

Table S2. Effect of photoconversion covers on plants growth.

Reference	Base	Phosphor	Excitation, nm	Emission, nm	Features	Plants	Growing conditions	Effect on plants growth in comparison with control plants, %
[1]	PE	Lumogen * F-Red 300	400-480 500-590	590-700	QY > 0.1 rel. units	<i>Tomatoes</i>		-Fruit weight +20% -Number of flowers per branch +26% -Flower weight 0% -Number of juvenile branches per bush +37%
						<i>Roses</i>		
[2]	PE	Red Dye	300-400	620-625	QY=0,04 rel. units	<i>Brassica oleracea</i>		<i>Brassica oleracea</i> -CO ₂ absorption +100% -Photosynthesis efficiency +7% -Carboxylation efficiency -33% -Electron transfer rate +17% -Triose phosphate use rate +13%
						<i>Lycopersicon esculentum</i>	-PPFD 350 $\mu\text{mol m}^{-2} \text{s}^{-1}$ -Temperature 28 °C -Experiment 32 days	<i>Lycopersicon esculentum</i> -CO ₂ absorption +100% -Photosynthesis efficiency +95% -Carboxylation efficiency -83% -Electron transfer rate 0% -Triose phosphate use rate 0%
[3]	PE	KSAN TA tm	300-380	600-630		<i>Lycopersicon esculentum</i>		
						<i>Lactuca sativa</i>		-Yield <i>Lycopersicon esculentum</i> +39% -Yield <i>Lactuca sativa</i> +45%
[4]	PE	Rhodamine 6G	460-560	500-620	QY=0.05 rel. units	<i>Anethum graveolens</i>		-Yield <i>Anethum graveolens</i> +28%
						<i>Spinacia oleracea</i>		-Yield <i>Spinacia oleracea</i> +53%
[4]	PE	Rhodamine 6G	460-560	500-620	QY=0.05 rel. units	<i>Brassica purpuraria</i>	-Temperature 25 °C	-Yield <i>Gossypium hirsutum</i> +10% -Yield <i>Winter lettuce</i> +29%

						<i>Gossypium hirsutum</i>	<i>Brassica purpuraria</i> +40% <i>Capsicum annuum</i> +60%
		Rhodamine B	500-600	520-640	QY=0.11 rel. units	<i>Winter lettuce</i> <i>Capsicum annuum</i>	
[5]	Ethylenediacetal polymer resins	CP-636 Magenta	400-560	580-620		<i>Fragaria ananassa</i>	CP-636 Magenta -Fruit weight -6% -Plant height +22% -Number of pests -100%
		CP-636 Orange	400-520	580-620		<i>Cucumis sativus</i>	CP-636 Orange -Fruit weight 0% -Plant height +18% -Number of pests -75%
[6]	PE	Blue		450		<i>Fragaria ananassa</i>	Blue -Fruit weight +11% -Number of fruits +5% -Dry weight 0% -Sucrose content 0% -Leaves number 0% -Leaf area 0%
		Red1 Red2 Red3	365	610-630 610-630 600-690			Red -Fruit weight +5% -Number of fruits 0% -Dry weight 0% -Sucrose content 0% -Leaves number -7% -Leaf area -9%
[7]	PE	RED	350-450	600-700			RED -Leaf area +9% -Dry weight +8% -Number of shoots +17% -Stem length 0%
		BLUE	350-450	450-500		<i>Triticum durum</i>	BLUE -Leaf area -32% -Dry weight +5% -Number of shoots -26% -Stem length +27%
		RED-BLUE	350-450	450-500 600-700			RED-BLUE -Leaf area -33% -Dry weight +8% -Number of shoots 0% -Stem length +25%
[8]	- Ethylenediacetal vinyl	Red (IAQ-DAS)	450-550	600-700		<i>Raphanus sativus radicola</i>	<i>Raphanus sativus radicola</i> Red (IAQ-DAS) -Leaf length 0% -Shoot dry weight +15%

