EPCA on Early Burning of Crop Residue

Why in News

The **Supreme Court**-appointed **Environment Pollution (Prevention and Control) Authority (EPCA)** raised concerns about early **burning of crop residue** in Punjab and Haryana.

Key Findings

- According to a **SAFAR (System of Air Quality and Weather Forecasting and Research)** under the Central government estimate which uses the **INSAT-3, 3D** and **the National Aeronautics and Space Administration (NASA)** satellite, the fire counts have increased from zero to 42 in a few days.
- In 2019, about 9.8 million tonnes of the total estimated crop residue of 20 million tonnes were burnt in Punjab.
    - Similarly, in Haryana, of the total 7 million tonnes, 1.24 million tonnes of stubble were burnt.

Environment Pollution (Prevention and Control) Authority

- EPCA was constituted under **section 3 of the Environment (Protection) Act, 1986** for the **National Capital Region** in compliance with the **Supreme Court order dated January 1998.**
- It has the power to take action **suo-moto,** or on the **basis of complaints** made by any individual, representative body or organization functioning in the field of environment.
- It takes all necessary steps for controlling vehicular pollution, ensuring compliance of fuel quality standards, monitoring and coordinating action for traffic planning and management.

INSAT

- The **Indian National Satellite (INSAT)** system is a constellation of operational communication satellites placed in **Geo-stationary orbit.**
- Established in **1983** with commissioning of INSAT-1B.
- The constellation of INSAT System consists of operational satellites, namely – INSAT-3A, 3C, 3D, 4A, 4B, 4CR, 3DR.

SAFAR

- The **System of Air Quality and Weather Forecasting and Research (SAFAR)** is a national initiative introduced by the **Ministry of Earth Sciences (MoES)** to measure the air quality of a metropolitan city, by measuring the overall pollution level and the **location-specific air quality** of the city.
- The system is **indigenously** developed by the **Indian Institute of Tropical Meteorology (IITM),** Pune and is operationalized by the **India Meteorological Department (IMD).**

Stubble Burning

- It is a **traditional practice** in **Punjab and Haryana** to clean off the rice chaff to prepare the fields for winter sowing.
- It begins **around October and peaks in November,** coinciding with the withdrawal of **southwest monsoon.**
- The **pollutants and the Particulate Matter (PM)** from the chaff, along with other sources of pollution in Delhi, makes winter air quality worse in Delhi and proximity.
    - **Reasons:**
        - **Increase in Rice Acreage: Subsidies and assured procurement** of rice have led to a rise in the rice acreage.
        - **Delayed sowing** of paddy to late June to discourage groundwater extraction as per the **Punjab Preservation of Subsoil Water Act 2009.**
        - This led to a delayed harvesting, stubble burning coincides perfectly with the withdrawal of southwest monsoon.
            - This time the **southward shift of subtropical jet stream** happens causing a **westward wind pattern in the northern part of India** and thus spread of pollutants.
        - **Technology:** Increased and modernised **farm mechanisation** extract the rice grains only and leave large quantities of rice stubble behind. Earlier, this excess crop was used by farmers for cooking, as hay to keep their animals warm or even as extra insulation for homes.
        - **High Silica Content:** Rice straw is considered useless as fodder in the case of non-basmati rice, because of its **high silica content.**
    - **Effects:**
        - The stubble burning emits large amounts of toxic pollutants in the atmosphere which contain harmful gases like **methane (CH^4), Carbon Monoxide (CO), Volatile organic compound (VOC) and carcinogenic polycyclic aromatic hydrocarbons.**
        - The burning of wheat straw **reduces the soil fertility,** besides polluting the environment.
        - Additionally, the heat generated by stubble burning penetrates into the soil, leading to the loss of moisture and useful microbes.

Way Forward

- A **centralized control room** must be set up to issue directions both for ensuring that appropriate technology to tackle this issue is within the reach of farmers and also ensure enforcement of non-compliance.
- The establishment of the **Farm Machinery Banks (FMB)** for custom hiring of in-situ crop residue management machinery.
    - The most efficient technology is the **Turbo Happy Seeder (THS)** machine. It not only cuts and uproots the stubble but can also drill wheat seeds in the soil that have just been cleared up. The straw is simultaneously thrown over the sown seeds to form a **mulch cover.**
- Stopping crop residue burning will aid the **National Clean Air Programme** (NCAP), which aims to reduce pollution by 20-30% in annual PM concentration by 2024.
- An expansion of schemes like the **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)** for harvesting and composting of stubble will help to resolve the dual problem of unemployment and stubble burning.
- In the long-term, **shifting the** cropping pattern away from paddy to maize, cotton, fruits or vegetables in Punjab, Haryana and UP is required.

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