

Cultivator, Mechanical Encyclopedia Article

Cultivator, Mechanical

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Cultivators, or tillers, prepare the soil for growing crops. Whereas the plow breaks the soil and turns it over, the cultivator further pulverizes the soil to facilitate planting. Cultivating helps promote plant growth by eradicating weeds, preparing the land for irrigation, and facilitating the incorporation of fertilizer and pesticide into the soil. For some crops, the cultivator can also prepare the soil for harvesting. The hoe, for manual cultivating, has dates to the earliest of humankind's tool-making periods and remains an important gardening tool.

In the early 1700s, Jethro Tull of England invented a horse-drawn mechanical hoe with three coulters, or hoes, and seed funnels for planting. In 1856 George Esterly patented a straddle row cultivator drawn by two horses. Horse-drawn riding cultivators were introduced in the late 1880s. Two-row cultivators appeared after 1900. In 1912 Australian A. C. Howard invented a rotary cultivator with revolving blades. It was later adapted to operate on tractor power.

A tractor-mounted cultivator was developed in 1918 by the B. F. Avery Company. International Harvester developed an integral mounted cultivator in 1925. In these devices, the gangs, or rows of rotors that perform the tilling, had to be manually lifted. The first cultivators with power-lift gangs were developed around 1937.

The modern rotary cultivator works through the plowed soil with running blades, or tines, to give the soil a powdery consistency ideal for planting and crop growth. The curved blades project from a central axle made of high-strength steel that can withstand the stress of moving through dense soil or over obstructions. Another version of the machine, the spiked-rotor cultivator, works the soil with spikes that rotate around a long axle. Balloon tires are a common addition, to add stability. Modern cultivators can also be modified to allow precision sowing of seed that otherwise would have been broadcasted, or randomly distributed.

Small pedestrian controlled rotary cultivators, or rototillers, have become increasingly popular with home gardeners. The gasoline -powered tillers spare the gardener hours of back breaking hoeing and raking.