

Controlling Plant Stretch Through the “DIF” Technique and The “Morning Temperature Dip”

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Defining terms- “DIF” stands for the difference between the night temperature and the day temperature. This can be expressed as either a positive or a negative number. For example, night 55°, day 65°: “DIF” = +10. Conversely, night 65°, day 55°: “DIF” = -10.

Predicting stem elongation by “DIF”- All other factors being equal, the more positive the “DIF”, the greater the potential for stem elongation, or stretching. The reverse is also true. Negative “DIF” values produce more compact plants. A plant being grown with a “DIF” of +15 will be taller than one grown with a “DIF” of +5. Finished crop height can be predicted and manipulated by altering the “DIF”.

Is “DIF” practical? - Running a crop at a strongly negative “DIF” for a long period of time is neither economical nor necessary. A strongly negative “DIF” (-5 or -7) may be employed for a period of time to achieve a specific goal, however maintaining this for a long period of time can have undesirable effects on many plants. Plugs grown under a strongly negative “DIF” often turn chlorotic, though it can also be observed on mature plants. Leaf angle also changes in some crops. These effects can usually be reversed by returning to a positive “DIF”. This also reduced the average daily temperature which delays crop maturity. The “Morning Temperature Dip” described below reduces elongation in a more energy efficient manner.

“Morning Temperature Dip” technique- Researchers have discovered that most of the stretch occurs in the first 3 hours beginning exactly at daybreak when plants first become photosynthetically active. By lowering the temperature below the night temperature at daybreak for a couple of hours, much of the plant stretch can be eliminated. Normal temperature settings can then be restored for the rest of the day. Stretching has been significantly reduced with much less impact on the average daily temperature. A typical temperature dip is 5 degrees below the night temperature.

Benefits from the “Morning Temperature Dip”- This technique can reduce or eliminate the need for growth regulators on many crops.