

Wet Direct Seeding of RICE



অসম চৰকাৰ



GOVERNMENT OF ASSAM



www.rkbassam.in

What is Wet Direct Seeding of rice?

In wet direct seeding, seed is normally pre-germinated prior to seeding onto recently drained, well puddled seedbeds. Wet direct seeding is more commonly used in rainfed irrigated areas.

Why Wet Direct Seeding?

- ✍ Easier (less drudgery) and timely crop establishment
- ✍ Reduced labor costs for crop establishment
- ✍ Possible savings in water use

How Wet Direct Seeding is done?

Main field Preparation

Start field preparation at least 2-3 weeks ahead of seeding. The ploughing intervals should be spaced such that the weeds germinating after the first round of ploughing are ploughed up in the next round. Level the fields, best by maintaining a shallow water layer in the field, preferably by Laser land leveler. Puddle the field properly before sowing. The basal fertilizer dose is applied at the time of field preparation.

Seeding

Drum seeding technique involves direct seeding of pre-germinated paddy seed, putting in drums made up of fiber material to dispense the seeds evenly in lines spaced at 20 cm apart in levelled and puddled fields in wet condition. About 40-45 kg paddy seed is used for drum seeding in one hectare area. Ideally, for drum-seeding, the field should be saturated, but there should be no stagnating water. Excess moisture / water leads to decay of seed. Care should be taken not to delay sowing, as seeds with long shoot growth are not suitable for drum seeder. In a single operation it covers 8 rows at 20 cm. It is made up of plastic material and thus it weighs less and is easy to operate. The seed drum is hyperboloid in shape with 200 mm diameter. The drum has 8 numbers of seed metering holes of 9 mm diameter. Baffles are provided inside the seed-drum between the seed holes to ensure the uniform seed rate in operation as well as to ensure hill dropping of the seeds. Four drums with two planting rows each are assembled to form eight rows of planting at a stretch. Wheels are provided at both the ends of the drum gangs. These wheels of 60 cm diameter are made up of plastic material to provide floating characteristic. Wheel diameter is two feet. One square shaft, handle base and handle with four seed drums are

assembled together. The handle is meant to pull along the drums.

Using the drum seeder:

- ✘ Assemble the drum seeder and tighten all the bolts and nuts before use.
- ✘ Fill 2/3 part of the drum with pre-germinated seeds.
- ✘ Loose the lid of the drum and lock securely.
- ✘ Pull the seeder manually at a normal walking speed (1 Km/h) keeping the drum seeder in the backward position.
- ✘ The wheel impression in the first pass will serve as a benchmark for subsequent passes
- ✘ In the second pass, the wheel should pass on the wheel impression of the previous pass to maintain the row-to-row spacing of 20 cm.
- ✘ Occasionally watch the dropping of the seeds through the holes of the seeder to check blockage
- ✘ Refill the drums up to 2/3rd of its capacity, when it reaches one fourth of its capacity.

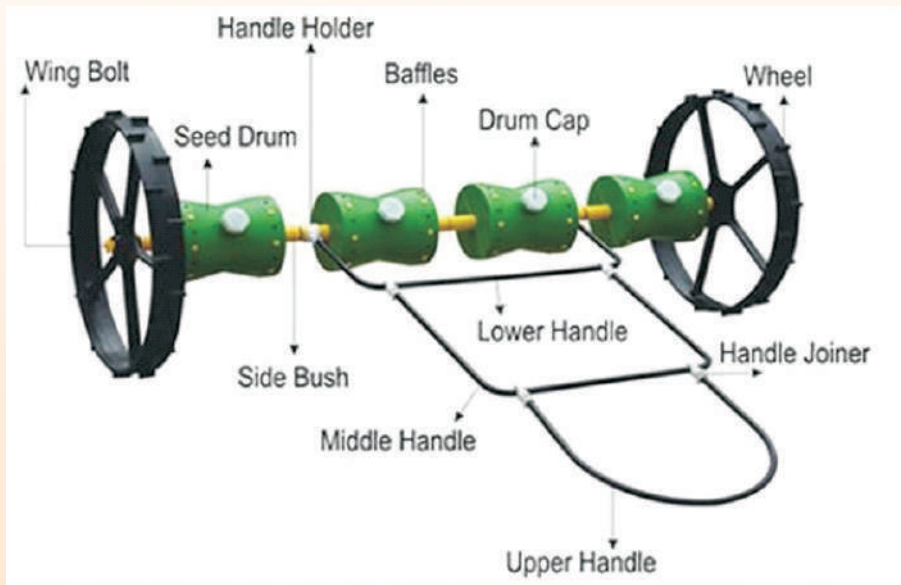


Fig : Different parts of a drum seeder

Salient features

- ✍ Time saving
- ✍ Labour saving
- ✍ Uniform seed sowing
- ✍ Reduces the seed rate and cost of cultivation
- ✍ Light in weight and easy to handle, less drudgery
- ✍ One hectare area is sown by drum seeder in one day

Time of sowing:

The optimum sowing time for drum seeding of rice in *Sali* season is May 20 to June 5 and for early *Ahu*, second fortnight of January. The date of sowing during the *Sali* season can be adjusted, depending upon onset of monsoon rainfall.

