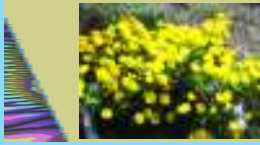


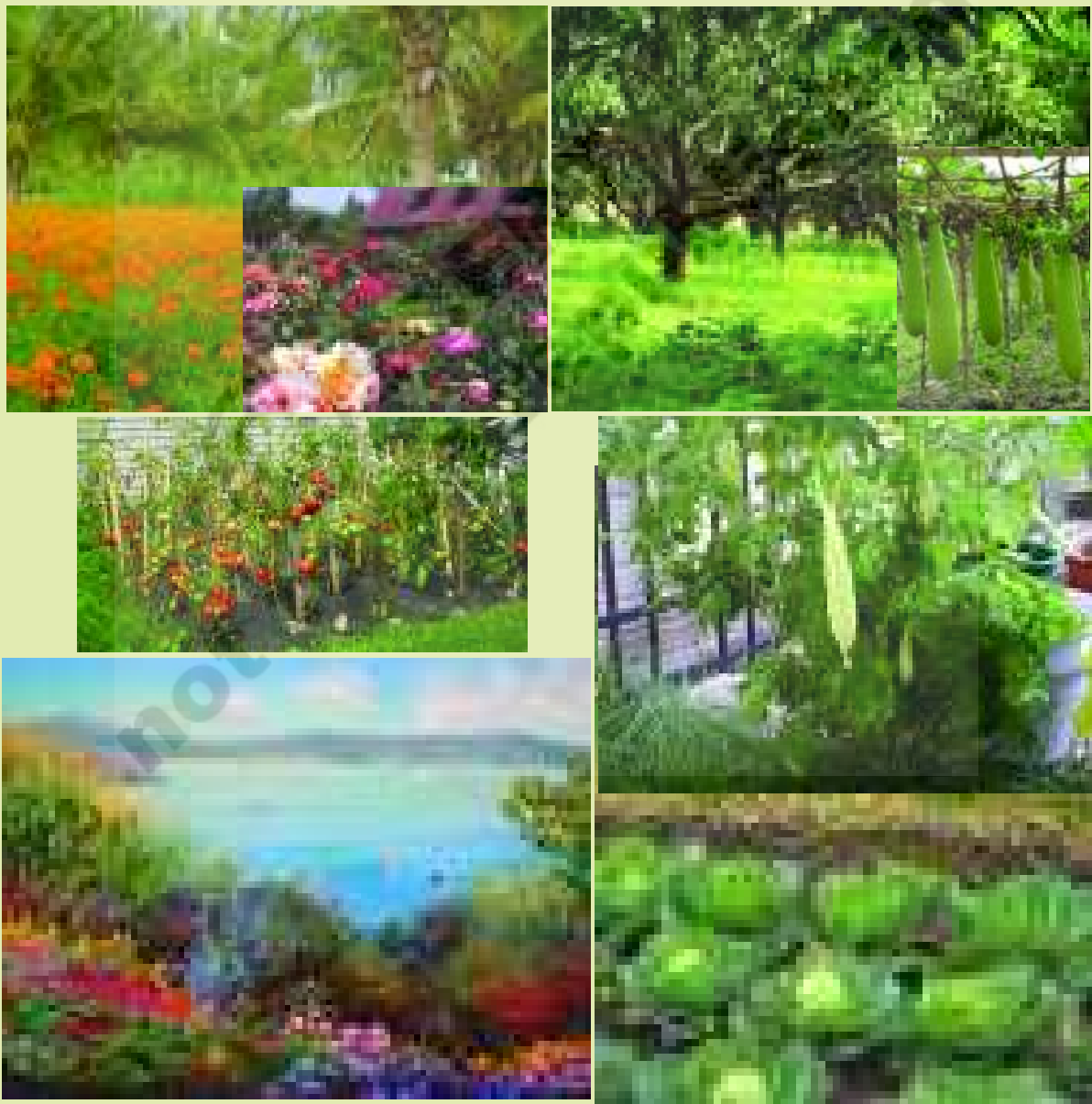
5



PLANTS AROUND US

We see many plants and trees around us. We are delighted at their sight. Plants and animals co-exist on earth with human beings. Some of the plants are small, while some are big. Some others are very big. There are different types of plants and trees just like different species of animals.

See the pictures given below. Name the trees.



