



NC STATE UNIVERSITY

CUT POINSETTIA: A NEW SPECIALTY CUT FLOWER WITH GREAT POTENTIAL

**By Geoffrey Njue, Paul Fisher, University of New Hampshire Cooperative Extension
and John Dole, North Carolina State University**

Renaissance Red cut flower brings a new look to poinsettias.

More than 30 years since poinsettias were widely used as cut flowers, the Renaissance series has opened new opportunities for high-quality, long-lived poinsettia cut flowers. This exciting cultivar provides a new look to poinsettias with 'Winter Rose'-style curled bracts, long stem length (18-30 inches), and excellent vase life.

The Renaissance series cut flower poinsettia (Figure 1) will contribute significantly to the specialty cut flower industry and provide North American cut flower growers with an alternative, profitable fall crop. The most important cultivar in this series is the Renaissance Red, formerly known as 'Winter Rose Crimson'. 'Renaissance Red' was bred by Paul Ecke Ranch and is being marketed by the Fred C. Gloeckner Company.

We set up trials on 'Renaissance Red' at the University of New Hampshire (UNH) and North Carolina State University (NCSU) over two years, along with several commercial growers and florists in NH and NC. Tips for production, post-harvest, marketing, and profitability are presented in this article to help you maximize success.



Figure 1. Renaissance Red poinsettia. Photo NCSU.

1. Production Tips

A production schedule is presented in Table 1 for producing 22-inch stems on pinched plants. Here are some additional hints:

- 8-inch azalea pots are ideal for production of this crop, with two plants per pot, because of the stability (weight) of the pot and the ability to re-space (in contrast to beds) as plants grow. Growing plants pot-to-pot until new leaves overlap on adjacent pots encourages stem elongation and straight stems, reduces stem breakage, and maximizes space use. Some growers have successfully grown cut poinsettias directly in ground beds. The method you choose will depend on space available.

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- Pinch initially to 4 nodes and then thin to the best 2 or 3 stems per plant – more than 2 saleable stems and may have reduced stem length and flower size if you do not thin. Unpinched plants elongate 9 to 12 in (23 to 30-cm) longer for the same planting date as a pinched crop, but produce half the number of stems per square foot and cutting cost per stem is higher (Figure 2).

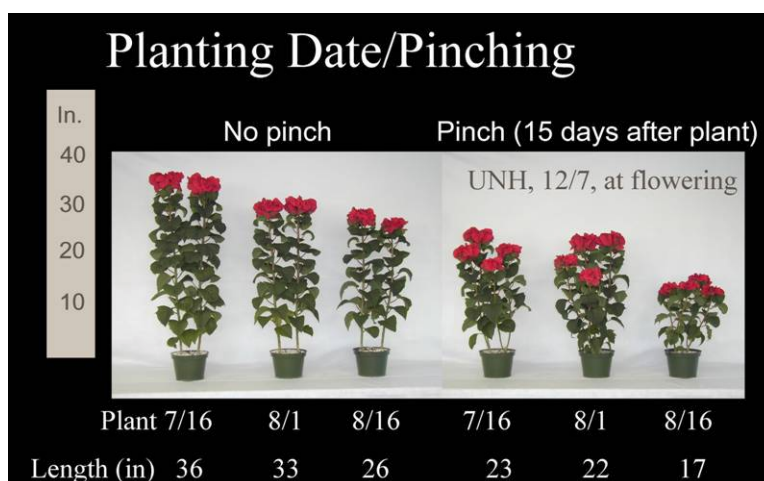


Figure 2. Effect of pinching and time of planting on stem length. Photo UNH.

- Use a typical poinsettia soilless growing medium (well-aerated, with a starting fertilizer charge). Make sure that the oasis or other transplant media is completely covered by media so that moisture does not evaporate from the soil surface, drying out and stressing the cutting.
- Renaissance Red, like other Winter Rose cultivars, has greater leaf expansion and more vigorous growth if not over-fertilized. Monitor pH and EC each week, and maintain pH in the range 5.6-6.4 and EC in the optimum range for your testing method (0.4-1.2 for 2:1, and 1.2-2.5 for saturated medium extract methods). Start with a balanced fertilizer program that includes all major and micronutrients including calcium and magnesium (for example, alternate 20-10-20 with 15-5-15 or 13-2-13) at a moderate rate (e.g. 150 ppm N) because initial growth is slow while roots are established and sideshoots elongate. Adjust fertilizer concentration based on EC (reduce ppm N by 50 ppm if EC is high, increase ppm N by 50 ppm if EC is low), and select fertilizer ammonium level based on media-pH (more ammonium if pH is high, e.g. 20-10-20; moderate if pH is on target (e.g. alternate 20-10-20 and 13-2-13, or use 17-5-17; less ammonium if pH is low, e.g. 15-5-15 or 13-2-13). If your water alkalinity is above 150 ppm CaCO₃, consider acidification to avoid a rise in media-pH over time (see www.ces.ncsu.edu/depts/hort/floriculture/software/alk.html for details).



