Mastering Poinsettia Production

This fact sheet is intended to offer advice on some of the finer points of poinsettia production - the critical steps and procedures that can make the difference between a premium crop or a disaster. Remember, ***it never costs more to produce quality - it pays.***

Choosing Your Cultivars

Long before you begin your first crop you should make a study of the poinsettia cultivars that are popular in your area and the new varieties that the breeders have on offer. In the past few years there has been an explosion of new varieties from the major poinsettia breeding houses. Although there have never been as many exciting new cultivars to choose from, having so many options can also create some confusion when trying to decide which varieties to grow. When choosing cultivars keep in mind the following criteria:

- What are the 'industry standards' for your area?
- Where can you get the best quality propagation materials from?
- Which varieties will perform well in your region?
- Which ones have the best tolerance to low light?
- Which varieties are best for your greenhouse conditions?
- Which are the least resistant to root rot diseases?
- Which varieties have the nicest habit and colours?
- Which new varieties are the best to trial?
- Do they branch easily?
- Which ones retain their cyathia (flowers) best?
- Which ones are resistant to epinasty (downward turning of leaves and bracts)?
- Which ones have good shelf and shipping life?

Each cultivar grows a little differently and you will have to learn each variety's tricks. To minimize risk, you might want to grow a limited amount of a new cultivar before doing any large-scale changes, but if you find a winner, don't be afraid to finally stop growing the 'old favorite'. Growing multiple varieties provides a diversity of product that spreads the risk and should help increase profits. However, you may have to modify your production practices. For example, different response groups will have different scheduling requirements; some varieties are compact, while other are tall; dark leaved and light leaved varieties have different fertilizer requirements; and customers can be slow to accept change. Breeders are focusing on developing a full range of colours within a variety, in the hope that the same management and timing can be used for all.

Table 1 lists many of the popular varieties available in North America. This information has been compiled from breeders and variety trials throughout North America and is intended as a guide and for comparison purposes only. No endorsement of specific varieties or companies is intended, nor is any judgment inferred of varieties omitted.

Floriculture FACTSHEET

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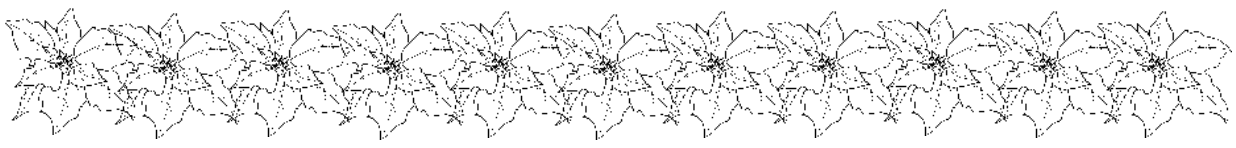
Table 1. Poinsettia Cultivar Information

VARIETY	LICENSED PROPAGATORS	WEEKS	BRACT COLOUR	COMMENTS
Angelika	Ecke	9	marble, pink, red, white	taller varieties; red sensitive to fading if finished too warm
Bonita	Fischer	8	copper/red	ideally grown at 20-21°C; does not perform well at 18°C; good shelf life
Celebrate 2	Ecke	8.5	pink, red, white	slower rooting and less vigorous than some cultivars; should be **planted and pinched 1 to 2 weeks earlier**; sensitive to high salts and drying-out
Cortez	Fischer	8.5	pink, red, white	dark green; tight spacing necessary in early stages to get V-shaped plant; ideally grown at 20°C until November 15; drop to 18°C to intensify colour; if grown at 18°C, plants should be **planted and pinched 1 to 2 weeks earlier** - bracts will be smaller, more upright, and the colour more intense.
Darlyne	Ecke	8.5	pink	Supjibi sport; may need slightly wider spacing
Dynasty	Oglevee	9.5	red	medium growth habit
Festival	Oglevee	8	red	cyathia resist splitting and dropping
Flirt	Fischer	8.5 to 9	light pink	ideally grown at 20-21°C; does not perform well at 18°C
Freedom	Ecke	8	'jingle bells', marble, pink, red, white	dark green; compact growth habit - **plant and pinch 1 to 2 weeks earlier**; sensitive to drying out; Exotherm termil may bleach expanded bracts; resistant to epinasty; withstands shipping stress
Jingle Bells 3	Ecke	10	dark red with pink flecks	cuttings do not root as easy as other varieties; may need to be **planted and pinched 1 to 2 weeks earlier**; Oct/Nov night temperatures 19-20°C
Jolly Red	Ball	9	red	dark green; upright growth habit; holds cyathia
Lilo	Ecke	8.5	marble, pink, red, white	follow propagator's recommended cultural tips closely, especially regarding stem breakage
Marblestar	Fischer	8 to 8.5	deep marble	**plant and pinch 1 to 2 weeks earlier** for 15 cm pots and larger; ideally grown at 20-21°C; does not perform well at 18°C; good shelf life
Maren	Fischer	8	salmon pink	ideally grown at 20-21°C; does not perform well at 18°C
Monet	Ecke	9.5	cream/rose/pink	unique colour, light to dark tones; allow 3-4 cyathia to open before shipping
Nobelstar	Fischer	8	coral	ideally grown at 20-21°C; does not perform well at 18°C.

