Environment & Ecology · GS - III

Stubble burning remains a major environmental challenge in northwestern India despite regulatory restrictions and enforcement measures. Examine its causes, environmental consequences and suggest sustainable alternatives to crop-residue burning.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 06/11/2026	GS - III	Environment & Ecology

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Paddy-wheat cropping cycle, short turnaround time, mechanisation constraints, particulate matter emissions, seasonal air pollution, soil nutrient loss, in-situ residue management, Happy Seeder, Pusa Decomposer, biomass utilisation, financial incentives, farmer awareness and inter-state coordination.

Model Answer

Introduction

Stubble burning is the practice of setting fire to crop residues, particularly paddy straw, before sowing the next crop. It remains a significant seasonal source of air pollution in northwestern India.

Causes and Environmental Impact

A short interval between paddy harvesting and wheat sowing, labour costs and limited access to residue-management machinery encourage burning. It releases particulate matter and harmful gases, deteriorates air quality, affects public health and destroys soil organic matter and nutrients.

Sustainable Alternatives

In-situ management through Happy Seeder machines and Super SMS technology can enable residue retention and incorporation. Microbial solutions such as Pusa Decomposer can accelerate decomposition. Ex-situ utilisation of

straw for biomass energy, biofuels, compost and industrial applications can create additional economic value.

Way Forward

Affordable machinery, timely subsidies, farmer awareness, biomass supply chains and coordinated enforcement are necessary. Incentives should encourage sustainable residue management rather than rely exclusively on penalties.

Conclusion

A combination of technology, economic incentives and institutional coordination is essential to eliminate dependence on stubble burning and promote sustainable agriculture.