CBSE Class 8 Science Notes Chapter 2: Chapter 2 of CBSE Class 8 Science, "Microorganisms: Friend and Foe," explores the role of microorganisms in our lives. Microorganisms like bacteria, fungi, protozoa, and viruses are discussed as both beneficial and harmful.

Beneficial microbes help in decomposition, nitrogen fixation, and the production of antibiotics and food items like bread and cheese. Harmful microbes, or pathogens, cause diseases in humans, animals, and plants, and spoil food. The chapter also explains food preservation methods like pasteurization and canning and highlights the importance of vaccines in preventing diseases caused by microorganisms.

CBSE Class 8 Science Notes Chapter 2 Overview

Chapter 2 of CBSE Class 8 Science, titled "Microorganisms: Friend and Foe," introduces microorganisms like bacteria, fungi, protozoa, and viruses, which are invisible to the naked eye but play a vital role in our lives. The chapter classifies these organisms into five major groups and explains their characteristics.

Microorganisms are both beneficial and harmful. On the positive side, they help in the decomposition of organic matter, nitrogen fixation, and the production of antibiotics, alcohol, and dairy products like curd and cheese. Some microorganisms, such as yeast, are used in the baking and brewing industries.

Quick CBSE Class 8 Science Notes Chapter 2 Microorganisms: Friends and Foe

Here we have provided CBSE Class 8 Science Notes Chapter 2 Microorganisms: Friends and Foe -

Microorganisms

Many live things that we might not be able to see are all around us. Certain ones, such as the fungus on bread, are visible under a magnifying glass. A microscope is required to view some of the others since they are so tiny.

Microorganisms, often known as microbes, are these organisms that are invisible to the unaided eye.

Microorganisms are microscopic organisms that cannot be seen with the naked eye.

These organisms are usually unicellular in nature.

Bacteria

Bacteria are prokaryotic, unicellular microorganisms.
While certain bacteria are beneficial to humans, others may be dangerous.
They fall into four main categories: Cocci, Bacillus, Vibrio, and Spirilla

Probiotics

Probiotics are live bacteria and yeasts that are good for your health, especially the digestive system.

Fungi

Fungi are parasitic or saprophytic living things.
They are not little; instead, they are mostly multicellular.
But yeast is a minuscule, unicellular organism.

Fermentation

A metabolic process called fermentation turns sugar into acids, gases, or alcohol.
Two products of fermentation are curd and alcohol.

Fermentation is a biochemical process in which microorganisms, such as yeast or bacteria, convert sugars into alcohol, gases, or acids in the absence of oxygen. It occurs in two main types: alcoholic fermentation, where sugars are converted into ethanol and carbon dioxide, and lactic acid fermentation, where sugars are converted into lactic acid.

This process is essential in various industries, including food and beverages, where it is used to produce bread, yogurt, cheese, wine, and beer. Fermentation also occurs in muscles during intense exercise, producing lactic acid, which can cause temporary muscle fatigue.

Creepy Protozoans

Protozoa

Protozoa are microscopic single-celled organisms that come in a variety of forms, such as ciliates, sporozoans, and flagellates.
Protozoa include, among others, amoeba, paramecium, euglena, and plasmodium.

Viruses – From Computers to Life

Viruses

Viruses are organisms with nucleic acid but no means of replication.
As a result, a virus needs living cells to survive.
Viruses are also thought to exist in the liminal space between living and nonliving things.
The influenza virus, HIV, poliovirus, Rabies virus, tobacco mosaic virus, etc. are a few instances of viruses.

Save Yourself – Vaccines and Antibiotics

Vaccines

A biological preparation known as a vaccination offers active acquired protection against a particular illness.

Usually, viruses are the target of vaccine development.
Salk vaccine for polio, influenza vaccine, rabies vaccination, etc. are a few examples of vaccines.

Antibiotics

Microorganisms are inhibited and killed by antibiotics, which can be either organic or inorganic.

Typically, antibiotics fight germs.
Antibiotics are thus used to treat the majority of bacterial illnesses.

Pathogens

Any organism that causes disease is considered a pathogen.
Pathogens are microorganisms in this sense.
Protozoa, viruses, and bacteria can all be harmful.

Carrier

An organism or human infected with an infectious disease agent but not exhibiting any symptoms is called a carrier.
Since they already carry the pathogen in their body, they are able to propagate the infection.

