



## Abstract / Résumé

### Topic/Thème

#### *Management of irrigation schemes at different scales*

### Title of the paper/Titre de l'article

#### **Water saving in rice irrigation: field assessment of alternate wetting and drying flooding and drip irrigation**

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### Abstract

Rice crop has an important economic and social value in Portugal, being traditionally cultivated under continuous flooding irrigation. Although the common use of laser land leveling have allowed a significant reduction of water use, there are still common problems of water management to deal with, in order to face the climate global changes and the raising of a social emergent consensus. Therefore, saving water in rice production becomes a priority, to safeguard its economic and environmental sustainability. This communication presents a field study started in 2019 with the following objectives: i) Assessing the current rice irrigation practices, through a field monitoring; ii) Testing the newly water saving technique of alternate wetting and drying (AWD), and prepare a knowledge base and tools to support its extension to rice farmers; iii) Testing the drip irrigation with dry seeding, in a non-traditional paddy area

with a light soil. The field experiments were carried out on the Lower Mondego and Lis Valley Irrigation Districts, Portugal, under Mediterranean Temperate climate, sponsored by the project MEDWATERICE ([www.medwaterice.org](http://www.medwaterice.org)). The field measurements included the soil hydrodynamics, water table level, irrigation depths, agronomic operations, and rice productivity. The AWD irrigation showed that there is a potential of saving 10-13% of irrigation water, with a negative yield impact of about 6%, with an increase of 4 to 14% of irrigation water productivity, among 0.45 to 0.67 kg/m<sup>3</sup>, allowing additional 28 days with non-flooded soil. Therefore, the precise land levelling is determinant to reduce the water level above soil surface and irrigation water saving. The drip irrigation essay, innovative in this area, uncover problems with soil lateral wetting and fertilizers leaching in a light soil, explaining the yield losses. However, the maximum plot yield, makes glimpse a potential good performance, achieving a yield of 7 t/ha and a water productivity of 0.64 kg/m<sup>3</sup>. More knowledge is required about the crop development response to soil moisture, to optimize yield and water savings.

Keywords: Rice irrigation, rice crop, MEDWATERICE, water saving, crop sustainability