

[P2] Farming System

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

1:15 PM - 2:00 PM

[P2-14] Grain Yield and Biodiversity in Lowland Rice Ecosystems: Comparison between Conventional and Organic Management Practices

*Nominated for Presentation Awards

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There is a growing interest in sustainable agro-ecosystem management aiming at biodiversity conservation. Previous works on flora and fauna in rice ecosystems have focused on two aspects: biotic constraint to yield and biodiversity loss. Meanwhile, attempts to harmonize crop productivity and biodiversity are still limited. The objective of this study was to clarify the effects of weeding and fertilizer application regimes on rice growth and biodiversity in lowland fields with conventional and organic management practices. Field trials were conducted at the Institute for Sustainable Agro-ecosystem Services, the University of Tokyo, Tokyo, Japan in the summer of 2020. Four treatments were compared in lowland fields with conventional and organic management practices: control, additional N topdressing, intensive mechanical weeding, and mild mechanical weeding. In organic management, weed biomass at heading was greatest in control. But there was no difference in N concentration in rice plants among the treatments, suggesting that there was little competition between rice and weeds for N. Threatened species were detected only in organic management, suggesting that the use of agrochemicals promotes biodiversity loss in lowland rice ecosystems. There was no difference in the rice yield and brown rice quality among treatments and management practices. Our results suggested that it is possible to avoid yield loss without herbicide application where weed biomass is less than 150 g m^{-2} at heading and the target yield is less than 7 t ha^{-1} .