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Effects of Different Doses of Far-Red LED Light on Growth and Yield of Greenhouse Strawberry

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Introduction

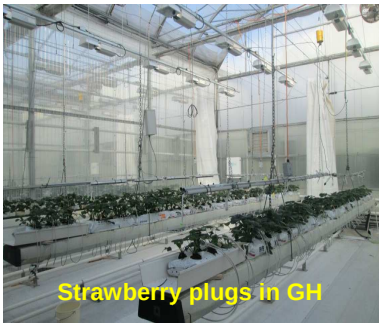
Strawberry (*Fragaria* × *ananassa*) is a rich source of nutrients, phytochemicals, and fiber. There is a increasing interest in Canada in the production of strawberry in greenhouses. Strawberry plants are very sensitive to the light environment.

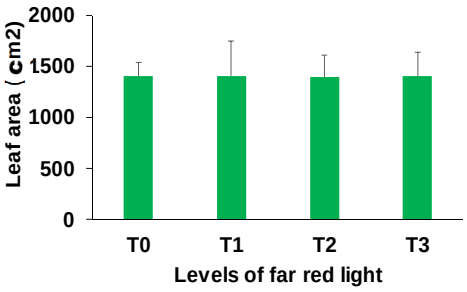
Objective

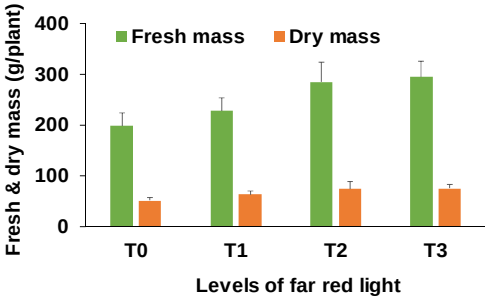
To examine the effect of different amounts of far-red LED light on vegetative growth and fruit yield of strawberry grown during the winter season in a greenhouse.

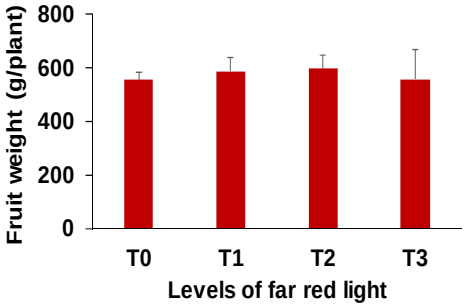
Materials and Methods

Strawberry (cv. *Albion*) plug transplants were obtained from a commercial greenhouse (Carther Plants, Thamesville, ON, Canada) and kept for 4 weeks in a greenhouse. The plug transplants were then planted on rockwool slabs (50 × 20 × 7 cm^3) for hydroponic culture in a research greenhouse (17/15℃ day/night, 65 – 85% humidity). Four levels of far red LED light (0 (T0), 8 (T1), 16 (T2) and 24 (T3) µmol m^{-2} s^{-1}) were applied after the planting. The far-red light and supplemental HPS (high pressure sodium) lighting (at 110 µmol m^{-2} s^{-1}) was used 10 hours a day when outside global solar radiation was below 500 µmol m^{-2} s^{-1}. The plants were drip-irrigated using complete nutrient solutions.









Results

Application of far-red light didn't change leaf area but increased plant fresh and dry mass. Berry yield was increased by the application of 8 to 16 µmol m^{-2} s^{-1} far-red LED light.

Conclusion

Far-red LED light increased vegetative growth, and berry yield was improved by the application of 8 to 16 µmol m^{-2} s^{-1} far-red LED light. Therefore, 8 to 16 µmol m^{-2} s^{-1} far-red LED light could be applied to improve berry yield in strawberry production during the winter season in greenhouses.

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