



### Effect on wheat genotypes (*Triticum aestivum* L.)

#### The net impact of individual and combined stress on plant growth

The table shows the effect of drought and salt stress alone and in combination on growth and physiology of wheat genotype Jimai22 and Yangmai20

**Crop:** Wheat (*Triticum aestivum* L.)  
 genotypes Jimai22 and Yangmai20  
**Stress 1:** Salt- NaCl 100 mM  
**Stress 2:** Drought (4% soil relative water content)  
**Stage:** 25 days after emergence

Genotypes	Stress treatments	Plant response to stress (reduction over control %)												
		Type A parameters *				Type B parameters *							Type C parameters *	
		Plant height	Root length	Shoot DW	Root DW	Chlorophyll a+b	Fv/Fm	Net photosynthesis	gs	Intercellular CO <sub>2</sub>	WUE (mol CO <sub>2</sub> /mmol H <sub>2</sub> O)**	Na <sup>+</sup> /K <sup>+</sup> ratio**		Proline (µg/g FW)**
											Root	Stem		
Yangmai 20	Drought (4% soil relative water content)	17.81 ↓	29.09 ↓	51.28 ↓	48.65 ↓	31.43 ↓	21.57 ↓	81.35 ↓	93.34 ↓	40.54 ↓	100.21	0.60	0.65	322.69
	Salt (100mM NaCl)	10.96 ↓	12.73 ↓	34.62 ↓	35.14 ↓	32.86 ↓	17.79 ↓	30.24 ↓	70.00 ↓	16.56 ↓	109.30	3.59	3.55	330.60
	Salt + drought	16.99 ↓	47.27 ↓	60.26 ↓	81.08 ↓	48.57 ↓	23.69 ↓	76.75 ↓	86.67 ↓	21.47 ↓	93.63	3.02	1.39	424.30
Jimai22	Drought (4% soil relative water content)	26.20 ↓	24.56 ↓	50.75 ↓	43.59 ↓	24.66 ↓	18.59 ↓	61.35 ↓	87.90 ↓	33.09 ↓	69.54	0.34	0.69	315.51
	Salt (100mM NaCl)	8.49 ↓	10.53 ↓	10.45 ↓	15.38 ↓	26.03 ↓	12.47 ↓	18.23 ↓	55.19 ↓	6.85 ↓	94.03	2.14	1.94	401.97
	Salt + drought	27.68 ↓	31.58 ↓	40.30 ↓	51.28 ↓	35.62 ↓	22.05 ↓	68.20 ↓	86.22 ↓	15.15 ↓	85.65	3.08	1.48	213.40

DW- dry weight, FW-fresh weight, WUE- water use efficiency, gs- stomatal conductance

Control- Yangmai20 (Root Na<sup>+</sup>/K<sup>+</sup> ratio- 0.78, shoot Na<sup>+</sup>/K<sup>+</sup> ratio- 0.47, WUE- 99.37, proline- 93.46); Jimai22 (Root Na<sup>+</sup>/K<sup>+</sup> ratio- 0.69, shoot Na<sup>+</sup>/K<sup>+</sup> ratio- 0.32, WUE- 87.06, proline- 97.1)



**For raw data** – Click here (.xlsx file)

**Reference-** Dugasa MT, Cao F, Ibrahim W, Wu F. (2019) Differences in physiological and biochemical characteristics in response to single and combined drought and salinity stresses between wheat genotypes differing in salt tolerance. *Physiologia plantarum*. 165(2):134-43.

**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).

'\*' - For more information on parameters classification, please refer to 'methodology' tab.

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

**The inference from the study:** Dugasa *et al.*, 2019 study analysed the effect of drought and salt stress alone and in combinations on growth and physiology of two wheat genotype Jimai22 and Yangmai20, which are saline tolerant and sensitive, respectively. Results showed higher reduction growth and physiology under combined stress compared to individual stresses in both the genotypes. However, Jimai22 had a lesser reduction in growth compared to Yangmai20 under combined stress and which was almost equal to individual drought stress. **Altogether study indicates that salt-tolerant genotype Jimai22 showed increased resistance to combined drought and salt stress compared to Yangmai20.**