

Power Tiller in Essential Agricultural Tools for Efficient Farming and Enhanced Productivity

**Anurag Patel^{1*} and
Bhupendra Singh Parmar²**

¹School of Agriculture, Sanjeev
Agrawal Global Educational
University, Bhopal- 462038,
Madhya Pradesh

²ICAR-Central Institute of
Agricultural Engineering,
Bhopal- 462038, Madhya
Pradesh



Available online at
<http://sunshineagriculture.vitalbiotech.org/>

Article History

Received: 15. 01.2025

Revised: 17. 01.2025

Accepted: 24. 01.2025

This article is published under the
terms of the [Creative Commons
Attribution License 4.0](https://creativecommons.org/licenses/by/4.0/).

INTRODUCTION

A power tiller is a crucial farming tool that performs various tasks beyond soil tilling. It is a fully motorized agricultural tool with a smooth flow, capable of seeding crops, warming soil, controlling weeds, and performing tasks like ploughing, improving soil fertility, harvesting, and combining. It replaces animal power and saves time and effort by automating soil tilling and nourishing crop growth. Power tiller operated two-wheeled walking tractor widely used for agricultural implement in dry and wet puddle soil. For small and hill farming a power tiller is the best choice. It replaces the animal power more effectively and helps in raising demand for human labour. This power tiller used for 15 hp engine and designed as such to push forward or backward various agricultural equipment. Power tiller is capable to perform the operations of different farm implements like rotary, puddler, leveler, trailers, plow disc, cutter, mover and thresher. The most important functions of power tiller are that prepares an accurate seeded for the crop to be planted and warms the soil before planting by burying its ruminant into it. By controlling weeds it helps in the proper growth of the crops. The overall farm mechanization level of the country was 47% in 2021- 22. The wheat, rice, maize are the highly mechanized crops with overall mechanization levels of 69, 53 and 46%, respectively and followed by pulses 41%, oil seeds 39%, cotton 36%, sugarcane 35% and sorghum and millets 33%. In India, the mechanization level for power tillers has been increasing over the years. In 2022-23, India sold 35,000 power tillers.

Types of power tillers: Depending upon the capabilities, features, and functionalities, power tillers are available in many types. We have listed the most common power tiller types for your reference.

1. Mini-sized power tiller: The mini-sized power tillers are perfect for small-scale fruit and vegetable farms with little cultivation and rather loose soil, as opposed to other types of soil that do not require much tilling.

2. Medium-sized power tiller: Medium-Power Tillers of various sizes are typically used in areas where the soil is thicker, rougher, and rockier, necessitating a moderate to heavy degree of tilling.

3. Large-sized power tiller: Power tillers are larger and more suited to extensive farming.

Benefits of power tiller

Power tiller helps in preparing the soil, sowing seeds, planting seeds, adding and spraying the

Power tiller machine

Puddler

Padding operation machine is done before transplanting the paddy seedlings. For this field operation power tiller is fitted with lugged wheels or drum type cage wheels depending upon the soil conditions after removing the rubber tires for better traction. Rotary is fitted with bent types. Tail wheel is also to be replaced with tail wheel float for adjusting the depth. Minimum two padding operations are required and at least 8-10 cm of water should be available in the field for best puddle and power leveling off the field.



Power tiller Puddler

fertilizers, herbicides and water. In addition to it also helps in pumping water, harvesting, threshing and transporting crops. A power tiller is ideal where the land side is small. We are to clear you about tiller agriculture, for better productivity on the farms. The power tiller uses follow.

- Power tiller used for cultivation, sowing, weeding, and tillage.
- It used with attachments that enhance its sowing machine, spray machine, router, and blood.
- Power tiller uses in sugarcane farming, rice cultivation, wheat farming, and paddy cultivation.

- Field coverage/day- 2.5 to 3 acres
- Average fuel consumption- 1.25-1.50 liters/hr.
- Depth of tilling- 150 to 225 mm, and
- Width of rotary- 540 to 600 mm

Dry tilling

In case of dry tilling either bent or straight tines can be fitted depending upon the moisture in the field. Normally this operation is done immediately after harvest to remove the roots or weeds in the field or loosening the soil for better aeration. Dry tilling is also done prior to planting seeds for dry crops such as Ground nut, chilies etc. Also for intercultivation, dry tilling operation is done.



