

Technical Poinsettia Webinar Series - PART 2

**From Pinch to Bract Development
Focus on making your specs, covering all
aspects of poinsettia culture, including fertility,
light, temperature, height control, and insect &
disease management.**

Pinching: Key tips

- Application of PGR (Cycocel) in late propagation and after transplant will reduce internode length. This contributes to even branching.
- Pinch plants about 12-14 days after transplant and when they are rooting out into pot.
- Plants need not be rooted out fully to the pot edge, just actively growing roots and tip.
- Pinch to leaf count based on finished specs (6-7 leaves after the pinch to produce a plant with 6 primary bracts).

Pinching: Key tips



- Don't leave too many leaves. Know your specs!
 - This can cause wide plants and smaller bracts.
- The growing environment just prior to, through two weeks after the pinch, is critical.
- High humidity is needed to evenly develop the branching.
 - Misting, quick boom passes, wetting floors, etc., are all useful tools to achieve this higher humidity environment.

Ready to pinch (13 days after transplant)



Pinched (13 days after transplant)



7 days after pinch



7 days after pinch



Even branching from correct pinching and early PGR

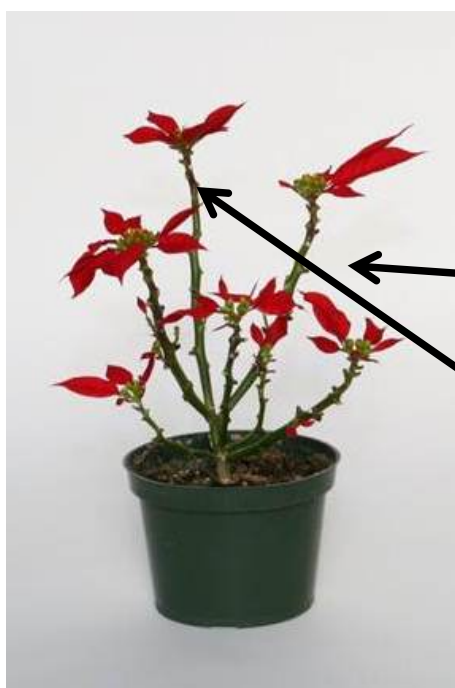


Early PGR applications



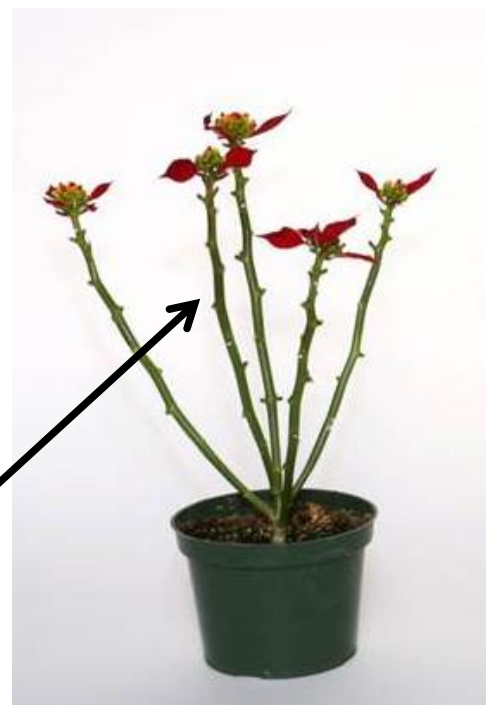
- Cycocel 500-1,000 ppm spray for cooler regions.
- B-Nine 1,000 ppm/Cycocel 500 ppm can be used in warmer climates.
- PGR can be applied after the pinch, when branches are 1 inch in length or longer.
- After pinching, the use of PGR of Cycocel spray and/or B-Nine/Cycocel spray is preferred, as they will focus their response on the shoots with most growth (leaf surface).
- Avoid PGR drenches and Bonzi at this stage, as they are absorbed by roots and stems, and they have an effect on all the shoots.
 - A drench at this stage will result in less-uniform branching than Cycocel or B-Nine/Cycocel sprays.

