



Assessment of water use and its productivity in the Spanish irrigation district “Río Adaja”

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A study of the assessment of the irrigation water use has been carried out in the Spanish irrigation District “Río Adaja” that has analyzed the water use efficiency and the water productivity indicators for the main crops during the first three years of operation (2010/2011, 2011/2012 and 2012/2013). A soil water balance model was applied taking into account climatic data for the nearby weather station and soil properties. Crop water requirements were calculated by the FAO Penman-Monteith with the application of the dual crop coefficient and by considering the readily available soil water content (RAW) concept. Likewise, productivity was measured by the indexes: annual relative irrigation supply (ARIS), annual relative water supply (ARWS), relative rainfall supply (RRS), the water productivity (WP), the evapotranspiration water productivity (ETWP), and the irrigation water productivity (IWP). The results show that the irrigation district applied deficit irrigation in most crops (ARIS<1), and also improved water productivity. This was higher in 2010/2011 which showed the highest effective precipitation P_e . The IWP (€/m³) index varied among crops with the highest values for onion (4.14), potato (2.79), carrot (1.37) and barley (1.21) for the first year and, onion (1.98), potato (1.69), carrot (1.70) and barley (1.16) in the second year. Thus, these crops would be a proper cropping pattern to maximize the gross income in the irrigation district.