

[P2] Farming System

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

1:15 PM - 2:00 PM

[P2-32] Do New Rice Cultivars Respond to Chemical Fertilizers Better than Old Cultivars?

*Nominated for Presentation Awards

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Nitrogen is the most important nutrient for rice growth, and rice's responsiveness to nitrogen application is cultivar-specific. We hypothesize that improved cultivars (Bekoaoba and Momiroman) increase biomass more than old cultivars (Yuminariho and Yamadanishiki) when chemically fertilized; the old cultivars increase biomass more than new cultivars when organically fertilized. The four cultivars with two controls (Koshihikari and Nipponbare) were subjected to five nitrogen levels (80 and 160kgN/ha in the form of organic and chemical and non-fertilized as control) applied once before transplanting. Biomass was collected at four active tillering, panicle initiation heading and maturity stages. At maturity, contrary to our expectation, old cultivars increased biomass in chemically fertilized plots than unfertilized control, while new cultivars' responses to chemical fertilizer were insignificant except for Bekoaoba in the 80kgN/ha. When chemically fertilized, Yuminariho and Yamadanishiki increased biomass during reproductive and ripening, respectively. Also, chemically fertilized Bekoaoba at 80kgN/ha lately increased biomass due to nitrogen immobilization during active tillering stage (biomass was higher in unfertilized than in chemically fertilized plots). Irrespective of genetic background, organic fertilizer had insignificant or even adverse effects on biomass at maturity than unfertilized control, implying occurrence of nitrogen immobilization throughout growth period. The results infer that cultivar's responsiveness to nitrogen application is influenced by soil organic matter or immobilization capacity of soils.