RESEARCH PAPER

Temperature induction response technique - A physiological approach to identify thermotolerant genotypes in rice

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Abstract : Thermotolerance is one of the various acquired stress tolerance phenomenon observed in many living organisms, when the stress is imposed gradually. It is extremely important to develop screening tools for identification of thermotolerant genotypes in the context of increase in average global temperature. Temperature induction response (TIR) technique has been standardised to identify thermotolerant genotypes in rice. This technique involves exposing rice seedlings to gradual induction temperature immediately followed by lethal temperature and measuring growth of the surviving seedlings at the end of the recovery period of 72 h. The accuracy of the TIR technique depends on optimum induction cycle and lethal temperature. The standardization of induction temperature and lethal temperature is based on per cent growth reduction and survival percentage at the end of recovery period. The induction temperature was standardized as 36-44°C for 5 h and the lethal temperature as 52°C for 3 h. It is proposed that this technique can be used as a potential tool to identify and select temperature tolerant lines at the seedling level from a large population.

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