A FIELD STUDY TO DETERMINE THE EFFECTS OF FOLIAR APPLIED ABSCISIC ACID AND ETHYREL ON EASE OF FRUIT REMOVAL AND OVERALL YIELDS.

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INTRODUCTION/OBJECTIVES:

This test was conducted on red bell peppers to determine ease of harvest, lack of stem breakage and earlier maturity due to the foliar applications of abscisic acid and Ethyrel.

METHODS AND MATERIALS:

On August 25, 2016, fourteen days prior to the harvest, 10,000 ppm and 100,000 ppm abscisic acid and 1.0 quart and 2.0 quarts of Ethyrel were applied in a randomized complete block statistical design, and compared to an untreated control.

On September 7, 2016, when the grower was conducting the first harvest all plots were hand harvested by experienced workers. They were asked to give a subjective number representing the ease of harvesting the fruit in the various treatments.

To obtain additional numerical data, the numbers of peppers with full peduncles and those with broken ones were counted for each treatment and each replication. The % intact peduncle peppers was then calculated.

TREATMENTS:

1. Untreated check
2. 10,000 ppm abscisic acid
3. 100,000 ppm abscisic acid
4. 1.0 quart Ethyrel
5. 2.0 quarts Ethyrel

Site Location:	Live Oak Farms
Host Crop Variety:	Barron Bell Pepper
Plot Description and Size:	Two lines 10 feet long, replicated 4 times
Experimental Design:	Randomized complete block

Application Conditions:

Date:	August 25, 2016
Time:	4:30 p.m.
Wind:	Calm
Sky:	Clear
Temperature:	88 F

ASSESSMENTS:

Ease of harvest, intact peduncles and earliness

RESULTS:

Table 1 – Subjective ease of harvesting red peppers (average of four replications)
---Above 5 = more difficult, Below 5 = less difficult--

	TREATMENT	SUBJECTIVE EASE
1.	Untreated check	5.0
2.	10,000 ppm abscisic acid	5.5
3.	100,000 ppm abscisic acid	5.3
4.	1.0 quart Ethyrel	4.8
5.	2.0 quarts Ethyrel	4.8

Table 2 – Percent intact peduncles (Average of four replications)

	TREATMENTS	% INTACT PEDUNCLES
1.	Untreated check	45
2.	10,000 ppm abscisic acid	37
3.	100,000 ppm abscisic acid	43
4.	1.0 quart Ethyrel	52
5.	2.0 quarts Ethyrel	55

Table 3 – Numbers of 25 pound boxes (Average of four replications)

	TREATMENTS	25 POUND BOXES
1.	Untreated check	570
2.	10,000 ppm abscisic acid	721
3.	100,000 ppm abscisic acid	723
4.	1.0 quart Ethyrel	744
5.	2.0 quarts Ethyrel	944

Table 4 - Analysis of Variance for yield - Type III Sums of Squares

Source	*Sum of Squares*	*Df*	*Mean Square*	*F-Ratio*	*P-Value*
MAIN EFFECTS					
A:treat	284720.	4	71180.1	1.06	0.4177
B:rep	140668.	3	46889.3	0.70	0.5708
RESIDUAL	805720.	12	67143.3		
TOTAL (CORRECTED)	1.23111E6	19			

All F-ratios are based on the residual mean square error.

Table 5 - Multiple Range Tests for yield by treat

Method: 95.0 percent LSD

treat	*Count*	*LS Mean*	*LS Sigma*	*Homogeneous Groups*
1	4	570.0	129.56	X
2	4	721.25	129.56	X
3	4	723.25	129.56	X
4	4	746.0	129.56	X
5	4	944.0	129.56	X

Contrast	*Sig.*	*Difference*	*+/- Limits*

1. The subjective rating of ease of harvest made by the workers is shown in table 1. The untreated check was a rating of 5.0 and the two treatments that received Ethyrel each averaged 4.8. This is an indication that Ethyrel allowed somewhat easier removal of the fruits.

2. The % of intact peduncles is shown in table 2 and reveal that the Ethyrel treatments resulted in about 10% more fruit that abscised cleanly from the main stem compared to those that broke upon being harvested.

3. Table 3 shows the numbers of 25 pound boxes per acre resulting from each of the treatments. The multiple range tests in table 5 shows that the high rate (2.0 quart/acre) of Ethyrel yielded highest, followed by the 1.0 quart/acre treatment. The next two highest yielding treatments were the 100,000 ppm and the 10,000 ppm applications of abscisic acid. All treatments out yielded the untreated check.

CONCLUSIONS:

Ethyrel treated plots yielded highest due to earliness of ripening. The material also appears to allow for easier removal of fruits from the plant and results in fewer peduncles being broken during harvest.

September 7, 2016 – Harvesting plots

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