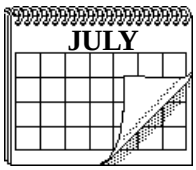
Table 1. Poinsettia Cultivar Information *(Cont'd)*

VARIETY	LICENSED PROPAGATORS	WEEKS	BRACT COLOUR	COMMENTS
Nutcracker	Oglevee	8.5	pink, red, white	cyathia resist splitting
Pearl	Ecke	8.5	white	Supjibi sport; may need slightly wider spacing
Pepride	Ecke	8	red	dark green; most suitable for smaller pot sizes (10 & 13 cm); 15 cm pots in cooler climates will require long day lighting between pinching and flower initiation to achieve required height or **plant and pinch 10 to 14 days earlier**; resistant to epinasty; withstands shipping stress
Peterstar	Ecke	8.5	marble, pink, white, red	sport of Gutbier's V-17 Angelika; more compact growth habits; flowers 3 to 4 days earlier
Petoy	Ecke	8.5	red	Supjibi sport; slightly taller; smoother and narrower bracts with a more uniform growth habit; may need slightly wider spacing
Picacho	Fischer	7.5 to 8	red	should be planted and pinched 1 to 2 weeks earlier for 15 cm pots and larger; ideally grown at 20-21°C; does not perform well at 18°C
Pink Peppermint	Ecke	9	pastel pink with red flecks	large flat bracts; open centres
Puebla	Fischer	8 to 8.5	marble	ideally grown at 20-21°C; does not perform well at 18°C
Silverstar	Fischer	8 to 8.5	red bracts; variegated silver-green/ white foliage	compact plant habit, **plant and pinch 1 to 2 weeks earlier** for 15 cm pots and larger; ideally grown at 20-21°C; does not perform well at 18°
Sonora	Fischer	9	'jingle bells', marble, pink, red, white	dark green; ideally grown at 20°C until November 15, then at 18°C to intensify colour; if grown at 18°C, plants should be **planted and pinched 1 to 2 weeks earlier**, bracts will be smaller, more upright, and the colour more intense.
Spotlight Dark Red	Dummen	8.5 to 9	red	dark green; upright growth habit; good cyathia retention and post harvest performance.
Success	Ecke	9.5	red	to establish roots, grow at night temperatures of 18-20°C, drop to 17-20°C in Oct; bract colour does not fade; good keeping qualities
Supjibi	Ecke	8.5	pink, red	resistant to epinasty, large mature bracts are subject to edge bract burn under some greenhouse conditions; their thick bracts may bruise more easily than other cultivars - care needed for handling and transportation



MANAGEMENT TIMETABLE FOR 15 TO 18 CM POINSETTIAS

(STARTED FROM ROOTED CUTTINGS)



Weeks 26 – 30 July – Before your plants arrive

Sanitation A good cleanup before the cuttings arrive will help reduce insect and disease carryover.

