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Shaping Lives...
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Rotavator



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Rotary tillage tools apply tractor engine power directly to the soil through tractor PTO shaft rather than tractive force through tires. Therefore, there is less wheel slippage, reduced soil compaction and need low weight tractor.

Rotavator has two unique features:

It combines primary and secondary tillage in one operation

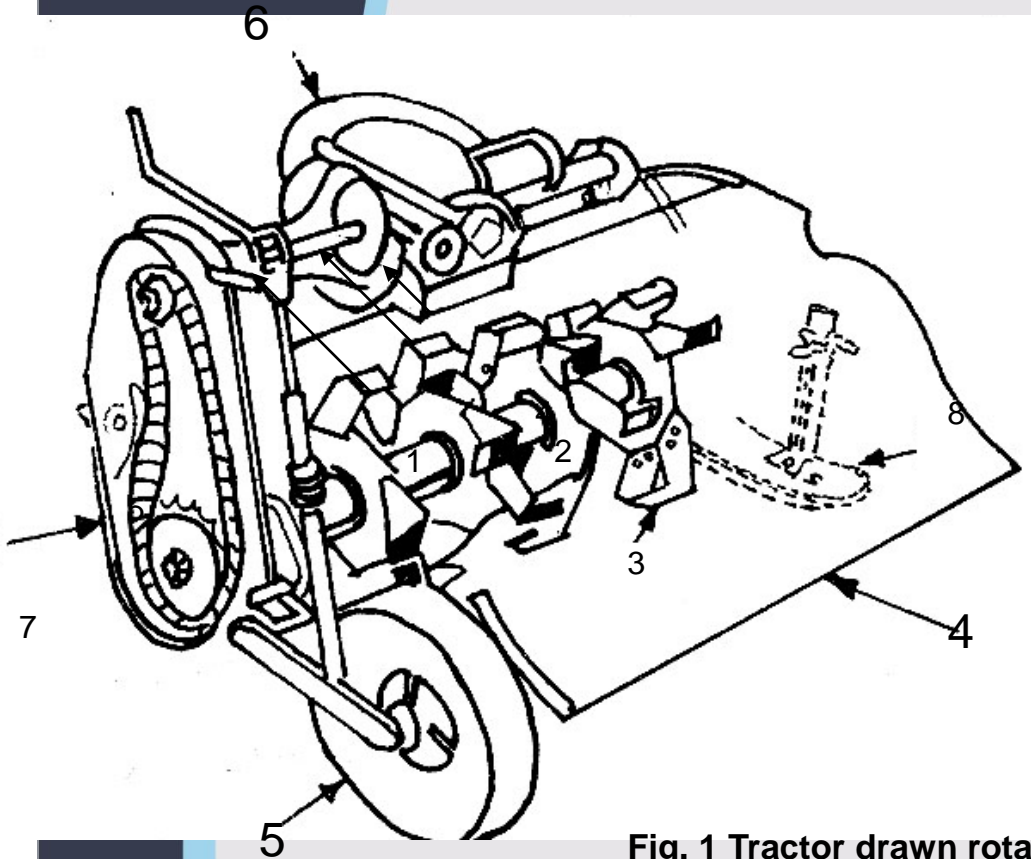
It provides negative draft because the rotor and the soil engaging tines rotate in same direction as the wheels of the tractor. When the rotavator works, it exerts a forward push on the tractor, which is retarded by means of soil resistance to the tires, transmission and brakes.



