



# WAYS TO PROTECT OUR SOIL



Land Resources Division  
**Ministry of Environment**





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## **WAY FOREWORD**

**THIS BOOKLET HAS BEEN PREPARED BY THE LAND RESOURCES DIVISION OF THE MINISTRY OF ENVIRONMENT AS AN AID FOR THE PRIMARY SCHOOL STUDENTS IN SRI LANKA FOR SELF LEARNING OR AS EXTRA READING MATERIAL THAT TEACHERS COULD RECOMMEND ON SUSTAINABLE SOIL CONSERVATION PRACTICES.**

**HERE WE PROVIDE SOME SIMPLE, EASY-TO-FOLLOW STEPS THAT CHILDREN CAN CARRY OUT TO PROTECT THE SOIL RESOURCE AND CAN BE PUT INTO ACTION AT HOME OR IN THE SCHOOL PREMISES AS WELL.**

**THE BOOKLET IS WRITTEN IN SIMPLIFIED INTERACTIVE LANGUAGE SO THAT CHILDREN CAN UNDERSTAND EASILY AND WE HOPE THAT THIS WOULD ENCOURAGE AND INSPIRE THEM TO PROTECT THIS VALUABLE SOIL RESOURCE AS THE FUTURE GENERATION OF SRI LANKA**



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## WHY DO WE NEED TO PROTECT OUR SOIL?

Soil covers most of the earth surface. The ability of the soil to function normally and sustain biological productivity, maintain the health of plants, animals and humans and the quality of the environment is known as the soil health.

This is important because healthy soil is needed for agricultural activities and for healthy and well-functioning ecosystems, nutrient cycles, water cycle and habitats which are essential to sustain life on earth.

Here we present 10 ways to protect soil as school children.





# 1. Planting Trees

This is the easiest way of protecting the soil! Planting trees on bare land reduces washing away of soil,

- Due to running rainwater and
- Soil being blown away due to strong wind

Trees will cover the soil like a barrier to slow down the strong winds and the rain drops from directly falling onto the earth kicking up soil particles. You can plant grass on your on your school playground and home garden or any patch of land that looks too bare!





## 2. No- Till Farming

Tilling is when we dig and turn up the soil and uproot all the grass or small plants covering a patch of land when we make plant beds or vegetable beds.

This leaves the soil exposed to wind and rainwater which washes away the nutrients in the soil leaving it infertile.

In no-till planting, we only dig up the spots that we are planning to plant our seedlings, leaving the grass cover around those spots as it is.

So there's no damage done to the soil that is around the planted seedlings.

This method can be done when you plant trees or flower beds in your school or home gardens too.





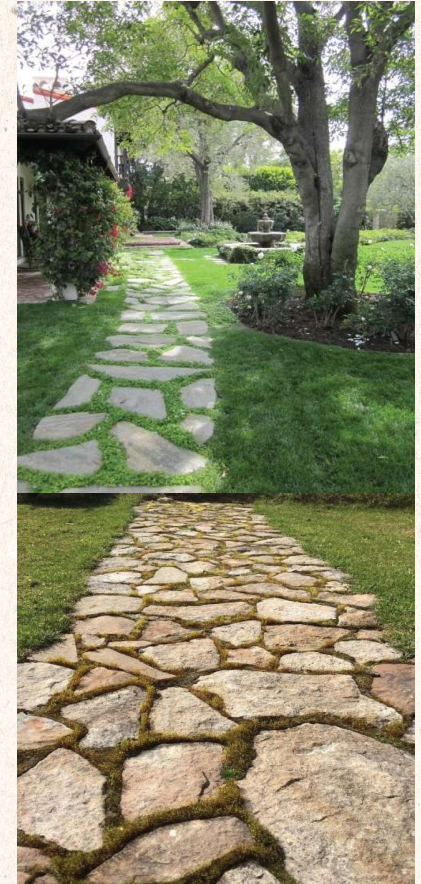
### 3. No Compacting Soil

Moist or loose soil is easily compacted when we walk on it, because our weight presses down on the soil we walk on making it tight.

This makes it hard for plant roots to spread through the soil and reduces topsoil fertility as well because soil animals like earthworms find it hard to move through soil.

So, we can make stone paths to walk through our gardens so that we don't walk all over it. Then only a smaller part of the soil is compacted.

Its best to use stones or paving blocks to make our paths since concrete will prevent the soil absorbing water leading to fertility loss all over again!



