



Direct-seeded Rice

For Prelims: Direct Seeded Rice (DSR), water stress, groundwater

For Mains: Benefits and issues of Direct Seeded Rice method of rice implantation

Why in News?

Recently, the state of Punjab was unable to achieve its target in the water-saving method (direct-seeded rice).

What is Direct Seeded Rice (DSR)?

- **Direct Seeded Rice(DSR)**, also known as the '**broadcasting seed technique**,' is a **water-saving method of sowing paddy**.
- In this method, **seeds are directly drilled into the fields. In contrast to the traditional water-intensive method of transplanting rice seedlings from a nursery to waterlogged fields**, this method saves groundwater.
- There is no nursery preparation or transplantation involved in this method.
- Farmers have to only level their land and give one pre-sowing irrigation.

What are the Advantages of DSR?

- **Require Less Number of Labours:**
 - DSR can **solve labour shortage problems** because like the traditional method it does not require a paddy nursery and transplantation of 30 days old paddy nursery into the main puddled field.
- **Avenues for Groundwater:**
 - It offers **avenues for ground water recharge as it prevents the development of hard crust** just beneath the plough layer due to puddled transplanting.
 - It matures 7-10 days earlier than the puddle transplanted crop, therefore giving more time for management of paddy straw.
- **Increase in Yield:**
 - According to the results from research trials and farmers' field survey, after this technique the yield is one to two quintals per acre higher than puddled transplanted rice.

What are the Major Issues Related to DSR?

- **Extreme climate:**
 - **High temperatures and deficient rainfall** are mainly to blame.
 - The temperature was in the range of 47-48 degrees Celsius on some days, whereas the ideal temperature is 42-43°C during the period.
 - **Farmers were hesitant** to choose DSR because their wheat crops had already suffered as a result of the heat wave.
- **Reluctance by Farmers:**

- **Due to a lack of support from the government** in the form of providing a good variety of weeds, and unable to supply uninterrupted electricity during the sowing season of DSR that's why farmers found it very difficult to irrigate the field using an electric motor.
- **Governance issues:**
 - Punjab Government's **uninterrupted electricity supply for puddling season which begins in mid-June** is not beneficial for DSR as its sowing season is between **early May to mid-June** and that's why it is beneficial for the traditional method.
- **Other challenges:**
 - It includes **closed canals, erratic electricity supply for operating tube wells for irrigation, and issues of weeds and rats.**
 - **Water availability was a challenge** due to **deficient to no rainfall** in many parts of the state of Punjab during May.

Way Forward

- The need of the hour is to get proper **feedback and a grievance redressal** programme by the government.
- Need **Weed management to enhance harvesting crops** in DSR, as poor quality of weedicides distributed by the government.
- **Leverage technology and work on innovative solutions** to promote the DSR method, as it requires less water than the traditional method, which could also help in **tackling water stress and groundwater in the region.**

UPSC Civil Services Examination Previous Year Question (PYQ)

Q. What is/are the advantage/advantages of zero tillage in agriculture? (2020)

1. Sowing of wheat is possible without burning the residue of the previous crops.
2. Without the need for a nursery of rice saplings, direct planting of paddy seeds in the wet soil is possible.
3. Carbon sequestration in the soil is possible.

Select the correct answer using the code given below:

- (a) 1 and 2 only
 (b) 2 and 3 only
 (c) 3 only
 (d) 1, 2 and 3

Ans: D

Exp:

- Zero Tillage, also called no-till farming, is a cultivation technique in which the soil is disturbed only along the slit or in the hole into which the seeds are planted, the reserved detritus from previous crops covers and protects the seedbed. As per a study, it has been found that farmers in north India can not only help reduce air pollution but also improve the productivity of their soil and earn more profits if they stop burning their crop residue and instead adopt the concept of no-till farming. Under zero tillage, the direct seeding of wheat into unploughed soil and with rice residues left behind has proved very beneficial. It saved on water, labour and use of agrochemicals, reduced greenhouse gas emissions, and improved soil health and crop yield and thus benefitted both farmers and the society at large. Hence, statement 1 is correct.
- **Direct Seeded Rice (DSR)** is a viable option to reduce the unproductive water flows. DSR refers to the process of establishing a rice crop from seeds sown in the field rather than by transplanting seedlings from the nursery. Conventional rice establishment system requires a substantial amount of water. It has been reported that water up to 5000 litres is used to produce 1 kg of rough rice. However, with increasing shortage of water, dry DSR with minimum or zero tillage further enhances the benefits of this technology by saving labour. Hence, statement 2 is correct.
- No tilled soils tend to be cooler than others, partly because a surface layer of plant residues is

present. Carbon is sequestered in the soil enhancing its quality, reducing the threat of global warming. Hence, statement 3 is correct. Therefore, option (d) is the correct answer.

Source: DTE

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