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PARTS OF ROTAVATOR



1. Rotor shaft
2. Rotor disc
3. Blade
4. Shield
5. Gauge Wheel
6. Bevel gear box
7. Chain drive
8. Skid

Fig. 1 Tractor drawn rotavator



TRACTOR OPERATED ANGAD ROTAVATOR

Capacity: 0.25 ha/h

Weight: 175 kg

Power: 22 hp tractor

Cost: Rs 60,000/-



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TRACTOR OPERATED ROTAVATOR

Capacity: 1 Acre/h

Weight: 215 kg

Power: 35 hp

tractor

Cost: Rs 75,000/-



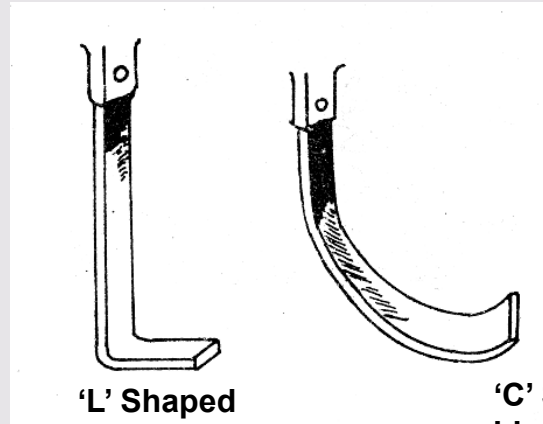


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Blades

There are two types of blades used in rotary tiller: 'L' and 'C' shaped. 'L' shaped blades are the most common and have their superiority to others in heavy trashy conditions for better chopping of weeds, mixing of surface residue. Besides that there is less possibility of blockage. 'C' shaped blades are more curved than 'L' type and are more suitable in hard ground and are recommended for heavy wet soil.



'L' Shaped
blade

'C' Shaped
blade

Blades used in a rotary tiller

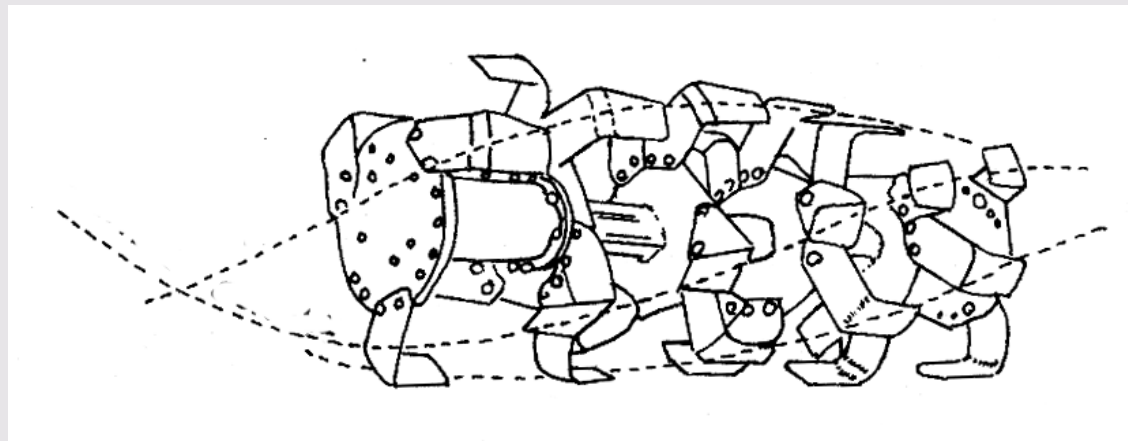


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Arrangement of blades

The rotavator blades are self-sharpening under normal conditions. Because of high peak torques developed during each cut by the blade, it is important that the blades should be staggered with equal angular displacement between them so that only one blade will strike the ground at a time. The blades are generally arranged on a rotor in a spiral or scroll pattern and should be approximately symmetrical about the longitudinal centerline. If two or more than two blades hit the ground at a time, it would result in uneven work and excessive vibration. A rotavator can have two blades or three blades on a rotor. But three blades on a rotor gives better tilth compared to two blades.



Arrangement of blades in a rotavator

Parts

Shield: The shield is provided at the back of the rotavator to control the amount of shattering of soil cut by the blades.

Gauge wheel: Gauge wheels are used to obtain desired depth of operation. In some rotavators skids are used for the same purpose.

Bevel gear box: The bevel gear box transmits the power from the tractor PTO to the rotavator rotor shaft. The PTO speed is reduced at two stages: first at the bevel gear which also converts the direction of rotation second at the chain drive. The rotor shaft rotates at speed of 250-300 RPM corresponding to the rated PTO speed of 540 RPM. The RPM of the rotor should not be less than 150.



ROTAVATOR

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Blade type

L shaped blade offers more negative draft and better soil pulverization

Fuel consumption increases with L shaped blade

Fuel consumption also increases at higher speed.

C type blade requires less PTO power compared to L shape blade (better soil brake up with L blade and higher soil metal friction)
L shape blade cuts a soil slice entirely along the cycloid.

Better residue incorporation with L blade