

[P3] Abiotic Stress for Crop Production

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 3 (Poster) (Abiotic Stress for Crop Production)

1:15 PM - 2:00 PM

[P3-30] Utilization of *SEMIDWARF1* for Vigorous Growth, Weed Competitiveness and Deep-Water Resistance in Rice Varieties for Organic Farming

*Nominated for Presentation Awards

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The interest in environmental conservation agriculture with reduced chemical fertilizers and pesticides applications has increased under the SDGs. The Green Revolution rice varieties with *sd1* adapted to the application of heavy chemical fertilizers and pesticides were developed and widespread. They obtained the resistance to lodging by using mutation in *SD1* that induces the inhibition of GA synthesis. Weed management and the amount of initial growth pose huge challenges in organic farming, because of no synthesized fertilizers and pesticides application. Some cultivation methods have been considered to resolve such problems; eg. organic fertilizer application and conducting the deep-water management. The development of new varieties adapted to organic farming are required for the post-Green Revolution. However, it is still unknown what characteristics should be introduced or what's the useful gene for organic farming, and such research approach has not been undertaken. In this study, we analyzed three key characteristics for organic farming of rice: vigorous growth in initial stage, deep-water resistance and weed competitiveness. Although the effectiveness of *SD1* for weeds competition was not enough, varieties carrying *SD1* grew better than those carrying *sd1* with the deep-water management and green manure application as an organic fertilizer due to their rapid shoot elongation. Therefore, it could be one of the key genes under the organic fertilizer application and the deep-water management to control weeds during the initial growth stage.