Planting media

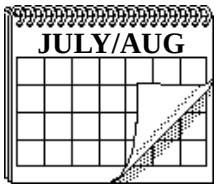
Use a well drained media with good porosity. Remember, your crop will grow through some of the brightest, hottest weather of the year to some of the darkest. You'll need the ability to control the media wetness carefully**.** Poinsettias are not overly fussy about pH, but a range of 5.8 to 6.2 is considered ideal for peat based media. The lime used should be dolomitic since this helps supply the calcium and magnesium needed for the crop. Initial salt levels should be low (EC less than 1.5 mS based on a saturated media extract).

Scheduling – lighting, temperature, and shade

The desired flowering date should drive your production schedule and determine the arrival date of your cuttings. Poinsettia cultivars are classified by response time, the time required from the start of short days to flowering (visible pollen). These times are approximate, since the actual time required is influenced by light and temperature. Under naturally decreasing day lengths in the fall, flower initiation takes place around September 20 to 25 in Southern BC when the day length falls below 12 hours. The day length must remain continually less than 12 hours for proper flower development to occur. Accidental flower delay can occur whenever light levels from stray sources such as street lighting, busy highways, or nearby lighting in other greenhouse compartments produces light levels above 1 foot candle. In such cases, use blackout curtains to prevent accidental delay. Early maturing varieties can be intentionally delayed by providing long days past September 5th. Research has shown that an interrupted night, where the lights are on from 10 p.m. to 2 a.m. is effective. (Be sure that the lights are working!) As a rough guide, count backwards, from your desired ready date using the response time for each cultivar. This is the date to turn the lights off. For example, the variety *Freedom* can be lit until October 5 to delay flowering till early December. Staggering the shut-off will stagger the finished crop. Similarly, poinsettias can be brought into flower earlier than normal by using blackout cloth for 13 hours per day before the start of natural short days. Early crops will require adjustments in planting and pinching schedules as well. Poinsettias grown at cooler than recommended temperatures may require planting and pinching 1 to 2 weeks earlier to finish on time. Keep in mind that smaller bract sizes are the usual consequence of cooler growing temperatures.

Table 2. A General Guide for Timing of Poinsettia Crops (Southern British Columbia)

	15 cm Pinched	13 cm Pinched	10 cm Pinched	10 cm Single Stem
Plant Rooted Cuttings	Aug 1-7 (week 31)	Aug 7 (week 32)	Aug 15-20 (weeks 33-34)	Sept 5-20th (weeks 36-38)
Pinch	Aug 20-31 (weeks 34-35)	Sept 10 (week 37)	Sept 18 - 22 (weeks 38-39)	



Weeks 31 – 35 July/August – Planting day to pinch

Rooted cuttings arrive

Open boxes, inspect for quality, any signs of insects or disease, and plant immediately. Top quality rooted cuttings should be well rooted prior to planting with plenty of healthy white roots. The growing point and new leaves should appear soft and vigorous. Cuttings that are too hard usually result from improperly managed stock plants or poor rooting conditions. They will tend to grow unevenly and to branch poorly. Cuttings that are overly soft will require much more acclimatization to August light, heat, and low daytime humidity levels.

Planting

Plant one rooted cutting per pot into moist soil with the top of the rooting medium flush with the potting media surface. Don't create a new soil line on the stem – it may encourage stem rot. If some cuttings are not as well rooted as others, grade these out at the start and keep them together, preferably on a separate watering zone.

Early spacing

Plants should be kept pot-tight until several weeks after pinching. This helps to provide a more humid micro-climate, relieving stress on the plants caused by high air and media temperatures and low humidity.

Watering and fertilization

If necessary, water in lightly and gently after planting (leave the fire hose to the firefighters!). Remember, poor water management is the primary cause of root disease in poinsettias. If the planting medium contains no fertilizers, use a complete feed mix intended for poinsettias. Start with half strength fertilizer at planting, and increase to 200 to 250 ppm nitrogen constant feed for dark green leaved varieties, and 250 to 300 ppm nitrogen for varieties with lighter green leaves. Commercial poinsettia feeds will usually supply 0.1 ppm molybdenum at 200 ppm N. If you use another fertilizer mix you may have to supplement the molybdenum. Monitor salt levels carefully, particularly in hot weather. One or two clear waterings just prior to pinching will help to reduce media salt levels during bud break. (See Table 3. ***Fertilizer and Tissue Levels for Poinsettias***.) Table 4 gives a sample fertilizer mix for growers who don't use a commercial mix.

