
Oral sessions | Abiotic Stress for Crop Production | O34: O₂ Deficiency, Submergence

[O34] O₂ Deficiency, Submergence

Chair: Mikio Nakazono (Nagoya University, Japan)

Chair: Feng Yu (Hubei University, China)

2021年9月10日(金) 09:45 ~ 11:45 Room 3 (Oral) (Abiotic Stress for Crop Production)

11:10 ~ 11:25

[O34-06] Morpho-Physiological Responses of Common Buckwheat (*Fagopyrum esculentum* Moench) and Rice (*Oryza sativa* L.) to Waterlogging Stress

*Nominated for Presentation Awards

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Waterlogging, a major environmental stress, is a severe constraint on crop growth and productivity in many regions in the world. This study aimed to investigate the morpho-physiological changes of buckwheat and rice under waterlogging stress. The common buckwheat (*Fagopyrum esculentum* cv. Harunoibuki) and rice (*Oryza sativa* L.) used in this study were collected from the Laboratory of Tropical Science at Kagoshima University in Japan. The seedlings were exposed to waterlogging stress with 0~1 cm of water depth for 3-days at early growth stage. The plant height, SPAD, chlorophyll fluorescence, root traits (length, surface area and volume), aerenchyma, Radial oxygen loss barrier and dry weight were measured. Waterlogging also caused dramatic changes in the plant height, chlorophyll content and root morphology. SPAD value and chlorophyll fluorescence of buckwheat was significantly ($p < 0.01$) affected under waterlogging stress. In case of buckwheat chlorophyll fluorescence showed the significant changes with 0.54 Fv/Fm in early growth stage under waterlogging stress. Also, the root morphology was affected significantly ($p < 0.01$) under waterlogging stress. Waterlogging affected root length, surface area and volume in buckwheat. Root (length, surface area, volume) caused serious damage by waterlogging stress. No aerenchyma and ROL barrier were found in Buckwheat, however, flooding stress enhanced adventitious roots substantially. The findings concluded that buckwheat was more sensitive regarding physiological characteristics under waterlogging stress.