



SNS COLLEGE OF TECHNOLOGY

**An Autonomous Institution
Coimbatore – 35**

Accredited by NBA – AICTE and Accredited by NACC – UGC with ‘A+ Grade
Approved by AICTE , New Delhi and Affiliated to Anna University , Chennai.

DEPARTMENT OF AGRICULTURE ENGINEERING

19AGB302 – FARM IMPLEMENTS AND MACHINERY

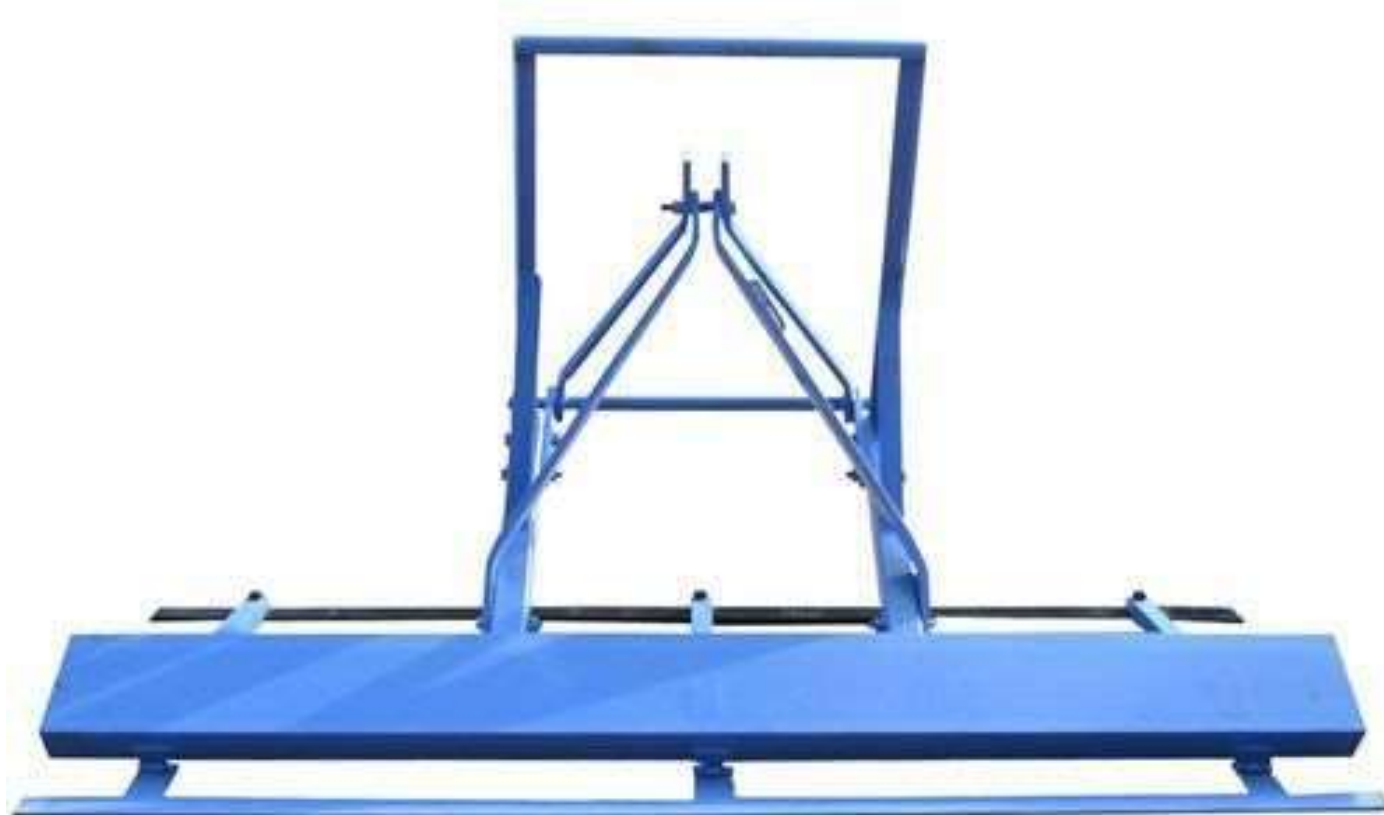
(2020-21 BATCH) III – YEAR V SEMESTER



TRACTOR DRAWN BLADE HARROW - GUNTAKA



- An important type of blade harrow.
- An implement, which consists of one or more blades attached to a frame or beam.
- Used for shallow working of the soil with minimum soil inversion.
- Used to prepare the seed bed mostly in clay soils.





