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The effect of different light treatments on nutrient concentration and leaf exchange in Brassica Chinensis (Conference Paper)

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Abstract

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The effect of different LED light treatments on nutrient concentration and leaf gas exchange in Brassica chinensis was performed in this study utilizing Internet of Things (IoT) technology as remote monitoring system. Brassica chinensis were grown under four different light treatments and have been used as light source. The experiments were conducted namely T1 (continues light; 24 h lights), T2 (pulse lights: 1 h lights 15 minutes darks), T3(various light intensities) and T4 (continues lights + Far red). The observation of nutrient concentration and activity leaf gas exchange plants were analyzed. An intelligent system using embedded system has been developed to automate the LED control and manipulation. The system is able to analze on data and monitor the environmental parameters of the plant factory on line via internet. The result shows that the system is stable and has a significant referential in the area of plant factory or indoor farming system. Based on the overall result, Continues Light (CL) gave a high impact towards Brassica chinensis growth. Therefore, combination CL and Far red also enhanced the plant nutrient concentration and the activity of leaf gas exchange. © 2018 IEEE.

Author keywords

Indoor Farming Intelligent Control Farming LED Light Spectrum Plant Factory

Indexed keywords

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Barta, D.J., Tibbitts, T.W., Bula, R.J., Morrow, R.C.

Evaluation of light emitting diode characteristics for a space-based plant irradiation source

(1992) *Advances in Space Research*, 12 (5), pp. 141-149. Cited 122 times.

doi: 10.1016/0273-1177(92)90020-X

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Massa, G.D., Kim, H.-H., Wheeler, R.M., Mitchell, C.A.

Plant productivity in response to LED lighting

(2008) *HortScience*, 43 (7), pp. 1951-1956. Cited 321 times.

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☐ 3

Morrow, R.C.

LED lighting in horticulture

(2008) *HortScience*, 43 (7), pp. 1947-1950. Cited 282 times.

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Schuerger, A.C., Brown, C.S., Stryjewski, E.C.

Anatomical features of pepper plants (*Capsicum annuum* L.) Grown under red light-emitting diodes supplemented with blue or far-red light (Open Access)

(1997) *Annals of Botany*, 79 (3), pp. 273-282. Cited 170 times.

<http://aob.oxfordjournals.org/>

doi: 10.1006/anbo.1996.0341

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