Environmental Science

Standard III

Part - 1

Government of Kerala
Department of Education

State Council of Educational Research and Training (SCERT), Kerala
2016

The National Anthem

Jana-gana-mana adhinayaka, jaya he
Bharatha-bhagya-vidhata.
Punjab-Sindh-Gujarat-Maratha
Dravida-Utkala-Banga
Vindhya-Himachala-Yamuna-Ganga
Uchchala-Jaladhi-taranga
Tava subha name jage,
Tava subha asisa mage,
Gahe tava jaya gatha.
Jana-gana-mangala-dayaka jaya he
Bharatha-bhagya-vidhata.
Jaya he, jaya he, jaya he,
Jaya jaya jaya, jaya he!

PLEDGE

India is my country. All Indians are my brothers and sisters.

I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it.

I shall give respect to my parents, teachers and all elders and treat everyone with courtesy.

I pledge my devotion to my country and my people. In their well-being and prosperity alone lies my happiness.

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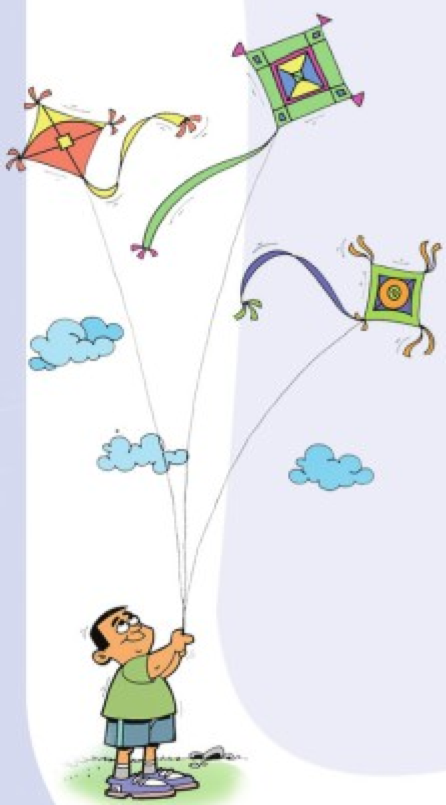
Dear children,

How wonderful are the things in the magic bowl of nature!
Many of them you discovered,
walking along the soil.....
watching sights of the sky......
whispering to the flower and the fly!
To remind you of them......
To provide you new ideas.....
this textbook will be with you
as your friend....
Many treasures lie hidden
in nature's lap.
Let us march ahead
seeking those unending truths.....
Let us conquer that wonderland
looking, listening, examining and experimenting!



Regards,

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Content

Certain icons are used in this textbook for convenience

 **For further reading (Evaluation not required)**

 **ICT possibilities for making concepts clear**

 **Significant learning outcomes**

 **Let us assess**

 **Extended activities**

1 Blooming and Sprouting

June 5

Today was an extremely joyful day for me and my friends. We got saplings as part of the Environment Day celebrations. I got a small kanikkonna. I went home and showed it to my grandpa. He came with me to plant it in the yard. Grandpa told me about many plants, thumba, mukkutti, thazhuthama, kurunthotti.... I came to know the names of many plants only then. There are many trees like the mango tree, jackfruit tree, tamarind tree, coconut tree etc in the yard. They were all planted by grandpa, it seems! My kanikkonna will also grow like this. I am waiting for the day it will blossom fully with golden flowers.

What are the trees you have in your homeyard?

Who planted and nourished them?

Aren't there plenty of plants and trees in our school premises too?

Observe the premises of your school and try to write the names of plants there.

Coconut, Leucas (*thumba*), Hibiscus,

\- -

Are all plants around us similar?

Big trees like the mango tree...

Small plants like the leucas.

Creepers that climb like the jasmine...

So many plants like this...

Try to classify the plants around you on the basis of their peculiarities and write them down.

Trees	Small plants	Creepers
• Jack fruit tree	• Basil (Tulsi)	• Jasmine
• Mango tree	• Hibiscus	• Bitter gourd
•	•	•
	•	•

The Bamboo Lore

Bamboo is the largest plant in the grass family. It is a fast growing plant. It blossoms only once in its life span and gets destroyed completely after this. Each bamboo plant deposits thousands of seeds before it perishes. The seeds of bamboo are known as 'bamboo grains'. These grains, having medicinal value, are used as food.

Smiling blossoms

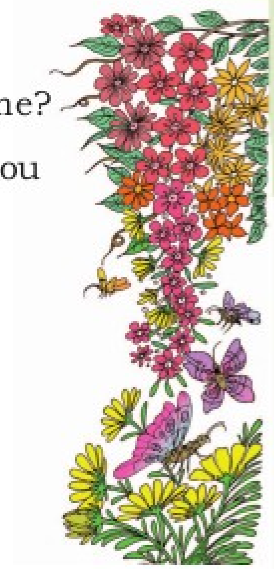
Do you have a garden at home?

