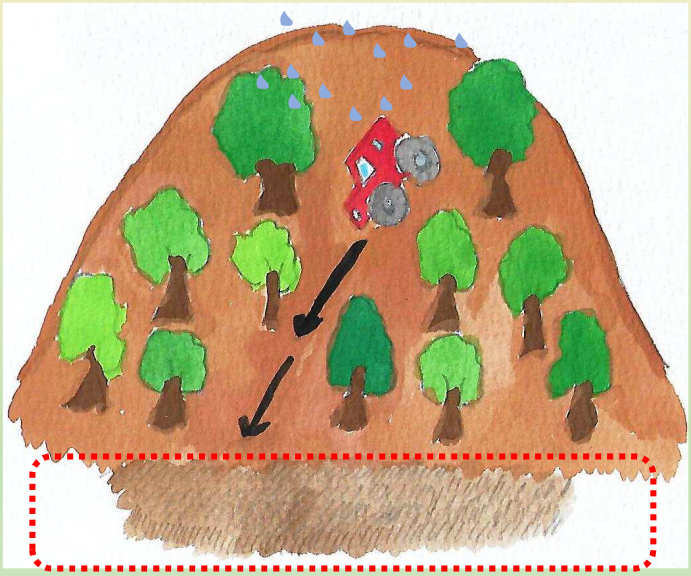


Bare soil

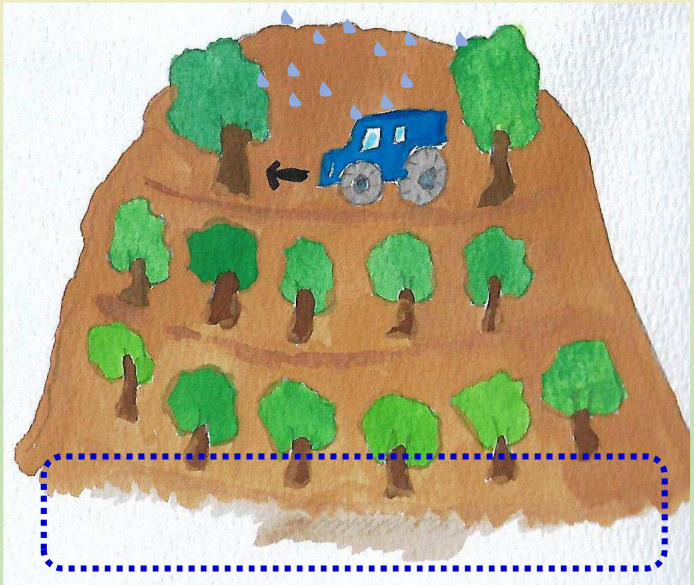
Soil with a covering of vegetation



Tractor working downhill



Tractor working according to contour lines



WE HOPE YOU HAVE ENJOYED THIS INTRODUCTION TO SOIL EROSION. SEE YOU SOON WITH MORE ADVENTURES!

LOLO, ELI, LOUISE Y GUS

HELP US TO SURVIVE ON THE SOIL

Cristina Lull Noguera

Mª Desamparados Soriano Soto

Lolo, Eli, Louise and Gus have been designed by Francisco Javier Galán Onrubia

SECS

SPANISH SOCIETY OF SOIL SCIENCE
SOIL EDUCATION AND PUBLIC SAFETY SECTION