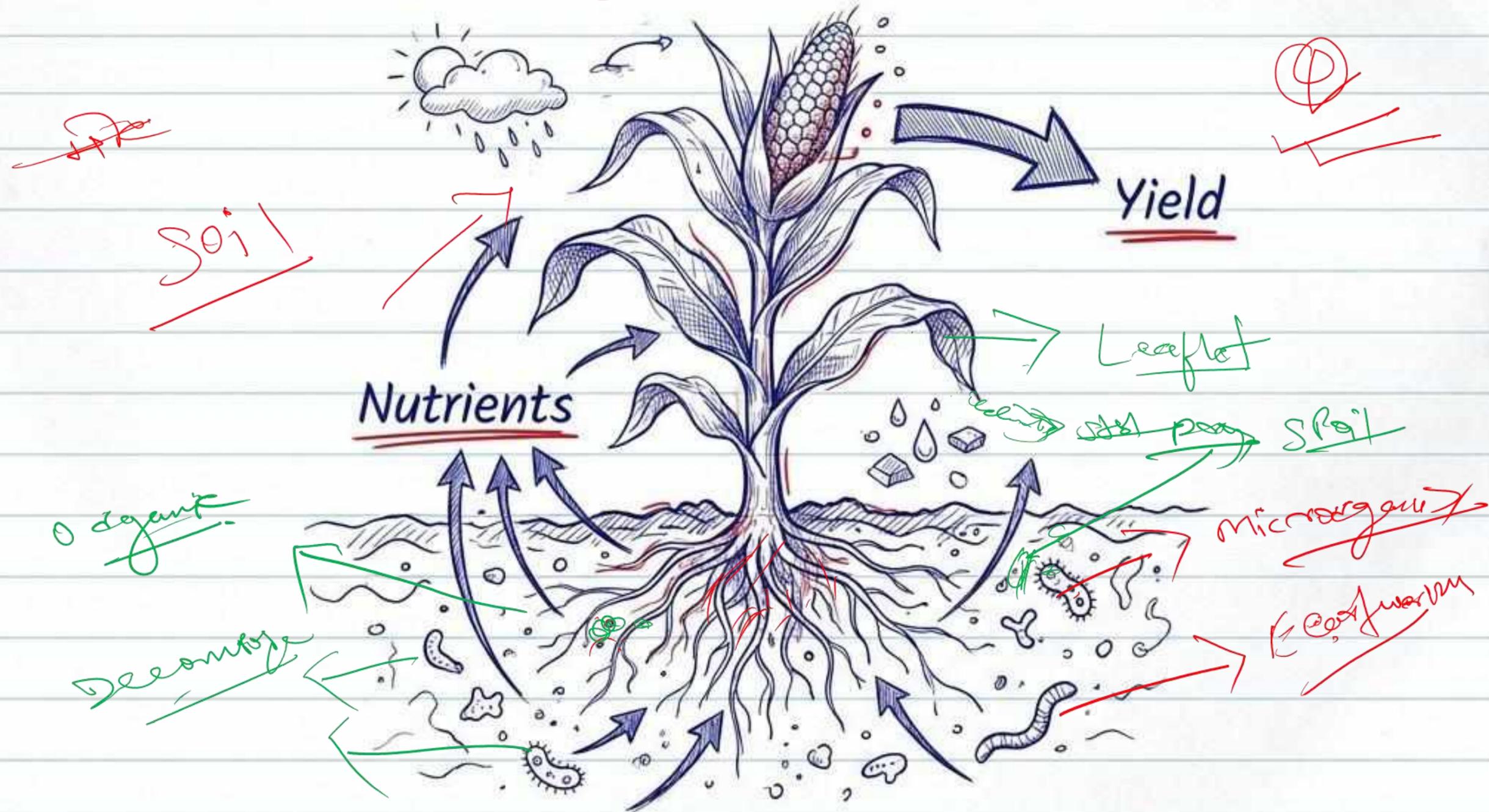


Chapter 2: Soil Fertility and Productivity

