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5. Paddy Dwarfing Disease in Punjab – Viral Threat to Rice Productivity – Science & Technology

1. Why in News

1. Agricultural scientists in Punjab warned farmers about recurring spread of paddy dwarfing disease ahead of 2026 paddy transplantation season
2. Viral disease linked to Southern Rice Black-Streaked Dwarf Virus (SRBSDV) first reported in Punjab 2022
3. Spread through white-backed plant hopper (insect vector)
4. Severe yield loss – Normal 30–32 quintals/acre reduced to 1–2 quintals in severely infected fields
5. Affected thousands of hectares in districts – Patiala, Fatehgarh Sahib, Rupnagar, Hoshiarpur, Pathankot, Shaheed Bhagat Singh Nagar

2. About Paddy Dwarfing Disease

Definition

1. Viral disease in rice linked to Southern Rice Black-Streaked Dwarf Virus (SRBSDV)
2. First reported in Punjab 2022

Viral Cause

1. Caused by Southern Rice Black-Streaked Dwarf Virus
2. Attacks paddy plants, severely reduces growth, grain formation

Insect Vector

1. Virus spreads through white-backed plant hopper
2. Insect vector transmits infection from diseased to healthy plants

Persistent Transmission

1. Once insect acquires virus, remains infectious throughout life cycle
2. Increases chances of widespread transmission

Alternate Hosts

1. Insect survives on weeds, grassy plants near fields, water channels
2. Enabling disease to reappear every season

3. Impact on Paddy Farming

Severe Yield Loss

1. Normal paddy yields in Punjab – 30–32 quintals/acre
2. Severely infected fields – Only 1–2 quintals/acre (95%+ loss)

Stunted Crop Growth

1. Infected plants become short, weak
2. Narrow leaves, shallow roots
3. Plant height may reduce to one-third of healthy plants

Grain Failure

1. Severely infected crops fail to produce grains or show poor grain filling
2. Major economic losses for farmers

Spread Across Punjab

1. Affected thousands of hectares in districts – Patiala, Fatehgarh Sahib, Rupnagar, Hoshiarpur, Pathankot, Shaheed Bhagat Singh Nagar

Livelihood Impact

1. Farmers face heavy financial losses
2. Symptoms appear nearly one month after transplantation leaving little time for replanting

4. Paddy Farming**Definition**

1. Cultivation of rice, staple food crop mainly grown in tropical, subtropical regions

India's Position

1. World's highest producer of rice (after China in total production but highest in certain measures)
2. **Major producing states** – Uttar Pradesh (highest), Telangana, West Bengal, Andhra Pradesh, Tamil Nadu

Favourable Conditions

1. **Climate** – Warm, humid climate ideal
2. **Temperature** – ~20°C–35°C during growing season
3. **Rainfall** – ~100–200 cm annual rainfall or assured irrigation
4. **Soil type** – Fertile alluvial or clayey soil with high water-retention capacity
5. **Water requirement** – Standing water in fields especially during transplantation, growth stages

Stages in Traditional Paddy Farming

1. **Nursery sowing** – Seeds first raised in nursery beds
2. **Transplantation** – Seedlings transplanted into flooded fields after 3–4 weeks
3. **Irrigation and weeding** – Fields kept waterlogged while weeds removed periodically
4. **Harvesting** – Mature crop cut manually using sickles
5. **Threshing and winnowing** – Grains separated from stalks, cleaned before storage

5. Preventive Measures**Early Monitoring**

1. Regular inspection of nurseries, early-stage fields
2. Infection begins during nursery phase itself

Vector Control

1. Monitor white-backed plant hopper infestation
2. Gently tapping plants, observing insects floating on water surfaces

Light Traps

1. Yellow-light bulb traps installed near nurseries, fields during night
2. Help detect, control insect populations early

Field Hygiene

1. Removing weeds, alternate grassy hosts from bunds, irrigation channels
2. Reduces insect breeding, disease transmission

Timely Transplantation

1. Agricultural scientists advise following recommended transplantation schedule between June 20–25
2. Reduce exposure to insect multiplication

Scientific Insecticide Use

1. Punjab Agricultural University (PAU)–recommended insecticides

2. Spray immediately after insect detection to limit disease spread

Other Measures

1. Use healthy seedlings from disease-free nurseries
2. Avoid planting infected seedlings
3. Crop rotation, resistant varieties (if available)
4. Community-level coordination for synchronized control

6. Way Forward

1. Develop virus-resistant rice varieties through breeding, genetic engineering
2. Strengthen extension services providing timely advisories to farmers
3. Integrated pest management combining biological, chemical, cultural controls
4. Research on virus biology, transmission dynamics for better control strategies
5. Compensation mechanisms for affected farmers

7. Conclusion

Paddy dwarfing disease caused by Southern Rice Black-Streaked Dwarf Virus (SRBSDV) first reported Punjab 2022 poses severe threat to rice productivity. Spread through white-backed plant hopper insect vector surviving on weeds-grassy plants enabling recurring transmission. Impact includes severe yield loss (normal 30-32 quintals/acre reduced to 1-2 quintals severely infected), stunted growth (plant height one-third), grain failure causing heavy financial losses affecting thousands of hectares in Patiala-Fatehgarh Sahib-Rupnagar-Hoshiarpur-Pathankot-Shaheed Bhagat Singh Nagar districts. Preventive measures require early monitoring of nurseries-fields, vector control through white-backed plant hopper surveillance, yellow-light traps detecting insect populations, field hygiene removing weeds-alternate hosts, timely transplantation June 20-25 reducing insect exposure, PAU-recommended insecticides sprayed immediately after detection. Early monitoring, vector control, scientific farming practices essential protecting Punjab's rice productivity ensuring farmer livelihoods, food security.

Source - <https://indianexpress.com/article/explained/punjab-rice-dwarfing-disease-paddy-virus-alert-10701430/>