Have you seen the pictures given in the previous page? Some plants have grown very big while the others look like a bush. Some are creepers with very tender stems. Discuss with your friends and classify the plants given in the picture and make a note of them in the table given below. Like wise, include those also, which you see in your surroundings.

Discuss in groups



- ◆ Which plants / trees are there? Are they all alike?
- ◆ What differences did you observe?
- ◆ Which plants are creepers? Which plants are bushy? Which plants are growing densely? Do you know what they are known as?

5.1. Herbs (climbers / creepers), shrubs and trees

Plants like ridge gourd, bitter gourd and Jasmine have very weak stems. So, they take the support of the nearby trees and grow / climb on them. These are known as climbers / creepers (herbs). Plants like chrysanthemum, chilly and roses grow in bushes.



Many branches grow from the base of the stem. Such plants are known as Shrubs tamarind, peepal and mango are very big. Their branch is tall and strong.

We get necessary timber from such plants. They also give us shade. They are called trees. We have learned about climbers, shrubs and trees. Write two or three examples for each in the table given below.



Climbers	Shrubs	Trees

5.2. Parts of a plant

We have seen that there are climbers, shrubs and trees around us. Some of them give us flowers, some give timber while others give us fruits. Do you know about their parts?



Observe the plant given below:



Generally plants have roots, stem, leaves, flowers and fruits. Roots grow below the ground (Soil).

Now you have identified the parts of a plant. Let's learn as to how each part is useful to the plant.

5.2.1. Roots

You have already learnt that plants have roots. Do you know how the roots are useful to the plant? Each one of you collect the roots of paddy, jowar, capsicum and cotton. Observe them and draw diagrams. Did you notice the differences in their roots? What are they?

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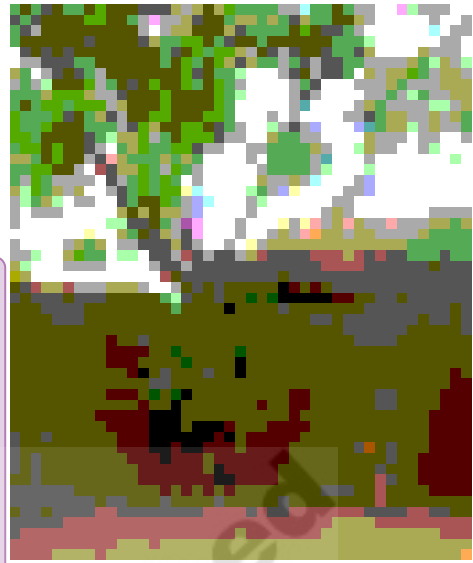
Have you seen the plant given in the adjacent picture? Which parts of the plant do you see? Which parts of the plant grow above the soil and which part below the soil? Label them.

Do this

Observe and collect a flowering plant from your school.

Compare this plant with the plant given in the picture. Does your plant have the same parts as the one given in the picture? Is every part similar to this plant. Your friends might have also observed like you. Discuss about the parts of a plant with your friends.

Hemanth was wondering how the roots of the neem tree in his back yard reached the wall of his house, which was quite far? Some doubts were troubling him. Can you guess what those doubts were? Discuss about them with your friends.



Discuss in groups



- ◆ How did the roots reach so far?
- ◆ From where did the tree get water?
- ◆ From where does the road side trees and the trees growing in the forests receive water?

Do you know about the uses of roots? As the foundation gives support to a house, the roots also being inside the soil, help the plant to stand erect. Plants absorb water and nutrients through the roots.

5.2.2. Stem

The part of the plant above the ground is called stem. The stem gives rise to the branches and other parts. Is the stem similar in all the plants?

Do this

Observe the plants in your surroundings. How are their stems? Record your observations in the given table. Mark '✓' in the appropriate column.

S.No.	Name of the plant	Thin	Soft	Hard	With bark	Climber	With thorns	Colour of the stem
1.								
2.								
3.								
4.								
5.								

Thus, you have observed four-five plants in your surroundings. What did you learn about them? Your friends might have also collected information about them. Discuss in groups.

Discuss in groups



- ◆ In the table given above which plants have dark stems? What is its colour?
- ◆ Which climbers have tender stems?
- ◆ Which plants have strong, thorny stem?
- ◆ Which plants have soft and tender stem?
- ◆ Which plants have soft and creeping stem?
- ◆ How is the stem useful to the plant?

