

Direct Seeding of Rice

Why in news?

Recently, the Punjab government has been actively promoting the direct seeding of rice (DSR).

What is direct seeding of rice (DSR)?

- **Definition** It is a planting method that involves *directly sowing of seeds* in the field.
- It requires *no nursery preparation or transplantation*.
- **Need of DSR** The conventional transplanting method require intense labour, continuous flooding of water and takes higher time and labour resources.

Transplanting Method of Rice

• It is a planting method that involves the *planting of seedlings or whole plants in the field or garden*.

- **Requirement** seed germination may occur inside the greenhouse.
- Advantages Weed management is easier and it requires less amount of seeds.
- **Disadvantages** <u>Slower maturation</u> of crops.
- It is *expensive* in comparing to DSR.
- It require *more usage of water* and thereby affecting the ground water table.
 - **Requirements** Soil suitability is crucial for the successful implementation of DSR.
 - **Soil texture** DSR should be *avoided in light-textured soils* as they do not retain water well.
 - It is more *suitable for heavy or medium-to-heavy-textured* soils which contains more clay and less sand, whereas light-textured soils have less clay and more sand.
 - **Iron content** Soil with severe iron deficiency, and weed problems must not be cultivated using this technique.
 - Even medium-textured soils are unsuitable simply due to their lack of iron.
 - In case iron supplements are being used, farmers should *apply ferrace iron*, which is green-coloured and not oxidised, rather than oxidised iron, which is brown in colour.
 - Lack of iron content can severely impact yields and lead to major financial losses for farmers.

What is tar-wattar technique?

- **Sowing of seeds** The paddy seeds are directly sown, roughly 20-30 days prior to when they would have been transplanted.
- **Soil levelling** The field is irrigated and laser leveled prior to the seeding process which is carried out using a seed drill or lucky seeder.
- **Seed treatment** The seeds soaked in a fungicide solution for eight hours, then dried for half a day before sowing.

- **Irrigation** The first round of irrigation is carried out <u>21 days after sowing</u>, followed by 14-17 more rounds at 7-10 day intervals, depending on soil type and the quality of the monsoon.
- The final irrigation takes place 10 days before harvest.
- The *traditional method requires 25-27 irrigations* in total.

What are benefits of DSR?



- **Saves water** This can <u>reduce water use by 15% to 20%</u> (the traditional puddling method requires 3,600 to 4,125 litres of water to grow a single kilo of rice).
- Saves labour DSR requires less labour and matures 7 to 10 days faster.
- **Ground water recharge** DSR offers avenues for ground water recharge as it *prevent the development of hard crust* just beneath the plough layer due to puddled transplanting.
- Straw management It <u>matures 7-10 days earlier</u> than puddle transplanted crop, therefore giving <u>more time for management of paddy straw</u>.
- **Higher yield** Research results have also indicated that yield, after DSR, are <u>one to</u> <u>two quintals per acre higher</u> than puddled transplanted rice.
- Environment benefits It leads to *lower GHG emissions*.
- **Labour welfare** Mechanized DSR provides <u>employment opportunities</u> for youth through service provision business model
- *<u>It increases total income</u>* by reducing cost of cultivation.

What are the major challenges associated with DSR?

- Irrational use In the race to avail the government incentives, some farmers <u>use DSR</u> <u>in unsuitable soils</u>, leading to the need for irrigation every second or third day.
- This completely *counteracts the water-saving benefits* of DSR, and in fact, ends up guzzling down more water.
- Less soil availability Only 20% of Punjab's soil is light-textured.
- Lack of iron content It should not be cultivated in sandy and loamy sand as these soils suffer from severe iron deficiency, and there is higher weed problem in it.
- **Higher seed rates** <u>Seed monopoly</u> automatically the price of seeds thereby reducing the income prospects for farmers.
- **Seeds exposed to birds and pests** Direct seeding *increases the vulnerability of seed* to get targeted by the pests and birds.
- Weed management There is higher growth of unsuitable plants in the DSR fields which compete the paddy crops and thereby reduce the yield.
- **Herbicide intolerance** While herbicide needs to be sprayed to control the weeds, irrational use make the <u>crops intolerant to herbicide</u>.

What lies ahead?

- Awareness drive A basic lack of awareness and understanding is holding DSR back.
- Thus, awareness should be created for rational use of DSR.
- **Educating farmers** Extensive training and a ready helpline be provided, to handhold the farmers through the whole process, from pre-sowing to harvesting.
- This can instill confidence among farmers regarding DSR's efficacy.

References

- 1. <u>The Indian Express</u> Slower Adoption of DSR in Punjab
- 2. IRRI Direct Seeded Rice

