

Identification of QTLs for Cold-Tolerance by Multi-locational Screening of RI Lines in Rice

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Objective

The objective of the present study was to identify QTLs associated with cold tolerance by multi-locational screening of RILs. In order to develop cold tolerant varieties adaptable to wide-range of cold stresses, a strategy facilitating MAS is being adopted to accumulate QTLs detected from different environments.

Maerials and Methods

○ Methods:

Dasanbyeol(*indica*)/TR22183(*japonica*)(F9) RI 166 lines

○ Methods:

The two RIL populations were grown in Kunming(Yunnan, China), the igh-altitude area, Chuncheon(cold-water irrigation) and Suwon(nomal environment).

○ QTL and epistasis analysis:

Interval mapping using Qgene 3.06 program and Epistacy version 2.0 SAS program.

Rusults and Discussion

1. All of the characters in both RIL populations revealed nomal distributions with some transgressive segregations, and varied more or less along test environments (Figure 1).
2. Several QTLs were identified in all characters tested which were associated with cold tolerance (Table1 & Figure 2). Percent phenotypic variation of QTLs ranged from 7.29% from 23.1%. In most of the characters, unique QTLs to each environment were detected, which were regarded as QTLs responsive to the specific cold-environment of each test location.
3. A number of significant two-loci interactions between markers were detected.

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