

# Assessing and improving water productivity in conservation agriculture systems in the Indus-Gangetic basin – A paper by **International Water Management Institute**

The paper by Challenge Programme on Water and Food (CPWF) <sup>[1]</sup> attempts to assess and improve water productivity in conservation agriculture systems in the Indus-Gangetic basin, in which during the past 40 years an intricate mosaic of interactions between man & nature, poverty & prosperity and problems & possibilities has emerged. Rapid expansion in agricultural water use is a common theme across these interactions and access to water is central to the livelihoods of the rural poor.

Irrigation and management of water resources is a critical factor in agricultural productivity in the Indus-Gangetic basin - one of the most populous and complex basins of the world. Presently, water productivity in the basin is low, particularly of rice due to low yields and high water applications. Yet, there is a great opportunity through closing the gap in agricultural productivity in the basin.

Several promising pathways are available for raising water productivity over the continuum from fully rainfed to fully irrigated farming systems -

- Supplemental irrigation in the regions with low consumptive water use has the potential to double the existing yield levels. Analysis showed that by providing just one critical irrigation in 25 M ha of the potential rainfed areas the yield of most crops shall improve by 50% and the intervention is economically viable especially for rice, pulses and oilseed crops.
- Resource conservation technologies can help in realising water savings to the level of 20-45% at the field scale under most conditions. But real benefits can be lower in case the non-adopters tend to utilise all the saved water through area expansion and excessive irrigation.
- Canal irrigation systems particularly need revitalisation for better use of the available resources and improved productivity as groundwater irrigated fields showed higher productivity for both wheat and rice crops.
- Improved irrigation systems as drip irrigation with better adoption rate and targeted subsidies has the potential to conserve about 44.5 BCM of irrigation water under Indian conditions.
- Auxiliary storage in the canal irrigation commands is another innovative intervention, presently practised mainly under the IGNP command, which provides improved control

and incentives to save water and improved productivity.

These physical interventions when supplemented with enabling policies and thrust for large scale adoption hold the potential to grow more food or gain more benefits on sustainable basis with less inputs.

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