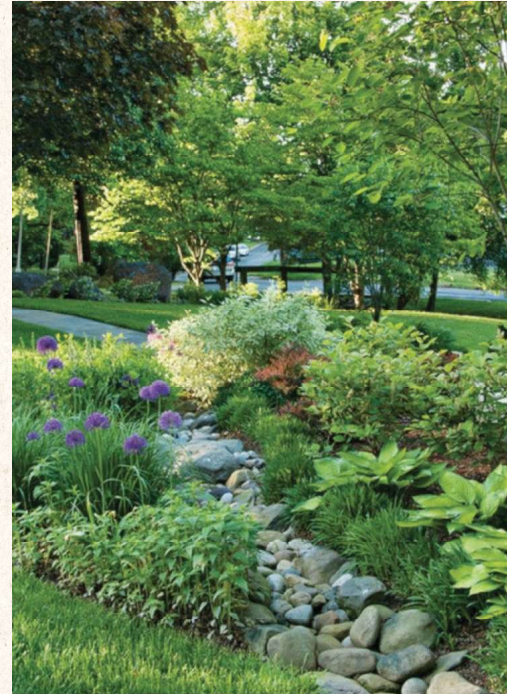


## 4. Making A Rain-Garden

If you have a home garden that is covered in concrete or patios, making your own rain garden at home with the help of your parents is a good way to help the soil absorb the water that it needs to be healthy.

You can create a rain garden in a low ground spot in your garden by removing some of the paving stones. Inside it you can grow small shrubs and short trees as well.

On rainy days you can see how the rain garden absorbs the water like the sink in your bathroom only a little slower!





### 5. Composting

Do you just throw away the leftover vegetables and food stuff that come to your kitchen basket or just burn the dried leaves that are swept out from the garden?

That's a huge waste because they can be made into soil fertilizer!

You can add the compost to plants to help them grow healthy and compost will do less harm to the soil than the fertilizer brought from shops. Compost can be brought from shops but you can make your own compost too it's easy!

- First take a plastic bin and cut small holes in it with the help of a parent
- Then put in all the kitchen waste and the debris from your garden sweepings
- Next sprinkle some water into the bin and mix the contents in the bin once a week and add small amounts of water if needed
- In about a month your compost will be ready to go!





## 6. Disposing Waste Properly

Here in Sri Lanka, we see a lot of garbage dumped on bare lands along the roads in large piles that look very ugly and smells bad too.

When people throw their waste like plastics, rags, old newspapers, medicine bottles, house waste and more into big piles on the soil, it will cover up and pollute the soil and will block the air going into soil as well. All these will bring down the soil fertility.

What you can do is to tell your family and friends to separate their house waste into

- paper
- plastic
- food stuff
- metal

and put them into different bins. You can send paper and plastics to the waste collectors to recycle and you can turn the food waste into compost!





## 7. Rainwater Management

Now you know that rainwater washes away the soil during heavy rain. So having a drain can collect and direct that water away from the open soil stopping it from washing away.

You can either dig a drain or use a pipe to collect the water coming from the roof. You can also collect that water into a large basin and use it to water the plants later.





## 8. Putting Up Wind Breaks

Wind break is another way to stop the open soil being swept away by the wind. It leads to the loss of top soil and makes the soil become less fertile.

A wind break is usually a line of tall, narrow, leafy trees that are planted on the border of open ground to reduce to the speed of the wind and protects the soil from being blown away.

### **So what can we do?**

We can ask our elders to help us put up a line of trees bordering our school ground to stop it from eroding and of course give us a little shade too!





## 9. Watering The Soil Properly

Soil needs water but not too much water either!

- Too much watering will wash away the nutrients in soil
- Too less water will make the soil dry, hard and cracked

When these happen, plants will not grow properly because the soil is now unhealthy.

So when watering we must make sure we use the right amount of water one bucketful of water that you can carry is enough for one small plant twice a day. It's always better to have your parent's help too.

When watering, you can use a watering can because it will softly sprinkle water without damaging the soil.





## 10. Awareness Programs

If you love the environment your size doesn't matter!

You can always voice out your ideas to your friends and adults on things we can do to protect the soil. Some of those are:

- Protecting forests – they nourish and cover the soil. Do a presentation at school so your friends can learn too.
- Planting a tree – on your birthday, on world soil day, and all the special days!
- Make a booklet – like this one! you can make one with your friends and distribute it among other classes at school.
- Take a field trip around your school garden and try to find good places with healthy soil it'll be fun!
- Make your own raingarden model using clay and have an exhibition in your class.



