By Erik Runkle and Sonali Padhye

Wave Petunia Smart Scheduling

Petunia is among the most commonly grown bedding plants. It has been bred extensively for desirable flower traits, growth habits, extended blooming periods, stress tolerance and quick production. Wave petunia from PanAmerican Seed is the most popular petunia family. What began as a single series has evolved into several Wave series, each having unique characteristics. However, detailed production information on crop timing of various Wave varieties has been limited.

With colleagues Tasneem Vaid, Cathy Whitman, Heather Greyerbiehl and Mike Olrich of Michigan State University, we performed experiments to quantify the effects of temperature and photosynthetic daily light integral (DLI) on flowering time and characteristics of 15 Wave petunia cultivars. Our goal was to generate temperature-based flowering time models for more predictable greenhouse scheduling.

Petunia seedlings in 288-cell trays were received from C. Raker and Sons soon after germination and were grown at 68° F under a 16-hour photoperiod. When plants had six to nine leaves (three weeks after seed sow), they were transplanted into 4-inch round pots and grown in different greenhouses at 54, 59, 64, 70 or 75° F. Nine days after transplant, all plants received a single drench of paclobutrazol (Piccolo) at 4 ppm. Plants were grown under a 16-hour photoperiod consisting of natural daylight supplemented with high-pressure sodium (HPS) lamps. Two DLIs were provided using a shade curtain and different intensities from the HPS lamps. During the experiment, the average DLIs were 7 or 14 mol·m^{-2}·d^{-1}.

Data were analyzed and mathematical models were developed to predict flowering times within the range of temperatures studied. The models were then entered into Microsoft Excel so that users can enter two different temperatures (between 54 and 75° F) and DLIs (between 5 and 14 mol·m^{-2}·d^{-1}) and days to first flower (from transplant of a 288-cell plug grown under long days) are estimated. The program is downloadable free on the MSU Floriculture web page (http://flor.hrt.msu.edu/production-info) and on the PanAmerican Seed web page (www.panamseed.com/WavePetunia.aspx).

Flowering time varied somewhat among the 15 Wave varieties studied. 'Shock Wave Coconut' flowered the quickest, in 31 days at an average of 70° F and 50 days at 60° F, both at an average DLI of 10 mol·m^{-2}·d^{-1}. 'Wave Pink' and 'Wave Purple Classic' were the latest to flower, in approximately 72 days at 60° F and 43 days at 70° F. We also estimated the base temperature of each variety, which is the temperature at which flower development is zero. The two cultivars that tolerated cold the best (those with the lowest base temperature) were 'Easy Wave Neon Rose' and 'Easy Wave Pink' whereas the two with the highest base temperature were 'Tidal Wave Silver' and 'Wave Pink'.

When the DLI was low (7 mol·m^{-2}·d^{-1}), doubling the DLI to 14 mol·m^{-2}·d^{-1} accelerated flowering by one to two weeks for most cultivars when grown at 65° F. The saturation DLI for flowering of petunia is around 12-15 mol·m^{-2}·d^{-1} and thus, a DLI greater than 15 should not be used in the spreadsheet. Download the program for additional information on how to use the tool for improved Wave petunia scheduling. g

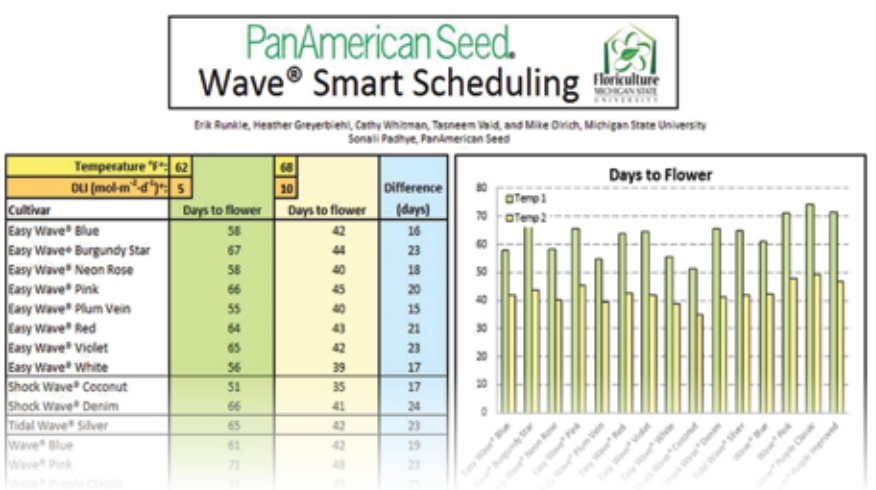

Figure 1. *The Wave Smart Scheduling tool can help growers predict the effect of temperature and daily light integral on flowering time of 15 different Wave petunia varieties.*

Erik Runkle is associate professor and floriculture extension specialist in Michigan State University's department of horticulture and can be reached at runkleer@msu.edu. Sonali Padhye is technical services manager at PanAmerican Seed and can be reached at spadhye@panamseed.com.