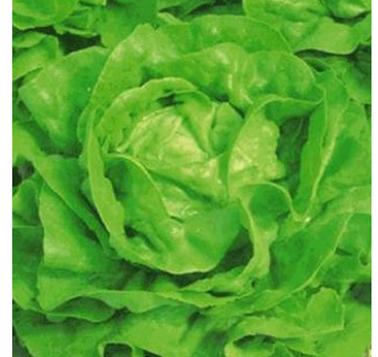


## Productivity of Bibb Lettuce cv. Optima in Hydroponic Production under Saskatchewan Greenhouse Conditions

Lettuce has excellent potential as a greenhouse crop in Saskatchewan. This project evaluated the growth and quality of the bibb-type lettuce cv. Optima over the course of 16 crop cycles running from April 2013 through June 2014. The lettuce was grown in the University of Saskatchewan Greenhouses using a NFT hydroponic production system. For crops grown from November through April, natural light levels were augmented with 1000 watt HPS lights operating for 16h/day at 125  $\mu\text{mol}$  intensity.



Optima lettuce

While growth of cv. Optima was influenced by the various production treatments utilized in each trial, light levels were the most important factor determining the rate of crop growth.

The total amount of light provided by sunlight in June and July was 4-5 times greater than the levels in November and December (see Fig. 1). Adding supplemental lights increased the total

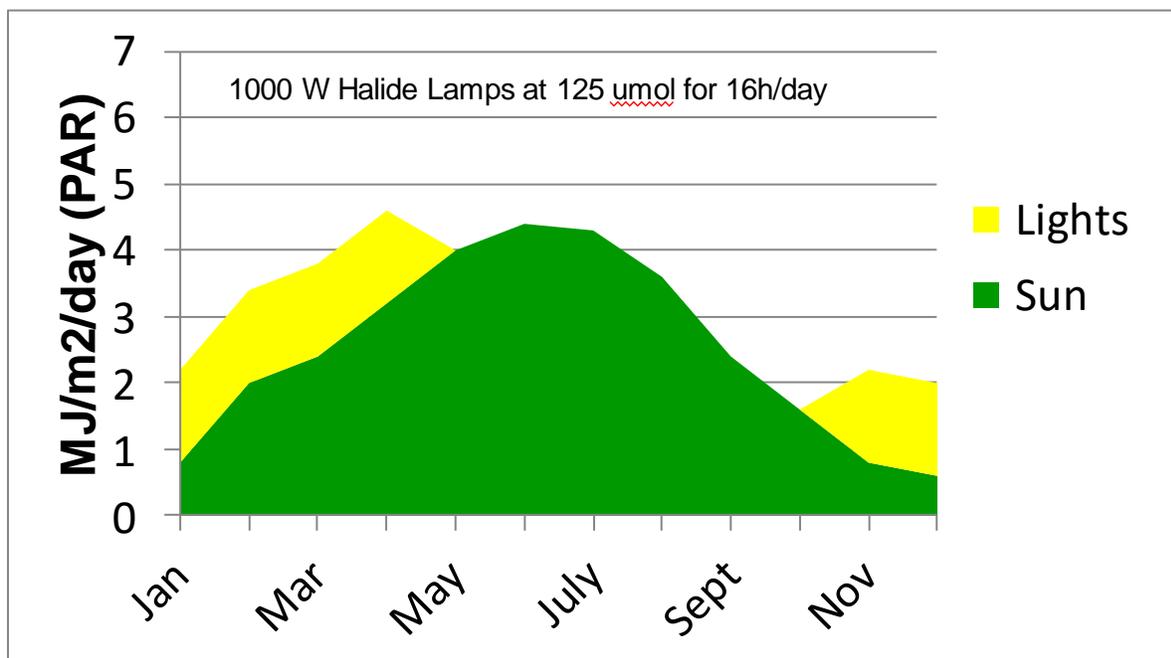
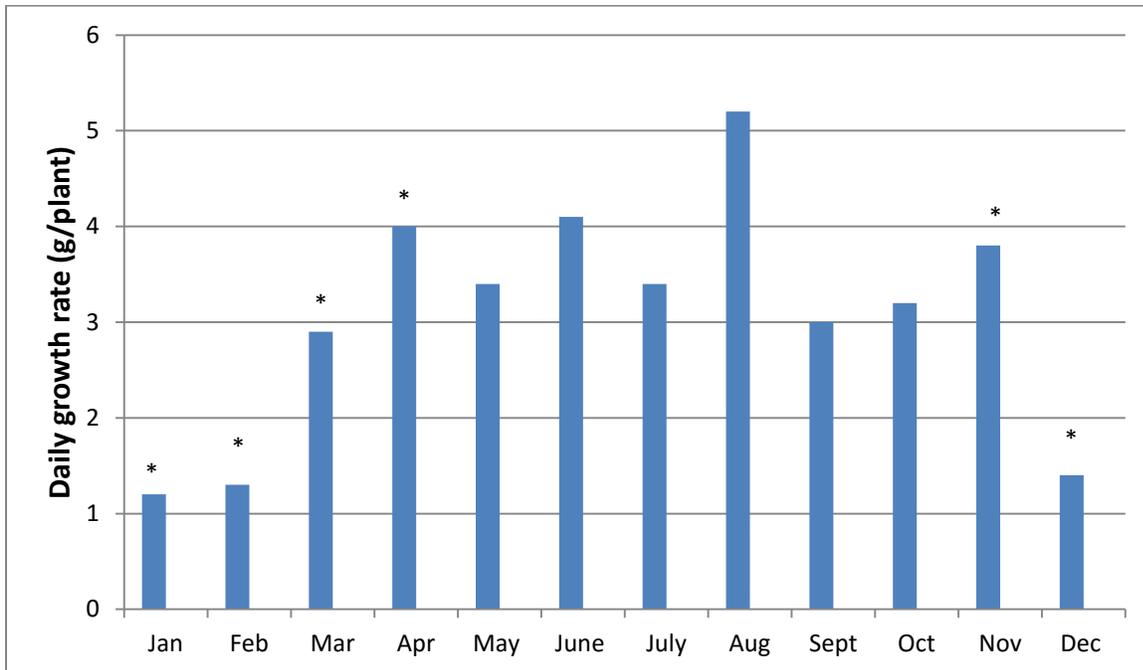


