Canal irrigation at night

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Abstract. Most canal irrigation water in South and Southeast Asia and elsewhere continues to flow at night and much is badly used or wasted. Yet what happens to water at night is a neglected subject, a matter for anecdotes more than analysis. Darkness, cold, fear, normal working hours, and desire for sleep deter irrigation staff, farmers and labourers from activities at night. At the farm level, irrigation at night entails extra labour and costs. It requires smaller streamflows and well shaped fields. Paddy and trees are the easiest crops to irrigate, and younger, lower and more thinly spread crops are usually easier than those which are older, taller and denser. On the lower parts of main systems, control at night often passes informally from irrigation staff to irrigators. Potential productivity of water at night is slightly raised by lower evaporation losses, but this gain is negligible compared with losses from breaks in channels, inefficient water application, and wasted water flowing into drains. Reuse of night drainage water lower down sometimes makes waste less wasteful than it appears. Equity effects at night are mixed: some farmers poach at the expense of others, but some get water at night who are denied it during the day. Night irrigation increases costs and inconvenience to small farmers, but raises labourers' incomes. Flooding and waterlogging can result from uncontrolled water flows at night.

Practical implications are of two types: a) reducing irrigation at night, especially where water can be saved and stored by regulating releases from main reservoirs; in storage or by travelling in canals; by use of intermediate reservoirs; by pondage on-farm; or as groundwater. Care is needed in analysing what is waste and what is water saved. b) improving irrigation at night – by making flows predictable and manageable; by improving convenience and efficiency including lighting, ease of movement and field shaping; by choosing easy crops; by zoning for night flows; and by phasing for short nights, warmth and visibility. The potential for better performance on canal irrigation systems is probably large. It is hoped that this paper will encourage and provoke system managers, designers and researchers to explore the practical potential of this neglected subject about which much more needs to be known. Canal irrigation at night is too important to remain a blind spot any longer.
A day has a period of 24 hours (i.e. it includes the night).


The magnitude of waste involved in not irrigating at night is so huge that savings from other sophistications in the field of water management like the lining of watercourses etc. pale into insignificance.


Night irrigation and what we know about it is truly a blank page in our books.


**Canal irrigation at night: Another blind spot**

This article draws on experience in South and Southeast Asia. There, as elsewhere, observation analysis and policy for canal irrigation have been distorted by biases. These include paying more attention to construction than maintenance, to water supply than drainage, to head reaches than tails, and to on-farm development below the outlet than to scheduling on the main system above it. Main system management has been a blind spot (Wade & Chambers 1980). These biases have been increasingly recognised, and efforts are being made to correct them. But canal irrigation has another blind spot, reflecting an almost universal bias of human activity and perception: that of day rather than night.

Canal irrigation at night is a subject of anecdotes more than analysis. Many knowledgeable people have provided information which has contributed to this article.* Most people with experience of canal irrigation have stories to tell, though often these are based on hearsay and inference rather than direct observation. Farmers, too, are very willing to talk about it, in their case drawing on direct experience. Yet despite much interest in the subject, once raised, informants have been able to draw my attention to only two papers specifically concerned with night irrigation — Don Campbell’s (1980) monograph *Design and Operation of Irrigation Systems with Supply to the Field Confined to Daylight Hours Only*; and El Antaki & El Bekri’s (1984) article on night irrigation on

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