Power tiller dry tilling

- Field coverage/day- 2 to 2.5 acres
- Average fuel consumption- 1.5-1.75 liters/hr.
- Depth of cut- 125 to 200 mm, and
- Rotary width- 540 to 600 mm

Cultivator

Five tine cultivator fitments are commonly used as secondary tillage equipment mostly in dry lands for loosening the soil, removal of crop roots. Weeds and for inter cultivation in orchards etc. A little moisture in the field increases the tilling efficiency. Cultivator can be converted into a seed drill or a seed cum fertilizer drill with slight modifications for fitment of seeding and fertilizer applications device.



Power tiller cultivator

- Field coverage/day- 2.5 to 3 acres
- Average fuel consumption- 1.25 - 1.5 liter/hr.
- Depth of cut- 100 to 150 mm, and
- Width of cut- 600 mm

Two share plough

This attachment has two shares to plough tilling in unidirectional whereas coverage is twice compared to reversible mouldboard plough. Suitable for plugging virgin land which is not tilled for long period. Tills the soil which has deep roots, unwanted plants, shrubs and weeds.



Power tiller plough

- Field coverage/day- 1 to 1.5 acres
- Average fuel consumption 1.5 – 2 liters/hr.
- Depth of cut- 200-250- mm, and
- Width of cut- 300 mm

Ridger

The ridger is used for making ridgers for row crops such as sugarcane, potato, chilies, tobacco, banana, etc. as well as for opening furrows for water flow. The ridger should be used when the soil is slightly moist and only after tilling the land once or twice. The ridger is fitted on the rotary assembly with the help of a special bolt and nut.



Power tiller ridger

- Field coverage/day- 1 to 1.25 acres
- Average fuel consumption- 1.5 to 2 liters/hr.
- Depth of furrow- 250 to 300 mm, and
- Width of furrow 375 to 450 mm

Shorter rotary

Power tiller fitted with a shorter rotary (340 mm) and extended lugged wheel is used for inter cultivation operation for deseeding and loosening the soil in sugarcane fields. A smaller furrower specially designed for sugar cane field. Can be used for bund formation which also helps in irrigation. after sugar cane harvesting, shorter rotary can be used for stubble removal of sugar cane. The stubble is pulverized and is mixed with the soil thereby forming organic manure.



Power tiller shorter rotary

- Field coverage/day- 1 to 2 acres
- Average fuel consumption- 1.5 to 2 liters/hr.
- Short rotary width- 340 mm, and
- No. of tynes- 10 Nos.

Trailer

Trailer of 1.5 tans capacity can be fitted for transport of goods. Water tanker of capacity 1000 liters can be fitted with power tiller for carrying drinking water.



Power tiller trailer

- Water tanker of capacity 1000 liters
- Average fuel consumption- 1-1.25 liters/hr.

Pumping

Self-priming pump with tanker can be fitted for cleaning septic tanks, CASs pools, clogged drainage, community wells etc.



Power tiller pumping

- Suction head- 25 feet
- Average fuel consumption- 1.25-15 liters/hr.
- Discharge- 440 liters/min, and
- Delivery head- 25-30 feet

Spraying

The sprayer is used for spraying pesticides and insecticides for controlling the pests in following areas: Coconut, chiku, pomegranate, grapes, guava, banana, papaya and mango etc.



Power tiller spraying

- Discharge- 36 liters/mm, and
- Average fuel consumption- 1.25-1.5 liters/hr.

Auger digger

Attachment used for making holes varying from 6-8 inches in diameter and 18-24 inches deep in 15-20% moisture soil. Mostly used for planting: Banana, papaya, mango, pomegranate, guava and chiku etc.



Power tiller auger digger

- Capacity- 12-15 holes/hr., and
- Average fuel consumption- 1 liter/hr.

Generator

The engine can be used as a prime mover to couple to a suitable standard generator available in the market. Submersible can be used for operating, water Pump and domestic requirements.



