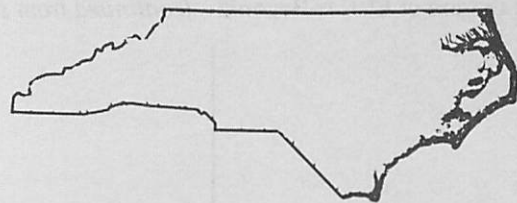


North Carolina

# Flower



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## THE CULTURE OF ELATIOR-BEGONIA

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Elatior-Begonia (Reiger-Begonia) is not a big crop at the moment in North Carolina, but there are great possibilities both for growing and selling this crop, especially during the winter season.

### Growth and development

Begonia x hiemalis (Elatior-begonia) is a cross between Begonia socotrana and Begonia x tuberhybrida. Elatior-begonia is a facultative short day plant, which means that the plant will flower earlier under short days (SD) than under long days (LD). How great this difference will be depends upon the temperature. At low temperatures (60°F), the number of days to flower will be more or less independent of daylength, while at high temperatures (70-80°F), plants will flower a lot earlier and better with SD than with LD. The plants will not flower at all under LD conditions if the temperature is too high.

The critical daylength is 12.5 hours. If the plants have a longer day than 12.5 hours, they will be vegetative if the temperature is above 70°F. If the temperature gets down to 60°F the plants will be partly induced to flower, even under long days. For commercial purposes the daylength should be extended to 18-20 hours, using artificial light, e.g. fluorescent tubes, 100 lux, from 12 p.m. to 6 a.m. to keep plants vegetative. The optimal temperature for growth will be from 62° to 70°F, depending on the cultivars. The night temperature should be reduced a few degrees if the day temperature is higher than 70°F (Figure 1).

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<sup>2</sup>Patterson's Flowers, Shelby, NC

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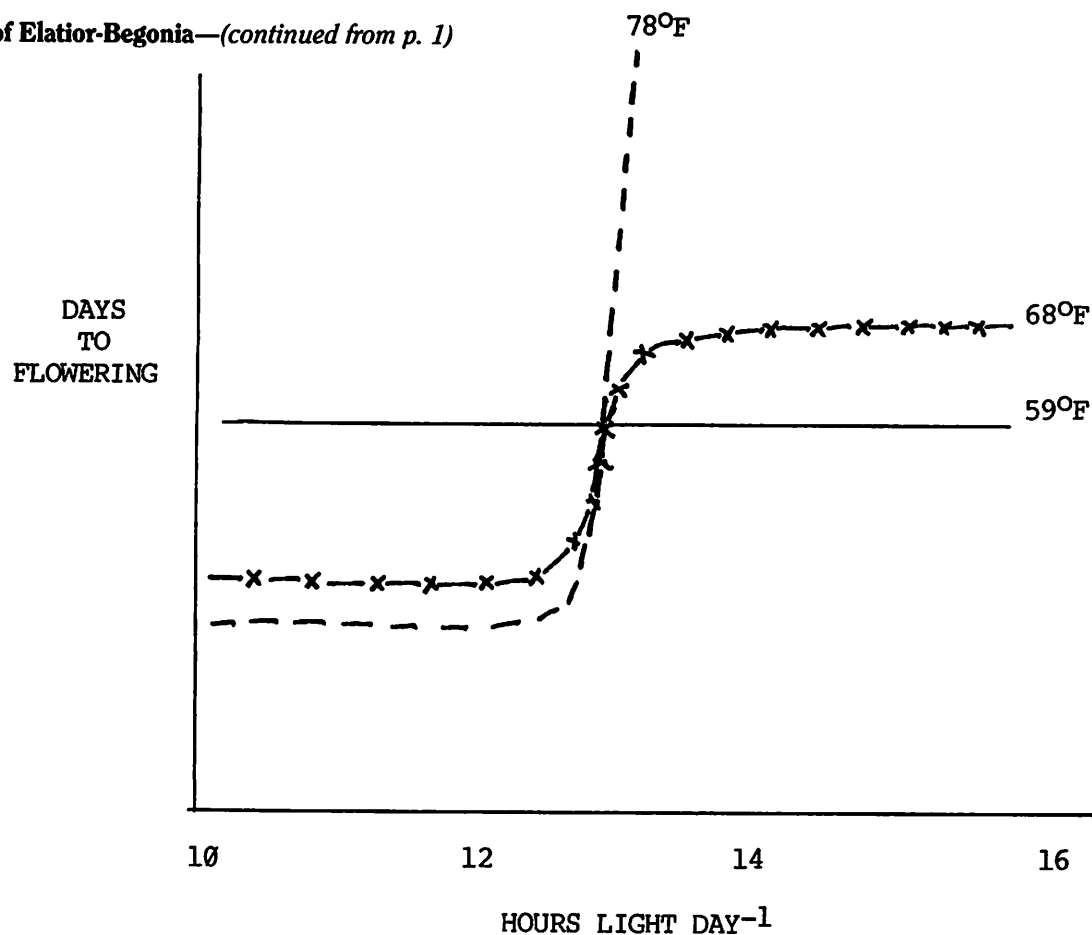


Figure 1. Effect of daylength and temperature on flowering of Elatior-Begonia.

