

Supplementary Material

Responses of pea plants to elevated UV-B radiation at varying nutrient levels: N-metabolism, carbohydrate pool, total phenolics and yield

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Table S1. Effects of UV-B on different parameters of pea plants at varying nutrient levels

Mean values with different letters show significant difference at $P \leq 0.05$. Nutrient levels: Background NPK (F₀); Recommended NPK (F₁); Recommended NK+ 1.5 times recommended P (F₂)

Parameters	Control			Elevated UV-B		
	F ₀	F ₁	F ₂	F ₀	F ₁	F ₂
MDA	0.66±0.020 ^b	1.26±0.023 ^a	0.65±0.006 ^c	1.95±0.029 ^a	1.52±0.029 ^b	1.16±0.078 ^c
H ₂ O ₂ contents in nodules	0.285±0.008 ^a	0.213±0.003 ^b	0.195±0.002 ^c	0.324±0.004 ^a	0.237±0.003 ^b	0.233±0.006 ^b
O ₂ ⁻ contents in nodules	0.552±0.005 ^a	0.462±0.006 ^b	0.450±0.004 ^b	0.623±0.003 ^a	0.491±0.004 ^c	0.520±0.004 ^b
H ₂ O ₂ contents in leaves	0.31±0.006 ^b	0.224±0.010 ^b	0.460±0.008 ^a	0.543±0.024 ^a	0.331±0.008 ^b	0.539±0.011 ^a
O ₂ ⁻ contents in leaves	0.627±0.008 ^b	0.543±0.011 ^c	0.825±0.004 ^a	0.733±0.008 ^b	0.655±0.012 ^c	0.965±0.005 ^a
SOD	3.13±0.294 ^b	6.38±0.589 ^a	3.91±0.075 ^b	6.38±0.196 ^a	4.53±0.098 ^b	3.47±0.133 ^c
POX	32.9±1.21 ^a	34.4±0.35 ^a	35.8±0.99 ^a	47.4±0.143 ^a	33.5±0.71 ^c	36.4±0.07 ^b
Ascorbic acid	0.06±0.001 ^c	0.196±0.011 ^a	0.128±0.010 ^b	0.257±0.018 ^a	0.169±0.004 ^b	0.173±0.007 ^b

Total chlorophyll	2.70 ± 0.009 ^b	3.33 ± 0.017 ^a	2.01 ± 0.008 ^c	2.17 ± 0.001 ^a	2.12 ± 0.012 ^b	1.86 ± 0.015 ^c
Total carotenoid	0.071 ± 0.001 ^b	0.092 ± 0.0001 ^a	0.038 ± 0.0001 ^c	0.069 ± 0.0001 ^a	0.058 ± 0.001 ^b	0.057 ± 0.0001 ^b
UV-B absorbing compounds	2.66 ± 0.005 ^c	3.22 ± 0.033 ^a	3.14 ± 0.004 ^b	3.00 ± 0.045 ^a	2.72 ± 0.038 ^b	2.47 ± 0.026 ^c
PAL	0.439 ± 0.010 ^a	0.325 ± 0.004 ^c	0.386 ± 0.004 ^b	0.827 ± 0.004 ^a	0.664 ± 0.004 ^c	0.745 ± 0.006 ^b
NR	2.33 ± 0.240 ^b	2.00 ± 0.173 ^b	3.33 ± 0.108 ^a	1.67 ± 0.176 ^c	3.30 ± 0.153 ^b	4.13 ± 0.088 ^a
NiR	1.16 ± 0.020 ^b	2.10 ± 0.009 ^a	2.14 ± 0.145 ^a	0.922 ± 0.019 ^c	1.89 ± 0.050 ^a	1.54 ± 0.047 ^b
LgHb	2.48 ± 0.040 ^b	3.12 ± 0.015 ^a	2.12 ± 0.029 ^c	2.10 ± 0.0009 ^b	2.71 ± 0.026 ^a	1.94 ± 0.052 ^c
N-uptake	0.978 ± 0.048 ^b	0.294 ± 0.056 ^c	2.17 ± 0.163 ^a	0.513 ± 0.055 ^a	0.165 ± 0.0009 ^a	0.868 ± 0.052 ^a
NUE	1.37 ± 0.014 ^b	1.59 ± 0.063 ^a	1.63 ± 0.055 ^a	1.16 ± 0.014 ^b	1.30 ± 0.023 ^b	2.00 ± 0.029 ^a
Protein	13.6 ± 0.179 ^b	14.2 ± 0.283 ^b	16.5 ± 0.185 ^a	14.04 ± 0.520 ^b	16.200.456 ^a	12.65 ± 0.872 ^b
Total phenolics	8.81 ± 0.197 ^a	6.11 ± 0.22 ^b	8.37 ± 0.469 ^a	5.28 ± 0.052 ^c	6.95 ± 0.15 ^b	8.93 ± 0.103 ^a
RSR	1.08 ± 0.179 ^a	0.290 ± 0.040 ^c	0.683 ± 0.060 ^b	0.163 ± 0.035 ^b	0.322 ± 0.041 ^b	1.15 ± 0.200 ^a
Total biomass	2.57 ± 0.023 ^b	3.46 ± 0.107 ^a	3.27 ± 0.040 ^a	3.01 ± 0.053 ^b	3.13 ± 0.029 ^a	2.08 ± 0.041 ^c
Number of nodules	8.0 ± 0.231 ^a	6.5 ± 0.289 ^b	1.5 ± 0.173 ^c	21.5 ± 0.289 ^a	3.0 ± 0.461 ^b	2.9 ± 0.208 ^b
Weight of pods	34.3 ± 2.31 ^a	27.9 ± 2.16 ^b	15.6 ± 1.20 ^c	21.8 ± 1.18 ^a	19.9 ± 1.28 ^a	10.9 ± 1.02 ^b
Number of pods	15.4 ± 1.45 ^a	12.3 ± 1.23 ^{ab}	8.4 ± 0.970 ^b	9.3 ± 0.870 ^a	10.1 ± 0.910 ^a	6.8 ± 0.450 ^b