Shade and humidity

Healthy, well rooted cuttings will likely be a little soft upon arrival. They have been rooted under reduced light conditions and shipped in darkness, so 50% shade during sunny weather is advised for the first two weeks while they are extending roots in the pot. Use mist, fog, or light sprinkling to cool the leaves and raise the humidity during the daytime. There are no rules for when or how often to mist. Watch the plants and the weather. Mist as needed, but try to avoid saturating the growing media in the process.

Table 3. Elemental Fertilizer and Tissue Level Targets for Poinsettias

Element	Fertilizer (ppm)	Tissue
Nitrogen	200 - 300	4.0 - 6.0%
Phosphorus	40 - 60	0.3 - 0.5%
Potassium	200 - 300	2.0 - 3.5%
Calcium	130 - 180	1.2 - 2.0%
Magnesium	40 - 60	0.6 - 1.0%
Sulphur	50 - 80	0.25 - 0.70%
Iron*	1.0 - 2.0	100 - 300 ppm
Manganese*	0.7	100 - 300 ppm
Boron*	0.5	30 - 100 ppm
Copper*	0.05	4 - 25 ppm
Zinc*	0.1	40 - 100 ppm
Molybdenum**	0.1	1.0 - 5.0 ppm

* Minor element ratios may vary considerably depending upon the fertilizer products chosen, and the concentrations applied.

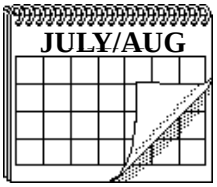
** Poinsettias tend to have a higher requirement for molybdenum than other potted plants. Use a complete feed intended for poinsettia production or provide a molybdenum supplement.

Table 4. A Sample Poinsettia Feed – 1000 Litres

Fertilizer Components	Grams Required	Elements Supplied (ppm)
Calcium Nitrate*	789	150 Ca, 122 N
Magnesium Sulphate	600	60 Mg, 78 S
Monopotassium Phosphate	174	40 P, 49 K
Potassium Nitrate	548	201 K, 71 N
Ammonium Nitrate	165	56 N
Iron Chelate (13.3%)	11.28	1.5 Fe
Manganese Chelate	5.83	0.7 Mn
Solubor	2.44	0.5 B
Zinc Chelate	0.70	0.1 Zn
Copper Sulphate	0.20	0.05 Cu
Sodium Molybdate	0.26	0.1 Mo

Total Nutrients	Total ppm
Nitrogen	250
Phosphorus	40
Potassium	250
Calcium	150
Magnesium	60
Sulphur	78
Iron	1.5
Manganese	0.7
Boron	0.5
Zinc	0.1
Copper	0.05
Molybdenum	0.1

* Do not mix calcium nitrate with magnesium sulphate or monopotassium phosphate in concentrated form since insoluble precipitates will result. If using a fertilizer concentrate diluter/injector, a separate concentrate tank and injector head is needed for calcium nitrate.



Weeks 31 – 35 July/August – Planting day to pinch *(Cont'd)*

Media temperature and disease control

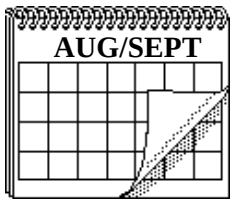
Poinsettias are susceptible to several root diseases such as *Pythium* and *Rhizoctonia.* A preventative fungicide drench a week after planting is often advised and should be done immediately if there is any sign of brown or dead roots on the cuttings. However, fungicides are no substitute for good management of water, nutrition, and temperature. Fast growing root systems are more resistant to infection, so it is important to maintain warm media temperatures (23°C) night and day for the first two weeks until a good root system has formed. Remember, media temperatures may be significantly cooler than the air due to evaporative cooling. Check the actual media temperature.

