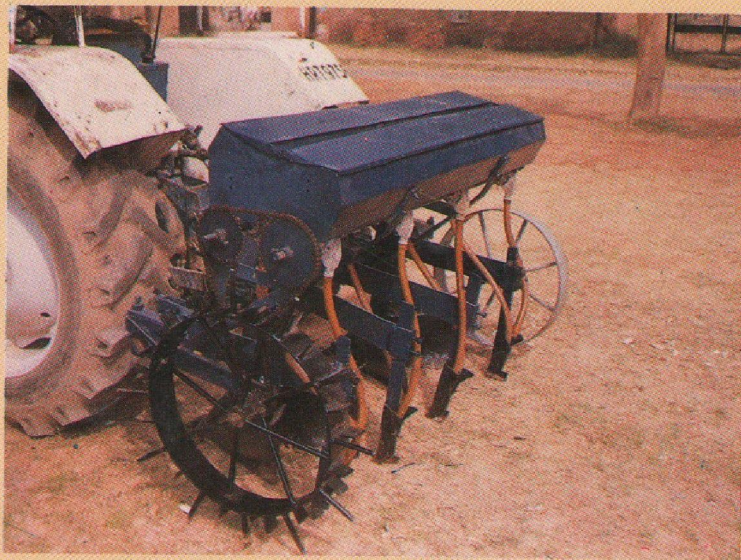


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TRACTOR MOUNTED RIDGER SEEDER

A SUCCESS STORY



ALL INDIA COORDINATED RESEARCH PROJECT ON
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Introduction

In the South Western region of Haryana, there is acute shortage of water. The farmers depend to a great extent on monsoon rains for both Kharif and Rabi crops. The average annual rainfall is about 350 mm. In kharif the farmers are either raising pearl-millet in the month of July-Sept. or conserving the moisture for cultivation of Raya and Chickpea (gram). Canal water is available but is hardly sufficient for irrigating one-third of the area. It is, therefore, necessary to adopt water conserving technologies. Sowing of crops in ridges and furrows is one of the possibilities. For this purpose the work on developing a ridger seeder capable of sowing both on ridges and in furrows was taken up.

Traditional Sowing Practices

The traditional method of sowing is on flat-bed with row spacing of 30-40 cm. The sowing is done using traditional *pora* method (sowing behind *desi* plough) by small and marginal farmers while other farmers use seed-sum-fertilizer drills. Crust formation and failure of crops due to poor germination especially in dry farming are common problems with the existing practices. Ridge furrow system of planting of *Kharif* and *Rabi* crops offers wider scope not only in rainfed areas but also under irrigated conditions.

Salient Features of Machine Developed

The ridger seeder was designed such that it can sow the seeds both in ridges and furrows. It prepares the ridges and furrows in the field and seeds are sown on the sides of ridges for *Kharif* pearl-millet and in furrows for *Rabi* oilseeds and

pulses. Thus it prevents the *Kharif* crops from excessive rains thereby preventing crust formation. Also it exploits the lower layer of soil for placing the seed during sowing of *Rabi* crops thus ensuring good germination and plant emergence. Due to the ridge and furrow system, the water requirement is significantly reduced.

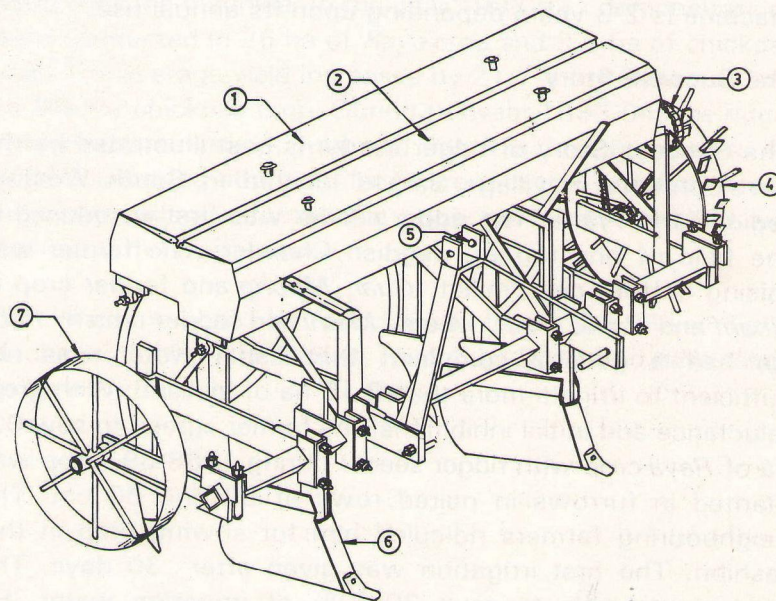
The ridger seeder consists mainly of a three point hitch, two-bottom ridger which makes the ridges and furrows, and a four row seed drill using fluted roller seed metering mechanism. The ridger seeder is shown in Fig. 1. The depth of sowing can be adjusted independent of furrow depth. Seeding is done on top of ridge in paired rows at spacing of 30 cm followed by 60 cm spacing between the pairs of rows.