Figure 3. Effect of ProGibb (Gibberellin GA3) on stem elongation. From right to left: Control (water), or ProGibb at 10, 25, and 50 ppm. ProGibb increased final stem length by 8 to 10 inches (20-25 cm). A delay in flowering by several days was seen on the higher two rates of ProGibb at NCSU. Photo UNH.

- Poinsettia is a short day crop that flowers under >12h of darkness per day. Short days naturally occur around Sept. 25 (Week 39), but can be delayed with night-interruption lighting (10 p.m. to 2 a.m. using incandescents, fluorescents, or high-pressure sodium) or occur earlier if you pull black cloth from approx. 5 p.m. until 8 a.m.
- Crop time is approximately 20 weeks for a pinched crop that will produce 20 to 22-inch stems. This includes 10 weeks from planting to start of short days, and 10 weeks response time from the start of short days until flower.
- Unpinched plants flowered several days earlier (Nov. 26-Dec.1) than pinched plants (Dec. 3-7) under natural days.

- The schedule in Table 1 is conservatively based on 20 to 22-inch stems. If you apply ProGibb and have a healthy crop you should achieve longer stems with that schedule.
- As a rough guide (averaged over three trials), final stem length increases by 2-inches for every extra week from planting to short days. For example, if you want 24-inch stems, plant 11 weeks before start of short days (10 weeks for a 22-inch stem as shown in Table 1 + 1 week (for an extra 2-inches)). If short days begin on Sept. 25 (Week 39), then planting 11 weeks earlier would be July 10 (Week 28).
 - Trial foliar sprays of ProGibb (gibberellin GA₃) at 10 ppm (0.3 oz/10 gal, or 0.25 mL/Liter of ProGibb 4%) each week beginning when the sideshoots are 1-inch long until the week before start of short days. ProGibb can delay flowering by up to 1 week if 25-50 ppm is used, but in our trials we did not see a delay at 10 ppm and increased stem length by 8-in (20-cm) compared with a water control (Figure 3). In our trials, Fascination (GA₄₊₇ plus BA) at 10-50 ppm gibberellin caused unacceptable leaf distortion and less elongation than ProGibb.
- For sales before Dec. 5, black cloth is advised. Consider not using ProGibb for early crops to avoid any possibility of flower delay.
- Run positive DIF temperatures (day temperature approx. 5°C (9°F) warmer than night temperature) throughout production to promote elongation. Avoid night temperatures above 72°F (22°C) after start of short days (to avoid delay in flowering). Temperatures below 50°F (10°C) at any time may cause chilling injury. 70-80°F (21-27°C) day and 60-65°F (16-18°C) night are fine throughout production.
- Avoid growth retardant sprays applied to potted poinsettia crops!
- We recommend harvesting stems when one or two cyathia per stem have anthers visible (anthesis) because cyathia and anthers are attractive features of the flower.
- There was no decrease in vase life when cut stems were harvested up to 4 weeks after anthesis, but delaying harvest up to four weeks resulted in cyathia drop on the plant (Figure 4). Since the presence of cyathia enhances the aesthetic features of inflorescence it would be preferable to harvest the stems near the anthesis date.
- After harvesting stems, immediately recut stems under water with sharp, sterile clippers and place in buckets.



Figure 4. Flowers showing intact cyathia (A) or abscised cyathia (B). Cyathia abscission (flower drop) can be avoided by maximizing light transmission into the greenhouse, and harvesting when the yellow anthers first appear on flowers.

