

Experiment 31

Aim



To collect and study symptoms of diseases in locally available crop plants.

Theory



Microbes like fungi, bacteria and virus are capable of causing serious diseases in plants. Such parasitic microbes affect many of our commercial crops like cereals, pulses, vegetables, fruits etc. Generally a parasitic infection is specific, that is, it infects a specific plant. Some microbes are capable of infecting plant species belonging to a particular group. The infected plant is called the host and the infecting organism is called the parasite. Parasitic microbes require a living host for completing their life cycle. They absorb nutrients from the host plants and may even kill the host. If the disease is not checked, it is capable of spreading rapidly to other plants causing severe loss. Bacterial blights, smuts, white rust, black rust, tobacco mosaic are a few common diseases of crop plants in our country.

Materials Required



Two or three diseased crop plants or ornamental plants or weeds, compound microscope, permanent slides of some diseased plants, a hand lens, slides, cover slips, needle, and a brush,

PROCEDURE



1. Collect two to three different kinds of diseased or infected plants.
2. Carefully observe each plant part for visible disease symptoms such as decolouration, infection spots, coloured patches, soft and decaying parts.
3. Observe if the entire plant is infected or only some parts like leaves, flowers or stem are infected.
4. Observe the infected parts and the physical characteristics of infection and record in the observations table.
5. Scrape the infected spot with a needle/blade and transfer it to a drop of water on a slide. Place a cover slip and observe under the microscope.
6. Under the low power of microscope, observe the presence of spores/hyphae and damage caused to plant tissues (or cells).
7. Draw a diagram of the infected part and show the disease symptoms.

OBSERVATIONS



Sl.No.	Observation	Plant 1	Plant 2
1.	Infected part is: Stem Root Leaf Flower Fruit	(Yes/No)	(Yes/No)
2.	Extent of infection: Localised Entire plant		
3.	Infection spot Soft patch Dry patch		
4.	Are spores visible?		
5.	Are hyphae visible?		

RESULTS AND DISCUSSION



Draw the diagrams of the infected parts and label the diseased parts. Also draw diagrams of spore and hyphae.

NOTE FOR THE TEACHER

- This is a group activity. Students may be asked to work in a team.
- The task of collecting infected plants may be assigned to students in advance.
- It is advised to facilitate students in identifying diseased plants by observing the external features like stunted or abnormal growth, discoloured spots on plant parts, etc.
- All weak plants are not necessarily diseased plants. Poor growth may also be due to a deficiency of certain minerals.
- Permanent slides of diseased plant parts may be focussed under the compound microscope.
- Careful observation of a slide may reveal the presence of spores or hyphae or both. Hyphae are generally filamentous, colourless and appear as branched and delicate strands.
- Students may also be advised to find out five diseases of crop plants which lead to extensive loss of revenue in our country. It may also be suggested to use internet or magazines or other information sources for this purpose.

QUESTIONS

- What are parasites? How do they obtain food?
- How do parasitic microbes spread from plant to plant?
- How do farmers check the spread of diseases in their fields?