

Effect on chickpea (*Cicer arietinum*) varieties

The net impact of stress on plant growth

The table shows the effect of individual and combined salt and ozone stress on growth, biomass, and ion allocation in chickpea varieties

Crop: Chickpea (*Cicer arietinum*) varieties CSG 8890 and CSG 88101.
Stress 1: Ozone- Ozone was supplied at a concentration of 85 nmol mol⁻¹
Stress 2: Salinity- 30 mM NaCl
Stage of the plant: Vegetative

Varieties	Stress treatments	Plant response to stress						
		Type A parameters*			Type C parameters*			
		Dry weight of leaf	Dry weight of roots	Plant height	Ion concentrations in leaf (μmol g ⁻¹ DW)#		Ion concentrations in roots (μmol g ⁻¹ DW)#	
					Na ⁺	K ⁺	Na ⁺	K ⁺
CSG 8890	Salinity	34.2 ↓	53.6 ↓	23.2 ↓	1183.7	446.9	589.5	356.6
	Ozone	5.3 ↓	32.1 ↓	3.2 ↓	150.5	117.8	87.8	546.8
	Salinity and Ozone	39.5 ↓	53.6 ↓	33.5 ↓	999	252.2	727.2	360.9
CSG 88101	Salinity	22.8 ↓	51.6 ↓	23.8 ↓	1053.7	376.9	546	324.1
	Ozone	8.6 ↓	25.8 ↓	5.5 ↓	153.5	186.5	70.7	499.9
	Salinity and Ozone	31.4 ↓	48.4 ↓	28.7 ↓	1050.1	337.8	639.3	423.3

Control values for Na⁺ concentration in leaf 97.4 (CSG 8890), 104.5(CSG 88101); K⁺ concentration in leaf- 279.7(CSG 8890), 307(CSG 88101); Na⁺ concentration in roots- 137(CSG 8890), 147.2(CSG 88101); K⁺ concentration in roots- 471.3(CSG 8890), 455.6(CSG 88101).

Reference-

Welfare K, Yeo AR and Flowers TJ (2002). Effects of salinity and ozone, individually and in combination, on the growth and ion contents of two chickpea (*Cicer arietinum* L.) varieties. *Environmental Pollution* 120(2):397-403.

Note:

The values presented in the table were calculated using the formula described below.

$$\text{Reduction over control (\%)} = \frac{(\text{Value Control} - \text{Value Stress})}{\text{Value Control}} \times 100$$

1) ↓- indicates plant parameters affected by stress that lead to high susceptibility (higher the value more the damage).

#'-Values are presented as it is from the source article without subjecting to the calculation.

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

The inference from the study: Welfare et al., 2002 studied the impact of combined salt and ozone treatment on chickpea varieties CSG 8890 and CSG 88101. The authors observed that salt and ozone reduce plant growth both singly and in combination in both the varieties. The reductions were found to be more under combined stress. The variety CSG88101 was less affected by the individual and combined stress than CSG 8890 in terms of growth, biomass, and ion compartmentation, indicating it to be more resistant to the combined stress.