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Single-trait GWAS of Leaf Rolling Index with the Korean Rice Germplasm

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[Abstract]

Leaves are an important organism for photosynthesis and transpiration. The shape of leaf is crucial factor affecting plant architecture. V-shape leaf rolling is enhancing canopy photosynthesis by increasing the CO₂ penetration and the light capture by reducing the shadow between the leaves. Therefore, moderate leaf rolling is thought to more high grain yield per area than flat leaf. We investigated 278 KRICE_CORE accession's Adaxial Leaf Rolling Index (LRI) in first heading using the following equation.

For each accession, genomic DNA was used for sequencing. We sequenced the genomics with ~8 X coverage to detect SNPS. Raw reads were aligned against the rice reference (IRGSP 1.0) for SNP identification and genotype calling. To generate genotype data for GWAS, SNPs were filtered with minor allele frequency 0.05. Finally, 841,134 high-quality SNPs were used for our GWAS.

The significant threshold was $-\log_{10}(P) > 7.23$. From the results, 2 significance SNP were detected. Considering the LD block of 250kbp, 60 candidate gene were selected including Hypothetical gene and Conserved gene. In this poster, we analyzed candidate gene affecting adaxial Leaf Rolling through single-trait GWAS.

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