

Supplementary data

Physiological and biochemical responses of maize plants exposed to seed coating and foliar spray of distinct seaweed nanopowder

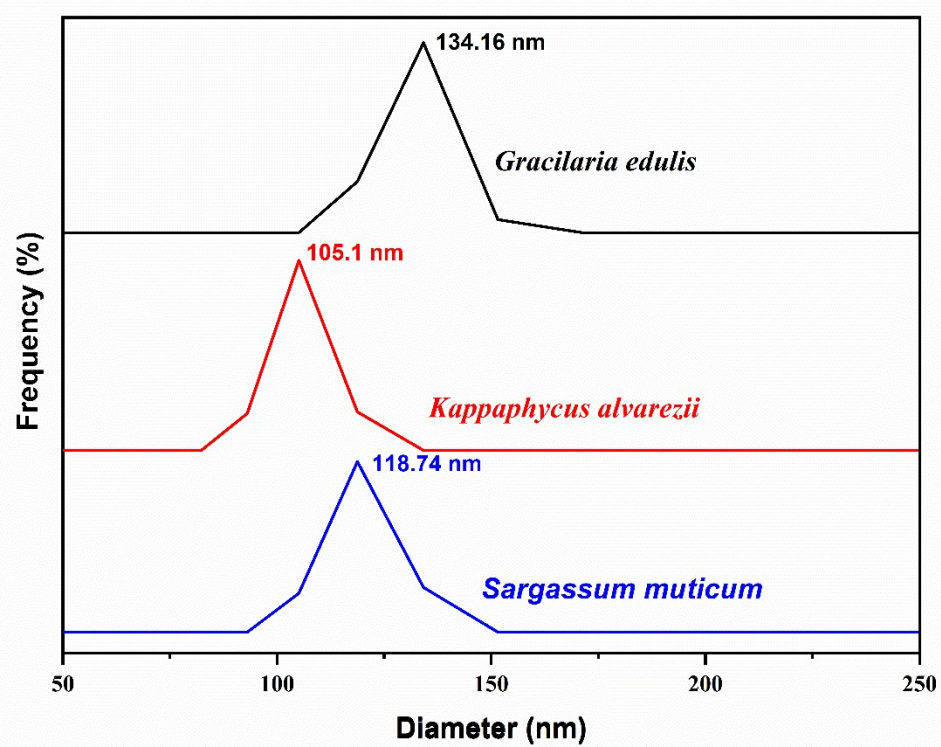


Figure S1. Particle size of prepared distinct seaweed nanopowder

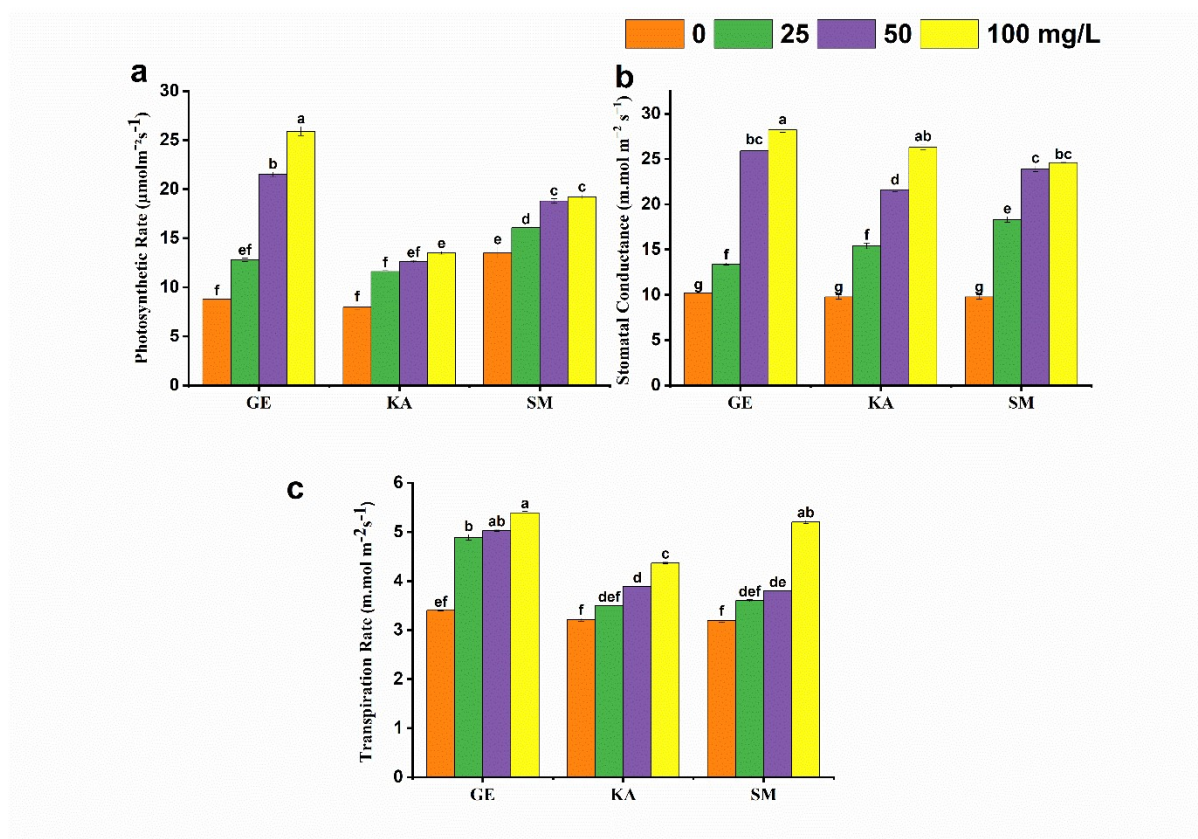


Figure S2. Effect of different species of seaweeds on (a) Photosynthetic rate, (b) Stomatal conductance and (c) Transpiration rate of *Zea mays*

