

Energy Efficient
Poinsettia Production



syngenta *flowers*

Why Grow Poinsettias at Cooler Temperatures?

- 🌀 Energy savings (= cost savings)
- 🌀 Less chemical plant growth regulator (PGRs) used
- 🌀 Red, pink and marble bract colors are intensified (white bracts become creamier)
- 🌀 Plants are more durable and withstand sleeving/handling better
- 🌀 Lower insect pressure (slower whitefly, thrips, mite development)
- 🌀 Enables popular early varieties, like Early Orion™ Red and Orion™ Red, to be sold mid-season via natural delay
- 🌀 Growing cooler is a sustainable approach to producing poinsettias

Syngenta Flowers Research Study

- 🌀 Trial was conducted to determine which Syngenta Flowers poinsettias were best suited for cold growing and energy-efficient production.
- 🌀 Data was collected on bract development, flower timing, plant appearance, height development and post-harvest quality.
- 🌀 Three different temperature regimes were tested with plants introduced to cool growing conditions (62°F/17°C ADT and 65°F/18°C ADT) over several different dates. Results were compared with plants grown at a constant 70°F/21°C ADT. Day and night temperatures varied within each temperature regime, but average daily temperature remained consistent for each respective regime.

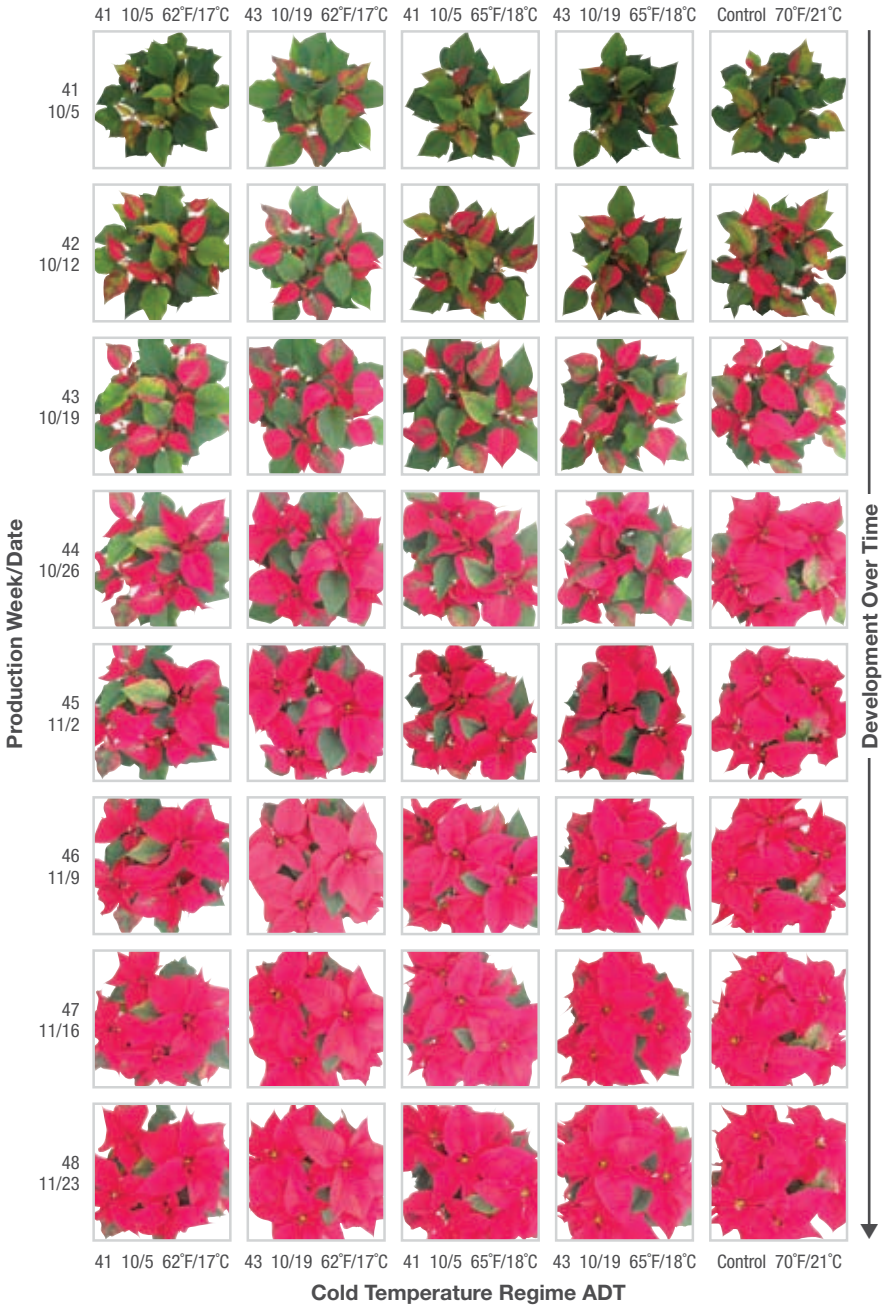
Based on our study results, we offer the following recommendations for successfully producing six Syngenta Flowers poinsettia varieties under cold growing conditions.* We describe development in detail for two model varieties, Mira™ White (compact) and Early Orion Red (vigorous) for two different dates of cold initiation. Find additional results for these and other recommended varieties (Orion Red, Cortez™ Red, Mira™ Red and Carousel™ Dark Red) in the poinsettia culture detail on our website, www.syngentaflowersinc.com.

