

ROTAVATOR- A TOOL FOR TILLAGE

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Tillage is the most important operation in agriculture. It is mechanical manipulation of soil to provide favourable condition for crop production. Soil tillage consists of breaking the compact earth surface to a certain depth and to loosen the soil. It is done mainly to penetrate the rain water deep in to soil, aeration, destruction of weeds and burying rubbish and mixing of fertilizers. As a results of this processing the water-air, thermal and nutrient regimes of the soil are improved in the interest of the growth and development of crops.

The most practiced method of tilling land is ploughing with mouldboard ploughs. In ploughing, soil layer is subjected to various deformations. However, by using mouldboard ploughs the upper layer of the soil is not always loosened to desired extent, nor is the proper mixing of the different layers achieved. Therefore secondary operations such as harrowing, discing, cultivation are carried out to create proper soil tilth seeding and planting.

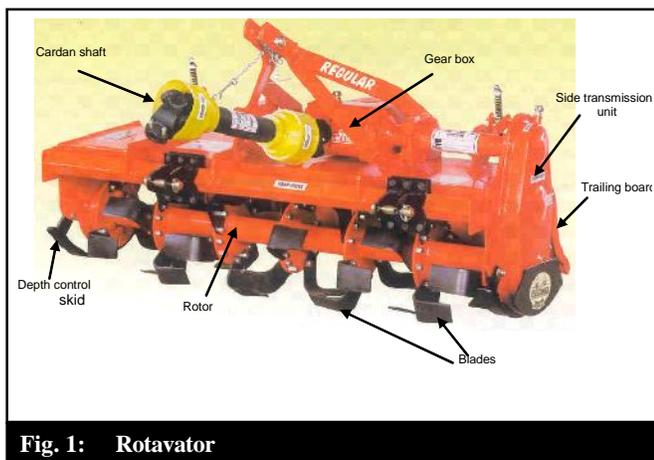


Fig. 1: Rotavator

Salient features: Seed bed preparation in heavy and black cotton soils is very difficult, due to deep cracks in soil. Clod formation in these types of soils experienced with mouldboard plough, disc plough and cultivators. For good seedbed preparation many operations of conventional implements are required like ploughing, harrowing, leveling etc. In paddy field, stubbles after combine harvesting create problems in subsequent sowing operation.

These problems have been overcome with the introduction of the tractor mounted rotavator. It cuts the soil, pulverizes it according to seed bed requirement *i.e.* coarse or fine. The cutting of soil is done by either blades or steel tines. Rotavator consists of a rotor shafts. On the

rotor shaft cutting blades ('L', 'J' or 'C' shaped) are attached. The rotating blade of the rotavator give impact on soil surface and throw soil upward because of its rotational speed and pulverizes soil by breaking the clods. It requires 35 to 55 HP as per size of rotavator.

The main components of rotavator are (Fig.1)

- Cardan shaft (PTO complete)
- Rotor shaft
- Trailing board
- Gear box
- Side transmission unit
- Depth control skid
- Blades

Rotavator are available in different sizes of 80 to 180 cm width. Different types of blade are used on the rotavator. One right and one left hand blade are fixed so that complete width of soil is cut. The hub carrying blades are so arranged to give spiral effect or uniform cutting load on the shaft. The gap between rotating blades and trailing board is adjustable, which controls the degree of pulverization. Lowering this gap increases pulverization. Trailing board also helps to level the land equally.

The field capacity of rotavator is 0.38 ha/hour. Fuel consumption is about 9 litre/ha. Cost of tillage is about Rs.800/ha. About 38.2 % time and 12.8 % cost per hectare can be saved as compared to tractor mounted blade harrow.

Rotavator advantages over traditional methods of land preparation:

- Soil pulverization is better than traditional implements.
- Suitable for use in dry as well as wet land cultivation.
- It is most suitable for removal of sugarcane stubble, wheat stubble, castor, grass, vegetable, weeds etc retains soil moisture and increases soil porosity and aeration which enhance germination and growth of crop.
- It can be used for intercultural equipment for horticultural crops and paddling in paddy cultivation.
- Used for loosening and aerating soil up to a depth of 10-15 cm.

Prepares seed beds quickly and economically compared to other traditional tillage operation.

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