Evolution of the Design

Under the dryland research project of HAU-Hisar, work was undertaken on cropping system to be taken under dryland farming conditions. Paired row sowing of crops like *Raya*, gram and pearl-millet resulted in significant water conservation. In order to popularize this system, a ridger seeder was developed which was capable of sowing the crops on ridges or in furrows as desired.

Performance of the Machine

The ridger seeder requires a 35 hp tractor to operate. This is suitable for light and medium soils. The average field capacity of the machine is 0.75 ha/h. By using the seeder to sow on ridges or in furrows, a 30-40% saving in irrigation water and



- | | | | |
|-----|-----------------|-----|---------------|
| (1) | SEED HOPPER | (2) | FERTI. HOPPER |
| (3) | DRIVE SYSTEM | (4) | DRIVE WHEEL |
| (5) | HITCH | (6) | RIDGER |
| (7) | TRANSPORT WHEEL | | |

Fig.1: Tractor Mounted Ridger Seeder

15-20% increase in crop yield is achieved.

The cost of the machine is Rs 8500/-. The cost of operation with this machine works out to Rs 105 / ha as compared Rs 275-280 / ha with traditional technology. Besides benefits in cost of operation, there is 70-80% saving in labour and 70-80% saving in time of sowing. The payback period of the machine is 2-3 years depending upon its annual use.

The Success Story

The Success Story of ridger seeder is best illustrated by the developments in village Sarsod located in South Western region of Haryana. The ridger seeder was first introduced in the field of one farmer, Jagdish Chander. The farmer was raising cotton, pearl-millet, *Guar*, *Moong* and fodder crop in *Kharif* and *Raya*, gram, wheat, *Methi* and fodder crop in *Rabi*. He had a general complaint that canal water was not sufficient to irrigate more than 8-10 ha of his land. With great reluctance and initial inhibitions, the farmer agreed to sow 0.8 ha of *Raya* crop with ridger seeder during 1988-89. Crop was planted in furrows in paired rows of 30 and 60 cm. The neighbouring farmers ridiculed him for sowing crop in this fashion. The first irrigation was given after 30 days. The farmer was able to save 30-40% of irrigation water. He utilized only 50 minutes of canal water to irrigate land as compared to 80 minutes earlier. This gave him some solace. The farmer was ultimately able to obtain 25% higher yields.

The farmer now became enthusiastic about the technology and in year 1989-90, he planted 1.6 ha of *Raya* crop and 0.8 ha of gram crop. He obtained 20% higher yields on *Raya* and 25% higher yields of gram. The following year he again

planted 1.6 ha of *Raya* and 2.4 ha of gram. He obtained yields of 20 q/ha for *Raya* and 13.8 q/ha of gram which represented an increase of 5 q / ha for *Raya* and 7.5 q/ha for gram crop over previous yields.

As a result of good performance of ridger seeder during three years, more and more farmers were interested in sowing their fields with the machine. In the year 1992-93, demonstrations were conducted in 26 ha of *Raya* crop and 9.6 ha of chickpea crop. The average yield increased by 21.7% for *Raya* crop and 16.6% for chickpea crop. During the year 1993-94, the ridger seeder became very popular and this was demonstrated to 45 farmers covering about 60 ha of area. In this process, nearly the entire village adopted the ridge and furrow method and sowing with ridger seeder.

The machine can be purchased from M/s Rajiv Farm Machinery 146, Auto Market, Hisar-125 001, who have taken up its manufacture.

Specifications of Tractor Mounted Ridger Seeder

1.	Source of power	35 hp tractor
2.	Crops for which it is suitable	<i>Gram, Raya, cotton, Moong, soybean, pigeon pea, Gour</i>
3.	Cost of machine, Rs	8500/-
4.	Weight, kg	200
5.	Field Capacity, ha/h	0.75-1.00
6.	Number of furrow openers	4
7.	Placement of seeds and fertilizer	Fertilizer placed 15 to 20 mm below seed
8.	Depth of sowing, mm	Adjustable, upto 50
9.	Seed metering mechanism (a) Type (b) Adjustment of seed rate	Fluted roller mechanism By changing exposed length of flutes
10.	Fertilizer metering mechanism	Cast iron / Aluminium plates with cells.
11.	Main frame, mm	70x70x6 MS angle iron square box 1700 long
12.	Seed box, mm	1410x400x180
13.	Fertilizer box, mm	1410x400x180
14.	Ground wheel diameter, mm	600 with lugs

Appendix-II

Production and Supply of Machine

Sl. No.	Organization	No. of Prototypes supplied
1.	Directorate of Extension Education CCS, HAU, Hisar	15
2.	Other departments of CCS, HAU, Hisar	16
3.	Department of Agriculture, Haryana	12
4.	CIAE, Bhopal	15
5.	Tractor Training Centre, Hisar	1
6.	PAU, Ludhiana	1
7.	Central Research Institute for Dryland Agriculture, Hyderabad	3
8.	ICRISAT, Hyderabad	3
9.	Dryland Agricultural Research Station, Jammu	1
10.	Dryland Agricultural Research Station, Jodhpur	3
11.	IFFCO	5
12.	KRIBHCO	5
13.	Individual farmers	2
	Total	82