



Effect on wheat cultivars (*Triticum aestivum* cv. Huaimai17, Yangmai12)

The net impact of individual and combined stress on plant growth

Crop: Wheat (*Triticum aestivum* cv. Huaimai17,
Yangmai12)
Stress 1: Salt (150mM NaCl)
Stress 2: Waterlogging (21 days)
Stage of plant: 7 days after anthesis


The table shows the effect of waterlogging and salt alone and in combination on the physiology and malondialdehyde (MDA) levels of wheat cultivars.


	Treatment	Plant response to stress (reduction over control %)			
		Type B parameters*			Type C parameters*
		Photosynthetic rate	Stomatal conductance	Chlorophyll content	MDA content
Huaimai17	Waterlogging (21 days)	35.9↓	14.3↓	13.9↓	-29.2↑
	Salt (150mM NaCl)	93.1↓	59.2↓	58.3↓	-95.8↑
	Salt (150mM NaCl) + Waterlogging (Simultaneous stress)	91.7↓	59.2↓	47.2↓	-104.2↑
Yangmai12	Waterlogging (21 days)	21.2↓	14.0↓	7.7↓	-13.0↑
	Salt (150mM NaCl)	90.4↓	55.7↓	35.9↓	-91.3↑
	Salt (150mM NaCl) + Waterlogging (Simultaneous stress)	86.5↓	54.4↓	33.3↓	-87.0↑

Reference – Zheng C, Jiang D, Liu F, Dai T, Jing Q, Cao W (2009) Effects of salt and waterlogging stresses and their combination on leaf photosynthesis, chloroplast ATP synthesis, and antioxidant capacity in wheat. *Plant Science* 176: 575–582.

Note: *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).

2)  - indicates plant parameters less/not affected by stress leading to improved resistance (higher the value lesser the damage).

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

Inference from the study: Zheng et.al. 2009, studied the interaction of waterlogging and salinity in two wheat cultivars, Huaimai17, Yangmai12. Plants were subjected to single and simultaneous salt and waterlogging stress treatment. Photosynthetic rate, stomatal conductance and chlorophyll content did not reduce synergistically under combined stress in both cultivars. Malondialdehyde levels were induced under stress. **Thus, this stress combination is not detrimental to the physiology of wheat cultivars.**