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An integrated approach for the estimation of crop water requirements based on soil, plant and atmospheric measurements

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ABSTRACT:

In this chapter, we argue that an integrated approach for estimating crop water requirements is required to account for atmospheric conditions, plant water status and soil properties. The chapter first reviews the concepts, principles, limits and advantages of the soil–plant–atmosphere–based methods to estimate crop water requirements at field level. The usefulness and complementarity of the integrated approach is then demonstrated through a case study to determine water requirements of an apple orchard in South Africa. Finally, the applicability of different methods, directions for future research and additional information for specific conditions are provided.