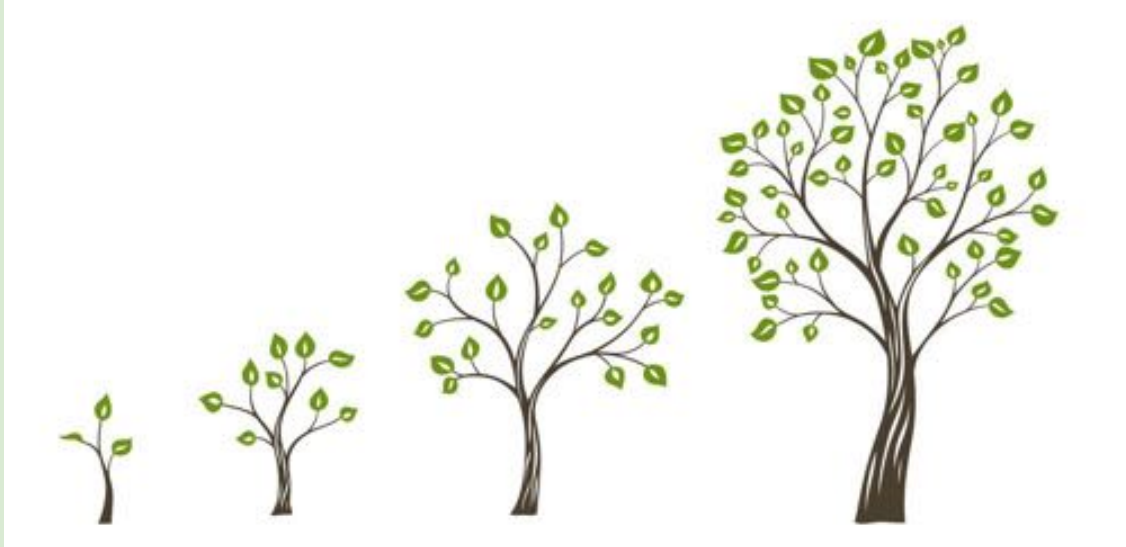


Our Tree



We have chosen a small area on Campus Vestfold (in the middle of the student accommodations) with three similar trees. We took a closer look at one of them and photographed it every week (Tuesday).

Type of the tree:

It's some kind of broadleaf tree. Unfortunately we could not identify the species. But our guess is that this tree is a bark.

Description:

The tree is quite young and has relatively many branches. Striking is that there is a layer on the trunk that protects the tree. The tree is approximately about 3 meters high.

We started our observations in the week of 11.02.2019. Since it is a deciduous tree, it had no leaves at the beginning of our observations (January - April). It should also be noted that during our observations the trunk of the tree was covered by snow at about $\frac{1}{3}$ of the time.

It was not until mid-April, when the weather improved and the snow began to melt, that the buds that the tree had had since the beginning of our records began to float.

Biological explanations:

Deciduous trees throw off their leaves in autumn to survive the winter. In winter, the water is frozen in the soil and can no longer get into the leaves. This is why in autumn the tree extracts all nutrients from the leaves and closes the leaf stalks so that the leaves are cut off from the water supply. (Normally the tree releases water through pores and stomata in the leaves).