Pest control, start clean – stay clean

The time to tackle whitefly problems is at the start. Some sprays can cause injury to foliage and flowers, so it's best to get control of whiteflies long before the bracts start to develop. Fungus gnats should be controlled early to prevent larval damage to roots. Fungus gnat damage is thought to promote secondary infection by root rot pathogens such as *Pythium, Phytophthora,* and *Rhizoctonia.* Put up yellow sticky monitoring cards and check them twice a week for signs of insect build-up. Record your results. Consult the ***BCMAFF Floriculture Production Guide*** for prevention and control strategies.

Weeks 36 – 39 August/September – Pinching (Aug 31) to flower initiation (Sept 20 – 25)

Pinching



For a programmed pinch date, it is normal to have some variation in plant maturity. Generally, the plants are ready to be pinched when the roots have reached the edge of the pot. Some plants will require a hard pinch to achieve the desired number of breaks, while others may require only a soft pinch. Hard pinches (where several leaves and the growing point are removed), tend to produce rapid, even breaks. They have fewer problems with dominant shoots and a good spreading habit. One leaf (node) is left for each lateral shoot desired. Soft pinches (where only the growing point is removed) tend to be slower breaking due to the continued apical dominance effect of the immature leaves left after the pinch. Often, 2 to 4 large 'mother leaves' will develop from which dominant shoots will arise. This produces a plant with fewer blooms, and a more upright canopy. However, if some of the smallest, most immature leaves (2 to 3) are removed at the same time then the plant will tend to perform and develop like a hard pinched crop. This combination of hard pinches, and soft pinches with leaf removal will help produce a very uniform crop (see the inset: ***Pinching Poinsettias***). The new varieties tend to branch freely, so it's recommended that only the desired number of nodes are left, rather than leaving a few extra as insurance.

Temperatures

18°C night, 20°C day with adjustments for DIF or morning DIPs if using temperatures for height control. **Many of the newer varieties require higher temperatures for best performance.** Refer to Table 1 for variety-specific requirements.

Spacing

Plants do not require spacing until 3 to 4 weeks after pinching. This helps the emerging laterals to form a V shape. The higher humidity of close spacing will aid in bud break. Final spacing can be performed when the laterals are 2 to 3 cm long. High quality poinsettias require adequate spacing, with at least 1090 cm^2 per plant (33 cm x 33 cm) and preferably 1440 cm^2 (38 cm x 38 cm) for premium florist quality plants.

Shade and humidity

Shade and misting for the first few days after pinching is a good idea if the weather is hot, since the reduced stress will aid in fast bud breaking. In September light levels start to fall, so it's important that greenhouse roof shading compounds are removed by September 10th. As the season progresses and light levels decrease, it is important to maintain the proper humidity levels for active growth. Humidity levels should be kept to below 80% Rh and preferably below 75% Rh depending upon the accuracy of your environmental controls. Excessive humidities can result in a higher incidence of disease due to the inability of the plants to take up water and nutrients through transpiration. This leads to pots that stay soaked for too long after waterings and the possibility of oxygen starved root systems. Since elements such as calcium and boron are taken up directly in the water stream and deposited at the sites of active cell division and elongation, it is important not to cause any interruption in transpiration, particularly during bract expansion. For more information about humidity control, consult the factsheet '***Understanding Humidity Control In Greenhouses***' available from the BCMAFF.

Fertilizer

Salt levels should be monitored throughout the crop and kept between 1.8 to 2.5 EC in the root zone until November. Calcium nitrate and magnesium sulphate supplements may be required occasionally. They can be substituted for the regular feed every two to three weeks, but they cannot be mixed together in concentrated form. Use a final dilution of one gram per litre of $CaNO_3$ and one half gram per litre of epsom salts. Keep the mid-pot salt levels in sub-irrigated plants at the low end of the range. In general, dark leaved varieties require less nitrogen than do lighter leaved varieties.

