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Control plant growth and height for potted herbs

Excessive stem stretch and leaf expansion results in “leggy” potted herbs. Learn non-chemical strategies for achieving more compact growth.

Controlling plant growth and height can be a challenge with potted herbs. Excessive stem stretch and leaf expansion causes cultural problems as well as a “leggy” plant appearance. Figure 1 shows basil and cilantro where stem stretch has resulted in tall and top heavy plants prone to falling over, especially after overhead watering or spraying. Once fallen over, plants often remain bent and grow crooked.

We do not have the option of using chemical growth regulators to control plant height and tone in potted herbs as we do with bedding plants. We discuss here cultural strategies to control plant growth and height for more compact potted herbs.

Experiment with container planting density

Planting density is the number of plants grown per container, from seed or from transplanting plugs or liners. The advantage of having a high planting density is that plants develop a full canopy much faster, shortening crop time and allowing for more crop turns. Seed is relatively inexpensive and often sown directly into the container.

The potential disadvantage is overcrowding, which reduces light quality near the base of the plants causing the stems to stretch (Figure 2). The result is a top heavy container

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Figure 1. Examples of top heavy basil (A) and cilantro (B) that have fallen over.

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with no leaves in the middle. Some customers do not mind this appearance, but others prefer a full canopy look. Trial different planting densities to determine what works best.

Avoid over fertilizing with nitrogen and phosphorus

Fertilizing with high nitrogen (N) tends to keep potted herbs looking dark green, but can also result in very soft and lush growth.

When injecting water-soluble fertilizers into the irrigation water, a target of

100 to 150ppm-N at the end of the hose provides sufficient nitrogen for most crops without promoting excessive stem stretch and leaf expansion. Crops such as lavender and rosemary are susceptible to leaf burn from the fertilizer, so consider rinsing the foliage with clear water after overhead fertilization.

Too much phosphorus (P) also promotes stem stretch and soft growth. More often than not, we apply much more phosphorus than plants actually need. Watering with 10 to 15ppm-P at the end of the hose provides sufficient phosphorus for most crops but is low enough to promote compact growth. Examples of water-soluble fertilizer formulations with lower phosphorus are 13-2-13 and 17-5-15 (N-P-K).

A few growers control growth by restricting fertilizer (<100ppm-N in the irrigation water) or switching to clear water. However, nutrient deficiency can occur easily and correcting deficiency symptoms requires the application of additional fertilizer prior to sale.

Grow at cooler temperatures

Consistent, excessive stem stretch and leaf expansion in certain crops may indicate temperatures are too warm. Many potted herb species are cool weather crops and perform better at lower temperatures. Examples include parsley, cilantro, chives, thyme, oregano, mint, sage, lavender, and rosemary. If this is the case, consider



Figure 2. High planting density promotes stem stretch in basil.

lowering the temperatures or moving plants to a cooler location.

On the other hand, basil is a warm weather crop and is sensitive to chilling injury when night temperatures drop below 60 degrees Fahrenheit.

High light and warm temperatures during summer can raise temperatures in a greenhouse beyond venting and cooling capabilities. This tends to increase the risk of high temperature stress for cool weather herbs. In this scenario, consider pulling retractable shade curtains at midday or whitewashing to reduce the amount of light that enters the greenhouse.

Allow plants to dry down between irrigations

In general, potted herbs are sensitive to over watering and saturated container medium, which often results in poor quality growth and root disease. Crops with fine root systems such as oregano are particularly susceptible to over watering and root disease.

Allowing the medium to dry before watering promotes healthier roots and growth that is more compact. More oxygen is available for root respiration and slight water restriction reduces stem stretch and leaf expansion. Crops such as lavender, rosemary, thyme, and sage evolved in dry climates and often grow better in drier media. Some growers wait until the medium dries to a lighter color and separates from the container whereas a few growers allow plants show early signs of drought stress before irrigating.

Consider pinching certain crops

Pinching potted herbs results in regrowth that is more compact. This strategy is used to develop a fuller canopy for crops such as mint and oregano or to hold plants past their original sale date. Leafy herbs such as parsley, cilantro, and chives are not usually pinched. Certain basil

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Figure 3. Irrigation booms with hanging plastic are programmed to brush plants throughout the day to control plant height. Photo courtesy of Paul Fisher.

varieties can be pinched if they are overgrown, but trial this first to make sure plants grow back to an acceptable quality. Remember to sterilize pinching tools periodically using a sanitizing product such as Greenshield (quaternary ammonium) or Zeritol (peroxyacetic acid and hydrogen peroxide) to prevent the spread of disease.

Consider plant brushing techniques

Brushing plants with soft plastic is a potential strategy to help control height in potted herbs. Over time, light physical stress on plant tissue reduces stem stretch and leaf expansion for more compact growth. Figure 3 shows how an irrigation boom can be rigged with hanging plastic and programmed to periodically pass over crops. Although it requires manual labor, workers can pass a wooden dowel with hanging plastic over crops or even use a leaf blower to create wind in the greenhouse. Currently, researchers at the University of New Hampshire are evaluating the effects of plant brushing over a range of potted herb species.

Conclusions

Combining height control strategies is usually the most effective approach to growing potted herbs that have compact growth. For example, reducing fertilizer rates and growing crops drier will likely have more of an effect than either strategy alone. If experiencing consistent problems with specific crops, trial different height control approaches to evaluate what works best for your operation.