Photosynthesis / respiration of the tree

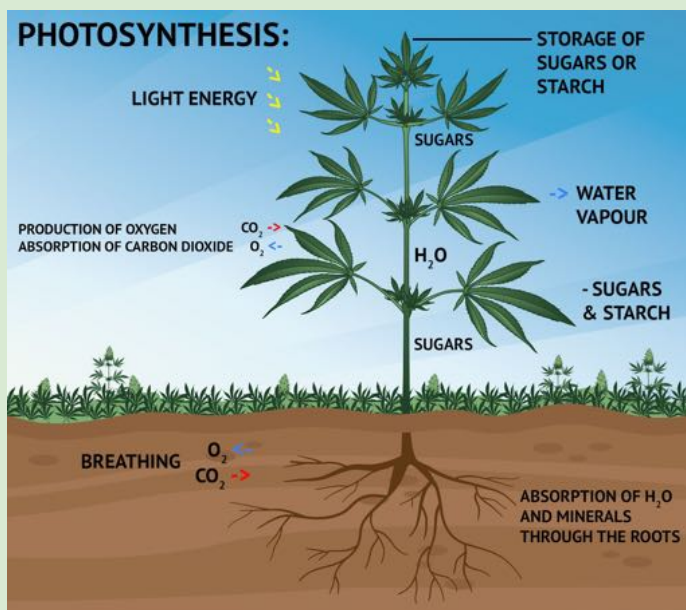
The aim of photosynthesis is to obtain high-energy organic substances (glucose, starch, protein) from low-energy inorganic substances.

This happens via the stomata of the leaves = gas exchange of the tree with the atmosphere.

The tree absorbs carbon dioxide from the atmosphere and processes it into sugar with the aid of light energy. The tree needs sugar as an energy supplier for its growth and metabolic processes.

As a waste product of photosynthesis, the tree releases oxygen, which all living beings need to breathe. The tree also breathes and consumes oxygen for this purpose. However, much less than it produces.

The root cells must also be supplied with oxygen and release carbon dioxide. This process is part of so-called soil respiration.

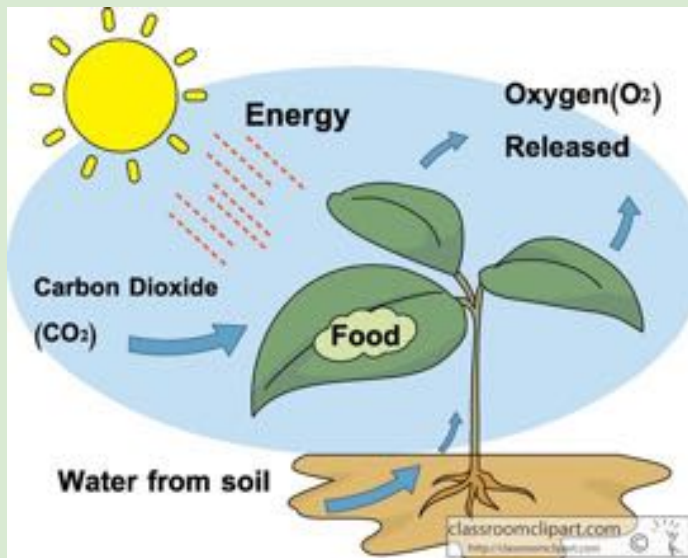


Plant release:

releases oxygen through the leaves

Plant intake:

absorbs carbon dioxide via the leaves



Water cycle of a tree

The roots of the tree absorb water and dissolved minerals from the ground. Now the mineral-containing water has to be transported through the entire shoot system of the tree - i.e. via the trunk into the individual branches and leaves.

The leaves have a special function because they form a huge evaporation surface. Because water constantly evaporates at the leaves, the tree must always replenish from the roots.

This creates a constant flow of water from the roots into the leaves. The water evaporates mainly through the stomata of the leaves. Someday it falls again as precipitation on the earth and can be taken up again by the roots of the tree.

