

## Effect on wheat (*Triticum aestivum*) cultivars

### The net impact of stress on plant growth

The table shows the effect of individual and combined salt and ozone stress on growth and physiology-related parameters of wheat cv Dekang 961 and Lumai 15.

**Crop:** Wheat (*Triticum aestivum*) cv Dekang 961 and Lumai 15  
**Stress 1:** Ozone- Charcoal Filtered air (5 ppb of Ozone) and 80 ± 5 ppb of Ozone  
**Stress 2:** Salinity- 100 mM NaCl  
**Stage of the plant:** Vegetative

Cultivars	Stress treatments	Plant response to stress								
		Type A parameters*			Type B parameters*				Type C parameters*	
		Shoot dry mass	Plant height	Root length	Stomatal conductance <sup>#</sup> (mmol m <sup>-2</sup> s <sup>-1</sup> )	Net photosynthetic rate <sup>#</sup> (μmol m <sup>-2</sup> s <sup>-1</sup> )	Transpiration rate <sup>#</sup> (mmol m <sup>-2</sup> s <sup>-1</sup> )	RWC <sup>#</sup> (%)	K <sup>+</sup> /Na <sup>+</sup> ratio <sup>#</sup>	Leaf Proline content <sup>#</sup> (mg g <sup>-1</sup> DW)
Dekang 961	Salinity	7.8↓	6.7↓	5.2↓	410	20.36	3.9	79	2.2	10
	Ozone	9.8↓	3.8↓	1.9↓	320	17.55	4	73.3	4.2	12
	Salinity and Ozone	59↓	23.4↓	31↓	210	11.26	2.9	60.5	0.6	30
Lumai 15	Salinity	50↓	41.9↓	43.3↓	132	9.93	2.3	49	0.2	33
	Ozone	28.8↓	5↓	7.7↓	154	15.56	2.9	70.4	3	15.8
	Salinity and Ozone	63.5↓	47.3↓	46↓	122	9.27	2.2	46.6	0.23	34

Control values for Stomatal conductance-440(Dekang 961), 344(Lumai 15); Net photosynthetic rate-21.52(Dekang 961), 19.54(Lumai 15); Transpiration rate-4.3(Dekang 961), 4.5(Lumai 15); , RWC-86.5(Dekang 961), 83(Lumai 15); , K<sup>+</sup>/Na<sup>+</sup> ratio-4.5(Dekang 961), 4.1(Lumai 15); Leaf proline content- 7.3(Dekang 961), 8.2(Lumai 15).

### Reference-

Zheng Y, Cheng D and Simmons M (2014). Ozone pollution effects on gas exchange, growth and biomass yield of salinity-treated winter wheat cultivars. *Science of the total environment* 499:18-26.

### 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:** Zheng et al., 2014 studied the impact of combined salt and ozone stress on salt-tolerant and sensitive wheat cultivars- Dekang 961 and Lumai 15, respectively. The

authors observed that compared to Dekang 961, Lumai 15 was more affected by individual and combined stress. However, there was no significant difference between the reductions observed in stomatal conductance, assimilation rate, transpiration rate,  $K^+ / Na^+$  ratio under salt, and combined stress treatment. This suggests that ozone affects salt-tolerant cultivar's physiology more negatively compared to salt sensitive one, which may be attributed to higher stomatal conductance of Dekang 961 under salt stress conditions.