Vector

An organism that can spread illness or parasites from one animal or plant to another is called a vector. Examples of these organisms include ticks and biting insects.
Mosquitoes are common examples.
Dengue virus is spread by Aedes mosquitoes, while malaria parasites are spread by Anopheles mosquitoes.

Airborne diseases

Certain diseases can spread by air.

These diseases are called airborne diseases.

Influenza is the best example of this type of disease.

Waterborne diseases

Waterborne infections are those that are transmitted by water.
Numerous pathogens can be found in contaminated water.
The best example of a waterborne illness is typhoid.

Examples of Diseases

Human diseases	Causative Organism	Mode of Transmission
Tuberculosis	Bacteria	Air
Measles	Virus	Air
Chickenpox	Virus	Air/Contact
Polio	Virus	Air/Contact
Cholera	Bacteria	Water/Food
Typhoid	Bacteria	Water
Hepatitis B	Virus	Water

Malaria	Protozoa	Mosquito bite
Sleeping sickness	Protozoa	Tsetse fly

Plant diseases

Plant diseases can be caused by certain pathogens. Plants are susceptible to viral or bacterial invasions, just as people.
Diseases in plants such as rice, potatoes, wheat, sugarcane, oranges, apples, and others are caused by a variety of microorganisms.

Disease	Pathogen	Mode of Transmission
Citrus canker	Bacteria	Air
Rust of Wheat	Fungi	Air/Seed
Yellow vein mosaic of bhindi	Virus	Insect

Watch What You Eat! – Food Poisoning and Preservation

Food poisoning

Food poisoning is the result of consuming contaminated food that contains bacteria or poisons.
Stomachache is the most typical symptom.
Food poisoning can be fatal in severe circumstances.

Food preservation

The most important aspect of the food sector is food preservation.
Certain substances prolong the shelf life of cooked food by preventing bacterial development.
We can perform some basic preservation procedures at home.

Chemical methods

Major food companies utilise chemical preservatives because they are safe for human consumption when used in food preservation.
Chemical preservatives that are frequently used include sodium benzoate and sodium meta-bisulphate.

Uses of common salt

At home, sodium chloride, commonly referred to as common salt, is used as a preservative. Salt is used to pickle vegetables because it draws out water and destroys bacteria and fungal cells.

Preservation by Sugar

Sugar is used to keep squashes, jellies, and jams fresh.
The use of sugar limits the growth of germs because it lowers the moisture content.

Preservation by oil and Vinegar

Pickles are one of the many food preparations that can be preserved by adding vinegar or oil. In this media, bacteria cannot proliferate.

Pasteurization

The technique of pasteurisation involves superheating and chilling drinks in order to eradicate harmful microorganisms.
Pasteurisation makes ensuring that a beverage's flavour, like milk's, is preserved.

Storage and Packing

Dry fruits and many vegetables are preserved in airtight/air-sealed containers.

