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Horticultural Science

Promotive effects of 5-aminolevulinic acid on photosynthesis and chlorophyll fluorescence of tomato seedlings under suboptimal low temperature and suboptimal photon flux density stress − Short communication

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[fulltext]

Effects of 5-aminolevulinic acid (ALA) on photosynthetic characteristics of tomato grown under suboptimal conditions were investigated to evaluate the potential value of ALA spraying in vegetables. The net photosynthetic rate (Pn), stomatal conductance (Gs), maximum quantum efficiency of photosystem II (Fv/Fm),

coefficient of photochemical quenching (qP), antenna transformation efficiency (Fv'/Fm'), light compensation point (LCP), CO_2 compensation point (CCP) and chlorophyll (chl) contents of tomato stressed by suboptimal temperature (17° C/12°C) and suboptimal photon flux density (250 μmol/m2s) were decreased, but intercellular CO_2 concentration (Ci) was increased distinctly. Compared with the parameters of tomato pretreated with water, Pn, Gs, Fv/Fm, qP, Fv'/Fm' and chl content of tomato pretreated with ALA were increased, and the Ci, LCP and CCP were decreased obviously. These results indicate that the inhibition of photosynthesis induced by suboptimal stress can be alleviated by ALA spraying.

Keywords:

protected culture; *Solanum lycopersicum*; environmental stress; chemical substance; carbon assimilation

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