NOTES - Nutrients and Cycles.pdf

Re-order the descriptions on the right to line up with the terms on the left.

non-mineral nutrients	magnesium - one of the atoms in a chlorophyll molecule
mineral nutrients	needed in relatively large amounts for plant growth (found in commercial fertilizers) -nitrogen, phosphorus and potassium
macronutrients	iron - needed to make hemoglobin molecules in red-blooded animals
primary macronutrients	nutrients which enter an ecosystem from bedrock
secondary macronutrients	nutrients which enter an ecosystem in the form of water and carbon dioxide - oxygen, carbon, hydrogen (building blocks of life)
micronutrient	required in greater amounts than micronutrients

Correct Matches

non-mineral nutrients → nutrients which enter an ecosystem in the form of water and carbon dioxide - oxygen, carbon, hydrogen (building blocks of life)

mineral nutrients → nutrients which enter an ecosystem from bedrock

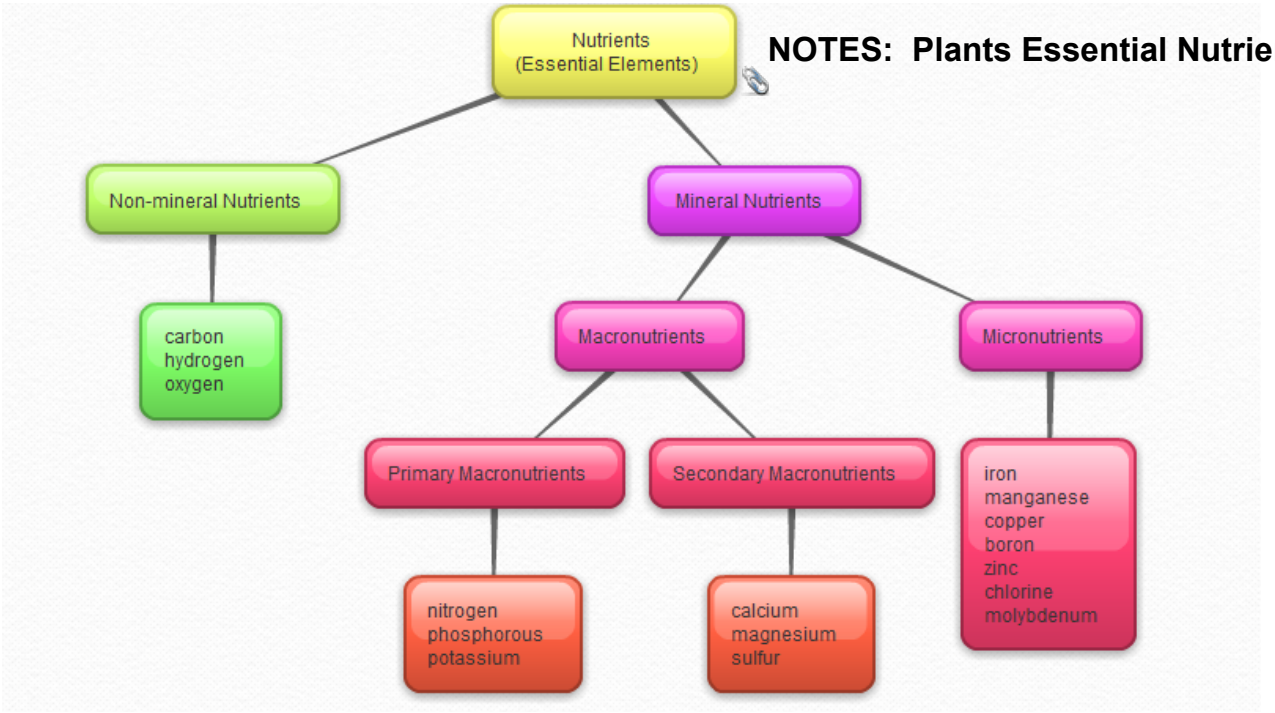
macronutrients → required in greater amounts than micronutrients

primary macronutrients → needed in relatively large amounts for plant growth (found in commercial fertilizers) -nitrogen, phosphorus and potassium

