

SUCCESS STORIES

Impact of Frontline Demonstrations

On

Farm Mechanization in Haryana

Tractor operated Potato digger



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Investigators : **N K Bansal and S Mukesh**
Department of Farm Machinery & Power
Engineering, CCS HAU, Hisar

Compilation and editing : **Dr. Surendra Singh**
Project Coordinator (FIM)
CIAE Bhopal

Editorial Assistance	:	Er. YS Bhokardankar Er. G S Chouhan
Word Processing	:	Sh. NG Bhandarkar Sh. R K Hadau
Proof Reading	:	Er. YS Bhokardankar
Reprography	:	Sh. RS Kushwaha

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9. Tractor Operated Potato Digger

Potato is an important cash crop of northern part of Haryana State and is cultivated in about ten thousands hectares which is about one sixth of the total area under fruits and vegetables cultivation. Potato digging is labour intensive and full of fatigue and time consuming operation and its mechanization can reduce the input costs, increase work efficiency, augment cropping intensity and hence the farmer's benefits. With this in view, farmers were motivated to purchase their own tractor operated potato digger for their own use as well as on custom hiring as a business. A view of potato digger is given in Fig. 9.1 and the potato digger in operation is given in Fig. 9.2.

Brief summary of past work: Front line demonstration of tractor operated potato digger-cum-elevator was given at farmer's fields in the months of March & April during 2004 and 2005 covering an area of 9.6 ha and 48 ha respectively. There was 2-3% loss of potato *i.e.* cut and remain buried in the soil with the use of potato digger-cum-elevator. The yield levels were 225-300 q/ha. The field capacity of machine was observed to be 0.2 ha/h while the field efficiency was 60-70%. About 10-12 labours are required to pick up the potato simultaneously. The machine is operated leaving one row in between so that potatoes can be picked by labours. The farmers/rural youth are using tractor operated potato digger-cum-elevator on custom hiring besides being used for their own fields.

Farmers and unemployed youth were motivated to use this machine on custom hiring basis as an entrepreneur. There was wide spread response in its adoption particularly in potato grown area. The farmers purchased their own tractor operated potato digger-cum-elevator. The custom hiring charges with conventional method was ₹ 2400 to 3000/ha for digging, picking and bagging (₹ 12 per bag of 80 kg each and the output was 200-250 bags per hectare or 160-200q/ha). The rate of custom hiring with the potato digger was ₹ 1500 per ha and the average saving was ₹ 750 per hectare. The pay back period of machine is one year when farmer covers an area of about 30 ha. The cost of machine was ₹ 25000/-. A Skilled operator is needed to operate the machine. The no. of potato digger purchased by the farmers of Haryana is given in Table 9.1. Performance and cost economics of tractor operated potato digger-cum-elevator is given in Table 9.2 and utility and efficacy of tractor operated potato digger-cum-elevator in comparison to conventional method is given in Table 9.3.

Table 9.1: Adoption level of tractor operated potato digger-cum-elevator in Haryana.

Years	No. of tractor operated potato digger-cum-elevator purchased
2005	37
2006	41
2007	74
2008	69
2009	02
2010	-
Total	223

Source: Office of Joint Director (Agriculture Engineering), Panchkula, Haryana

Table 9.2: Performance and cost economics of tractor operated potato digger-cum-elevator.

Performance	
Field Capacity, ha/h	0.2
Field efficiency, %	60-70%
Potato exposed	100%
Labour required to pick up potato simultaneously	20 persons
Economics	
Cost of machine, ₹	25,000
Cost of operation, ₹/ha	750
Custom hiring rate, ₹/ha	1,500
Benefit, ₹/ha	750
Command area of one machine, ha	30
Benefit over conventional system by one machine in one year, ₹/year	22,500
Benefit Cost ratio	1.50
Payback period, years	One



Fig. 9.1: A view of two row tractor operated potato digger-cum-elevator.



Fig. 9.2: Tractor operated potato digger-cum-elevator in operation.

List of manufacturers of tractor operated potato digger-cum-elevator

Refer Appendix 'A' {S. No. 27, 31, 44, 46}