

CUSTOM HIRING OF TRACTOR OPERATED HIGH CAPACITY THRESHER IN HARYANA STATE



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Introduction

Threshing operation is 100% mechanized in wheat crop where as in other crops it needs to be perfected. The work on multicrop thresher was started in 1994-95 when feasibility trials on syndicator type high capacity thresher in Raya & wheat crops were conducted. Front line demonstrations of high capacity thresher were carried out in wheat, raya, gram, etc. The grain output capacity was 16-20q/h in wheat, 8-10q/h in raya, 6-8q/h in gram and 4-5q/h in green gram. Threshing efficiency, un-threshed grain & visible damage were recorded to be 98-99, 2.0 & 1.0% respectively. Average total losses were 5.01%.

During the year 2002, Frontline demonstrations on multicrop thresher were conducted under bajra, moong & guar crops. Observations on crop input, persons employed, and time taken in threshing and power sources were recorded. The average capacity of thresher was 4.0 and 5.0 q/h in moong and guar crops respectively. The breakage was observed to be less than 5.0 % in moong while in guar; it was 0.5% to 2.0%. Threshing efficiency and cleaning efficiency were observed to be with in the prescribed limit.

Success of high capacity multicrop thresher on custom hiring:

The farmers and rural youth were motivated to buy high capacity multicrop thresher and adopt custom hiring business (Fig.1). About 30 farmers having land from 1.0 ha to 10 ha were pursued to buy their own thresher and do custom hiring business. In Rabi-2004, the area covered by these farmers (own area as well as on custom) is reported in Tables 1 & 2. The area threshed on custom hiring was 137ha and 327ha under raya and wheat crop respectively whereas in Rabi-2005, the area threshed under different crops was 152,152 & 40 ha (own area) and 431, 780 & 600 ha (custom) under raya, wheat & gram crops respectively. However, the area (000ha) threshed by high capacity multicrop threshers in Haryana was about 1400, 90, 400, 500 & 11 out of

total area 2300, 142, 585, 536 & 13.6 in wheat, chickpea, pearl millet, raya and moong crop respectively.



Fig. 1. High capacity multicrop thresher on custom hiring in wheat crop at farmer's fields.

Table 1 Custom Hiring Project on High Capacity Multicrop Thresher in Raya & wheat (Rabi-2004-05)

Name & Address of Entrepreneur	Details of crops threshed			
	Month	Crop	Number of farmers	Area Threshed on custom hiring (ha)
Sh Surender Singh S/o Sh Jagdish, VPO Tampura, Distt. Fatehabad. Ph. 221225	3/04	Raya	5	9.60
Sh Rajinder Singh S/o Sh Harnarain, VPO Umra Sultanpur, Distt. Hisar	3/04	Raya	3	4.60
Sh Naresh S/o Sh Abhey Ram VPO. Gorakhpur, Distt. Fatehabad	3/04	Raya	6	6.40
	4/04	Raya	4	5.40
	4/04	Wheat	11	23.00
	5/04	Wheat	7	13.20
Sh Kala S/o Sh Omparkash, VPO Gorakhpur, Distt. Fatehabad	4/04	Wheat	10	25.20
	5/04	Wheat	6	10.40
Sh Omparkash S/o Sh Nathuram, VPO. Gorakhpur, Distt. Fatehabad	4/04	Wheat	16	26.00
	5/04	Wheat	5	6.30
Sh Ved Parkash S/o Sh Munja, VPO. Gorakhpur, Distt. Fatehabad	3/04	Raya	7	6.0
	4/04	Wheat	20	22.30
	5/04	Wheat	4	4.00
Sh Satnarain* S/o Sh Chhabildas VPO. Jandli Kalan, Distt. Fatehabad	3/04	Raya	10	15.0
	4/04	Wheat	30	36.50
	5/04	Wheat	10	12.50
Luna Ram s/o Pyra lal Village Dhansu, Hisar (Own land=3.0ha)	3/04	Raya	12	30
	4/04	Wheat	15	60
	5/04			
Rajesh s/o Mala Ram, Balsmand ,Hisar Own land (30ha)	3/04	Raya	-	-
	4/04	Wheat	2	10
	5/04			
Lyak ram s/o Bhagrith, Dhani Talwandi Badshahpur, Hisar Own land (2.0ha)	3/04	Raya	15	60
	4/04	Wheat	20	80
	5/04			
		Raya Wheat	62 156	137 327