Stems of all the plants are not similar. Stems of some plants have thorns. In some, the stems are soft. Others have rough stems. Some others have a thick bark. The stem gives the necessary strength to the plant to stand straight (maintain erect position). The stem transports (conducts) water and nutrients absorbed by the roots to all the parts of the plant. You will learn more about this in your higher classes.

5.2.3. Leaves, flowers and fruits.

You have already learnt that besides roots and stem, a plant has leaves and flowers. Do all the leaves have same shape, colour and size? How do they help the plant?

Collect

- Visit your surroundings. Collect four - five different kinds of leaves. Draw their picture observe, whether all the leaves are similar. Tell the differences if any.

Leaves prepare food for the plant. Leaves are green in colour due to the presence of a green colour pigment called, 'Chlorophyll'. The plants which have more leaves prepare more food. Hence, we should not pluck leaves. A plant does not grow well if we pluck its leaves.

Sun gives heat and light energy. This energy is absorbed by the leaves and they make use of it in the preparation of food material. The energy that we get from tubers, seeds, vegetables produced from plants is the energy received from the sun. Man and other animals get the necessary energy by consuming these food products produced by the plants.

Think...

- What is the source of primary energy which is received by man and other animals?
- Sun is the source of energy. What should we do to make use of this energy?

You have learnt about the leaves of a plant. Let's learn about the fruits and vegetables. Look at the picture given below.



Discuss in groups



- ◆ What vegetables and fruits are there in the above picture?
- ◆ From Where do we get fruits and vegetable?
- ◆ From where do we get the plants?
- ◆ Do all the plants grow from seeds?
- ◆ From where do we get the seeds?

We obtain the necessary fruits and vegetable from the plants. These plants grow from seeds. Seed is obtained from flower. Let's learn about the different types of flowers and the occasions on which they are used.



You have seen the flowers. How were they before blossoming? How are these flowers useful to us? What is the relationship between a flower and a bud? How many days does a bud take to change itself into a flower? In order to know about it, do as given below.

Do this

- Observe the flowers that grow near your school and home. Observe their buds.
- Note the number of days taken by these buds to grow into a flower.
- Name the flowering plants which you have observed, and the colour of their flowers?
- Some grow as a single flower, where as others grow in clusters (groups). Have you noticed such flowers?
- Have you noticed any flower with a long stalk?
- Do all the flowers blossom only in the morning?
- You might have noticed some flowers that grow on the climbers. Name them.
- Do any flowering plants have thorns? If so, name them?

We have learned many aspects (things) about flowers. Usually, in which season do you see abundant flowers? They have a variety of colours and odours (smell). We have seen that some flowers are small while some are big. We get necessary fruits and vegetables from these flowers which have undergone due changes. Flowers bestow us with beauty and joy. We are happy to see flowers near our home, school and along the road. The mood gets a lift on seeing colourful flowers. Flowers are used for decorative purposes and also while praying.

Do you know?

The largest flower in the world is Rafflesia. Its diameter is 1 metre and it weighs about 4 kgs. When the flower decays, it emits smell of rotten meat upto 2 kms.



5.3. Flowers - livelihood

Some people depend upon flowers to earn their livelihood. People do business with flowers. Flowering plants are not found in every body's house. Such people buy flowers. You too might have purchased them. Where are flowers sold. From where do they get the flowers? Find answers for these questions from a florist. Collect information about the following aspects:



Collection



- ◆ May I know your name?
- ◆ Since when have you been doing this business?
- ◆ Which flowers do you sell?
- ◆ Who buys the flowers and when? Why do they buy them?
- ◆ How much do you earn by this?
- ◆ When do you earn more?
- ◆ Which flowers are more profitable?
- ◆ Are all the flowers sold by you, available locally?
- ◆ Do you bring flowers from other states and sell?
- ◆ How do you preserve such flowers?
- ◆ Do any of your family members help you in the business?

You can ask many more questions.

Do you know these are also flowers!



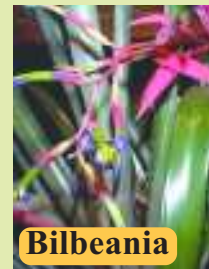
Faciflora



Ponshitia



Bottle Brush



Bilbeania

5.4. Flowers to fruits

Flowers change (transform) into fruits. Did you notice this transformation? The transformation of a flower into a fruit can be observed in the pictures given below. Look at them and arrange them in sequence (serial order).



You have noticed the transformation of pomegranate fruit from its flower. You can observe the transformation of flowers in - guava, ridge gourd, bitter gourd, beans etc. Draw their figures and show them in your class.

