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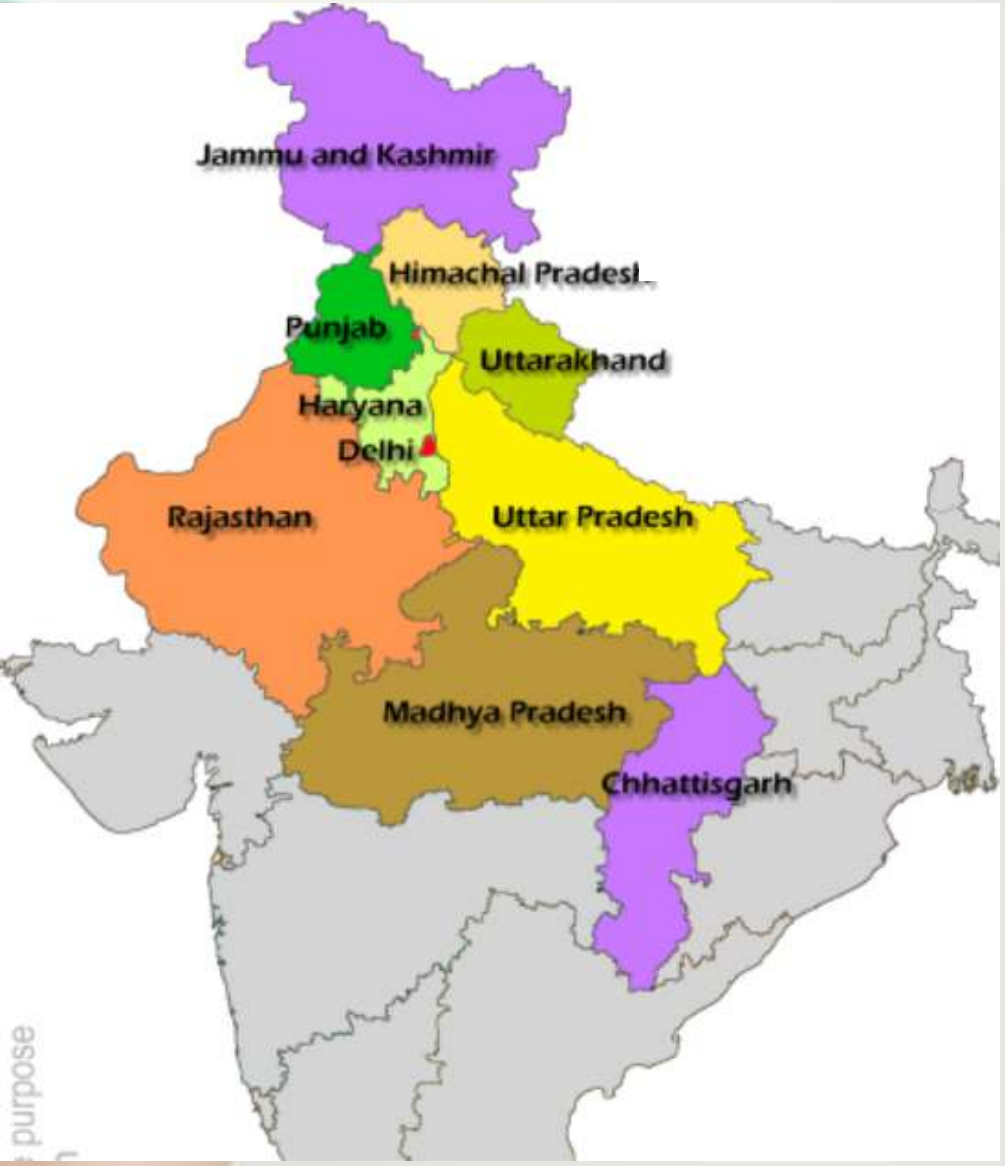
STUBBLE BURNING



Why in the news?

Supreme Court directed Punjab, Haryana, Uttar Pradesh, Rajasthan, and Delhi to stop stubble burning immediately which is considered a major cause of air pollution in Delhi.

