
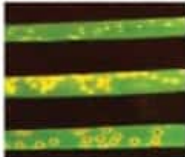



Table 2.2: Some Common Plant Diseases caused by Microorganisms

Plant Diseases	Micro-organism	Mode of Transmission	Figures
Citrus canker	Bacteria	Air	
Rust of wheat	Fungi	Air, seeds	
Yellow vein mosaic of <i>bhindi</i> (Okra)	Virus	Insect	

use of certain chemicals which kill the microbes.

Food Poisoning

Boojho was invited by his friend to a party and he ate a variety of foodstuff. On reaching home he started vomiting. He had to be taken to a hospital. The doctor said that this condition could be due to food poisoning.



Paheli wonders how food can become a 'poison'.

Food poisoning could be due to the consumption of food spoilt by some microorganisms. Microorganisms that grow on our food sometimes produce toxic substances. These

make the food poisonous causing serious illness and even death. So, it is very important that we preserve food to prevent it from being spoilt.

2.5 Food Preservation

In Chapter 1, we have learnt about the methods used to preserve and store food grains. How do we preserve cooked food at home? You know that bread left unused under moist conditions is attacked by fungus. Microorganisms spoil our food. Spoiled food emits bad smell and has a bad taste and changed colour. Is spoiling of food a chemical reaction?

Paheli bought some mangoes but she could not eat them for a few days. Later she found that they were spoilt and rotten. But she knows that the mango pickle her grandmother makes does not spoil for a long time. She is confused.

Let us study the common methods to preserve food in our homes. We have to prevent it from the attack of microorganisms.

Chemical Method

Salts and edible oils are the common chemicals generally used to check the growth of microorganisms. Therefore they are called **preservatives**. We add salt or acid preservatives to pickles to prevent the attack of microbes. Sodium benzoate and sodium metabisulphite are common preservatives. These are also used in the jams and squashes to check their spoilage.

Preservation by Common Salt

Common salt has been used to preserve meat and fish for ages. Meat and fish are covered with dry salt to check the growth of bacteria. Salting is also used to preserve *amla*, raw mangoes, tamarind, etc.

Preservation by Sugar

Jams, jellies and squashes are preserved by sugar. Sugar reduces the moisture content which inhibits the growth of bacteria which spoil food.

Preservation by Oil and Vinegar

Use of oil and vinegar prevents spoilage of pickles because bacteria cannot live in such an environment. Vegetables, fruits, fish and meat are often preserved by this method.

Heat and Cold Treatments

You must have observed your mother boiling milk before it is stored or used. Boiling kills many microorganisms.

Similarly, we keep our food in the refrigerator. Low temperature inhibits the growth of microbes.



Why does the milk that comes in packets not spoil? My mother told me that the milk is 'pasteurized'. What is pasteurization?

Pasteurized milk can be consumed without boiling as it is free from harmful microbes. The milk is heated to about 70°C for 15 to 30 seconds and then suddenly chilled and stored. By doing so, it prevents the growth of microbes. This process was discovered by Louis Pasteur. It is called **pasteurization**.

Storage and Packing

These days dry fruits and even vegetables are sold in sealed air tight packets to prevent the attack of microbes.

2.6 Nitrogen Fixation

You have learnt about the bacterium *Rhizobium* in Classes VI and VII. It is involved in the fixation of nitrogen in leguminous plants (pulses). Recall that *Rhizobium* lives in the root nodules of leguminous plants (Fig. 2.9), such as beans and peas, with which it has a symbiotic relationship. Sometimes nitrogen gets fixed through the action of lightning. But you know that the amount of nitrogen in the atmosphere remains constant. You may wonder how? Let us understand this in the next section.