Are the flowers useful only to us? Did you observe the flowers in the garden? Do butterflies, honeybees and other insects sit on the flowers? Did you ever think, why they rest on flowers?

Look at the picture given below, what do you see? Say what is happening?



You have observed the pictures. Honeybees, butterflies and beetles rest on the flowers and suck their nectar. Thus, they are taking their food from the flowers. In the same way, plants also benefit by them. These insects help the flower to transform itself into fruit. You will learn more about this in your higher classes.

5.5. Fruits - seeds

Seeds germinate into new plants. Do you know from where we get these seeds? Do you know, how the seeds germinate and how they look? Look at the pictures given below. Form groups and discuss with your friends.



Discuss in groups



- ◆ Observe the fruits & vegetables in the above picture.
- ◆ Which fruits have seeds inside them? Why?
- ◆ Do the seeds of all fruits resemble each other?
- ◆ Do you know how many seeds are found in each fruit?
- ◆ Do all the fruits have the same number of seeds?
- ◆ Name the fruits and vegetables which have only one seed.
- ◆ Name the fruits and vegetables which have many seeds.
- ◆ Name the seedless (without seed) fruits and vegetables.

5.6. Do all the seeds look alike?

Are all the seeds alike? Is there any link between the size of the seed and that of the plant? Do all the plants grow only from seeds? Do you know about the plants that germinate without a seed? Do huge trees bear huge (big) seeds? Let's think.



The size of a tree does not correspond to the size of the seed. Seeds are small (pulses, Banyan) some are big in size (Coconut). Some round gram seeds have hard shells, while others seeds are soft. Palm, coconut, soapnut, cashew nut have only one seed inside them. Palmtree, chikoo have 2 to 3 seeds. How many seeds do you see inside a bean? Capsicum and pumpkin have many seeds. In millets like jowar, maize and ragi seeds are borne on the spike. Many seeds are found in custard apple and pomegranate. Thus, we can call the spike of a maize as a fruit, like pomegranate! Think over it.

5.7. Germination of the seed

We have learnt about seeds. How do seeds germinate? Do you know about it. Did you ever sow a seed in the soil? What happens? How many days does it take to germinate? Has germination taken place in all the seeds sown? In order to know about these aspects let's do as given below.

Do this

Please form groups. Put ten green gram seeds in a tin box filled completely with water, other ten green gram seeds in a tinbox containing a wet cloth and another ten green gram seeds in an empty tin box. Observe for two days. Write your observation in the table given below. Each group can repeat with bengal gram and leguminous seeds.

	Box - 1	Box - 2	Box - 3
Availability of air to the seed (Green gram)			
Did you water these seeds			
Change Observed			
Germination of the seed			

- The seeds in which of the boxes germinated? What differences (changes) did you observe in the box containing - germinating seeds and the other boxes.

Air, water and sun light are essential for the germination of seed.

You have learnt about the germination of seeds. Rice is our staple food. We get rice from paddy. We eat the cooked rice. Do you know how paddy seeds germinate? Ask your elders / farmers about it.

Collect



- What do we do in order to make a paddy seed germinate?
- In how many days do they germinate?
- What do we do after the germination of the seed?

5.8. Do all the seeds germinate?

One day Raheem sowed some tamarind seeds and some coriander seeds in their backyard. The seed coat of tamarind is very hard. Where as coriander's seed-coat is soft. He watered them every day. He was carefully observing the seeds every day and wanted to see them germinate. Every day he was noting the changes in a book. After some days, new plants sprouted. But all the seeds did not germinate. Some seeds grew into new plant and leaves where as others did not germinate. What may be the reason behind some seeds not germinating? Think over it. Let's think - what leads to seed germination? You too try to find the answer. Talk about it in your class. Which seed germinates faster? Bittergourd or soapnut? Why? Let's think.

Germination of Seed



Seeds germinate when they are sown in a fertile soil. Do you know how the soil becomes fertile? Dead bodies of the animals, leaves shed by different trees and excreta of animals, are decomposed by the micro - organisms (decomposers) which make the soil fertile. Some animals dig burrows in the soil and live in them. They make the soil porous and fertile. Earth worm is known as the 'farmer's friend'. Why are they called so?

Do you know?

When the wheat grains were imported to our country from Australia, the seeds of the weed parthium came along with it. Now-a-days many people in our country are suffering from lung diseases, eye diseases and skin diseases, caused by the pollen grains of this notorious weed.



