Reference: - eagri.org

SPRAYERS

TYPES OF SPRAYERS

Based up on the volume of liquid handled, sprayers may be classified in to

1. High volume sprayer (more than 400 litres /ha)
2. Low volume sprayer (5 to 400 litres/ hectare)
3. Ultra-low volume sprayer (ULV) spray (less than 5 litres /ha).

ULTRA LOW VOLUME SPRAYER

- ULV formulations are applied at only 2.5-7.5 litres / ha. One hectare of crop can be treated in around 2.5 hour.
- ULV Sprayer is used to spray chemicals on row crops like cotton, cowpea, groundnuts, tobacco and vegetables. It is ideally suited for home gardens.

HAND ATOMIZER

- It consists of a container of 0.5 to 3.51it capacity a built in air pump, pressure gauge , nozzle and flow cut off lever. The tank is to be filled with ¾ th volume. The pump is operated to build pressure in the tank of 0.15-0.3 kg/cm2 .
- The application rate ranges from 45 to 100 litres /ha.

HAND COMPRESSION SPRAYER

- Tank capacity- 10-12 litter
- The chemical tank is filled 75-80 % volume .
- The pump is operated to pump air in to the tank to build pressure up to 2.0 – 3.5 kg/cm2
- The application rate ranges from 45 to 100 litres /ha.

KNAPSACK SPRAYER (HAND OPERATED)

- The operator carries the sprayer on his back and hence the name knapsack sprayer. It has a flat or bean-shaped tank of 10-15 litres capacity
- The pressure developed in these sprayers depends on the pump and varies from 3 to 12 kg/cm2 the application rate is 500 lit/ha. The coverage is 0.5-1.0 ha/day.

ROCKER SPRAYER

- Mainly used for spraying fruit trees in orchards, coconut and areca nut trees, flower gardens, and cotton and tapioca fields.
- The pump builds up a pressure up to 14-18 kg/cm2
- The output of the sprayer is 70-90 lit/hr with one nozzle. Coverage is about 1.5 ha/day.

FOOT OR PEDAL OPERATED SPRAYER

- It develops a pressure of 17-21 kg/cm2
- The discharge rate with one nozzle is 110-135 l/hr and coverage is 1.0 ha/day

KNAPSACK MOTORIZED MIST BLOWER CUM DUSTER

- It consists of a 1.2- 3.0 hp high speed petrol engine, a blower, a 12 lit chemical tank.

POWER SPRAYER

- It can be powered by a 3 HP engine or electric motor
- It can Develops 250 to 350 pounds pressure and can deliver the solution up to 15 m.
- It is convenient to spray with 4 to 6 spray lances at a time using the sprayer.

DUSTER

Duster is a machine used to apply chemicals in dust form.

Types of dusters

1. **Plunger type**
   - It is a simple duster with a small piston.
   - suitable only where the area to be dusted is small like **vegetable gardens**
2. **Knapsack type**
   - It is a duster with the powder container carried on the back of the operator.
   - These dusters are suitable for small areas.
3. **Rotary duster**
   - Hand rotary dusters are useful to apply chemicals which are in powder form.
   - The rate of delivery can be regulated It is used to apply powdery chemicals to vegetables, sorghum etc. crops.
4. **Power operated duster**
   - This type of dusters is used for large areas.
5. **Arial duster or crop duster**
   - An aircraft is used for dusting or spraying large acreages with pesticides
   - The technique was greatly improved in the 1960s with the development of ultra-low-volume applicators, in which concentrated pesticides are distributed in amounts as small as 1 ounce per acre (70 grams per hectare).

HARVESTING TOOLS

According to power source used harvesting tools can be classifies as:

(1) Manually operated tools (sickle)

- Animal drawn implements
- Power driven machines

MOWER

Mower is a machine to cut herbage crops and leave them in a swath. Animal drawn and tractor operated mowers are available

According to the cutting tool mowers are classified in to the following types such as:

(i) Cylinder mower (it is used for trimming grass in lawns, golf grounds etc.)

(ii) Reciprocating mower (Used for harvesting of crops like paddy and wheat.)

(iii) Horizontal rotary mower (Used for trimming lawns, golf grounds etc.)

(iv) Gang mower (It is used for trimming grass in lawns, golf grounds etc.)

(v) Flail mower (Used to cut herbaceous weeds like parthenium)

SELF PROPELLED PADDY HARVESTER

- The crop is manually harvested along the four sides of the field for a width of 0.5m and cleared from the field for providing space to the machine.
- At one comer an area of 2.0 x 1.5m is manually harvested to place the machine initially in the field. Since the harvested crop is discharged at the right side of the reaper the machine has to be turned always to the left side.
- The width of operation is 1.0 metre.
- The coverage is 1.5 ha/day

TERMS CONNECTED WITH HARVESTING OPERATION

1. **Mower**

- It is a machine use to cut herbage crops and leave them in a swath.

2. **Reaper**

- It is a machine to cut grain crops.

3. **Reaper binder**

- It is a machine which cuts the crops and ties them into neat and uniform bundles.

4. **Sickle**

- It is a curved steel blade with sharp edge in the inner side and a handle. It is used by human power. The person holds the tool and shears the straw or stalk and harvests the crop

5. **Swath**

- The harvested material laid on the land by the machine when harvesting is in progress is called a swath.

6. **Windrow**

- It is a row of material formed by combining two or more swaths.

7. **Windrower**

- It is a machine to cut crops and deliver them in a uniform manner in a row.

COMBINE

Functions

1. Cutting the standing crops
2. Feeding the cut crops with the threshing unit
3. Threshing the crops

Combine harvester type

Self-propelled type

- This has got its own dependent engine and Size varies from 2-4 m.

PTO driven type

- This combine is pulled by a tractor and The power requirement of the combine may be taken on **8 HP/m** width of cut for **pulled type machine and 12 HP/m** width of cut for **self-propelled machines.**