[O42] Assimilate Partitioning for Crop Productivity and Quality

Chair: Naohiro Aoki (The University of Tokyo, Japan)
Chair: Tatsuro Hirose (Takasaki University of Health and Welfare, Japan)
Chair: Yong-Ling Ruan (The University of Newcastle, Australia)
2021年9月9日(木) 14:30 ～ 16:30 Room 4 (Oral) (Crop Genetics and Physiology)

15:55 ～ 16:10

[O42-06]Genetic Modification of Non-structural Carbohydrate Composition in the Stem of Rice

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In order to improve the self-sufficiency of food and renewable energy and make effective use of paddy fields in the future, it is important to make great strides in the multi-use of rice, such as for bioethanol and feed. We have shown that the accumulation and composition of stem non-structural carbohydrates (NSCs) can be genetically modified without affecting the function of the leaf blade or ears (endosperm). In this study, we crossed the existing high-starch feed rice cultivars "Leaf Star" or "Tachisuzuka" with a mutant line of "Nipponbare", which does not accumulate much starch in the stems due to a functional deficiency in *OsAGPL1* gene, and then grew their BC1F3 generations in paddy fields to investigate the relationship between the genotype and the stem sugar and starch contents at harvest. The results showed that stem starch content in AGPL1-deficient individuals, regardless of the parental cultivar, was almost zero, and soluble sugars were increased twice as much as in normal and heterozygous individuals, confirming the heritability of the high stem-sugar trait. In addition, the crude fat content was also increased in the stems of AGPL1-deficient individuals.