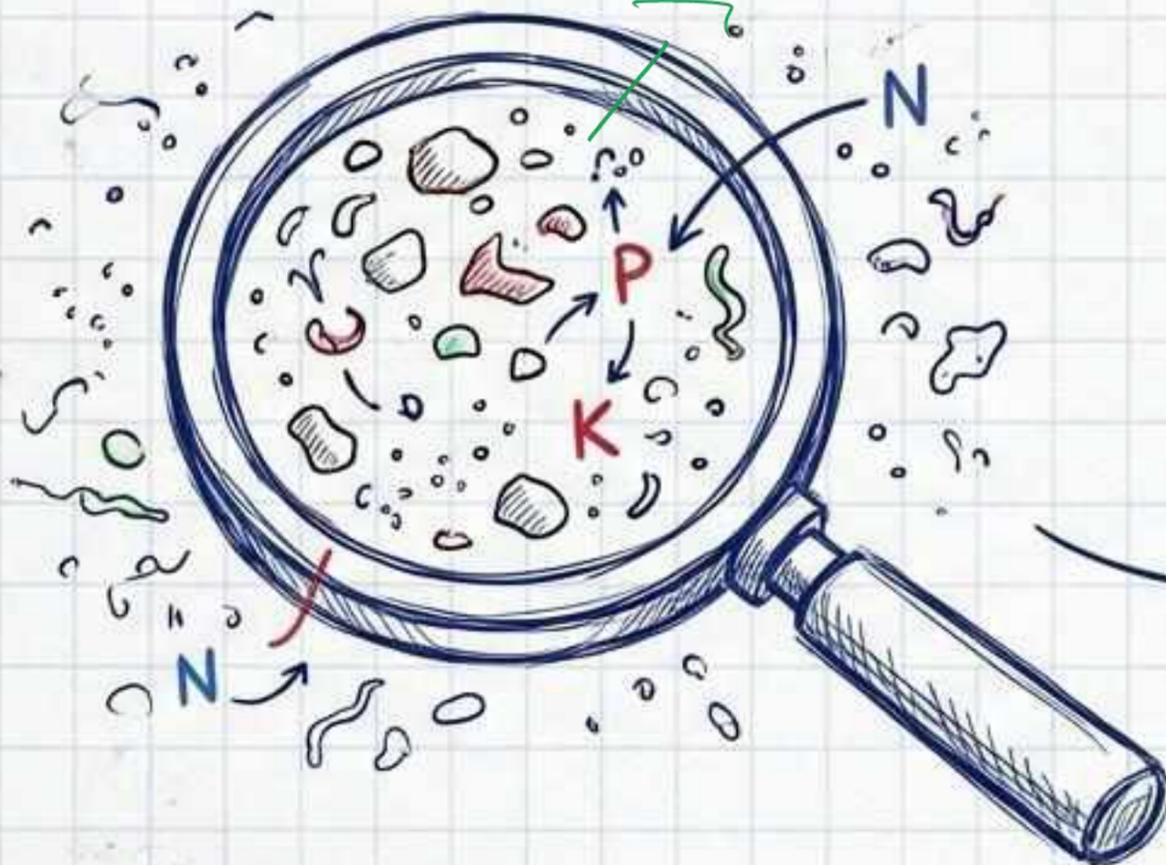
Subject: Advance Crop Production



"Definitions"