What all types of plants do you have in your garden?

Which of those plants blossom?

Which is the flower you like?

Try to draw its picture.



What are the flowers seen in the pictures below?

Make the flowers more beautiful using suitable colours.

How many of their names do you know? Try to write them.

Which colour did you give to the rose? Did all of you give the same colour?

Why did you give them different colours?

Do all hibiscus plants have flowers of the same colour?

Haven't you seen plants that bear flowers of only one colour like leucas and jasmine?

Add names of more flowers in the table below.

Plants with flowers of different colours	Plants with flowers of only one colour
• Hibiscus	• Leucas
• Rose	• Jasmine
•	•
•	•

Try to smell flowers like the rose, jasmine, hibiscus, marigold (*chendumally*) etc.

As in the case of colour, don't flowers have different smell too?

How many plants can be identified only by the smell of their flowers? Try to write.

- •
- •
- •
- •

Who am I?

Don't you like the 'eye-band' game?

Collect fragrant flowers like rose, jasmine, chrysanthemum (*jamanthi*), frangipani (*chempakam*), marigold (*chendumalli*) etc. Cover the eyes of your friend with a band and ask her to smell each of these flowers. How many flowers can she identify from their smell?

Those that blossom at night

Flowers that blossom at night are white and fragrant. This helps flies locate them at night.

Queen of the Night (Nishagandhi)

When Neelakurinji blossoms

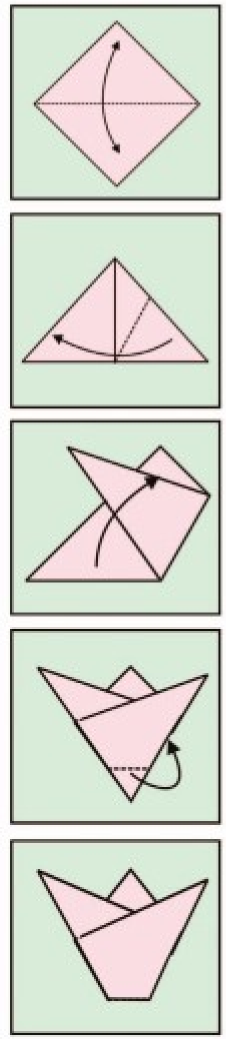
Neelakurinji blossoms only once in 12 years. What a sight it is to see the Neelakurinji blossomed all over the Nilgiri Hills.

The giant among flowers

Rafflesia is the biggest flower in the world. It has an approximate weight of 10 kilogram and encircles as big as an umbrella. It has foul smell.

Making flowers

Didn't you see the various stages of making flowers using paper? Now try it out.



Find out whether all plants flower?

There are flowers of different colour, smell and size. Flowers can be identified by their smell. There are many flowers in nature that arouse our curiosity.

Leaves - different types

The smell of each flower can be identified.

What about leaves then?

Which are the leaves whose smell you know?

Try to smell leaves of different plants.

Are you able to identify the smell?

Can you identify the smell of leaves of plants in your locality like basil, mango tree, curry leaf, lemon, cinnamon (*Karuvapatta*), ginger, vettiver (*ramacham*), bitter gourd, cashew nut, Spanish thyme (*panikoorka*) etc?

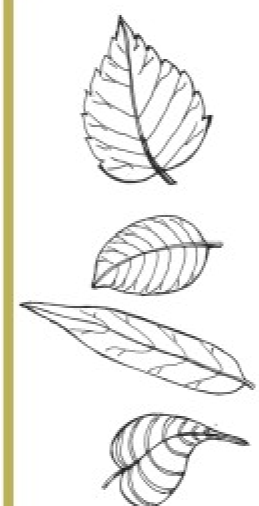
Isn't the smell of the leaves of each plant different?

Leaf figures

Leaf is a very important part of a plant. Suppose all of you pluck a leaf each. How many leaves will the plant lose! Hence let us do an activity using fallen leaves. Collect leaves of four or five different types of plants. Is the shape of all the leaves you collected the same? Compare the mango leaf with the jack leaf. What is the difference in their shape?

Collect leaves fallen from different mango trees.

Aren't their shapes the same?



Beautify the leaf pictures by colouring them.

Plants can be identified by the shape of their leaves.The shape of leaves of different plants is different. Plants can also be identified by the smell of their leaves.

Living things

What are the objects seen in the picture?

Pick out the living and non-living things in it.

Find the living and non-living things in your surroundings and tabulate, them.

Living things	Non-living things

What all peculiarities of living and non-living things do you know?

Complete the table shown below.

Peculiarities of the living	Peculiarities of the non-living
• Grow	•
• New ones are formed	•
•	• do not move
•	• do not respond
•	• do not take food
•	•

All living things grow. Food is required for their growth. Don't we grow by taking food? Similarly, food is required for the growth of plants too.