Power tiller generator

- Generator capacity- 7.5 kVA, and
- Average fuel consumption- 1.5-1.75 liters/hr.

Seed cum fertilizer drill

Exclusive attachment used with rotavator of power tiller. Drill seed and fertilizer in row. It consists of seed and fertilizer boxes separately, shoe type opener and spiked ground wheel. It is suitable for sowing seed of wheat, soya bean, bengal gram etc.



Power tiller seed cum fertilizer drill

- Field coverage/day- 1.25-2.2.5 acres, and
- Average fuel consumption- 1.25 liters/hr.

Reaper

Power reaper is one of the most reliable farming tools which work excellent in all reaping processes. It is a high expensive and high labour consuming method of harvesting. Harvesting is a highly time constrained job resulting economic losses to the farmers, if it is delayed. This reaper is the most choice of Indian farmers (small/marginal and hill farming) due to its all ultimate performance and long life expectancy.



- Field coverage- 0.5 acres/hr.
- Power- 5-7 HP
- Fuel- 700 ml to 900 ml/hr.
- Width of cutter- 13 mm

Power tiller reaper

Transplanter

The power tiller rice transplanter is a manual machine that uses a 20 cm wide by 40 cm long seedling mat to transplant rice seedlings in rows. It requires two operators and a helper to operate. The machine transplants 3-4 seedlings per hill, with a 21-day seedling lifespan.



- Working Efficiency- 0.4 ha/ 4.5 hr
- Row Spacing- 200 - 240 mm
- Max Planting Depth- 45 mm
- Fuel consumption- 500ml/hr.

Power tiller transplanter

Power tiller company in India

Power tiller mostly used by small/marginal and hilly farmers. We showed below the best power tiller models and price list in India 2024.

S. No.	Power tiller models	Power tiller price
1.	VST Shakti 135 DI Ultra	Rs. 1,95,000/-
2.	KMW Mega T 12 LW	Rs. 2,70,000/-
3.	Kubota PEM140DI Power Tiller	Rs. 2,20,000/-
4.	KMW MEGA T 15	Rs. 2,85,000/-
5.	Kirloskar Mega T 15 Deluxe	Rs. 3,05,000/-
6.	VST Shakti 165 DI Power Plus	Rs. 2,17,000/-
7.	Honda FJ 500	Rs. 74,000/-
8.	Graves Cotton GS 15 DI	Rs. 22,400/-

9.	Graves GS 18 DIL	Rs. 2,90,000/-
10.	VST Shakti 130 DI	Rs. 2,05,000/-

Source: <https://tractorgyan.com>

Use of power tiller: A power tiller can be used in a variety of farming chores by a knowledgeable and experienced farmer. For example:

- Use a motorized tiller to prepare farming land. Farmers can use the blades to break up soil clusters and level the surface.
- Farmers can use power tillers to properly seed their crops and warm the soil before planting.
- Power tillers can effectively remove weeds and undesired crops from farmlands.
- Power tillers help with harvesting, threshing, and transportation of crops.
- Farmers can use power tillers to pump water.

CONCLUSION

Power tillers are a versatile farming tool that performs various tasks like seeding, warming, weed control, ploughing, soil fertility improvement, harvesting, and crop transportation. Equipped with a 15 hp engine, they can operate various farm implements and

come in different sizes. They enhance productivity and efficiency in agricultural operations, making them essential assets for modern farming.

REFERENCES

- Anurag Patel, Rajkishor Singh, Prabhakar Shukla and S.C. Moses, 2018. Performance evaluation of self-propelled reaper binder for harvesting of wheat crop. *Int.J.Curr.Microbiol.App.Sci.* 7(12): 896-906.
- Anurag Patel, RC Singh and Ashok Tripathi, 2020. Development and testing of tractor operated variable depth fertilizer applicator on application of granular urea in wheat crop planted on beds. *IJCS* 2020; 8(5): 989-996.
- <https://www.tractorjunction.com/blog/the-benefits-of-power-tiller-cultivator-on-agriculture>
- <https://tractorgyan.com/tractor-industry-news-blogs/856/top-best-power-tiller-in-india>