2. Post-harvest Tips

Extensive post-harvest trials at NCSU, with follow up trials at UNH showed that:

- Post harvest life was excellent in deionized water with vase life averaging three weeks.
- Pretreatments such as alcohol dips, heated floral solution or sucrose pulses have no positive effect on vase life so long as stems are recut under water after removing from the plant. We therefore do not recommend dip or pulse treatments.
- Lack of water uptake and wilting is the most common cause of flower death (Figure 5).
- As with many cut flower species, cut poinsettia lasts longer in water than in floral foam.
- Deionized water plus bactericide and re-cutting stems every 3 days, increased vase life and delayed leaf abscission.
- Commercial floral preservatives such as Floralife or Chrysal had no effect on vase life but they delayed leaf abscission. These chemicals can therefore be used in mixed vase arrangements with no detrimental effect on cut poinsettia.
- Long-term storage temperature for cut poinsettia should not be below 50°F (10°C) or chilling injury can occur. Storage longer than one day should be at 50 to 65°F, but preliminary research indicates that temperatures down to 40°F may be fine for 24 hours.
- For long term storage, cut stems must be stored wet. Cut stems can be stored either wet or dry for 24 hours or less.



Figure 5. Flower death in the vase is usually caused by wilting and lack of water uptake. Cutting stems under water, adding a bactericide, recutting stems every 3 days, and avoiding warm temperatures (> 70°F (21°C)) maximizes vase life.

3. Marketing Tips

We worked with several companies to evaluate markets.

Cut stems were delivered to four retail florists in NH who sold and tracked their retail sales. Three wholesale poinsettia growers in NH grew and marketed the flowers through brokers. In NC cut stems were sold wholesale to two upscale supermarkets and one florist. In summary, the market feedback was:

- This specialty cut flower market differs from regular potted poinsettia that are sold through mass merchandisers and retail nurseries. Markets for Renaissance Red include cut flower brokers, upscale supermarkets, and florists. Line up sales early in the season and provide photos of final product. This is a niche crop rather than a high-volume crop.
- Best for local sales – bruises easily, needs to be stored in buckets once cut, and is bulky. Find out whether your customer wants product shipped already cut or in pots.
- Likely to be best suited to small retail greenhouses with attached florist operations, or larger greenhouses already producing specialty cut flower products.
- In retail, sell in vase arrangements – there is less customer interest in individual stems. More interest if customer can see the product before purchase and if promoted as a new and special item.
- Charge at least \$2.20 per stem wholesale, and \$3-5/stem retail (Table 2).
- Because of the red color, this product is specific to the Nov.-Dec. holiday period. For earlier sales, black cloth needs to be used in production to provide early flower initiation (10 weeks from start of short days to harvest). Other colors, which are being developed, may expand the marketing period but that would require artificial day length control during production.

- **Promotion is needed to establish the market for cut poinsettias and education is needed to help customers use the product.** Because cut poinsettias are new, the more education you can provide to your wholesale customers (including this article), and for them to pass on to retail customers, the better.

4. Evaluation of profitability (Table 3)

With any crop budget, each assumption can vary. Fixed costs are particularly variable between greenhouse firms. Table 3 shows one set of assumptions that you can adapt for your own location.

- Pinching increases profitability unless you have a special market for very long unpinched stems. If you pinch each plants to produce 2 stems/plant, and use a final spacing of 12-in. on center, that gives four stems per square foot. If you produce stems for \$2.20 wholesale, that provides \$8.80 per square foot. For a \$3 retail price (as in Table 3) the return would be \$12/square foot. That compares favorably against potted poinsettia.
- The budget shows that a minimum sales price of around \$3.83/pot would be required to cover direct costs, and \$8.69 to cover a reasonable estimate of direct and fixed costs and losses. Therefore, the break even price per stem would be around \$2.17. Production costs would be very similar for cut or potted poinsettia, especially given that growth retardants are often applied to potted plants, and have a comparable cost to ProGibb applications.
- ProGibb at 10 ppm would be a highly cost-effective technology. Material cost for ProGibb was approximately \$0.064/1000 stems for five weekly applications. Unsprayed plants elongated at approximately 2-inches (5-cm) for every week of vegetative growth, and five sprays of ProGibb at 10 ppm resulted in an additional 8-in (20-cm) of stem length. Therefore, applying the growth hormone corresponded to approximately 3-4 weeks of elongation with a resulting decrease in necessary production time and associated fixed costs.

Geoffrey Njue is Extension Educator with University of New Hampshire Cooperative Extension. Paul Fisher is Associate Professor and Extension Specialist for Floriculture, University of New Hampshire. John Dole is Associate Professor of Floriculture, North Carolina State University.

