

**Title: Evaluation of Apogee for Control of Runner Growth in Annual Plasticulture Strawberries**

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**Objectives**

- 1) To determine the proper application **rate** of Apogee to control strawberry runner development, while minimizing any negative effects on fruit production.
- 2) To determine the proper application **frequency** of Apogee to control strawberry runner development, while minimizing any negative effects on fruit production.

**Justification and Description:**

In some parts of the Southeastern U.S. fall runner development in annual plasticulture strawberries is a common, if not a perennial problem. This is especially true in the strawberry producing area of Southeast VA. Many growers in this area have to remove runners every year. Some experts suggest delaying the planting date. This would be possible for some growers, but others have other enterprises that prevent them planting later in the season. Also, transplanting at the recommended time in the fall usually results in the right amount of branch crown development in the spring. Therefore, many producers in Eastern Virginia and elsewhere are locked into a planting time that means they have to deal with fall runners.

In addition to some growers having to deal with runners every year, warm mild falls like 2007 and 2009 can result in many growers over large geographical areas having to deal with runners some years. Again, these producers are planting at the recommended time for their area. Long term forecasts are not reliable enough to make a decision to delay planting. Another issue is that plants have to be ordered several months ahead of time. The plants are ordered to arrive at the proper planting time. Some producers can't hold them for a week or two once they are received; and plant vigor can suffer even under

proper “storage” conditions. The plant growers also need to move them out so they keep production going.

Therefore, annual plasticulture strawberry producers need a tool to help them manage runner development if and when it occurs. Apogee from BASF seems to be a possible tool for managing strawberry runner development. Discussions with BASF scientists and the data from limited trialing have indicated that Apogee is effective in reducing runner development. However, there are still issues with rate and timing that need to be refined.

David Handley, Extension Small Fruit Specialist in Maine has been evaluating Apogee to reduce strawberry runner development in that area. He is using a solution of approximately 150 ppm when runners are visible from the crown (less than 1 inch long). He then uses a follow up application 2 to 3 weeks later. It would seem reasonable that such an approach would work for us in the Southeastern U.S. However, we need to determine the number of applications need in the Southeast, especially during warm falls. Also, since the per acre rate changes when application rates change, BASF has indicated that they do not want to use a ppm rate. Therefore, the appropriate rate of active ingredient per acre to control strawberry runners without creating a negative impact on fruit production needs to be determined.

## **Methodology**

Plugs of ‘Chandler’ strawberries were planted in early September. The first part of September was cooler than normal. However, runner development was observed in early October. Some of the runners were already longer than 1 inch. Therefore to allow all treatments to start at the same place, all visible runners were removed prior to the first Apogee applications on October 5. Four rates of Apogee were applied at 3 different application frequencies. Please see Table 1 for the complete treatment list. The four application rates included: 0.18, 0.24, 0.30 and 0.36 lb ai/A. The three different application frequencies evaluated included: weekly, two week and three week re-treatment intervals. All of these treatments were compared to an untreated check plot. Application information is listed in Table 2.

Plots (experimental units) consisted of one (1) double row bed containing 20 plants. Experimental design was a randomized complete block with a factorial arrangement of treatments and 4 replications. The trial was located at Mann Farms in Fort Blackmore, VA.

Data collected in the fall on December 14, 2009 included: visible plant vigor, the number of runners per plant, along with runner vigor. Subsequent yield data and runner evaluation will be collected in the spring of 2010.

## **Results**

Results of plant vigor and runner evaluations taken on December 14 are reported in Table 3. All applications of Apogee reduced plant vigor when compared the UTC treatment.

The highest application rate tended to cause the most growth reduction. However, no significant difference was observed among application rates.

Plants from the UTC plots produced the most runners (almost twice as many as most of the Apogee treated plots). However, the UTC was only significantly different from treatments 3, 10 and 13.

The vigor of the runners produced was greater from the UTC plots than any of the Apogee treated plots. Many of the runners produced by the Apogee treated plants were not very vigorous and would not amount to much in the spring. The stolons were often very small and weak. These runners could be easily removed.

### **Conclusions**

The application of Apogee to 'Chandler' strawberry reduced plant growth, runner development and runner vigor. The highest application rate (0.36 lb ai/A) tended to cause the greatest reduction in all three areas. However, little difference was among the other 3 rates.

In order to evaluate phytotoxicity and / or yield benefits, yield data will be collected in the spring. Another years worth of data may be needed to optimize the application rate and frequency.

### **Impact Statement**

The use of Apogee on 'Chandler' strawberries appears to reduce runner development and vigor. If no negative impact on yields is observed, Apogee could be used to minimize runner development in strawberries.



Table 3. Plant vigor and runner evaluations (December 14, 2009) for ‘Chandler’ strawberries treated with Apogee, 2009.

Treatment	Product	Rate (lb ai/A)	Frequency of Application	Plant Vigor (%)	Runner Development (no./plant)	Runner Vigor (0 – 10) <sup>y</sup>
1	UTC	---	---	100 a <sup>z</sup>	0.63 a	10.0 a
2	Apogee	0.18	2 Weeks	65 bc	0.34 ab	5.8 b
3	Apogee	0.18	3 Weeks	70 bc	0.21 b	4.0 b
4	Apogee	0.18	Weekly	53 bc	0.28 ab	3.8 b
5	Apogee	0.24	2 Weeks	65 bc	0.29 ab	4.8 b
6	Apogee	0.24	3 Weeks	73 b	0.34 ab	5.8 b
7	Apogee	0.24	Weekly	55 bc	0.26 ab	3.5 b
8	Apogee	0.30	2 Weeks	50 bc	0.39 ab	4.0 b
9	Apogee	0.30	3 Weeks	58 bc	0.28 ab	4.0 b
10	Apogee	0.30	Weekly	68 bc	0.24 b	3.3 b
11	Apogee	0.36	2 Weeks	45 c	0.25 ab	3.5 b
12	Apogee	0.36	3 Weeks	70 bc	0.34 ab	3.8 b
13	Apogee	0.36	Weekly	45 c	0.15 b	2.8 b

<sup>y</sup> Runner vigor rating of 0 to 10; where 0 = dead runners and 10 = very vigorous runners.

<sup>z</sup> Means within a column followed by the same letter are not significantly different at the 0.05 level of probability. Means were separated using SNK mean separation technique at the 0.05 level of probability.