

The Plant Nutrient Cycle

Plant Needs Week 4 Reading Page

Have you ever taken a vitamin? Was it crunchy or was it a gummy? Did it look like one of your favorite cartoon characters? Do you know what was inside of it?

People take vitamins to help our bodies grow and stay healthy. Vitamins are a type of nutrient. A nutrient is something that helps our bodies work properly. Some of the nutrients people take include things like vitamin C, vitamin D, iron, and calcium. These nutrients are also found in the food we eat. So don't worry if you do not take vitamins; you are probably getting all the nutrients you need from your food.

Guess what? Plants need nutrients to grow well too!

Unlike people though, plants do not eat food, so where do you think they find the nutrients they need? Plant nutrients are found in the soil. Plants absorb them through their roots and then move them to their stems, leaves, flowers, fruits, and seeds.

Do you think plants and people need the same kind of nutrients? There are some things that both of us need to grow, but people and plants are pretty different so our lists are not exactly the same.

Plants have some nutrients they need a lot of. These are called macronutrients (macro means large). Other nutrients they need in small quantities. These are called micronutrients (micro means small). There are 3 main nutrients that are really important to plants: nitrogen, phosphorus, and potassium. What do these 3 substances do for the plant?

- **Nitrogen** is used by the plant to make important compounds inside of the plant, including chlorophyll. Chlorophyll is the green substance that plants use to help them make their food through photosynthesis. If a plant that does not have enough nitrogen, the older leaves at the bottom of the plant will turn yellow.
- **Phosphorus** is used by plants to help them make flowers, fruits, and seeds. If a plant does not have enough phosphorus, it may have small, purple-tinged leaves, and will develop few flowers and fruits.
- **Potassium** is important for helping water move around the plant. If a plant does not have enough potassium, it will stay short and the edges of the leaves will turn yellow and brown.



The bright green seedling on the left received enough nutrients. The pale seedling on the right did not.

So how do these important nutrients get into the soil for plants to use? In nature, the main way nutrients get added to the soil is through a process called decomposition.

When leaves fall on the ground or when plants and animals die, there are little creatures in the soil called decomposers that eat the dead things. These creatures include earthworms, sow bugs, ants, and even smaller things we can't see, like bacteria and fungi. When they eat the dead things, they break them into smaller pieces and deposit those pieces in the soil through their waste (their poop).

Let's think about leaves that fall off the plant and collect on the ground. Those leaves used to be part of a bigger plant, so inside they will have stores of nitrogen, phosphorus, and potassium. But all those nutrients are locked up in the leaf and can't get out, even though the leaf fell off so the plant is not using them anymore.

Decomposers to the Rescue!

Decomposers will chomp on the leaf and break it down into little pieces — the components that include nutrients. The pieces will be returned to the soil through the decomposer's waste. So through this process, which is called decomposition, the nutrients that were locked up in the leaf will get free in the soil and be ready to be picked up and used by a new plant. (And when they die, the bodies of the decomposers themselves are broken down into nutrients, too!)

The process where plants and animals use nutrients while they are alive and then pass them along to new plants and animals when they die is called the **Nutrient Cycle**. Nutrients go 'round and 'round from being available in the environment to being trapped in living things to being available again.

Gardeners can add nutrients to the soil for plants, too. Just like we have vitamins that we can take, sometimes gardeners help plants get the nutrients they need by adding something called fertilizer to the soil.

Fertilizer can be a solid or a liquid and there are lots of different kinds full of lots of different nutrients. Gardeners should always read the labels on fertilizers carefully to make sure they are giving their plants what they need. Too many nutrients or the wrong kind of nutrients can be just as bad for plants as not enough.



Snails (above) and earthworms (below) break down organic matter, helping to recycle the nutrients it contains.



Reading Comprehension Questions:

1. What is a nutrient?

2. Where do plants get most of the nutrients they need for healthy growth:
 - A. the grocery store
 - B. rain water
 - C. the soil
 - D. food

3. True or false, macro means large.

4. What are the 3 nutrients that plants need in big quantities to grow well:

5. Sometimes gardeners provide nutrients to help plants grow. What do we call the nutrients people give to plants?