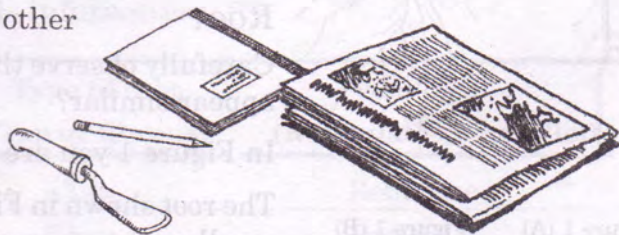


ROOTS, LEAVES AND SEEDS

In this chapter we will first study the two main types of roots. We will then try to find the relationship that exists between the type of root, the venation of the leaf and the number of cotyledons in the seed of the plant. On this basis we will then classify plants into two groups.

In order to carry out this study, we will need to bring small plants with their roots and leaves intact to the classroom. We will go out on a field trip to collect these plants. We will need the following things for the field trip:

1. Old newspapers or magazines or any other type of waste paper.
2. Exercise book and pencil.
3. A cloth bag and a wet cloth (towel or napkin).
4. A small spade or any other tool for digging and a knife.



During this field trip, if you find that a plant is too big to collect intact with its roots and leaves and bring back to school, look for smaller plants of the same variety. You may find these growing nearby. Try to collect as many different types of plants as possible. Try to collect plants you can find easily or those for which you know the number of cotyledons in their seeds. Dig around the plants carefully and uproot them gently so that the roots are not damaged. Try to find out the names of all the plants you collect.

Write these names on slips of paper and tie the name tags to the respective plants. Wrap the plants in the wet cloth.



AFTER RETURNING TO SCHOOL

Take the plants out of your bag and arrange them on a flat surface.

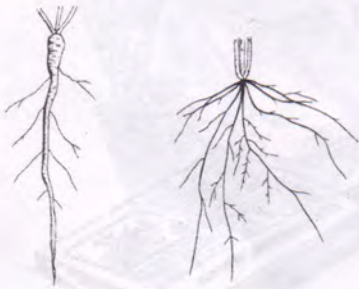


Figure 1 (A)

Figure 1 (B)

ROOT

Carefully observe the roots of all the plants. Do all the roots appear similar?

In Figure 1 you are shown two types of roots.

The root shown in Figure 1 (a) has one main root, with many smaller roots emerging from it. This type of root is called a tap root.

In Figure 1 (b) there is no main root. All the roots are similar and seem to originate from the same point on the plant. This type of root is called a fibrous root.

Now divide the plants into two groups on the basis of the type of roots they have - tap root or fibrous root.

Select one plant from each group and draw its diagram. (1)

Make a list of plants in each group. (2)

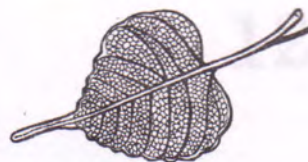


LEAF

You already know that leaves have two types of venation and you also know how to identify them. Both types of venation are shown in the adjoining figure.

Divide the plants you have collected into two groups on the basis of the venation of their leaves - reticulate or parallel.

Make a list of plants in both the groups. (3)



SEED

In the chapter on 'Seeds and their Germination' you had studied the number of cotyledons present in different seeds.

Using this as a basis, make a list of dicot and monocot plants. (4)

If you have collected any new plant during the field trip, find out the number of cotyledons in its seed and add its name in the appropriate place in these two groups. (5)



COMBINED TABLE

Look at the table given below. You have to fill in the number of cotyledons, type of root and type of venation against each plant. Two examples have been filled in.

You had, earlier in this chapter, grouped plants on the basis of the types of roots, types of venation and number of cotyledons.

Complete the table on the basis of this information. (6)

No.	Name of plant	Number of cotyledons	Type of root (Tap or fibrous)	Venation (Reticulate or parallel)
1.	Mango	2	Tap	Reticulate
2.	Wheat	1	Fibrous	Parallel
3.				
4.				

Now answer the following questions on the basis of the information available in the table:

What type of venation is found in the leaves of plants with fibrous roots? (7)

What type of venation is found in plants which have a tap root? (8)

What can you say about the roots of a plant whose leaves have reticulate venation? (9)

If the leaves of a plant have parallel venation, what would be the type of its root? (10)

Complete the following sentences and write them in your exercise book:

(a) Monocot plants usually have _____ roots and leaves with _____ venation.

(b) Dicot plants usually have _____ roots and leaves with _____ venation. (11)

QUESTIONS FOR REVISION

On the basis of what you have learnt about roots and leaves, describe the relationship between the type of root and the venation in the form of a rule.

Complete the following table:

No.	Name of plant	Number of cotyledons	Type of root	Venation
1.	<i>Chiku</i> (Sapota)	2		
2.	Bamboo		Fibrous	
3.	Gulmohar			Reticulate
4.	Mustard (<i>Rai</i>)			

NEW WORDS

fibrous roots tap roots