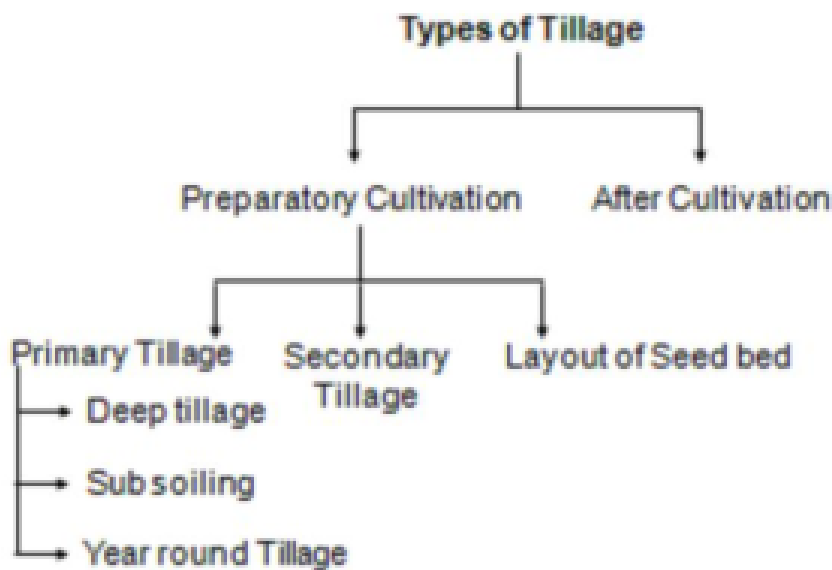


# Types of Tillage

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## Types of Primary Tillage

### ▪ Deep Tillage

- Deep ploughing turns out large sized clods, which are baked by the hot sun when it is done in summer. These clods crumble due to alternate heating and cooling and due to occasional summer showers.
- This process of gradual disintegration of clods improves soil structure.
- The rhizomes and tubers of perennial weeds (world's problematic weeds viz., *Cynodon dactylon* and *Cyperus rotundus*) die due to exposure to hot sun. Summer deep ploughing kills pests due to exposure of pupae to hot sun.
- A deep tillage of 25-30 cm depth is necessary for deep rooted crop like pigeonpea while moderate deep tillage of 15-20 cm is required for maize.
- Deep tillage also improves soil moisture

content. However the advantage of deep tillage in dry farming conditions depends on rainfall pattern and crop.

#### ▪ **Subsoiling**

- Hard pans may be present in the soil which restrict root growth of crops. These may be silt pans, iron or aluminium pans, clay pans or -man-made pans.
- Man-made pans are tillage pans induced by repeated tillage at the same depth.
- Root growth of crops is confined to top few centimetres of soil where deep penetration of roots is inhibited by hard pans.
- For example, cotton roots grow to a depth of 2 m in deep alluvial soil without any pans. When hard pans are present, they grow only up to hard pan, say 15-20 cm.

#### ▪ **Year-round Tillage**

- Tillage operations carried out throughout the year are known as year-round tillage.
- In dry farming regions, field preparation is initiated with the help of summer showers.
- Repeated tillage operations are carried out until sowing of the crop. Even after harvest of the crop, the field is repeatedly ploughed or harrowed to avoid weed growth in the off season.

### **Secondary Tillage**

- Lighter or finer operations performed on the soil after primary tillage are known as secondary tillage. After ploughing, the fields are left with large clods with some weeds and stubbles partially uprooted.
- Harrowing is done to a shallow depth to crush the clods and to uproot the remaining weeds and stubbles. Disc harrows, cultivators, blade harrows etc., are used for this purpose.

- Planking is done to crush the hard clods to smoothen the soil surface and to compact the soil lightly. Thus the field is made ready for sowing after ploughing by harrowing and planking. Generally sowing operations are also included in secondary tillage.

### **Layout of Seedbed and Sowing**

- After the seedbed preparation, the field is laid out properly for irrigation and sowing or planting seedlings.
- These operations are crop specific. For most of the crops like wheat, soybean, pearl millet, groundnut, castor etc., flat levelled seedbed is prepared. After the secondary tillage, these crops are sown without any land treatments.
- However, growing crops during the rainy season in deep black soils is a problem due to ill-drained conditions and as tillage is not possible during the rainy season. Broadbed and furrows (BBF) are, therefore, formed before the onset of monsoon and dry sowing is resorted to.