	aceta te - Dyes				<i>Allium fistulo sum</i>	-Experiment 7 weeks	-Root fresh weight +100% -Root dry weight +100%
		Blue (BFO– BUT)	350- 450	450- 550			<i>Raphanus sativus radicula</i> Blue (BFO–BUT) -Leaf length +19% -Shoot dry weight +30% -Root fresh weight 0% -Root dry weight 0%
		Red (IAQ– DAS)	450- 550	600- 700			<i>Allium fistulosum</i> Red (IAQ–DAS) -Leaf length 0% -Shoot fresh weight +27% -Shoot dry weight +47%
		Blue (BFO– BUT)	350- 450	450- 550			<i>Allium fistulosum</i> Blue (BFO–BUT) -Leaf length +16% -Shoot fresh weight +9% -Shoot dry weight +37%
[9]	Poly styre ne	Red dye	400- 550	600- 700	<i>Cymbi dium finlays onianu m</i> <i>Cymbi dium insign e</i>	-Photoperiod 16 h -PPFD 34 $\mu\text{mol m}^{-2} \text{s}^{-1}$ -Experiment 40 days	-Number of PLB (protocorm like body) +350% -Fresh weight +190%
[10]	PE		320- 380	600- 640	<i>Cucu mis sativus</i>	-Temperature 25/18 °C -Experiment 6 month	-Shoot length +35% -Leaves number +80% -Leaf area +10% -Number of fruits +64% -Fruit weight +13% -Yield +85% -Ascorbic acid content +35% -Carbohydrate content - 10%
[11]	Poly styre ne	RFF	500- 550 300- 400	600- 700	<i>Cymbi dium finlays onianu m</i> <i>Phala enopsi s</i> «1327 »	-Photoperiod 16 h -PPFD 34 $\mu\text{mol m}^{-2} \text{s}^{-1}$ -Temperature 25 °C -Experiment 42 days	<i>Cymbidium finlaysonianum</i> RFF -Fresh weight +120% -Number of PLB +260% <i>Cymbidium finlaysonianum</i> BFF -Fresh weight +250% -Number of PLB +240%

									<i>Cymbidium finlaysonianum</i> YFF -Fresh weight +71% -Number of PLB +120%
									<i>Phalaenopsis «I327»</i> RFF -Fresh weight +26% -Number of PLB +90%
									<i>Phalaenopsis «I327»</i> BFF -Fresh weight +16% -Number of PLB +50%
									<i>Phalaenopsis «I327»</i> YFF -Fresh weight +5% -Number of PLB 0%
									-Leaves number 0% -Shoot length +50% -Leaf area +35% -Fresh weight +30% -Dry weight +16% -Ascorbic acid content +180% -Hypocotyl length -100%
									-Leaves number 0% -Shoot length +25% -Leaf area +25% -Fresh weight +17% -Dry weight +5% -Ascorbic acid content +150% -Catalase activity +40%
									F-16 -Shoot length 0% -Leaf area +20% -Dry weight +15% -Photosynthesis efficiency +8% -Chlorophyll a content 0% -Chlorophyll b content 0% -Carotenoids content - 22%
									F-15 -Shoot length 0% -Leaf area +45% -Dry weight +15% -Photosynthesis efficiency +16% -Chlorophyll a content 0% -Chlorophyll b content 0%

							-Carotenoids content 0%
							F-14
							-Shoot length 0%
							-Leaf area +40%
							-Dry weight 0%
							-Photosynthesis efficiency +30%
							-Chlorophyll a content -5%
							-Chlorophyll b content 0%
							-Carotenoids content -37%
							F-13
							-Shoot length 0%
							-Leaf area +60%
							-Photosynthesis efficiency +15%
							-Chlorophyll a content -6%
							-Chlorophyll b content 0%
							-Carotenoids content -37%
							F-10
							-Shoot length 0%
							-Leaf area +100%
							-Dry weight +60%
							-Photosynthesis efficiency +70%
							-Chlorophyll a content 0%
							-Chlorophyll b content +14%
							-Carotenoids content 0%
							F-8
							-Shoot length 0%
							-Leaf area +20%
							-Dry weight -8%
							-Photosynthesis efficiency +12%
							-Chlorophyll a content -60%
							-Chlorophyll b content -43%
							-Carotenoids content -100%
[14]	Tetrafluoroethylene	AGC	500-560	580-680	QY=0,08 отн. ед.	Cucumis sativus	-Temperature 30/13 °C -Experiment 8 month -Fruit length 0% -Fruit diameter 0% -Fruit dry weight +8% -Fruit weight 0% -Number of fruits per plant +45% -Yield +39% -Fresh weight +41%