Table S2. Effects of UV-B on soluble sugar, starch, phosphorus, nitrogen and C/N ratio of nodules and leaves of pea plants at varying nutrient levels

Mean values with different letters show significant difference at $P \leq 0.05$. Nutrient levels: Background NPK (F₀); Recommended NPK (F₁); Recommended NK+ 1.5 times recommended P (F₂)

Parameters	Parts	Control			UV-B treatment		
		F ₀	F ₁	F ₂	F ₀	F ₁	F ₂
Soluble sugar	Leaves	85.7 ± 0.79 ^c	177.5 ± 2.2 ^b	230.3 ± 1.9 ^a	161.7 ± 1.1 ^c	178.3 ± 1.2 ^b	252.2 ± 1.0 ^a
	Nodules	68.7 ± 1.33 ^c	147.1 ± 1.6 ^a	137.4 ± 1.9 ^b	151.9 ± 0.83 ^a	132.9 ± 21.4 ^b	149.1 ± 1.3 ^a
Starch	Leaves	186.2 ± 0.71 ^c	381.3 ± 1.4 ^a	221.9 ± 1.3 ^b	433.3 ± 1.8 ^c	486.9 ± 0.77 ^b	493.7 ± 0.83 ^a
	Nodules	105.4 ± 0.65 ^c	203.5 ± 2.4 ^a	138.9 ± 0.48 ^b	219.6 ± 2.0 ^b	270.2 ± 2.6 ^a	89.5 ± 0.42 ^c
Phosphorus	Leaves	0.47 ± 0.01 ^{ab}	0.42 ± 0.02 ^b	0.49 ± 0.01 ^a	0.34 ± 0.01 ^b	0.053 ± 0.01 ^c	0.46 ± 0.02 ^a
	Nodules	0.44 ± 0.01 ^b	0.07 ± 0.01 ^c	0.71 ± 0.01 ^a	0.11 ± 0.01 ^b	0.09 ± 0.01 ^b	0.56 ± 0.02 ^a
Nitrogen	Leaves	5.8 ± 0.05 ^b	11.6 ± 0.21 ^a	4.8 ± 0.11 ^c	3.3 ± 0.09 ^b	2.7 ± 0.06 ^c	3.8 ± 0.06 ^a
	Nodules	3.4 ± 0.03 ^b	1.1 ± 0.05 ^c	4.2 ± 0.08 ^a	3.9 ± 0.03 ^a	1.0 ± 0.06 ^b	0.67 ± 0.05 ^c
C/N ratio	Leaves	2.04 ± 0.09 ^b	2.3 ± 0.08 ^b	6.6 ± 0.22 ^a	11.7 ± 0.52 ^a	5.3 ± 0.49 ^b	3.9 ± 0.19 ^b
	Nodules	10.9 ± 0.26 ^b	19.3 ± 0.76 ^a	4.5 ± 0.14 ^c	7.1 ± 0.39 ^b	21.2 ± 1.4 ^a	25.7 ± 1.9 ^a