Hitting The Right Curve

Our exclusive series on graphical tracking continues with selecting the proper curve for targeting poinsettia height.

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IN the first article in this series, we described the standard curve used to graphically track the height of poinsettia crops. In graphical tracking, actual crop height is compared against the maximum and minimum target curves to aid height control decisions. Growers have used this approach successfully over the last decade.

The standard curve was developed from research on the growth of 'Annette Hegg Dark Red' plants grown at an open (14-inch) spacing and at a constant temperature of 68°F. There are situations, however, where the standard curve is not the best curve to use.

For example, unpinched plants have a different elongation pattern than pinched plants. Also, Freedom varieties tend to stretch late in the production cycle, resulting in a slightly different overall pattern. In this article, we will describe two different curves – unpinched and late – and help you choose the best curve for a variety of situations.

The Unpinched Curve

For single stem crops, use the unpinched curve. The growth pattern of unpinched plants differs substantially from the standard curve. Early plant elongation varies depending on variety, quality of cuttings, whether cuttings are planted rooted or unrooted, and light and temperature conditions. Thus you cannot reliably start graphical tracking for the unpinched curve until after the plants have begun to elongate rapidly.

Unpinched plants develop many internodes and leaves on the stem. The large number of internodes results in several weeks of rapid, almost constant stem elongation. As the plants approach flowering, elongation slows down, signaling the start of a plateau phase of elongation. We have found that this generally begins 6 weeks after the start of short days. During the plateau phase, plants grow only about 1 inch.

The following guidelines for the unpinched curve were developed from 10 different cultivars over 2 years. The plants were grown in 6-inch-diameter pots, spaced in 12- by 12-inch areas, and held at constant temperatures of 68°F (year one) or 70°F (year two). To create a graphical tracking diagram for unpinched plants:

1) Identify the start date. Do this by measuring the height of transplants when they are first planted. The start date is the day when plants have grown 1 inch taller than this height. After the start date, they begin a period of rapid linear growth and can be graphically tracked. The start date can occur anywhere from 10 days to 1 month after transplanting. Remember, the transplant date is not the start date for the graph.

2) Identify the end date of the graph. This is the ship date.

3) Determine the desired range of final plant heights on the ship date.

4) Draw the axes for the graph. The horizontal axis should run from the start date on the left side of the graph to the end date on the right side, graduated in weeks. The vertical axis should include the range from the start plant height to the maximum plant height. On the resulting graph, mark the start height and the maximum and minimum end heights. In the example crop used to make Figure 1, the height at transplant (including pot height) was 7 inches, and the plant had elongated to 8 inches (circle) on August 31. Also in this example, the ship date was November 9 with a final height target range of 16 -18 inches (squares in Figure 1).

5) Record the date when short days need to begin. If you subtract the flowering response time from the scheduled shipping date, you will have the date when short days need to begin. For Eckespoint 'Freedom Red' in the example (Figure 1), the response time of 8 weeks would mean that short days must begin on September 14, 56 days before November 9.

6) Now graph the onset of the plateau phase. This phase occurs 6 weeks after the start of short days, when the plant height will be 1 inch shorter than the final size. Thus in the example, the plateau phase is estimated to occur on October 26; the minimum height would be 15 inches and the maximum 17 (triangles).

7) Connect the start height (8 inches on August 31) and the plateau minimum and maximum heights (15 and 17 inches on October 26) with straight lines. Now connect the plateau heights with the final target heights (16 and 18 inches on November 9).

The Standard Curve

For most pinched crops, use the

standard curve. When in doubt, for most poinsettia crops and cultivars, the standard curve (Figure 2) will provide a close guideline to the growth of your pinched crop.

The Late Curve

For pinched crops growing quickly after first color, use the late curve (Figure 2). The late curve rises more slowly than the standard curve, especially during the middle of the growth period. The late curve assumes that plants will elongate more quickly during the second half of the season.

If you track a crop with the late curve, then your aim is to keep plants shorter before first color than you would with the standard curve. This means more growth retardant applications or a negative DIF temperature early on in production.

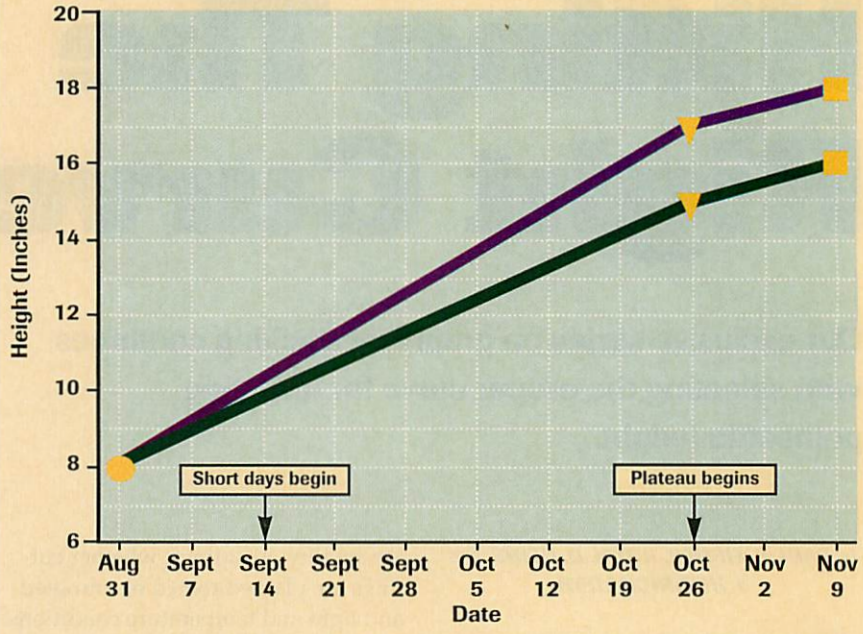
You may choose to use the late curve when:

1) Growing the Eckespoint Freedom cultivars. Freedom plants tend to elongate more than other cultivars after first color. They can finish too tall if you use the standard curve.

2) Growing in a pot smaller than 5 inches in diameter. Smaller plants tend to require more growth retardant applications early in production.

Figure 1.

An example unpinched curve for a poinsettia crop grown as a single stem.



Therefore it is very important to keep plants shorter than the standard curve recommends before first color. The late curve is similar to the tracking curves used in Norway and The Netherlands, where crops are grown to shorter height specifications than in the U.S.

3) Growing plants at close spacing (e.g. less than 12-inch spacing for 6-inch diameter pots). When the canopy closes in around the middle period of production, the increased competition for light can cause a rapid burst in elongation.

4) Growing in greenhouses where very positive DIF (average day minus average night) temperature conditions (at least 10°F warmer days than nights) will occur throughout the crop.

5) Plants have been pinched and are under long days for a longer period (and therefore have more internodes) than plant breeders recommend for your cultivar and location. **GG**

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Figure 2.

A comparison between the standard and late curves for pinched poinsettias.