Watering

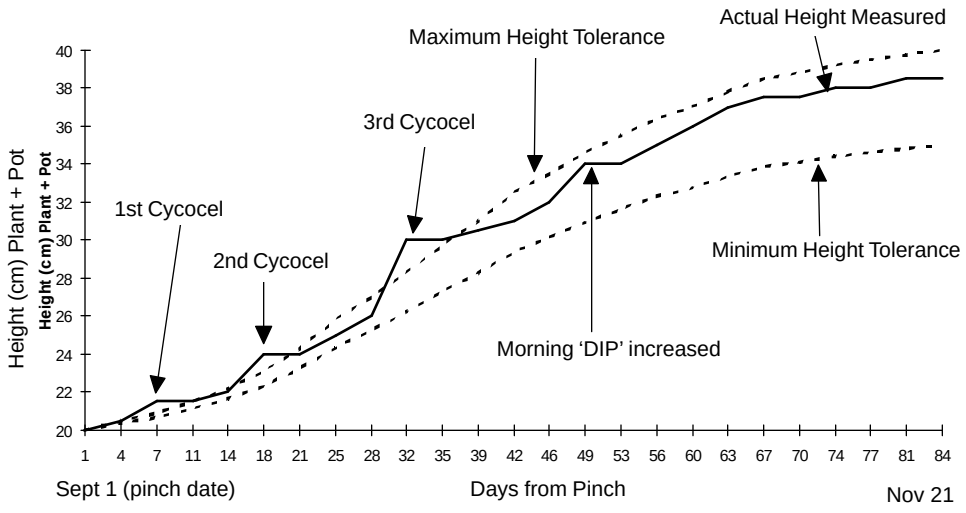
Poinsettias need to grow and develop under a wide range of greenhouse light conditions. Shortened days and progressively duller weather combine to make it a very easy crop to overwater. In general, poinsettias will perform better if allowed to dry between waterings. This will help to keep them compact, and encourage good rooting. However, the re-wetting ability of the growing medium must be taken into account, since some soils can be difficult to water evenly once the pots have dried beyond a certain point. Try, if possible, to 'water with the weather'. Avoid heavy waterings just prior to extended dull periods.

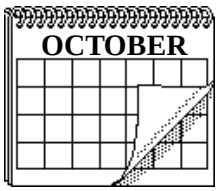
Height control, growth regulators, and DIF

Ideally, a good 15 cm poinsettia should reach a total height of 35 to 40 cm including the pot, with a spread of about 40 cm. Poinsettias tend to stretch and elongate more whenever day temperatures are higher than night. This is particularly true when day temperatures exceed night temperatures by more than 5°C. This effect varies between cultivars and some newer varieties require almost no height control management (see Table 1). Several methods are available for producing compact quality plants including temperature management and chemical growth regulators. Regardless of the method or combination of methods you choose, graphical tracking is the most effective way to ensure that your plants finish at the desired height (see Figure 1. ***Poinsettia Height Chart***). It allows you to see the effect of your treatments and take corrective action as soon as it is needed. Don't get caught having to apply growth regulators too late in the season. Materials

applied after October 15 may cause smaller, stunted bracts. Growth control with positive DIF (the DIFference between day and night temperatures with the night temperatures being equal to or higher) is very effective alone or in conjunction with chemicals. A morning 'DIP' of 2 to 3°C for two hours starting just before dawn has also proved as effective as all night positive DIF. Many growers now use a combination of chemical growth control early in the crop (1 to 4 sprays of Cycocel, one week apart, at 250 to 1000 ppm starting 10 days after pinching) when day temperatures are warmer, and morning DIPs in October. Since varieties tend to respond differently to various height control strategies it is best to use the method recommended by the propagator.

Figure 1. Poinsettia Height Chart





Weeks 40 – 44 October – Stem elongation, bract and flower development

Bract development

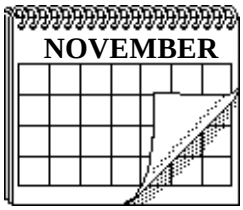
The average daily temperature during the first 4 weeks after the appearance of bract colour is critical to bract development. Day temperatures of at least 21 to 22°C are needed during this time for maximum bract expansion. Light is also important, so plants growing under the gutters and other shade influences will tend to have smaller, later developing bracts. Growth regulators can also reduce bract size when applied too late (October 1 preferred last date, October 15 latest. Use DIF or DIP to help control plant height during October.).