**Results may vary depending on different climates and greenhouse conditions.*

Bract Development & Flower Timing

Early Orion Red Plant Date 8/1/08

Week, Date and ADT Moved into Cold Treatment



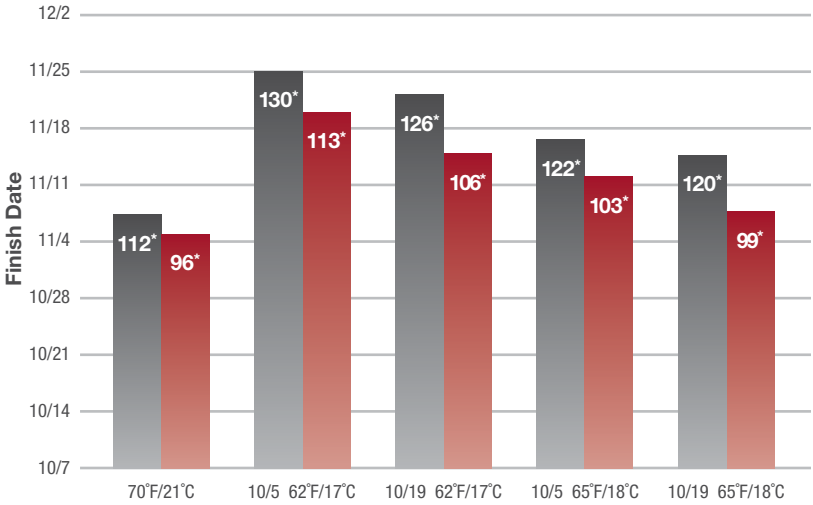
Days To Finish (Salable Stage)

Early Orion Red Plant Date 8/1

Mira White Plant Date 7/18

Mira White

Early Orion Red



Average Daily Temperature and Date Introduced to Cool Growing Conditions

**Number indicates actual days to finish from plant date.*

Cold treated plants show delay in bract development, so the introduction date should be considered.

Plants introduced to 62°F/17°C ADT on either 10/5 or 10/19 show the most reduction in bract size and the longest finish time. Plants introduced to 65°F/18°C ADT on either 10/5 or 10/19 were significantly less affected than those at 62°F/17°C. Depending on the variety, plants introduced to 65°F/18°C ADT were generally three to 10 days later in finish than the warm control (70°F/21°C ADT).

Recommendations: *The later that plants are introduced to cold growing conditions, the larger the finished bract size and less delay in finish. Finish quality and bract size is improved the later the plants go into cool growing conditions. The trade off for improved finish quality is additional fuel consumption. Our experience shows that Early Orion Red and Orion Red are two excellent red choices for cool finish (either 62°F/17°C ADT or 65°F/18°C ADT) beginning mid-October. Cool finishing also allows Early Orion Red and Orion Red to be used as mid-season reds with improved plant strength and bract color.*

