ROHINI
COLLEGE OF ENGINEERING AND TECHNOLOGY
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DEPARTMENT OF AGRICULTURAL ENGINEERING

AI3402 SOIL AND WATER CONSERVATION ENGINEERING

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Simple Terms of Conservation

Conservation is planned management of a natural resource to prevent exploitation, destruction, or neglect of the resource. It may more specifically be used for preserving biodiversity, environment or natural resources. It is done so that future generations can also have the advantage of the resources.

The practice of protecting and preserving the wealth and variety of species, habitats, ecosystems, and genetic diversity on the planet, is important for our health, wealth, food, fuel, and services we depend on.

UNIT I SOIL EROSION PRINCIPLES

1.1 Why Soil and Water Conservation?

Soil and water are two important natural resources and the basic needs for agricultural production. During the last century it has been observed that the pressure of increasing population has led to degradation of these natural resources. In other words increase in agricultural production to feed the increasing population is only possible if there sufficient fertile land and water are available for farming. In India, out of 328 million hectares of geographical area, 68 million hectares are critically degraded while 107 million hectares are severely eroded. That's why soil and water should be given first priority from the conservation point of view and appropriate methods should be used to ensure their sustainability and future availability. Status of global land degradation is shown in Fig. 1.1.

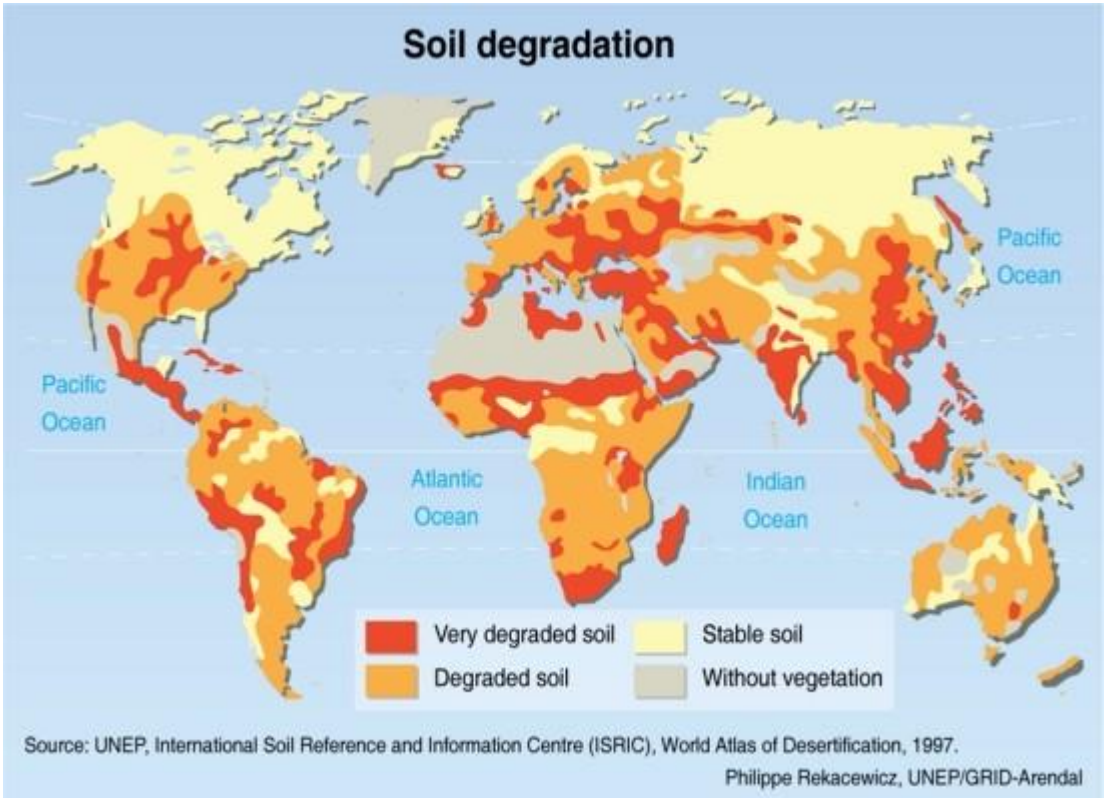

Fig. 1.1. Global soil degradation map. (Source: UNEP, International Soil Reference and Information Centre (ISRIC), World Atlas of Desertification, 1997)

Water conservation is the use and management of water for the good of all users. Water is abundant throughout the earth, yet only three percent of all water is fresh water, and less than seven-tenths of freshwater is usable. Much of the usable water is utilized for irrigation. Detailed analysis will show that in about fifteen years, about two-thirds of the world‟s population will be living in some sort of water shortage. Water is used in nearly every aspect of life. There are multiple domestic, industrial and agricultural uses. Water conservation is Soil and Water Conservation Engineering 6 www.AgriMoon.com rapidly becoming a hot topic, yet many people do not realize the importance of soil conservation. Soil conservation is defined as the control of soil erosion in order to maintain agricultural productivity. Soil erosion is often the effect of many natural causes, such as water and wind. There are also human factors which increase the rate of soil erosion such as construction, cultivation and other activities. Some may argue that since it is a natural process, soil erosion is not harmful. The truth is that with the removal of the top layer of soil, the organic matter and nutrients are also removed. Conservation is not just the responsibility of soil and plant scientists, hydrologists, wildlife managers, landowners, and the forest or mine owner alone. All citizens should be made aware about the importance of natural resources as our lives depend on that and everyone should be involved in the process of caring of these resources properly and using them intelligently.

Causes of Soil Erosion

No single unique cause can be held responsible for soil erosion or assumed as the main cause for this problem. There are many underlying factors responsible for this process, some induced by nature and others by human being. The main causes of soil erosion can be enumerated as:

(1) Destruction of Natural Protective Cover by

(i) indiscriminate cutting of trees,

(ii) overgrazing of the vegetative cover and

(iii) forest fires.

(2) Improper Use of the Land

(i) keeping the land barren subjecting it to the action of rain and wind,

(ii) growing of crops that accelerate soil erosion,

(iii) removal of organic matter and plant nutrients by injudicious cropping patterns,

(iv) cultivation along the land slope, and

(v) faulty methos of irrigation.