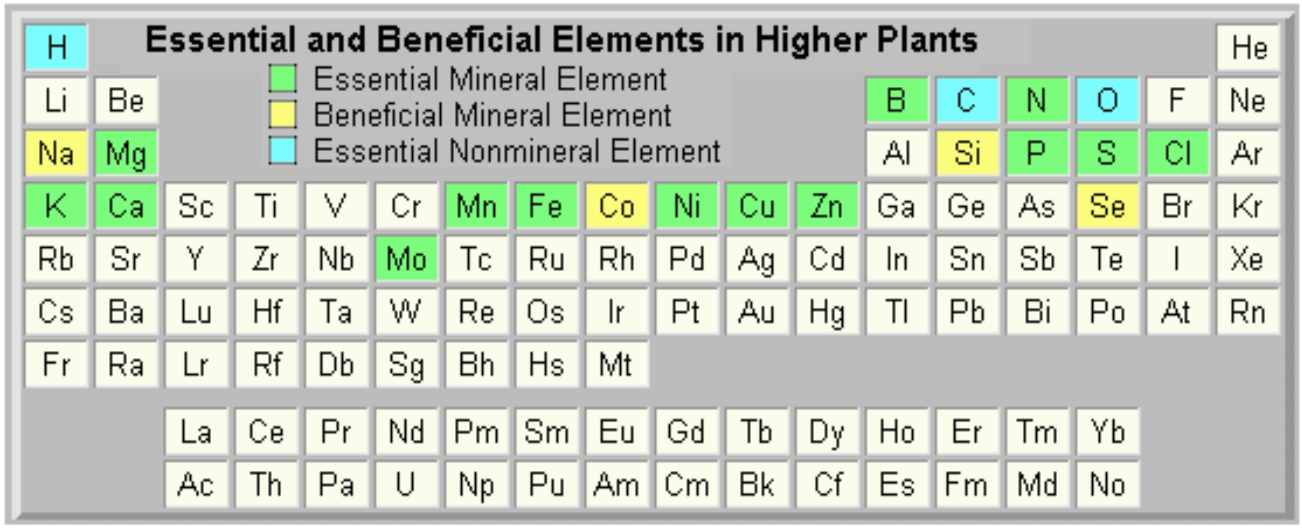
secondary macronutrients → magnesium - one of the atoms in a chlorophyll molecule

micronutrient → iron - needed to make hemoglobin molecules in red-blooded animals

- **16 elements which most plants need (excludes nickel)...**



NOTES: Plants Essential Nutrients

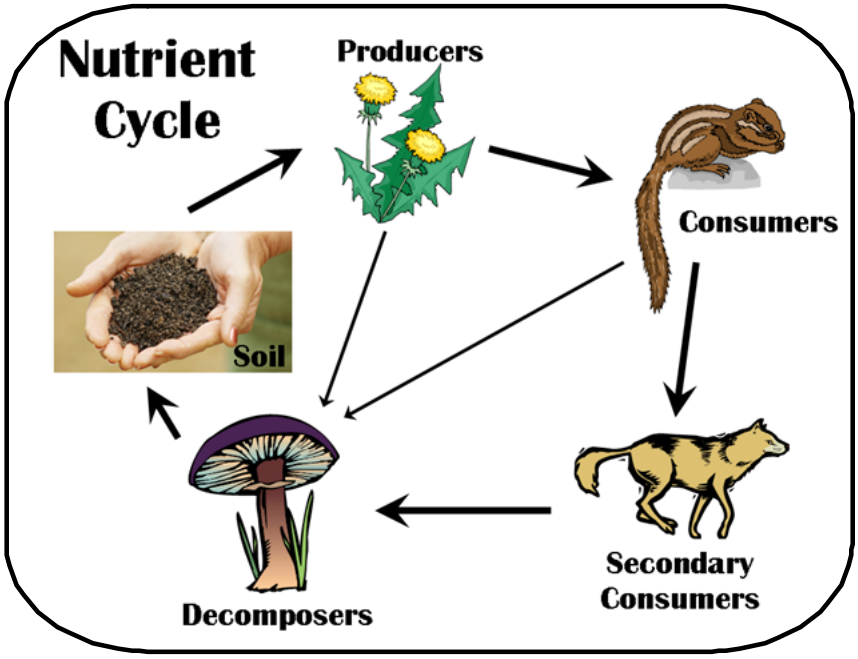


Remember: Energy flows through an ecosystem in one direction.

Nutrient Cycles

Nutrients are recycled through ecosystems...

Producers get their nutrients from the soil, water and air.
Herbivores get nutrients when they eat producers.
Carnivores get nutrients when they eat herbivores.
Decomposers break down animal wastes and dead organisms.
The actions of decomposers release nutrients back into the soil, water and air so producers can use them again.



