

Name _____

Date _____

Plant Nutrition

Plants get their nutrition both from the air and from nutrients found in the soil. The **carbon** that makes up the bulk of a plant comes from **carbon dioxide** in the air that plants let in through tiny openings in their leaves called **stomata**. This carbon dioxide is then used along with energy from the sun in the process of **photosynthesis** to make **sugars** the plant can use. Plants also require water and minerals found in soil, which they take in through their underground **roots**.

Macronutrients are elements that plants require in large amounts to live. There are **nine** macronutrients necessary for plants including **carbon, hydrogen, oxygen, and nitrogen**. Plants also require **eight** other **micronutrients** in smaller amounts in order to survive.

Nitrogen is a special plant nutrient. Sometimes plants do not have enough nitrogen to live even though the atmosphere is almost **80%** nitrogen. This is because the nitrogen in the air is not in a form that plants can use directly. **Bacteria** in the soil do the job of taking nitrogen from the atmosphere and making it into a form that plants can use.

This process of making nitrogen useable is called **nitrogen fixation**. Some of the bacteria that fix nitrogen for plants live freely in the soil. Others live in **nodules** or bumps on the plant's roots. Plants that have root nodules include peas, beans, and peanuts. The relationship between a root nodule and the bacteria that live in it is a **mutualistic symbiosis**. This means that both the plant and the bacteria benefit from the relationship.

There are other types of plants that actually act as parasites or carnivores as an extra means of nutrition. Mistletoe is a **parasitic** plant that lives on oaks and other trees. Mistletoe does do photosynthesis to make its own food, but it also takes nutrition from the trees it lives on. **Carnivorous** plants also do photosynthesis, but they supplement their nutrition by killing and digesting insects and other animals. Examples of plants that actually catch and digest insects are Venus flytraps and pitcher plants.

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Plant Nutrition Questions

1. True or False. Plants use both the air and soil as sources of nutrition.
2. Where do plants get most of the carbon that makes up their bulk from?
3. What is the process by which carbon dioxide is converted to sugars the plant can use?
4. _____ are elements that plants require in large amounts to live.
5. The atmosphere is made of almost _____% nitrogen.
6. Nitrogen _____ is done by bacteria in the soil to convert nitrogen from the atmosphere into a form that plants can use.
7. Some nitrogen fixing bacteria live in _____ on plant roots.
8. A mutualistic symbiosis is _____.
 - a. good for both organisms involved
 - b. good for neither organisms involved
 - c. good for one organism and bad for the other
 - d. neither good or bad for the organisms involved
9. Give an example of a parasitic plant.
10. True or False. A Venus flytrap is a carnivorous plant.

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Plant Nutrition Answers

1. **True** or False. Plants use both the air and soil as sources of nutrition.
2. Where do plants get most of the carbon that makes up their bulk from?
Carbon dioxide
3. What is the process by which carbon dioxide is converted to sugars the plant can use? **photosynthesis**
4. **Macronutrients** are elements that plants require in large amounts to live.
5. The atmosphere is made of almost **80%** nitrogen.
6. Nitrogen **fixation** is done by bacteria in the soil to convert nitrogen from the atmosphere into a form that plants can use.
7. Some nitrogen fixing bacteria live in **nodules** on plant roots.
8. A mutualistic symbiosis is _____.
 - a. **good for both organisms involved**
 - b. good for neither organisms involved
 - c. good for one organism and bad for the other
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9. Give an example of a parasitic plant. **mistletoe**
10. **True** or False. A Venus flytrap is a carnivorous plant.