

**Effects of artificial lighting on growth and chlorophyll content of brassica rapa var.
Chinensis**

ABSTRACT

Light are known to be the main factor that drives plant growth and normally used to achieve mass production in indoor farming. Despite consistency under artificial light, there is little knowledge on the effect of light intensities and photoperiod on commonly grown Brassica species. This study was carried out to compare the effects of natural light and artificial light on Brassica rapa var. chinensis. The plants were grown in a growth room under two light intensities i.e. $150 \mu\text{mol m}^{-2} \text{s}^{-1}$ and $75 \mu\text{mol m}^{-2} \text{s}^{-1}$ using light emitting diode (LED) with 12-h light/12-h dark photoperiod. Plants grown under solar light in a glasshouse served as the control. The fresh weight and chlorophyll content of the plants were recorded at 42 days after sowing. Higher biomass production was observed in the plants grown under $150 \mu\text{mol m}^{-2} \text{s}^{-1}$ (29.5 g fresh weight) than $75 \mu\text{mol m}^{-2} \text{s}^{-1}$ (5.3 g fresh weight) and the yield was comparable to that of natural light (39.9 g fresh weight). Brassica sp. grown under both artificial light intensities also showed higher chlorophyll content in comparison to those grown under natural light, resulting in darker green color in the leaves of artificial grown plants. Regardless, artificial farming could be implemented as crop production-based technology to support the growing demand for fresh vegetables.