

## CUSTOM HIRING OF TRACTOR OPERATED ROTAVATOR IN HARYANA STATE



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## **CUSTOM HIRING OF TRACTOR OPERATED ROTAVATOR IN HARYANA STATE**

### **Introduction**

Presently the area under rice in Haryana is 1.027 million hectares. Area under wheat is 2.3 million hectares.

Preparation of seed bed for wheat after the harvest of rice is very difficult in heavy soils, due to the development of deep cracks. Clod formation in these types of soils necessitates repeated operations of conventional implements. Rice stubbles remain intact in the case of combine harvested fields and create problem in the subsequent sowing operation.

The tractor mounted rotavator holds promise for overcoming these problems. There are five discs in the rotavator on each of which tines are mounted. A leveler is provided at the rear. The rotavator is mounted on three point linkage system of tractor of 26 kW or higher and it is powered through the tractor pto. The width of the machine is 1250 mm.

Tractor mounted rotavator also results in a satisfactory seedbed in less number of passes, resulting in time saving and incorporation of rice stubbles into the soil.

The studies conducted at CCS HAU, Hisar during the period 1996-97 and 1999 to 2002 revealed that tractor operated rotavator is quite effective to prepare seed bed in dry as well as wet conditions. Hence, the need was felt to popularize tractor-operated rotavator in Haryana in Rice-wheat cropping system and to encourage farmers/rural youth to adopt it on custom hiring to increase their income.

### **Necessity for promotion over traditional practices**

To obtain specific benefits of early seed bed preparation soon after harvesting of paddy crop for sowing wheat and after harvest of wheat crop for sowing of paddy. This will improve the soil physical properties and hence, result in increased crop yield. As an ideal seedbed is

prepared with the use of rotavator (Fig.1), it will facilitate the sowing of wheat by seed-cum- fertilizer drill without any operational problems.

The farmers and young unemployed rural youth were encouraged and motivated to use tractor operated rotavator on custom hiring basis as an income generation activity.

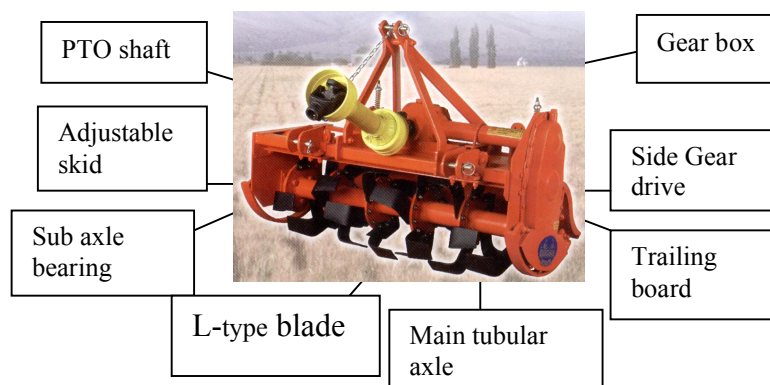
### **Specifications of Tractor Operated Rotavator**

#### **Salient Features**

Type of drive	Chain/ Gear
Side drive	Single/ Double
Blade type	L-Type
<b>Width of rotavator (m)</b>	<b>Tractor hp required</b>
1.75	35-45
2.00	45-50
2.25	50-60
2.50	Above 70
Gear box	Single drive
PTO speed (rpm)	540/1000
Over load protection device	Shear bolt
Field capacity (ha/hr)	0.4

#### **Status and adoption level of tractor operated rotavators in Haryana:**

The farmers and unemployed youth were motivated to use this machine on custom hiring basis as an enterprise. There was wide spread response in its adoption particularly in area where paddy- wheat crop rotation is followed. The no of rotavators purchased by farmers from the year 2001-02 to 2005-06 in Haryana are tabulated in Table-1



**Fig.1: Tractor mounted rotavator**

**Table-1. Population of Rotavators in Haryana**

Year	Numbers of rotavators purchased by farmers in Haryana
2001-02	20
2002-03	50
2003-04	114
2004-05	688
2005-06	1120
Total	1992

*Source: Office of Additional Director of Agricultural engineering, Panchkula, Haryana.*

The enterprising farmers & unemployed rural youth engaged in custom hiring business of rotavators are charging on an average of Rs.1000- 1500/ha for puddling in paddy and Rs.1500-1800/ha for sowing of wheat after harvest of paddy.

The average area covered by one entrepreneur is about 125-130 hectares per year (80 hectares in puddling & 50 hectares for wheat sowing).



**Fig. 2: Tractor mounted rotavator in operation**

*The Economics of Rotavator:* Under paddy – wheat rotation during year 2004-05 custom hiring of equipment is estimated and reported in Table-2. The net profit by an individual is about Rs.101625/year. The pay back period of rotavator is one season.