Don't we cook food in our house in the kitchen? Plants prepare their food in their leaves. The prepared food is used for their growth. The remaining food is stored by the plant in its different parts. We use this as our food.

See the pictures of some plants we use for food. Identify each one's name from the box and note down.

Wheat

Rice
Papaya
Guava
Carrot
Beet root
Tapioca
Radish

Prepare an album of pictures of plants that we use for food.

We use the leaf, flower and fruit of moringa for food. Do we use all parts of all plants for food? Complete the table given below.

Flower	Fruit	Leaf	Stem	Tuber
Onion	Papaya	Amaranthus	Amaranthus	Tapioca
Moringa	Pumpkin	Cassia tora	Taro	Sweet potato
•	•	•	•	•

Germinates when sown

Haven't you seen plants sprouting out?

Haven't you seen the mango seed, coconut and others sprouting out?

Seeds germinate to form new plants.

Let us also try germinating seeds.

Fill a flower pot with soil. Wet the soil. Bury a few pea seeds a little low in the soil. Observe the seedling sprouting out. What are the changes seen?

Examine the various stages of germination of the pea seed.

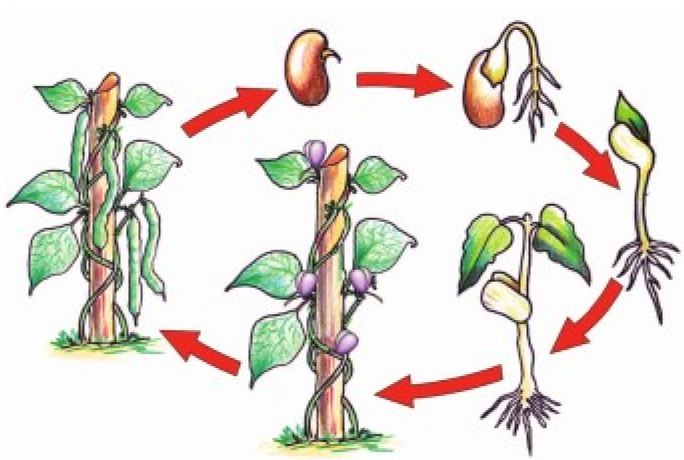
You can't see the root of the pea plant sown in the flower pot. Let us conduct an experiment to see the root coming out.

To see the root

Place some wet cotton in a glass vessel. Put three or four pea seeds in it. Observe daily. Don't forget to wet the cotton daily. Observe the changes in the pea seed everyday and note them down in the environment diary.

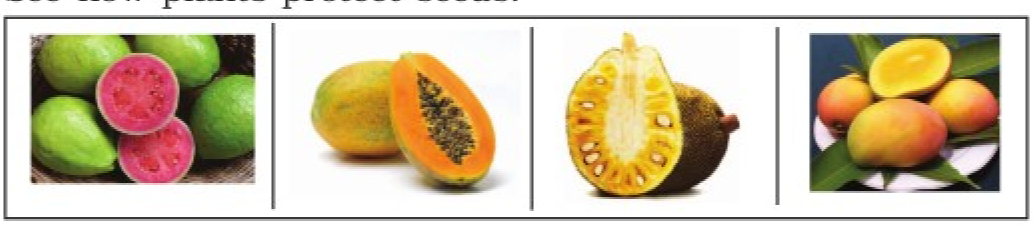
The seed germinates. It grows into leaf, flower and fruit. New plants are formed from the seed in the fruit.

Examine the process of the formation of plant from seed and seed from plant.



Did you understand the significance of seed? Shouldn't such a very significant seed be protected?

See how plants protect seeds.



There are fruits with only one seed and fruits with many seeds. Which is the smallest seed you have seen? And the biggest?

Examine the seeds of fruits and vegetables we use for food.

Didn't you observe the germination of the pea seed?

Which comes first - the leaf or the root?

Do you know why plants have roots?

Don't you want to know how the root serves the plant?

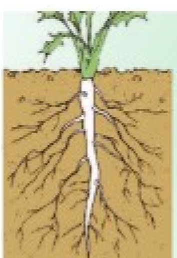
Let us try a simple experiment.

Take out a rooted peperomia plant (*mashithandu chedi).* Wash the root of the peperomia plant in water. Observe the colour of the stem and note it down.

Take water in a glass vessel. Mix a few drops of red ink in the water. After 10 minutes place the peperomia plant in the ink-water. Keep it in sunlight for a while. What change do you observe?

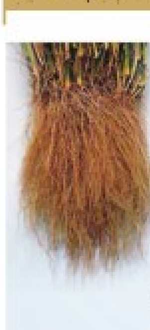
Is there a colour change in the stem? Why does this happen? Record the observation of the experiment in the environment diary.