Branching Response



Branching Response Comparison

- Uneven response (left)
- Apical dominance
- Even response (right)



Incorrect PGR pre- and post-pinch can result in an uneven branching response.

Moisture Management

Good roots = Good shoots



Moisture Management Do's and Don'ts

Focus on...

- Building your foundation
- Staying in the middle of the road
- Creating a consistent language of moisture levels within your growing team
- Quantifying your moisture levels, and when and how much to water

Avoid...

- Growing "dry" to avoid root diseases
- Big swings in moisture management
- Guessing when and how much to water
- Overhead watering late in the day



Ideal Irrigation Method

Some form of drip irrigation is ideal

- Most efficient way to deliver water, fertilizer and chemicals
- Best option for humidity and disease control
- Drip tape makes spacing easier
- Drip tubes are more flexible for different pot sizes



Water Quality and Fertility

Complete Fertilizer Options

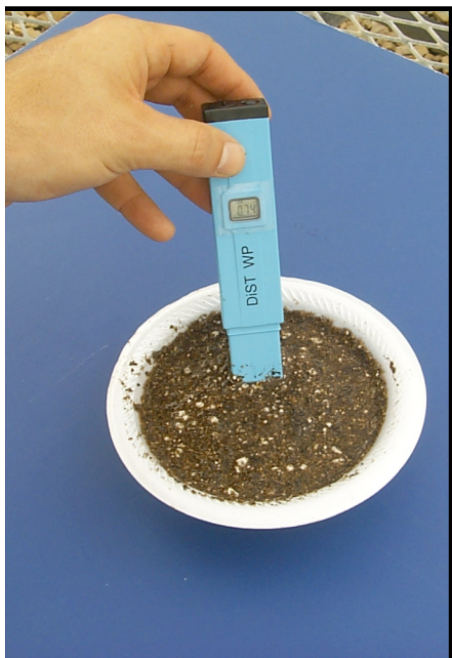
Main Feed:
17-5-17

Push Feed:
20-10-20

Hold Feed:
13-2-13

- Maintain a media pH of 5.7 – 6.3
- Poinsettias are usually grown with a constant liquid feed program of 200-250 ppm N
- Cal/Mag feed is recommended, as they need a good source of Calcium
- Know your water quality to choose correct fertilizer and better manage media pH

Finished Media Testing



- Maintain a media EC of 1.5-2.0 from a pour-through or 0.9-1.3 for a 1:2
- A healthy and active growing poinsettia will consume a lot of fertilizer
 - If consistently fertilizing and media EC is still low, that is ok
 - Utilize tissue analysis to ensure nutrition is adequate
- Don't forget the moly; deliver 0.1 ppm with each fertilization