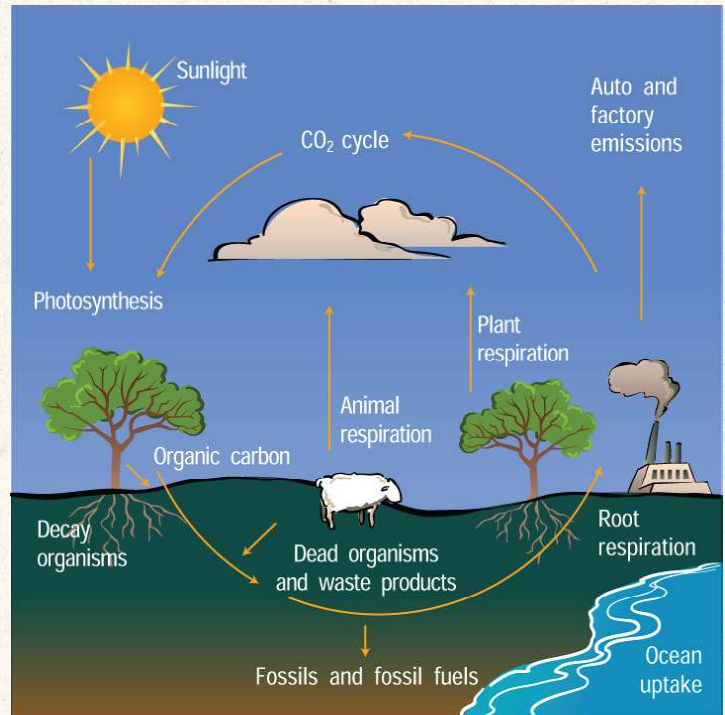


## To Trigger Your Knowledge

### Soil Carbon, the backbone of the soil fertility

Soil plays a critical role in the carbon cycle. The continuous process by which carbon atoms travel between the atmosphere and Earth. For example, in breaking down organic matter in the soil, microorganisms release carbon dioxide into the atmosphere and create nutrient and minerals that feed plants and crops.

Soil also naturally absorbs carbon, reducing the effects of greenhouse gases.





## Nitrogen Is A Key Nutrient Element For Plants

Abundant Nitrogen in the atmosphere cannot be used directly by plants or animals. Nitrogen cycle is an important part of the ecosystem and explain how Nitrogen makes the usable form of nitrogen available to plants and other living organisms, back into the atmosphere. It involves several processes such as;

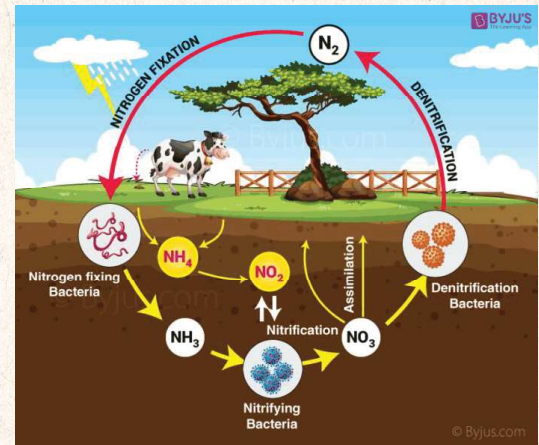
Nitrogen fixation - Bacteria that contain nitrogenase convert nitrogen (which is a gas) from the atmosphere so that it becomes ammonia.

Atmospheric fixation

Industrial nitrogen fixation

Biological nitrogen fixation

- **Nitrification** - Bacteria in the soil convert the ammonia to nitrogen dioxide. Another type of bacteria then adds an oxygen atom, which creates nitrate
- **Assimilation** - Plant convert nitrate to chemicals they need, such as nucleic and amino acids. Animals that eat the plants then utilize these substances.
- **Ammonification** - When plants and animals die, the ammonification process causes the nucleic and nitrates. They are then released back into the soil.
- **Denitrification** - Bacteria convert nitrates back into nitrogen, which is then released back into the atmosphere





## WAYS TO PROTECT OUR SOIL

### WORLD SOIL DAY

World Soil Day (WSD) is held annually on 5<sup>th</sup> of December with the aim of focusing the attention on the importance of soil health and to advocate for the sustainable management of soil resources.

An international day to celebrate soil was recommended by the International Union of Soil Sciences (IUSS) in 2002. Under the leadership of the Kingdom of Thailand and within the framework of the Global Soil Partnership, FAO has supported the establishment of WSD as a Global awareness raising platform. The FAO Conference unanimously endorsed World Soil Day in June 2013 and requested its official adoption at the 68<sup>th</sup> UN General Assembly held in December 2013. Since its inception in 2014, Global community is celebrating this world important day in every year based on the thematic areas identified by the United Nations.







**United Nations**  
Convention to Combat  
Desertification

### **UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION (UNCCD)**

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United Nations Convention to Combat Desertification (UNCCD) was formed in 1994 with the objectives to combat desertification and land degradation in affected countries. As land degradation is a major issue in Sri Lanka and considering the need for global partnership for addressing the issue, Sri Lanka signed and ratified the United Nations Convention to Combat Desertification and became a party to the convention in 1995. Since then, Sri Lanka closely work with the UNCCD and Ministry of Environment is the National Focal Point for the UNCCD in Sri Lanka.



# The soil

The soil is the blanket that covers the earth  
It has different colors too  
Black and brown and yellow and red  
And sometimes white color too  
It helps us grow our vegetables,  
and flowers and trees all green  
It holds our houses on top of it  
And is home to earthworms beneath  
It helps us so in so many ways and live on the planet blue  
So we must protect it with all our might today and future too!







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