Paddy Drum Seeder

I Introduction

Draft animals and human labours continue to be the major power source for agricultural production in small and marginal land holdings as well as in hilly areas indicating a very low level of mechanization. With the increase in maintenance cost and also reduction in population of draft animals, human energy is predominantly used in agriculture for all operations starting from seedbed preparation to threshing and transportation. In order to improve the efficiency of human labours, simple, suitable and efficient machines or implements should be available to raise the agricultural production in the above mentioned areas. The transplanting of rice seedlings which is a highly labour-intensive and expensive operation can be replaced by direct seeding that can reduce labour needs by more than 20 per cent in terms of working hours requirements. The seeder consists of a seed drum, main shaft, ground wheel, floats, and handle. Joining smaller ends of frustum of cones makes the seed drum. Nine numbers of seed metering holes of 1 cm diameter are provided along the circumference of the drum at both the ends for a row-to-row spacing of 20 cm. Two floats are provided on either side to prevent restrict the sinkage and to facilitate easy pulling of the seeder

II Specifications

Length (cm)	200
Width (cm)	150
Height (cm)	64
Number of rows sown	6 and 8
Row to row spacing (cm)	20
Number of seed metering holes	9
Diameter of the metering holes (cm)	1
Number of floats	2
Weight (kg)	10
Capacity (ha/day)	1.1

III Details of the direct-seeding technology (on per-hectare basis)

1. Seed rate required - 40 kg
2. Time required for direct seeding - 300 minutes (5 hours)
3. Labour required - 3 persons [one for pulling the drum seeder, one to help the puller to lift the machine at the end of the field, and one to fill/refill the seed in the drums].
4. Weedicide use is a must, and if needed (in fields where weed problem is high), a second application at 30 days after sowing is also done in addition to the first application made within 2 days after sowing.
5. Paddy seeds are filled to 3/4 level in each of 4 drums, and once the seeder is pulled, seeds fall in 8 rows @ 20 cm width between the rows.
6. Conoweeders are fit into the 20cm gap between rows, and they are run across the field 3-4 times, starting from 20 days after sowing.

III Water management

No standing water after seeding. The field is kept wet until panicle initiation stage and from then on 2-3 cm standing water until 10 days before harvesting.

IV Weed management

Weedicide is a must once or twice. Butachlor just 1-2 days after seeding, and if necessary 2.4-D, sodium salt application at 30-35 days after seeding.

V Operation

Conoweeder is run in one direction only, either E-W or N-S, i.e., in the direction in which the drum-seeder was pulled.

VI Advantages of Paddy Drum Seeder

1. Direct seeding method avoids any raising of nursery, pulling up seedlings and transplanting them so that labour requirement for crop establishment is negligible.

2. Farmers can take up paddy cultivation at any time, right away, as there is no requirement or delay of raising a nursery.

3. Paddy cultivation using direct seeding method can be taken up in fields which have heavy weed infestation; although this means that weedicide application is a must.

4. Duration of the crop can shortened by 7-10 days compared to traditional practice.

VII Comparison between traditional transplanting and direct seeding per hectare area

Particulars	Traditional method of transplanting	Direct seeding
Seed rate	80-90 kg	40 kg
Days to transplant	30 - 40 days nursery	0 days
Cost of raising nursery (Rs)	3500	0
Labour required for transplanting man-days/ha	50	3
No of effective tillers / sq. meter	13	15
No. of grains / panicle	165	186
Average yield (Kg/ha)	6250	6500

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