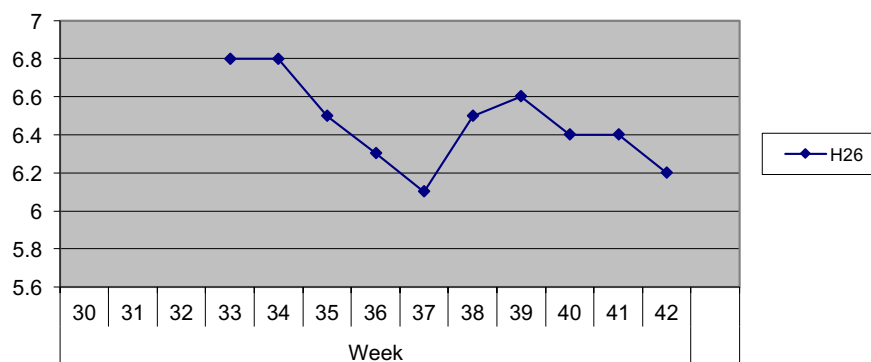
Finished Media pH and EC

Direct stick 4.25" crop

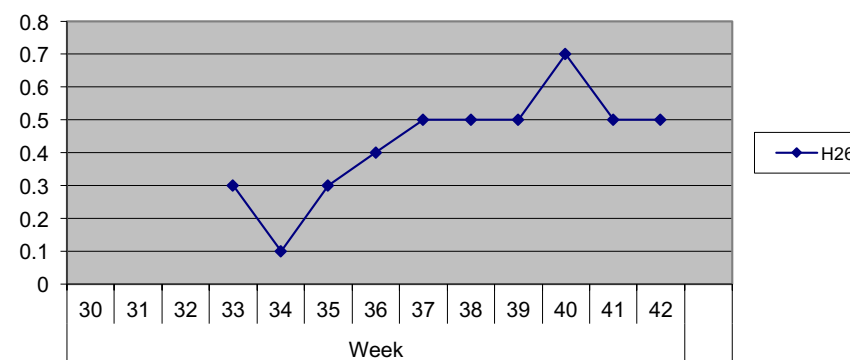
- Crop stuck week 32
- First media test week 33
- Media EC is almost zero after one week

pH	Week	30	31	32	33	34	35	36	37	38	39	40	41	42
H26					6.8	6.8	6.5	6.3	6.1	6.5	6.6	6.4	6.4	6.2
EC	Week	30	31	32	33	34	35	36	37	38	39	40	41	42
H26					0.3	0.1	0.3	0.4	0.5	0.5	0.5	0.7	0.5	0.5

4.25" Poinsettia pH



4.25" Poinsettia EC



Finished Disease Control



Rhizoctonia

- Attacks at or just above the soil line
- Often misdiagnosed as Pythium
- Rootshield WP/Rootshield Plus
- Actinovate
- Cleary's 3336
- Medallion
- Heritage/Empress



Botrytis

- Can attack pre-space when canopy is closed
- Usually starts with leaves but in a closed microenvironment can attack stems
- Cease
- Phyton 27 (phyto, interactions)
- Pageant
- Palladium
- Medallion (Finish)
- Decree (Caution @ Finish)
- Cleary's 3336



Pythium

- Often follows Fungus Gnat infestations
- Avoid cycling moisture from wet to dry
- Sloughing roots
- Rootshield/Rootshield Plus
- Subdue Maxx (watch resistance)
- Segway
- Terrazole/Truban
- Heritage
- Aliette



Powdery Mildew

- Can attack pre-space when canopy is closed
- See more every year
- Actinovate (spray)
- Cease
- Pageant
- Eagle
- Milstop
- Phyton 35



