ABSTRACT

THE EFFECT OF LIGHTING LENGTH WITH LED AND FLUORESCENT LAMPS ON THE GROWTH AND PRODUCT OF PAKCOY (*Brassica rapa* L.) WITH WICK SYSTEM HYDROPONICS

By

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This research aimed to find out the lighting length of LED and fluorescent lamps combined, suitable to grow pakcoy (*Brassica rapa* L.) with wick system hydroponics. The research used five treatments: sun lighting as a control (P0), and artificial lighting of 36-watt LED combined with 42-watt fluorescent lamps. Sun lighting represented a conventional cultivation, with normal lighting period (±12 hours per day), while the artificial lighting consisted of four different lighting lengths per day: 8 hours (P1), 12 hours (P2), 16 hours (P3) and 20 hours (P4). The artificial lighting experiments were placed in boxes as the growth chambers, while the regular sun lighting treatment was placed in an outdoor mini greenhouse. Each treatment consisted of four plants, so there were 20 plants in total.

The results showed that 20-hour treatment of 36-watt LED lamp plus 42-watt fluorescent lighting (P4) was the best among the other artificial lighting treatments, but still less optimal as compared to the treatment of natural sun lighting (P0). The plants grew in treatment P4 still showed etiolating, indicating possibility of using higher power than 36-watt LED lamp and 42-watt fluorescent, although the length of lighting reached 20 hours. Yet, in term of quality, the mineral/ash content of all treated plants was not much different.

Keyword : LED lamp, fluorescent lamp, lighting, pakcoy, wick system hydroponics.