								-Leaves fresh weight +49%	
								-Leaves number per plant +17%	
								-Stem length 0%	
[15]	PE	NP YVO ₄ E u	320- 380	600- 640	<i>Lactuca sativa</i>	-Temperature 28 °C -Experiment 30 days		-Leaves number +36%	
								-Fresh weight +60%	
								-Dry weight +100%	
								-Leaf area +50%	
								-Ascorbic acid content +60%	
[16]	PE		RED	290- 350	420- 490	QY=0.543 rel. units		<i>Prunus persica</i> RED	
								-Trunk area +44%	
								-Shoot length +50%	
								-CO2 absorption 0%	
								-Stomatal conductance +22%	
								-Transpiration rate +17%	
								<i>Prunus persica</i> BLUE	-Trunk area +34%
									-Shoot length +22%
									-CO2 absorption +6%
									-Stomatal conductance +33%
									-Transpiration rate +34%
									<i>Prunus persica</i> RED-BLUE
-Shoot length+14%									
-CO2 absorption -32%									
-Stomatal conductance -33%									
-Transpiration rate -23%									
<i>Prunus Cerasus</i> RED	-Trunk area 0%								
	-Shoot length+12%								
	-CO2 absorption 0%								
	-Stomatal conductance +18%								
	-Transpiration rate +15%								
	<i>Prunus Cerasus</i> BLUE	-Trunk area -24%							
-Shoot length 0%									
-CO2 absorption +14%									
-Stomatal conductance +45%									
-Transpiration rate +16%									
<i>Prunus Cerasus</i> RED-BLUE		-Trunk area -27%							
	-Shoot length -10%								

								-CO ₂ absorption -12%
								-Stomatal conductance -10%
								-Transpiration rate 0%
[17]	Polypropylene	NP Y ₂ O ₂ S Eu	250-380	570-650-700-720	particle size 3-5 μm -QY=0.21-0.24 rel. units	<i>Lactuca sativa</i> <i>Brassica oleracea</i>	-PPFD 730 ± 80 μmol m ⁻² s ⁻¹ -Temperature 26/21 °C -Experiment 28 days	-Photosynthesis efficiency +40% -Plant biomass +40% -Transpiration rate -40% -WUE (water use efficiency) +47%
[18]	Fluoropolymer	Cd _{0.6} Zn _{0.4} Se	375 nm	650 nm	QY=0.17 rel. units	<i>Capsicum annuum</i> <i>Solanum melongena</i> <i>Cucumis sativus</i> <i>Solanum lycopersicum</i>		-Leaf area <i>Cucumis sativus</i> +15% <i>Solanum melongena</i> +25% <i>Capsicum annuum</i> +30% <i>Solanum lycopersicum</i> +50% -Fruit weight <i>Solanum lycopersicum</i> +20%
[19]	Fluoroplast	NP: Cd(1-x) Zn(x)S e	300-400	450-655	Partical size 7 nm, 15 nm QY=0.22-0.28 rel. units	<i>Capsicum annuum L</i> <i>Solanum melongena</i> <i>Cucumis sativus</i> <i>Solanum lycopersicum</i>	-Experiment 5 weeks	-Leaf area +20-55% -Fruit weight (tomatoes) + 15%
[20]	PE	NP Sr ₂ Si ₅ N ₈ :Eu ²⁺	313-421	550-700	500 nm	<i>Brassica rapa</i>	-Temperature 24/18 °C -Experiment 10 days	-Plant height +24% -Leaf length +15% -Leaf width +15% -Leaves number 0% -Fresh weight +60% -Dry weight +30% -Carotenoid content +45%