Disease Control Chemicals Poinsettia

Product	Active Ingredient	Rate range/100gal	Diseases controlled	Chemical Class	Safe on Bracts	Notes
Daconil	Chlorothalonil	16 - 22oz	Botrytis	5	No	
Chipco 26019	Iprodione	16 - 32oz	Botrytis	2	No	Foliar Spray rate listed. Drench rate is different/read label
26GT	Iprodione	32 - 80oz	Botrytis	2	No	
Pagaent Intrinsic	Pryaclostrobin + Boscalid	12 - 18oz	Botrytis	7 + 11	Yes	Do not combine with organosilicone-based adjuvants (Capsil)
Medallion	Fludioxonil	2 - 4oz	Botrytis	12	Yes	
Milstop	Potassium Biocarbonate	20 - 80oz	Botrytis	NC	Yes	Use lower rates on bracts
Decree	Fenhexamid	12 - 24oz	Botrytis	17	Yes	Will leave some residue on bracts; some sensitivity possible
Veranda O	Polyoxin D	4 - 8oz	Botrytis	19	Unknown	
Pagaent Intrinsic	Pryaclostrobin + Boscalid	12 - 18oz	Rhizoctonia	7 + 11	Yes	Do not combine with organosilicone-based adjuvants (Capsil)
Medallion	Fludioxonil	1oz	Rhizoctonia	12	Yes	Sprench/drench rate is 1oz/100 gallon water
Clearys 3336/OHP 6672	Thiophanate Methyl	16 - 20oz	Rhizoctonia	1	No	
Daconil	Chlorothalonil	16 - 22oz	Rhizoctonia	5	No	
Pagaent Intrinsic	Pryaclostrobin + Boscalid	6 - 12oz	Powdery Mildew	7 + 11	Yes	Do not combine with organosilicone-based adjuvants (Capsil)
Milstop	Potassium Biocarbonate	20 - 80oz	Powdery Mildew	NC	Yes	Use lower rates on bracts
Phyton 35	Copper Sulfate Pentahydrate	15 - 35oz	Powdery Mildew	M1	Yes	Adjust pH to 5.5-6.5
Daconil	Chlorothalonil	16 - 22oz	Powdery Mildew	5	No	
Zyban	Thiophanate Methyl, dithiocarbamate, zinc, manganese	24oz	Scab	1 + M3	No	
Spectro 90 WDG	Chlorothalonil/Thiophanate Methyl	16 - 32oz	Scab	1 + M5	No	
Heritage	Azoxystrobin	1 - 4oz	Scab	11	Yes	
Terrazole L	Etridiazole	2.5 - 7oz	Pythium	14	No	Remember to apply appropriate amount of solution based on soil volume of container. The rates listed are oz/gallon of stock solution at a 1:100 ratio.
Fenstop	Fenamidone	7 - 14oz	Pythium	11	No	
Subdue	Mefenoxam	0.5 - 1oz	Pythium	4	No	
Segway	Cyazofamid	1.5 - 3oz	Pythium	21	No	
Phyton 35	Copper Sulfate Pentahydrate	15 - 35oz	Erwinia/Bacteria	M1	Yes	Adjust pH to 5.5-6.5
Junction	Mancozeb + Copper Hydroxide	28oz	Erwinia/Bacteria	M1 + M2	No	Be sure spray solution is above pH 6.5 or phytotoxicity is likely
Zerotol	Hydrogen Dioxide + Peroxyacetic Acid	42 - 128oz (1:100 - 1:300)	Erwinia/Bacteria	NC	Yes	Don't apply in combination with metal-based chemicals

Biological disease control for Poinsettia

Control Agent	Active Ingredient	Rate range/100gal	Diseases controlled	Safe on Bracts	Notes
Actinovate SP	Streptomyces lydicus	6-12oz	Botrytis	Trial First	Used as a foliar spray
Cease	Bacillus subtilis	64 -256oz (2-8qts)	Botrytis	Trial First	
Milstop	Potassium Bicarbonate	20-80oz	Botrytis	Yes	Use lower rates on bracts; trial first
Actinovate SP	Streptomyces lydicus	4-6oz/100 of finished solution	Rhizoctonia	Trial First	This would be a 4-6oz per gallon of stock solution using a 1:100 injector
Rootshield Plus WP	Trichoderma	3-8oz	Rhizoctonia	Trial First	Can use granular inplace of WP(see label for rates)
Actinovate SP	Streptomyces lydicus	6-12oz	Powdery Mildew	Trial First	Used as a foliar spray
Cease	Bacillus subtilis	64 -256oz (2-8qts)	Powdery Mildew	Trial First	
Milstop	Potassium Bicarbonate	20-80oz	Powdery Mildew	Yes	Use lower rates on bracts; trial first
Actinovate SP	Streptomyces lydicus	4-6oz/100 of finished solution	Pythium	Trial First	This would be a 4-6oz per gallon stock solution using a 1:100 injector
Rootshield Plus WP	Trichoderma	3-8oz	Pythium	Trial First	Can use granular inplace of WP(see label for rates)
Cease	Bacillus subtilis	64 -256oz (2-8qts)	Erwinia/Bacteria	Trial First	
Zerotol	Hydrogen Dioxide + Peroxyacetic Acid	42-128oz (1:100 - 1:300)	Erwinia/Bacteria	Trial First	No residual. Many peroxide products to choose from

