KOHIMA COLLEGE KOHIMA

PROJECT ON ENVIRONMENTAL SCIENCE

TOPIC: SOIL DEGRADATION DUE TO PLASTIC DISPOSAL & MEASURES TO IMPROVE SOIL DEGRADATION.

Submitted by: GROUP 5

1. Chenolo Jemu (52)
2. Chimkela S (54)
3. Chimpi Meyo (55)
4. Choshelu Hesuh (59)
5. Christina (60)
6. Chuhanle Kath (61)
7. Cicilia Seb (62)
8. Cüvolü Ringa (63)
9. Daniel Pao (64)
10. Daniel Konyak (65)

Submitted to:

Medoseno Genevieve Thapo

Asst. Professor (HOD)

&

Dr. Petevino Chase

Asst. Professor

Dept. of Environmental Science

CONTENT

Soil Degradation : Meaning

Soil degradation is defined as a change in soil health status resulting in a diminished capacity of the ecosystem to provide goods and services for its beneficiaries

Soil degradation is the decline in soil condition caused by its improper use or poor management, usually for agricultural, industrial or urban purposes. It is a serious environmental issue.

Soil degradation is the physical, chemical and biological decline in soil quality. It can be the loss of organic matter, decline in soil fertility, and structural condition, erosion, adverse changes in salinity, acidity or alkalinity, and the effects of toxic chemicals, pollutants or excessive flooding

SOIL DEGRADATION : DUE TO PLASTIC DISPOSAL.

One third of all plastic waste ends up in soils or freshwater, endangering our food, our livestock and the health of the soil. Invisible to the eye, microplastics linger in the environment, the food chain, and our bodies.

While plastic has many valuable uses, our dependency on it comes at high environmental, social, economic and health costs. The qualities that make plastic useful are also the ones that make it hazardous.

Our wildlife eat plastic while grazing on grass. This causes intestinal obstructions, and poisoning from the chemicals used to make the plastic. These problems often lead to a slow and painful death. Plastic getting caught in an animals digestive tract causes the animal to feel full and they either live with severe malnutrition or death due to starvation.

It not only poses a great danger to our animals who become entangled or swallow the plastic, it also affects our soil. Once the plastic bags start to break down in our soil they release toxic chemicals. Very little of the plastic we discard every day is recycled. Much of it ends up in landfills, leaching potentially toxic substances into the soil and water.

When plastic gets accumulated on land, the plastic comes in contact with water and forms toxic chemicals. When plastic waste goes underground, it harms the quality of land and water.

SOIL DEGRADATION: DUE TO PLASTIC DISPOSAL

1. Fertility of the soil:- Disposal of plastic in the soil causes several traits in the fertility of the soil. When plastic breaks down, the chemical contain during it's manufacturing mixed with the soil, which degrades the natural fertility of the soil. Due to which, production of various plants are far beyond to meets the needs.

2. Harm the quality of land and water:- When plastic get accumulated on land, the plastic comes in contact with water and forms toxic chemical. When plastic waste goes underground, it harms the quality of land as well as the water

3. Disrupt the natural balance:- Micro-plastics, tiny particles of plastic, can accumulate in the soil and disrupt the natural balance of micro-oganism.

4. Plastic mulch used in agriculture can prevent the soil from receiving adequate sunlight and nutrients.

5. Platstic debris can block water drainage, leading to water logging and soil erosion.

6. Increased risk of disease transmission in plants, also leading to various disease, for human too.

7. Increased salinity in soil due to plastic wastes.

EFFECTS OF SOIL DEGRADATION

1. Soil degradation may lead to, altered the pH levels and soil acidification causing various ecological problems .

2. It may cause some negative impact on the mycorrhizal fungi and their symbiotic relationship with plants.

3. Due to plastic waste, increased in soil salinity can be seen, which would hindered the decomposing process of organic matters.

4. Due to plastic waste disposal, food-webs of soil and trophical interaction has been disrupt, causing imbalance in the nature.

5. The natural fertility of the soil is degraded due to which the food production is lower causing various losses in the economy of the country.