Fertilizer management

For DSR, the fertilizer recommendation in *Sali* season is 60-20-40-5, and in *Boro* season it is 60-30-30-5 kg/ha of N-P₂O₅-K₂O-Zn. Nitrogen is applied in 3 splits i.e. 1/3rd at 15 days after emergence, 1/3rd at maximum tillering, and 1/3rd at panicle initiation. In addition to this, if submergence occurs during *Sali* season, 20 kg N and 20 kg K₂O per hectare is applied 5-7 days after recession of flood to facilitate regeneration, and boost recovery from flood-shock.

The detailed schedule and method of applying all nutrients is given in the table-

Fertilizer doses (kg/bigha) in *Sali* and early *Ahu* season

Stage of fertilizer application	Name of fertilizers	Fertilizer application (kg/bigha)				Application method
		Early <i>Ahu</i>		<i>Sali</i>		
		Through DAP	Through SSP	Through DAP	Through SSP	
Basal	DAP	9	-	6	-	Broadcast & incorporate in soil at the time of field preparation
	SSP	-	25	-	17	
	MOP	7	7	9	9	
	ZnSO ₄	3	3	3	3	
15 days after crop emergence	Urea	2	6	3	6	Broadcasting
Maximum tillering after first weeding	Urea	6	6	6	6	Broadcasting
Panicle initiation, after second weeding	Urea	6	6	6	6	Broadcasting
Additional fertilizer 5-7 days after the flood recedes	Urea	--		6		Broadcasting
	MOP	--		4.5		

Note:

- ✗ Stop urea broadcast, in case Bacterial leaf blight symptoms appear.
- ✗ Apply ZnSO₄ in soils deficient in zinc once in three years.
- ✗ As far as practicable, drain out standing water before top-dressing of fertilizer.

Weed management

Keep the field weed-free, especially early in the season. Weeds do the most of the damage in the early crop stage. But control in later stage is also important to prevent seed setting by the weeds

Hand weeding:

First weeding with paddy weeder or hoe, 3 weeks after sowing and second weeding with paddy weeder or hoe, 6 weeks after sowing should be done.

Herbicide Use:

Herbicides should be selected based on present and even previous weed pressure in the field.

Select suitable and need-based herbicide (s) from the table given below:

Table : Detail of herbicides with doses

Sl No.	Technical name	Dose (ai/ha) ml	Product dose (ml or g /ha)	Time of application	Remarks
PRE-EMERGENCE					
1	Pretilachlor with safener 30.7 % EC	500	1629 ml	Apply within 0-3 days after seeding using 375-500 lit/ha water volume. Good soil moisture is important for efficacy	They may be used in rainfed ecology or their cloudy weather conditions
2	Oxadiargyl 80% WP	90	112.5 g		
POST-EMERGENCE					
1	Bispyribac-sodium 10% SL	25	250 ml	Spray 15-25 days after emergence using 300 liter water/ha when weeds are 2-4 leaf stage .Note: Field should not be flooded at the time of herbicide application, however it should not be too dry (There should be sufficient soil moisture for better efficacy of the applied herbicide)	Weak on sedges
2	Pyrazosulfuron ethyl 10% WP	20-25	200-250 g		Only controls sedges
3	Metsulfuron methyl 10% WP + chlorimuron ethyl 10% WP	4 (2+2)	20 g		Effective mainly on broadleaf weeds
4	Ethoxysulfuron 15% WDG	18	120 g		Only controls sedges
5	Bispyribac-sodium SL + pyrazosulfuron WP	25+20	250 ml + 200 g		Grassy & Sedges
6	Fenoxaprop-ethyl with safener 6.9 EC (6.7% w/w)+ ethoxysulfuron 15% WG/WDG	90 + 18	1300 ml + 120 g		

Given below are some of the recommended herbicide-combinations. Depending on weed flora, follow the application timing and doses as per above table:

- Pretilachlor with safener (PE) fb Bispyribac-sodium (POE)
- Pretilachlor with safener (PE) fb Bispyribac-sodium + Pyrazosulfuron
- Bispyribacsodium (POE) + Pyrazosulfuron

**fb : followed by*

Irrigation

Application of 5 cm post-sown protective irrigation is recommended, 3 days after disappearance of ponding-water in medium and heavy soils

Plant protection measures

Apply, if threshold levels of pests are present in the field. Follow plant protection measures as per State recommendations.

Harvest and post-harvest

- Harvest when 80-85% of the grains attain physiological maturity i.e. visually straw-colored.
- Minimize the time during which the harvested plants remain in the field, and avoid field drying. Make sure that the panicles stay dry.
- Thresh and dry within two days after harvesting. Sun-drying is best on a mat or plastic sheet, keeping the thickness of the grain layer at 3 to 5 cm.
- Clean thoroughly by winnowing. Store the rice in a cool, dry, and clean area.

- The World Bank is the funding agency of APART
- Department of Agriculture, Govt. of Assam is the nodal department for APART
- ARIAS Society is the State level coordinating and monitoring agency for APART
- Assam Agricultural University is one of the implementing agencies of APART, imparting scientific support.
- International Rice Research Institute (IRRI) is the rice global leader providing technical support for paddy value chain in APART