Fungus Gnats/ Shore Flies

FLIES
Darkwinged Fungus Gnats*

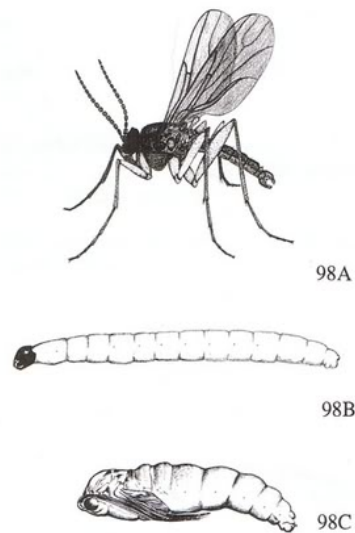


Fig. 98 Darkwinged fungus gnats. A, Adult. B, Larva. C, Pupa.

FLIES
Shore Flies*

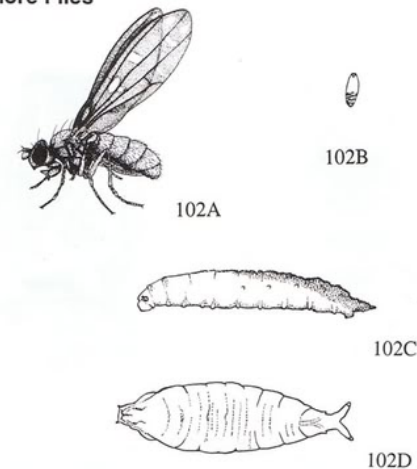


Fig. 102 Shore fly. A, Adult. B, Egg. C, Larva. D, Pupa.




Fungus Gnats

- Larvae feed on roots and callus
- Vector for pythium
- Best control is sanitation
- IGR insecticides early



Whitefly

- Bemisia tabaci/Sweet Potato Whitefly/Silver leaf
 - Bemisia tabaci/Sweet Potato Whitefly/Silver leaf (Q/B Biotype)
 - Greenhouse Whitefly
 - Banded Wing Whitefly
- 
- A solid blue horizontal bar spans the width of the slide near the bottom.

Greenhouse Whitefly

Trialeurodes vaporariorum



Sweet Potato Whitefly(Silver leaf) *Bemisia tabaci*



Banded Wing Whitefly

Trialeurodes abutilonea



Whitefly (Control Strategies)

- Scout, Scout, Scout, Scout
- Use traps
- Type of Whitefly
- Find hotspots
- Outside pressure?
- Biocontrol?
- Non-Neonic?



