Using PGRs on Spring Crops

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Common Height Control Methods

Chemical PGRs

DIF or DIP methods of temperature control

Pruning and shearing

Low phosphorus fertilization

Variety selection and scheduling

Common Reasons for Applying PGRs

Stretching caused by low light intensity

Stretching caused by too close spacing

Stretching caused by DT > NT

Planting or seeding too early

To hold plugs for transplant or mature crops for market

To “rescue” too tall plants

A tall variety was chosen instead of a compact one

Interactions like low light and DT > NT

Which of these could be controlled by changes other than PGRs?

What PGRS are available for height control of bedding plants and other spring crops?

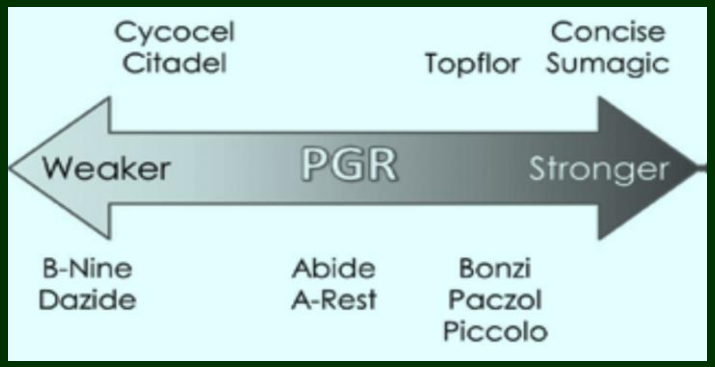
Ancymidol	Daminozide	Flurprimidol
Abide	B-Nine	Topflor
A-Rest	Dazide	
Chlormequat chloride	**Paclobutrazol**	**Uniconazole-p**
Citadel	Bonzi	Concise
Cycocel	Downsize	Sumagic
	Florazol	
	Paczol	
	Piccolo	

PGRs for height control are plant growth chemicals called “antigibberellins”. Why?

Choice

PGR Application Method and Level of Activity

Active Ingredient	PGR Example	Method	Activity
Ancymidol	A-Rest	Spray or drench	Moderate
Diaminozide	B-Nine	Spray	Low
Paclobutrazol	Bonzi	Spray or drench	High
Chlormequat chloride	Cycocel	Spray	Low
Uniconazole	Sumagic	Spray or drench	High
Flurprimidol	Topflor	Spray or drench	Moderate



Choice

Success with PGRs – Environmental & Situational Factors

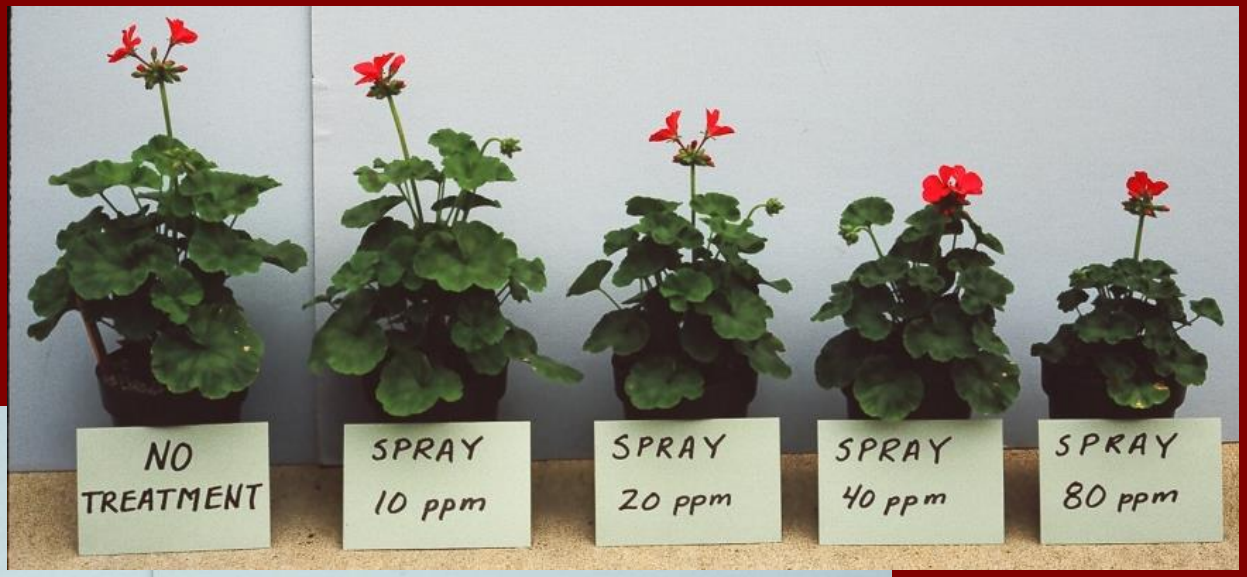
PGRs are most effective when applied under conditions of high humidity , cool temperatures, minimal air movement, and low light. Apply on cloudy days.

