



Effect on tomato (*Lycopersicon esculentum*) varieties

The net impact of individual and combined stress on plant growth

Crop: Tomato greenhouse-ecotype varieties (G; ST1254, Momo126 and SLA2103), and four field ecotype varieties (F; GC788, ZU1438, ZU1082 and ZU753)

Stress 1: - Low light - 100 $\mu\text{mol m}^{-2} \text{s}^{-1}$ photosynthetic photon flux density (PPFD)

Stress 2: Low temperature- 12/7 °C day/night temperature

Stage of the plant: 12-leaf stage

The table shows the combined effect of low light and low temperature on the physiology of tomato varieties

Treatments	Varieties	Plant response to stress		
		Type B parameters		
		Plastochron index	Quantum yields of CO ₂ assimilation ϕCO_2 (mmol/ mol)	
Control	GC788 (F)	10.6	40.40	
	ZU1438 (F)	13.2	42.80	
	ZU1082 (F)	12.3	45.80	
	ZU753 (F)	11.1	48.80	
	ST1254 (G)	13	54.40	
	Momo126 (G)	12	46.6	
	SLA2103 (G)	11.9	45.8	
	Low light + low temperature	GC788 (F)	0.2	11.2
		ZU1438 (F)	2.2	16.4
ZU1082 (F)		0.7	6	
ZU753 (F)		0.3	4.4	
ST1254 (G)		1.6	36	
Momo126 (G)		1.8	41.4	
SLA2103 (G)		2.2	34.2	

For raw data – Click here (.xlsx file)

Reference- Hu WH, Zhou YH, Du YS, Xia XJ, Yu JQ. (2006) Differential response of photosynthesis in greenhouse-and field-ecotypes of tomato to long-term chilling under low light. *Journal of plant physiology* 163(12):1238-46.



Note: *The values were presented as it is from the source article without subjecting to the calculation. The plastochron index (PI), a measurement of the developmental age of a plant which is independent of biomass parameters*

‘*’ - For more information on parameter classification, please refer to the ‘methodology’ tab.

The inference from the study: Hu et al., 2006, study conducted to assess the combined effect of low temperature and low light stress on the physiology of tomato greenhouse-ecotype varieties (G; ST1254, Momo126 and SLA2103), and four field ecotype varieties (F; GC788, ZU1438, ZU1082 and ZU753). Results showed a greater reduction in quantum yields of CO₂ assimilation and plastochron index under combined stress. Greenhouse ecotypes were able to adapt quickly to the changing conditions and showed lesser reduction as compared to field ecotypes. **Overall, the study indicated a negative impact of combined stress on the physiology of tomato.**