

# Effects of Non-flooded Cultivation with Straw Mulching on Rice Agronomic Traits and Water Use Efficiency [PDF]

QIN Jiang-tao<sup>1</sup> HU Feng<sup>1</sup> LI Hui-xin<sup>1</sup> WANG Yi-ping<sup>2</sup> HUANG Fa-quan<sup>3</sup> HUANG Hua-xiang<sup>3</sup>

(<sup>1</sup>College of Resources and Environmental Sciences, Nanjing Agricultural University, Nanjing 210095, China; <sup>2</sup>China National Rice Research Institute, Hangzhou 310006, China; <sup>3</sup>Plantation of Dengjia Town, Yujiang County, Jiangxi Province, Yujiang 335200, China)

**摘要:** A field experiment was conducted to study water use efficiency and agronomic traits in rice cultivated in flooded soil and non-flooded soils with and without straw mulching. The total amount of water used by rice under flooded cultivation (FC) was 2.42 and 3.31 times as much as that by rice under the non-flooded cultivation with and without straw mulching, respectively. The average water seepage was 13 560 m<sup>3</sup>/ha under the flooded cultivation, 4 750 m<sup>3</sup>/ha under the non-flooded cultivation without straw mulching (ZM) and 4 680 m<sup>3</sup>/ha under non-flooded cultivation with straw mulching (SM). The evapotranspiration in the SM treatment was only 38.2% and 63.6% of the FC treatment and ZM treatment, respectively. Compared with the ZM treatment, straw mulching significantly increased leaf area per plant, main root length, gross root length and root dry weight per plant of rice. The highest grain yield under the SM treatment (6 747 kg/ ha) was close to the rice cultivated in flooded soil (6 811.5 kg / ha). However, the yield under the ZM treatment (4 716 kg/ ha) was much lower than that under the FS treatment and SM treatment. The order of water use efficiency and irrigation water use efficiency were both as follows: SM> ZM> FC.

**关键词:** rice; non-flooded cultivation; straw mulching; water use efficiency; irrigation water use efficiency  
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