

Environment and Ecology: Stubble burning and pollution

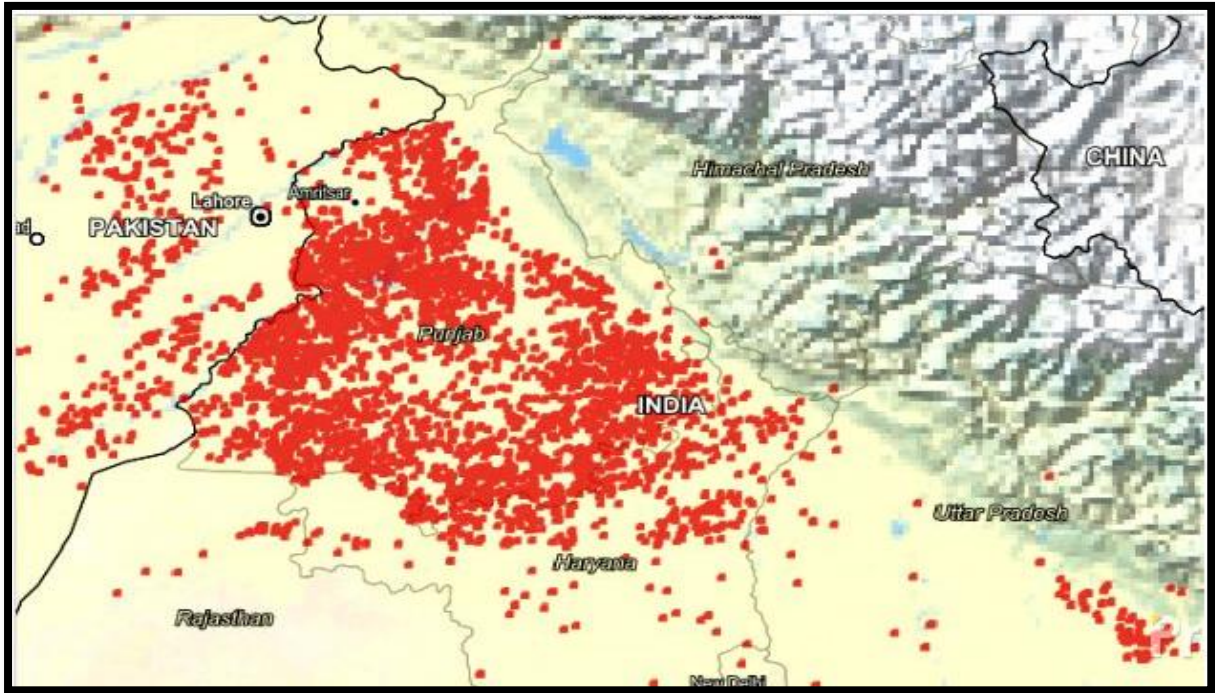
GS Paper 3: Indian economy and agriculture; conservation, environmental pollution and degradation; environmental impact assessment.



Stubble burning is the deliberate setting fire of the straw stubble that remains after wheat and other grains have been harvested. The burning of stubble, contrasted with alternatives such as ploughing the stubble back into the ground has a number of consequences and effects on the environment like loss of nutrients, pollution from smoke, damage to electrical and electronic equipment from floating threads of conducting waste, risk of fires spreading out of control, etc.

The threat to India

Stubble burning in Punjab and Haryana in northwest India has been cited as a major cause of air pollution in Delhi. From late September through October of each year, farmers mainly from Punjab and Haryana burn an estimated 35 million tons of crop waste from their wheat fields after harvesting, as a low-cost straw-disposal practice to reduce the turnaround time between harvesting and sowing for the second (winter) crop. Smoke from this burning produces a cloud of particulates visible in images from space and has produced a "toxic cloud" in New Delhi, resulting in declarations of an air-pollution emergency.



Stubble burning: satellite image: October 24-25, 2017

The gravity of the issue

A study by the PGIMER shows that if timely measures are not taken to check stubble burning, a major contributor to air pollution, the emissions will almost double by 2050. The image shared by the Postgraduate Institute of Medical Education and Research (PGIMER), shows 2,328 fire spots detected during the satellite overpass.

The rice straw burning in agricultural fields was considered 80% in Punjab, Haryana and Himachal Pradesh, 50% in Karnataka and 25% in other states. Rice and wheat contribute significantly to a total emission of PM2.5 and PM10 emissions from crop residue burning. The rice residue contributes 51% of the total PM2.5 emissions followed by wheat residue, which contributes 32% of the total PM2.5 emissions from crop residue burning.

Government initiatives

- To address the menace, and under directions from the Supreme Court-constituted Environment Pollution (Prevention and Control) Authority, or EPCA, the Centre is partnering with Punjab, Haryana and Uttar Pradesh to provide farmers with a range

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of mechanised implements to clear their fields of paddy crop residue to prepare for sowing wheat.

- There is a 50% subsidy to farmers, and a 75% waiver to cooperative societies, agencies that rent out equipment, farmers' interest groups or gram panchayats to buy such machines.
- States have got nearly ₹650 crore to help farmers buy subsidised equipment such as Happy Seeder, paddy straw choppers and Zero Till Drill.
- A task force, headed by the Principal Secretary to the Prime Minister and comprising Environment Ministry officials and Chief Secretaries of these States, have been meeting since January to prepare for the winter.

The challenges in overcoming stubble burning issue

- Many farmers, particularly those with land holdings of less than 5 acres remain sceptical of the efficiency of the promised machines. Many have told officials that they are worried there could be damage to the soil.
- Even though farmers are aware that the burning of straw is harmful to health, they do not have alternatives for utilising them effectively.
- The farmers are ill-equipped to deal with waste because they cannot afford the new technology that is available to handle the waste material.

Way Ahead

- Just making technological tools available may not be enough; there needs to be proactive engagement to both persuade and reassure farmers.
- Given geography (in the stubble burning case, Delhi) low wind speeds and a spike in local pollution (from vehicles, biomass burning, firecrackers, etc.) raise the particulate matter count dramatically during winter. To be effective, the fight against pollution must necessarily be broad-based.
- The alternatives
 - i. The available paddy straw can be effectively used for power generation.
 - ii. Paddy straw-based power plants can help avoid stubble burning to a large extent and also create employment opportunities.
 - iii. Incorporation of crop residues in the soil can improve soil moisture and help activate the growth of soil microorganisms.
 - iv. Create enriched organic manure through composting.



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Questions

1. Crop-clearing process in an ecologically sound manner will not be possible with assistance solely from technology. Comment. What are the alternatives?
2. The government needs to look beyond fiats and explore the option of financial incentives to eliminate stubble burning. Critically Analyse.

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