[O11] Direct-seeded Rice in Asia-Oceania Region

Chair: Yoichiro Kato (The University of Tokyo, Japan)
Chair: Virender Kumar (International Rice Research Institute, Philippines)
2021年9月9日(木) 09:45 ～ 11:45 Room 1 (Oral) (Field Crop Production)

10:05 ～ 10:25

[O11-02]Improvements in Abiotic Stress Tolerance Required for Drill Seeded Aerobic Rice Production

(Invited Speaker)
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Traditionally, the temperate Australian rice production system is reliant on permanent water. Largely as a water productivity measure, there has been a shift in establishment to drill seeded technique. However, with recent droughts and increasing irrigation costs, adaptation to aerobic growing conditions has been considered. The potential for water saving with an aerobic, drill seeded system is high, however it is only an emerging system and varieties have not been developed for southern Australia. For successful aerobic production, potential donor varieties adapted to both low- and high-temperature and aerobic conditions, need to be identified.
In temperate growing areas, rice often suffers severe low-temperature damage (<19º C), and varieties need to be tolerant, particularly from panicle initiation to anthesis. Under aerobic conditions, where the crop will be exposed to greater temperature extremes and intermittent water deficit, tolerance becomes critical. With phenotypic screening for low-temperature tolerance at the booting and flowering stages, genotypes were identified that were more tolerant than Sherpa, the current Australian cold tolerant variety. Results indicated the importance of anther dehiscence in contributing to low-temperature tolerance. Recent work focused on root morphology to explore aerobic adaptation, specifically in relation to root cone angle, rooting depth and the relationship with maintenance of crop transpiration and grain yield under aerobic conditions. The above will be discussed in the context of an aerobic, drill seeded cropping system.