

Rate by Timing Interactions of Propel on Head Lettuce

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Introduction

Propel is a lactic acid material produced by Brea Agricultural Services, Inc. which is believed to function as a plant growth regulator on head lettuce and other crops. There is evidence that it may increase metabolism, resulting in increased size and weight. In studies from California the greatest effect has been seen when the material is applied during the 16-20 leaf stage at one pint active ingredient per acre. Since plant growth regulators often have their greatest effect when plants are under stress, this study was conducted on an October 22 planting which would experience the coldest seasonal temperatures.

Methods and Materials

Three rates of Propel, (0.2, 1.0, 1.8 ppa ai) were applied at three phenological stages (4-6 and 16-20 leaf stages, and 2 weeks preharvest). Distilled water was used to prevent possible neutralization due to excessive alkalinity and a nonionic wetting agent, X-77, was added at the rate of 1 pint per 100 gallons. Applications were made to 25 foot single bed plots on 40 inch centers using a CO₂ backpack sprayer at 40 psi with 2 TJET 8005 nozzles applying 50 gallons per acre. Dates of application were November 28, December 21 and January 25. The ten treatments were replicated eight times in a randomized complete block design.

The study was evaluated on February 11 by harvesting the center 20 feet of each plot, which included double rows of lettuce per bed. The heads were counted and weighed to determine the average weight per head, including wrapper leaves.

Results and Discussion

A summary of the results are provided in Table 1. There were no statistically significant differences between any of the treatments. Under the conditions of this trial Propel did not affect the average weight of the plants regardless of rate or timing. This is despite the fact that the study experienced subfreezing temperatures for a six day period during December. Since the effectiveness of growth regulators is depend on environmental factors, additional research is necessary to accurately evaluate Propel on desert production of head lettuce.

Table 1. Comparison of rate by timing interactions of Propel on head lettuce.

Treatments	Average head weight (lbs.)
0.2 ppa ai/2 weeks before harvest	2.81 a *
1.0 ppa ai/4-6 leaf stage	2.71 a
0.2 ppa ai/16-20 leaf stage	2.66 a
1.8 ppa ai/4-6 leaf stage	2.65 a
1.8 ppa ai/16-20 leaf stage	2.64 a
1.0 ppa ai/2 weeks before harvest	2.64 a
1.8 ppa ai/2 weeks before harvest	2.63 a
Untreated control	2.60 a
0.2 ppa ai/4-6 leaf stage	2.59 a
1.0 ppa ai/16-20 leaf stage	2.56 a

* Treatments followed by the same letter are not statistically different from one another at the 5 percent level using the Student-Newman-Keuls Test for comparison of multiple means.