

IV. Heat stress in *Triticum*: kinetics of Fe and Mn accumulation

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ABSTRACT

The interactions between Fe/Mn accumulation and the photosynthetic light reactions were investigated in heat stressed bread and durum wheat genotypes (*Triticum aestivum* L. and *Triticum turgidum* subsp. *durum*). Four genotypes were chosen according to its genetic background diversity. Plants were grown in a greenhouse at two different day/night temperatures regimes (control - 25/14°C and heat stress - 31/20°C), during the grain filling phase. The contents and uptake/translocation of Fe and Mn were evaluated on booting, grain filling and maturity and correlated with chlorophyll a fluorescence parameters. It was found that, under heat stress, the concentrations of Fe in the culm and leaves diminished in bread wheat, but increased in durum wheat. An opposite trend was found on the contents of Fe in the spike, being this effect higher in Sever. During grain filling, the concentrations of Mn in the heat stressed plants raised significantly in the shoot for all genotypes (excepting Golia). After anthesis, the proportion of Mn translocated also augmented with high temperatures. At maturity, the same trend was found in the translocated proportion of Fe. During grain filling, all the studied fluorescence parameters did not vary significantly except q_p and q_e that decreased in the heat stressed Golia and F_v and F_v/F_m that increases in Acalou. It was concluded that under heat stress, during the grain filling period, Fe and Mn translocation to the shoots accelerates, eventually to overcome the negative effects on several photosynthetic physiological traits.

Key words: heat stress; nutrients; translocation; *Triticum aestivum* L.; *Triticum turgidum* subsp. *durum*; uptake.