Supplementary data:

Table S1. Germination rate [%] of mung bean, buckwheat and radish seeds after PDI treatment via two-sided illumination from LED-arrays (radiant) exposure of 28.2 J/cm². Control -/- and Dark control were not illuminated. Light control contained no Chl. n = 3.

	Germination Rate Mean	**Germination rate Standard deviation**
Mung bean Control -/-, 30 min	100	0
Mung bean Dark control, 100 μM Chl, 30 min	96.30	5.24
Mung bean Light control, 30 min	100.00	0.00
Mung bean PDI, 100 μM Chl, 30 min	100.00	0.00
Buckwheat Control -/-, 30min	85.19	5.24
Buckwheat Dark control, 100 μM Chl, 30 min	85.19	13.86
Buckwheat Light control, 30 min	81.48	10.48
Buckwheat PDI, 100 μM Chl, 30 min	74.07	5.24
Radish Control -/-, 30 min	100.00	0.00
Radish Dark control, 100 μM Chl, 30 min	96.30	5.24
Radish Light control, 30 min	100.00	0.00
Radish PDI, 100μM Chl, 30 min	100.00	0.00

Table S2. Relative inactivation of *L. innocua* on mung bean, buckwheat and radish seeds after PDI treatment with 28.2 J/cm². Dark control was not illuminated but contained 100 μM Chl. Light control was illuminated but did not contain Chl. PDI 100 μl contained 100 μM Chl and was illuminated. n = 3.

	Relative inactivation Mean	**Relative inactivation Standard deviation**
Mung bean Control -/-, 30 min	1	0
Mung bean Dark control, 100 μM Chl, 30 min	14.49	8.63
Mung bean Light control, 30 min	2.89	1.72
Mung bean 100 μM Chl, 30 min	556.07	433.98
Buckwheat Control -/-, 30min	1.00	0.00
Buckwheat Dark control, 100 μM Chl, 30 min	1.43	0.77
Buckwheat Light control, 30 min	1.61	0.85
Buckwheat 100 μM Chl, 30 min	7.16	3.55
Radish Control -/-, 30min	1.00	0.00
Radish Dark control, 100 μM Chl, 30 min	1.83	0.53
Radish Light control, 30 min	1.46	0.36
Radish 100μM Chl, 30 min	1428.66	1213.79

Table S3. Germination rate [%] of PDI with shortened aqueous contact time with single-sided illumination for 20 minutes resulted in 28.2 J/cm² radiant exposure on mung bean seeds. "Dry" indicates the germination rate after treatment, but without addition tap water to the seeds. "Wet" samples were the same mung bean seeds as "Dry" of the respective control or PDI-treatment, but the germination rate was assessed after seven days of dry storage and subsequent germination post watering with 1.1 ml sterile tap water per seed. n = 3.

	Germination rate Mean	Germination rate Standard deviation
Dry, Light control, 30 min	0.00	0.00
Dry, 30 min, 100 μM Chl	0.00	0.00
Wet, Light control, 30 min	98.77	1.74
Wet, 30 min, 100 μM Chl	96.30	3.02

Table S4. Relative inactivation of *L. innocua* on mung bean seeds after PDI treatment with one sided illumination for 27.8 J/cm². Dark control was not illuminated but contained 100 μM Chl. Light control was illuminated but did not contain Chl. PDI 100 μM contained 100 μM Chl and was illuminated. n ≥ 5.

	Relative inactivation Mean	Relative inactivation Standard deviation
Control -/-, 30 min	1	0
Dark control, 100 μM Chl, 30 min	1.30	0.93
Light control, 30 min	1.70	1.68
PDI, 1 μM Chl, 5 min	16.68	22.78
PDI, 10 μM Chl, 5 min	270.18	163.98
PDI, 100 μM Chl, 5 min	256.95	326.45
PDI, 1 μM Chl, 30 min	42.29	52.81
PDI, 10 μM Chl, 30 min	3154.87	3055.89
PDI, 100 μM Chl, 30 min	16280.65	26153.35
Supernatant Control -/-, 30 min	1.00	0.00
Supernatant PDI, 10 μM Chl, 30 min	18071.92	15595.65
Supernatant PDI, 100μM Chl, 30 min	23687.72	31357.71

Table S5. Germination rate [%] of 56.4 J/cm² PDI treated mung bean seeds. Control -/- contained no Chl and was not illuminated. Dark control contained 100 μM Chl but was not illuminated. Light control was illuminated but contained no Chl. n = 6.

	Germination rate Mean	Germination rate Standard deviation
Control -/-, 30 min	98.15	4.14
Dark control, 100 μM Chl, 30 min	100.00	0.00
Light control, 30 min	100.00	0.00
PDI, 1 μM Chl, 5 min	100.00	0.00
PDI, 10 μM Chl, 5 min	96.30	5.24
PDI, 100 μM Chl, 5 min	100.00	0.00
PDI, 1 μM Chl, 30 min	100.00	0.00
PDI, 10 μM Chl, 30 min	98.15	4.14
PDI, 100 μM Chl, 30 min	100.00	0.00

Table S6. Relative inactivation of mung bean seeds of *L. innocua* after 56.4 J/cm² of PDI treatment with illumination from two sides. Mean CFUs/ml: $1.2*10^6$. Liquid indicates the relative inactivation of the seedless PS/DPBS Liquid of the respective samples. Control -/- contained no Chl and was not illuminated. Dark control contained 100 μM Chl but was not illuminated. Light control was illuminated but contained no Chl. n ≥ 4.

