Effect on Pigeon pea cultivars (*Cajanus cajan* L. millsp. cv. PARAS, ICPH 2431, SGBS6, UPAS 120)

The net impact of individual and combined stress on plant growth

Crop: Pigeon pea (*Cajanus cajan* L. millsp. cv. PARAS, ICPH 2431, SGBS6, UPAS 120)
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 (reduction over control %)				
		Type A parameters*			Type B parameters*	Type C parameters*
		Biomass	Seed yield/plant	100 Seed weight	Electrolyte leakage	Malondialdehyde
ICPH2431	Waterlogging (8 days)	22.3⬇	27.9⬇	12.0⬇	-136.0⬆	-26.7⬆
	Salt (60 mM NaCl)	1.7⬇	18.9⬇	7.2⬇	-95.0⬆	-13.3⬆
	Waterlogging (8 days) + Salt (30 mM NaCl) (Simultaneous stress)	44.6⬇	51.2⬇	18.1⬇	-187.0⬆	-35.0⬆
PARAS	Waterlogging (8 days)	19.6⬇	38.2⬇	23.2⬇	-131.0⬆	-29.5⬆
	Salt (60 mM NaCl)	1.9⬇	14.6⬇	9.8⬇	-85.1⬆	-16.4⬆
	Waterlogging (8 days) + Salt (30 mM NaCl) (Simultaneous stress)	44.9⬇	57.7⬇	24.4⬇	-188.5⬆	-41.0⬆
SGBS 20	Waterlogging (8 days)	28.0⬇	59.4⬇	21.5⬇	-179.6⬆	-50.0⬆

	Salt (60 mM NaCl)	11.0⬇	30.3⬇	11.4⬇	-121.5⬆	-39.7⬆
	Waterlogging (8 days) + Salt (30 mM NaCl) (Simultaneous stress)	46.0⬇	66.8⬇	35.4⬇	-231.2⬆	-63.8⬆
SGBS6	Waterlogging (8 days)	28.1⬇	62.5⬇	22.7⬇	-175.3⬆	-51.8⬆
	Salt (60 mM NaCl)	8.3⬇	33.7⬇	12.0⬇	-118.1⬆	-41.1⬆
	Waterlogging (8 days) + Salt (30 mM NaCl) (Simultaneous stress)	100.0⬇	100.0⬇	100.0⬇	-229.1⬆	-66.1⬆

Reference – Lal M, Duhan S, Bala S, Dinesh, Sheokhand S (2016) Influence of waterlogging, salinity and their combination on membrane injury, lipid peroxidation, plant biomass and yield in pigeon pea (*Cajanus cajan* L. Millsp.) genotypes. The bioscan 11(2):795-800.

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

$$Reduction\ over\ control\ (\%) = \frac{(Value_{Control} - Value_{Stress})}{Value_{Control}} \times 100$$

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: Lal et.al. 2016, studied the interaction of waterlogging and salinity in four pigeon pea cultivars, ICPH2431, UPAS120, SGBS6, PARAS. Plants were subjected to single and simultaneous salt and waterlogging stress treatments. Biomass, seed yield, and seed weight was reduced synergistically under combined stress conditions in all four cultivars. SGBS6 showed maximum reduction under combined stress. However, electrolyte leakage and malondialdehyde levels were increased under combined stress. **Thus, this stress combination is detrimental to the growth and yield of all pigeon pea cultivars tested.**