Fig. 1. Light levels in the test greenhouse from January to December, with and without supplemental lighting.

amount of light received by the lettuce crop by up to 50% in the winter months – but the resulting total amount of light received by the crops was still well below the amount of natural sunlight received in the summer months. It is therefore not surprising that Daily Growth Rates – determined by dividing the final weight of the harvested heads by the number of days it took from seeding until the heads reached marketable size - indicated that growth of cv. Optima in summer was significantly higher than in winter – even with the large amounts of artificial light

provided in winter (see Fig. 2). During the shoulder months of November and April, turning on the lights significantly enhanced growth relative to crops grown without artificial light in October and May. This suggests that the artificial lighting systems should have been left on later in the spring and turned on earlier in the fall.



**Fig. 2. Daily growth rate of Optima lettuce crops grown over a year of production in a NFT-type hydroponic system. During months with \*, natural light was supplemented with HPS lights (16h/day at 125  $\mu\text{mol}$ ).**

For more detail see the full report on the Evaluation of Bibb Lettuce for Hydroponic Production in Saskatchewan Greenhouses:

<http://veg.usask.ca/wp-content/uploads/Evaluation-of-Greenhouse-Bibb-Lettuce-Full-Report-2014.pdf>

This project was supported by the ADOPT Program of Saskatchewan Agriculture in collaboration with the Saskatchewan Greenhouse Growers Association and the Department of Plant Sciences at the University of Saskatchewan

