

**PB-30**

## **Validation of KASP Markers for Important Agricultural Traits in Wheat**

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### **[Introduction]**

Wheat (*Triticum aestivum* L.) is one of the major crops worldwide and per capita food use of wheat is about 32kg in Korea. The self-sufficiency of wheat is around 1.5% and an efficient wheat breeding strategy is needed to improve self-sufficiency. Kompetitive Allele-specific PCR (KASP) assay has recently emerged as single-plex high-throughput genotyping technology. Here, we evaluated the KASP markers which are related to important economic traits in wheat to apply our wheat breeding program.

### **[Materials and Methods]**

DNA extraction and PCR analysis

Genomic DNA was extracted from 4-week seedlings according to C-TAB method. For KASP assays, KASP primers by designed Rasheed A. and et. al. (TAG, 2016, 129:1843-1860) were used. PCR cycling was performed using the following protocol: hot start at 95°C for 5 min, followed by ten touchdown cycles (touchdown at 65°C initial and decreasing by 0.6 per cycle), followed by 30 additional cycles of annealing at 57°C. Genotyping was determined using Real-time PCR machine.

### **[Results and Discussion]**

In here, we first examined the agriculture traits such as plant height, heading date in the field located in Milyang. Then we selected 70 of the varieties and lines showing proper agricultural traits in Milyang. To establish MAS system with selected varieties and lines, we have evaluated the 48 of KASP assays which are reported by Rasheed A. and et. al. Among them, 6 of KASP assays were not working in our experimental conditions. 10 of KASP assays were not showed polymorphisms between our experimental materials. 32 of KASP assays showed the clear separation between polymorphisms. Finally, we established up 23 the KASP assays for the agricultural traits, 7 the KASP assays for biotic resistant, and 2 of the KASP assays for drought tolerant in wheat. And *TsSdr-D1*, *Vp1B1* and *TaPHS1* for preharvest sprouting and *Fhb1*, *Lr34*, and *Yr15* for rust and Fusarium resistance may be useful for improving wheat breeding efficiency.

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