Insecticide recommendation for Poinsettia

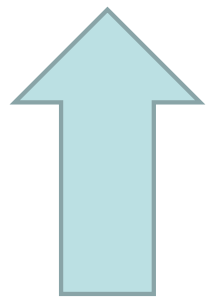
Product	Active Ingredient	Rate range/100gal	Pest controlled	Chemical Class	Safe on Bracts	Notes
Rycar	Pyriproxyfen	1.6 - 3.2oz	Whitefly	Unknown	Trial First	
Mainspring	Cytraniliprole	1 - 8oz (foliar);12oz (drench)	Whitefly	28	Trial First	Drench rate is 12oz/gallon stock solution at 1:100 ratio
Judo	Spiromesifen	2 - 4oz	Whitefly	23	Trial First	
Safari	Dinotefuran	4 - 8oz (spray); 12 - 24oz(drench)	Whitefly	4A	Yes	1-3 weeks after pinch for best control. Drench rate is 12 - 24oz/gallon stock solution at 1:100 ratio (Neonicotinoid)
Kontos	Spirotetramat	1.7 - 3.4oz	Whitefly	23	Trial First	
Flagship	Thiamethoxam	2 - 4oz	Whitefly	4A	Trial First	Neonicotinoid
Endeavor	Pyrimethozine	2.5 - 5oz	Whitefly	9B	Trial First	
Sanmite	Pyradaben	4 - 6oz	Whitefly	21A	Trial First	
Xxpire	Isoclast Active + Spinetoram	2.75oz	Whitefly	4C + 5	Trial First	
Avid	Abamectin	8oz	Whitefly	6	Trial First	
Avid	Abamectin	4oz	Mites	6	Trial First	
Kontos	Spirotetramat	1.7 - 3.4oz	Mites	23	Trial First	
Judo	Spiromesifen	1 - 4oz	Mites	23	Trial First	
Sanmite	Pyradaben	4oz	Mites	21A	Trial First	
Overture	Pyridalyl	8oz	Thrips	Unknown	Trial First	
Pylon	Chlorfenapyr	5.2 - 10oz	Thrips	13	No	Label states that can cause phyto on poinsettias
Avid	Abamectin	8oz	Thrips	6	Trial First	
Conserve	Spinosad	11 - 22oz	Thrips	18	Trial First	
Azatin	Azadiractin	8oz/gallon @ 1:100 ratio	Fungus Gnats	Unknown	Trial First	IGR. Target larvae in top third to half of soil profile
Citation	Cyromazine	2.66oz/gallon @ 1:100 ratio	Fungus Gnats	17	Trial First	IGR. Target larvae in top third to half of soil profile
Safari	Dinotefuran	12 - 24oz/gallon @ 1:100 ratio	Fungus Gnats	4A	Trial First	Neonicotinoid. Use as curative when larvae causing damage
Parasitic Nematodes			Fungus Gnats			Steinernema feltiae

Biological Control for insects on poinsettia

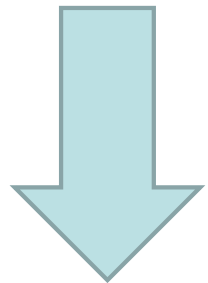
Control Agent	Active Ingredient	Rate range/100gal	Pest controlled	Safe on Bracts	Notes
Botaniguard ES	Beauveria bassiana	16 - 32oz	Whitefly	NO	Label states: Do Not Apply after Poinsettia Bract Formation
No Fly WP	Paecilomyces fumosoroseus	28oz	Whitefly	Unknown	
Met52 EC	Metarhizium anisopliae	8-32oz	Whitefly	Unknown	Do not apply at pressures above 200psi.
Amblyseius swirskii	Predator		Whitefly		
Delphastus pusillus	Predator		Whitefly		
Encarsia formosa	Parasitoid		Whitefly		
Eretmocerus eremicus	Parasitoid		Whitefly		
Eretmocerus mundus	Parasitoid		Whitefly		
Amblyseius andersoni	Predator		Spider Mites		
Amblyseius californicus	Predator		Spider Mites		
Feltiella acarisuga	Predator		Spider Mites		
Phytoseiulus persimilis	Predator		Spider Mites		
Botaniguard ES	Beauveria bassiana	32-64oz	Thrips	NO	Label states: Do Not Apply after Poinsettia Bract Formation
No Fly WP	Paecilomyces fumosoroseus	28oz	Thrips	Unknown	
Met52 EC	Metarhizium anisopliae	8-32oz	Thrips	Unknown	Do not apply at pressures above 200psi.
Amblyseius andersoni	Predator		Thrips		
Amblyseius swirskii	Predator		Thrips		
Hypoaspis miles	Predator		Thrips		
Steinernema feltiae	Parasitic Nematode		Thrips		
Orius insidiosus	Predator		Thrips		
Hypoaspis miles	Predator		Fungus Gnats		
Steinernema feltiae	Parasitic Nematode		Fungus Gnats		
Atheta coriaria	Predator		Fungus Gnats		
Gnatrol	Bacillus thuringiensis		Fungus Gnats		