**Table 2 Custom Hiring on High Capacity Multicrop Thresher
in Raya, Gram& wheat (2005-06)**

Name & Address of Entrepreneur	Details of crops threshed				
	Month	Crop	Out put q/hr	Area Threshed (ha)	
				Own	Custom
Ruli Ram s/o Sh Sohan Lal. VPO Bado, Hisar	3/05	Raya	3.0	5.0	-
	4/05	Wheat	12.0	5.0	15
Sh Phool Singh s/o Hardhan Singh	3/5 &	Raya	3.5	10.0	25.0
	4/5	Wheat	12.0	5.0	30.0
	4/5				
Sh Ram Niwas s/oRanu Ram, VPO Bado, Hisar	3/5 &	Raya	3.5	5.0	40.0
	4/5	Wheat	12.0	5.0	25.0
	4/05				
Sh Subhash s/o Bhaktawar, VPO Bado, Hisar	3/5 &	Raya	3.5	4.0	10.0
	4/5	Wheat	12.0	2.0	10.0
	4/5				
Sh Rajendra s/o Sheokran, VPO Bado, Hisar	3/5 &	Raya	3.5	5.0	25.0
	4/5	Wheat	12.0	5.0	15.0
	4/5				
Sh Jai Parkash s/o sh Ram ji lal Bado, Hisar	3/5	Raya	3.5	6.0	30.0
	4/5	Wheat	12.0	3.0	35.0
Sh Om parkash s/o sh Bhajan singh, Bado, Hisar	3/5 &	Raya	3.5	2.0	30.0
	4/5	Wheat	12.0	2.0	20.0
	4/5				
Luna Ram s/o Pyra lal Village Dhansu, Hisar (Own land=3.0ha)	3/5 &	Raya	3.5	0.5	30.0
	4/5	Wheat	12.0	1.0	60.0
	4/5				
Rajesh s/o Mala Ram, Balsmand ,Hisar Own land (30ha)	3/5 &	Raya	3.5	15.0	-
	4/5	Wheat	12.0	5.0	10.0
	4/5				
Lyak ram s/o Bhagrith, Dhani Talwandi Badshahpur, Hisar Own land (2.0ha)	3/5 &	Raya	3.5	0.5	40.0
	4/5	Wheat	12.0	1.0	60.0
	4/5				
Jagdish s/o sh Jukti Ram	3/5 &	Raya	3.5	25.0	25.0
	4/5	Wheat	12.0	5.0	5.0
	4/5				
Rai singh s/o Sube singh, VPO Sarsod, Hisar	3/5 &	Raya	3.5	20.0	25.0
	4/5	Wheat	12.0	3.0	10.0
	4/5				

alip singh s/o Mokh Ram Godara, Village Kalwash, Hisar	3/5 &	Raya	6.0	22.0	95.0
	4/5	Wheat	16.0	45.0	---
	4/5	Gram	6.0	20.0	600
	4/5				
Bril lal Jhakar VPO Kalwash Hisar	4/5	Wheat	16.0	12.0	17.0
Radhey sham s/o Ram Kumar, VPO Kalwash Hisar	4/5	Wheat	10.0	8.0	62.0
Ram Kumar Godara VPO Rawat Khera, Hisar	4/5	Wheat	7.0	20.0	----
	3/5	Raya	5.0	22.0	---
	4/5	Gram	5.0	20.0	---
Suresh Kumar Varma s/o Chandi Lal Village Dhani Kumarwali, Hansi, Hisar	4/5	Wheat	10.0	8.0	100.0
		Raya	6.0	5.0	30.0
Pala Ram s/o Maman Ram Village Dhani Kumarwali, Hansi, Hisar	4/5	Wheat	10.0	--	100.0
		Raya	6.0	--	30.0
Gyan singh s/o Chamel singh, Umri, Deru majra KKR	4/05	Wheat	12.0	4.0	50.0
Shanti ram s/o Ram Diya Umri, Deru majra KKR	4/5	Wheat	14.0	2.5	40.0
Mohinder Singh s/o Balwant singh, Umri, Deru majra KKR	4/05	Wheat	12.0	5.0	80.0
Sh. Devi Ram VPO Mirzapur, Distt. Hisar	4/05	wheat	15.0	4.4	21.6
Sh. Jagdish Chander s/o sh. Jugti ram VPO sarsod, Distt. Hisar	4/05	Wheat	14.0	4.8	5.6
		raya	3.5	5.6	6.0
		Raya		152.6	431
		Wheat		152	780
		Gram		40	600

Status and adoption level of high capacity thresher on Custom Hiring

The farmers and unemployed youths were motivated to use this machine on custom hiring basis as an entrepreneur. The number of High capacity multicrop thresher procured by the farmers in Haryana during the year 2001-02 was 1500 while in the year 2004 - 05 and 2005-06, the numbers were 5000 respectively. High capacity multicrop thresher purchased by farmers in Haryana is tabulated in Table-3.

