



Effect on mungbean cultivars (*Vigna radiata* L. cv. IC333090, IC507340, IC488526, EC397142)

The net impact of individual and combined stress on plant growth

Crop: Mungbean (*Vigna radiata* L. cv. IC333090, IC507340, IC488526, EC397142)
 Stress 1: Phosphorus deficiency
 Stress 2: Drought (10% reduction in soil moisture)
 Stage of plant: At sowing

The table shows the impact of phosphorus deficiency and drought alone and in combination on growth of mungbean plants.

	Treatment	Plant response to stress (reduction over control %) Type A parameters*					Plant response to stress (reduction over control %) Type C parameters*
		Leaf biomass	Leaf area	Specific leaf weight	Pod number/plant	Seed yield	Leghaemoglobin
IC333090	Phosphorus deficiency	0.0	10.6↓	14.3↓	7.5↓	15.4↓	1.4↓
	Drought	-8.7↑	34.7↓	2.9↓	13.0↓	26.9↓	50.0↓
	Phosphorus deficiency + Drought (35 days later (Sequential stress))	21.7↓	54.1↓	-20.0↑	21.9↓	34.6↓	47.3↓
IC507340	Phosphorus deficiency	0.0	21.0↓	10.6↓	18.0↓	19.4↓	28.7↓
	Drought	10.5↓	28.1↓	6.4↓	2.9↓	32.3↓	46.0↓
	Phosphorus deficiency + Drought (35 days later (Sequential stress))	15.8↓	38.6↓	-8.5↑	27.3↓	35.5↓	75.9↓
IC488526	Phosphorus deficiency	0.0	35.0↓	-34.4↑	13.1↓	29.4↓	22.1↓

	Drought	28.0↓	42.2↓	-18.8↑	19.0↓	32.4↓	52.9↓
	Phosphorus deficiency + Drought (35 days later (Sequential stress))	56.0↓	64.4↓	-3.1↑	52.4↓	59.4↓	85.3↓
EC397142	Phosphorus deficiency	10.0↓	50.3↓	-37.9↑	53.5↓	44.0↓	40.6↓
	Drought	50.0↓	74.1↓	-13.8↑	49.1↓	72.4↓	59.4↓
	Phosphorus deficiency + Drought (35 days later (Sequential stress))	50.5↓	81.1↓	-86.2↑	44.7↓	92.8↓	75.4↓

Reference – Meena SK, Pandey R, Sharma S, Gayacharan, Vengavasi K, Dikshit HK, Siddique KHM, Singh MP (2021) Cross tolerance to phosphorus deficiency and drought stress in mungbean is regulated by improved antioxidant capacity, biological N₂-fixation, and differential transcript accumulation. *Plant Soil* 466:337–356.

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: Meena et.al. 2021 studied the interaction of phosphorus deficiency and drought in four mungbean cultivars IC333090, IC507340, IC488526, EC397142. Plants were subjected to single and sequential stress of phosphorus deficiency and drought. Leaf biomass, leaf area, pod number/plant and seed yield was reduced synergistically under combined stress conditions. However, specific leaf weight and leghaemoglobin did not reduce synergistically under combined stress. **Thus, this stress combination is detrimental to all mungbean cultivars.**