



## Direct Seeding Of Rice (DSR)

### Why in news?

Farmers could adopt 'direct seeding of rice' (DSR) in place of conventional transplanting.

### Why is DSR encouraged now?

- Punjab and Haryana (granary states) could face a shortage of labourers to undertake transplantation of paddy in the upcoming kharif season.
- This is mainly because the seasonal migrants from Bihar and Uttar Pradesh who usually arrive by early June, may not come in time.

### How is DSR different from normal transplanting of paddy?

- **Conventional transplantation** - Farmers prepare nursery seedbed in the 5-10% of the area to be transplanted.
- Here, the paddy seeds are sown and raised into young plants.
- These seedlings are then uprooted and transplanted 25-35 days later in the main field.
- **DSR** - There is no nursery preparation or transplantation. The seeds are directly drilled into the field by a tractor-powered machine.
- 'Lucky Seed Drill' developed by the Punjab Agricultural University (PAU) can both sow seeds and simultaneously spray herbicides.
- This machine is different from the 'Happy Seeder', which directly sow wheat on combine-harvested paddy fields.

### Why spray herbicides along with sowing seeds?

- **Wateracts as a herbicide for paddy** - The threat from weeds recedes once tillering (stem development) stage is over.
- The need to flood the fields will also be over.
- For the first three weeks or so after transplanting, the seedlings have to be irrigated daily to maintain a water depth of 4-5 cm.
- Farmers continue irrigating every 2-3 days even for the next 4-5 weeks, when the crop is in the tillering stage.

- The underlying principle here is simple: Paddy growth is compromised by weeds that compete for nutrition, sunlight and water.
- Water prevents growth of weeds by denying them oxygen in the submerged stage.
- Aerenchyma tissues in paddy allow air to penetrate through their roots.
- **In DSR, water is replaced by real chemical herbicides.**
- Farmers have to only level their land and give one pre-sowing irrigation.
- Once the field has good soil moisture, they need to do two rounds of ploughing and planking (smoothing of soil surface).
- This is followed by sowing of the seeds and spraying of herbicides.

### What are these herbicides?

- There are two kinds, called pre-emergent (applied before germination) and post-emergent (sprayed 20-25 days after sowing).
- **Pre-emergent** -In this case, the herbicide used is Pendimethalin.
- The Lucky Seed Drill that sows paddy can also spray the chemical, which costs Rs 450-500 at one litre per acre.
- Alternatively, farmers can use an ordinary seed drill and apply the herbicide immediately after sowing.
- **Post-emergent** - They include Bispyribac-sodium (Rs 600-700 at 100 ml/acre) and Fenoxaprop-p-ethyl (Rs 700-800 at 400 ml/acre).

### What is the main advantage with DSR?

- **Water savings** - The first irrigation (apart from the pre-sowing) under DSR is necessary only 21 days after sowing.
- This is unlike in transplanted paddy, where watering has to be done daily to ensure submerged/flooded conditions in the first three weeks.
- **Labour** - About three labourers are required to transplant one acre of paddy in a single day.
- In 2019, transplanting labour costs were around Rs 2,400 per acre, which may double this time.
- The cost of herbicides under DSR will not exceed Rs 2,000 per acre.

### What are the drawbacks?

- As DSR demands more of herbicides, the **availability of herbicides** may become a problem.
- The **seed requirement** for DSR is also higher, at 8-10 kg/acre, compared to 4-5 kg in transplanting.
- **Laser land levelling**, which costs Rs 1,000/acre, is compulsory in DSR. This is not so in transplanting.

## How much area is likely to come under direct seeding of rice?

- The adoption of any new technology, be it Happy Seeder or Lucky Seed Drill, is ultimately dependent upon farmers feeling the need.
- The maximum area covered by DSR in Punjab was roughly 1.60 lakh hectares (lh) in 2015, which dropped in the subsequent years.
- It is expected to rise to 2-2.5 lh this time on the back of labour shortages.
- Even that would be hardly a tenth of the state's total 29-30 lh paddy area.

**Source: The Indian Express**



**IAS PARLIAMENT**  
*Information is Empowering*  
A Shankar IAS Academy Initiative