

Quantifying the water used in different rice crops

November 4 2015



Location and programming of the 'Eddy Covariance' (California, USA) at a paddy trial. Credit: Rubén Moratiel

A researcher from Universidad Politécnica de Madrid has been involved in a study to establish the quantity of water used in rice crops according to their seeding system.

The aim of the study was to quantify the [water](#) used in two different systems of [rice crops](#) during the first month of crop growth: water-seeded systems and dry-seeded systems. This research was carried out in California by the Universidad Politécnica de Madrid (UPM) and 15 researchers from other universities and research centres of Italy, China, Egypt and United States. Results suggest that these two systems of water management show no differences regarding the total crop cycle.

Rice is the third-largest global crop area (165m hectares) after wheat and corn, but it is the most important crop worldwide, considering the large area and the amount of people who depend on their harvest. Globally, the cultivated area in China and India represents half of the total surface.

Spain has the second largest rice area of the European Union with 115,000 hectares behind Italy. Rice crops usually grow under conditions of continuously flooded soils, requiring large amounts of water. An alternative system of cultivation consists of watering the soil during the first month and flooding it after that period. Are there any differences in the consumption of water between these systems?

To answer this question, a group of researchers from diverse countries has carried out a 3-year study on paddies fields in California (USA) using the Eddy covariance method to determine the crop evapotranspiration (combination of two processes of leaking water: evaporation through soil surface and evaporation through crop transpiration) and other set of variables (such as water drain and irrigation water input).

The research shows that there are not significant differences in the total

evapotranspiration of the cycle between a water-seeded system and a dry-seeded system. However, a tendency toward lower values for non-flooded soils was observed in 2007, suggesting that is possible to reduce evapotranspiration when rice is sown in soil humidity conditions avoiding the flooding of ground.

However, it is necessary to consider that in many cases, water-seeded systems have to be used due to factors such as weed control and salinity. Further comparative research may identify water optimization in this type of crop.

More information: Bruce Linquist et al. Water balances and evapotranspiration in water- and dry-seeded rice systems, *Irrigation Science* (2015). [DOI: 10.1007/s00271-015-0474-4](https://doi.org/10.1007/s00271-015-0474-4)

Provided by Universidad Politécnica de Madrid

Citation: Quantifying the water used in different rice crops (2015, November 4) retrieved 20 September 2024 from <https://phys.org/news/2015-11-quantifying-rice-crops.html>

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