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Table 1. Production schedule for pinched ‘Renaissance Red’ poinsettias in order to produce 22-inch (56-cm) stems.

Crop Action	Production Week or Stage	Weeks to flower
Plant 2 rooted cuttings per 8-in diameter (20-cm) pot. Place pot-to-pot. Initial fertilizer level 150 ppm N with a complete water-soluble fertilizer. Begin weekly nutrient and pest monitoring, including media-pH, media-electroconductivity (EC), root and leaf inspections, and sticky card counts. Run positive DIF temperatures.	Week 29. If using ProGibb, it may be possible to plant and pinch 3 weeks later than dates recommended here.	20
Pinch to four nodes per plant. Modify nutrient levels and fertilizer type based on pH and EC measurements.	Week 31, or when the roots are to edge of pot.	18
Thin to two shoots per plant. Begin monthly tissue nutrient analysis.	Week 34, or when shoots are large enough to thin without damaging plant.	15
Begin weekly ProGibb sprays	Week 34, or when leaves are at least 1 inch long.	15
Re-space pots to 12 x 12 in (30 x 30 cm).	Week 35, or when leaves on adjacent pots start to overlap and sideshoots have elongated to 10-cm (4-in).	14
Start short days (natural short days begin around 25 Sept.) and end ProGibb sprays. If using imidacloprid for whitefly control, apply to growing medium at this stage and avoid leaching for following week.	Week 39	10
Flowering, ready to harvest stems. After removing stems from the plant, re-cut the base under water and place immediately in a bucket of water.	Week 49-50	0

Table 2. Sales prices per stem obtained from a marketing evaluation of Renaissance Red poinsettia by 4 florists and 3 wholesale growers (NH wholesale) in NH, 1 florist and two upscale supermarkets (NC wholesale) in NC.

Stem length	NH Florists Retail	NH Wholesale	NC Florists Retail	NC Wholesale
14 - 16 in. (35 – 40 cm)	\$3 - \$5	\$2-\$2.50 for all stem lengths	\$2	\$1.00
16-23 in. (41 – 57 cm)	\$3.50-\$5.50		\$3.00	\$1.50
23-31 in. (58 – 78 cm)	\$4.00-\$8.50		\$3.00	\$1.50
31 - 39 in. (79 – 100 cm)	\$5.50-\$8.50		\$3.00	\$2.50

Table 3. Example cost accounting budget for cut flower poinsettia

	Per pot	Per stem	Notes
1. Sales price	\$12.00	\$3.00	Based on retail florist price, Table 2
Direct costs			
Plant	\$1.60		2 rooted cuttings @ \$0.80
Container	\$0.49		8-inch azalea pot \$48.60/100 pots
Growing medium	\$0.51		\$9.75/3 cubic foot bag, 5.26 bags/100 pots
Fertilizer and Chemicals	\$0.03		Based on research based on research on 6-in poinsettia by Dr. Robin Brumfield at Rutgers Univ. 0.12 h/season, based on research on 6-in poinsettia by Dr. Wilkerson and others at Texas A&M Univ., and \$10/h
Labor	\$1.20		
2. Total direct costs	\$3.83	\$0.96	Sum of direct costs
Space and time			
Square feet per plant (spacing 1)	0.44		8 x 8 inch initial spacing (pot to pot)
Square feet per plant (spacing 2)	1.00		12 x 12 inch final spacing
Weeks of production (spacing 1)	6		20 wks is based on 70 d response time + 51 d of vegetative growth for 22-inch stem length + 15 d for root establishment = 136 d
Weeks of production	14		
3. Square foot weeks per container	16.67		ft ² per plant * weeks of production for both spacings (1 and 2) combined
4. Total fixed (overhead costs)	\$4.45	\$1.11	Subtotal 3 x \$0.267 fixed cost/ft ² /week. Fixed cost/ft ² /wk based on research by Rutgers Univ.
5. Total direct plus fixed costs	\$8.28	\$2.07	Subtotal 2 + subtotal 3
Loss %	5%		
6. Cost of losses	\$0.41	\$0.10	Subtotal 5 * loss %
7. Profit (Loss)	\$3.31	\$0.83	Subtotal 1 - (subtotal 5 + subtotal 6)
8. Profit (Loss)/ft²/week	\$0.24		Subtotal 7/ subtotal 3
9. Break even price	\$8.69	\$2.17	Subtotal 5+subtotal 6