Table 3 Number of High capacity multicrop thresher machines procured by the farmers and unemployed rural youth in Haryana

Year	Number of High capacity multicrop thresher
2001-02	1500
2002-03	2000
2003-04	3000
2004-05	5000
2005-06	5000
Total	15500

Source: Haryana Statistical abstract and manufacturers

Success of custom hiring

CCS Haryana Agricultural University has undertaken intensive research and large scale demonstrations at farmer's fields in the use of tractor operated High capacity multicrop thresher machines which can accomplish threshing operation in time. Large scale demonstrations were also undertaken during the year 2004 to 2006 with tractor operated High capacity multicrop thresher in different district of Haryana. Front line demonstrations of tractor operated high capacity multicrop thresher were organized at farmer's fields in different villages covering thousands of hectares.

Economics of High capacity multicrop thresher on custom hiring

As given in Table 4, the net saving per year is estimated to be Rs. 86,000/- and the pay back period of machine is one year. The capacity of machine varies from crop to crop and makes and models. The out put of machine in different crops is tabulated in Table-5. The price of machine is Rs.70000/- to Rs.80,000/-.

Table 4 Economics of High capacity multicrop thresher on custom hiring

Crops	Rate of custom Hiring (Rs./ha)	Area covered (ha)	Total income (Rs)
Wheat	1250	50	62,500
Raya	1250	30	37,500
Gram	1000	30	30,000
Moong	1000	50	50,000
Arhar	1000	10	10,000
Urd	1000	25	25,000
Guar	750	50	37,500
Bajra	750	50	37,500
Total		295	2,90,000
Total hrs used: 800			
Expenditure: Rs.255/h			
Total expenditure: 800*255=2,04,000			
Net profit per year= 86,000			

Feed back from farmers:

- Good source for generating income for unemployed rural youth and farmers

Appendix-I

Specifications of tractor drawn high capacity Hadamba thresher

Particulars	Specifications
Type	Tractor drawn high capacity Hadamba thresher
Crops for which suitable	Wheat, Gram, Mustard, Green gram, Urad, Guar, Lentil etc.
Over all dimensions, mm: Length Width Height Ground clearance from ground, mm	4100-4320 1160-1740 2290-2500 185-270
Type of cylinder	Combination of chaff cutter and spike tooth type
Diameter of cylinder, mm	610
Length of cylinder, mm	520
Number of rows of beater	6
Number of beaters per row	7 in three rows and 6 in three rows
Size of beaters (spike), mm	Length = 150 and dia = 20
Recommended speed of threshing cylinder, rpm	400-1000
Type of concave	Grate of parallel rectangular bars
Concave grate openings for different crops (three different sizes)	Small grains like mustard & bajra Medium grains like wheat, guar, moong, urd, lentil, etc Bold grains like Gram (Kabli), soybean,
Concave clearance, mm	5-20 (Adjustable)
Number of Aspirators	Two
Speed of Aspirators(rpm)	700-1000
Feeding unit	Manual. Feeding unit having a conveyor, wooden platform of size 1500 x 2000 x 25 mm
Height of feeding chute from Ground, mm	1500-1600
Length of feeding chute, mm	1050-1160
Width of feeding chute,	260-270

Particulars	Specifications
mm	
Number of cutters	Three
Type of sieve	Perforated with round holes of thickness 10g
Number of sieves	For crops mentioned above
Transportation system	Two pneumatic wheels new one of standard make (MRF, Dunlop, Applo, JK), mounted on square axle of size 2*2 inch fitted with rim (new one) standard make bearing new one, Tyre size 6.00-16 of 10 ply rating
Power transmission	B-size, V grooved pulleys to get different speed as mentioned above
Accessories	Two set of cutters set of sieves for different crops Set of concaves for different crops
Output capacity (q/hr)	
Wheat	15-20q/h
Raya	3-4 q/h
Gram, Moong, arhar, Urd	4-5q/h
Guar	5-6q/h
Bajra	6-7q/h