Table S1. Nutrient profile of synthesised diverse seaweed nanopowder

Parameters	Results		
Physicochemical properties	<i>Kappaphycus alvarezii</i>	<i>Sargassum muticum</i>	<i>Gracilaria edulis</i>
Organic matter (g 100 g ⁻¹)	6.78±0.67	11.09±0.56	18.09±0.43
Electrical Conductivity (dS m ⁻¹)	34.90±12	41.32±0.56	23.87±0.67
pH	8.12±0.04	7.86±0.04	8.32±0.02
Total ash (%)	24.09±0.65	22.01±0.87	29.34±0.67
Nutrient content (g 100 g ⁻¹)			
Nitrogen	1.02± 0.44	1.23±0.98	1.08±0.23
Phosphorus	0.21±0.17	0.56±0.033	0.65±0.023
Potash	4.60±0.33	2.67±0.82	13.37±1.43
Calcium	1.33±0.32	2.14±0.34	2.52±0.56
Magnesium	1.21±0.61	1.90±0.002	0.68±0.054
Sulphur	7.74±0.97	5.67±0.97	3.86±0.32
Chloride	2.97±0.01	2.09±0.005	8.82±0.19
Iron	0.02 ± 0.06	0.04±0.023	0.03±0.004
Manganese	0.01±0.001	0.01 ±0.079	0.04±0.007
Zinc	0.01 ± 0.03	0.31±0.011	0.05±0.002
Copper	0.006± 0.02	0.044±0.04	0.27±0.003
Boron	0.034±0.01	0.076±0.01	0.034±0.021
Cobalt	BDL	BDL	BDL
Lead	BDL	BDL	BDL
Sodium	3.29±0.23	7.20±0.34	6.50±3.12
Silica	0.71±0.33	3.20±0.79	6.47±0.49
Aluminium	0.44±0.03	0.55±0.064	0.94±0.03
Amino acids (mg/g of protein)			
Alanine	0.31±0.04	1.22±0.22	1.87±0.31
Arginine	0.59±0.10	0.66±0.07	3.45±0.41
Aspartic acid	1.13±0.23	1.74±0.31	0.99±0.22
Cysteine	0.44±0.07	1.01±0.08	1.45±0.04
Glycine	0.67±0.02	2.11±0.17	2.11±0.09
Histidine	0.78±0.03	0.43±0.08	0.22±0.01
Isoleucine	1.34±0.31	0.78±0.05	1.01±0.09
Leucine	1.63±0.18	1.67±0.13	0.70±0.06
Lysine	0.77±0.05	1.23±0.07	1.56±0.03

Tryptophan	0.34±0.02	0.88±0.04	1.22±0.13
Methionine	0.98±0.22	0.66±0.02	2.97±0.41
Phenylalanine	0.22±0.04	0.97±0.21	1.87±0.04
Proline	0.76±0.12	0.83±0.03	0.77±0.23
Serine	0.95±0.17	1.11±0.09	0.56±0.07
Threonine	0.47±0.06	0.97±0.02	8.4±0.33
Tyrosine	0.31±0.02	0.32±0.01	1.36±0.64
Valine	0.58±0.21	1.45±0.33	1.22±0.23
Vitamins (mg/g)			
Vitamin A	1.25±0.02	1.89±0.04	2.17 ± 0.02
Vitamin C	2.9±0.41	0.97±0.32	9.6 ± 0.21
Vitamin D	0.12±0.03	0.64±0.03	2.01±0.06
Vitamin B2	0.01±0.003	0.34±0.07	1.22±0.05
Vitamin B3	0.23±0.08	0.37±0.05	1.33±0.02
Vitamin B6	0.02±0.005	0.56±0.08	0.74±0.07
Vitamin B9	0.07±0.007	0.26±0.04	0.47±0.08
Vitamin E	0.08±0.004	9.10±0.60	1.89±0.32
Chlorophyll a	7.8±0.17	12.54±0.05	18.92±0.45
Chlorophyll b	3.4±0.47	6.66±0.02	9.45±0.67
Carotenoids	2.5±0.19	3.41±0.05	3.11±0.06
Growth Hormones (mg/100g)			
Auxin	0.8±0.012	2.01±0.06	1.81 ± 0.05
Cytokinin	ND	0.08±0.01	0.26±0.07
Gibberellic acid	19.8±0.65	4.55±0.94	2.24±0.02
Indole Acetic Acid (IAA)	25.34±0.71	0.73 ± 0.06	2.18 ± 0.07
Zeatin	0.47±0.04	0.53±0.08	0.21±0.082
Fatty acids profiles (mg /100 g)			
Palmitic acid	21.37±0.26	3.4±0.66	0.56±0.03
Margaric acid	0.07±0.012	0.44±0.09	0.23±0.10
Stearic acid	4.54±0.77	1.56±0.92	0.78±0.06
Oleic acid	2.30±0.71	0.67±0.11	1.21±0.03
Linolenic acid	ND	ND	0.53±0.03
α- linolenic acid	12.69±0.34	ND	0.12±0.04
Stearidonic acid	5.60±0.83	2.78±0.12	0.26±0.07
Docosahexaenoic acid	ND	0.09±0.005	0.12±0.11
ΣFA	8.40±0.17	11.34±0.52	5.21±0.12

Σ FA = Total fatty acids; BDL: Below Detection Limit; ND: Not detectable;

Values are mean ± standard deviation