Nutrient Cycle

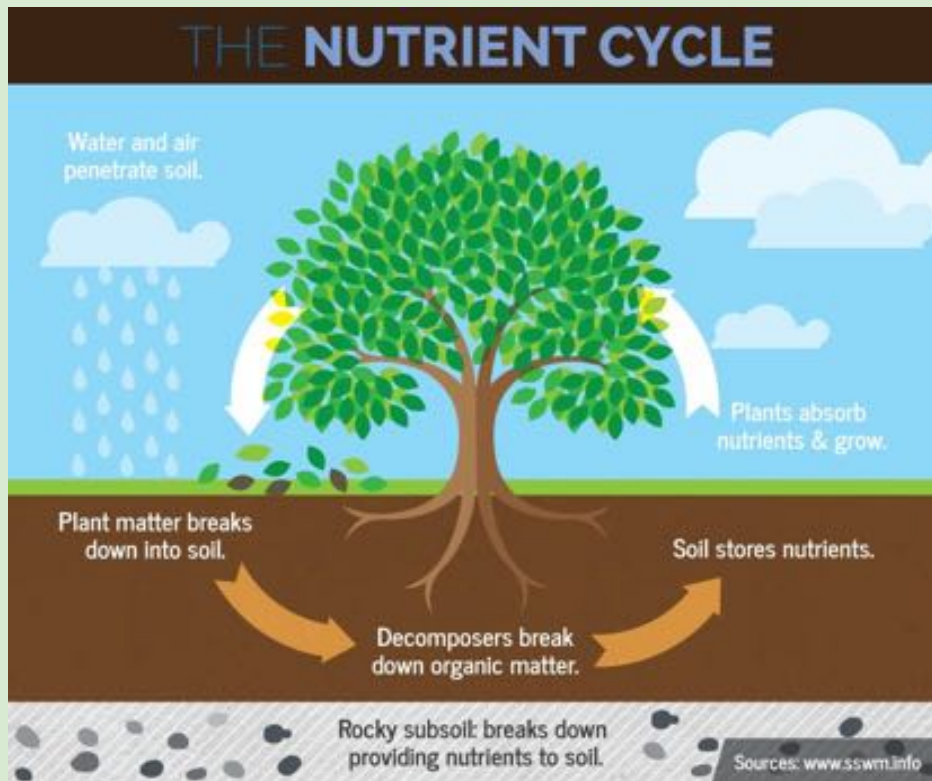
In addition to carbon dioxide and oxygen, the tree needs nitrogen to live. However, the tree cannot directly absorb the gaseous nitrogen in our atmosphere.

Nitrogen bacteria in the soil convert the gaseous nitrogen into a usable form for the tree and build up a supply of nitrogen. The tree can then supply itself with nitrogen via the roots.



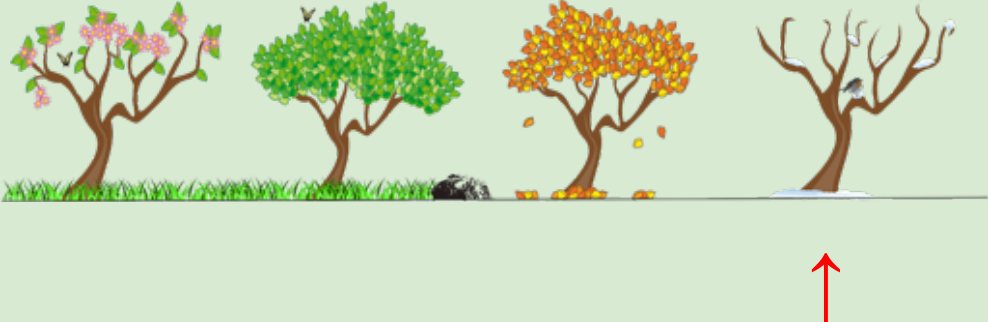
In autumn, broad-leaved trees lose their leaves and take a rest during which hardly any growth takes place. The falling leaves are decomposed on the ground together with other organic waste from bacteria and fungi and form the so-called humus layer, which serves as a mineral store.

If it rains, the minerals are washed out of the humus layer. The soil thus gradually gets its minerals back, which can then pass through the roots into the tree together with water.



