Indian Economy · GS - III

What are the major reasons for declining rice and wheat yield in the cropping system? How crop diversification is helpful to stabilize the yield of the crop in the system?

EXAM YEAR	PAPER	SUBJECT
2017	GS - III	Indian Economy

MARKS	WORD LIMIT
15	~ 250 words

Answer Hint

Soil degradation; groundwater depletion; nutrient imbalance; climate stress; monocropping; crop diversification; sustainable agriculture

Model Answer

Introduction

Rice and wheat form the core of India's foodgrain system. In some regions, yield growth has slowed because of ecological stress, inefficient resource use and limited diversification of cropping systems.

Reasons for Declining or Stagnating Yields

- **Soil degradation:** Repeated intensive cultivation can reduce soil organic matter and weaken soil structure.
- **Nutrient imbalance:** Excessive nitrogen use and inadequate micronutrients can lower productivity.
- **Groundwater depletion:** Water-intensive cultivation in stressed regions threatens irrigation reliability.
- **Monocropping:** Continuous rice–wheat cultivation can encourage pests, diseases and declining soil health.
- **Climate change:** Heat stress, irregular rainfall and extreme weather affect crop growth and grain formation.
- **Residue management:** Burning crop residues contributes to air pollution and may reduce opportunities for improving soil health.

- **Input inefficiency:** Poor seed quality, inappropriate planting dates and inefficient irrigation can reduce yields.

How Crop Diversification Helps

- **Soil restoration:** Legumes can improve soil nitrogen and break pest cycles.
- **Water conservation:** Replacing some water-intensive crops with suitable millets, pulses or oilseeds can reduce irrigation demand.
- **Risk reduction:** Different crops respond differently to weather and market conditions, reducing dependence on a single crop.
- **Income stability:** Diversification can open additional markets and spread farmers' income risk.
- **Ecological resilience:** Crop rotations can improve biodiversity and reduce excessive dependence on chemical inputs.

Measures Required

Promote region-specific cropping systems, quality seeds, micro-irrigation, soil testing, crop insurance, extension services and assured market access for alternative crops.

Conclusion

Rice and wheat yield constraints reflect both agronomic and environmental pressures. Diversification, combined with improved soil and water management, can stabilise productivity and strengthen long-term food security.

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