



Can water productivity benchmarks support us towards achieving a food-secure future?

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A growing world population requires food production to increase. Under some circumstances water availability limits such an increase. Increased water productivity (WP), for cereal crops in particular, seems the obvious solution. Towards achieving this, benchmarks for water footprints and productivities of crops have been proposed to inform decision-makers, including crop producers and consumers of food products. Several assessment studies have estimated yields and consumptive water use of food crops across scales, worldwide. Such assessments involve the use of statistics, crop models, processed remotely-sensed data and data from experimental plots. This study discusses whether and how the resulting estimates could be meaningfully used as benchmarks to guide decision-making such that food-security increases. More in particular the difficulty in estimating crop yields and consumptive water use across spatiotemporal scales and in different local contexts is discussed. This study shows that the range of uncertainties in estimating WP at various levels and the disagreement between results of different studies is considerable. This study concludes that benchmarks, presented in the form of global maps showing spatial variations of temporal averages of consumptive water use of particular crops at coarse resolutions, do not support a valid assessment of performance at water system and field levels. It is also argued that a considerable part of the (inherent) uncertainty in determining consumptive water use of crops cannot be overcome by additional research or data.