								-Chlorophyll content +29%
								-Dissolved protein content +9%
								-Polyphenol content +21%
								-Dissolved sugar content +19,15%
[21]	PE	Dye GR	400-480 500-600	570-650	QY=0.376 rel. units	<i>Capsicum annuum</i>	-PPFD 200 $\mu\text{mol m}^{-2} \text{s}^{-1}$ -Temperature 26 °C -Experiment 25 days	<i>Capsicum annuum</i> -Photosynthesis efficiency +18% -Leaves fresh weight +35% -Leaves dry weight +43% -Leaf area +30%
						<i>Lactuca sativa</i>		<i>Lactuca sativa</i> -Photosynthesis efficiency +18% -Leaves fresh weight +32% -Leaves dry weight +29% -Leaf area +32%
[22]	PE	Dye GtR	530-560	610-680	QY=0,034 rel. units	<i>Capsicum annuum</i>	-PPFD 2300 $\mu\text{mol m}^{-2} \text{s}^{-1}$ -Temperature 26 °C -Experiment 45 days	-Stem length +8% -Stem diameter 0% -Number of shoots 0% -Leaves number +13% -Fresh weight +20% -Dry weight +20% -Number of fruits 0% -Internodes length 0% -Leaf length 0% -Leaf width 0% -Leaf area+6% -Photosynthesis efficiency 0%
[23]	Acrylic resin	CuInS ₂ /ZnS QD-Orange	440	550-650	QY=0.15-0.2 rel. units	<i>Lactuca sativa</i>	-Photoperiod 14 h -PPFD 380 $\mu\text{mol m}^{-2} \text{s}^{-1}$ -Temperature 24/20 °C -Experiment 28 days	QD-Orange -Leaf area +8% -Fresh weight +11% -Dry weight +13% -Photosynthesis efficiency +5,6% QD-Red -Leaf area +13% -Fresh weight +11% -Dry weight +8,7% -Photosynthesis efficiency +17,6%
[24]	PE	Lumogen Red (LR305)	400-480	550-680	Photonic Crystal SiO ₂ /TiO ₂ for reflection IR 1000-1600 nm	<i>Solanum lycopersicum</i>	-Photoperiod 16 h -PPFD 400 $\mu\text{mol m}^{-2} \text{s}^{-1}$ -Temperature 24/20 °C	<i>Solanum lycopersicum</i> -Stem length +13% -Leaves number +6% <i>Lactuca sativa</i> -Fresh weight +12% -Stem fresh weight +100%

							-Stem dry weight +35%
							-Leaf area +91%
							<i>Lactuca sativa</i>
							-Breathing rate 0%
							-Maximum rate of photosynthesis +9%
							-Fresh weight 0%
							-Dry weight -30%
							-Chlorophyll content -6%
							-Leaf area 0%
							-Leaf length +22%
							-Leaf width 0%
							-Plant height +33%
							<i>Brassica rapa</i>
							-Breathing rate -67%
							-Maximum rate of photosynthesis +23%
							-Fresh weight 0%
							-Dry weight -18%
							-Chlorophyll content 0%
							-Leaf area 0%
							-Leaf length+6%
							-Leaf width 0%
							-Plant height-15%
							<i>Cucumis sativus</i>
							-Breathing rate -35%
							-Maximum rate of photosynthesis +19%
							-Fresh weight 0%
							-Dry weight 0%
							-Chlorophyll content +7%
							-Leaf area+14%
							-Leaf length 0%
							-Leaf width 0%
							-Plant height -32%

NP – nanoparticles, QY – quantum yield, PE – polyethylene, IR – infrared radiation, WUE – water use efficiency, PLB – protocorm like body.

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