Soil Fertility

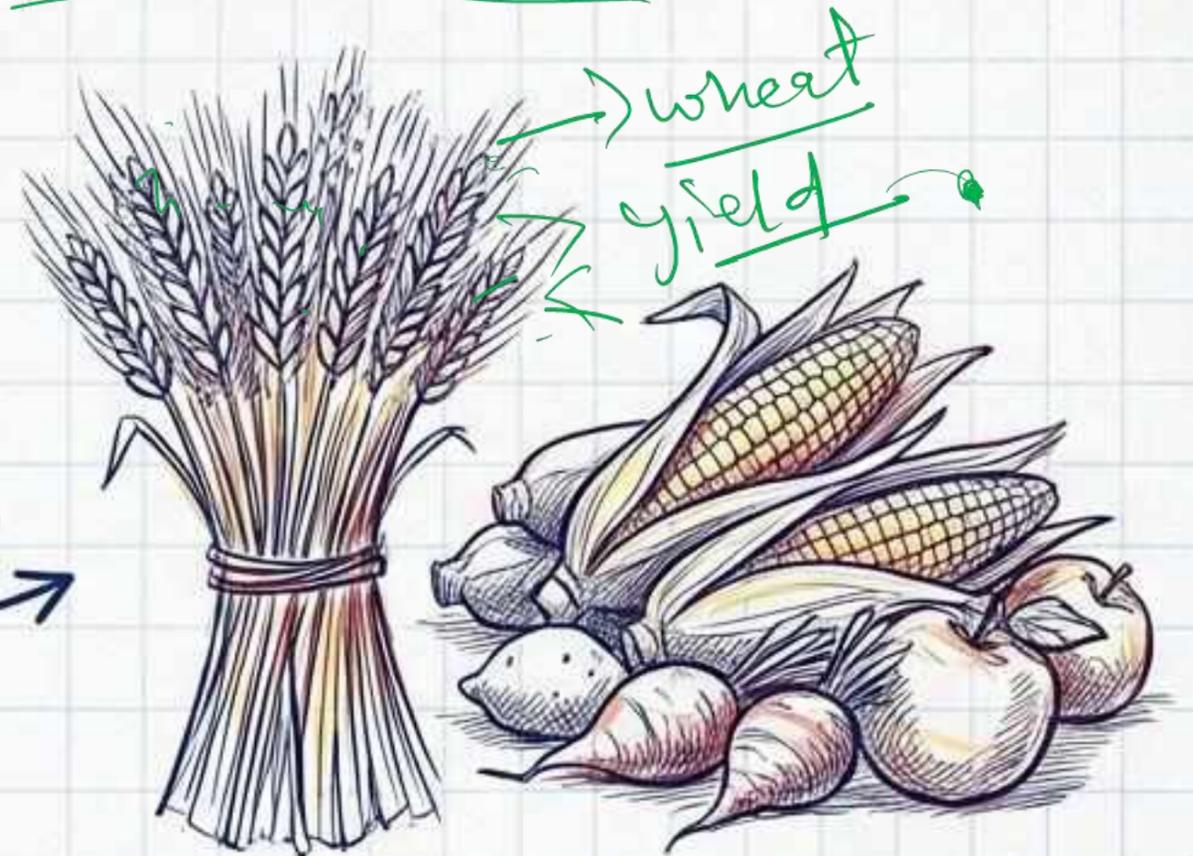
Soil fertility is the ability of the soil to provide all essential plant nutrients in available forms and in a suitable balance.



Soil Productivity

The capability of soil to produce specified crop yield under well-defined and specified systems of management of inputs and environmental conditions.

