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Water Holding Capacity of Soil in Raigad District

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Abstract: *Along with the elements required in the soil for proper growth of crops, water is the main factor responsible. Soils in each location have different water holding capacity. It affects the growth of crops. The amount of water required for the same type of crops in soils is different.*

Keywords: Water Holding Capacity

I. INTRODUCTION

Soil is a mixture of dissolved rock minerals nutrients decaying organic matter water air and many types of organisms. Soil is considered a perfect ecosystem. Plants use soil as an ecosystem. Soils are considered an important factor in the biodiversity of a region, not as a substance, but under climate. Soil is the basis of life on land. Plants get nutrients from soil. Soil is an essential tool for all plants on land. Soil formation is very slow. Therefore, soil is a non-renewable resource. Soil cannot be created artificially in a laboratory.

All the soil on the ground is base. For this, soil erosion should not occur and soil degradation should not occur due to excessive or improper use. For this, it is necessary to manage the soil carefully. The amount of water required for the same type of plant varies from region to region. Types of rocks in Raigad district, climate, time required for soil formation, we can see many types of soil, the projects are as follows.

1.1 Research Objectives

- To study the amount of water required for the same type of plant in different areas
- To study the water holding capacity of soil in different areas
- To study the elements required to retain water
- To study the involvement and effect of soil ridges on water retention

1.2 Hypotheses

- Soil particle size affects water holding capacity.
- Organic matter in the soil affects the water holding capacity.

Annual rainfall in Raigad district shows that the average rainfall of Raigad district is 722 mm and out of every 10 years 03 years rainfall is late and 02 years rainfall is above normal. Also, the rainfall is very less every four years. At that time water shortage occurs.

10 to 15 percent of the total rainfall is available only for crops and 60% of the water leaves the soil surface through evaporation. The technology essential for soil moisture storage is studied every year from the research centre under Dapoli Agricultural University, Dapoli. Some of its references are taken here.

Scientist Dokuchalev is recognized globally as the father of agricultural science. At the same time, soil testing is the need of the hour and soil testing is essential for crop productivity. This opinion has been expressed by the famous scientist Bangar.

1.3 Outline of Procedure

a) Collecting soil samples
b) to experiment
c) Check the findings

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A. Collecting Soil Samples

For this, horticultural soil, field soil, forest soil, field soil, roadside soil, river bank soil samples were collected from various places in Raigad district.

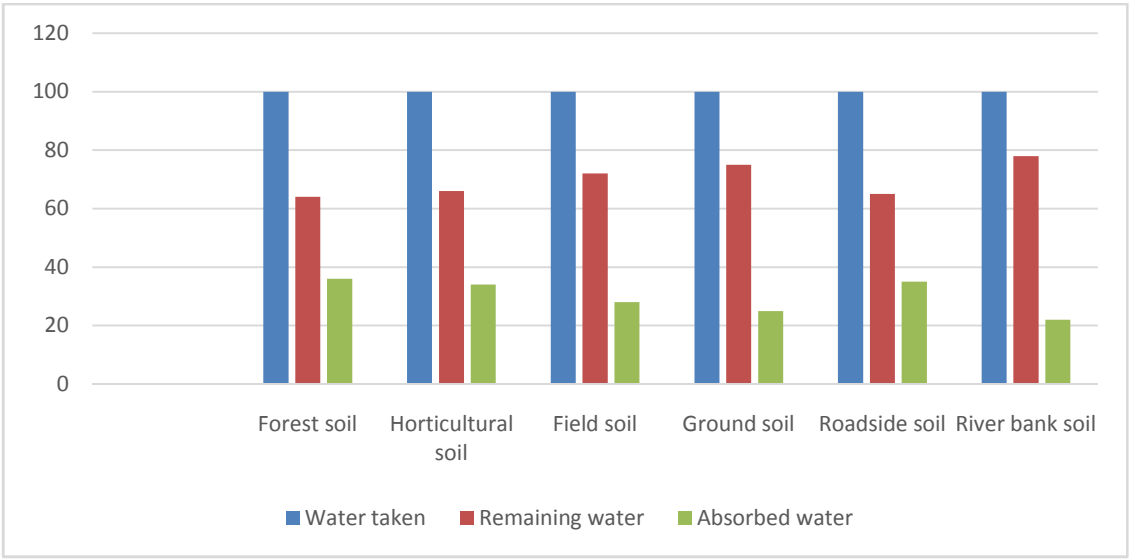
B. To Experiment

1. Generally, at each place above, a pit of size 30 x 30 x 30 was taken, with four corners and five pits in the middle, one hundred grams of soil was taken from each pit at a depth of about one foot. Five hundred grams of soil was divided into four equal parts at five places. Out of these four parts, opposite two parts were selected and again divided into two parts and sub-two parts were selected and 50 percent soil sample was obtained from them.
2. Six such samples were taken six times in a bowl and named as A B C D respectively.
3. Pour 100 ml of water into each beaker and let it stand still for five minutes.
4. Place the filter paper folded inside the coconut and keep it in a measuring vessel.
5. The mixture prepared as above was filtered sequentially in that Funnel.
6. The filtered water was recorded for each sample and a graph was drawn according to that record.
7. Draw a simple histogram showing the type of soil on the x-axis and the water absorbed by that soil on the y-axis.
8. Draw a graph on the y-axis with a volume of one centimetre equal to 5 ml

II. ANALYSING

The amount of water absorbed by each type of soil sample during the experiment is as follows

Sr. No.	Soil names	Water taken	Remaining water	Absorbed water
01	Forest soil	100 ml	64 ml	36 ml
02	Horticultural soil	100 ml	66 ml	34 ml
03	Field soil	100 ml	72 ml	28 ml
04	Ground soil	100 ml	75 ml	25 ml
05	Roadside soil	100 ml	65 ml	35 ml
06	River bank soil	100 ml	78 ml	22 ml



A graph showing the amount of water absorbed by soil

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III. CONCLUSION

The amount of water absorbed by the forest soil was the highest. The amount of water absorbed by the soil in the river was the lowest. This showed that there is a certain relationship between the size of the soil particles and the water holding capacity.

Soil type	Absorbed water Percentages
Forest soil	36 %
Horticultural soil	35 %
Field soil	34%
Ground soil	28%
Roadside soil	25%
River bank soil	22 %

Soils with smaller particle sizes have the highest water holding capacity. Also, the soil which has high organic matter content. That soil has more water holding capacity.

Due to the fall of forest trees, their decomposition increases the amount of organic matter and the increase in the amount of organic matter increases the water holding capacity of the soil at that place. Alternatively, the soil has a higher water holding capacity at that location.

Also, the amount of organic matter in the horticultural soil is high and due to the small size of the grains in that soil, the water holding capacity is high. This also increases the water holding capacity of the soil at this place

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