



By Erik Runkle

# Graphical Tracking

Graphical tracking, a decision-support tool, can help growers monitor plant height throughout production and identify when plants are too tall or too short.

For many greenhouse crops, crop height is managed to meet market specifications. In some cases, growers may establish their own crop height guidelines; in other cases, a retailer will determine the height constraints. Crops that are excessively short may bring a lower price, and crops that are too tall require more space for shipping, making transportation more expensive.

When a grower produces a large number of the same crop (such as poinsettia, chrysanthemum and other potted crops), it is especially important to manage each variety so each crop finishes at the target height. Graphical tracking is a decision-support tool that was developed by Royal Heins and his graduate students at Michigan State University. The technique involves monitoring plant height from the time it is transplanted or pinched until the desired market date (see Figure 1, below) and helps growers identify when crops are becoming too tall or too short.

## Track Crops Yourself

Graphical tracking curves and software are available for some crops, such as University of New Hampshire FloraTrack for poinsettia and lilies, available at [www.plantdocs.biz](http://www.plantdocs.biz). For other crops, it is possible to develop your own graphical tracks by following the process outlined below.

1. Use a piece of graph paper or a computer program to create a simple graph for each crop variety. At the left end of the horizontal axis, write the date of transplant or pinch, whichever occurs later. Next, count off the number of weeks until the market date and record that date towards the right end of this axis.

2. Measure plant height when plants are transplanted or pinched for 10 randomly selected plants for each variety. Calculate the average plant height and record this value on the graph (starting crop height).

3. Mark the target crop finish height on the graph (desired crop height) and the acceptable crop heights. For example, the target finish height for poinsettia may be 16 inches, but 15-17 inches could be acceptable.

4. Draw a line or an S-shaped curve from the starting crop height to the desired finish crop height. The shape of the curve depends on the crop. A majority of crops terminate with a flower (e.g., poinsettia and Easter lily) and have an S-shape growth curve (red line in Figure 1). Other crops continue to develop flowers as they elongate and have a linear growth curve (blue line in Figure 1.) The shape of the growth curve depends on the crop and even the cultivar. For example, poinsettia 'Freedom Red' is known to have more elongation late in the crop (late stretch) than most other cultivars. You may have to make an educated guess on the shape of the curve based on your experiences with the crop.

5. Each week (or perhaps more frequently), measure crop height of the same 10 plants that were measured previously and calculate the average. Record the average on the graph and then compare the height with your growth curve.

6. If plant height is above the growth curve, such as point three for the S-shaped curve in Figure 1, then some action needs to be made to inhibit future stem elongation. This can be accomplished in many ways, including application of a plant growth regulator, wider plant spacing and use of a negative DIF (cooler day than night) temperature regimen.

7. If plant height is below the growth curve, such as point seven for the S-shaped curve in Figure 1, then crops are too short for that stage of development and plant height needs to begin to increase more rapidly. This can be accomplished by tighter plant spacing, use of a positive DIF (warmer day than night) and the application of products containing gibberellic acid (such as Fascination or Fresco).

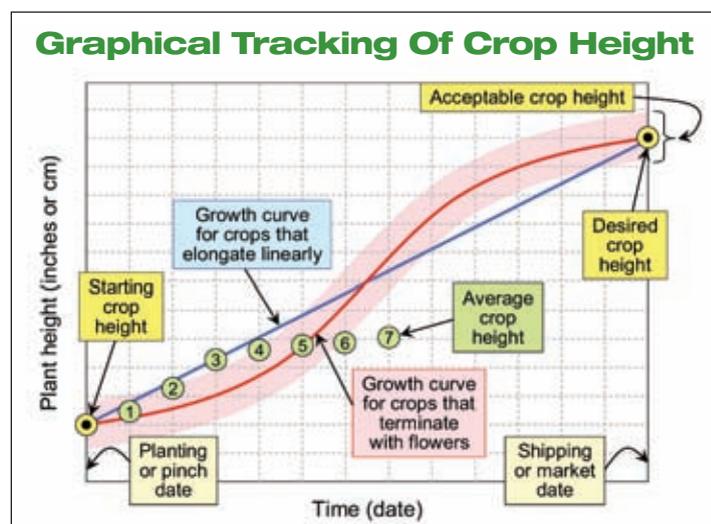


Figure 1. The technique involves monitoring plant height from the time it is transplanted or pinched until the desired market date and helps growers identify when crops are becoming too tall or too short.

## Helping You Forecast

Graphical tracking is a useful tool that helps growers forecast crop height and identify when actions need to be taken so crop height stays on track. When you're finished with a crop, take notes on how you would grow the next crop differently and make appropriate adjustments to the shape of the growth curve for the next season. **GPN**

*Erik Runkle is assistant professor and floriculture extension specialist in the Department of Horticulture at Michigan State University, East Lansing, Mich. He can be reached at (517) 355-5191 or [runkleer@msu.edu](mailto:runkleer@msu.edu).*

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