



LED Superior to HPS for Cut Gerbera Production



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Rationale

At higher latitudes, greenhouse cut flower & vegetable growers rely on supplemental lighting for production in the darker months.

Industry-standard, decades-old, HPS lighting is a proven technology but suffers from short lifespans, low energy efficiency & poor spectral distribution.

New LED technologies promise high energy efficiencies, long lifespans, tremendous control of spectral distribution & higher energy efficiencies.

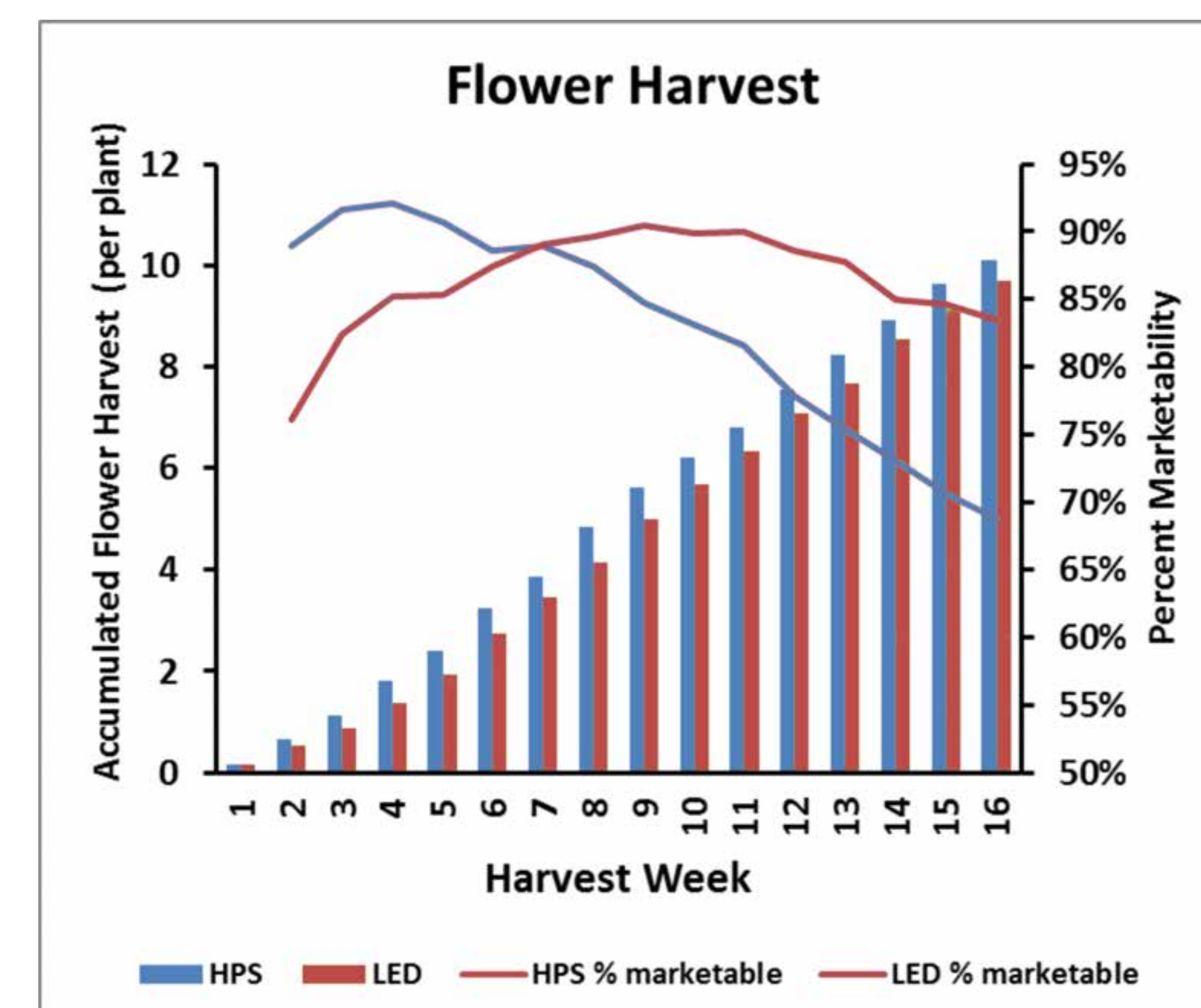
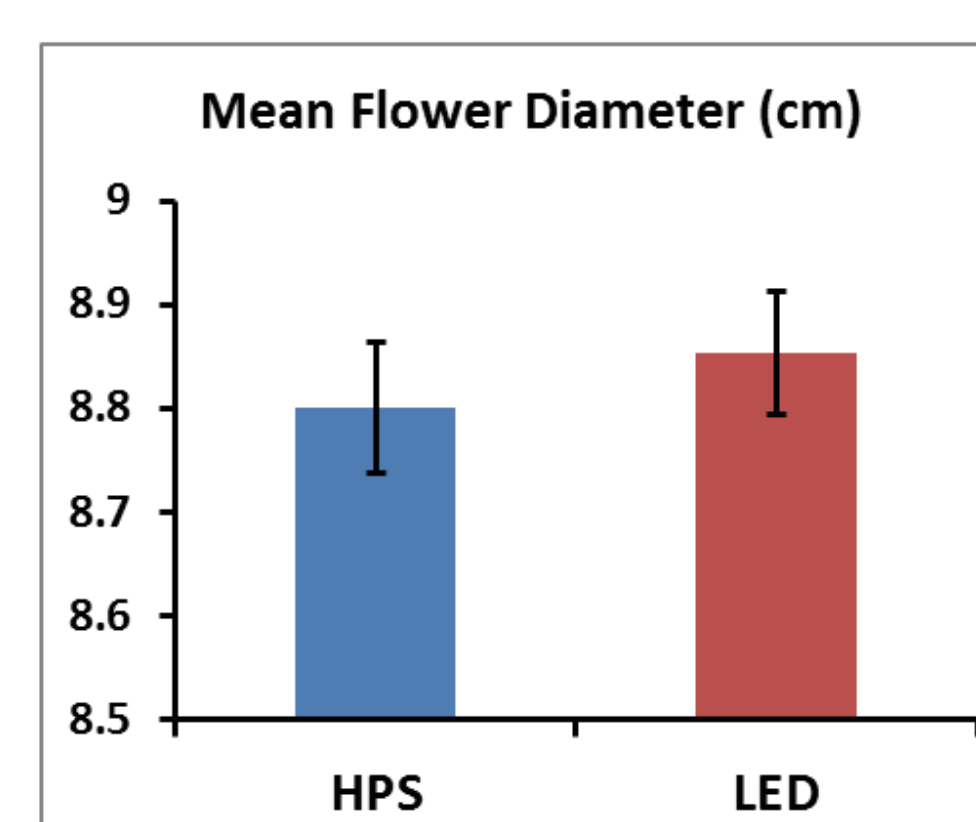
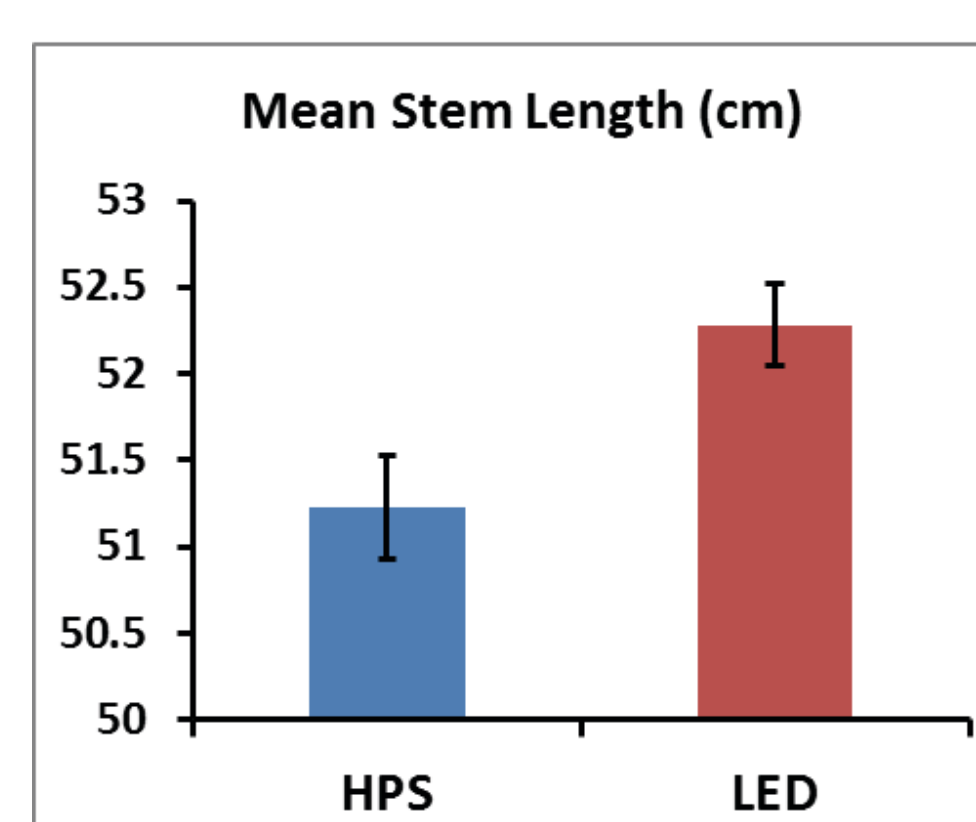
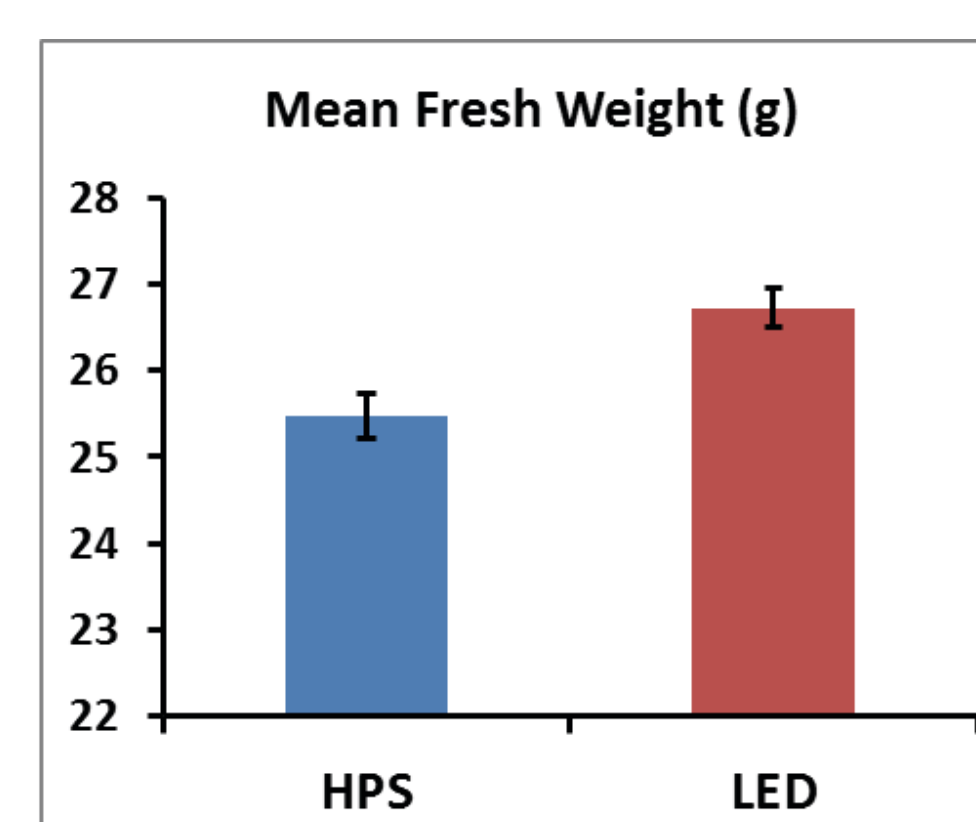
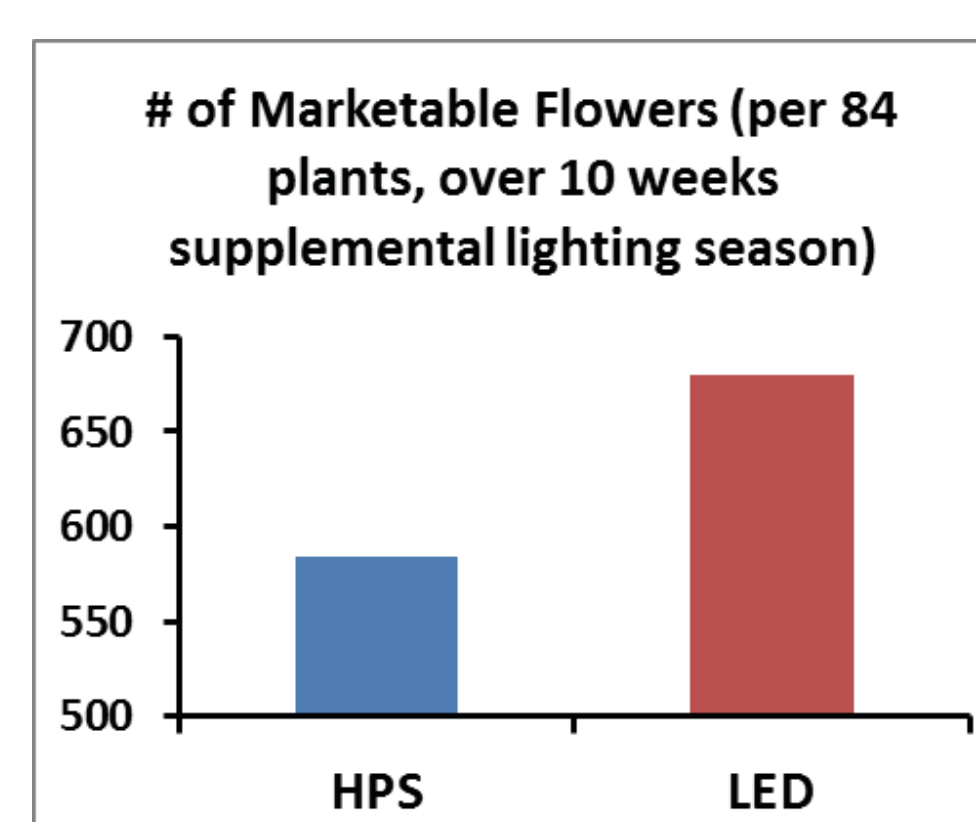
This project evaluated LumiGrow's commercially available Pro 325 LED fixtures for the production of cut gerbera by direct comparison with HPS using concurrently replicated greenhouse trials during the 2013-14 supplemental lighting season (ie. Nov. to Mar.).