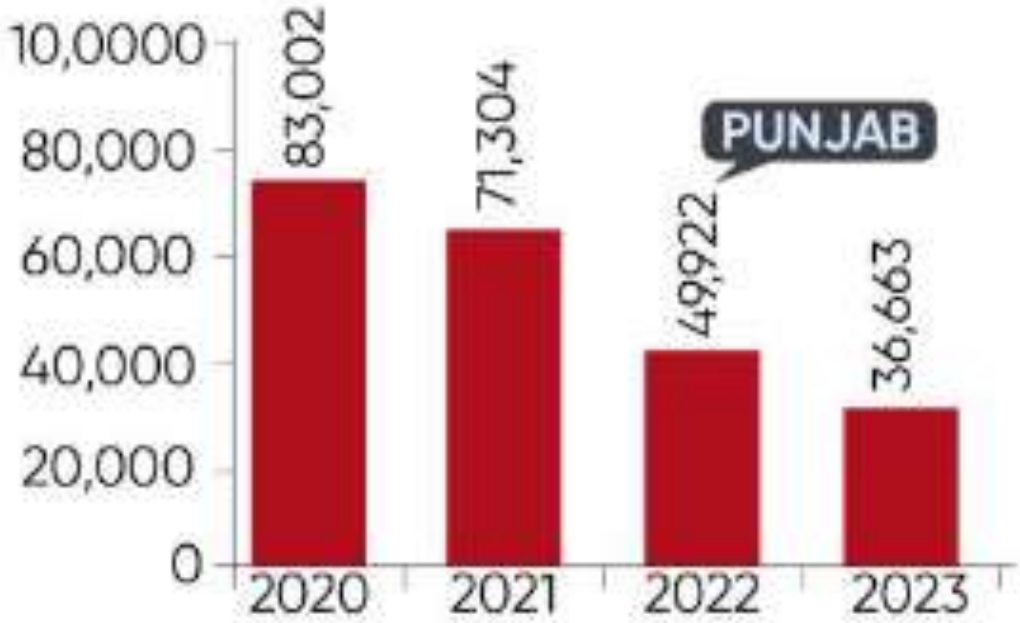
About Stubble (Parali) burning

Stubble burning is a process of setting on fire the straw stubble, left after the harvesting of grains, like paddy, wheat, etc.

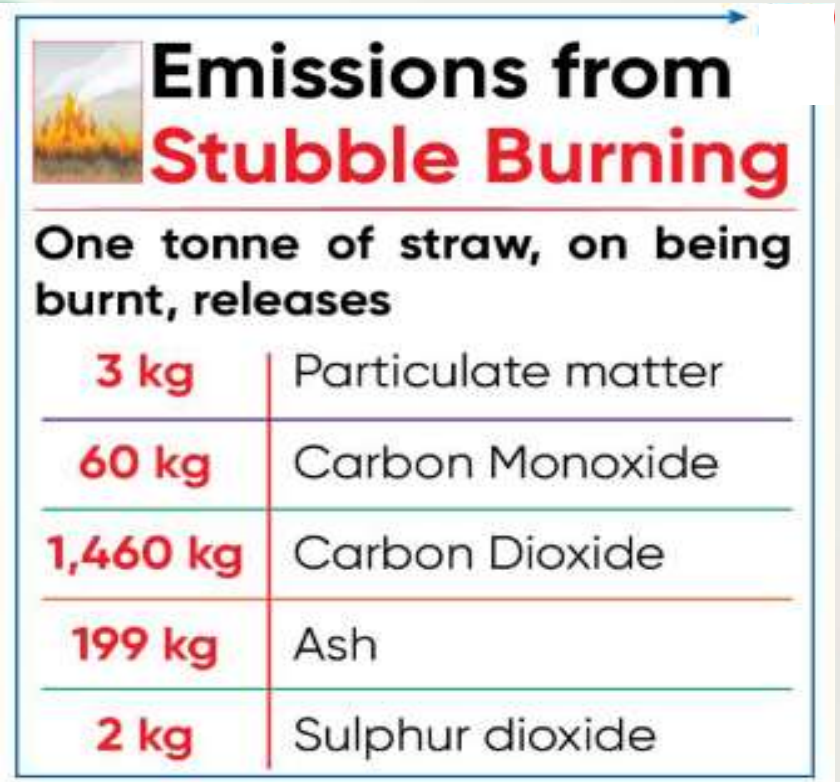
It is usually required in areas that use the combined harvesting method which leaves crop residue behind.

