

PROTECTING OUR CROPS

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You must have heard that sometimes standing crops are ruined in the fields, causing great losses to the farmers. There are many agents which may cause damage to the crops.

Make a list of all the different agents which damage crops. (1)

Field trip

The purpose of this field trip is to learn more about the agents which destroy our crops. We also want to find out how diseases spread in crops and how farmers prevent and control them. At the same time we shall study weeds and the role played by birds and beasts seen around the fields.

Preparation

Every group should be equipped to collect plants and their parts and also be able to **press** them between sheets of old newspapers. Each group should take along a bottle of BHC powder. You also need to take along a magnifying glass, razor blade, and your note books. A net to catch flying insects would come in handy. A damp cloth for wrapping some samples and keeping them moist should also be taken on the trip.

Season for the trip

One field trip should be taken during the kharif season (mid-August to mid-September) and another during the Rabi season (January to February).

Planning the field trip

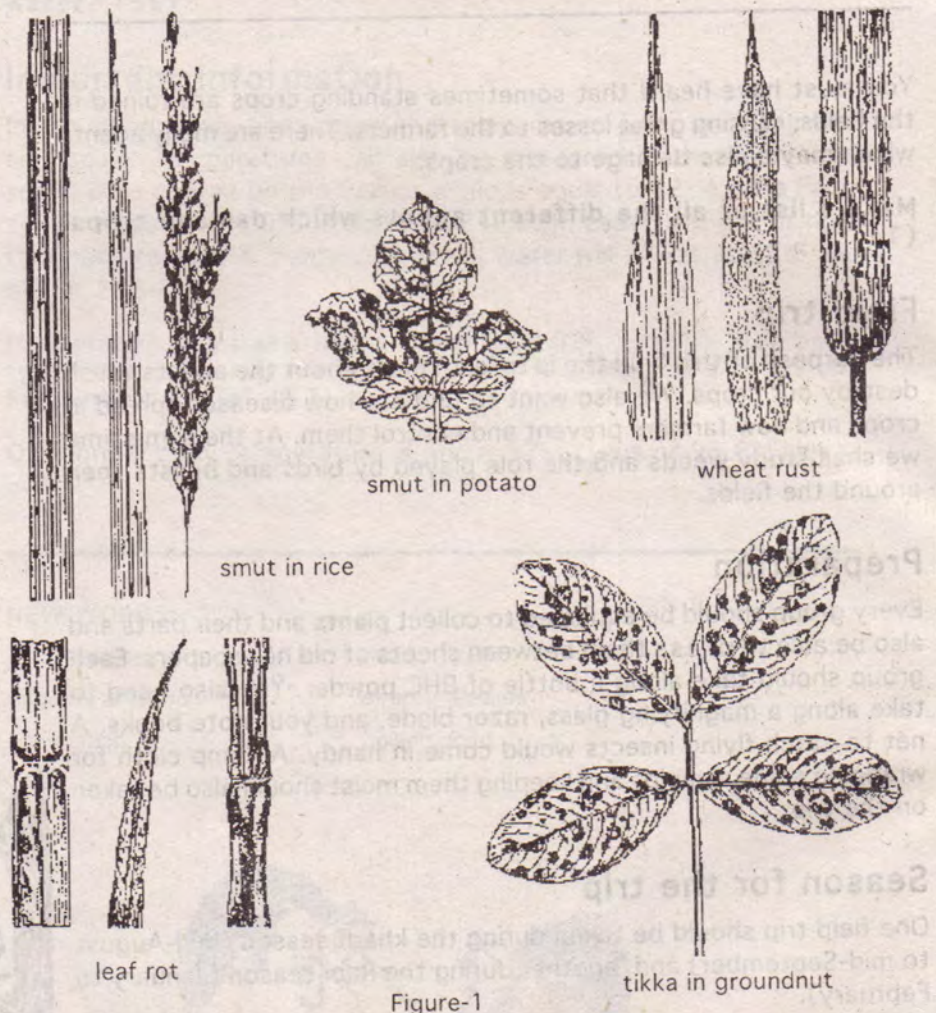
It would be good if different groups could survey different villages. The reason for this is that all the pests cannot be found in just one village at the same time. Plan the field trip to several places with the



help of your teacher. Before starting the survey, it would be good to talk to the farmers of the area. They will help you identify the agents of destruction. If possible take one or two farmers with you on the field trip. It would be to your advantage if the Agricultural Extension Officer (*gram sevak*) comes along with you. Talk to them beforehand to fix a convenient day and time for the trip.

Recognising the agents

Figure 1 shows some symptoms of diseases caused by fungi. Here the agent of disease is some fungus.



Let us look at another example. Groundnut gets a disease in which the entire arboreal part of the plant (stem, branches, leaves) wither and gradually all the leaves fall off. However, the cause of the disease lies in the roots. If you pull out one of these plants and shake the soil away from the roots you will find that they are all rotten.