February / March

	WEEK 1 11.02.2019 - 17.02.2019	WEEK 2 18.02.2019 - 24.02.2019	WEEK 3 25.02.2019 - 03.03.2019
What we saw	<ul style="list-style-type: none"> • There is a lot of snow (more than 50cm) • Branches • Little buds are on the tree 	<ul style="list-style-type: none"> • There is a lot of snow (but not that much as in week 1) • Snow is melting • the trunk begins to drop the plastic cover (slowly) • During the week we heard a lot of different birds singing. • it seems that the tree has lost branches, because the branches have bent further inwards and are no longer outwards. 	<ul style="list-style-type: none"> • Snow is melting • Branches • the trunk begins to drop the cover • You can see a bit of the ground (weed)
What we didn't see	<ul style="list-style-type: none"> • During our first observation we were unable to see leaves, animals, insects or the ground. • No leaves hanging from the tree • The buds are not open 	<ul style="list-style-type: none"> • Animals • Insects • No leaves hanging from the tree • The buds are still closed and tiny 	<ul style="list-style-type: none"> • The buds still haven't opened. • There are no leaves on the tree

<p>WHY it happened / changed?</p>	<ul style="list-style-type: none">● Because there is no water in the branches in winter, there are no leaves to be seen, because they fell from the tree in autumn. (see photosynthesis)● The buds are also there during the winter, as the tree withdraws the liquid from the buds in autumn. In addition, the tree stores sugar solutions in the buds, which strongly lower the freezing point. In this way, the bud does not freeze through and the cells remain undamaged.	<ul style="list-style-type: none">● Nothing changed compared to last week.	<ul style="list-style-type: none">● The bright snow reflects more sunlight than the dark tree trunk. The snow absorbs less sunlight than the tree trunk. This warms the tree trunk much faster than the snow and the heat causes the snow to melt faster in the immediate vicinity of the tree trunk.
			

