Effects of Interrupted Nocturnal Lighting on the Growth and Development of Indian Jujube (*Ziziphus mauritiana* Lam.)

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Abstract

The growth and flowering of Indian jujube were affected by the lighting treatments applied at night. For energy and cost savings, the responses of Indian jujube to the interrupted nocturnal lighting treatments were investigated. Two cultivars, "Kaolang 1"and "Telong", grafted on February 25, were studied with a complete randomized design and 4 replications. Light was applied from 6 pm to 6 am next day since June 25 for 40 days. Five interrupted lighting treatments including continued lighting for 12 hours (12L, as control), one hour lighting followed by one hour dark (1L1D), two hours lighting followed by two hours dark (2L2D), three hours lighting followed by three hours dark (3L3D), and non-lighting as the check (DD) were applied. Results showed that the increases in number of nodes per branches, shortening in length of internodes, increases in number of earlier flowers and fruit setting, and advances in flowering and yielding dates were observed in light-treated plants. The number of flowers and fruit setting at the early stage was the highest with continued lighting treatments (12L), and in a descending order followed by the treatments of 1L1D, 2L2D, and 3L3D. Flowering was advanced by the continued lighting (12L) and 1L1D treatments. Higher fruit yields were obtained from the 1L1D and 2L2D treatments. Initial yielding date could be advanced for 40 days in plants subjected to continued lights as compared to control, and 35 days for 1L1D and 2L2D treatments, 25 days for 3L3D treatment. Therefore, interrupted nocturnal lighting of one or two hours followed by one or two hours dark period, i.e. 1L1D and 2L2D were proved to be feasible for consideration of energy and cost.

Key words: Interrupted lighting, Indian jujube, Growth and development

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