

# Farm Machinery & The Tillage Implements

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- ⇒ Soil tillage consist of
- Breaking the compact surface of earth
  - Loosen the soil mass
  - Enable the roots of crops to penetrate

## Farm machinery

• Mechanical devices, including tractors and implements, used in farming to save labour. Farm machines include a great variety of devices with a wide range of complexity: from simple hand-held implements used since prehistoric times to the complex harvesters of modern mechanized agriculture.

Tillage:  
It is mechanical manipulation of soil by hand, tools, animal Powers & mechanical machinery Provide favourable condition for crop Production

## What is Tillage?

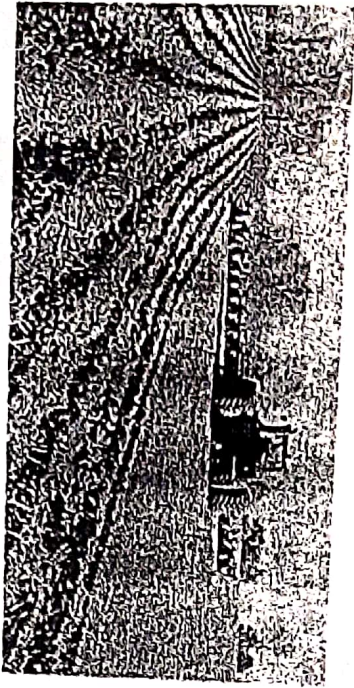
- The practice of keeping the soil mellow (soft) and free from weeds mechanically (physically)
- Can be seedbed preparation or post emergence cultivation.



## Objectives

- 1- To obtain seed bed (deep), suitable for different types of crops
- 2- To add more humus & fertility to soil by covering the vegetation
- 3- To destroy & prevent weeds.
- 4- To reduce soil erosion
- 5- To aerate the soil for proper growth of crops

## Tillage



## The purposes of Tillage

- 1) develop soil tilth (physical condition of the soil)
- 2) kill weeds
- 3) manage crop residue

- 6- To increase water absorbing capacity
- 7- To destroy insect pests & their breeding places.
- 8- Reduce cost in fewer operations
- 9- Improved Soil Till (less compaction)

## Types of Tillage

- ① Minimum Tillage: Minimum soil manipulation for crop Production
- ② Strip Tillage: Only isolated bands of soil tilled.
- ③ Combined Tillage: Utilizing two or more different types of tillage
- ④ Rotary Tillage: cut, break & mix the soil.
- ⑤ Mulch Tillage: To reduce Plant residues as other mulching material

## What is Soil Tillage?

- The physical condition of the soil
- fitness for cultivation

## How is good soil tillage developed?

- till at proper time to maintain proper aggregation
- too wet during tillage makes soil lumpy, too dry during tillage makes soil too fine and likely to blow
- over tillage will destroy soil structure and lead to soil compaction



Tillage is normally classified as  
1- Primary Tillage  
2- Secondary Tillage

### Primary tillage

- ✓ The first tillage operation of a season
- Loosen soil to permit air and water to penetrate
- Dark soils absorb light, warm up quicker
- Residue insulates, warms slower
- In wet areas soil is plowed
- In dry areas leave residue

### Objectives of Primary Tillage

- Attain a reasonable depth (10-15 cm)
- Incorporate crop residues
- Kill weeds by burying

### Secondary Tillage

- All tillage operations after primary
- Till at shallower depth. than Primary tillage
- Inter cultural operations etc.....

→ used for seed bed Preparation

### Objectives

- Reducing clod size
- weed control
- Incorporation of fertilizers.
- leveling of the soil surface

### Minimum Tillage

- Delay primary tillage until seeding.



### Contour Tillage

- Strip cropping so that fields are all at the same elevation (along hills)
- Slows water runoff