The roots would be giving off a bad smell. You would also see some white stuff scattered here and there on the surface of the roots and inside them. This white stuff is a fungus and it is the cause of the disease.

Figure- 2 shows various symptoms of diseases caused by insects.

Figure 2 (b) shows the withering of leaves and the tip of a plant. If you make a long vertical cut along the stem, with a blade, you might not find an insect, but you may find pupae and larvae of the insect inside. The larvae of this insect have eaten the stem hollow, so that the upper part of the plant can no longer get any food. Therefore the upper part of the plant wilts. When you collect a sample, save the stem along with the wilted parts.

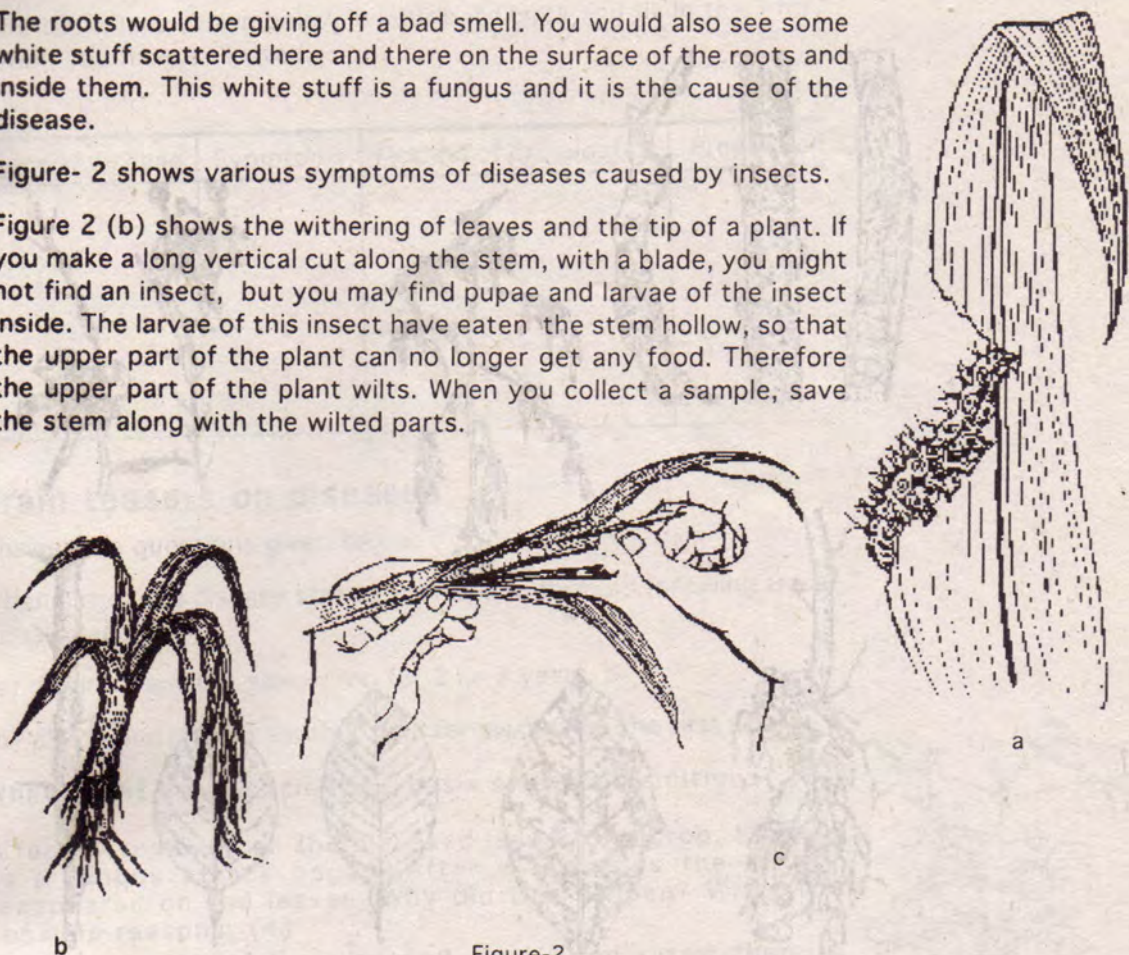


Figure-2

Sometimes because the soil is deficient in some essential elements, the plant wilts away or its leaves turn yellow.

Figure 3 shows some more symptoms caused by various other agents. These symptoms might be manifest in different parts of plants, such as flowers, fruits, leaves, stems, roots, etc. Therefore, look carefully at all the parts of plants in the fields.

Collect the plants or their parts which have the symptoms shown above.

Collect the weeds, with their roots intact, from the various fields you visit. Write the name of the weed and the crop on slips of paper and tie them to each sample. Keep the weeds rolled up in a damp cloth in your bag. Carefully look around the farm for birds and beasts and try to find out if they are helpful or destructive to the crops.