	Relative inactivation Mean	Relative inactivation Standard deviation
Control -/-, 30 min	1	0
Dark control, 100 μM Chl, 30 min	10.14	17.42
Light control, 30 min	2.14	2.40
PDI, 1 μM Chl, 5 min	76.55	60.46
PDI, 10 μM Chl, 5 min	217.21	251.74
PDI, 100 μM Chl, 5 min	312.03	324.38
PDI, 1 μM Chl, 30 min	141.01	111.56
PDI, 10 μM Chl, 30 min	3334.15	6731.72
PDI, 100 μM Chl, 30 min	43397.26	77771.64
Supernatant Control -/-, 30 min	1.00	0.00
Supernatant PDI, 10 μM Chl, 30 min	822627.55	629700.53
Supernatant PDI, 100 μM Chl, 30 min	1525000.00	978787.52

Table S7. Relative inactivation of *L. innocua* on mung bean sprouts, 13 days after PDI treatment with LED-array illumination from two sides resulting in a radiant exposure of 56.4 J/cm². Mean CFUs/ml: $1.1*10^6$. Supernatant indicates the relative inactivation of the seedless PS/DPBS liquid of the respective samples. Control -/- contained no Chl and was not illuminated. Dark control contained 100 μM Chl but was not illuminated. Light control was illuminated but contained no Chl. n ≥ 3.

	Relative inactivation Mean	Relative inactivation Standard deviation
Control -/-, 30 min	1.00	0.00
Dark control, 100 μM Chl, 30 min	16.10	25.30
Light control, 30 min	6.80	8.41
PDI, 1 μM Chl, 5 min	3.54	2.24
PDI, 10 μM Chl, 5 min	55.80	57.30
PDI, 100 μM Chl, 5 min	17.10	8.46
PDI, 1 μM Chl, 30 min	83.90	83.80
PDI, 10 μM Chl, 30 min	49.60	82.50
PDI, 100 μM Chl, 30 min	2860.00	4440.00

Table S8. Mass of mung bean sprouts [g] that were treated as seeds with PDI from two-sided illumination by LED-arrays with 56.4 J/cm² radiant exposure. Control -/- contained no Chl and was not illuminated. Dark control contained 100 μM Chl but was not illuminated. Light control was illuminated but contained no Chl. n = 6.

	Mass of sprouts [g] Mean	Mass of sprouts [g] Standard deviation
Control -/-, 30 min	2.23	0.14
Dark control, 100 μM Chl, 30 min	2.23	0.27
Light control, 30 min	2.07	0.22
PDI, 1 μM Chl, 5 min	2.18	0.33
PDI, 10 μM Chl, 5 min	2.17	0.23
PDI, 100 μM Chl, 5 min	2.20	0.18

PDI, 1 μM Chl, 30 min	2.35	0.39
PDI, 10 μM Chl, 30 min	2.03	0.29
PDI, 100 μM Chl, 30 min	2.18	0.25

Table S9. Germination rate [%] of 112.9 J/cm² PDI treated mung bean seeds. Control -/- contained no Chl and was not illuminated. Dark control contained 100 μM Chl but was not illuminated. Light control was illuminated but contained no Chl. n ≥ 3.

	Germination rate Mean	**Germination rate Standard deviation**
Control -/-, 30 min	97.22	4.81
Dark control, 100 μM Chl, 30 min	100.00	0.00
Light control, 30 min	100.00	0.00
PDI, 1 μM Chl, 5 min	97.22	4.81
PDI, 10 μM Chl, 5 min	100.00	0.00
PDI, 100 μM Chl, 5 min	100.00	0.00
PDI, 1 μM Chl, 30 min	100.00	0.00
PDI, 10 μM Chl, 30 min	100.00	0.00
PDI, 100 μM Chl, 30 min	100.00	0.00

Table S10. Relative inactivation of mung bean seeds of *L. innocua* after 112.9 J/cm² of PDI treatment with illumination from two sides. Mean CFUs/ml: $1.27*10^6$. Supernatant indicates the relative inactivation of the seedless PS/DPBS liquid of the respective samples. Control -/- contained no Chl and was not illuminated. Dark control contained 100 μM Chl but was not illuminated. Light control was illuminated but contained no Chl. n ≥ 3.

	Relative inactivation Mean	**Relative inactivation Standard deviation**
Control -/-, 30 min	1.00	0.00
Dark control, 100 μM Chl, 30 min	3.03	2.60
Light control, 30 min	7.62	11.18
PDI, 1 μM Chl, 5 min	136.01	102.00
PDI, 10 μM Chl, 5 min	587.40	297.21
PDI, 100 μM Chl, 5 min	1507.14	1245.12
PDI, 1 μM Chl, 30 min	74.40	14.21
PDI, 10 μM Chl, 30 min	8232.58	12295.42
PDI, 100 μM Chl, 30 min	47563.13	45203.51
Supernatant Control -/-, 30 min	1.00	0.00
Supernatant PDI, 10 μM Chl, 30 min	790920.03	893200.01
Supernatant PDI, 100 μM Chl, 30 min	3325000.00	3191132.24