

SUCCESS STORY

(2018-19 to 20-21)

DEVELOPMENT AND EVALUATION OF STRAW CHOPPER- CUM-SEEDER FOR SMALL HOLDINGS OF ODISHA

(Project ID: OR/RKVY-AGRE/2017/794)



**DEPARTMENT OF FARM MACHINERY AND POWER
COLLEGE OF AGRICULTURAL ENGINEERING AND TECHNOLOGY
OUAT, BHUBANESWAR**

1. **Title of the Project:** **Development and evaluation of straw chopper cum seeder for small holdings of Odisha**

2. **Category (Agriculture, Horticulture, Soil Conservation, etc.) -To narrate significant/ the success story of the project:** **Agricultural Engineering**

A tractor operated straw chopper cum seeder has been developed for line sowing of pulse seeds in combine harvested fields under residual moisture and zero-till condition; thereby reducing the time, labour and cost involvement in management of combine harvested straw followed by line sowing of pulse seeds. Furthermore, the chopped straw facilitates moisture conservation and sowing in zero-till condition facilitates utilization of residual moisture for better germination of line sown pulse seeds.

3. **Background of the project. (Issues, Challenges, Gaps)**

Issues:

With increased adoption of combine harvesters by the farmers, today, straw management has become a burning issue at the state and national level. Straw burning being the easier option at this instant for the farmers to get their field free for land preparation and sowing pulse seeds thereafter, the environmental pollution has been the major concern apart from degradation of soil, and destruction of micro-organisms in the soil due to rise in soil temperature.

Challenges

Management of the combine harvested straw is a typical challenge before land preparation for pulse crops. Delay in land preparation also hampers sowing and prohibits pulse crop production; thus, the rice-fallow area increases adding further problems.

Gaps

Straw choppers have been developed; but, farmers of this region are hardly aware of this machine. Tractor operated Zero till seed drill was introduced in this region few years ago; but, in combined harvested fields this machine cannot work due to clogging of straws in tynes. This machine can work only when the fields are free from straws which prompt the farmers to go for straw burning without caring for environmental pollution.

4. **Pre-Implementation Issues**

a) **Supporting images/ Videos / Baseline information**

In Odisha, 12 lakh hectares area fall under Rice-fallow system which offers huge scope for pulse cultivation provided effective technology is made available. Introduction of tractor operated zero till drill for line sowing pulses under residual moisture in Rabi season following

Kharif paddy has been successful but for the combine harvested fields. Straw burning in combine harvested paddy fields seems to be comparatively easier job for farmers which certainly results in environmental pollution besides losses of nutrients available in the burnt out straw.

5. **RKVY Initiative (feedback from stakeholders activity knowledge changing the practice, policy, investment through amount spent, year of intervention)** Survey work on the status of paddy straw management and economics of pulse sowing methods for paddy-pulse cropping system in Odisha was undertaken prior to the initiation of the development of machine during 2017-18. During subsequent years, fabrication of prototype of tractor operated straw chopper cum seeder started during 2018-19, which led to the development and successful evaluation of the final prototype during 2020-21 both in OUAT Research Farm and farmer's field in village-Resinga, Nimapara, Puri.
6. **Technology/Tools development** Development of a Tractor operated Straw Chopper cum Seeder with fluted roller metering mechanism for metering of pulse seeds, inverted Y-shaped flails arranged on periphery of a hollow shaft for chopping straws and inverted T-type tynes for opening furrows simultaneously.
7. **Outcomes/Impacts of the project.**
a) **Supporting images/ Videos** Development of a Tractor operated Straw Chopper cum Seeder by which chopping of combine harvested left over straws and line sowing of pulse seed in furrows made by inverted 'T' type tynes are accomplished simultaneously.
8. **Citation of 3-4 sentences from 4 to 5 beneficiaries that bring a change (Beneficiaries details to be mentioned):** Sri Sangram Patra, Vill-Resinga, Nimapara, Puri expressed satisfaction during field evaluation in his field due to accomplishment of straw chopping and line sowing of pulses (greengram) in less time and labour requirement.
9. **Additional Information:a)List of project parameters/donors**
 - a) **List of equipment purchased:**
 - Tractor, 42 hp
 - Tractor, 60 hp
 - Happy seeder
 - Zero till drill
 - Plasma cutting machine
 - Photo Spectrometer
 - Digital hardness tester
 - Tri-axial accelerometer

- Solid works software

Furniture: Chair, Almirah, book case

Infrastructure: Workshop- 2100 sq.ft

b) Links to supporting materials:

- i) Photograph of field evaluation:



Field evaluation of the developed tractor operated straw chopper cum seeder in Farmers' field, Village-Resinga, Nimapara, Puri



Prof K. C. Barik, Nodal Officer, RKVY Projects, OUAT and Dean of Research, Prof S. K. Dash, Dean, CAET, Prof D. Behera, Head, Dept of Farm Machinery & Power, Prof N. Panigrahi, RKVY Coordinating Cell, and scientists of Department of Farm Machinery & Power attended the field evaluation of the developed tractor operated straw chopper cum seeder in OUAT Research Farm

ii) News published: TV/news paper:



Coverage of Demonstration of Tractor operated Straw Chopper cum Seeder in Farmers' Field, Village-Resinga, Nimapara, Puri in "KrushiDarshan" programme of DD-6 Odia.on 23.02.2021