Factors Affecting Choice of a PGR Rate

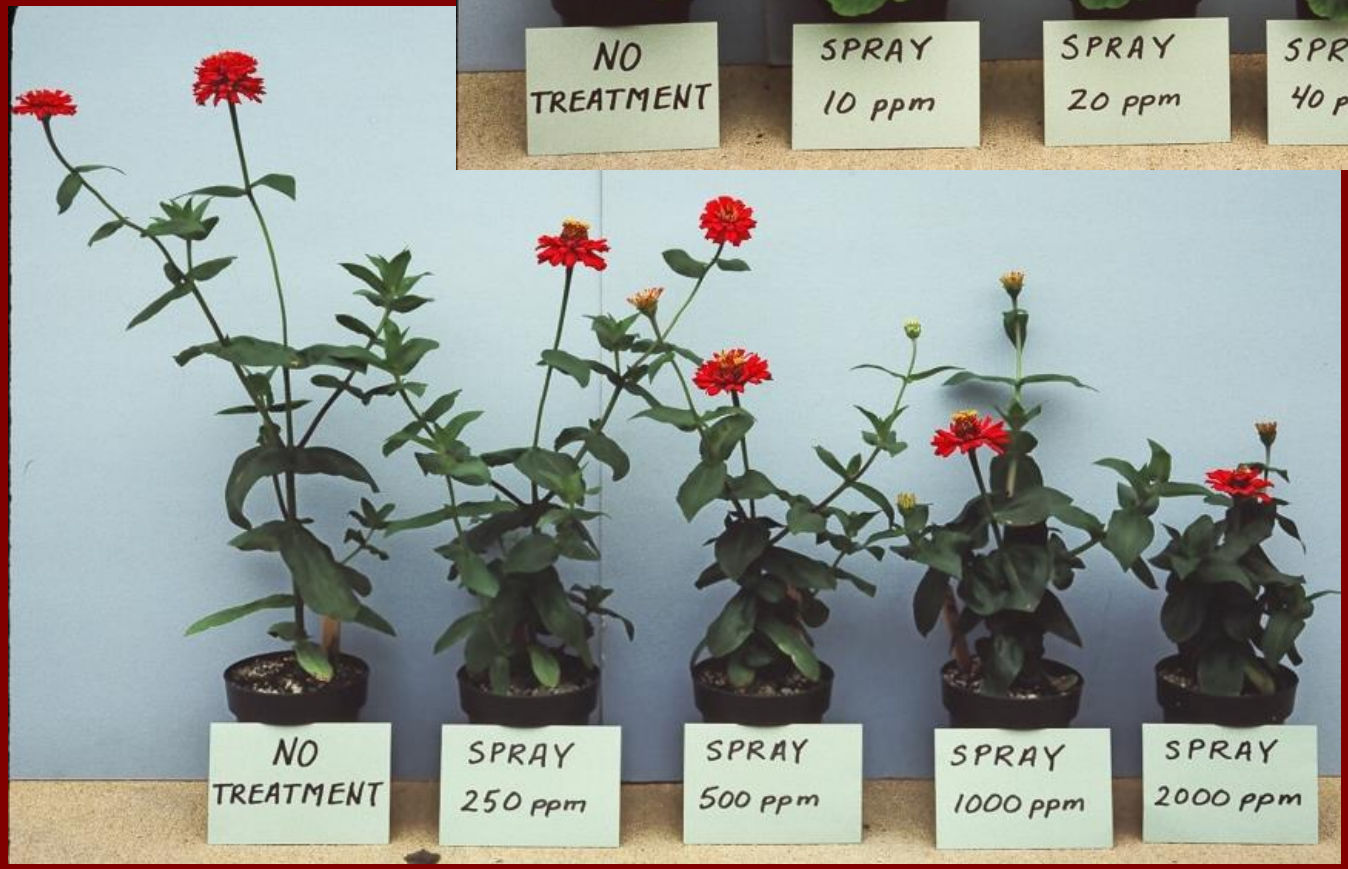
Low	Temperature	High
Low	Light levels	High
Low	Vigor of variety	High
Low	Magnitude of response	High
Wide	Crop spacing	Tight
Early	Application timing	Late
Several	Other suppression techniques	None

