

Purdue Greenhouse Newsletter

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How temperature affects plant quality in hanging baskets?

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Hanging baskets are very popular around this time in many Indiana greenhouses and are targeted for the Mother's day. Petunias and geraniums are popular bedding plant choices for hanging baskets. Temperature affects both growth (ex: change in size) and development (ex: change from vegetative to flowering stage) in plants. This means that greenhouse temperatures during March and April can significantly affect plant quality in hanging baskets. Keeping this in mind, I want to provide some

information on how temperature affects plant quality (elongation, branch number and flowering time) in hanging baskets.

1. Air is generally warmer by 5 to 10 °F near the roof than around the benches or floor in a greenhouse because hot air is lighter than cold air and moves higher. Due to their physical location in the greenhouse, hanging baskets are usually exposed to higher temperatures than other crops.
2. **Flowering time** is affected by mean daily temperature (MDT). For example, petunias can flower earlier by 10 days at a MDT of 75 compared to 65 F. The following example shows how to calculate MDT (note that MDT is same for both cases):
 - a. Case 1: 65 F day (12 hours) / 53 F night (12 hours);
MDT = $(65 + 53)/2 = 118/2 = 59$
 - b. Case 2: 70 F day (14 hours) / 44 F night (10 hours);
MDT = $[(70 \times 14) + (44 \times 10)]/ 24 = 1416/24 = 59$ F
2. **Flower number** is influenced by the number of lateral branches, which decreases with increasing MDT. Therefore, MDT can affect both flowering time and flower number but in opposite ways. It is important to grow plants at a temperature where both flower number and flowering timing can be optimal.
3. **Elongation or stretching** in plants is affected by the difference between daytime and nighttime temperatures. Usually a difference of 5 F between day and nighttime is the best. Plants elongate most when day and nighttime temperatures are the same.
4. Generally high light level (15 mol/m²/day) inside the greenhouses is always useful at any given temperature: it results in early flowering, decreased elongation and increased lateral branching.
5. Good quality plants in hanging baskets can be grown by maintaining greenhouse at 65-70 F day/60-65 F night temperatures.

Hydroponic Lettuce Production Workshop at Purdue University, West Lafayette Campus

Wednesday, March 29th from 8:30am to noon
Registration is free!

RSVP by March 10th to ljollybr@purdue.edu

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