Growth regulation

The greatest potential for stretching occurs from October to early November. Use graphical tracking measurements twice weekly on representative plants to ensure your plants are on track. (See Figure 1. Poinsettia Height Chart.) (8 and 10 week graphical tracking charts are included for your use.)

Weeks 45 – 48 November – Final bract expansion and flowering (visible pollen)

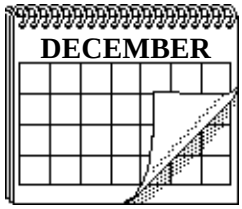
Preventing bract edge burn



This problem has troubled some growers for the last few years, and it is not entirely clear what the cause is. A combination of high salts and poor calcium uptake during the rapid bract expansion phase may be the reason, or at least part of the reason. Poor humidity management may also be a factor, since calcium is not mobile within the plant and must be provided constantly in the water flow. High humidities reduce the ability of plants to transpire, thereby restricting the amount of calcium that can be brought up in the water stream. Salt levels can be reduced during this time while maintaining high calcium levels by withholding all other fertilizers except for calcium nitrate. Weekly calcium chloride sprays at one gram per litre concentration have also been recommended to help ensure sufficient calcium in the leaves. Try to spray on dry days to avoid problems with *Botrytis.* Calcium chloride dihydrate ($CaCl_2 \cdot 2H_2O$) reagent grade is the recommended form because of its purity, however, it is expensive.

Fertilizer

Gradually reduce fertilizer rates after November 10th to about one third the original strength.



Weeks 49 – 51 December – Finishing and shipping

Fertilizing and watering

Properly timed and fertilized poinsettias will keep longer, and have fewer bract problems if the salts are gradually reduced during the finishing stages. Give two or three clear waterings prior to shipping to reduce salt levels and help prevent post harvest bract edge burn.

Temperatures

Poinsettia bracts do not increase in size much after the appearance of pollen, so at this time it is best to gradually lower the temperature to harden the plants and intensify the bract colour (maximum reduction of 1°C per day with good humidity control). Finished plants can be held at 16 to 17°C until shipping.

Maturity

Plants are ready to be shipped when the pollen is visible. Shipping plants before visible pollen results in arrested bract development and colouration. In such cases, the bracts of red varieties may remain pinkish while other varieties may never develop their full intensity.

Sleeving

Plants should be in the sleeves for as short a period as possible to reduce epinasty. Try not to sleeve plants on Friday afternoon for a Monday shipment.

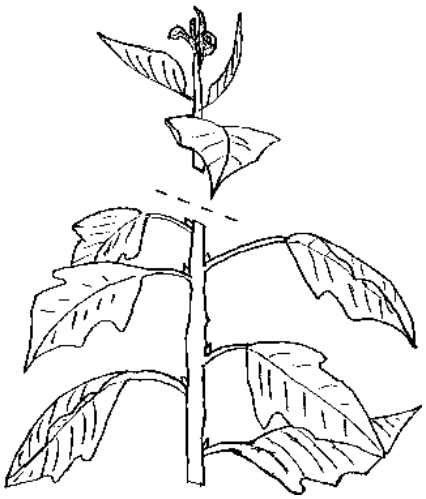
Shipping temperature

Poinsettias do not tolerate cold temperatures; the minimum transportation temperature is 13°C. Even short exposures to temperatures below 10°C will result in plant damage.