How might nutrient status, EC, irrigation practice affect PGR choice of PGR rate?

Response to Bonzi Sprays



Geranium
10-80 ppm
spray



Zinnia
250-2000 ppm
spray

Choice

PGRs for Bedding Plant Height Control in Flats and Pots

PGR Example	Rates (ppm) & Methods	Uses & Precautions
A-Rest	6-66 spray 1-4 drench	15 ppm spray, 1 ppm drench for trials.
B-Nine	2500-5000 spray	Repeat apps. on some species. Two apps. at 1/2 to 2/3 label rates may be better than full label rate.
Bonzi	5-90 spray 0.5-1 drench	15-30 ppm for trials. For vigorous species. Apply to stems. Not for vinca and begonia.
Cycocel	800-1500 spray	1250 ppm for trial. 800-1500 ppm for most species but as much as 3000 may be needed. No more than 6 apps. per crop cycle.
Sumagic	1-50 spray 0.1-2 drench 0.5-2 PSS	5-15 ppm for spray trials. Not for begonia. Apply PSS right before transplanting while mix is moist. 2 qt./100 sq. ft.
Topflor	0.5-80 spray 0.25-4 drench	Test at low rates. Repeat apps. May be needed at 21 day intervals.

Consult the New England Greenhouse Floriculture Guide 2017-2018 for more specific recommendations.

Multiple PGR Applications

- Consult product labels or NE Floriculture Guide for rates taking into account current season's conditions.
- Multiple applications made at a fraction of the full rate are often best. Treatments are made at weekly or biweekly intervals and allow monitoring of progress.
- Avoid late applications which might cause delay in flowering, a reduction in flower size, and stunted growth in flower gardens. Instead, use a sprench treatment at drench rate.

Examples of Multiple Applications



Left to right: Super Elfin Lavender Impatiens untreated, drenched with 0.5 ppm Topflor every other week, and drenched with 0.5 ppm Topflor every week.



Left to right: Wave Lavender Petunias untreated, 2500 ppm B-Nine + 4 ppm Topflor drench 2 weeks later, and 2500 ppm B-Nine + weekly 0.5 ppm drench.

Sepro Corp.

Success with PGRs - Spray Applications

1. Apply sprays to recently watered plants with no wilting.
2. Don't water from overhead until the PGR spray has dried (Don't dilute spray solution).
3. Don't use a wetting agent unless recommended by label.
4. The most uniform response results from multiple applications of low PGR rates.
5. Use a consistent spray technique and avoid excessive runoff.