The total estimated area covered in Haryana with the use of rotavator in year 2004-05 and 2005-06 for puddling was 30,000 and 40,000 hectares respectively. The total estimated area covered to prepare field as reduced tillage technology after harvest of paddy for sowing of wheat in year 2004-05 and 2005-06 was 50,000 and 60,000 hectares respectively.

**Table.2. Economics of Rotavator under paddy-wheat rotation during year 2004-05 on custom hiring**

Particulars	Puddling	Wheat sowing
Av. Field capacity (acre/h)	1.33	1.0
Av. Fuel consumed (l/h)	5.0	6.0
Av. rate of hiring (Rs./ha)	1250	1750
Av. Work done on hiring (ha)	80	50
Total turn out (Rs/year)	1,00,000	87,500
Expenditure (Rs/ha)	550	850
(Rs/year)	44000	42500
Net saving (Rs/year)	56,000	45,000
<b>Total saving per year:</b>	<b>1,01,625</b>	
<b>Pay back period :</b>	<b>One season</b>	

**Table-3 Performance of Rotavator for Puddling in Paddy at farmer's fields during year 2005**

**Treatments:** T1 = Traditional practice existing in that location  
T2 = Rotavator (once)+ planker(once)

	Treatments	
	T1	T2
Av. Depth of puddling (cm)	20.0	17
Av. Puddling index	53.6	67.4
Basic infiltration rate (mm/h)	1.4	0.77
Av. Time taken (h/ha)	6.125	3.175
Time saving h/ha (%)	----	2.95(48)
Field capacity (ha/h)	0.16	0.312
Av. Cost of operation (Rs/ha)	1650	995
Saving in Cost of operation (Rs/ha)	----	655
Average increase in yield (q/ha)	----	4.1
Additional income @ Rs. 600/q (Rs/ha)	----	2460
Overall benefit (Rs/ha)	-----	3115
Saving in irrigation over control (cm)	----	3 (15)

**Farmers feed back**

- Saves water, time, energy, labour and money
- For green manuring of Dhaincha, Moong and other crops in wet conditions followed by heavy planker in standing water for puddling.
- Incorporates residues of paddy, sugarcane, cotton in the soil in single operation
- Better quality of work in lesser number of operations as compared to traditional practice both in dry and wet land condition.
- Level of field not disturbed
- Used throughout the year



## **Appendix-I**

### **List of manufacturers**

1. Beri udyog P (Ltd.), Karnal 100-101/3, HSIDC, Karnal. Mr. Ravi Beri  
Ph.2221571-72, 73,74,2262659, 2270415@ tel. 0184-2221571-72-73  
Fax. 0091-184-2221574 email: [beriuudyog@hotmail.com](mailto:beriuudyog@hotmail.com)  
[wwwfieldking.com](http://wwwfieldking.com)
2. OSAWA, Jawahar Lal Nehru Marg, Opposite civil hospital Ambala  
Cantt- 133001 (Haryana)  
Phone: 0171-2633834, 2641485, Fax 2643180  
Email [osawfarm@rediffmail.com](mailto:osawfarm@rediffmail.com) Web: [www.osawfarmchines.com](http://www.osawfarmchines.com)
3. M/s A.G. Agro Industries, Near hotel Krishna Park, Behind Hindustan  
Oil Mill Cake, Gondal Road, N.H.8-B, Vavadi, Rajkot-360004. Gujarat  
(India)  
Tel. 2386047, 2380852, Fax: 0281-2380852  
Email: [Shaktiman@jindalonline.net](mailto:Shaktiman@jindalonline.net)
4. Mr. Sat Pal garg & Ashok Garg C/o M/s Sarwati Krishi Udyog,  
Assandh-132039, Karnal  
Ph. 01749-278501 Mob: 9896110850, 9896290511
5. Deshmesh Mechanical Works Navha- Malerkotla Road, Anargarh-  
148022, Sangrur (Pb.) India  
Ph.91-1675-284221, fax:91-1675-285999  
Email: [info@dasmesh.net](mailto:info@dasmesh.net) Web: [www.dasmesh.net](http://www.dasmesh.net)
6. Matharu Engg. Works, Faridkot (Pb.)Suppliers: Mr. Rameshwar Dutt  
Sharma C/o Sharma Agro Traders. Assandh , Karnal Road In front of  
Munjhal Hospital- 132039 Ph. 01749-278955
6. Kamla Engineering Works, Ismailabad, Distt. Kurukshetra  
(Haryana)  
Phone: 252164
7. Harjinder Singh Kalsi C/o New Kalsi Agriculture Works G.T. Road  
Dabwali-125104  
Ph. 01668-227140 Mob. 09815596536
9. Mr. Subhash Chander C/o Vishwakarma Agril. Works. G.T. Road,  
Daryiapur, Distt. Fathabad
10. Sardar Baldev Singh Kalsi & Jaswinder Singh KalsiC/o Kalsi Agri.  
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Ph. 01668-226596 Mobile: 9814225052