

## Eddy correlation approach to determine evapotranspiration in three crop fields with different irrigation methods

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Three fields covered with maize within the Nile delta were the target of the study. In 2010 summer, two fields employed conventional fallow irrigation while one uses drip irrigation method. Also one of the conventional fields was covered with mulching. In 2011 summer, one field employed conventional fallow irrigation, one drip irrigation method, and last one newly developed narrow ditch irrigation. At three fields, an eddy correlation system with relevant meteorological, hydrological and vegetation measurements has been operation. Also made were two intensive measurements in the summer of 2010, 2011, in which various data were obtained in order to allow model application to separate evapotranspiration into transpiration and soil evaporation during growing season of maize.

As a result of the measurement, annual evapotranspiration was found to be in the range of 649-983mm, and the amount of evapotranspiration during summer growing season accounted for 43-48% of the annual totals. They are about the same among fields with different irrigation methods. Some results derived from the model analysis will also be presented.

Keywords: evapotranspiration, eddy correlation method, Maize, Nile Delta, irrigation, Force Restore method