

[O32] Drought Physiology

Chair: Junichi Kashiwagi (Hokkaido University, Japan)

Thu. Sep 9, 2021 2:30 PM - 4:30 PM Room 3 (Oral) (Abiotic Stress for Crop Production)

4:10 PM - 4:25 PM

[O32-07] The Ear Photosynthesis as Potential Source for Drought Yield Improvements in Wheat

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Recently, severe droughts have often occurred in major wheat cultivation regions. It is, therefore, quite important to improve the drought tolerance in wheat. Although the significant improvements with scientific knowledge have been made for it, the information on contributions of ear photosynthesis to the drought productivity is still limited. We have conducted the drought studies in wheat at Hokkaido University. Domestic and abroad wheat varieties (ICARDA and Hokkaido varieties) were evaluated the contribution of ear photosynthesis to grain yield in field trials. The wheat were cultivated under well- and restricted-irrigation conditions. At the ear emergence, the ear photosynthesis restriction was imposed by covering the entire ears with aluminum foils (shading ear treatment), and as control treatment, normal cultivation without the foil covering was set. Their canopy photosynthesis and drought performances were evaluated during the cultivation periods. The shading ears brought significant yield reductions. In addition, there was significant correlation between the canopy photosynthetic rate during the ripening period and yield. These indicated the significance of ear photosynthesis to the canopy photosynthesis which could determine the grain yield. The contributions of ear photosynthesis under drought conditions were increased significantly in two ICARDA varieties, but not in a Japanese variety. This indicated that the ear photosynthesis could more important as source organ if they were subjected to droughts, although the magnitudes would depend on the genotypes.