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RESEARCH ARTICLE :

Bio-physical characters of maize (*Zea mays* L.) genotypes to elevated carbon dioxide and temperature regimes

K. ADISHESHA, B.S. JANAGOUDAR, A. AMAREGOUDA, U.K. SHANAWAD AND M. CHANDRANAIK

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SUMMARY : Higher atmospheric CO_2 concentration may influence positively plant production.Carbon dioxide was substrate for photosynthesis and gradient increase between the ambient air and mesophyll cells. Plants respond not only to change in surrounding CO_2 concentration, but to modifications of their microenvironment. Plants with C_4 photosynthetic pathway showed negligible photosynthetic response to elevated CO_2 because the C_4 cycle increased the CO_2 concentration in bundle sheath cells to the point where very little photorespiration occurs and calvin cycle is nearly saturated with CO_2 However, there is no consensus on the quantitave effects of increased CO_2 on plant processes and growth because of differences in response at different stages of growth, species of crops and growth limiting environmental factors. The purpose of this paper was to study the biophysical response of maize genotypes to elevated carbon dioxide and temperature regimes. The exposure of the crop elevated CO_2 and temperature regime resulted in the significant decrease in the photosynthetic rates. The minimum reduction was observed in HTMR-1, HTMR-2 and NK 6240 and the maximum in ARJUN and 900M-GOLD. Among the genotypes NK 6240, HTMR-1 and 900 M-GOLD genotype recorded maximum transpiration rate and stomatal conductance whereas, the genotypes HTMR-2 and ARJUN had the least transpiration rate and stomatal conductance. More detailed investigations are needed to complete our imagination about future consequences of possible climate variations, mainly in local level.

KEY WORDS :
Physiology of maize, Elevated CO_2, Temperature, Biophysical parameter

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Author for correspondence :

K. ADISHESHA
Department of Crop Physiology, University of Agricultural Sciences, RAICHUR (KARNATAKA) INDIA
Email : adishesha1144@gmail.com

See end of the article for authors' affiliations