On the Decline

According to official data, **farm fires in Punjab and Haryana have seen a consistent drop**



Impact of stubble burning



- **Pollution:** Stubble burning **emits toxic pollutants** in the atmosphere containing harmful gases like Carbon Monoxide **(CO), methane (CH4), carcinogenic polycyclic aromatic hydrocarbons**, and **volatile organic compounds (VOC).**

o These pollutants disperse in the surroundings and eventually affect air quality and people's health by forming a **thick blanket of smog.**

Smog formation due to stubble burning

Smog = smoke + fog

- Smog is a harmful mixture of fog, dust and air pollutants such as nitrogen oxides, volatile organic compounds, etc. which combine with sunlight to form a dense layer of ground-level ozone and other oxidants.

- two distinct types of smog are recognized: sulfurous smog and photochemical smog.

Other impacts of stubble burning

Soil fertility: Soil becomes less fertile, and its nutrients are destroyed when the husk is burned on the ground.

- **Impact on Biodiversity: Fires can destroy habitats for various wildlife species, such as insects, birds, and small mammals, which may rely on crop residues for shelter or food.**

Reasons why farmers burn the stubble

- **Time Constraints: In many agricultural regions, there is a narrow window between the harvest of one crop and the sowing of the next. Stubble burning is seen as a quick and efficient way to clear fields.**

o **For example, in Punjab and Haryana, there is only a two to three-week time between cropping cycles.**

- **Increased mechanization of harvesting: Use of mechanized harvesters leaves stubble of 10 – 30 cm in the field, depending on the type of crop, which was not the case earlier with manual harvesting.**

Labour shortage: Use of expensive labour for stubble extraction is not feasible. Costs are high, especially in Punjab and Haryana, where farm sizes are large, and the use of mechanized harvesters is common.

- **No market for crop residue**: Low commercial and economic value of crop residue, coupled with the high costs of processing, reduces its value for farmers.

- **Pest and Disease Management**: Farmers view burning the stubble can help eliminate pests, diseases, and weed seeds that may be present in the crop residue.

- Access to Resources: **Limited access to** resources such as **equipment for residue management** also indirectly encourages stubble burning.

Challenges to Curb Stubble Burning

Overcoming **deeply rooted traditional beliefs** regarding stubble burning is difficult.

In some cases, farmers may not fully understand **environmental and health consequences** of stubble burning.

Lack of viable economic alternatives to Stubble Burning for farmers.

States face challenges in **allocating the necessary resources** for effective regulation and enforcement.

Regulatory Measures and Policies

- **National Policy for Management of Crop Residue (NPMCR) 2014:** Envisages adoption of technical measures including diversified uses of crop residue, capacity building & training along with formulation of suitable law/legislation.

- National Green Tribunal (NGT) had issued the following directions in 2015:

  - Mechanism for collection of crop residue, transportation, and utilization to be evolved.

  - For persistent defaulters of crop residue burning, appropriate coercive and punitive action could be taken.

  - Every state must provide machines, mechanisms and equipment or cost to the farmers to remove, collect and store straws.

- **Commission on Air Quality Management in NCR and Adjoining Areas (CAQM) has developed an action plan for effective prevention and control of Stubble Burning.**

✓ **In-situ Crop Residue Management:**

✓ **high yield, and short duration paddy varieties,**

✓ **staggering of harvesting schedule,**

✓ **extensive use of bio-decomposer.**

Ex-situ Crop Residue Management:

Alternative usage of paddy straw viz.

- **Biomass Power Projects,**
- **Co-firing in Thermal Power Plants,**
- **Feed stock for 2G Ethanol plants,**
- **fuel in industrial boilers,**
- **WTE plants,**
- **packaging materials etc.**

New and Improved Seed Varieties: Recently, the Indian Agricultural Research Institute (IARI) has developed a high-yielding short-duration variety namely Pusa-2090.

o The Pusa-2090 variety matures in only 120 to 125 days as compared to

- currently Pusa-44 which takes 155 to 160 days to mature.

o New paddy variety will give around 30 days time to farmers to ready their fields for the next crop.

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