WEEK 1



WEEK 2

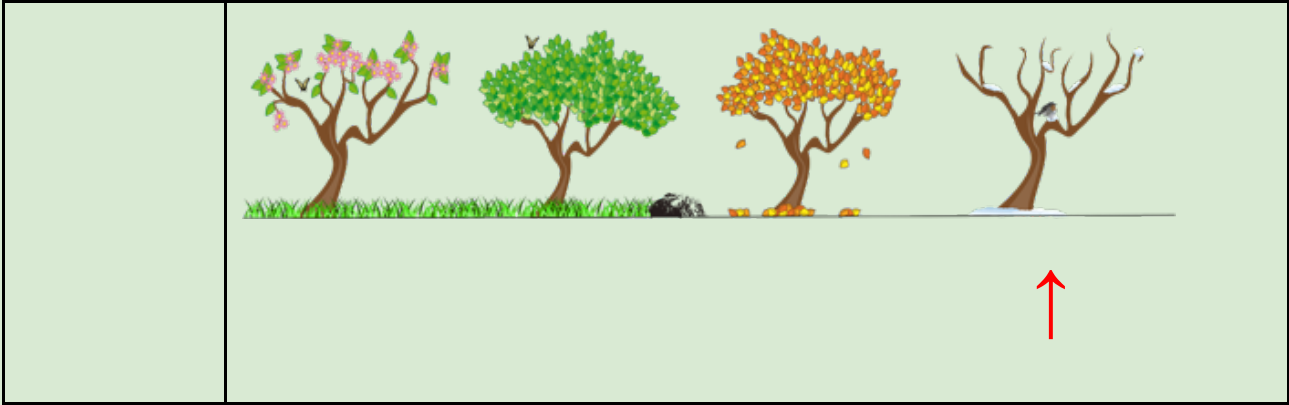


WEEK 3



March

	WEEK 4 04.03.2019 – 10.03.2019	WEEK 5 11.03.2019 – 17.03.2019	WEEK 6 18.03.2019 – 24.03.2019
What we saw	<ul style="list-style-type: none"> • more snow than the week before • The snow gets stuck on the "protective cover" of the tree 	<ul style="list-style-type: none"> • Approximately the same amount of snow as last week • Bark detaches easily • The buds on the branches have grown slightly 	<ul style="list-style-type: none"> • Buds on the branches have grown a bit again (this week you could see a real difference for the first time, which can also be seen on the pictures) • The snow this week is less than last week
What we didn't see	<ul style="list-style-type: none"> • No movement of insects or other animals (birds) on the tree • The buds didn't open. • The leaves haven't started sprouting yet. 	<ul style="list-style-type: none"> • No movement of insects or other animals • The buds start growing slowly. 	<ul style="list-style-type: none"> • No movement of insects or other animals • The buds begin to grow slowly.
WHY it happened / changed?	<ul style="list-style-type: none"> • The animals aren't here yet, because it's still too cold. • The buds are still closed because it is still too cold. 	<ul style="list-style-type: none"> • The animals aren't here yet, because it's still too cold. • Buds started to grow, because it's warmer. 	<ul style="list-style-type: none"> • The animals aren't here yet, because it's still too cold. • Buds started to grow because it's warmer.



WEEK 4



My nature area

Ilaria Kintzi, Nadine Murgia, Alina Tremel



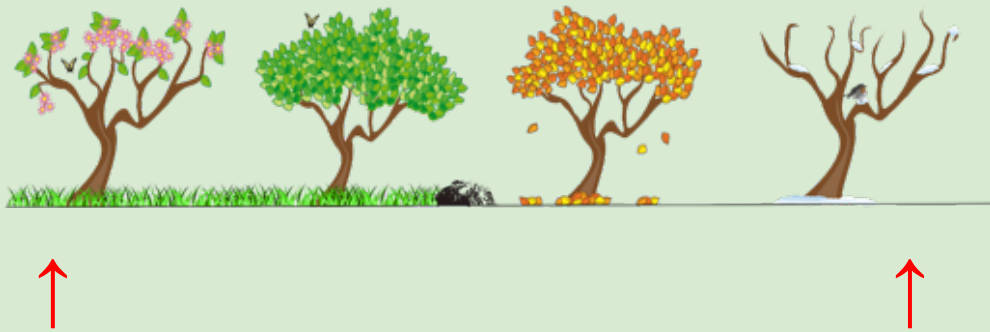
WEEK 5



WEEK 6



March / April

	WEEK 7 25.03.2019 – 31.03.2019	WEEK 8 01.04.2019 – 07.04.2019	WEEK 9 08.04.2019 – 14.04.2019
What we saw	<ul style="list-style-type: none"> The buds start to change color (brown with some yellow) 	<ul style="list-style-type: none"> buds turn green, sprout on and on No more snow 	<ul style="list-style-type: none"> the buds continue to open and begin to unfold gradually
What we didn't see	<ul style="list-style-type: none"> There is no difference between the buds and the size of the buds. 	<ul style="list-style-type: none"> There are no animals on our tree. 	<ul style="list-style-type: none"> There are no animals on our tree.
WHY it happened / changed?	<ul style="list-style-type: none"> The inside of the bud slowly comes to light as it has become warmer and it no longer has to stay for protection. 	<ul style="list-style-type: none"> The buds keep opening as it gets warmer. This allows the tree to get more nutrients from the soil, through the roots, and can better pass them on to the buds. These then open more from day to day. 	<ul style="list-style-type: none"> The buds keep opening as it gets warmer. This allows the tree to get more nutrients from the soil, through the roots, and can better pass them on to the buds. These then open more from day to day.
			

WEEK 7




WEEK 8



WEEK 9



April / May

	WEEK 10 15.04.2019 - 21.04.2019	WEEK 11 22.04.2019 - 28.04.2019	WEEK 12 29.04.2019 - 05.05.2019
What we saw	<ul style="list-style-type: none"> From the buds grow small leaves. Small buds also come out of the tree trunk. 	<ul style="list-style-type: none"> The buds continue to sprout the leaves The buds on the tree trunk have also grown further The "protection" on the tree widens and the natural bark of the tree comes to the surface. 	<ul style="list-style-type: none"> Buds sprout all over the branch
What we didn't see	<ul style="list-style-type: none"> There are no insects or other animals on our tree. 	<ul style="list-style-type: none"> There are no insects or birds on our tree. 	<ul style="list-style-type: none"> Still no animals to see.
WHY it happened / changed?	<ul style="list-style-type: none"> Sunlight provides the tree with nutrients and the buds and leaves are growing. 	<ul style="list-style-type: none"> Sunlight provides the tree with nutrients and the buds and leaves are growing. 	<ul style="list-style-type: none"> Sunlight provides the tree with nutrients and the buds and leaves are growing
			