Figure-3

Back in school

Arrange whatever material you have collected for study. Press the diseased parts of the plants between sheet of paper for drying. Kill the insects, larvae, and pupae with BHC powder and stick them with pins on matchboxes or on thick cardboard. Each sample should have its name slip attached to it. To study the diseases call an Agricultural Extension Officer to your school one day and show him all the samples.

He can give you a lot of information about the things you have collected. Discuss with him the different ways by which diseases spread and the methods of their prevention. Your teacher can help to get copies of kharif and rabi **crop manuals** and the *Kisani Samachar* published by an Agriculture University. The names of diseases of each crop and the methods of prevention are given in these manuals.

Make table 1 as shown below in your note book and fill in the information you have collected.

Table 1

| Agent of disease | Symptoms | Method of propagation | Prevention |
|------------------|----------|-----------------------|------------|
| | | | |

Brain teasers on diseases

Answer the questions given below:

When a dreaded disease strikes their crops, farmers following traditional practice-

- (a) do not plant the same crop for 2 or 3 years, or
- (b) plant that crop in another field far away from the first one.

What might be the scientific basis of these traditions? (3)

A farmer removed all the diseased leaves of a crop, as soon as a fungus attack began. After a few days the fungus reappeared on the leaves. Why did this happen? Write the possible reasons. (4)

A farmer removed the diseased leaves and threw them in the field. Did the farmer make a mistake? If yes, what was it? (5)

One farmer pulled out fungus infected groundnut plants and buried them in the field. Could this be harmful? If yes, how? (6)

What should a farmer do with such plants? (7)

According to a crop manual, two pesticides (e.g. Diathane Z-78 and Aldrin) should be sprayed for preventing diseases in groundnuts

Why should you apply two pesticides? Wouldn't only one pesticide be enough? (8)

Why is it necessary to use a fixed dose of disease control chemicals? What harm can occur by using more or less than the fixed dose? (9)

A farmer went to the Block Office and told the Agricultural Extension Officer that the leaves of his guava trees were suddenly wilting. Without asking any questions the officer handed the farmer a container and told him to apply it to the affected trees.





Did the Agricultural Extension Officer make a mistake? If so, what? (10)

As compared to improved varieties are local varieties affected more or less by diseases? Explain and illustrate your answer. (11)

Weeds

Press all the weeds you have collected between pieces of paper in order to dry them.

Make a crop-wise list of the weeds you have collected. (12)

When you have done both the field trips, classify the weeds into two groups - kharif and rabi weeds. (13)

On the basis of their leaves and roots classify them as monocots or dicots. (14)

Are the weeds found in different crops in one season the same or different? Study the crop-wise list you made above and answer this question. (15)

What is the name of a weed that is also grown as a crop? (16)

If you grow this weed as a crop will you still call it a weed? Explain with reasons. (17)

Make an exhibition

Here are some suggestions for putting up exhibitions.

(a) Put up an exhibition which displays collected samples, pictures, and descriptions of at least three diseases in plants.

(b) Choose one crop from each of the four categories listed below

and display the weeds which grow along with them -

one grain crop

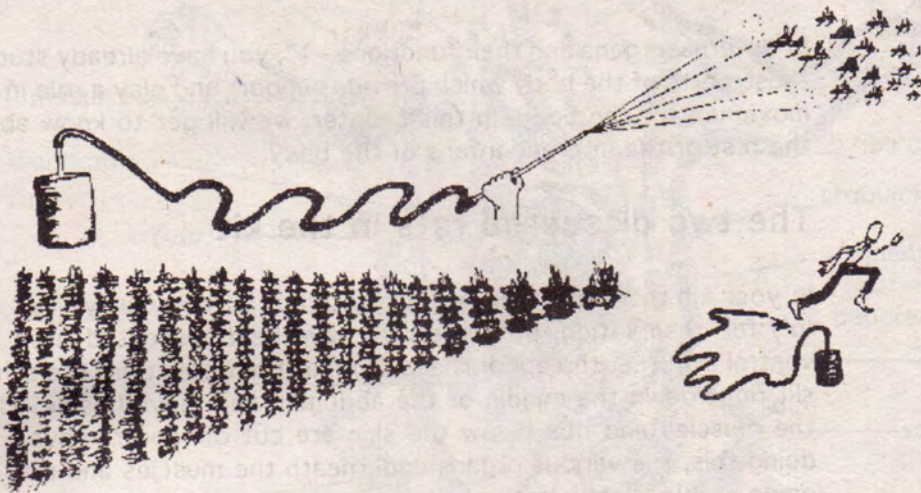
one dal crop

one vegetable crop

a fruit orchard

(c) Put up an exhibition of the weeds which grow in every season.

In addition to these suggestions, think and put up at least one more exhibition.



NEW WORDS:

agent

weed

essential

crop

manual

infected

elements