

Preharvest high-intensity, pulsed polychromatic light and low-intensity UV-C treatments control *Botrytis cinerea* on lettuce (*Lactuca sativa*)

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Abstract

Hormetic treatments using high-intensity, pulsed polychromatic light (HIPPL) and low-intensity UV-C (LIUV) can control *Botrytis cinerea* on lettuce (*Lactuca sativa*) in a controlled environment. For the cv. Temira, 48 pulses of HIPPL significantly reduced mean disease progression (26%), while 0.64 kJ/m² of LIUV gave reductions of 27%. No LIUV or HIPPL treatment significantly reduced disease progression for cv. Amica. A 0.98 kJ/m² dose of LIUV and 24 pulses of HIPPL, however, reduced mean disease progressions (25% and 15%) when compared to the control. Phytotoxicity was observed at 48 and 72 pulses of HIPPL for Amica and Temira, respectively. LIUV caused phytotoxicity on both cvs. above 0.98 kJ/m² but at a reduced incidence for Temira. Both technologies delivered a similar level of disease control on cv. Temira and may provide a residue-free alternative to the chemical control of plant pathogens. HIPPL treatments, however, were achieved in 15 s and may prove to be a more commercially feasible alternative to LIUV with a treatment duration of 32 s.