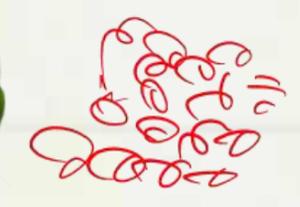
Yield



fertile



corn
soil



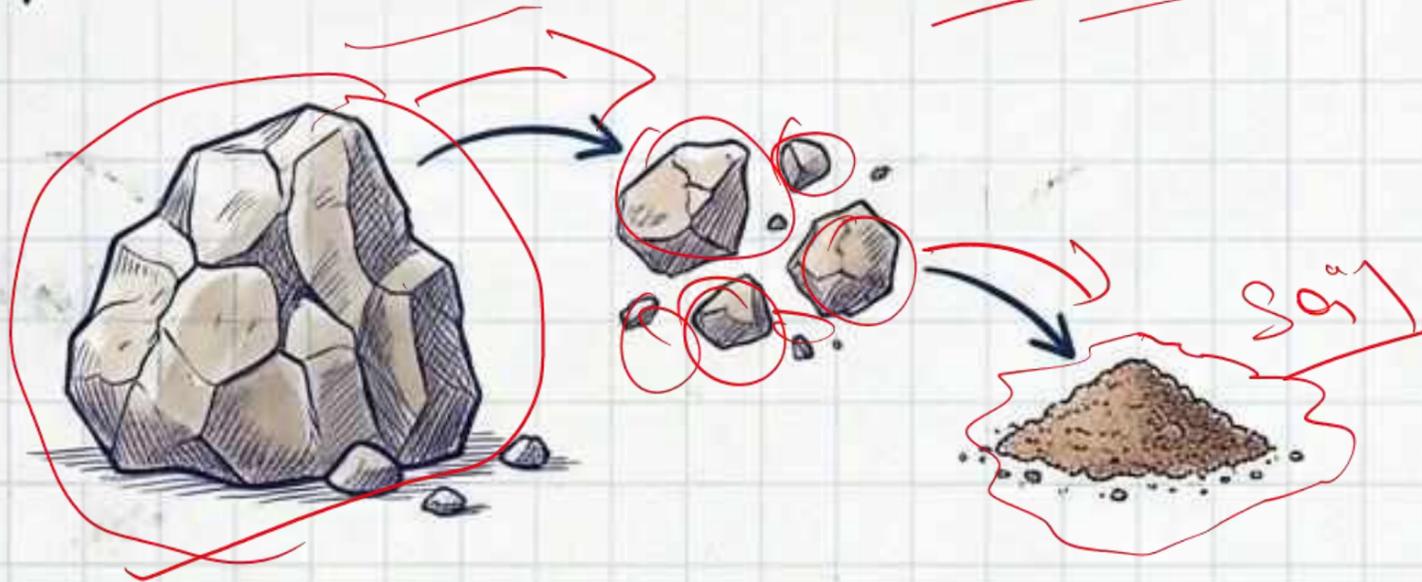
Nutrients



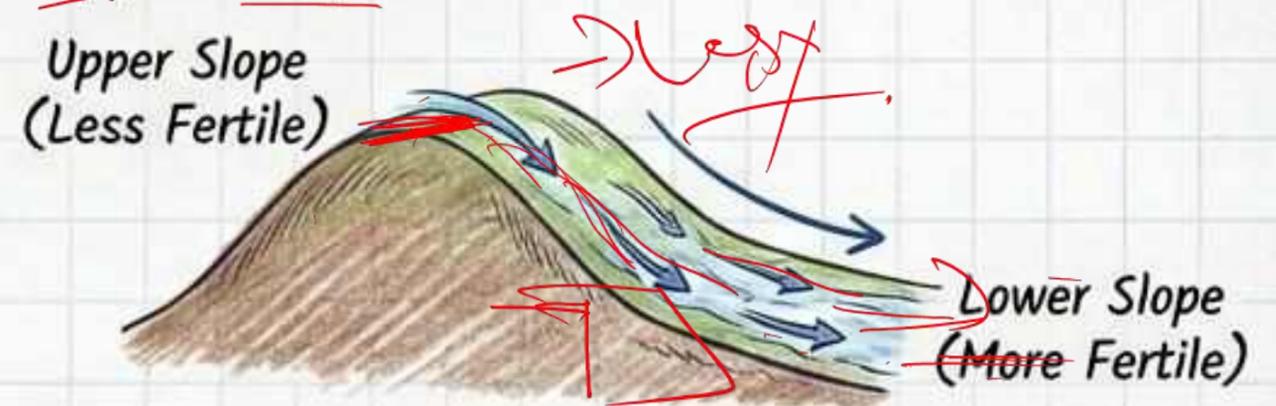
Factors Governing Soil Fertility

A. Natural Factors (1-3)

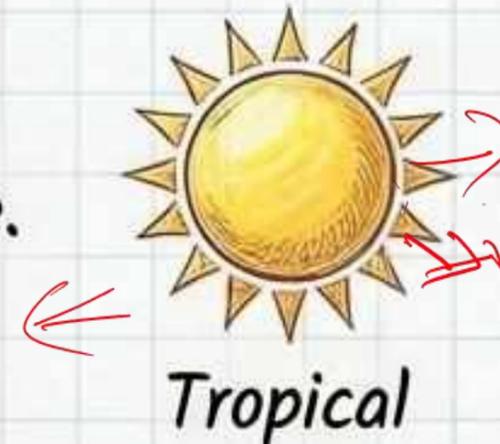
1. **Parent Material:** Fertility of a soil depends on the chemical composition of parent material from which it derived.



2. **Topography:** Soils on the upper slope are less fertile than the soils on lower slope because high leaching and erosion on upper slope.