Methodology

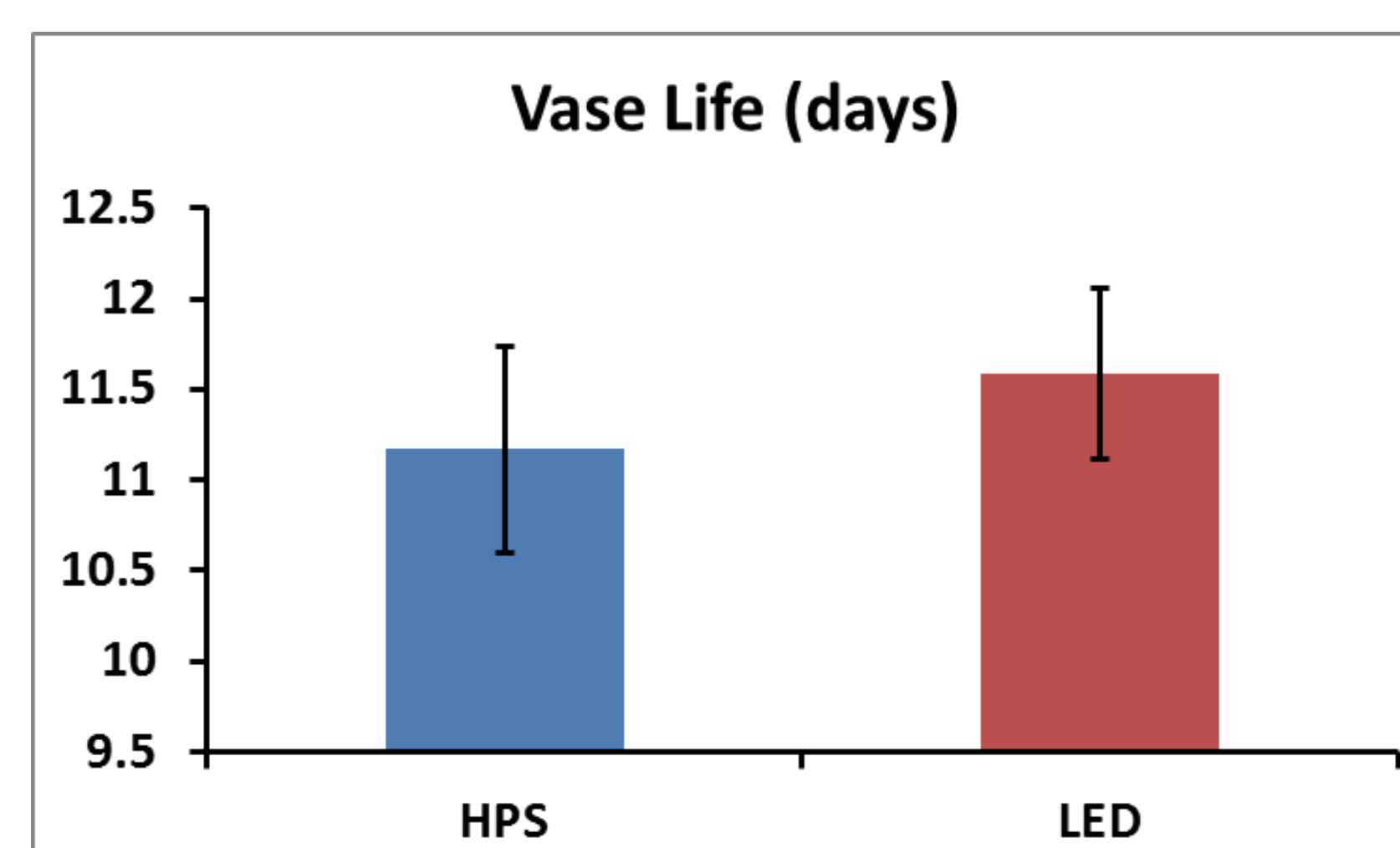
- 8 benches in specialized lighting research greenhouse facility
- 3 cultivars of cut gerbera
- Each lighting treatment (400 W HPS & LumiGrow Pro 325 LED) replicated four times
- Using a spectrometer, mean bench-level PAR for both lighting treatments set at $55 \mu\text{mol m}^{-2} \text{s}^{-1}$ by adjusting fixture positioning and lowering the light output of the LED fixtures by 20%
 - Note - the LumiGrow Pro 325 consumed 257 W and the HPS consumed 430 W in this set-up
- Evaluations for:
 - Weekly flowers harvest metrics (mass, stem length, flower diameter, marketability)
 - Vase life
 - Environmental parameters (leaf temp, DLI, electricity use)



