**SOWING METHODS - SEED DRILLS, SEED CUM FERTILIZER DRILLS -**

**COMPONENTS AND FUNCTIONS**

**Sowing** is an art of placing seeds in the soil to have good germination in the field. A

perfect sowing gives

a. Correct amount of seed per unit area.

b. Correct depth of sowing

c. Correct spacing between row-to-row and plant to plant.

d. Correct seed rate

**SOWING METHODS**

(i) Broadcasting (ii) Dibbling (iii) Drilling (iv) Seed dropping behind the plough (v)

Transplanting (vi) Hill dropping (vii) Check row planting.

**(i) Broadcasting**

Broadcasting is the method of random scattering of seeds on the surface of seedbed. It can be done manually or mechanically. When broadcasting is done manually, uniformity of seed placement depends upon the skill of the man scattering the seeds. Soon after broadcasting the seeds are covered by planking or some other devices. Usually higher seed rate is obtained in this system. Mechanical broadcasters are used for large-scale sowing. The device scatters the seeds on the surface of the seedbed at controlled rates.

**(ii) Dibbling**

Dibbling is the process of placing seeds in holes made in the seedbed and closing the seed with soil. In this method, seeds are placed in holes made at definite depth at fixed spacing. The equipment used for dibbling is called *dibbler*. It is a conical shape instrument used to make proper holes in the field. Small hand dibblers are made with several conical projections made in a frame (Fig.1). This is very time consuming process, so it is not suitable for small seeds. Mostly vegetables are sown in this way.

 

 **Dibbler**

**(iii) Seed dropping behind the plough**

It is a very common method of sowing followed by farmers in villages. This method is used for seeds like maize, gram, peas, wheat and barley. A woman/ man walk behind a plough ploughing the land and drop the seeds in the furrows made by the

plough. Sowing behind the plough can be done by a device known as *malobansa.* It consists of a bamboo tube provided with a funnel shaped mouth. It is fitted to the handle of the plough. One man drops the seeds through the funnel and other man handles the plough and the bullocks. This method is a slow and laborious method.

**(iv) Drilling**

Drilling consists of dropping the seeds in furrow lines in a continuous stream and covering them with soil. The spacing between the seeds is not uniform. Seed metering may be done either manually or mechanically. The number of rows planted may be one or more. This method is very helpful in achieving proper depth of sowing, proper spacing between seeds and proper seed rate. Drilling can be done by using seed drills of tractor drawn and animal drawn types

**(v) Transplanting**

Transplanting consists of rising the seedlings in a nursery bed and then planting

the seedlings in another field (main field). It is commonly done for paddy, vegetable and flowers. It is a time consuming operation. Equipment used for planting the seedlings in the main field is called *transplanter.*

**(vi) Hill dropping**

In this method, few seeds are dropped as a hill at a fixed place and not in a

continuous stream. The spacing between hill to hill in a row is constant The equipments are called planters

**(vii) Check row planting**

It is a method of planting, in which row-to-row and plant-to-plant distance is

uniform. In this method, seeds are planted precisely along straight parallel furrows. The rows are always in two perpendicular directions. A machine used for check row planting is called check row planter.

**SEED DRILL**

Seed drill is a machine used for placing the seeds in a continuous stream in furrows at uniform rate and at controlled depth with an arrangement of covering the seeds with soil. According to the power source used , seed drills may be classified in to (i)

Bullock drawn seed drills (ii) Tractor drawn seed drills.. According to the type of seed

metering done animal drawn seed drills may be classified into i) manually metered seed drills and ii) mechanically metered seed drill. . In manually metered seed drills a person drops the seeds in the furrows, in mechanically metered seed drills a mechanical device called seed metering mechanism is used to meter the seeds. There are many designs of bullock drawn seed drills and tractor drawn seed drills which are used for sowing..



**Gorru Bullock drawn seed drill**

**Functions of a seed drill:**

Seed drill performs the following functions

i) To carry the seeds.

ii) To open furrows at uniform depths

iii) To meter the seeds

iv) To deposite the seeds in furrows in an acceptable pattern

**v)** To cover the seeds and compact the soil around the seed.

**SEED CUM FERTILIZER DRILL**

Seed drills fitted with fertilizer dropping attachments are called seed-cum-fertilizer

drills, They deliver both the seeds and fertilizers simultaneously in an acceptable

pattern. Seed cum fertilizer drill has a large seed box which is divided lengthwise into

two compartments, one for seed and another for fertilizers distribution.

**Functions of a seed cum fertilizer drill :**

Seed cum fertilizer drill performs the following functions

1) To carry the seeds and fertilizer in separate compartments.

2) To open furrows at uniform depths

3) To meter the seeds and fertilizers

4) To deposit the seed and fertilizer in the furrows in an acceptable pattern

5) To cover the seed and fertilizer and compact the soil around the seed.

 

 **Seed-cum-fertilizer drill**

**COMPONENTS OF A SEED DRILL**

A seed drill with mechanical seed metering device mainly consists of:

(i) Frame (ii) Seed box (iii) Seed metering mechanism (iv)drive transmission system v) Furrow openers

(vi) Covering device

(vii) clutch

 viii) hitch frame

 ix) Transport wheels.

**Frame**

The frame is usually made of mild steel angle section and flats . It is strong enough to withstand all types of loads in working condition. All other parts of a seed drill are fitted to the frame

**Seed box**

It is a box like structure made up of either mild steel or galvanized iron and

provided with a lid. In some designs a small agitator is provided at the bottom of the box which agitates the seeds while the drill in operation and prevents clogging of seeds. Seed metering mechanism is placed at the bottom of the box.

**Seed metering mechanism**

The mechanism which picks up seeds from the seed box and delivers them in to

the seed tube is called *seed metering mechanism*. Seed metering mechanism may be

of several types: (a) Fluted feed type (b) Internal double run type (c) Cup feed type (d)

Cell feed type (e) Brush feed type (f) Auger feed type (g) Picker wheel type and (h) Star wheel type. Usually seed metering mechanism is provided at the bottom of the box.

**Furrow openers**

These are the parts which open up furrows in the soil for placing the seeds.

Different types of furrow openers in use namely

1. Hoe type

2. Shoe type

 3. Stub runner type

 4. Full or curved runner type

5. Single disc type

 5. Double disc type etc. In

cultivator type seed drills the tines work as furrow openers.

**Covering device or furrow closer**

It is a device which closes the furrow with soil after the seed has been dropped in

it. Covering the seeds is usually done by chains, bars, packers, rollers or press wheels,

designed in various shapes and .sizes

**TYPES OF SEED METERING MECHANISMS**

Some of the seed metering mechanisms used in seed drills are explained here.

**(a) Fluted feed type**

The fluted wheel also known as fluted roller is driven by a square shaft. There are horizontal groves provided along the outer periphery of the wheel and wheel can be shifted sideways depending upon the seed rate. These rollers are mounted at the bottom of the seed box. They receive the seeds in the longitudinal groves and pass on to the seed tube through the seed hole..



 