3. **Climate:** In tropical climate decomposition of organic matter is faster than temperate climate. Thus — soils of tropical regions are less fertile when compared to temperate region.



Tropical



Temperate

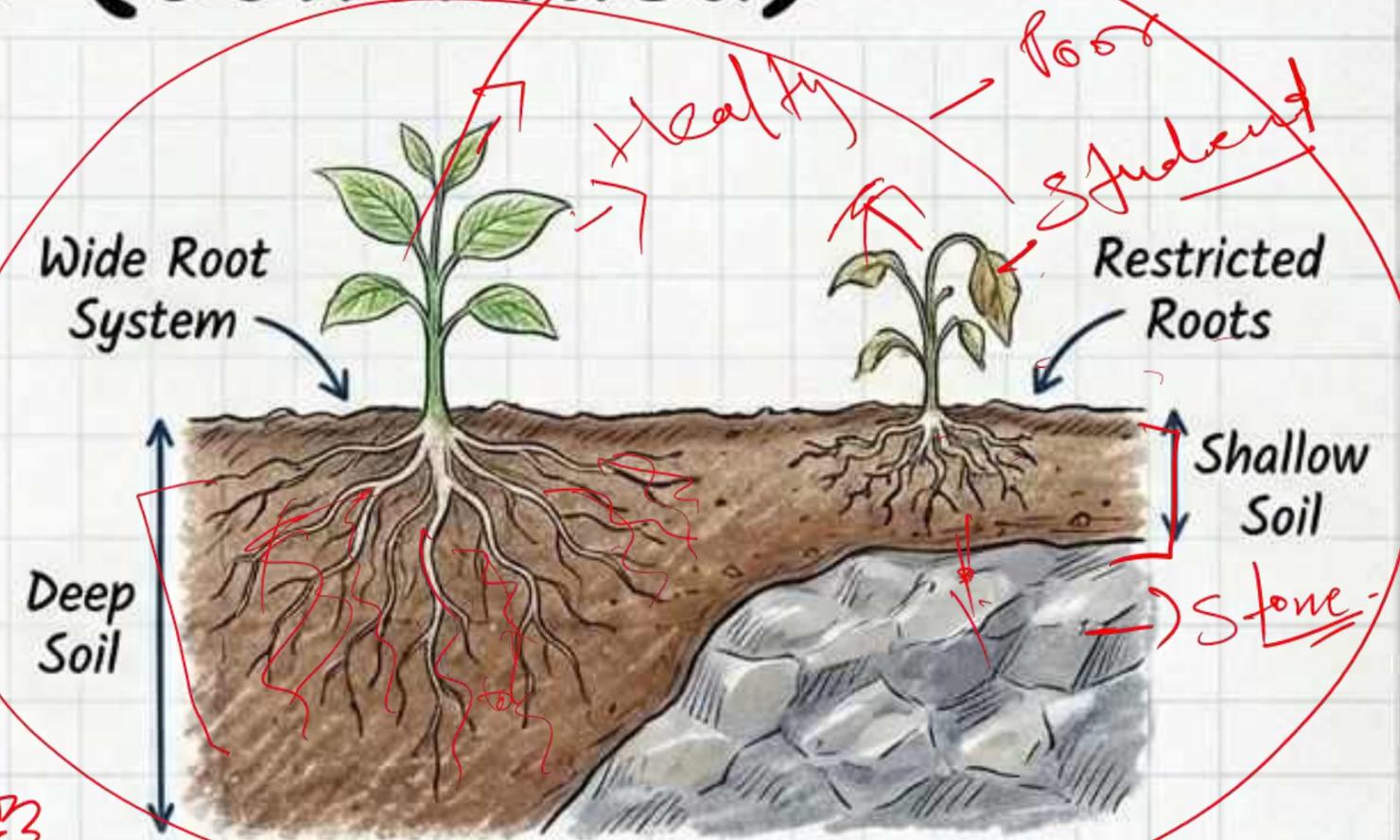
Natural Factors (Continued)

A. Natural Factors (4-6)

4. **Depth of Soil Profile:** Deep soils are more fertile than the shallow soils and the roots are spread well enough in deep soils than the shallow soils.

