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Direct Seeded Rice

Context: In a bid to mitigate the rainfall uncertainty due to the potential impact of El Nino, the Chhattisgarh government advised farmers in the State to cultivate oil seeds and use Direct Seeded Rice (DSR) instead of the traditional transplanting method in paddy for the upcoming kharif season.

Direct Seeded Rice (DSR) is a rice cultivation technique in which **pre-germinated or dry seeds are sown directly into the field**, eliminating the need for nursery raising and transplantation.

- Seeds are sown using **seed drills or tractor-operated Happy Seeder/Lucky Seeder**.

DSR vs Traditional Transplanting

Direct Seeded Rice (DSR)	Traditional Transplanting
Seeds sown directly in the field	Seedlings raised in nursery and transplanted
No nursery preparation	Nursery preparation required
No puddling required	Puddling required
Less labour-intensive	Labour-intensive
Requires 15-18 irrigations	Requires 25-27 irrigations
Lower water requirement	Higher water requirement

Suitable Conditions for DSR

- Best suited for **medium to heavy-textured soils** (loam to clay).
- Soil should have:

- Good water-holding capacity.
- Adequate plant-available iron.
- Low weed infestation.

- Not suitable** for light, sandy, poorly drained soils.

Advantages of DSR

- Saves **15-20% (up to 50% in some conditions)** irrigation water.
- Requires **15-18 irrigations** instead of **25-27**.
- Reduces labour requirement and cultivation cost.
- Crop matures **7-10 days earlier**, facilitating timely management of paddy straw.
- Improves soil health by avoiding puddling.
- Reduces **methane emissions**, making rice cultivation more climate-friendly.
- Improves profitability by lowering input costs.
- Creates opportunities for mechanized farming and custom hiring services.

Challenges of DSR

- Higher weed infestation due to simultaneous growth of rice and weeds.
- Greater dependence on effective herbicide and weed management.
- Seeds are vulnerable to birds, rodents, and pests.
- Risk of poor or uneven crop establishment.
- Higher seed rate required.
- Greater risk of lodging (crop falling over).
- Expensive DSR machinery limits adoption by small farmers.
- Free or subsidized electricity reduces incentives to adopt water-saving methods.

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- Lack of awareness and technical knowledge among farmers.

Source: El Nino impact: Chhattisgarh govt. advises farmers to go for fast-growing varieties of crops (The Hindu)

Terms in News

Marburg Virus

- MVD, formerly known as **Marburg haemorrhagic fever**, is a **severe, often fatal illness** caused by the Marburg virus.
- The Marburg virus is a **zoonotic virus** that belongs to the Filoviridae family (filovirus), **the same group of viruses that includes Ebola**.
- It is a **rare disease that occurs in humans and non-human primates** (chimpanzees, gorillas, and monkeys).
- The Marburg virus is **most commonly found in sub-Saharan Africa**.
- The Marburg virus is **naturally carried by Egyptian fruit bats (Rousettus aegyptiacus)**, which serve as its **primary reservoir**.
- People usually become infected after prolonged exposure to bat-inhabited caves or mines.
- Once a human is infected, the virus spreads through direct contact with the blood, saliva, vomit, urine, faeces, and other bodily fluids of an infected person.
- It can also spread through contaminated objects such as bedding, clothing or medical equipment that have come into contact with infected bodily fluids.
- **Unlike some respiratory viruses, Marburg is not airborne and does not spread through casual contact.**
- Transmission requires direct exposure to infected bodily fluids or contaminated materials.

- As the disease advances, symptoms can become more severe, including liver failure, delirium, shock, bleeding (hemorrhaging), and multi-organ dysfunction.
- The **average MVD case fatality rate is around 50%**. Case fatality rates have varied from 24% to 88% in past outbreaks.
- **There is no vaccine or specific treatment for MVD.**

Radio Telemetry

- **Radio telemetry** involves using radio waves to automatically transmit data from remote or inaccessible sources to a receiving station for monitoring and analysis.
- It is commonly used in **wildlife tracking, weather monitoring, industrial process control, and medical monitoring to gather data without needing physical access to the source**.
- Since the 1960s, scientists have been using radio telemetry to track wildlife, studying their migration patterns, behaviors, and habits.
- **Radio telemetry uses radio signals, which are made up of invisible and silent electromagnetic waves, to determine location.**
- A radio telemetry system is made up of three parts: a radio transmitter, a radio antenna, and a radio receiver.
- The transmitter can be attached or tagged to the subject using a collar, an ear tag, or a wing tag for birds in particular.
- It is the part that transmits, or sends, the radio signal.
- The operator uses an antenna, attached to a receiver, which is programmed to the transmitter's frequency, to pick up the

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radio signals given off by the transmitter affixed to the target animal.

