

Knowledge organiser for KS3 Science Biology Ecosystems and their processes at Saint Ambrose College 2020+

What is covered in this unit?

The reactants in, and products of, photosynthesis, and a word summary for photosynthesis. The dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere. The adaptations of leaves for photosynthesis. The role of leaf stomata in gas exchange in plants. Plants making carbohydrates in their leaves by photosynthesis and gaining minerals, nutrients, and water from the soil via their roots. Chemosynthesis in bacteria and other organisms. Aerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life. A word summary for aerobic respiration. Anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life. The process of anaerobic respiration in humans and microorganisms, including fermentation, and a word summary for anaerobic respiration. The differences between aerobic and anaerobic respiration in terms of the reactants, the products formed, and the implications for the organism. The interdependence of organisms in an ecosystem, including food webs and insect pollinated crops. How organisms affect, and are affected by, their environment, including the accumulation of toxic materials. The interdependence of organisms in an ecosystem, including food webs and insect pollinated crops.

Key vocabulary

Population – group of same species living in an area

Bioaccumulation – The process which causes the build-up of poisonous chemicals in the higher level of the food chain

Ecosystem – The living things in a given area and their non-living environment

Adaptation – Structure or feature that which makes it good at its job

Respiration - Respiration releases energy from glucose so that life processes can carry on. Aerobic respiration needs oxygen but anaerobic respiration does not.

Key facts-

Food Chains - these **show what is eaten by what** in an ecosystem. Remember the direction of the arrow shows the direction of energy transfer. Eg the grass gives the rabbit its energy. The fox gets its energy from the rabbits.



Plants are always **Producers** and go first in the chain. If something eats another thing it is called a **Consumer**. Depending on their position in the chain it can be a **primary consumer** like the rabbit. As the fox is the second consumer it is called the **secondary consumer**. If something ate the fox (3rd) it would be the **tertiary consumer**.

Food Webs - are made up of many interlinked food chains. They show that every organism in the ecosystem is **interdependent** - that a change in one will affect the others.



An organism can belong to different groups depending on the food chain. For example, the Hawk can be both a secondary consumer and a tertiary consumer.

As nothing eats the hawk, it is at the top of the food chain. We call this the **Apex Predator**.

Photosynthesis

Mineral	Use in plant	Deficiency signs
nitrogen	making leaves	stunted growth and yellow leaves
phosphorus	making roots	poor roots and purple leaves
potassium	making flowers and fruits	yellow leaves with dead spots
magnesium	making chlorophyll	leaves turn yellow from the bottom

Possible homework tasks

H/W: including project, Kerboodle, Kahoot.

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Stretch & challenge (wider reading/independent work)

Stretch: modelling tasks, Biological Science Review research.