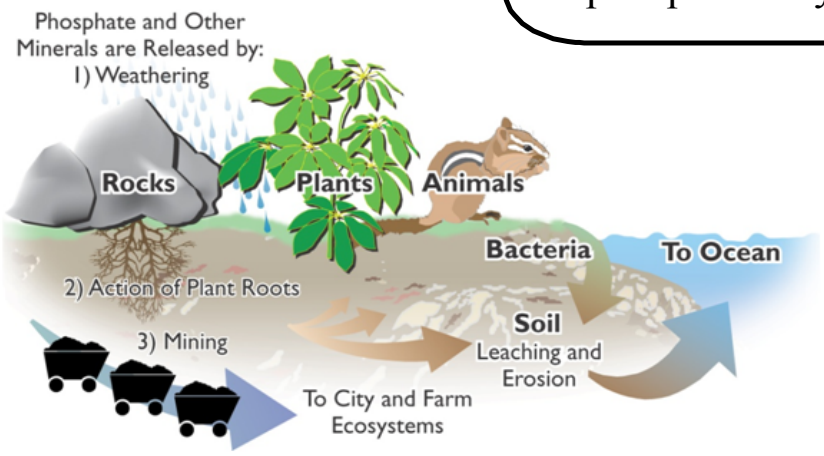
(Water and air not shown in this diagram.)

Mineral Cycle

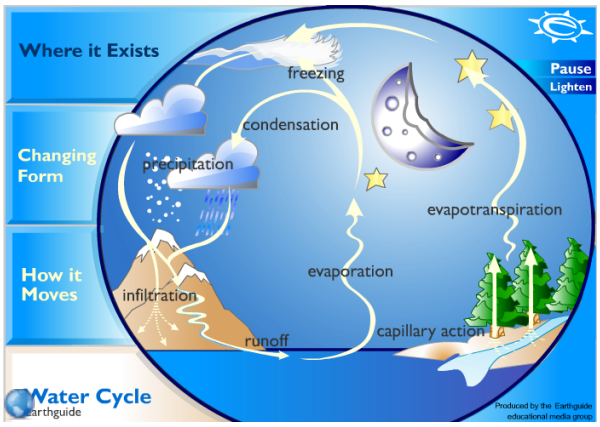
Notes - Cycles.pdf

Cycles to be studied:

1. water cycle
2. carbon cycle
3. nitrogen cycle
4. phosphorus cycle



Water Cycle or Hydrologic Cycle



READ THE FOLLOWING ON THE WATER CYCLE.

TEXT - Water and Nitrogen Cycles.pdf

BE ABLE TO LABEL THE GIVEN DIAGRAM
DEFINE EACH OF THE FOLLOWING...

1. **transpiration** - loss of water through the pores in the leaves of plants.
2. **evaporation** - water vaporizes into the air.
3. **condensation** - water forms into a liquid form.
4. **precipitation** - collects in clouds and falls to the ground as rain/snow.
5. **surface runoff** - water that travels on the ground to a stream, pond or other body of water.
6. **percolation/infiltration** - water soaks into the ground.
7. **ground water** - water found within bedrock.
8. **capillarity** - water movement from the soil up to the roots of a plant.

Taken from 'Investigating Terrestial Ecosystems (Green Text)

pages 43-44

The Water Cycle

The hydrogen and oxygen atoms in water are nutrients organisms need. These nutrients are recycled through ecosystems as follows.

Water vapour enters the atmosphere through **transpiration** from vegetation. (Transpiration is the loss of water through pores in the leaves of plants.) It also enters the atmosphere by evaporating from bodies of water and the soil (Fig. 3-7). In the cool upper atmosphere this vapour condenses, forming clouds. In time, enough water collects in the clouds to cause **precipitation**. When this happens, some of the water that falls on the ground runs along the surface of the ground to a stream, pond, or other body of water. This water is called **surface runoff**. But some of the water also soaks into the ground by a process called **percolation**. Some water percolates down to the bedrock. Then it becomes **ground water** and gradually runs back to lakes and other bodies of water.

Some of the water in the soil moves up to the roots of plants by **capillarity**. The roots absorb the water. This is how most plants get the hydrogen and oxygen they need. Animals can obtain water by eating plants or by eating other animals. Of course, they can also obtain it by drinking water directly from a body of water.

Finally, when plants and animals die, they decompose. During this process, the water in their tissues is released back into the environment.