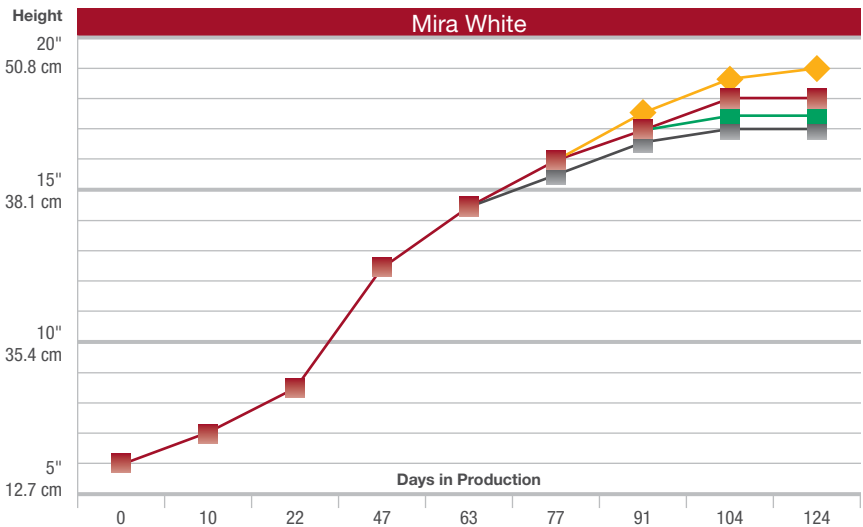
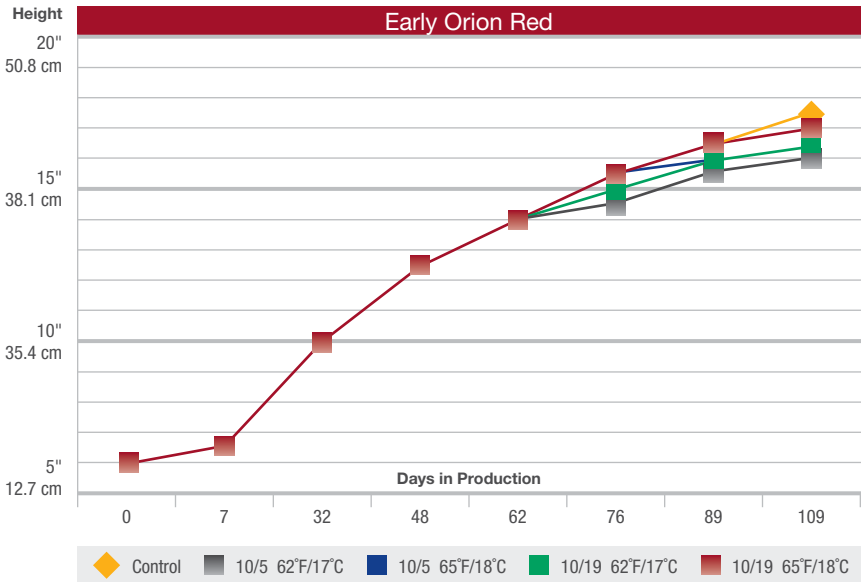
Plant Appearance

Overall finished look of the plants grown at different temperatures and introduced to cold treatments over the growing season is depicted below.



Recommendations: *Introducing plants to cold treatments later will result in a more predictable crop. Plants will have slightly larger bracts and moderately taller finish size. Plants can be grown in 62°F/17°C ADT or 65°F/18°C ADT beginning mid-October (10/19) and have very good finish quality while saving on fuel consumption. All plants grown under cooler temperatures will have more intense red bract color (white bracts become creamier), especially those at 62°F/17°C ADT. Plants grown under cooler temperatures also have thicker branches and tighter plant habits.*

Height Monitoring



Recommendation: Height curves are based on our trial. Growers should use this information as an estimate to predict finish height. Generally, the longer the plants are exposed to cold growing conditions, the shorter the finished plant height. Growers should be proactive and go into the cold growing regime with adequately sized plants.

Post-Harvest Results

Plants were evaluated for overall appearance, cyathia drop, leaf yellowing and bract edge burn. The best post-harvest quality across varieties was at 70°F/21°C ADT. The top cold treatments overall quality across varieties and rating criteria were both 65°F/18°C ADT treatments (introduction to cold on 10/5 and 10/19). Plants grown at 62°F/17°C ADT beginning 10/5 had the lowest quality scores across varieties and rating criteria. Further studies are being conducted to evaluate cold-grown plants for post-harvest quality.

Recommendation: *Grow plants at 65°F/18°C ADT beginning either 10/5 or 10/19 for best post-harvest quality and increased energy efficiency.*

Overall Considerations

- ☞ Cold-grown plants require less frequent irrigation and will stay wetter longer. Be sure to regularly inspect roots.
- ☞ When applying preventative fungicide drenches, plan appropriately around your less-frequent irrigation cycles.
- ☞ Cold-grown plants are shorter, so they should go into the cold environment at or slightly above your height tracking curves. If possible, use medium to vigorous varieties and/or start plants earlier to reach your final height specs.
- ☞ Do not overdo PGR applications before going into the cold environment. Early Florel or Cycocel might be all that is necessary for most varieties.
- ☞ Be conservative in planning your market dates—know that cold-grown plants can be significantly delayed. We have found that growing at ADT 62°F/17°C beginning the first week in October can delay flowering and market dates 14 to 20 days over typical warm growing conditions (ADT 70°F/21°C).
- ☞ Growers with later market dates (e.g., late November to mid-December) using moderately cold temperatures (ADT 65°F/18°C beginning mid-October) will also have success with Novia™ Red, Sonora™ Red, Cinnamon Star™ and Da Vinci™.
- ☞ Varieties that should not be grown cold because they produce either too small of bracts or are otherwise not suitable for cold growing are: Mars™ varieties, Olympus™ Red, Red or Pink Elf™, Whitestar™, Maren™ and Cortez™ Burgundy.
- ☞ Cold grown plants have improved plant strength and controlled vigor.



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