

Evaluation of Genes Effects and Providing Linkage Map in Iranian Rice Mapping Population of Gharib × Khazar Cross

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Abstract

The genetic structure of agronomic traits has the most important role in determination of breeding methodology. Generation means analysis and QTL mapping refers to effective methods for determination of gene type and action. In order to investigate the genetic structure of agronomic traits of Gharib × Khazar via means analysis, six basic generations in three replications as randomized complete block design were cultivated at Gonbad Higher Education Center in 2008. At the same time, in order to map agronomic traits, 20 plants of 192 F₃ families and parents were planted. The results showed gene controlling of plant height, panicle length and biomass indicated over dominance, grain number, branches number, days to flowering, panicle extraction and flag leaf length showed partial dominance. Significant additive effects were detected for grain number, branches number, days to heading, plant height and panicle extraction. Therefore, the selection method is useful for improving these traits. The three parametric models were detected for branches number, plant height, panicle length, panicle extraction, days to heading, panicle extraction and flag leaf length and width. Mapping of agronomic traits showed that qHD-1b, qPL-12, qNP-2, qDWS-8, qWFL7, qWP1, qWP-11a and qWP11b explained more than 20 percent of total phenotypic variation. The comparison of the two methods showed that, with the aid of selection for some QTLs such as qHD1b, can be used for decreasing days.

Keywords: *Generation means analysis, QTL mapping, Heredity, Additive effect, Dominant effect, Linkage map, Rice*