A 10 hour day is usually provided for 2 to 3 weeks for good flower induction. More than 3 weeks of short days can result in smaller plants. This is because one of the parent plants is a tuberous begonia and this begonia will become dormant under continuous SD. The optimal night temperature during SD is 68-70°F.

### Propagation

With leaf propagation, which is usually used for Schwabenland and Nixe cultivars, the mother plants have to be flowering. To get the mother plants induced to flower, one should provide 2 to 3 weeks of SD after potting. It is usually necessary to repeat the SD treatment during the propagation period to keep the mother plants in a good generative growth. The mother plants will then produce leaves of good quality for making leaf cuttings.

The temperature for mother plants should be 64-70°F, depending on cultivars. The temperature can rise a few degrees during the day, but it is then sensible to decrease the night temperature a few degrees. If the temperature gets too high for the mother plants, then the ability of the leaves to make at least 3 good shoots (breaks) decreases drastically.

When the leaves are taken for propagation, the stems should not be longer than 2 cm, and the cutting is put directly into a porous propagation medium. The cuttings then get SD day for 2 weeks to improve their ability to make at least 3 good breaks (shoots). After 2 weeks with SD the cuttings need LD or they will induce flower buds instead of vegetative shoots.

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The temperature during the propagation period should be 68-70°F. Higher temperatures will cause a decrease in the number of new breaks. A lower temperature will reduce the length of time it takes to make the cuttings. The making of a cutting takes 9 to 12 weeks and it should have 3 good shoots.

To make top cuttings, which are usually used for the Aphrodite cultivars, the mother plants need to be vegetative. The mother plants then need LD, longer than 13 hours. Usually the daylength should be 18-20 hours both for mother plants and cuttings. The temperature for both the mother plants and the cuttings should be 76-78°F. It then takes 4 weeks to make a cutting.

**Healthy Mother Plants**

To get a good production of quality cuttings and good quality flowering plants the mother plants need to be healthy. In Norway we have found it necessary to clean up the mother plants by tissue propagation and test them later for bacteria and nematodes. Commercial propagators then get clean stock material from the experiment station. We think this system has been very successful and today we have no problems with systemic diseases in Elatior-begonia.

**Cultural Program**

When you get the cuttings pot them in sphagnum peat moss with some clay and sand (about 15%) usually a lighter medium than for pot mums. The compost should be limed to pH 5.5. Use a complete nutrient solution with each watering (Table 1). You can easily "kill off" the roots with an excessively strong nutrient solution and too heavy watering. One has to be more careful than in the culture of pot mums.

Table 1. Composition of the nutrient solution used for Elatior-Begonia in Europe.

<u>NUTRITION</u>		
	mg/l	(ppm)
N	150	
P	30	
K	150	
Ca	120	
Mg	30	
S	30	
Fe	2.0	
Mn	0.7	
B	0.24	
Cu	0.2	
Zn	0.1	
Mo	0.03	

Conductivity = 1.7 mS/cm Salinity of the media is  
(SSE) 2.0 mS/cm  
pH 5.5-6.0

Give this fertilization with every watering.

The plants should be grown at 63-68°F, depending on the cultivars (Figure 2). The Schwabenland cultivars ought to be grown at the low temperature range while the other cultivars can be grown at the higher temperatures. The daylength should be long (longer than 13 hours) for 1 to 4 weeks from potting, depending on the cultivar, how large you want to grow the plants and if you need to pinch the plants. It can be necessary to pinch the plants if the cuttings you get have 1 or 2 shoots. Then you

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need to leave the plants under LD for a longer time than if you got a good quality cutting with 3 or more shoots. For growing larger plants it can also be necessary to leave them under LD conditions for an extra week.

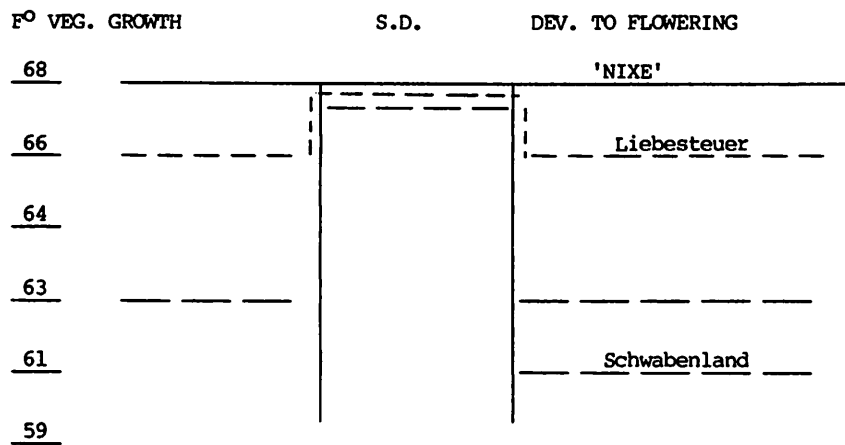


Figure 2. A temperature program for some Elatior Begonia Cultivars (After G. Sandved).

