عنوان مقاله:

.Quantitative Genes Controlling Chlorophyll Fluorescence Attributes in Barley (Hordeum vulgare L)

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خلاصه مقاله:

Chlorophyll fluorescence is one of the very useful techniques in plant physiology because of the ease with which the user can gain detailed information on the state of photosystem II (PSII) at a relatively low cost. Detection of quantitative traits loci related to chlorophyll fluorescence have a major role in understanding the genetic mechanisms of photosynthesis. In the present research, to mapping, the genome regions controlling chlorophyll fluorescence traits, barley (Hordeum vulgare L) from ۱۰۶ F۸ recombinant inbred lines caused by crossing two cultivars of Badia × Kavir was used and these lines were cultured in a complementary randomized design with two replications. Traits studied include ABS/CSo, TRo/CSo, DIo/CSo, ABS/CSm, DIo/CSm, psi (Eo), TRo/RC, REo/RC, ABS/RC, DIo/RC, Area, Fv/Fm, Sm. Linkage maps were prepared using ۱۵۲ SSR polymorphic markers, ۷۲ ISSR, ۷ IRAP, ۲۹ CAAT, ۲۷ Scot, and ۱۵ iPBS alleles. Molecular markers were assigned on ۷ chromosomes of barley. The linkage map covered ۹۹۹.۲ cM of the barley genome and the average distance between two flanking markers was ۳.۳۸۷ cM. Three major QTLs were identified for Area, psi (Eo), and Dio/Rc on Chromosome ۶ between ISSR۳۱-۱-Bmag۰۸۶۷ in position ۶۲ Centimorgan that explained ۱۷.۲%, ۳۱.۵%, and ۱۵.۹%, respectively. Also, another colocation was detected for ABS/CSo, TRo/CSo, ABS/CSm, and DIo/CSm QTLs on chromosome ۶ in position ۷۲ Centimorgan. The results obtained in the present research provide valuable information on the genetic basis of the Chlorophyll fluorescence parameters that can be used in the barley breeding program, including marker-assisted selection.

کلمات کلیدی:

Barley, Hordeum vulgare L, Chlorophyll fluorescence, Molecular markers, QTL