CULTIVATORS



- An implement for inter cultivation with laterally adjustable tines or discs to work between crop rows.
- Stirs the soil, and breaks the clods.
- Tines fitted on the frame of the cultivator comb the soil deeply in the field.
- Cultivator performs functions intermediate between those of plough and the harrow.
- Destruction of weeds is the primary function of a cultivator





OPERATIONS PERFORMED BY A CULTIVATOR



1. Perform Intercultural operation in the fields.
2. Destroy the weeds in the field.
3. Aerate the soil for proper growth of crops.
4. Conserve moisture by preparing mulch on surface
5. Sow seeds when provided with sowing attachment.
6. To prevent surface evaporation and encourage rapid infiltration of rain water into the soil.





CULTIVATORS WITH SPRING LOADED TYNES



- A tine hinged to the frame and loaded with a spring so that it swings back when an obstacle is encountered.
- Each of the tine of this type of cultivator is provided with two heavy coil springs, pre-tensioned to ensure minimum movement except when an obstacle is encountered.
- Springs operate, when the points strike at roots or large stones by allowing the tines to ride over the obstruction, thus preventing damage.
- On passing over obstruction, the tines are automatically reset and work continues without interruption.





CULTIVATORS WITH SPRING LOADED TYNES



- Tines are made of high carbon steel, held in proper alignment on the main frame members.
- Recommended for soils which are embedded with stones or stumps.
- A pair of gauge wheel is provided on the cultivator for controlling the depth of operation.
- Fitted with 7, 9, 11, 13 tines or more depending upon the requirements.





CULTIVATORS LOADED WITH RIGID TYNES



- Rigid tines of the cultivators are those tines which do not deflect during the work in the field.
- Tynes are bolted between angle braces, fastened to the main bars by sturdy clamps and bolts .
- No springs are available with these cultivators.
- Spacing of the tines is changed simply by slackening the bolts and sliding the braces to the desired position.
- Since rigid tines are mounted on the front and rear tool bars, the spacing between the tynes can be adjusted without getting the tines choked with stubbles of the previous crop or weed growth.
- A pair of gauge wheel for controlling the depth of operation.