6. It not only affects the plants or the soil but also effects on human health through the process of food chain.

7. It has led to increased pollution and sedimentation in streams and rivers, clogging these waterways and causing declines in fish and other species.

MEASURES TO IMPROVE SOIL DEGRADATION

1. Reducing Deforestation:
Efforts should be made to reduce deforestation and promote sustainable forest management practices. Reforestation and forest conservation programs can help restore vegetation cover and prevent soil degradation.

2. Land Reclamation:
Land reclamation involves restoring lost soil organic matter and essential minerals. This can be achieved through activities like adding plant residues to degraded soils, improving range management, and addressing salinized soils through reclamation projects.

3. Preventing Salinization:
Preventing salinization through actions like reducing irrigation, planting salt-tolerant crops, and improving irrigation efficiency is more cost-effective than reclamation projects. Prevention is key to maintaining soil quality and fertility.

4. Conservation Tillage:
Practicing conservation tillage techniques that minimize changes to the soil's natural condition can help prevent soil degradation. Leaving crop residue on the surface and avoiding deep plowing can protect the soil from erosion and maintain its productivity.

5. Windbreaks:

A windbreak is a method(shelter-belt) or technique of planting of trees or shrubs, usually made up of one or more rows in such a manner as to provide shelter from the wind and to protect soil from degradation and erosion. This increase in crop yields and protects livestock from heat and cold and prevents soil degradation

6. Striping Framing:

In areas where a slope is incredibly steep, or there is no other method of preventing degradation and erosion. According to several field studies, striping farming is the most effective way of getting back soil properties which can also be described by a crop rotation system.

7. Contour Farming:

Another method used to plant trees all around the levels of a hill instead of up and down. By this technique, we can prevent water-based soil erosion as it decreases the runoff.

8. Stop overgrazing:

Due to overgrazing, the protective cover of the soil gets depleted and causes degradation of soil. Therefore, it is important to stop overgrazing, and farm domestic animals not in a large amount.

9. Recycling waste:

By recycling waste like plastic bags, bottles etc, can help prevent from soil being get depleted. The use of 3R's should be kept in mind by every one inorder to improve the soil quality.

10. Using of Eco-friendly materials:

In this modern world, many eco friendly materials are being out there to use in our daily life to prevent pollution. Thus, making use of materials like paper bags, organic fertilizer or manure, Compress natural gas (CNG) can greatly improved not only the soil but also the overall environment.

ACTIVITY TAKEN

- **Cleanliness Drives and Making of Eco-bricks**

In this activity, Cleanliness drive was taken around the college, were the main motive was to recycle plastic waste.

Inorder to tackle down plastic wastes, Eco-bricks was made.

Eco bricks help reduce plastic waste by using it as a building material instead of sending it to landfills or polluting the environment. This helps to reduce the amount of plastic, which can be harmful to ecosystems.

- ***Planting of Ornamental shurbs***



Ornamental shurbs was also planted inorder to improve the soil and to protect the soil from being degraded.

At the same time, This shurbs also served as a reference of beauty, providing flowers for natural decorations.

It can be said that, plantation should take part everywhere around the globe not only to protect our mother nature but also, keeping in mind the usefulness materials that we get from it.

For example: Medical plants etc.

Conclusion

Continued soil degradation directly affects the environment and our capacity and ability to support a growing global population. At the least, it weakens the ability to utilize land optimally, and at its most dangerous, it can drive to desertification, rendering land unusable.

Controlling and reducing soil degradation is a focus of increasing awareness of the problem and promoting innovative ways in land management methods. Moreover, our climate is changing, and future weather models are frequently uncertain.

Moreover, wise and improved soil management techniques should be integrated and implemented in order to alter the soil properties that are impacted by anthropogenic and natural ways.

REFERENCES

BOOKS

1. SOIL DEGRADATION
-SIVAKUMARAN SIVARAMANAN
FIRST PUBLICATION -JUNE 2016
2017 EDITION

2. SOIL DEGRADATION, CONSERVATION AND REMEDIATION
-KHAN TOWHID OSMAN
FIRST PUBLICATION -15 OCTOBER 2013
-2014 EDITION