Effect on broccoli cultivars (*Brassica oleracea* var.TSS-AVRDC-2, B-75)

The net impact of individual and combined stress on plant growth

Crop: Broccoli (Brassica oleracea var.TSS-AVRDC-2, B-75)
Stress 1: High temperature (40 °C)
Stress 2: Flooding/Waterlogging/Submergence (3 days)
Stage of plant: 40 days old plant

The table shows the effect of waterlogging and high temperature alone and in combination on the chlorophyll content, stomatal conductance, and H2O2 content of broccoli plants.

	Treatment	Plant response to stress (reduction over control %) Type B parameters*		
		Chlorophyll content	Stomatal conductance	H2O2 content** (µmol/g)
TSS-AVRDC-2	High temperature (40°C)	8.2↓	17.3↓	11.9
	Waterlogging (3 days)	3.6↓	22.1↓	10.6
	High temperature (40°C) + Waterlogging (3 days) (Simultaneous stress)	13.4↓	36.6↓	34.5
B-75	High temperature (40°C)	11.9↓	-1162.9↑	7.9
	Waterlogging (3 days)	1.7↓	27.4↓	4.1
	High temperature (40°C) + Waterlogging (3 days) (Simultaneous stress)	16.4↓	50.2↓	33.0

Reference - Lin HH, Lin KH, Chen SC, Shen YH, Lo HF(2015) Proteomic analysis of broccoli (Brassica oleracea) under high temperature and waterlogging stresses. Bot Stud. 56(1):18

Note: *Values presented in the table were calculated using the formula described below.*

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

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

Inference from the study: Lin et.al. 2015 studied the interaction of waterlogging and high temperature in two broccoli varieties TSS-AVRDC-2 and B-75. Plants were subjected to single and simultaneous waterlogging and high temperature stress treatment and analysed for their chlorophyll levels, stomatal conductance, and H2O2 level. Chlorophyll level and stomatal conductance reduced under combined stress in both varieties but the reduction was higher in B-75. However, the accumulation of reactive oxygen species H_2O_2 levels increased indicating the stressed condition of broccoli plants. This increase was high under combined stress conditions in the variety TSS-AVRDC-2. **Thus, this stress combination is detrimental to broccoli plants.**