

Lecture No – 14 Study of planter

Planter, Functions, seed metering devices, type of planters, solved examples

PLANTER

Planter is normally used for those seeds which are larger in size and can not be used by usual seed drills.

Function:

- (i) to open furrow,
- (ii) to meter the seed,
- (iii) to deposit the seed in furrows,
- (iv) to cover the seeds and compact the soil over it.

A planter consists of: (i) hopper (A planter has a seed hopper for each row) (ii) feed metering device (iii) knock out arrangement (iv) cut-off mechanism (v) furrow opener and (vi) other accessories.

A planter has seed hopper for each row.

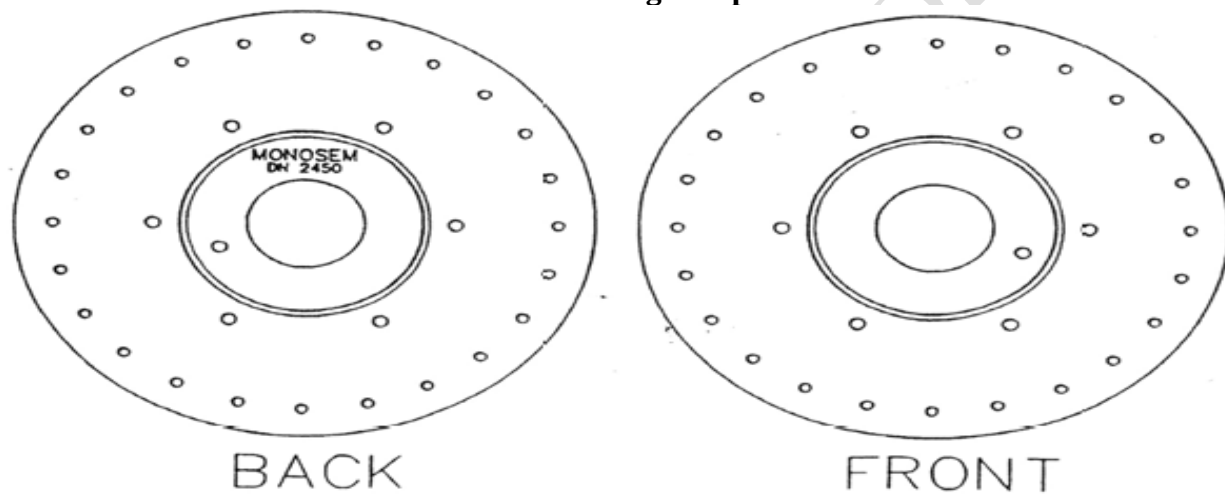
Seed metering device in a planter: There are a number of seed metering devices in a planter but the most common device consists of a rotating plate at the bottom of seed hoppers. In some planters, vertical rotors as well as inclined rotors are also used. The most common is the horizontal seed plate used in planters. **The horizontal seed plates have got suitable notches or holes called cell. Depending upon the type of notches on the plates, it is of three types. (i) Edge drop (ii) Flat drop (iii) Hill drop.** The edge drop carries the seed on edge in the cell of the plate. The flat drop carries the seed on a flat in the cell of the plate. In hill drop, the cells round the edge of the plate are large enough to admit several seeds at a time. Planter is usually used for those seeds which are required to be sown at equal intervals between plant to plant.



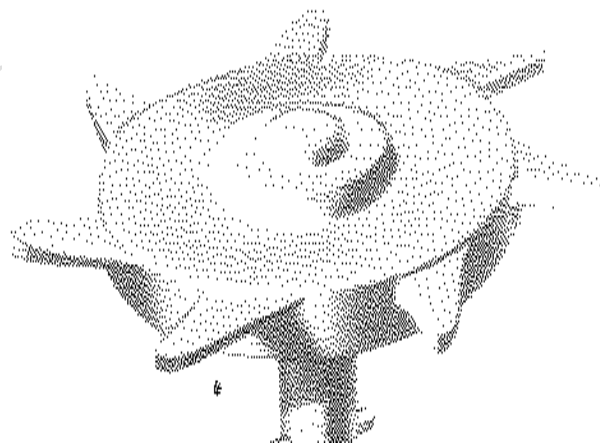
ANIMAL DRAWN JYOTI MUL TICROP PLANTER



1. Edge drop



2. Flat drop



3. Hill drop

Seed metering Mechanism:

I. Cut- off mechanism:

The rotating plate receives the seed from the hopper. The plate moves under an arrangement call *cut off* which allows only those seed which are accommodated in the cell.

Cut- off mechanism cuts-off or brushes out excess seeds from the cells of the mechanism.

II. Knock out mechanism:

It is a device which *knocks out* the seeds from the cells or picker heads of the mechanism.

It consists of rollers, star wheels or rounded points which are forced into the cells by the pressure of a spring and eject seeds out of the cells.

The spacing of the seeds or hills in the row is determined by the ratio of linear or peripheral speed of the cells to the forward speed of the planter and by the distance between the cells in the metering unit.

The accuracy of the planter depends upon factors:

- i) speed of seed plate
- ii) shape and size of cells
- iii) shape of hopper bottom and
- iv) uniformity of seed size.

Planter is usually used for those seeds which are required to be sown at equal intervals between plant to plant

Potato planter: - Potato is an important crop in India. It requires a lot of labour for sowing the seeds in the fields. Potato planter is getting popular day by day. Potato planter have two types of dropping mechanism. 1. Automatic 2. Semi-automatic

Potato planter (Automatic): The automatic potato planter consists of a hopper for each row and cups with chain drive mechanism. The graded potatoes are picked up by the cup and carried to furrow opener spout and released in the furrow. The fertilizer and pesticide can also be placed simultaneously. It can plant in 2-4 rows. Its capacity may be 6000-14000 potatoes per hour.

Potato planter (Semi-automatic): - It is used for planting potatoes. It consists of a hopper, metering disc and furrow openers. The fertilizer application unit can be attached separately. The potatoes from the hopper are placed in metering disc which contains a number of compartments. This disc is rotated through gear drive mechanism. The potatoes drop due to gravity in furrow opener. It may plant 2-4 rows. Its field capacity may be 0.15 -0.25ha/hr. It may be run by a 20-25hp tractor. It can plant in 2-4 rows. Its capacity may be 6000-14000 potatoes per hour.

Sugarcane planter: - It is used for planting of sugarcane sets. Desired spacing between row to row and plant to plant is maintained for sugarcane planting. The fertilizer and chemical pesticides can be applied simultaneously. The machine consists of a hopper, two rotating distributor discs, two fertilizer hoppers, a pesticide tank with a distribution valve and two furrow openers. Two persons are required to put sets in seed rotor manually from the hopper. The machine is mounted on the tractor. Its output may be 0.6 ha/hr. It may require 4-6 men for field operations.