Effect on soybean cultivars

The net impact of individual and combined stress on plant growth

The table shows the effect of individual and combined drought and freezing stress on the physiology of soybean cultivars Maple arrow and Fiskeby V.

Plant: Soybean (*Glycine max)* cultivars Maple Arrow and Fiskeby V.
Stress 1: Withholding water.
Stress 2: 8°C; dark chilling
Stage of the plant: Vegetative stage

Cultivars	Stress treatments	Plant response to stress			
		Type B parameters *			
		Pre-dawn leaf water potential (MPa)	Carboxylation efficiency ($mol/m^2/s$)	CO_2 assimilation rate at ambient c_a ($\mu mol/m^2/s$)	Stomatal conductance ($mol/m^2/s$)
Maple Arrow	Control	-0.3	NA	NA	NA
	Drought	-0.8	0.16	2.1	40.14
	Dark Chilling	-0.6	0.95	18.5	415.1
	Drought + Dark Chilling	-1	0.41	5.9	83
Fiskeby V.	Control	-0.2	NA	NA	NA
	Drought	-0.8	0.08	0.6	26.8
	Dark Chilling	-0.4	0.35	5.9	112.5
	Drought + Dark Chilling	-0.8	0.07	0.8	26.7

For raw data – Click here (.xlsx file)
Reference- van Heerden PDR and Krüger HG (2002). Separately and simultaneously induced dark chilling and drought stress effects on photosynthesis, proline accumulation and antioxidant metabolism in soybean. *Journal of Plant Physiology* 159(10): 1077-1086.

Note: *Values are presented as it is from the source article without subjecting to the calculation and the data was recorded 9 nights after stress treatment.*

'' - For more information on parameters classification, please refer to 'methodology' tab.*

The inference from the study: Heerden and Kruger (2002) reported that prolonged combined drought and dark chilling treatment resulted in less inhibition of photosynthesis than drought alone treatment. Individual dark chilling treatment was found to be the least damaging. Compared to Fiskeby V, the cultivar Maple arrow was found to be more tolerant to both the individual and combined drought and dark chilling treatments. **The study concluded that combined drought and dark chilling treatment brings about less damage to soybean as compared to individual drought stress and that the cultivar Maple arrow is better adapted to combined drought and dark chilling treatment.**