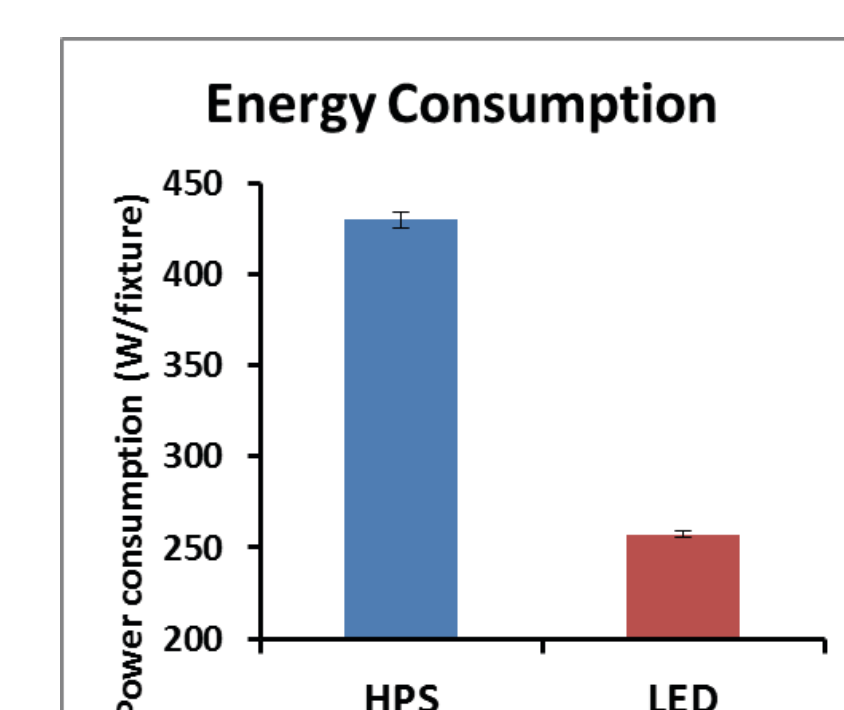
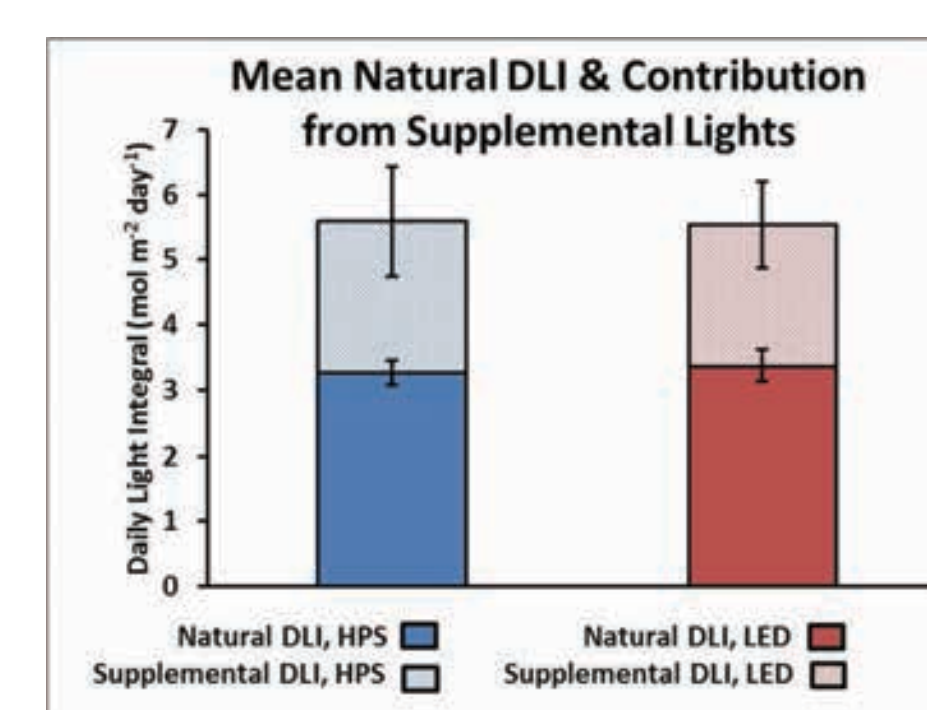
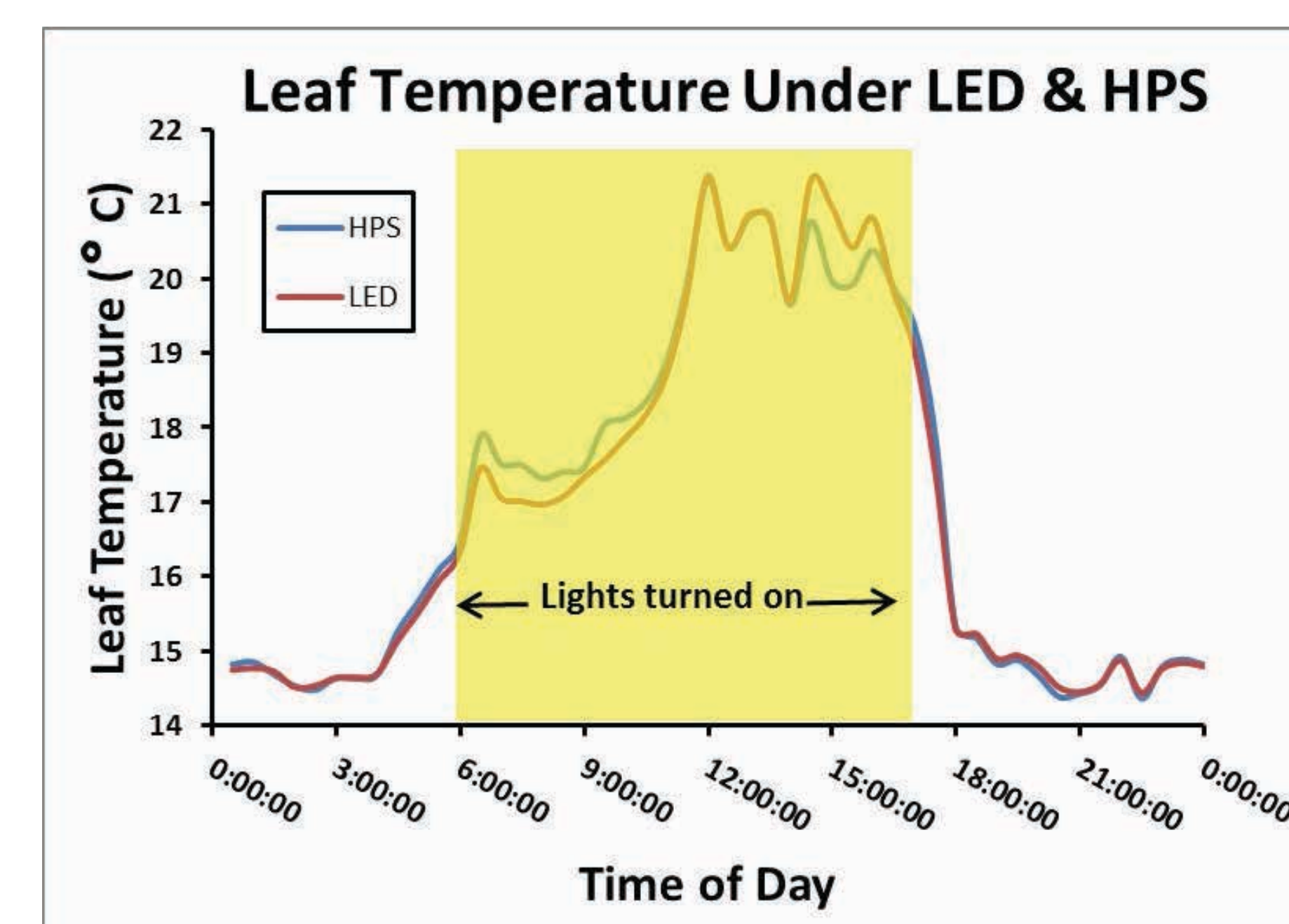
Flower Harvest Metrics & Marketability



Postharvest



Environmental



Conclusions

LED supplemental lighting can produce as good or better cut gerbera crops than HPS lighting, but at a substantial energy savings.

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