

## Effect on sorghum (*Sorghum bicolor*) varieties

**The net impact of individual and combined stress on plant physiology**

**The table shows the effect of individual and combined drought and high light stress on the physiology of sorghum varieties.**

**Crop:** Sorghum (*Sorghum bicolor*) variety Aralba, R109A, ICSV 112.  
**Stress 1:** Drought- withdrawal of irrigation for 3d  
**Stress 2:** PPFD of 2500  $\mu\text{mol}/\text{m}^2/\text{s}$   
**Stage of the plant:** Seedling

Varieties	Stress treatments	Plant response to stress				
		Type B parameters *				Type C parameter*
		Fv/Fm	Net CO <sub>2</sub> Assimilation ( $\mu\text{mol CO}_2/\text{m}^2/\text{s}$ )	Electron transport activity in PSII ( $\mu\text{mol O}_2/\text{mg Chl}/\text{h}$ )	Distribution of chlorophyll (LHC/PS II ratio)	Ratio of Carotenoids/ (Chla+Chlb)
Aralba	Control	0.56	6.94	161	3.47	0.243
	Drought	0.56	0.94	101	3.59	0.241
	High light+ Drought	0.36	0.39	46	3.94	0.245
R109A	Control	NA	7.73	190	NA	NA
	Drought	NA	2.3	144	NA	NA
	High light+ Drought	NA	0.52	92	NA	NA
ICSV 112	Control	0.64	9.76	77	4.03	0.292
	Drought	0.67	5.31	61	4.29	0.259
	High light+ Drought	0.59	2.79	47	4.93	0.269

*Control Fv/Fm- 0.64(Aralba); 0.69(ICSV 112), Net CO<sub>2</sub> assimilation-5.67(Aralba);7.61(R109A); 8.23(ICSV 112), Electron transport activity in PSII -146(Aralba);166(R109A); 178(ICSV 112), Distribution of chlorophyll 3.81(Aralba);4.15(ICSV 112), Ratio of Carotenoids/(Chla+Chlb)-0.229(Aralba); 0.257(ICSV 112).*

**For raw data** – Click here (.xlsx file)

### Reference-

Masojidek J, Trivedi S, Halshaw L, Alexiou A, Hall DO (1991). The synergistic effect of drought and light stresses in sorghum and pearl millet. *Plant Physiology* 96(1):198-207.

**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:** Masojidek et al., 1991 studied the effect of combined drought and high irradiance in one drought sensitive (Aralba) and two drought resistant (R109A and ICSV 112) varieties of sorghum. The authors found that combined drought and high irradiance stress

significantly inhibited the CO<sub>2</sub> assimilation and PS II fluorescence and photosynthetic electron transport in all the three varieties. ICSV 112 was found to be less stressed than the other two varieties. **Thus, the study indicates an overall increased negative effect of combined drought and high irradiance stress as compared to the individual stresses in all three varieties of sorghum.**