SELF PROPELLED 10 ROW PADDY SEEDER

Design and developed by: ANGRAU Hyderabad

All India Coordinated Research Project on
FARM IMPLEMENTS AND MACHINERY
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Introduction

In the state of Andhra Pradesh, shortage of labour during peak planting season creates a bottleneck in the area for transplanted rice. For getting optimum yield, transplanting of 30-50 hills/m^2 at row spacing of 200 mm and 3 to 5 seedlings per hill are generally practiced. For expanding summer rice area, puddle seeding of pre-germinated seeds is recommended. In rainy season this technique can not be adopted due to problem of unpredictable rain and water accumulation in the field. However, in flood prone areas, puddle seedling of short duration rice is a viable alternative.

Fig. 1. Self-propelled 10 row paddy seeder.

Traditional Practice and necessity of development

Traditionally, rice is grown by the age-old manual transplanting method and hand broadcasting during the rainy season. To save seed and water requirements, and to control weeds, a manual seeder was designed by the ANGRAU centre so that row to row spacing and proper plant population is achieved. The 10-row self propelled pre-germinated rice seeder operates in the puddle soil and seeds are sown below soil surface. This helps proper establishment of the plant and is highly suitable for operation during rainy season.

Evolution and Design Process

On the basis of identified requirement in the region 10 row seeder was developed and evaluated in research farm and farmers field. The seeder (Fig. 1) consisted of seed drum, transport wheel, ground wheel, float, seat, clutch and 3.7 kW diesel engine as source of power. The seeder unit floated on puddle soil and can move easily. The drive to the seeder drum unit was provided through the seeder wheels.

Salient Feature of the Machine

For sowing by seeder, the germinated radicles of 1 to 2 mm were used. The machine simple in design placed the seed below the puddle soil surface. There was no wash out of radicles even in rain.

Performance of Machine

The machine was tested at farmers field in light and heavy soil. The performance results of machine observed are as below:

Field capacity, ha/h	0.25
Working width, mm	2000
Speed, kmph	2.4
Field efficiency, %	76
Row spacing, mm	200
Hill spacing, mm	100
Seed rate, kg/ha	7
Seed placement, mm	Below soil surface
Number of seed per hill	4 to 6
Labour requirement	One person
Fuel consumption, l/h	1.0

Specification

Type of machine	Self propelled
Overall dimensions, mm	2850 x 2500 x 1300
Power source, kW	3.7 kW diesel engine
Working width, mm	2000
Row spacing, mm	200
Number of rows	10
Capacity of each seed drum, kg	3
Seed dropping mechanism	2 set holes provided on the periphery of drum
Seeder drum	Cylinder shape

Labour requirement and economics of operation (comparative performance)

Parameters	VST Transplanter	Manual paddy row seeder	Self propelled paddy row seeder
Use	Transplanting of mat type paddy nursery	Sowing of pre-germinated paddy seed	Sowing of pre-germinated paddy seed
Power source	2.61 kW hp diesel engine	Two men labour	3.7 kW diesel engine
Make	Chinese model	ANGRAU	ANGRAU
Cost of machine, Rs	1,28,000.00	2,500.00	35,000.00
Cost of operationRs/ ha	1,200.00	1,600.00	500.00
Labour requirement:			
Skilled	One	--	One
Unskilled	Two	--	One
Field capacity, ha/h	0.16	0.08	0.25
Fuel onsump-tion, l/h	0.8	--	1.0
Drawback	Raising of mat type nursery	Suitable for only Rabi season	Suitable for only Rabi season

Present status of Technology

The equipment has been evaluated under laboratory and at farmers fields during the last four years. It was also tested under CIAE , Bhopal condition , proving its usefulness for Madhya Pradesh . it is to be popularized on a large scale.

List of Manufacturers

1. M/s AP State Agro Industries Development Corporation, 504, Hemitage Office Complex, Hill Fort Road, Hyderabad-500 004
2. M/s Vishwakarma Industries, Plot No.5, Road No.6, Industrial Estate, Kattedan,Hyderabad-500 077
3. M/s Vishwakarma Engineering Company, Plot No.138, Road No.26, Industrial Estate, Kattedan, Hyderabad-500 077
4. M/s Karshak Industries, No. 18-3014, Chhatrinaka, Laldrawaja, Hyderabad-500 253