



Effect on Pigeon pea cultivars (*Cajanus cajan* L. millsp. cv. ICPH 2431, UPAS 120, HO9 33, PARAS)

The net impact of individual and combined stress on plant growth

Crop: Pigeon pea (*Cajanus cajan* L. millsp. cv. ICPH 2431, UPAS 120, HO9 33, PARAS)
 Stress 1: Salt (30 mM NaCl)
 Stress 2: Waterlogging (8 days)
 Stage of plant : 20 days after sowing

The table shows the effect of waterlogging and salt alone and in combination on growth and physiology of pigeon pea cultivars.

	Treatment	Plant response to stress Type A parameter*	Plant response to stress (reduction over control %) Type B parameters*	
		Survival Percent** (%)	Chlorophyll content	Chlorophyll fluorescence
ICPH2431	Waterlogging (8 days)	58.00	19.7↓	20.9↓
	Salt (60 mM NaCl)	100.00	-1.7↑	3.0↓
	Waterlogging (8 days) + Salt (30 mM NaCl) (Simultaneous stress)	35.00	37.6↓	29.9↓
UPAS120	Waterlogging (8 days)	46.00	33.9↓	32.3↓
	Salt (60 mM NaCl)	100.00	-0.7↑	3.1↓
	Waterlogging (8 days) + Salt (30 mM NaCl) (Simultaneous stress)	19.00	47.6↓	41.5↓
HO9 33	Waterlogging (8 days)	47.00	32.9↓	29.2↓
	Salt (60 mM NaCl)	100.00	-1.4↑	3.1↓
	Waterlogging (8 days) + Salt (30 mM NaCl) (Simultaneous stress)	26.00	44.2↓	40.0↓

PARAS	Waterlogging (8 days)	47.00	23.8↓	24.2↓
	Salt (60 mM NaCl)	100.00	-1.7↑	1.5↓
	Waterlogging (8 days) + Salt (30 mM NaCl) (Simultaneous stress)	33.00	39.8↓	30.3↓

Reference – Duhan S, Sharma N, Bala S, Lal M, Sheokhand S (2016) Effects of waterlogging, salinity and their combination on percent survival, chlorophyll content and chlorophyll fluorescence in pigeon pea (*Cajanus cajan* L. Millsp.) genotypes. The bioscan 11(2):815-819.

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.

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

Inference from the study: Duhan et.al. 2016, studied the interaction of waterlogging and salinity in four pigeon pea cultivars, ICPH2431, UPAS120, HO933, PARAS. Plants were subjected to single and simultaneous salt and waterlogging stress treatments. Survival percentage, chlorophyll content, and chlorophyll fluorescence were reduced synergistically under combined stress conditions for all cultivars. **Thus, this stress combination is detrimental to the growth and physiology of pigeon pea cultivars.**