What the root says...

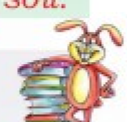


I keep plants fixed in the soil. I help in absorbing water and minerals required for plants from the soil.

My help is required for rain water to seep into the soil and also to prevent the washing away of soil.



Roots



We use the roots of many plants like the common cida (kurunthotti) and vetiver (ramacham) as medicines. The roots of teakwood, coffee plant and rose wood (eetti) are used to make curios. The roots of tapioca and sweet potato (madhurakizhangu) are used as food.

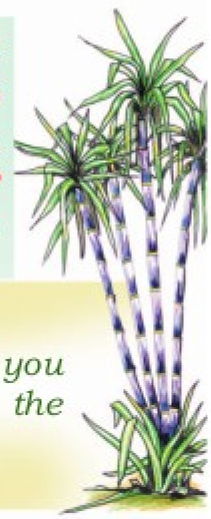
Plant and stem

Did you see the picture? Which part of the plant is missing? Draw that part.

It is the stem that transported the water absorbed by the root of the peperomia plant to all parts. Just imagine the condition of the plant without stem.

The stem too has to say...

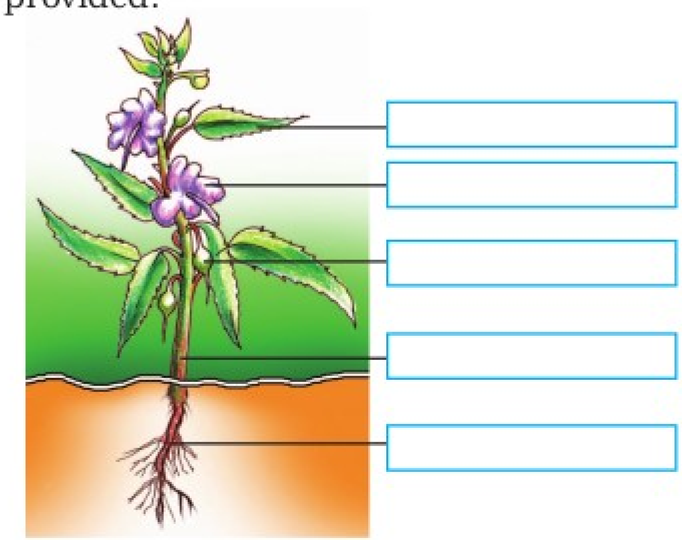
I transport the water and minerals absorbed by the root to the leaves. Haven't you seen leaves arranged in plants? Without me leaves cannot stand.



Sweet stems

Don't we all like the sugarcane stem? Do you know that sugar is produced from the sugarcane stem?

You have familiarised yourself with different parts of plants. Observe the picture of the plant given below and label its parts in the boxes provided.



Native Mango trees vanishing

'Granny Mango tree' that awaited children with her honey sweet mangoes...

'Honey Mango tree' that lent its shade to crows, squirrels and little ants...

How many native mango trees were abodes for several organisms! Many of them are vanishing from our sight.

Not only mango trees but many other trees and little plants are disappearing from our villages.

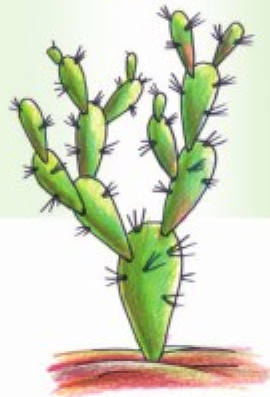
Is it not our duty to protect them?

Let us also plant trees.

Let us welcome every little seedling sprouting from the soil.

Cactus

Have you seen the plant whose stem modifies into leaves? It can also grow in places where there is water scarcity. The stem does the work of the leaf.



Significant learning outcomes

The learner can

- classify plants into different categories on the basis of their peculiarities.
- identify some of the plants by observing their parts.
- identify and explain the functions of root, stem and fruit.
- identify living and nonliving things in nature, tabulate them and mention their peculiarities
- identify parts of a plant that are edible and tabulate them.
- illustrate parts of a plant
- realise the significance of protecting plants and participate in activities to conserve them.

Let us assess

1. Part of the plant that can be called its 'kitchen'

   (A) Root (B) Stem
   (C) Leaf (D) Fruit

2. Which among the following is not a message related to plant conservation?

   (A) Trees-a boon (B) Do not cut trees
   (C) Trees only for man (D) Trees-our friends

3. Examine the given details about plant parts. Fill in the missing details.

Fruit	
	Prepares food for plants
Stem	
	Fixes the plant firmly in soil

Extended activities

1. Visit a nearby paddy field, sacred grove, pond, forest etc with elders. Find out the different types of plants there and how they are beneficial to man and other organisms.
2. Place name boards for trees and plants in your school yard.