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### Water Saving in Rice-Wheat Systems

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**Abstract:** Water shortage is a major constraint to sustaining and increasing the productivity of rice-wheat systems. Saving water can be elusive in that reducing seepage, percolation and runoff losses from fields does not necessarily save water if it can be recaptured at some other temporal or spatial scale, for example by groundwater pumping. Many technologies appear to save substantial amounts of water through reducing irrigation water requirement, but whether these are true water savings is uncertain as components of the water balance have not been quantified. Such technologies include laser levelling, direct drilling, raised beds, non-ponded rice culture and irrigation scheduling. It is questionable whether puddling saves water. Reducing non-beneficial evaporation losses is a true water saving, and optimal planting time of rice to avoid the period of highest evaporative demand and changing to non-ponded rice culture can save significant amounts of water. However, moving away from puddled, ponded to more aerobic rice culture sometimes brings new production problems. Furthermore, farmers faced with unreliable water supplies need to store water on their fields as insurance, and puddling assists retention of water during the rice crop. Rehabilitation and

improvement of canal and power systems in Asia, funded by charging according to use, are required to facilitate adoption of many water saving technologies. Australian farmers pay fixed plus volumetric charges for water to cover the cost of infrastructure and operation of irrigation systems, which are continuously being improved to provide water on demand and minimise losses. They are able to plan their plantings based on knowledge of the likely amount of irrigation water available each season and crop water use requirement, and thus avoid wasting water and financial loss by overplanting and crop failure. Such approaches have the potential to increase production and water productivity in Asia, however the challenge would be to apply them in an equitable way that benefits many millions of subsistence farmers.

**Keywords:** [Evaporation](#), [Deep drainage](#), [Irrigation](#), [Percolation](#), [Water use efficiency](#)

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