

Effect on cassava cultivars

The net impact of individual and combined stress on plant growth

The table shows the effect of combined nutrient deficiency and toxicity on growth and physiology of cassava cultivars

Crop: Cassava (*Manihot esculenta*) cv Mameya and Seda
Stress 1: Nutrient treatment- Programmed nutrient addition of 0, 5.4, 15.1, 45.4 mg/pot of Boron..
Stress 2: Cold stress-19°C (LT), 33 °C (OT)
Stage of the plant: Seedling

Cultivars	Stress treatments	Plant response to stress	
		Type A parameter *	Type C parameter *
		Dry weight of plant (g)	Boron concentration in shoots (µg/g DW)
Mameya	0mM Boron ^a +LT	3.5	13
	5.4mM Boron+LT	5	97
	15.1mM Boron +LT	4.9	186
	45.4mM Boron +LT	4	392
	0mM Boron ^a +OT	6.3	13
	5.4mM Boron+OT	11.6	143
	15.1mM Boron ^b +OT	8.3	270
	45.4mM Boron ^b +OT	8.3	502
Seda	0mM Boron ^a +LT	4.3	11
	5.4mM Boron+LT	4.9	125
	15.1mM Boron +LT	5.2	279
	45.4mM Boron +LT	2	475
	0mM Boron ^a +OT	4.6	11
	5.4mM Boron+OT	9.1	173
	15.1mM Boron ^b +OT	7.7	418
	45.4mM Boron ^b +OT	6.9	605

DW- dry weight, LT-low temperature (19°C), OT- optimal temperature (33°C), a- deficiency symptoms were seen, b- toxicity symptoms were seen, Control values not available.

For raw data – Click here (.xlsx file)

Reference-

Forno DA, Asher CJ and Edwards DG (1979). Boron nutrition of cassava, and the boron temperature interaction. *Field Crop Research* 2: 265–279.

Note: Values are presented as it is from the source article without subjecting to the calculation.

‘*’ - For more information on parameter classification, please refer to the ‘methodology’ tab.

The inference from the study: Forno et al. 1979 studied the interaction between boron nutrition and temperature stress in cassava cv Mameya and Seda. Both the cultivars were exposed to a deficient and surplus concentration of boron along with low temperature, and it was found that low temperature enhances the plant's susceptibility to boron deficiency due to the decreased boron uptake and reduced root growth at low temperatures. It was observed that the boron absorption rate was higher in Seda than Mameya, which is exhibited by high shoot concentrations of boron in Seda.