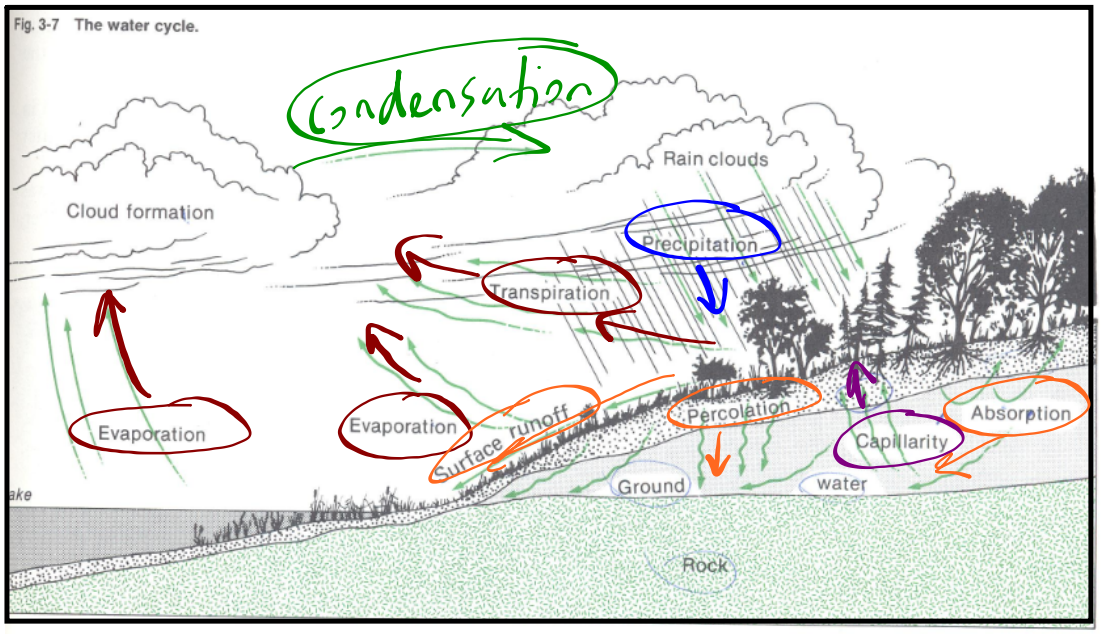
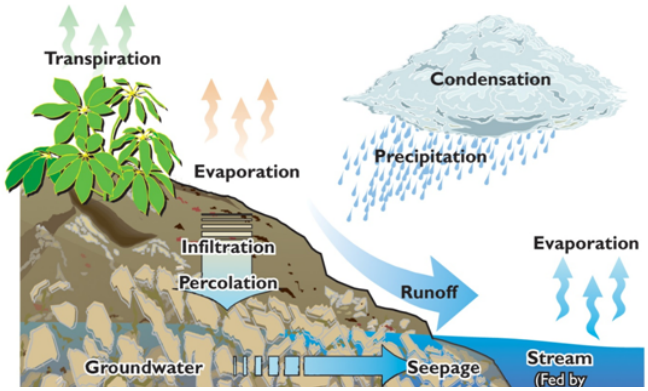


Fig. 3-7 The water cycle.

Water Cycle



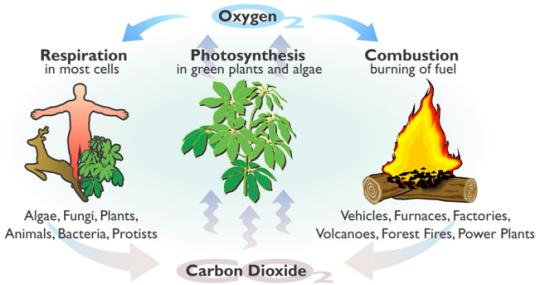
Did you know?

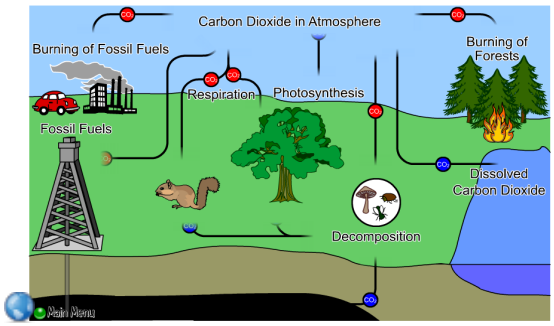
- A fixed amount of water recirculates around the Earth.
- Water moves in certain directions from place-to-place (reservoir-to-reservoir) by only certain processes and pathways.
- Some processes of transfer are rapid while others are much slower.
- A conceptual "reservoir" of water is not quite the same thing as a reservoir in which water is stored.
- When land-based glacial ice melts and runs off into the sea, sea level rises.
- When land-based glacial ice forms, sea level drops.
- When floating icebergs melt into the sea, sea level doesn't change.
- Glacial ice is made up of freshwater that had previously fallen as snow.
- Evaporation of seawater requires an input of energy; condensation of clouds releases energy.

Carbon Cycle

Carbon is needed by all living things and cycles through ecosystems.

Carbon-Oxygen Cycle





- Some organic matter does not decompose easily. Instead, it builds up in the earth's crust. Oil and coal were formed from the build-up of plant matter millions of years ago.

- At one time the carbon cycle was almost a perfect cycle. Carbon was returned to the atmosphere as quickly as it was removed. The increased burning of fossil fuels is adding carbon to the atmosphere faster than producers can remove it.

Attachments

NOTES - Nutrients and Cycles.pdf

Essential Nutrients for Plants.pdf

Notes - Cycles.pdf

TEXT - Water and Nitrogen Cycles.pdf