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## Annals of Biological Research

### Abstract

[Evaluation of drought tolerance in bread wheat \(\*Triticum aestivum\*\)](#)

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## [L.\) using immature embryo culture](#)

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In order to evaluate the response of twenty genotypes of bread wheat (*Triticum aestivum* L.) to callus induction and in vitro drought stress. A completely randomized design (CRD) with six replications was used for callus induction and a 20 × 2 factorial experiment based on CRD design with three replications was carried out for response of genotypes to in vitro drought stress at the Agricultural College of Razi University, Kermanshah, Iran during 2009-2010. Analysis of variance revealed high significant differences ( $P < 0.01$ ) between genotypes for callus relative growth (CRG), callus relative growth rate (CRGR), callus growth rate (CGR), percentage of callus chlorosis (PCCH) and percentage of callus water content (PCWC) at different drought levels indicating the presence of genetic variability, different responses of genotypes to different drought intensities and in vitro selection of drought-tolerant genotypes using immature embryos. The stress × genotype ( $G \times S$ ) interaction was significant for CRG, CGR, PCCH and PCWC except for CRGR displaying different responses of characters to different levels of drought (PEG), while CRGR was stable and independent of different drought levels. Mean comparison for the effect of different stress (PEG) levels indicated that the effect of stress levels on CRG, CGR, PCWC and in vitro tolerance (INTOL) were decreased with increment of drought percentage. Mean comparisons between genotypes indicated that maximum CRG, CGR, CRGR, PCWG, PCCH and INTOL were attributed to genotypes 5, 16, 17, 2, 3 and 20 (drought tolerant), respectively. While the lowest amount of CRG, CGR, CRGR, PCWC, PCCH and INTOL were belonged to genotypes 13, 10, 15, 4, 15 and 15 (drought sensitive), respectively. Screening drought tolerant genotypes and in vitro indicators of drought tolerance using biplot analysis and rank sum, discriminated genotypes 6, 16, and 5 as the most drought tolerant genotypes, respectively. While genotypes 15, 17 and 10 as the most sensitive to drought, therefore they are recommended for crossing and genetic analysis of drought tolerance using diallel mating design or generation mean analysis and also for the QTLs (quantitative trait loci) mapping and marker assisted selection.

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getElementById(id)){js=d.createElement(s);js.id=id;js.src=p+"//platform.twitter.com/widgets.js";fjs.pa  
rentNode.insertBefore(js,fjs);}}(document,"script","twitter-wjs");
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