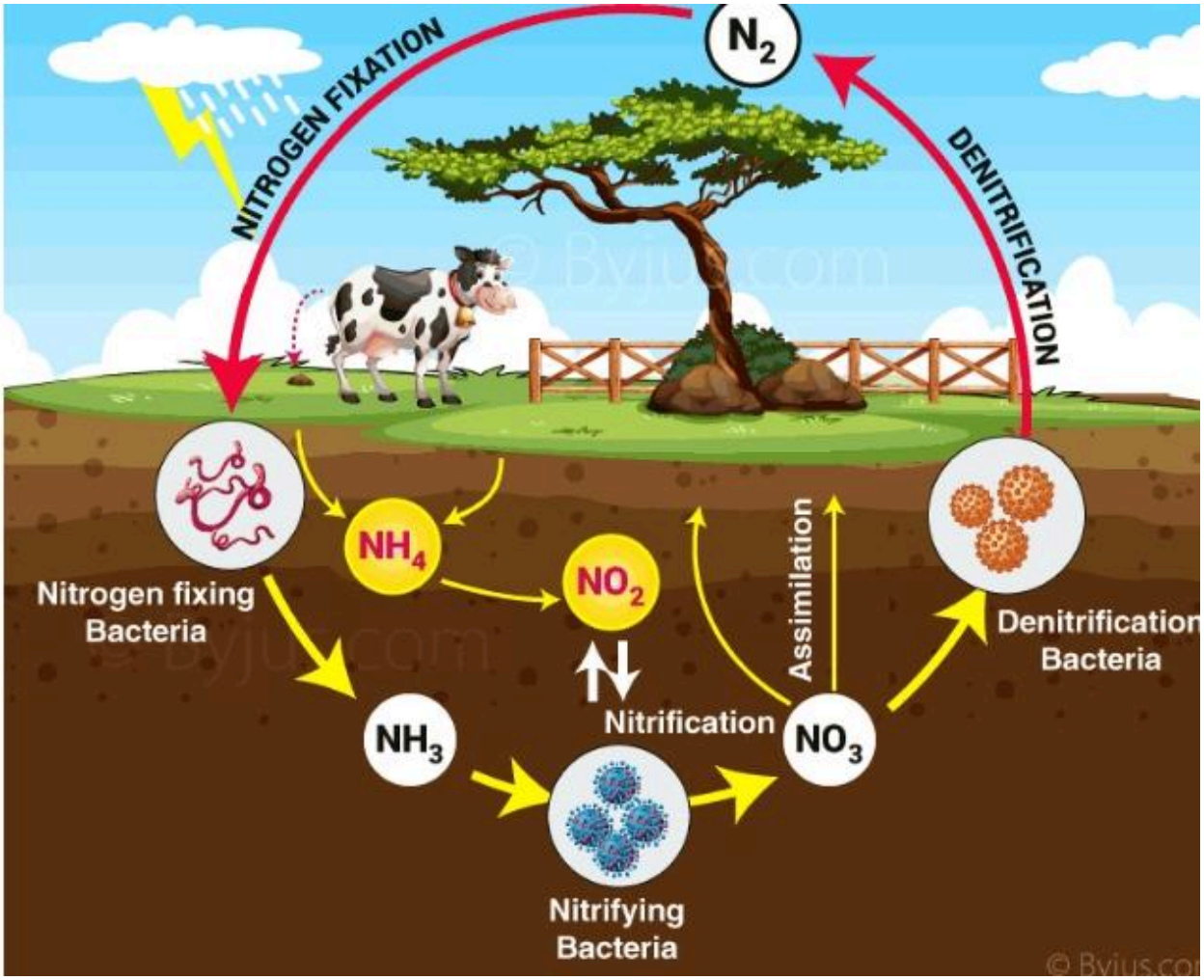
The absence of air prevents the growth of bacteria or fungi.

Nitrogen Cycle

The nitrogen cycle is a biogeochemical cycle in which nitrogen moves through the atmosphere and between terrestrial and marine ecosystems, changing into different chemical forms along the way.

The nitrogen cycle is a biogeochemical process in which nitrogen is converted into various chemical forms as it circulates between the atmosphere, soil, and organisms. Key steps include nitrogen fixation, where bacteria convert atmospheric nitrogen (N_2) into ammonia (NH_3), nitrification, where ammonia is converted into nitrates (NO_3^-), and denitrification, where nitrates are reduced back into nitrogen gas.

Plants absorb nitrates for growth, and animals obtain nitrogen by consuming plants. Decomposition of organic matter returns nitrogen to the soil, continuing the cycle. This cycle is crucial for maintaining the balance of nitrogen in ecosystems, essential for life.



Benefits of CBSE Class 8 Science Notes Chapter 2

The benefits of studying CBSE Class 8 Science Notes Chapter 2 "Microorganisms: Friends and Foe" include:

Understanding Microorganisms: Students learn about different types of microorganisms like bacteria, fungi, protozoa, and viruses, and their roles in the environment.

Knowledge of Beneficial Microbes: It explains how microorganisms are helpful in processes like nitrogen fixation, decomposition, and the production of antibiotics, alcohol, and dairy products, promoting awareness of their positive impacts.

Awareness of Diseases: The chapter educates about harmful microorganisms that cause diseases in humans, animals, and plants, helping students understand how to protect themselves from infections.

Food Preservation: It teaches various methods of food preservation like pasteurization and refrigeration, enhancing practical life skills in maintaining food quality.

Health and Vaccination: Students learn the importance of vaccines and hygiene in preventing diseases, encouraging healthy habits and promoting public health awareness.

Critical Thinking: The chapter fosters critical thinking about the dual nature of microorganisms, emphasizing their role in both supporting and harming life.