5. **Physical Condition of Soil:** The soil texture and soil structure influence the soil fertility.

6. **Soil Age:** New soil is more fertile and good in structure than old soil because regular consumption of nutrient and degradation of soil structure by vegetation.



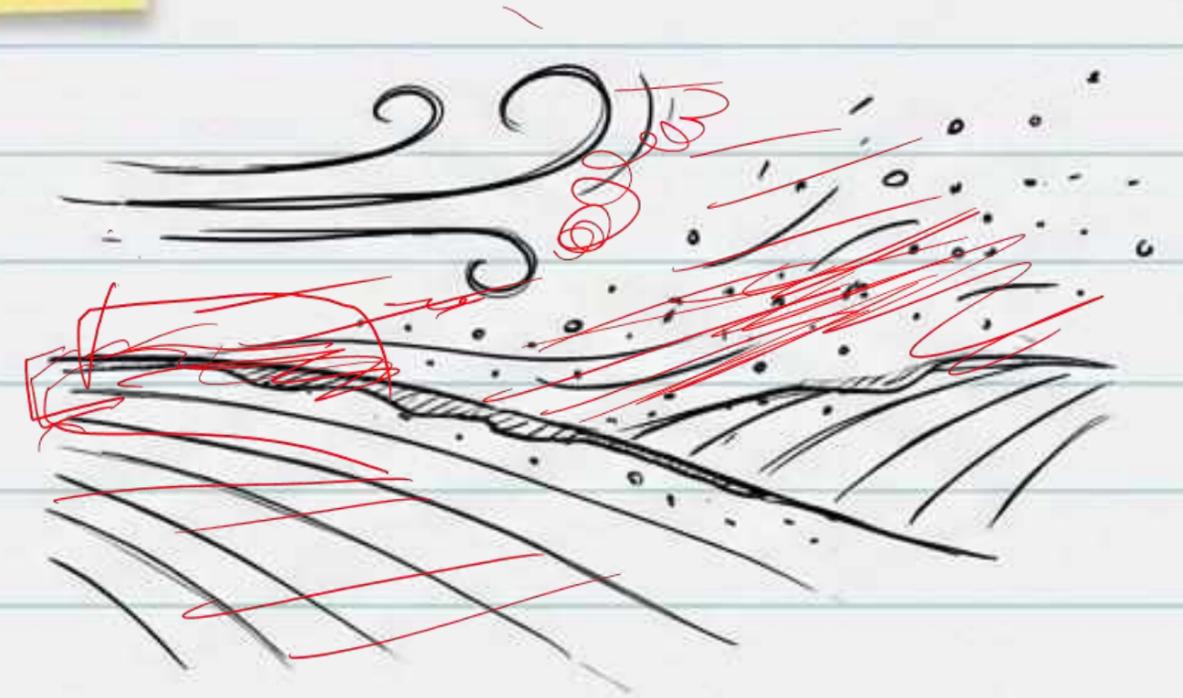
Natural Factors (Final)



A. Natural Factors (7-8)

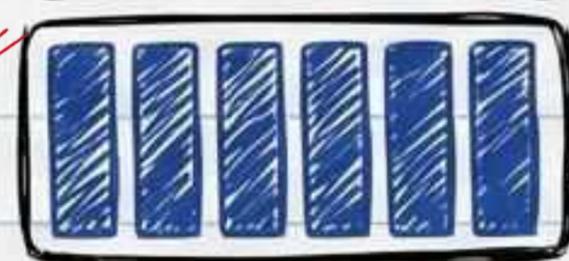
7. Soil Erosion:

With soil erosion, the top layer of soil is worn away due to factors such as water, wind and tillage of farmland, its lead to less fertility and poor structure.