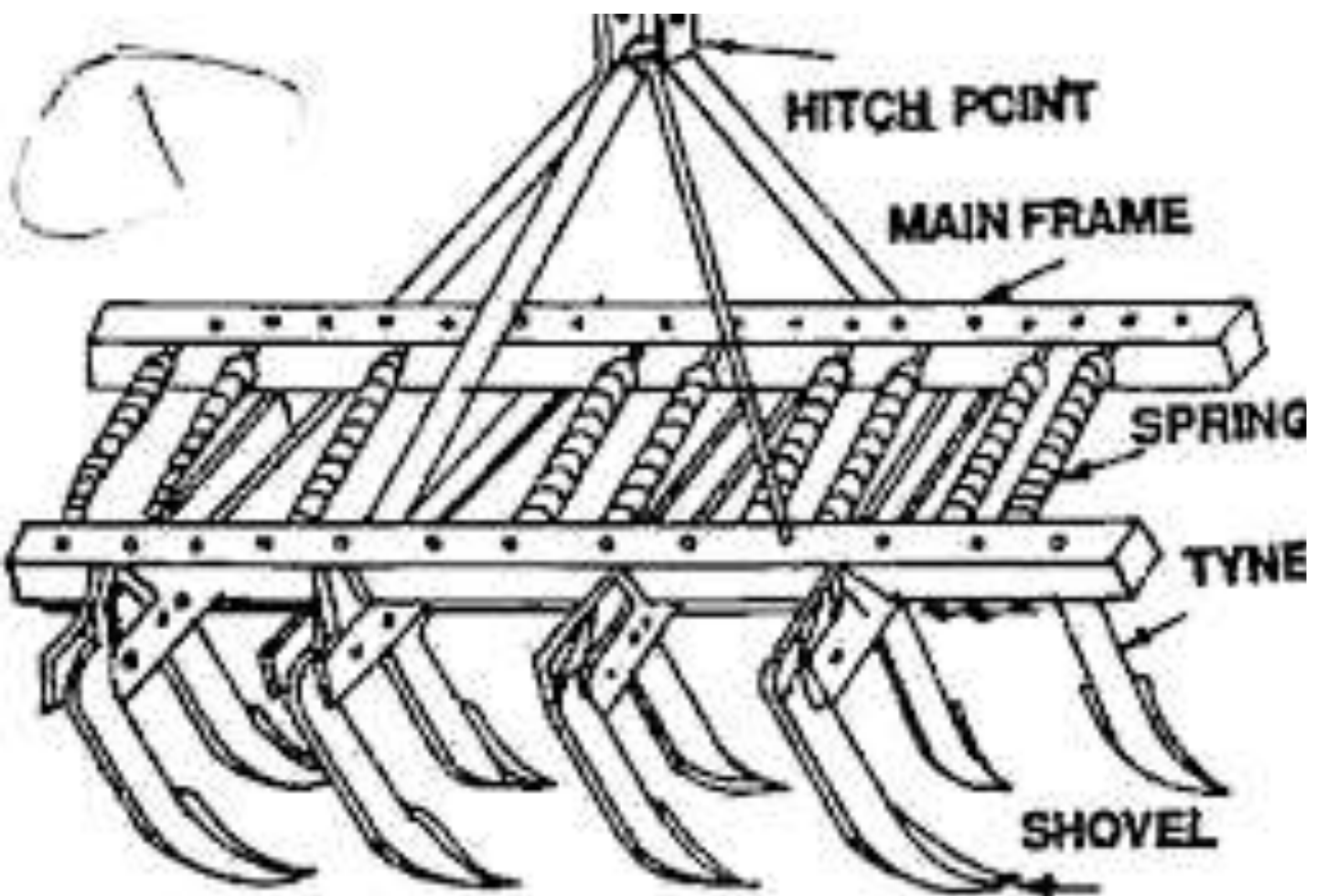




TRAILED TYPE CULTIVATOR



- It consists of a main frame which carries a number of cross members to which tines are fitted.
- At the forward end of the cultivator, there is a hitch arrangement for hitching purpose.
- A pair of wheels are provided in the cultivator.





TRACTOR MOUNTED CULTIVATOR



- Tractors fitted with hydraulic lift operate the mounted type cultivators.
- A rectangular frame of angle iron is mounted on three point hydraulic linkage of the tractor.
- The cross members carry the tines in two staggered lines.
- Depending upon the type of soil and crop, shovels are chosen for use on the cultivators.





LEVELLER



- In irrigated areas, land leveling is an essential operation for farming.
- Level fields receive uniform penetration of irrigation water with high efficiency.
- Water logging and soil erosion is reduced.
- Land leveling is usually done in the slack season when the field is free from crops.
- Operated in ploughed land to collect loose soil from high spots and dump it into depressions.
- Common type of field levelers used by farmers. Wooden logs or planks.
- Improved type of land leveller: Used on the large farms, is called the leveling karaha (scoop) or scraper.





LASER LEVELLER



- **Land leveling : Expected to bring permanent improvement in the value of land.**
- **Levelling modifies the existing contours of land for efficient agricultural production system with the objective**
 - (i) Efficient application of irrigation water,**
 - (ii) Improved surface drainage,**
 - (iii) Minimum soil erosion**
 - (iv) Increased conservation of rain water (dry lands)**
 - (v) Provision of an adequate field size and even topography for efficient mechanization.**





LASER LEVELLER



- Mostly used in construction of table top levelled field.

Components

- Laser transmitter
- Laser receiver
- Controller unit
- Levelling blade with actuator





TRACTOR DRAWN BUND FORMER



- **Used for making bunds or ridges by collecting soil.**
- **Bunds are required to hold water in the soil, thereby one can conserve moisture and prevent run-off.**
- **Size of the bund former is determined by measuring the maximum horizontal distance between the two rear ends of the forming boards.**



RIDGER



- Implement used to form ridges
- Required for sowing row crop seeds and plant in well tilled soil.
- Also used for forming field or channels, earthing up and similar other operations.
- Also known as ridging plough





PUDDLERS



- **Puddling of soil is a Farm operation in paddy growing areas.**
- **Desirable soil conditions for transplanting : semi-pervious hard pan covered with app.10 to 15 cm dense mud & little free water on the surface.**
- **Churning of soil in presence of excess water by a puddler .**
- **Purpose of puddling is to reduce leaching of water, to kill weeds by decomposing and to facilitate the transplanting of paddy seedlings by making the soil softer.**
- **It is done in a standing water of 5 to 10 cm depth in the field, which has already received one ploughing by the MBP.**