Sizing Up: Ideal Environment

Active Environment



Light Levels
Fertility



Temperature
Humidity





Finished Environmental Factors

- Temperatures
 - Average daily temperature (ADT)
 - DIF or the relationship between day and night temperatures
- Light
 - Light intensity
 - Daylength
- Humidity

Temperatures



- Day temps: Ideally 24C(75F) to 30C(86F)
- Night temps: 16C(61F) to 22C(72F)
- ADT important for plant development
 - Leaves will unfold at the highest rate around 75F ADT
 - Around 80F ADT, development will slow
 - 68 -73F ADT is a good target
 - Especially important after initiation
- High temperatures are still a challenge



Light

Two measurements of light:

- Intensity....FC or Lux
- Quantity.....moles/day
- Light intensity
 - 3,000 – 5,000 FC is ideal
- Light quantity
 - 10 – 25 moles/day
- Daylength is the other consideration

Humidity



- Late Summer/Fall tends to be the lowest humidity you will get during production
 - High transpiration rates = great chance to put a lot of fertilizer and Ca into the plant
- Humidity tends to steadily increase as you get closer to finish date
 - You will need a plan for humidity control
 - Disease pressure and reduced transpiration are both factors to consider as humidity increases

Environmental Considerations



Outdoor environment changes a lot during poinsettia season

- Fall brings cooler temperatures
 - Watch your night temps
 - Use DIF, especially AM dip (1 hr before sunrise to 3 hrs after sunrise)
- Adjust to decreasing light levels
 - Reduced ventilation can = higher humidity
 - Be sure to remove shade

Know Your Specs

What goes into your poinsettia specs?

- Number of blooms
- Finished height
- Finished width

Do you have different specs for different customers?



How Do You Make Your Specs

Clearly communicate your specs from the beginning of the crop

- “Big and nice!” is not a spec

How to get the correct # of blooms?

- Goes back to the pinch

Know your varieties!

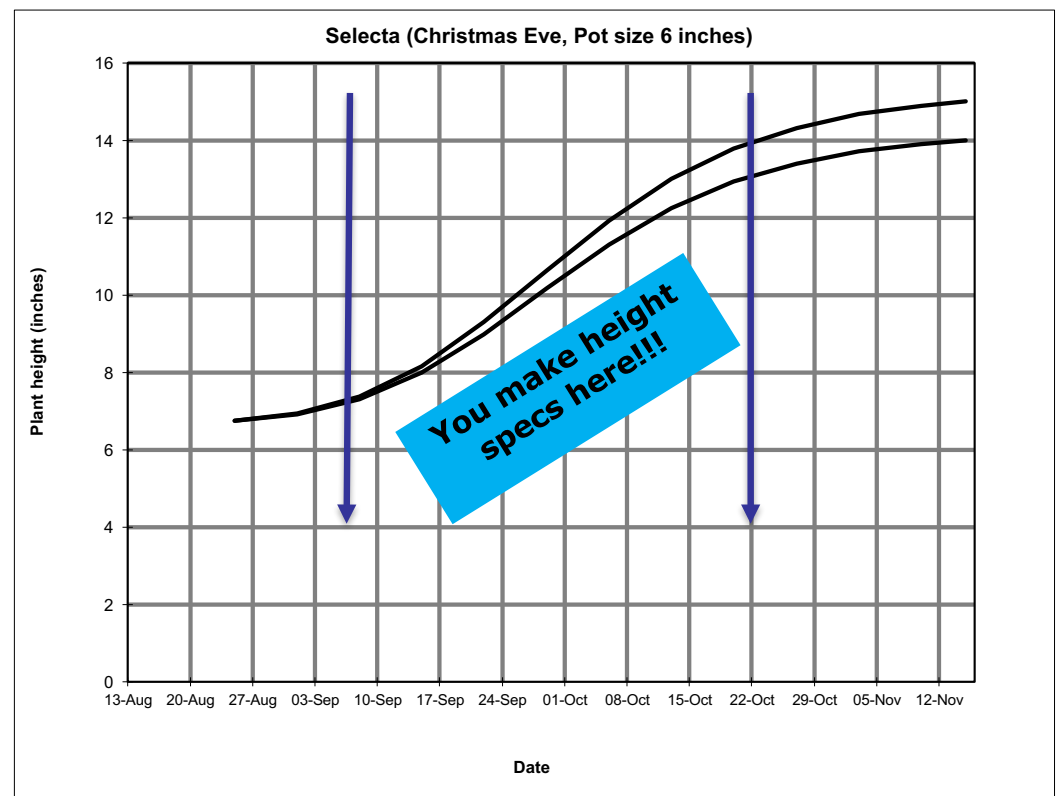
How to get the correct plant height and width?

