

## Effect of artificial light supplementation and split application of Albert's fertilizer solution on growth and yield of Bell Pepper in protected conditions

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Enhancing plant productivity through split fertilizer applications and providing supplementary artificial light has not been adequately addressed in Sri Lanka's protected agriculture sector. Therefore, this study aimed to investigate the impact of artificial light supplementation (ALS) and split application of Albert's solution (SAAS) on the growth and yield of bell pepper (variety-Polaris) grown under a controlled environment using coir dust media. A grid of 60 W LED lights, controlled by an automated system, was utilized to sustain a minimum of 3000 lux between 6.00 a.m. to 6.00 p.m. Meanwhile, a separate house was maintained under natural light conditions. As determined by previous experiments the optimal level for Albert's solution, 1.5 g/plant/day, was administered as a split application: in twice and thrice per day applications. The experimental design was two-factor factorial CRD with four treatments and five replicates. At two-week intervals and harvesting, respectively, growth and yield parameters were assessed. The results indicated that ALS and SAAS were individually significant for the growth and yield of bell peppers. Therefore, significantly highest values for plant height (152.9 cm), number of leaves/plant (47.8), number of flowers/plant (16.5), number of fruits/plant (7.5), fresh weight of fruit (177.8 g) and diameter of fruit (7.1 cm) were obtained by ALS. On the other hand, significantly highest values for number of flowers/plant (15.2), number of fruits/plant (6.7), fresh weight of fruit (170.7 g), and diameter of fruit (6.5 cm) were observed thrice a day SAAS. The study suggests that artificial light supplementation and split application of Albert's solution individually enhance bell pepper growth and yield under protected house conditions.

**Keywords:** Albert's solution, Artificial light supplementation, Bell pepper, Growth, Yield

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