Appendix-II

List of manufacturers

1. National Agro Industries, Link Road, Industrial area, Ludhiana-141003 (Punjab)
2. ASS foundry & Agril. Works, G.T.Road, Jandiala Guru, Amritsar-143115, Punjab Near Police Station, Jandiala Guru, Amritsar-143115 (Punjab)
3. Kamla Engineering Works, Ismailabad, Distt. Kurukshetra (Haryana) Phone:252164
4. Guru Nanak Khalsa engineering works, Pehowa, Kurukeshtra, Haryana
5. Bharat Agril. Industries, Karnal, Haryana
6. Punni Agricultural Works, Punni Thresher Tohana, Haryana
7. Panishar Agricultural Works, Amargarh, Punjab
8. Malwa Agro Industries, Ludhiana, Punjab
9. Amar Agricultural Implements works, Amar Street, Janta nagar Gill road, Ludhiana-141003, Punjab
11. Bharat Industrial corporation, Akalsar Road, Faridkot, Moga-142001, Punjab
12. Madho Mechanical works, B-49, Focal point, G.T. Road, District Faridkot, Moga-142001, Punjab
13. Kalsi Mechanical works, Majestic Road, District Faridkot, Moga-142001, Punjab
14. Punjab Engineering Works. Talwandi Bhai, Ferojpur, Punjab
15. M/s Zandu Steel Works, Hisar Road, Ambala city. Mr. Jaipal Ph. 0171-2530143
16. M/s Zandu Engineering Works, Hisar Road, Ambala City, Mr. Ramji Lal Ph. 0171-2530656
17. M/s Dhiman Steel Works, Hisar Road, Ambala City Ph. 0171-2532330, 2531985
18. M/s Kalra Agro Industries, Hisar Road, Ambala City. Mr. J.C Kalra Ph. 0171-2530636
19. M/s Ashok Industry, Railway Road, Ambala City. Mr. Ashok Aggarwal Ph. 0171-2511799
20. M/s Jagdish Trailor, Kachery Road, Ambala City Mr. Jagdish Chand. Ph. 0171-2532817
21. M/s Jagdev Steel Works, Old Village, Saraula Khurd, Ambala City Ph. 0171-2531425
22. M/s Indian Hadamba Thresher, Barara Bypass, Ambala City
23. M/s Saini Agro Works, Ambala –Jagadhary Road, Ambala City Mr. Om Parkash Saini Ph. 0171-274184

24. M/s Bharat Agro Industries, Chandigarh Road, Tohana
25. M/s Mahindra Agriculture Implements, Chandigarh Road, Tohana
26. Vikas Industries, Old Hansi Road, Jind, P:257123
27. M/s Kisan Agricultural Industry, Old Hansi Road, Jind, Ph: 252184
28. M/s Saini Engg. Works, Old Hansi Road, Jind, Ph: 255773
29. M/s Arya Krishi Udhog, Patiala Road, Narwana
30. M/s Haryana Krishi Udhog, Patiala Road, Narwana, Ph: 9416062799
31. M/s Raj Agricultural Works, Jind Road, Safidon, Ph:262931
32. M/s Baluja Industries, Railway Road, Safidon, Ph: 262607
33. M/s Jai Kishan Engg. Works, Railway Road, Safidon, Ph: 262639
34. M/s Punjab Agro Sales (India), Delhi Bye-pass, G.T Road, Karnal Sh. Ajit Dawar Ph. 2220113, 22220957 (O), 2282063, 2283063
35. M/s Bharat Industries/ M/s Bharat Steel Discs, Delhi Bye-pass , G.T Road, Karnal
36. Mr. J.M.L Patni, Mr. Rakesh Patni, Deepak Ph. 2220262, 2221555(O), 2200804, 2201918
37. Engineering Sales Corporation, 55/3, HSIDC, Karnal, Sh. D.N Bhardawaj, Ph. 2272922, 2221355,(O), 2387536
38. M/s Krishi Kalyan Udyog, Delhi Bye-pass, G.T Road, Karnal Sh. Ajay Sehgal Ph. 2270448 (O), 2265919
39. M/s Aggarwal Agril. Works, Jind Road, Assandh Sh Kailash Aggarwal Ph. 278726
40. Guru Nank Engg. & Foundary, Jind Road, Kaithal. Sh. Bajinder Singh Ph. 223923