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Simple sequence repeat markers related light-induced germination in Korean weedy rice

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Objectives

We have tried to find simple sequence repeat (SSR) markers related light-induced germination in Korean weedy rice.

Materials and Methods

1. Material

Plant Photoblastic rice (Japonica-type weedy rice)

Ilpum (*Oryza sativa* L. cv. Ilpum)

Milyang23 (*Oryza sativa* L. cv. Milyang23)

2. Methods

- Isolation of genomic DNA from rice leaf
- PCR amplification with SSR markers
- ANOVA analysis

Results and Discussion

The control of germination exists at two levels. One is the dormancy that is related entirely to the state of the seed itself, and the second is the operation of environmental factors on both dormancy and germination. The light is an important environmental factor for releasing seeds from dormancy in the many crops besides rice. The seed germination of rice (*Oryza sativa* L.) has been known to be unaffected by light. However a photoblastic rice (PBR), which was discovered in Korean weedy rice, was induced germination by light (Chung 2003). The PBR germinated below 30% in darkness but 100% in light and germination rate increased to 50% by 2mM GA treatment. And PBR germination showed far-red light reversible reactions.

For identification of molecular markers related to light-induced germination, bulked segregation analysis (BSA) was used with simple sequence repeat (SSR) marker. BSA approach performed in two RILs population derived from a cross between Ilpum X PBR and Milyang23 X PBR. We confirmed some SSR markers in chromosome 12 which has a polymorphic banding pattern between bulks in F3 plants of Milyang23 X PBR. Also, we performed BSA in F4 plants of Ilpum X PBR and could confirm same results.