PGRs are most effective when applied under conditions of high humidity , cool temperatures, minimal air movement, and low light. Apply on cloudy days.

Success with PGRs - Drench Applications

1. Plants with good roots and without water stress are best for drenching.
2. Apply the same volume of drench to each pot based on diameter and product label recommendations.
3. Drenches should be applied uniformly to the surface to evenly moisten the medium.
4. Uniform application is most important for large containers with multiple plants.

Success with PGRs - Uniform Application

Apply sprays at a consistent volume per 100 ft^2 of bench area based on product label.

Product examples	Quarts/100 ft^2
A-Rest	2
B-Nine	2
Bonzi	2-3
Cycocel	2-3
Sumagic	2

Apply drenches at a consistent volume per pot based on diameter based on product label.

	Drench volume (fl.oz./pot)		
Pot dia.	A-Rest	Bonzi	Cycocel
4”	2	2	3
5”	3	3	4
6”	4	4	6
8”	10	10	8

Dramm
Chemdose CD120

Chemdose is for precision application of growth medium drenches. Doses 10-90ml in a single shot. Capable of multiple shots in short time intervals. 20 gal. tank, battery operated.

Common Question

PGRs and Mixed Containers

PGR use is a special challenge when containers contain multiple plants with different levels of vigor.

1. Prior to planting treat plug trays with a liner dip lasting 5 to 30 minutes to allow the plugs to absorb the chemical.
2. The best chemicals for dip are those which can be applied by drench.
3. Spray treatments, incuding Florel, can be done in two different ways:
   - Plant the variety to be treated in the final container, spray, and then add the untreated species.
   - Grow the species to be treated in small pots, spray, and then add to the container.

Liner dip concentrations: Bonzi 4-16 ppm, Sumagic 2-8 ppm, or Topflor 3-12 ppm.

Common Question

“Holding” Plants in Spring Prior to Sale

Great spring weather can cause some plants to grow too well. PGRs can’t make tall plants short, only cutting back can, but PGRs can be used to “hold” plants.

- PGR foliar sprays, rather than drench, are best because sprays have a shorter residual life.
- Apply sprays at the high end of the normal concentration range.
- Do not drench or use excessive spray rates. The risk is that the growth suppression will carry over into the landscape.
- Do not use Cycocel because there is a chance of phytotoxicity.

Common Question

Correcting Overapplication of a PGR

- Causes of PGR overapplication. Best to avoid overdose mistakes.
- Plants overdosed with antigibberellin PGRs will begin to grow with sprays of gibberellin-containing PGRs like Fascination and ProGibb.
- Apply low concentrations every 7 days until desired growth stimulation occurs. Fascination or Fresco at 2 -5 ppm or ProGibb 4% at 1-2 ppm.
- Higher rates are likely to reduce final quality of plants to less than correctly treated plants.

