

# Crop production management practices as a cause for low water productivity at Zanyokwe Irrigation Scheme

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## Abstract

Generally, smallholder irrigation schemes (SIS) in South Africa have performed poorly and have not delivered on their development objectives of increasing crop production and improving rural livelihoods. Limited knowledge of irrigated crop production among farmers has been identified as one of the constraints to improved crop productivity, but research that investigates the relationship between farmer practices and productivity is lacking. A monitoring study was therefore conducted at the Zanyokwe Irrigation Scheme (ZIS) in the Eastern Cape to identify cropping systems and management practices used by farmers and to determine how these were related to performance. Evidence from 2 case studies showed that water management limited crop productivity. Irrigation application and system efficiencies were below the norm and irrigation scheduling did not take crop type and growth stage into account. Monitoring of 20 farmers over a 3-yr period showed that cropping intensity averaged only 48% and that the yields of the 2 main summer crops, grain maize (*Zea mays* L.) and butternut (*Cucurbita moschata*) averaged only 2.4 and 6.0 t·ha<sup>-1</sup>, respectively. In addition to poor water management, other main constraints to crop productivity were inadequate weed and fertiliser management and low plant populations. The results indicated that a lack of basic technical skills pertaining to irrigated crop production among farmers was a possible cause of inadequate management. In this regard, it is expected that farmers could benefit from 'back to basics' training programmes in the areas of crop and irrigation water management. Research needs to focus on labour-saving production technologies, establishing farm-specific fertiliser recommendations, the identification and use of affordable sources of nutrients, as well as strategies to improve plant population in maize by preventing bird damage to newly-planted stands.

**Keywords:** smallholder irrigation schemes, cropping pattern, constraints to crop productivity, research agenda