- Receiver antennas may be hand-held, mounted on an object, or affixed to towers to avoid interference from buildings and trees.
- They may also be fixed to a vehicle, boat, or aircraft to allow the operator to exploit larger areas.
- The radio signals are then transformed into a beeping sound by the receiver.
- As the receiver gets closer to the transmitter, the beeps get louder, meaning the animal wearing the transmitter is close by.
- The researcher can use this audible clue to locate and follow the animal wearing the transmitter.

Limitations:

- Unlike GPS satellite tracking, radio telemetry requires researchers to remain within the signal range of the transmitter to locate the tagged animal.

Places in News

Nameri Tiger Reserve

- It is situated in the northern part of the Sonitpur district of **Assam**.
- It shares its northern boundary with the Pakke Tiger Reserve of Arunachal Pradesh.
- It has been carved out of two protected areas: Nameri National Park & Sonai-Rupai Wildlife Sanctuary, and two Reserve Forests: Naduar Reserve Forest & Balipara Reserve Forest.
- The area is drained by the Jia Bhoroli and its tributaries namely the Diji, Dinai, Doigurung, Nameri, Dikorai, Khari etc.
- Jia Bhoroli river of Assam is famous for the Golden Mahseer fish- The Tiger of Indian rivers.

- The habitat of Nameri is made up of **tropical evergreen, semi-evergreen, moist deciduous forests, cane brakes and grassland**.
- Hollong, Nahor, Simul, Orchids and Medicinal Plants are found here.
- Leopard, Clouded leopard and Wild dog, Asian Elephant etc.

Species in News

Caspian Cobra

- The **Caspian cobra**, also called the **Central Asian cobra**, ladle snake, Oxus cobra, or Russian cobra, is a species of **venomous snake** in the family Elapidae.
- It is the **most venomous cobra in the world**.
- Scientific Name: *Naja oxiana*
- It is **native to Central Asia**.



- It is found in parts of Turkmenistan, Uzbekistan, Kyrgyzstan, Tajikistan, the Fergana Valley, north and east Afghanistan, northeastern Iran, the northern half of Pakistan from the Kashmir region east to the state of Himachal Pradesh in India, and in southwestern Tajikistan.
- It thrives in **arid and semi-arid regions, including rocky hillsides and scrublands**.

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- It averages 1-1.2 metres, with a maximum known length of 175 cm, making it slightly shorter than the Indian cobra (max 2.2 metres).
- Its body is slender, uniformly thick from head to midbody, and ends with a medium-length tail.
- It has long cervical ribs capable of expansion to form a hood.
- It has **no hood marking, just a plain colour instead.**
- When threatened, it will spread its hood to appear larger and more intimidating.
- Its coloration can vary from light brown to dark brown or even black, sometimes with a faint banding pattern.
- The belly is usually lighter, ranging from cream to light yellow.
- Its head is large, as broad as the neck, and has a rounded snout.
- It is classified as 'Near Threatened' under the IUCN Red List.

- (B) Filoviridae
- (C) Coronaviridae
- (D) Retroviridae

Q.3 With reference to "Radio Telemetry" tracking systems, consider the following statements:

1. It uses invisible electromagnetic waves to determine an animal's location.
2. Unlike GPS tracking, researchers must remain within signal range of the transmitter.

Which of the statements given above is/are correct?

- (A) 1 only
- (B) 2 only
- (C) Both 1 and 2
- (D) Neither 1 nor 2

Q.4 "Nameri Tiger Reserve", known for the Golden Mahseer fish, is located in which state?

- (A) Arunachal Pradesh
- (B) Assam
- (C) Meghalaya
- (D) Manipur

Q.5 Consider the following statements regarding the "Caspian Cobra":

1. It is considered the most venomous cobra species in the world.
2. It possesses highly distinct, prominent hood markings.
3. It is currently classified as 'Near Threatened' on the IUCN Red list.

Which of the statements given above are correct?

- (A) 1 and 2 only
- (B) 2 and 3 only
- (C) 1 and 3 only
- (D) 1, 2 and 3

Answers

1. D
2. B
3. C
4. B
5. C

Practice Questions

Q.1 Consider the following statements regarding Direct Seeded Rice (DSR):

1. It eliminates the need for nursery raising and transplantation.
2. It generally requires fewer irrigations than the conventional transplanted rice method.
3. It reduces methane emissions by eliminating the need for puddling.

Which of the statements given above is/are correct?

- (A) 1 and 2 only
- (B) 1 and 3 only
- (C) 2 and 3 only
- (D) 1, 2 and 3.

Q.2 The "Marburg Virus", recently seen in the news, belongs to which of the following virus families?

- (A) Flaviviridae

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