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# Center for Smart Agriculture

## Organic Farming



**Module 2: Introduction to Organic farming**

**Session1: Soil cultivation and tillage**

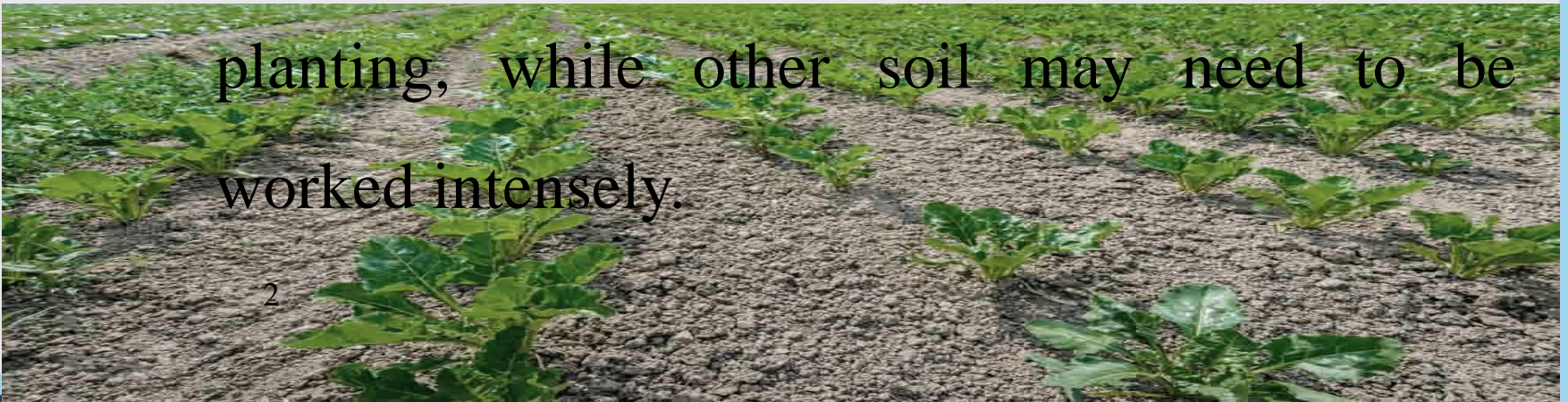


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# SOIL CULTIVATION

- Soil cultivation is a practice which is designed to improve the condition of the soil prior to establishing crops or decorative plants.
- Cultivation is an important step in gardening or farming which can determine whether or not plants will thrive.
- Some soil needs minimal cultivation before planting, while other soil may need to be worked intensely.





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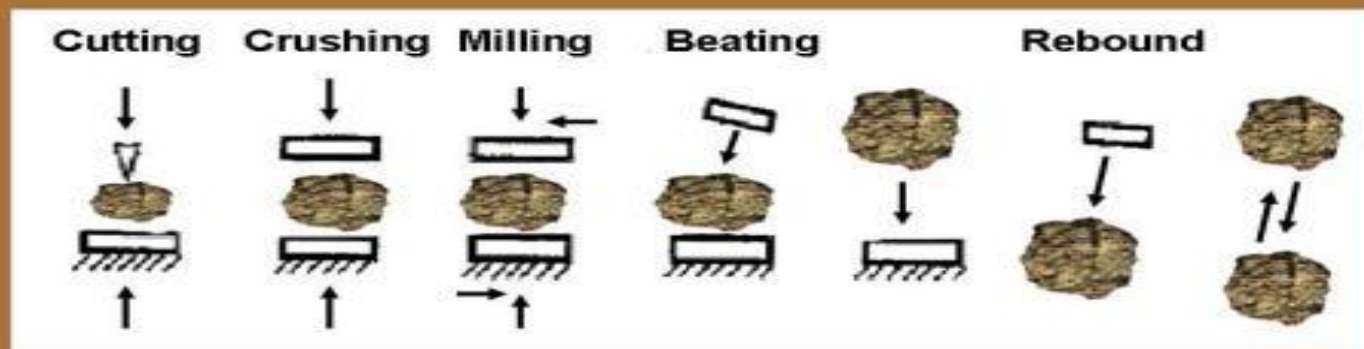
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# TILLAGE

**Tillage** is defined as the mechanical manipulation of the soil aimed at improving its physical condition or **TILTH**.