5.9. Dispersat of seeds

Once a plant is planted, it remains stationary in one place. But its seeds reach far off places. Do you know how it is possible? Did you observe any seed flying in the air? Does any seed collected by you, fly in the air? The baby plant grows in a distant place. The seeds are carried by the wind to distant

places and the seeds germinate there into a new plant. Example : Asclepaediaceae plant family.

When the cattle - goats and sheep graze, the seeds get stuck in their hair and are carried and dropped by them in different places. There, they grow into new plants. Example - observe the seeds of palleru, telu kondi kaya. When we sit on the grass, its seeds stick to our clothes. When we move about, they fall on the ground and grow. Have you ever seen the seeds and fruits stuck to the hair of the animals. When the fruits of some plants get dried, they break open and disperse their seeds. What will happen if the seeds do not get dispersed by wind, water, animals and also human being and remain in the same place? Hence, we see a variety of plants in different regions. In some places, fruits and seeds are carried away by water. While floating in water, they break open and settle in the soil where they are being left off by the water. There, they grow into new plants.

5.10. Nurseries

Suppose you want to grow flowering plants or fruit bearing plants in your house. From where do you bring them? Look at the picture given below.



A nursery is a place where a wide variety of plants are grown. Plants are grown and sold in a nursery. The officials of the forest department also grow the plants like neem, teak, daris (Kanuga), in the nursery. They supply these plants for the social welfare of people.

It is significant to note that Kadium nurseries of our state located at East Godavari near Rajahmundry supply a variety of plants all over the country. These nurseries are spread in nearly 5 thousands acres of land with 700 of them growing various flowers, plants of fruits, decorative plants and medicinal plants. We can see thousands of varieties of plants in these nurseries. Desert plants like cactus or bonsai grown in a tinypot are also available here. Plants are grown by sprinkling seeds. Plants are grown in controlled climatic conditions using shed nets and polyhouses. Growing diverse varieties of plants found in deserts, polar regions and moist regions together in one place it self, proves to be a model of Bio-diversity. Hence, Kadium nurseries of our State are known as the largest bio-diversity region. It is necessary to plant the trees as the pollution is increasing day by day. Thus Kadium nurseries are playing a vital role in protecting the environment. We should visit such nurseries without fail.

Key words:

- | | | |
|--------------------|---------------------|------------------------------|
| 1. Climbers | 3. Trees | 5. Roots |
| 2. Shrubs (Bushes) | 4. Parts of a plant | 6. Stem |
| 7. Chlorophyll | 8. Seeds | 9. Livelihood |
| 10. Germinate | 11. Nursery | 12. Environmental Protection |

What have we Learnt?

1. Conceptual understanding

- Write the similarities and differences between climbers, bushes and trees.
- Which parts of a plant are useful to us? Give two examples.
- How can you say that flowers are means of livelihood?
- What are the uses of nurseries?
- When do the seeds germinate?

2. Questioning - hypothesis

- ◆ Raju planted a rose plant. It did not grow well. It dried up, imagine what may be the reasons, for this.

3. Experiments - field observations

- Write about the different stages in the germination of a seed.
- Sow any seed in the soil. Sow some of them in a box containing sand. Water both of them, every day. Tabulate the results after five days.

4. Information skills, projects

- ◆ Meet a farmer. Ask him what all they do to grow vegetables and fruits. Write about it in a sequence.

5. Communication through mapping skills, drawing pictures and making models

- Draw figures showing how the flower changes into a fruit.
- Draw your favourite flower. Colour it and write about it.
- Prepare a 'bouquet' with flowers and leaves available in your surroundings. Explain how you prepared it in your classroom.

6. Appreciation, values and awareness towards bio-diversity

- Your friend is growing some plants carefully in the school premises. After a year she celebrated the birthday of the plants too. What did you feel when you observed her love for plants.
- Why should we take care of plants and trees? Write a few slogans in support of this.

Can I do this?

- | | |
|--|----------|
| 1. I can give examples of climbers, bushes and trees. Tell their similarities and differences. | Yes / No |
| 2. I can explain about the different parts of a plant and their uses. | Yes / No |
| 3. I can do experiments to show the germination of a seed and explain it. | Yes / No |
| 4. I can collect information from farmers about growing vegetables. | Yes / No |
| 5. I can write slogans appreciating, planing and protecing plants. | Yes / No |