

**Supplementary Table S1. Electrical lighting sources commonly used in controlled environment plant production and blue lighting sources used in literature.**

| Lamp types                    | BL proportion (%) | B:G:R ratios | Peak wavelength (nm) | Wavelength range (nm) | R:FR ratio | PPS  | Brand/Model                 | Lighting manufacturer                          | References |
|-------------------------------|-------------------|--------------|----------------------|-----------------------|------------|------|-----------------------------|--|------------|
| <i>Multispectral lighting</i> |                   |              |                      |                       |            |      |                             |  |            |
| CWF                           | 25                |              |                      |                       |            |      | Vita-Lite                   | Duro-Test Corp., Fairfield, NJ, USA            | [10]       |
| CWF                           | 19                | 19:49:32     |                      |                       |            |      | F40T12                      | Philips Lighting, Somerset, NJ, USA            | [59]       |
| CWF                           | 18                | 18:55:27     | 580                  | 360-800               | 18         | 0.86 | F96T12/CW/VHO               | Osram Sylvania Ltd., Markham, Ontario, Canada  | - [160]    |
| CWF                           |                   |              | 575                  |                       |            | 0.85 | F96T12                      | Philips, Amsterdam, The Netherlands            | [57]       |
| CWF                           | 16                | 16:70:14     | 600                  | 350-850               |            |      |                             | Sylvania                                       | [14]       |
| MH                            | 20                | 20:56:24     | 575                  | 300-800               | 3          | 0.82 | ETAC-400-MH-CH              | Energy Technics, York, PA, USA                 | [12, 99]   |
| MH                            | 23                |              |                      |                       |            |      | Optimarc                    | Tungsten Products Corp., North Bergen, NJ, USA | [10]       |
| HPS                           | 7                 |              |                      |                       |            |      |                             | GE Lucalox                                     | [10]       |
| HPS                           | 9                 | 9:51:40      | 569                  |                       |            |      |                             |  | [165]      |
| HPS                           |                   |              | 600                  | 425-725               |            | 0.86 | LU150                       | Acuity Lithonia Lighting, Conyers, GA          | [148]      |
| HPS                           |                   |              | 600                  | 425-725               |            | 0.86 | LR48877                     | P.L. Light Systems, Beamsville, ON, Canada     | - [148]    |
| HPS                           |                   |              |                      |                       |            | 0.85 | NAV T-400W                  | Osram, Munich, Germany                         | [145]      |
| RB-LED                        | 10                | 10:0:90      | 453 and 660          | 425-700               |            | 0.88 | GP-TOPlight DR/B-LB2013     | Philips, Eindhoven, the Netherlands            | [148]      |
| RB-LED                        | 12                |              | 450 and 650          | 400-700               |            | 0.89 | Luxeon Rebel Tri-Star LEDs; | Quadica Developments Inc., Ontario, Canada     | [53]       |
| RBG-LED                       | 10                | 10:5:85      | 453 and 660          | 425-700               |            | 0.88 | GP-TOPlight                 | Philips, Eindhoven, the Netherlands            | [148]      |

|                                  |    |          |                   |         |      |                                 |  |          |
|----------------------------------|----|----------|-------------------|---------|------|---------------------------------|--|----------|
|                                  |    |          |                   |         |      | DR/W-MB2013                     |  |          |
| RBG-LED                          | 14 | 14:23:63 | 475, 550, and 660 | 400-700 | 0.89 | Luxeon Rebel Tri-Star LEDs;     | Quadica Developments Inc., Ontario, Canada | [53]     |
| Warm white LED                   | 11 | 11:41:48 | 450 and 625       | 400-800 | 0.84 |                                 | Multicomp; Newark, Gaffney, SC             | [53]     |
| Neutral white LED                | 19 | 19:46:35 | 450 and 600       | 400-800 | 0.84 |                                 | Multicomp; Newark, Gaffney, SC             | [53]     |
| Cool white LED                   | 28 | 28:48:25 | 440 and 580       | 400-800 | 0.83 |                                 | Multicomp; Newark, Gaffney, SC             | [53]     |
| <i>Broad-band blue lighting</i>  |    |          |                   |         |      |                                 |  |          |
| Blue FL                          |    |          | 450               | 350-550 |      | BF6 165-12                      | JKL Components Corp., Paccoima, CA, USA    | [12, 99] |
| Blue FL                          |    |          | 450               | 400-550 | 1.87 | Philips TLD 18/18               | Philips                                    | [11]     |
| Blue FL                          |    |          | 435 and 470       | 400-600 |      | F20 T12/246                     | Sylvania, Danvers, Mass.                   | [14]     |
| Blue FL                          | 91 |          | 454               | 396-565 | 1.28 | Philips TL-D 36 W/18            | Philips                                    | [166]    |
| <i>Narrow-band blue lighting</i> |    |          |                   |         |      |                                 |  |          |
| Blue LED                         |    |          | 450               | 400-500 | 0.49 | Royal Blue (LUXEON Rebel        | Philips, Amsterdam, Netherlands            | [43]     |
| Blue LED                         |    |          | 450               | 425-500 | 0.5  | PHYTOFY® RL LED lighting system | OSRAM GmbH, Munich, Germany                | [31]     |
| Blue LED                         |    |          | 455               | 400-500 | 0.49 | LX602C                          | Heliospectra AB, Gothen-burg, Sweden       | [33]     |
| Blue LED                         |    |          | 440               |         | 0.49 | Pro Series 325                  | LumiGrow, Inc., Emeryville, CA             | [30]     |
| Blue LED                         |    |          | 405               | 388-425 | 0.58 | RX30                            | Heliospectra AB, Gothenburg, Sweden        | [36]     |
| Blue LED                         |    |          | 440               | 419-455 | 0.49 | LX601C                          | Heliospectra AB, Gothen-burg, Sweden       | [36]     |

|          |     |         |      |                             |  |      |
|----------|-----|---------|------|-----------------------------|--|------|
| Blue LED | 455 | 425-482 | 0.48 | Pro650                      | LumiGrow, Emeryville, USA                    | [36] |
| Blue LED | 446 | 400-500 | 0.48 | customized                  | Osram OptoSemiconductors, Northville, M      | [57] |
| Blue LED | 455 | 400-520 | 0.51 | ISL-305X302 Series,         | CCS Inc., Kyoto, Japan                       | [27] |
| Blue LED | 440 |         |      | GF-320s                     | Good Feeling Co. Ltd., Sungnam, Korea        | [18] |
| Blue LED | 470 | 405-530 |      | IS series                   | CCS Inc., Kyoto, Japan                       | [29] |
| Blue LED | 470 | 425-550 |      | Q3J                         | Phillips LUMILEDS, San Jose, California, USA | [17] |
| Blue LED | 460 | 400-525 | 0.58 | Luxeon Rebel Tri-Star LEDs; | Quadica Developments Inc., Ontario, Canada   | [53] |

Note: BL = Blue light; B:G:R ratios = Blue : green : red LED light ratios; R:FR ratio = Red : far-red light ratio; PPS = phytochrome photostationary state; CWF = cool-white fluorescent lamp; HPS = high-pressure sodium lamp; MH = metal halide lamp; Blue FL = Blue fluorescent lamp