

[P2] Farming System

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 2 (Poster) (Farming System)

1:15 PM - 2:00 PM

[P2-20]Effect of Flood and Drip Irrigation and Difference of Organic Material Input on Morphological and Physiological Traits in Rice Root

○Jiabin Bian¹, Kanchana Chomsang², Masahiro Morokuma³, Masanori Toyota³ (1.College of Agronomy & Resources and Environment, Tianjin Agricultural University, China, 2.United Graduate School of Agricultural Science, Ehime University, Japan, 3.Faculty of Agriculture, Kagawa University, Japan)

We investigate the effects of irrigation method (drip or flood) and different management of organic material on root morphological characteristics and its distribution and physiological functions of the rice cultivar Hinohikari. Experiments were conducted in the paddy field in the University farm (input organic materials every year) for both drip and flood irrigation and the paddy and upland field (no input organic material) in the campus of the Faculty (Campus) under flood and drip irrigation, respectively. The planting density was 13.8 and 16.7 hills m⁻² for Farm and Campus, respectively. Plant root was sampled with a core sampler (ø 5cm × 30cm) and root length and surface area were determined using image analysis. Yield in flood was significantly higher than in drip irrespective of the site. The increase of dry weight, bleeding rate and specific root length during the ripening stage were significantly higher in flood than in drip. The root depth index at the heading stage was significantly deeper in drip than in flood. All root morphological characteristics were larger in Farm than in Campus, though the difference between site was not significant excepting that length and surface area of root at heading were significantly higher in Farm than those in Campus. These results indicated that the root diameter is thicker, and root distribution is deeper in drip than in flood. It also suggested that the farm soil which was applied organic materials every year is more conducive to root growth.