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Mapping of QTL for germination attributes under salt stress in wheat

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Identification of genetic factors responsible for controlling germination traits in salt stress condition can be helpful to identify and develop salt tolerant cultivars. Present study was designed to identify quantitative trait loci (QTL) related to germination traits using F7 mapping population RILs derived from cross between Pasban-90 (salt tolerant) and Frontana (salt susceptible). Composite interval mapping (CIM) was used for QTL analysis of germination percentage, germination index, seedling vigor index, root length, shoot length, fresh weight and dry weight. This analysis resulted in the identification of 26 QTLs under salt stress and 18 QTLs under control condition. Seven major QTLs (QFW.6A, QDW.6A, QRL.6A, QFW.3B, QFW.6B, QRL.6D and QSL.6D) were mapped on 6A, 3B, 6B and 6D in control treatment and 11 main QTLs were detected under stress condition. We identified shared location for root length, shoot length and fresh weight on 3D in xgdm8-xgwm314. Shoot length and root length QTL detected in interval xcfd13-xgwm132 on 6D.

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Effects of light intensity and quality on physiological changes in winter rice (*Oryza sativa* L.)

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An investigation into the effects of low light (≈mean PPFD169-493μMs^{-1}m^{-1}), red light (≈mean PPFD657-843 μMs^{-1}m^{-1}) and normal light (≈mean PPFD1061-1260 μMs^{-1}m^{-1}) on physiological changes including yield attributes, nutritional status at Panicle Initiation (PI), flowering and harvest stages in winter rice (genotype: Monoharsali) was carried out from 40 days after transplanting (DAT) to crop maturity under both pot and field conditions. There was reduction in available PPFD at flowering as compared to PI stage of the crop. The genotype exhibited significantly higher total dry matter (TDM) and lower leaf area index (LAI) values at normal light or red light than at reduced light situation. The bio-economical yield and harvest index (HI) under normal light exceeded those at low light regime. The yield attributes viz., number of panicles, number of field grains per panicle, 1000 grain weight (test weight), high density (HD) grains, potential 1000 grain weight and sink capacity were superior at normal or red light to low light condition. Higher the total carbohydrate contents in grains, higher were the sink capacity with the normal /red light illuminations at harvest stage. At PI stage, leaf nitrogen content was reduced by low light, but it increased at flowering stage significantly. Grain protein contents, under normal/red light exceeded its value at low light treatment. A positive correlation of most of the yield attributes with grain yield at normal/red light, and a negative correlation of these parameters were found at low light conditions.

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