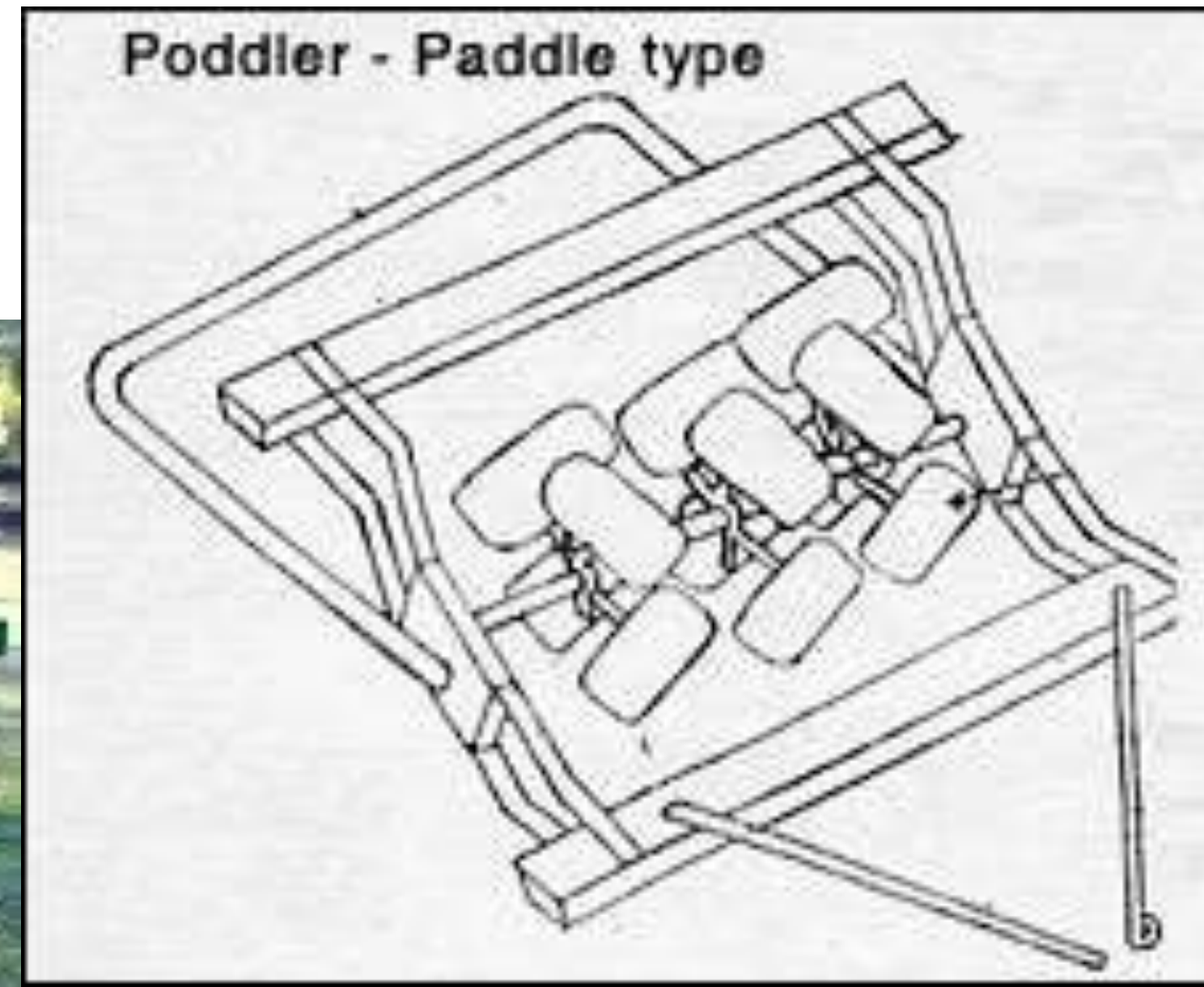




PUDDLERS

Classified as: (i) hand operated puddlers,
(ii) AD puddlers, (iii) TD puddlers.

- Among various types, AD puddlers are mostly used. Indigenous Plough and peg tooth harrow are used for puddling in paddy growing areas.
- None of these implements are as effective as the rotating blade type puddlers.





THANK YOU