- Finalize height and width specs before ordering inputs
- Number of days/weeks from pinch to short days (initiation) is critical
 - Too much time = over spec
 - Too little time = under spec
- Space on time
- Track height every week
- Monitor ADT, DIF and night temps every week
- Utilize PGR and fertilizer strategy to manipulate growth as needed

Tracking Height

Ways to track height?

- Utilize graphical tracking software
- Create your own digital photo log with weekly pictures
- Make a ruler or measuring stick for easy visual tracking



Space on Time

Huge factor in making specs and finished quality

- Make it a priority
- Too late = stretched and weak plants
- Too early can result in sideways shoots and more stem breakage at shipping
- Best to space as canopy starts to close



Florel application Prior and Post-pinch. (Florel Sandwich)

- Applications of Florel 5 days prior and 5 days after the pinch is a technique that has been used to help ensure good branching in varieties and conditions where branching can be inhibited.
- Can cause a "PGR effect" that will continue through the crop cycle (see photo)
- Rates from 200 ppm to 400 ppm
- Not necessary on many new very free branching varieties



PGR for finishing

- Spray vs. Drench
- Use only spray until shoots are 5 cm(2 in.) in length
- Cycocel spray 1,000 – 1,500 ppm
- B-Nine/Cycocel tank-mix spray 1,000/750
- Paclobutrazol (Bonzi) Drench very low rate! Only apply after breaks are established and even, use Cycocel and/or B-Nine/Cycocel sprays early
- Stop PGR applications by Oct. 10 (natural season crop) except for Micro drenches of Paclobutrazol (Bonzi)
- Late PGR for shelf life improvement: Paclobutrazol (Bonzi) drench of ½ ppm at full color

Cycocel Spray vs. Bonzi Drench

All plants pinched on 8/23, sprayed with Cycocel 750 ppm 3 applications weekly Sept 1, 8, 15



Cycocel 750 ppm spray October 5 on left plants. Bonzi 1/10 ppm drench October 5 on right plants.



Measure leaf internode to
measure PGR response



Paclobutrazol (Bonzi)
Drench at full color slows
ripening



Flower Induction

- Heat Delay
 - Night temps over 75F during initiation
 - Varietal sensitivity
- Light pollution
 - Critical during initiation
- Daylength manipulation

Day Length Manipulation



- **Black Cloth**
 - Use for early finish schedules
 - Know your varieties' response
 - Light leakage
 - When to stop?
 - Heat and humidity buildup

- **Lighting**
 - Delaying finish schedules
 - Know your varieties' response
 - Increase MOLES per day
 - When to stop?
 - Light quantity
 - Light quality



Hope to see you again October 3rd!

Technical Poinsettia Webinar Series - PART 3

Bract development and the final stages of poinsettia production:

This session includes late height control, final bract development, insect and disease control, and other topics related to finishing a strong poinsettia crop.

October 3 12PM CST

THANK YOU!

Questions?
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