

# BOTANY, PLANT PHYSIOLOGY AND PLANT GROWTH

## Lesson 9: Plant Nutrition

### Teachers answer sheet

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Nutrients to monitor closely

- Some elements are less likely to be deficient. Place an asterisk before the nutrients that typically are present in sufficient amounts in air, water, and Minnesota soils.
- Then underline the elements without asterisks; levels of the underlined elements will need to be monitored more closely.

#### MACRONUTRIENTS

*Found in air and water*

* carbon	C
* oxygen	O
* hydrogen	H

Primary Elements

<u>nitrogen</u>	vegetative	<u>N</u>
<u>phosphorus</u>		<u>P</u>
<u>potassium</u>		<u>K</u>

Secondary Elements

<u>calcium</u>	cell wall	<u>Ca</u>
<u>magnesium</u>	chlorophyll	<u>Mg</u>
* sulfur		S

#### MICRONUTRIENTS

<u>iron</u>	<u>Fe</u>
* manganese	Mn
* copper	Cu
* zinc	Zn
* boron	B
* molybdenum	Mo
* chlorine	Cl
* cobalt	Co

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Nutrients to associate with key functions:

- Find the element having a key function in producing vegetative growth rather than reproductive growth. Write “vegetative” after the element.
- Find the element that is a part of a compound in the cell wall. Write “cell wall” after the element.
- Find the element that is present in chlorophyll and that acts as a catalyst. Write “chlorophyll” after the element.