Indian Economy · GS - III

What are the major factors responsible for making rice-wheat system a success? In spite of this success how has this system become bane in India?

EXAM YEAR	PAPER	SUBJECT
2020	GS - III	Indian Economy

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Green Revolution; high-yielding varieties; irrigation; fertilisers; MSP and procurement; food security; groundwater depletion; soil degradation; crop residue burning; crop diversification

Model Answer

Introduction

The rice-wheat cropping system became central to India's Green Revolution, particularly in Punjab, Haryana and western Uttar Pradesh. It substantially increased foodgrain production, but its prolonged dominance has generated serious environmental and economic challenges.

Factors behind its success

- **High-yielding varieties:** Improved seeds increased productivity when combined with suitable inputs.
- **Irrigation:** Assured water supply reduced dependence on monsoon rainfall and enabled multiple cropping.
- **Fertiliser and mechanisation:** Chemical fertilisers, pesticides and machinery supported intensive cultivation.
- **Minimum Support Price:** Assured procurement of rice and wheat reduced price uncertainty for farmers.
- **Institutional support:** Agricultural research, extension services, rural electrification and credit facilitated adoption.
- **Public distribution system:** Government procurement supported national food security and buffer stocks.

Why it has become a bane

- **Groundwater depletion:** Water-intensive paddy cultivation has contributed to falling groundwater levels in northwestern India.
- **Soil degradation:** Imbalanced fertiliser use, declining organic matter and monocropping can weaken soil health.
- **Crop residue burning:** Short intervals between rice harvesting and wheat sowing encourage stubble burning, contributing to air pollution.
- **Biodiversity loss:** Concentration on two crops reduces cropping diversity and ecological resilience.
- **Economic inefficiency:** Excessive dependence on procurement-supported crops can discourage diversification towards more suitable and remunerative alternatives.
- **Climate vulnerability:** Rising temperatures, water stress and changing rainfall patterns threaten the long-term sustainability of the system.

Way forward

Promote crop diversification towards pulses, oilseeds and suitable millets; expand micro-irrigation and direct-seeded rice where appropriate; improve residue management; and align procurement incentives with agroecological conditions.

Conclusion

The rice-wheat system helped India achieve food security, but its long-term sustainability requires moving from input-intensive production towards diversified, water-efficient and climate-resilient agriculture.

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