



Problems of Punjab's Monoculture

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Why in News

Amidst the ongoing **farmer's protests**, questions are being raised on the sustainability of **paddy-wheat cultivation**, especially in Punjab.

Key Points

- **Monoculture in Punjab:**
 - Monoculture is the agricultural practice of growing a **single crop, plant, or livestock species, variety, or breed in a field or farming system** at a time.
 - Wheat and paddy constitute about **84.6% of the total area** planted to all crops compromising on pulses, maize, bajra and oilseeds cotton.
- **Problem of Monoculture:**
 - Growing the same crops year after year on the **same land increases vulnerability to pest and disease attacks**. The more the crop and genetic diversity, the more difficult it is for insects and pathogens to devise a way to pierce through plant resistance.
 - Wheat and paddy cannot also, unlike pulses and legumes, **fix nitrogen from the atmosphere**. Their continuous cultivation without any crop rotation, then, leads to depletion of soil nutrients and growing dependence on chemical fertilisers and pesticides.

- **Wheat vs Paddy:**

- **Wheat:**

- It is **naturally adapted** to Punjab's **soil and agro climatic conditions**. It is a **cool season crop** that can be grown only in regions particularly north of the Vindhyas where day temperatures are within the early-thirty degrees Celsius range right through March.
 - Its cultivation is desirable for **national food security**. The state's wheat yields at **5 tonnes-plus per hectare**, as against the national average of **3.4-3.5 tonnes**.

- **Paddy:**

- It requires **a huge amount of water**.
 - Farmers usually irrigate wheat five times. In paddy, 30 irrigations or more are given.
 - **Punjab's groundwater table** has been **declining by 0.5 meters per annum** on an average due to paddy and the state's policy of supplying **free power for irrigation**. It has encouraged farmers to grow long-duration water-guzzling varieties like **Pusa-44**.
 - **Pusa-44** has high yield but a **long duration growth period**. Long duration means transplanting by **mid-May (Peak Summer)**, to enable harvesting from October and timely planting of the next wheat crop. But being peak summer time, it also translated into **very high water requirements**.
 - Paddy, being a **warm season crop** is not very sensitive to high temperature stress thus can be grown in much of **eastern, central and southern India**, where **water is sufficiently available**.

- **Government Initiatives:**

Punjab Preservation of Subsoil Water Act, 2009 barred any nursery-sowing and transplanting of paddy before **May 15 and June 15, respectively**.

- The Act was passed for the **conservation of the groundwater**.
 - Problem with the Act:
 - If transplanting of paddy was permitted only after the monsoon rains arrived in mid-June, it also **pushed harvesting to October-end**, leaving a narrow time window for **sowing wheat before the November 15 deadline**.
 - Farmers, then, had no option other than **burning the paddy stubble left behind**. Simply put, groundwater conservation in Punjab ended up causing **air pollution** in Delhi.

Way Forward

- Reducing **acreage area** for wheat and promoting cultivation of **alternate crops** like coarse grains in Punjab will lead to crop diversification in the region bringing in better soil resilience and added nutritional benefits to the locals.

- **Shifting Paddy cultivation** to eastern and southern states, planting of **only shorter-duration** varieties of paddy crop which mature early without any effect on production, **metering of electricity** and **direct seeding of paddy** further address the issue of monoculture and depleting groundwater.

Source:IE