

Estimation of genetic parameters for morpho-physiological traits under terminal heat tolerance in bread wheat (*Triticum aestivum* L.)P. Kumar^{1,3}, S. Dhillon^{1*}, P. Kumar² & S. Kumar²¹ Department of Molecular Biology and Biotechnology² Department of Genetics & Plant Breeding, CCS Haryana³ Agricultural University, Hisar-125 004 (Haryana)

Correspondence: k.pritam4@gmail.com

Winter wheat is adversely impacted by the effects of high temperature stress in many wheat-producing areas. Increasing productivity under heat stress conditions requires the development of high temperature-tolerant wheat cultivars. The identification and measurement of traits conferring high temperature tolerance and an understanding of genetic variability and gene regulation of these traits are essential for the development of high temperature-tolerant germplasm.

Understanding the genetic basis of tolerance to high temperature is important for improving the productivity of wheat (*Triticum aestivum* L.) in regions where the stress occurs. The objective of this study was to estimate the genetic parameters for morpho-physiological characters *viz.* number of days to heading, days to maturity, tillers/plant, grain number, 1000 grain weight, grain yield, membrane stability and chlorophyll stability index under terminal heat stress which was created by delayed sowing of the crop. Four cultivars, DBW 16, Hindi 62 (heat-tolerant) and WH147, WH711 (heat-susceptible), were crossed as WH147 × DBW 16 and Hindi 62 × WH711 to produce F₁, F₂, and F₃ populations, and their grain-filling duration (GFD) at 35 °C day was determined as a measure of heat tolerance. Results indicated that significant variations were observed among different F₂ plant of both wheat crosses in respect of all yield attributes under heat stress environment. The SSR marker analysis was applied for the screening of the four parents for the polymorphism under stress condition. Products from 25 primer pairs among 50 simple sequence repeat (SSR) pairs were polymorphic between the parents. The polymorphic markers will be subjected for the genetic analysis of F₂ and F₃ population of the respective crosses under study.

Keywords

Morpho-physiological characters; genetic parameters; genetic variability; GFD – grain filling duration; SSR – simple sequence repeats

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