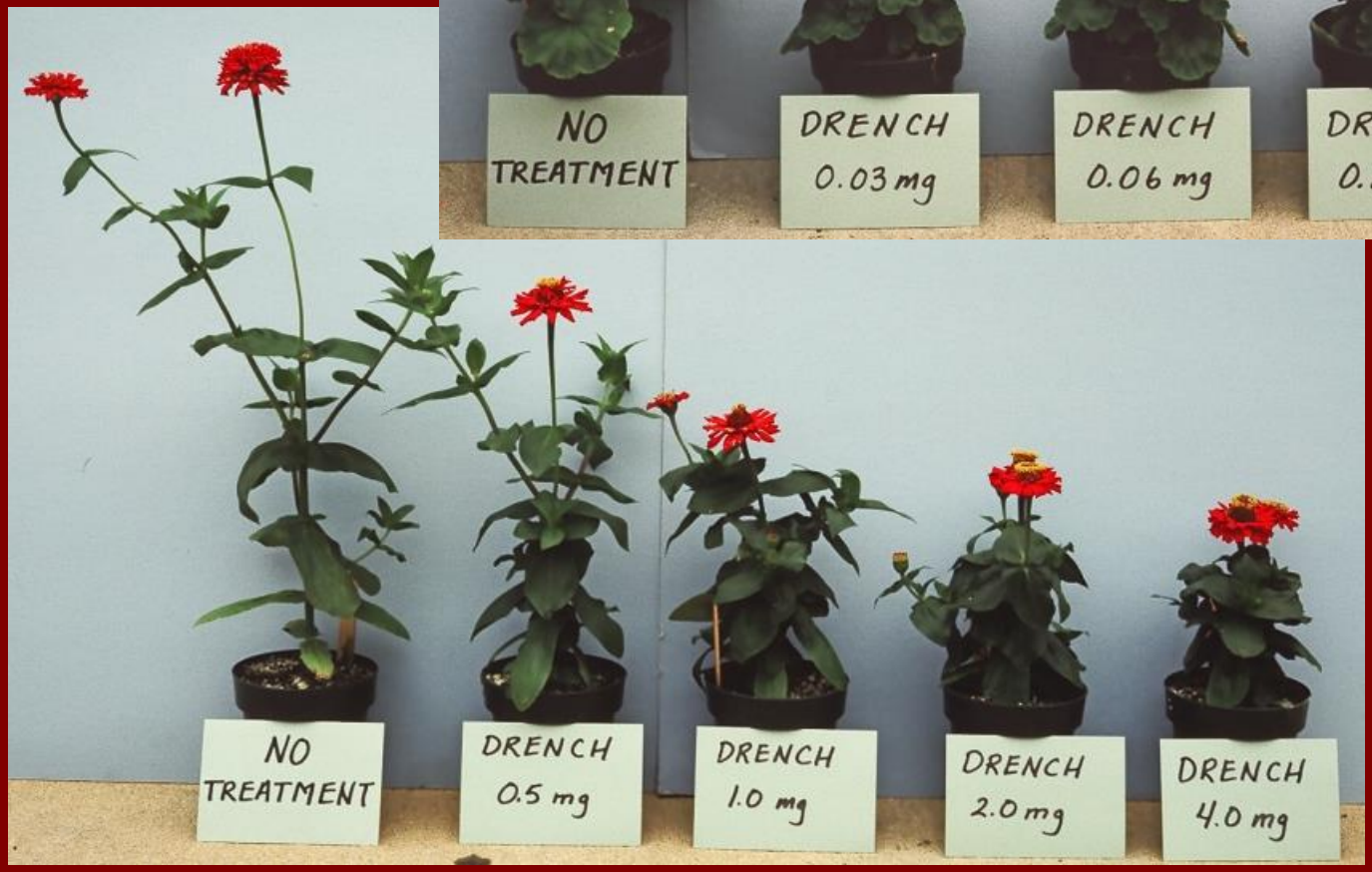
Final Points

- Consult the 2017-18 New England Greenhouse Floriculture and the Plant Growth Regulator Website flor.hrt.msu.edu/PGRs/ created by Michigan State Univ. for specific information on PGR products, rates, and application methods.
- Don’t use PGRs if height can be controlled by simple cultural changes.
- Be aware of environmental and situational factors that may affect response of plants to PGRs and choice of low or high activity chemicals.
- Consider multiple applications of low PGR rates for high activity chemicals.
- Uniform application of sprays and drenches is an important key to success.

Florel to Increase Branching

1. Florel stimulates branching and provides some growth control.
2. Use a foliar spray at 250-500 ppm.
3. Apply Florel early with or without a pinch to stimulate branching of vigorous vines.
4. Don’t apply less than 2-3 weeks before expected flowering.
5. Some chlorosis may develop as a result of enhanced plant stress.

Response to Bonzi Drench



Geranium
0.03-0.24
mg a.i./pot

Zinnia
0.5-4.0
mg a.i./pot