

# Chemical Stimulation of Plant Growth of Vegetables in Florida<sup>1</sup>

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## Introduction

Florida farmers cultivated about 290,000 acres of vegetables in 1997, forty three percent of which were established from transplants. While possibly best known for tomato production, Florida's sweet corn, potato (fresh and chipping), watermelon, and snap bean acreage all rival that of tomato. Like farmers everywhere, Florida growers want healthy plant growth and development that is free of disease and insect pressure. To raise better crops, Florida growers often avail themselves of chemical opportunities to stimulate plant growth and increase yields. The following discussion will focus on chemical plant growth regulators (PGR's), often called biostimulant products (seaweed extracts and various hormone mixtures) as opposed to classical uses such as ethylene for in-field fruit ripening or anti-GA's for growth control.

## Surveys

In December 1998, Florida's vegetable extension agents were asked to contact 2 growers who used PGR's to help document crop use acreage and satisfaction with their products. The survey, while

admittedly limited in scope, revealed that PGR's were used in all major vegetable production areas throughout the state with the exception of a corridor from Gainesville northwest to Quincy. PGR products were used on all the major vegetable crops on a total of about 12,300 acres and satisfaction ranged from poor to fair. Products that appeared repeatedly in the survey results included Acadian Seaweed (Acadian Seaplants, Dartmouth, Nova Scotia), Early Harvest (Griffin Corp., Valdosta, GA), Folizyme (Stoller Chemical, Houston, TX), Goemar (Agrimar Corp., Atlanta, GA), Key Plex (Morse Enterprises, Miami, FL), and Triggrr (Westbridge, Vista, CA).

A survey of three local purveyors of these products in the Immokalee/Homestead area documented sales on over 40,000 acres of vegetables treated with PGR's in south Florida alone. These figures in conjunction with county agent survey results would bring the total vegetable acreage treated with PGR's to slightly greater than 52,300 or approximately 17% of Florida's total vegetable acreage. It is suspected this number is an underestimate.

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Phrases that surfaced during discussions with growers, suppliers, and agents about the performance of PGR products included:

- "inconsistent results from year to year"
- "better performance under stressful conditions"
- "everybody has one, but they are generally too expensive for regular use"
- "snake oil"

### Trial Studies

Csizinszky (1996), who has more published works than anyone in Florida on the subject, sums up five years of tomato PGR research on both spring and fall crops thus:

- inconsistent results - increased fruit size and yield one year, but not the next
- a tendency to increase the uptake of micronutrients resulting in phytotoxicity
- cultivars vary in response to application
- foliar application is the most efficacious route

Our lab (SWFREC) has documented crop to crop response variation with mode of application (Fig. 1), critical timing and rate issues that complicate efficacy (Fig. 2), and general non-significance across the board regarding yield.

With such a diversity of variation in "controlled" trials (cultivars, mode of application, rate and timing) one can see why researchers and growers alike have reached the conclusion that these products are inconsistent. However, statewide use figures seem to indicate some growers may still believe the beneficial effects of PGR's outweigh the inconsistent results.

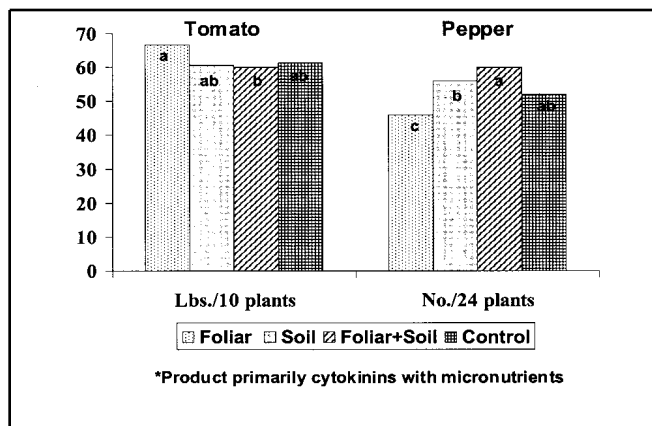


Figure 1. Crop response to mode of PGR application.

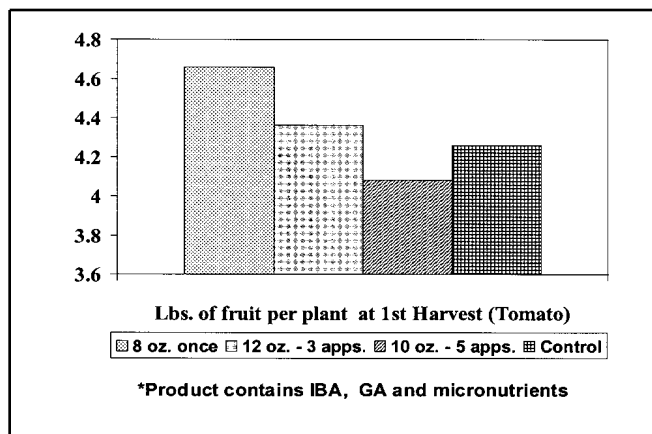


Figure 2. Rate & timing issues with PGR application.