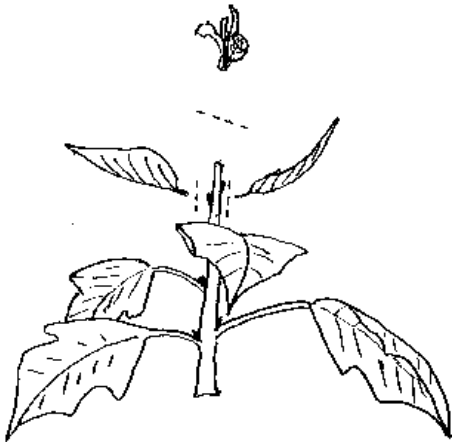
PINCHING POINSETTIAS

(a) Soft pinch

(b) Hard pinch



(c) Soft pinch with immature leaf removal



Many years ago it was discovered that branched poinsettias could be grown for the Christmas season by performing a pinch on rooted cuttings in early September. One leaf was left on the mother shoot for each lateral desired. The young poinsettia plant tends to grow unbranched for quite some time as long as the growing point remains intact and healthy. This is due to a process called apical dominance. The growing point and the youngest leaves send hormonal signals to the nodes in the lower leaf axils, effectively telling them to stay dormant. When a hard pinch **(b)** is performed (removal of growing point and the youngest leaves) apical dominance is broken and each node is free to begin growing.

Ideally, poinsettias should be planted early enough for good root and single stem shoot development to ensure that a hard pinch is necessary for the entire crop. When the plants are hard pinched usually 3 cm or more of the growing point is removed. But this is not always possible. For a variety of reasons, some of the plants may not have developed enough by your program pinch date, and a soft pinch must be performed, removing only the growing point.

Soft pinches **(a)** can be troublesome since apical dominance may be only partially overcome and the young immature leaves and shoot tissues at the top of the mother stem will continue to suppress the nodes in the lower leaves. Therefore, soft pinched plants often tend to produce only 2 to 4 strong laterals instead of the 5 to 7 laterals desired for a 30 cm poinsettia. Furthermore, these laterals tend to be more upright in habit and will usually finish a few inches taller than hard pinched plants.

One method of overcoming the partial dominance in soft pinched poinsettias is to remove a few of the immature leaves at the top of the mother stem at the same time **(c)**. This will ensure faster, more even breaking of all the laterals, and a shorter, spreading habit. This method requires more labour than a standard soft pinch, but the finished plants should be indistinguishable from the hard pinched ones.

Precocious shoots can be another problem at pinching time. They occur when one or two lateral branches begin to grow before pinching. This may be due to the poinsettia variety, the condition of the cutting, or any stress or damage to the growing point that results in the temporary suppression of apical dominance.

If precocious shoots are not removed at the time of pinching, they will become the dominant shoots, effectively suppressing the growth of the other laterals. If there are only one or two precocious shoots they should be removed with the pinch (don't include these in your leaf count for laterals). If there are 3 or more shoots growing away before the pinch it is probably best to leave them. Segregate these plants into a separate area and use extra or earlier growth regulator treatments to try to keep them under control.

The new varieties tend to branch freely, so it's important to leave only the desired amount of nodes.

TOP 10 RECIPES FOR DISASTER WITH POINSETTIAS

❶ Buy the cheapest rooted cuttings you can find and have them shipped from as far away as possible.

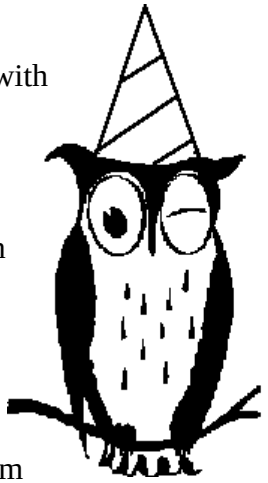
❷ Don't baby your cuttings – let them sit unopened for the weekend. It's August and you deserve a holiday.

❸ Plant your cuttings in a poorly drained, heavy mix and start overwatering right away. Don't fertilize until they turn yellow.

❹ No need for heat at night, nobody heats in August, and besides, the boiler's in pieces anyway.

❺ Place your new crop in the hot sun immediately. This will reduce the number of breaks and help to burn out the growing point (less pinching that way!).

❻ Final spacing – provide for about a finger width between 10 cm pots, 2 fingers for 15 cm.



❼ Ignore whiteflies until shipping time. Then blast them with something strong enough to knock the flowers off and spoil the bracts.

❽ Wait until the plants are waist high before applying growth regulators. Then hit them once at triple strength to get an even edge burn on the leaves and nice, tiny bracts.

❾ Never vent for humidity. Poinsettias like to grow in a cold sweat. *Botrytis* does too.

❿ Wait for the coldest day in December, and then ship them in an unheated truck.