

Benefits of Nutrients for Plants and Humans

Plants and humans need some of the same essential elements to be healthy. What does “**essential element**” mean?

* An essential element is required for a plant to complete its life cycle. It cannot be replaced by another element. It is directly involved in the plant’s metabolism, and is required by many different plants.

* Cells carry on the many functions needed to sustain life. This requires that they take in nutrients, which they use to provide energy for the work that cells do and to make the materials that a cell or organism needs. Plants and humans require similar sets of essential nutrients.

Students will:

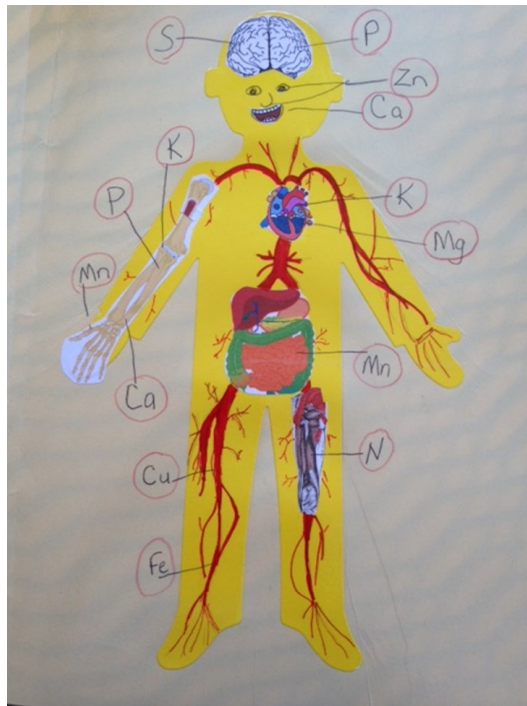
1. Compare Essential Plant Nutrients Periodic Table with Essential Human Nutrients Periodic Table and make a list of the nutrients that both plants and animals need.
2. Use the Periodic Table to find the abbreviation of the following elements: **Nitrogen, Potassium, Calcium, Magnesium, Phosphorus, Sulfur** ****If you use the older student’s version also include: Iron, Manganese, Zinc, Copper**
3. Research why essential elements are needed in plants and humans.
4. Correctly identify body parts.
5. Draw the flow of blood vessels from the heart.
6. Learn the essential element that aids or help body part functions.
7. Create a model that shows the flow of energy.
8. Explain how plants and animals are dependent on each other.



This lesson is an extension to “In Search of Essential Nutrients” a Nutrients for Life lesson which can also be found in Florida Agriculture in the Classroom’s *Gardening for Nutrition* school garden curriculum.

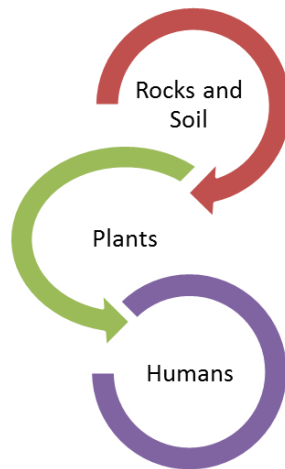
Directions:

1. Students will use periodic table to fill in the chemical symbols on the Benefits Chart. (Handout included)
2. Students will need a large piece of paper. Fold paper in half. Human body will go on one side and corn plant will go on other.
3. Students will cut out person and body parts from handout, glue body to large paper. Glue body parts in the correct places. (Cutouts included)
4. For older students: Draw the flow of the blood vessels from the heart.
5. Cut out corn plant and glue onto large paper. (Cutouts included)
6. Using the Benefits Chart mark on the corn plant where the essential nutrient helps the plant.
7. Using the Benefits Chart mark on the human body where the essential nutrient helps the body. Examples below.



8. Discuss with students how plants and animals are dependent on each other based on what they learned with the Benefits Chart and labeling the corn plant and human body.

9. Have students create a model that shows the flow of energy from soil to plant to human. An example below.



10. Explain how this diagram will represent the flow of energy. Ask students “Where would you add air and water to show this is another way plants and humans gather nutrients?”
11. Using the Benefits Chart ask students to diagram how the nutrients make a cycle between water, soil, air, plants and humans.

Benefits Chart

Nutrient	Chemical symbol	Found in water, soil, air	Benefits for plants	Benefits for humans	Food Found in
Nitrogen		Organic sources in the soil, some from atmosphere	Leaf, stem, and root growth, green color (chlorophyll)	Proteins needed for our cell growth	Legumes, soy beans, cauliflower, green peas,
Potassium		Weathered rock	Water uptake, improves resistance to pests and disease	Healthy muscles, blood circulation, healthy organs	sweet potatoes, pears, tomatoes, soybeans, spaghetti squash
Calcium		Weathered rock	Leaf and root cell growth, cell division, nutrient uptake	Strong teeth and bones	apples, broccoli, tomato, Carrots
Magnesium		Weathered rock	Chlorophyll in Photosynthesis, activates enzymes	Heart and Blood vessels, muscles	legumes, nuts, spinach, whole grain
Phosphorus		Soil, fossilized sea remains(phosphate)	Flowers, fruits, and seeds, proper growth of plants	Helps brain and nerve works, strong bones	Pumpkin seeds, nuts, beans
Sulfur		Soil through recycling organic matter such as grass clippings and tree leaves	Amino acids, photosynthesis	Helps brain and nerves work, strengthen hair	Broccoli, cauliflower, cabbage, kale, Bok choy
Copper		Soil through Recycling organic matter such as grass clippings and tree leaves	Seed production, plant growth, strong stems	Connective tissues, healthy red blood cells	Kale, shiitake mushroom
Iron		Soil Iron sulfate	Photosynthesis	Healthy red blood cells	Spinach, kale, sweet potato, broccoli
Zinc		Soil through recycling organic matter such as grass clippings and tree leaves	Chlorophyll in photosynthesis, proper plant growth	Helps senses: taste, smell, clear mind, heals wounds	Wheat germ, cashews, spinach, pumpkin seeds, dark chocolate
Manganese		Organic material	Chlorophyll in photosynthesis, root cells, pollen tubes	Strong bones, organs, blood	Nuts, tea leafy vegetables, whole grain