WEEK 10



My nature area



Ilaria Kintzi, Nadine Murgia, Alina Tremel



WEEK 11

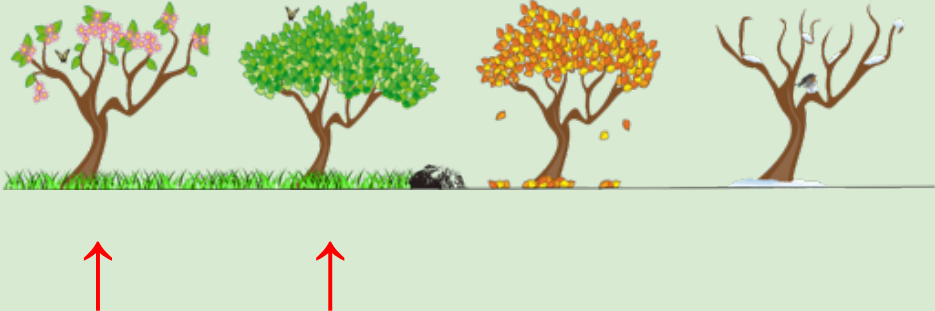


WEEK 12



May

	WEEK 13 06.05.2019 - 12.05.2019	WEEK 14 13.05.2019 - 19.05.2019	WEEK 15 20.05.2019 - 23.05.2019
What we saw	<ul style="list-style-type: none"> • The leaves, which grow directly from the trunk, unfold and grow in a very light green with a little red in hue. • The tree looks more "alive" because the colours unfold much more strongly • The buds open and a white flower appears. • The other leaves look very small and dark green. 	<ul style="list-style-type: none"> • We saw a caterpillar. • We saw a larva pupate in the leaf. • The leaves had many holes, which is a sign that the leaves are eaten by the larvae and caterpillars or other small insects and animals. • At night we saw ants in the tree. • There were spider webs to see. • The blooms are now almost all completely open <ul style="list-style-type: none"> • We've only just noticed there's a fungus on the trunk. 	<ul style="list-style-type: none"> • Ants running up and down the tree (during the day) • The blossoms of the tree had faded and the pistils of the blossom were protruding far out. • The leaves on the trunk have grown very quickly and are significantly higher than those on the branches. • The faded flowers have an orange coloration. • The ground is quite wet, because it has rained a lot in the past days.
What we didn't see	<ul style="list-style-type: none"> • Insects on or near the tree. • Birds at the tree. 	<ul style="list-style-type: none"> • Any Birds • Spiders 	<ul style="list-style-type: none"> • During our entire observation period no bird has nested in our tree.

<p>WHY it happened / changed?</p>	<ul style="list-style-type: none">• Due to a lot of sun and the recent rain, the tree gets the nutrients it needs to open its leaves and buds.	<ul style="list-style-type: none">• The larvas are there are eating the leaves and are protected	<ul style="list-style-type: none">• Since it is an artificial tree, it is an ornamental tree that is not intended for birds to nest.• The fruits of a plant, which contain the seeds, are formed from the flowers, or usually only from the ovary.
			

WEEK 13



My nature area

Ilaria Kintzi, Nadine Murgia, Alina Tremel



WEEK 14



My nature area

Ilaria Kintzi, Nadine Murgia, Alina Tremel



WEEK 15



My nature area

Ilaria Kintzi, Nadine Murgia, Alina Tremel