The plants have to be left under SD conditions (10 hour day) for 2 to 3 weeks for induction to flowering. The temperature during the SD treatment should be 68°F. After the SD treatment the plants should have long days, (16-20 hours) with, for example, incandescent light at 100 lux. It takes about 8 weeks from start of SD to flowering (Figure 3).

The light intensity and temperature can easily be too high for Elatior-begonia here in a North Carolina summer. Place the plants in the pad-cooling end of the greenhouse. Shade the plants, probably not as much as for Gloxinia, but something in the same range.

In Norway we would use CO<sub>2</sub> for this crop (800 ppm). This increases the growth and usually gives more shoots.

Growth retardant is usually used in Europe for a lot of the cultivars to keep plants more compact. Better quality plants could be achieved if the Schwabenland and Aphrodite cultivars were sprayed with 800 ppm Cycocel once during the SD treatment and 1 to 2 times after.

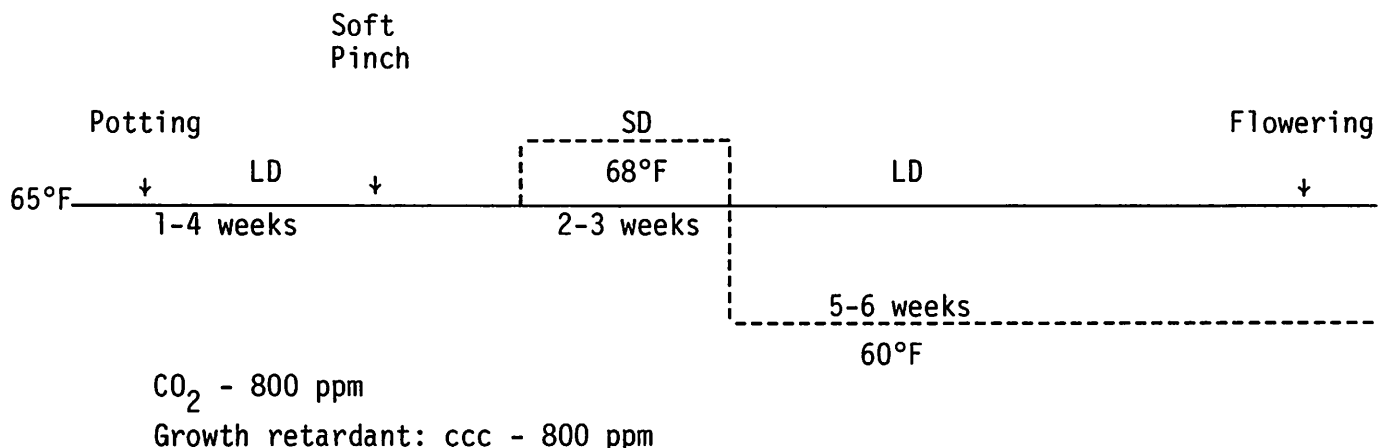


Figure 3. A growing program for Elatior begonia.

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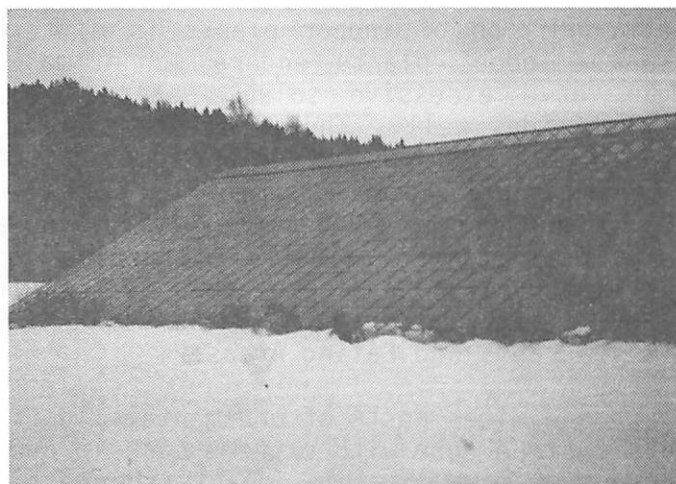
## The Culture of Elatior-Begonia—(continued from page 4)

### Diseases

Mildew is a problem for some of the cultivars, especially Schwabenland. Milban seems to work very well. For insects, it works well with use of Themie and Ambush.



High quality begonia plant and a house full of high quality plants.



### Editor's note:

So you think our winters get tough at times? This greenhouse is located in Norway, where the authors of the begonia article had their early education in floriculture. Being of Swedish descent, I would guess this picture was taken in July.