
Happy Seeder based Lentil cultivation - An emerging option to manage crop residues

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Published on: March 31, 2026

ABSTRACT

Adoption of Happy Seeder for lentil cultivation increases overall productivity and reduces cultivation costs. Many farmers used to burn the crop residues after harvesting, addressing pollution of environment and soil health. The Happy Seeder helps to overcome the issues by managing crop residues, land preparation, and sowing seeds at a single time, saving labour, time and other inputs resulted in enhancing production efficiency.

INTRODUCTION

Bihar, Lentil (*Lens culinaris* L.) is one of the most important pulse crops. It is one of the most ancient pulse crops used in human diet as a rich source of protein and fibre. Bihar ranks 9th in terms of pulse production with a contribution to 0.52 million tons to the national pool value. The major lentil growing districts of Bihar are Patna, Aurangabad, Nalanda, Gaya, Lakhisarai, Seikhpura and Jahanabad with a state productivity of 9.85 q/ha (Directorate of Economics and Statistics, 2022-23). To a large extent, kharif crops like paddy and millets are harvested using

combine harvester machine. A large volume of crop residues are generated after harvesting of crops. As per the record of Ministry of New and Renewable Energy India produces about 500 million tonnes of crop residues each year. Out of total crop residues produce in the country, 34 % is contributed by rice crop only. In Bihar, 25.29 million tonnes of crop residues generated every year and 3.19 million tonnes of residues are burned annually (Ministry of New & Renewable Energy, 2009, Govt. of India, New Delhi and Pathak, H. et. al (2010). After harvesting of the kharif crop, farmers have very less time available for sowing rabi crops. Due to labour shortages and the high cost of removing crop residues from the field, many farmers resort to burning the residues. This practice leads to a decline in soil organic matter and overall soil fertility. Burning also raises the temperature of the root zone, which adversely affects soil health, and causes the loss of beneficial soil microorganisms due to the heating effect.



Source: Krishi Vigyan Kendra, Birauli, Samastipur

In Bihar, lentil is generally sown by broadcasting techniques after kharif crops harvesting. Farmers used to plough the field for two to three times using rotavator followed by planking for lentil sowing. But under the scenario of labour shortage and less preference of crop residues, farmers used to practice traditional method of sowing. In this situation, mechanised sowing using Happy Seeder/Turbo Seeder/Super Seeder would be a holistic approach for the farmers of Bihar in lentil cultivation.



Source: Krishi Vigyan Kendra, Birauli

ROLE OF HAPPY SEEDER IN CROP RESIDUE MANAGEMENT

Happy seeder plays a pivotal role in crop residues especially under rice-wheat cropping system. Conventional techniques of crop residues management generally include burning without recycling them. Zero-till seed-cum-fertilizer drill machine like Happy Seeder helps in direct drilling of seeds in the presence of crop residues (loose and anchored residues up to 10 tonnes/ha). This machine helps to conserve moisture and nutrients in the soil as well as also

useful in controlling the weeds in the crop field. Gradual decomposition of crop residues on the soil surface enhances the mobilization of soil nutrients, enriches the organic carbon status, enhances the microbial activity and contributes to overall improvement of soil quality index. Happy Seeder is associated with multiple operations like crop residues management, land preparation, and sowing that helps in saving time, inputs and labour. This one-time operation enables farmers to sow rabi crops like wheat/pulses within the narrow sowing window. This machine also facilitates an ecological balance and ensures long-term sustainable farming.



Happy Seeder sown lentil plot after finger millet harvesting at KVK, Birauli

COMPARISON BETWEEN CONVENTIONAL AND HAPPY SEEDER SOWING

Based on the demonstration conducted on Happy Seeder sown lentil by Krishi Vigyan Kendra, Birauli, Samastipur during Rabi season, 2023 it has been shown that Happy Seeder technology significantly improved lentil yield with grain yield of 14.49 q/ha compared to conventional method of sowing (Table 1).

The production economics of lentil cultivation showed a significant impact in Happy seeder technology which fetches 26.52% higher net profitability in compared to Conventional method of lentil cultivation (Table 1).

Table 1. Comparison between conventional and Happy seeder sowing techniques

Particulars	Happy seeder sown-lentil	Conventionally sown-lentil
Yield (q/ha)	14.49	12.56
Cost of Cultivation (₹/ha)	31200	34400
Gross Returns (₹/ha)	86940	75360
Net Returns (₹/ha)	55740	40960
Benefit: Cost ratio	2.79	2.19

CONCLUSION

Adoption of Happy Seeder technology offers an emerging option to enhance agricultural sustainability. Integration of crop residues management, land preparation, followed by sowing in single pass reduces cost of cultivation, saves time, inputs and maintains soil health. Lentil cultivation through Happy Seeder technology not only boosts crop productivity but also helps to conserve environment and provides sustainable livelihood security for the farmers of Bihar.