- Practice of modifying the state of soil in order to provide conditions favorable to growth.

## What is tillage ?



**Mechanical modification of soil structure**



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## OBJECTIVE OF TILLAGE

- Improve soil tilth and prepare a seedbed
- Loosen the soil to facilitate the penetration of plant roots
- Manipulate plant residues and farm wastes, Manage water and air in the soil
- Control weeds and soil-borne insects pests and diseases.
- Establish a surface layer which prevents wind and soil erosion

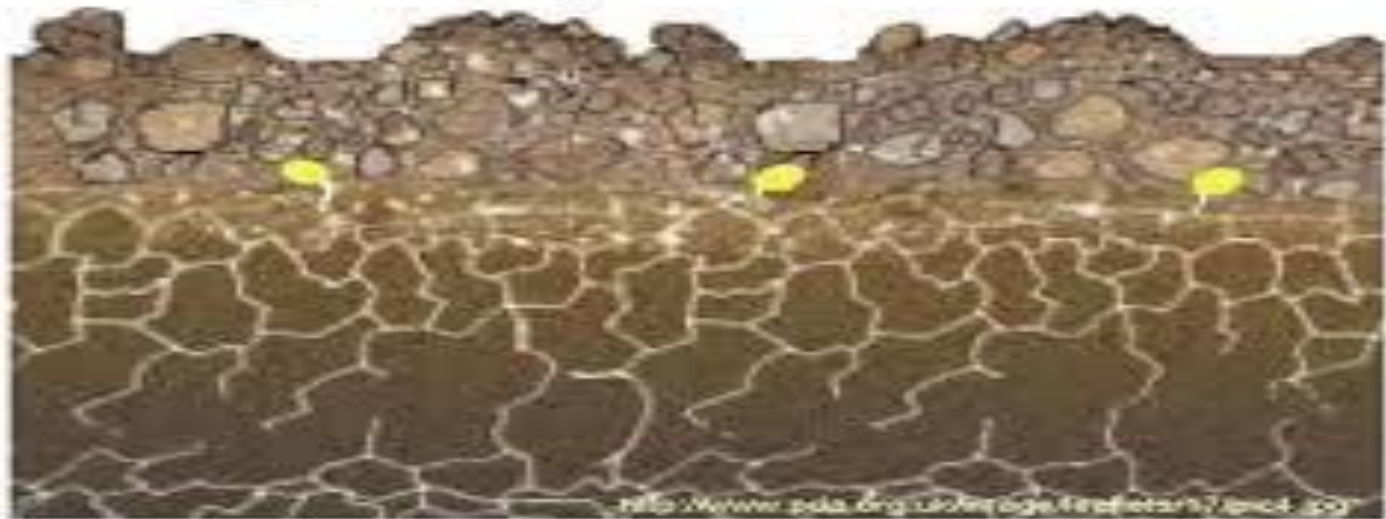


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- Improve the aeration (nitrogen and oxygen from the air)
- Encourage the activity of the soil organisms
- Increase infiltration of water
- Reduce evaporation
- Destroy or control weeds and soil

**Tillage can prepare a favorable seed bed**





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# TYPES OF TILLAGE

- **Primary & Secondary Tillage**
- **Primary tillage** is the first soil tillage after the last harvest. It is normally conducted when the soil is wet enough to allow plowing and strong enough to give reasonable levels of traction.
- **Secondary tillage** consists of conditioning the soil to meet the different tillage objectives of the farm. These operations consume less power per unit area compared to primary tillage operations.<sup>6</sup>



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## **OBJECTIVES OF PRIMARY TILLAGE**

- To reduce soil strength
- To rearrange aggregates
- cover plant materials and burry weeds
- To kill insects and pests



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## OBJECTIVE OF SECONDARY TILLAGE

- Improve soil tilt and prepare a seedbed.
- Manipulate plant residues and farm wastes.
- Manage water and air in the soil Control weeds and soil-borne insects pests and diseases.
- Establish a surface layer which prevents wind and soil erosion.





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# PRIMARY TILLAGE IMPLEMENTS



Moldboard Plough



Disc Plough



Rotary Tiller



Chisel Plough



Subsoiler



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# SECONDARY TILLAGE IMPLEMENTS



Disk, spring tooth and spike tooth harrow



Weed control implements



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**THANK YOU**