

CHALLENGES & ISSUES OF DEPLETING GROUNDWATER AND AGRICULTURAL SCENARIO IN PUNJAB STATE

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Agriculture at a Glance

- Net sown area in Punjab is 41.33 Lakh Ha. and Cropping Intensity is 204%.
- Paddy covers 74% and Wheat covers 85% of the net sown area respectively.
- Vegetables cover 6% and Fruit covers 2% of the net area sown respectively.
- Wheat Production is 178.5 Lakh Ton and contribution to the central pool (Year 2017-18) was 126.9 Lakh Ton (35.7%). Rice Production is 174.3 Lakh Ton and contribution to the central pool (Year 2017-18) was 118.3 Lakh Ton (32.4%).
- Vegetable production is 51.36 Lakh Ton, Fruit production is 83.6 Lakh Ton and Milk production is 113.0 Lakh Ton.
- Fertilizer (N+P+K) average consumption in Punjab is 243.0 kg/ha against an average consumption of 123.0 kg/ha in the country. Consumption of Pesticides is about 5690.0 Mt and that of insecticides is about 2344.0 MT, which is also very high.

Water Availability and Demand of the State

Out of total water demand for agriculture, i.e. about 60.0 BCM, the irrigation demand of paddy is 70% and that of wheat is about 20%. Availability of water (Surface & Ground) is about 36.18 BCM [Annual Replenishable Groundwater: 21.58 bcm + Surface Water: 14.6 bcm] and as such, there is a crippling deficit of 24.0 BCM. About 10.0 bcm of the deficit is being met through rainfall and the balance, 14.0 bcm comes from over-drawl of groundwater.

- As per Dynamic Groundwater assessment report (Year 2017-18), **#109 blocks are over-exploited**, #2 are critical, #5 are semi-critical and #22 are safe.
- In the last about 35 years (1984-2016), the ground water level in 85% area of the State has gone down, while in the remaining area (about 15%), it has risen.
- The average groundwater level fall is about 0.49 m/yr., whereas, taking entire area of groundwater level fall, rate of fall is about 0.37m/yr.

Management Practices and Options for Sustainable Development

Department of Agriculture & Farmers Welfare, Punjab, is propagating various Agricultural practices and interventions for sustainable development. These include, alteration of crop calendar for paddy, introduction of medium/short duration rice cultivars, resource conservation technologies (RCT) and

increase in efficiency through micro irrigation, dry-seeding of rice (DSR), intermittent irrigation, crop diversification, irrigation through treated water of STPs/ponds and check dams for water harvesting and recharge of groundwater etc.

The paddy-wheat monoculture needs to be diversified to obtain an optimal crop mix aimed at diversifying to less water intensive crops like maize, cotton, basmati, pulses, oilseeds, vegetables, fruits etc. Major issues and interventions requiring GoI support are:

Major Issues:

- Punjab is endowed with one of the best possible infrastructures for agriculture and the network of regulated mandis is one of the best in the country.
- **A robust and fast-moving procurement system** has reduced the market risks of wheat and paddy growers in the state. Almost 90% of the market arrivals are procured at the minimum support price (MSP) and this system has made **Punjab's farmers risk averse**. This also discourages farmers from diversifying the wheat-rice monoculture.
- Farmers are reluctant to switch as there is **no effective procurement system** for alternative crops and lack of diversification poses a threat of ecological imbalance.

Interventions Required with Support of GoI:

- There is a need to **invest in marketing infrastructure for alternative crops**, as was done for grains by creating a robust mandi infrastructure.
- **An active procurement mechanism** for assured procurement at MSP of alternative crops by a **designated nodal agency** is required to promote diversification.
- **Price stabilization fund** and **Minimum Floor Price** as proposed by Punjab Mandi Board with an objective to prevent distress sale of alternative and perishable crops is required to be established to promote diversification.
- The **processing industry needs to be incentivised** for preferring Punjab.
- **Diversification towards fruit, vegetables, floriculture etc.** needs support in terms of modern expressways to ports and airports for faster transportation.
- Support to farmers, shifting from paddy to alternative less water intensive crops for providing **equivalent economic returns to that of paddy**.

Conserve, Preserve and Harvest Water

- Conserve through optimal use of water resources, **efficient conveyance system** (underground pipeline system), **pressurized irrigation system** (pipe and micro).

- Additional irrigation potential through, **treated water for irrigation** (STPs & Ponds) and **revamping of ageing canal system**.
- Preserve through **repair/renovation/rejuvenation of village ponds** (augment recharge & irrigation potential), **watershed development**, improved agricultural practices and **on-farm irrigation water management** etc.
- Harvest through, **rainwater harvesting** (Check Dams in Kandi), **recharge of groundwater** (recharge structures at canal tail ends & for rooftop rainwater harvesting and recharge) etc.

Budget for Water Management and Conservation

- State Irrigation Plan (SIP) and District Irrigation Plans (DIPs) specifying various interventions for water management and conservation have been prepared under Pradhan Mantari Krishi Sinchayee Yojana (PMKSY) and submitted to GoI. As per SIP (5 year plan), an amount of Rs.9530.904 crore (Rs. 5716.324 crore new projects/ interventions & Rs. 3814.580 crore for ongoing projects) has been proposed.
- An additional budget of Rs. 1100.0 crore would be required to undertake other water conservation interventions like shifting of paddy area in blocks having stage of groundwater development above 200%, demonstrations of Direct Seeding of Rice (DSR) with Lucky Seeder machines at block level, Establishment of Price Stabilization Fund (PSF)/Minimum Floor Price (MFP) to help farmers from distress sale of alternative less water consuming crops etc.