

# EVALUATING THE IMPACT OF RELIABLE WATER SUPPLY IN THE ADOPTION OF ALTERNATE WETTING AND DRYING IRRIGATION PRACTICE FOR RICE IN CHINA

SHAHBAZ MUSHTAQ<sup>1,2\*</sup>, MOHSIN HAFEEZ<sup>1</sup>, AGUS HERMAWAN<sup>1,3</sup>

<sup>1</sup>*International Centre of Water for Food Security, Charles Sturt University (CSU), Wagga Wagga, NSW, Australia*

<sup>2</sup>*Australian Centre for Sustainable Catchments, University of Southern Queensland, Toowoomba, Qld 4350, Australia*

<sup>3</sup>*Assessment Institute for Agricultural Technologies (AIAT) Central Java – Indonesia*

## ABSTRACT

Alternate wetting and drying (AWD) has been attracting increasing interest, because it seems to reach several useful objectives: using less water to achieve the same result; thus increasing water productivity and profitability. It is the most widely adopted water-saving irrigation practice in China. This method of irrigation is characterized by: a) mid-season drainage during the later tillering stage of the crop and b) periodic soil drying 2-4 days in between irrigation events from panicle initiation to the harvest. In the mid-season drainage, the soil is dried out for 10-15 days, depending on the weather condition until some fine cracks appear in the soil.

The aim of this paper is to better understand how reliable water supplies, from main reservoir, smaller reservoirs, and local ponds, are important for the adoption of AWD irrigation practices. We hypothesized that access to reliable water sources such as water ponds would increase the likelihood of practicing AWD for rice cultivation. While it seems intuitively reasonable to assume that farmer's ability to access reliable water sources would reduce the risk involved in letting the paddy field dry

---

\* Correspondence to: Dr. Shahbaz Mushtaq, Charles Sturt University (CSU) - International Centre for Water and Food Security Building 24, Boorooma Campus, Wagga Wagga, New South Wales 2650, T: +61-2-6933 4934 F: +61-2-6933 2647, E-mail: [smushtaq@csu.edu.au](mailto:smushtaq@csu.edu.au)

temporarily, and therefore encourage the adoption of AWD, this study found no solid empirical evidence to support the proposition. However, weaker empirical evidence shows that access to reliable water supply from local ponds positively influences AWD practices. The results show that the adoption of AWD is not driven by farmer's self choice but rather they are adopting AWD to mitigate risk in the face of increasing water scarcity. The result suggests that AWD training and farm size or land distribution system has an important role in the adoption of AWD practices. The policy implication of this research is that imposing institutional water scarcity could be a way to promote the adoption of AWD irrigation practices.

Key words: Water productivity; Water-saving irrigation practices; Adoption; Reliability; Water policy; Alternate wetting and drying; and Censored Tobit regression.