8. Nutrient status in Soil

⊕ Nutrients ⊖



Factors Governing Soil Fertility

B. Artificial Factors

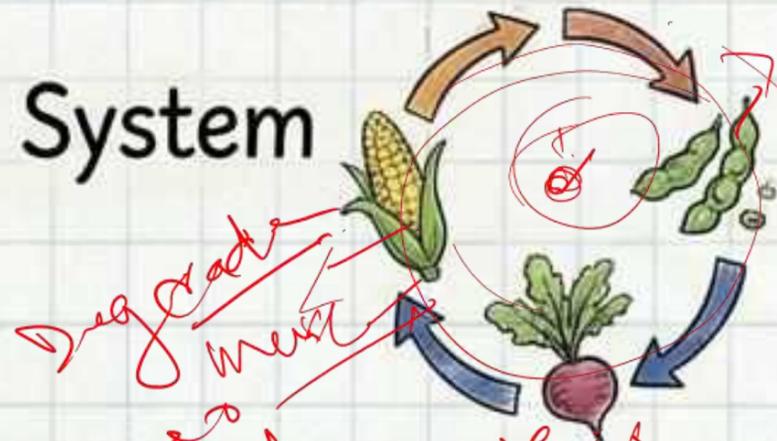
Waterlogging



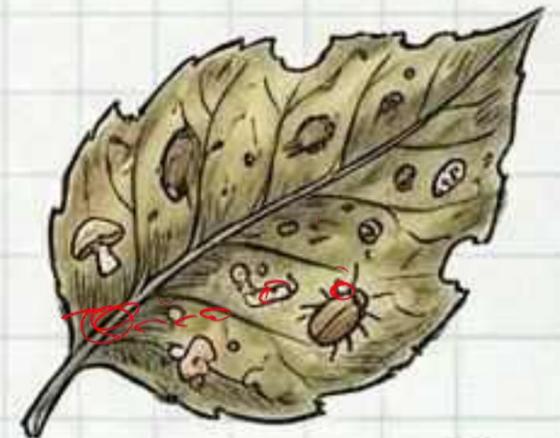
Soil Microorganisms



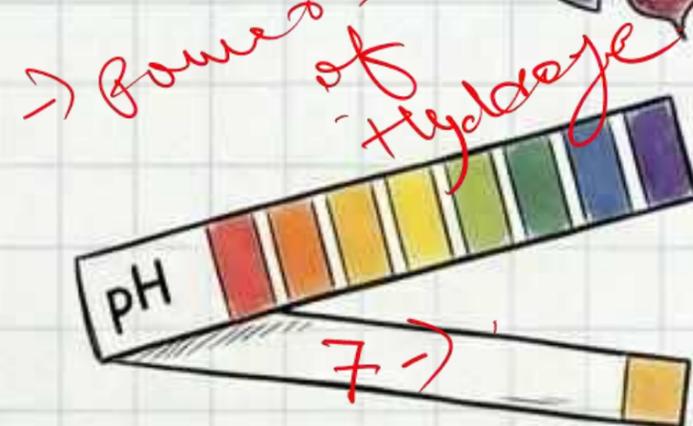
Cropping System



Organic matter content in Soil

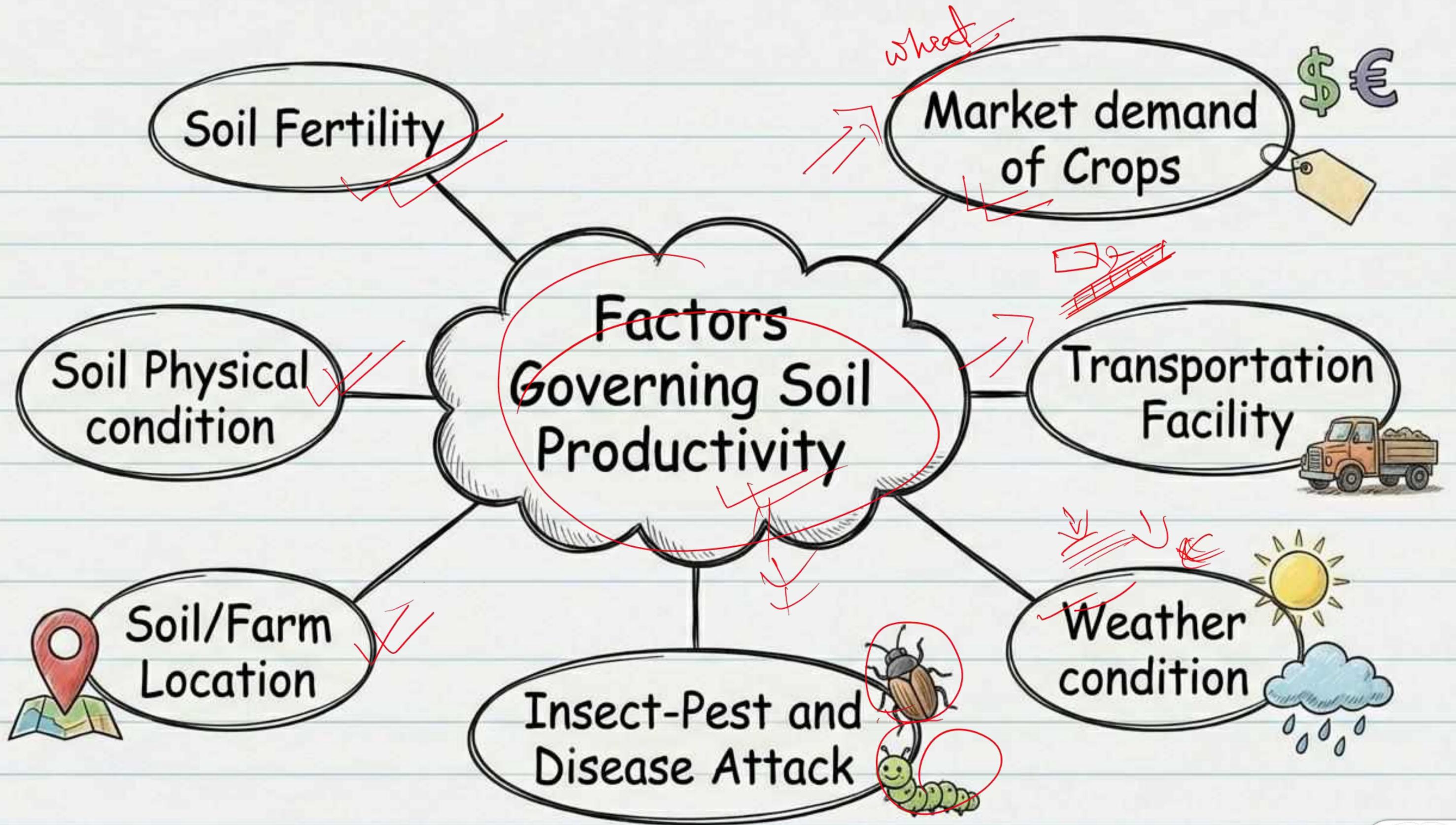


Soil pH



Method and time of ploughing





Difference between Soil Fertility and Productivity

<u>Soil Fertility</u>	<u>Soil Productivity</u>
It is an index of available nutrient to plants.	It is used to indicate crop yields.
Influenced by the physical, chemical and biological factors of the soil.	Depends upon fertility and location.
It is the function of available nutrients of the soil.	It is the function of soil fertility, management and climate.
All fertile soils are <u>not</u> productive.	All <u>productive</u> soils are fertile.
It is an inherent property of the soil.	It is not the inherent property of the soil.
It is evaluated by soil testing in laboratory.	It is evaluated by crop production.

Practice: Subjective Questions



Define the Soil Fertility and Soil Productivity?

roughly - Environment

Write down the difference between Soil Fertility and Productivity?

Actual yield

Which factor affect to soil fertility? [N, P, K], etc

Which factor affect to soil productivity? Soil fertir

Practice: Objective & Fill in the Blanks

Section 1: Fill in the Blank

1.*soil fertility*..... is the ability of the soil to provide all essential plant nutrients in available forms and in a suitable balance.
2. Deep soils are*more*..... fertile than the shallow soils.
3. Soil fertility determine in*Lab test (soil test)*.....

Section 2: Objective Questions

1. ✓ Capacity of nutrient supply to plant is known as?
 a. Soil Productivity b. Soil Fertility c. a & b Both d. Production
2. Per unit production is known as?
 a. Soil Productivity b. Soil Fertility c. a & b Both d. Production
3. Which is parental factor?
 a. Soil Productivity b. Soil Fertility
 c. a & b Both d. Production



Good Luck!