

Timing Carnations in Colorado With Lights (Revised Nov. 23, 1973)

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The use of lights to improve the timing of carnations has become a commercially accepted procedure by many Colorado carnation producers. Shoots with at least 4-6 pairs of leaves will initiate buds sooner if subjected to low intensity lighting (2-10 ft. candles adequate) high in red-far red wave lengths. Flowering is hastened by as much as four to six weeks depending on the size of shoot lighted. For this reason, it is essential that growing conditions following bud initiation be conducive to good growth. Fortunately for Colorado growers, good winter light conditions and cool temperatures allowing long hours of carbon dioxide injection, make it possible to obtain adequate stems when lighting for holiday timing.

Dusk-to-dawn lighting of older plants for three weeks followed by 3 weeks lights off sets up a 6 week cycle similar to that accomplished by pinching roses for holiday timing. Also similar to roses, it is wise to set up for this cycling by producing a fall crop. This will reduce the crop load for Christmas and should even out the crop load for the following holidays, thus producing stronger stems. Lights can be turned on for 2 or 3 weeks dusk-to-dawn in July to move flowers normally produced in late October and November into September and early October. Early July lighting produces an early September crop while late July lighting crops into October. As a side benefit, blind cuts made in Sept.-Oct. may produce shoots that will flower by Mother's Day while November cuts will not.

Two weeks of light dusk-to-dawn is adequate to produce a good peak if there are numerous good-sized breaks available at the time of lighting. Growers must learn to observe their plants and predict results.

This paper will attempt to lead you through the steps that should result in good holiday timing with good quality. Timing for planting or lighting will not be the same for all growers or for different locations within a greenhouse. Each grower should record the daily production on representative benches and plot a weekly production graph in order to develop his own dates for planting and lighting. Refinements in timing include allowances for location in the greenhouse relative to light and temperature conditions. The time from bud initiation to flowering will be delayed under poor sunlight conditions and lower growing temperatures.

New Crop Planting and Lighting

The determination of a planting schedule should be based upon the needs of the market, the condition of plants being carried over, and your judgement of which schedules will be the most profitable. I don't believe in replanting before the Mother's Day crop is off unless there has been severe plant loss because earlier plantings crop in the summer when the production is not wanted. All lighting recommendations are based on single pinching.

It is usually better to space out the replanting job in order to spread the labor requirement. We use the schedules at the bottom of the page (Ground Beds).

Lighting For First Crop

To reduce inhibition of laterals, wait until small laterals may be seen in the axils of the leaves prior to 3 weeks dusk-to-dawn lighting. (Waiting too long until the breaks have 4-6 pairs of leaves will allow them to initiate and develop under the shade of the 1st crop and result in poor quality due to overload.) Lighting as soon as laterals are visible results in elongation of the stem above the laterals allowing cutting of longer stems and leaving more of the breaks. The crop flushes off faster due to initiation of buds in the smaller shoots sooner than usual. These normally don't have breaks whether lighted or not and will be cut blind.

Lighting For Second Crop

Breaks left when cutting the 1st crop may be lighted about the time the crop is half cut off. The date used should be similar to the date used on carry-over plants for the holiday the 2nd crop is to hit. If the shoots are large, 5-10 day delay in lighting may result in better timing.

Some allowance should be made for location in the greenhouse relative to pads and fans when the crop is subjected to variable temperatures. For crops flowering from December to Easter this may be overlooked since temperatures are usually similar throughout the houses due to overhead ventilation or the use of tubes.

Plant	1st crop	2nd	3rd crop
May 15-31	Late Sept.-Oct.	Jan. 15-Feb. 15 (From 1st crop breaks)	April 15-May 15 (From 1st crop blind cuts)
June 1-20	November	March-April	May-June*
June 25-July 5	December	April 15-May 15	June-July*

*Breaks left when cutting 2nd crop. Better to cut 2nd crop blind and delay return crop to late summer and fall.

Lighting For Third Crop

Shoots developing from blind cuts made on the first crop flowering in September-October may be lighted for Mother's Day using regular carry-over lighting dates.

Plantings flowering the first crop for November and December are better cut to breaks (although this may reduce the number of Fancy grade stems) since blind cuts return after Mother's Day. Second crops flowering after January should be cut blind to delay the return crop into late summer and fall.

It will usually pay to light all young plants for Mother's Day; then turn off for 3 weeks followed by one more 3 weeks lighting for late May-early June. This will reduce late June-early July production.

Reducing Summer Production on Plants Being Carried the Second Year

By mid-April, shoots responding to the late May-early June lighting are showing buds. Smaller shoots not showing buds that would flower in July may then be pinched to delay them into fall. This could be repeated again in early May.

It might also be worthwhile to try the old haircut using a hedge trimmer. Remember to have the soil moisture in a mellow condition at the time of cutting back. Maintain this condition while the plants are breaking back. Shoots developing from the cutback could then be lighted to crop back in the fall and winter over a prolonged period. This might reduce the overcropping problem we used to see with the haircut. This needs some research.

Lighting Carry-Over Carnations

I prefer to set up the lighting cycle by starting in July with the first lighting for September-October. After that, my original recommendations have not changed much.

Lights on	Crop
Early July	September
Late July	October
September 1-20	Christmas
October 13-November 2	Valentine's Day
December 10-24 (1973)*	Easter
January 10-30*	Mother's Day
February 21-March 13	Late May-Early June

**Easter and Mother's Day dates must be adjusted according to the dates they fall on. CSU Red should be lighted one week earlier. Fast varieties such as Gigi or Coquette can be lighted a little later.*

The final decision on replanting should be made before the late May-early June lighting. Plants going out before June 1st should not receive this lighting. However, this lighting is useful for plants going out after June 10th for the Christmas planting.

Other Considerations

Group varieties together, particularly red, so that red is not lighted for Easter. New crop red should go in the October-Valentine's Day, or Christmas-Mother's Day schedule. Avoid planting red in the June 1-20 period that may hit a heavy 2nd crop for Easter.

Keep records of lighting periods and graph production to determine results. Observe plants prior to each lighting to determine the number of shoots that will respond and their size. When there is a heavy load or they are large, reduce the length of the lighting period to a minimum of 10 days.

Original equipment recommendations appear to be satisfactory. Low intensity lighting with a minimum of 2-5 foot candles will reduce the elongation or weak stem problem and will have less of an inhibiting effect upon laterals.

Remember, lighting will not cure other problems!

Your Editor,

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