

Performance Evaluation of Post Hole Digger

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Post hole digger is a tool used to dig holes in the ground, for general purposes such as setting fence and planting of horticultural saplings. It consists of a rotating vertical metal rod with one or more blades attached at the lower part that cut or scrape the soil. In operation, the tool is jabbed into the ground with the blades in the open position. The handles are then operated to close the blades, thus grabbing the portion of soil between them. The tool is then pulled out and the soil is deposited by the side. This process is repeated until the hole is deep enough.

Treatment details

T1: Digging of pits by manual method (farmers practice)

T2: Digging of pits by hand operated post hole digger

T3: Digging of pits by tractor operated post hole digger

Conventionally digging a deep or larger diameter hole requires more labour, drudgery and time. So, in order to reduce these losses, we procured commercially available tractor operated post hole digger. It is the fastest method to dig holes by PTO driven implement, made for all types of soil and easy to transport. It is ideal for digging with less time and efforts. Pits of depth up to 36 inches with a well-defined circumference and neat finishing can dug in less than 20 seconds. Removed soil is placed around the pit which makes it easier to fill back after plantation/erection. It can be used for planting saplings of mango, coconut, lemon, teak, and pomegranate, erection of fencing poles, plantation crops, and forest species. Time for preparing the planting hole/pit refers to the total time taken to erect the auger, rotate and at same time move the auger to penetrate the soil surface, lift up the auger, and tilt the auger to its rest position. Measurement for the time duration immediately started when the operator shifted the hydraulic control lever to erect the auger and terminated when the auger was at its rest position and the clamping covering mechanism at the convenient height position to the operator.



Plate 1. Glimpse of manual method and mechanical method of digging of pits

Table 1: Specifications of tractor operated post hole digger

Sl No	Parameters	Details
1	Name of the equipment	Post hole digger (Tractor operated)
Specifications of equipment		
2	Overall dimensions (L X B X H), mm	2391x840x1430
3	Auger diameter, mm	450
4	Weight, Kg	240
5	Cost of the equipment, Rs.	1,40,000
6	Power source	Tractor operated
7	Horse power required, Hp	>40
8	Fuel used	Diesel
9	Labour required	1 operator, 1 helper

Table 2: Specifications of hand operated post hole digger

Sl No	Parameters	Details
1	Name of equipment	Post hole digger (hand operated)
Specification of equipment		
2	Cost of the equipment, Rs.	30,000
3	Weight, kg	9
4	Number of bids	Two
5	Power source	Self-propelled 2.7 HP petrol engine
6	Fuel used	Petrol
7	Speed	300 rpm
8	Labour required	1 operator

Results and Discussion: The specifications and performance data of the commercial post hole digger are as given in Table 1, 2 and 3.

Inference: Performance evaluation and frontline demonstration of post hole digger for digging of pits was conducted in the research plots of ZARS, V.C. Farm, Mandya and farmers' fields at various villages of Mandya (T&D). The post hole digger demonstrated at farmers field for planting of horticultural, plantation and forest species for about 18 ha. Farmers are happy with performance of the

machine and also appreciated the reduction in labour charges and cost of operation.



Plate 2. Glimpse of post hole digger demonstrated at farmer's field

Table 3: Comparative performance of tractor operated post hole digger

Sl No	Parameters	Tractor operated post hole digger	Hand operated post hole digger	Farmer's practice
1	Type of soil	Sandy clay	Sandy clay	Sandy clay
2	No. of pits/h	180-200	40-60	6-8
3	Effective working diameter, mm	450	75	450
4	Working depth, m	0.90-1.55	0.30-0.45	0.30-1.55
5	Time taken for making a pit, sec	20	60	600-900
6	Effective field capacity, ha/h	0.032	0.042	0.0022
7	Fuel consumption, l/h	4.30	0.95	-
8	Cost of operation, Rs/h	495	125	65

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