Effect on diatom species

The net impact of individual and combined stress on plant growth

The table shows the combined effect of salinity and high light stress on the physiology of three diatom species

Crop: Diatoms species Epipelon (Navicula phyllepta), Epipsammon (Biremis lucens), Tychoplankton (Plagiogrammopsis vanheurckii)
Stress 1: Salt level 33, 37, 41 and 45
Stress 2: high light- 600 µmol photons/m2/s

Species	Stress treatments	Plant response to stress					
		Type B parameters *					
		Fv/ Fm	ϕPSII	NPQn	Chla (pg/cell)	Chlc (mol/100 mol Chl a)	ß-carotene (mol/100 mol Chl a)
Epipelon	Salt (33)	0.72	0.6	0.31	0.83	33.2	8.6
	Salt (37)	0.73	0.6	0.32	0.82	42.2	8.3
	Salt (41)	0.73	0.6	0.25	0.81	42.7	14
	Salt (45)	0.72	0.6	0.26	0.79	40.7	14.1
	Salt (33) + High light (600µmol)	0.67	0.55	0.55	0.72	37.1	13
	Salt (37) + High light (600µmol)	0.66	0.57	0.49	0.62	35.9	13.9
	Salt (41) + High light (600µmol)	0.66	0.56	0.54	0.65	34.8	12.2
	Salt (45) + High light (600µmol)	0.67	0.57	0.65	0.61	33.2	11.3
Epipsammon	Salt (33)	0.69	0.56	0.32	1.83	27.1	7.1
	Salt (37)	0.69	0.55	0.32	1.66	24.3	2.8
	Salt (41)	0.69	0.57	0.33	1.88	29	3.6
	Salt (45)	0.7	0.56	0.36	1.75	26.6	4.1
	Salt (33) + High light (600µmol)	0.63	0.5	0.86	1.64	25.7	2.2
	Salt (37) + High light (600µmol)	0.6	0.49	0.74	1.63	24.4	3.5
	Salt (41) + High light (600µmol)	0.61	0.59	0.78	1.55	22.80	3.50
	Salt (45) + High light (600µmol)	0.63	0.53	1.00	1.73	25.50	3.70

Tychoplankton	Salt (33)	0.59	0.31	0.79	2.01	29.60	1.90
	Salt (37)	0.54	0.29	0.62	2.37	30.90	2.10
	Salt (41)	0.56	0.29	0.63	2.03	25.60	1.40
	Salt (45)	0.58	0.32	0.54	2.10	26.80	3.40
	Salt (33) + High light (600µmol)	0.37	0.27	1.00	2.10	30.80	1.90
	Salt (37) + High light (600µmol)	0.35	0.27	1.18	1.68	27.10	2.20
	Salt (41) + High light (600µmol)	0.34	0.21	0.91	1.59	26.80	1.90
	Salt (45) + High light (600µmol)	0.36	0.22	0.87	1.46	23.90	2.20

For raw data – Click here (.xlsx file)

Reference- Juneau P, Barnett A, Meleder V, Dupuy C, Lavaud J (2015) Combined effect of high light and high salinity on the regulation of photosynthesis in three diatom species belonging to the main growth forms of intertidal flat inhabiting microphytobenthos. *Journal of Experimental Marine Biology and Ecology* 463:95-104.

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

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

The inference from the study: Juneau *et al.*, 2015 study was conducted to assess the combined effect of salinity and high light on the regulation of photosynthesis in three diatom species Epipelon (*Navicula phyllepta*), Epipsammon (*Biremis lucens*), and Tychoplankton (*Plagiogrammopsis vanheurckii*). There was no significant difference in photosynthesis parameters under combined stress treatments in all the species. However, Epipelon was in-sensitive to both individual high salinity and combined stress, whereas Epipsammon was sensitive to only combined stress, and Tychoplankton was sensitive to both individual and combined stress treatment. This could be due to the natural habitat and growth form.