

**PB-009**

## Identification of QTLs Related Rice Pre-harvest Sprouting using a Tropical Condition

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### [Introduction]

Recent climate change has been threatening the sustainability of agricultural production. High temperature and frequent rainfalls in the autumn are accelerating the pre-harvest sprouting during the rice ripening period in Korea. Especially, most japonica cultivars of Korea is highly vulnerable to pre-harvest sprouting which affect grain quality such as milling recovery and head rice ratio as well as rice yield. In 2016, Pre-harvest sprouting damaged area reached 15,000 hectares mainly in Jeolla south province, bringing about serious economic and social problems.

### [Materials and Methods]

To enhance the selection efficiency for pre-harvest sprouting tolerance, 126 recombinant inbred lines were derived from a cross between a tolerant Tongil type cultivar, 'Milyang 23', and a sensitive japonica cultivar, 'Hwayeong'. Each line and parents were genotyped with 7K Infinium rice LD SNP Chip and polymorphic 2,785 SNP markers were found and 816 SNP markers were distributed on the 12 chromosomes after removing the redundancy markers. Phenotyping were conducted at the paddy field of IRRI, Philippine. Three panicles were collected from each plant at 35 days after heading and wrapped with wet paper towels and incubated at 30°C with 100% humidity. After 7 days of treatment, each panicle was checked out for pre-harvest sprouting.

### [Results and Discussion]

As a result, we identified three significant QTLs located in chromosome 7, 11 and 12 which explain 7~17% of total phenotypic variation. These QTLs would provide the basic marker to select tolerant lines for pre-harvest sprouting in the breeding population.

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