

Another Look at Cyclamen

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Cyclamen is a crop that I haven't seen enough of lately--it graces neither the shop windows of retail florists nor the aisles of grocery and mass market chains in abundance. There are drawbacks to cyclamen production. The long production cycle (7-9 months from seed) makes the crop expensive to grow for our price-conscious customers. In addition, the cool temperature and intolerance to drying out, two criteria necessary for long post-harvest life, may limit success among homeowners who have a tendency to place their purchases on top of the television in a dark corner of their living room. But cyclamen production may offer some unique advantages to our growers. While production can be timed to serve up potted cyclamen any time of the year, most crops are targeted for fall and winter sales. The flowers of red, pink, or white make this an ideal crop for Christmas and Valentine's Day, and even the later holidays of Easter and Mother's Day. Cyclamen thrive under a cool temperature regime which results in lower heating bills during winter production compared to crops like poinsettia. However, this crop will also perform at higher temperatures (although flowering may be delayed), which can be related to the fact that it is native to the Mediterranean region. And, miniature cyclamen offer opportunity for production in smaller pots which requires less production space and a greater return on investment than a typical poinsettia crop.

Propagation-Seed vs. Plugs

Cyclamen seed is old by count rather than weight. Germination rates of 75-85% are generally reported. While no specific seed treatment consistently improves germination rate, soaking the seed overnight in warm water is reported as beneficial, but not necessary. While it is may not be commercially practical, an old trick from an old pro,

the University of Illinois' Dr. Marv Carbonneau, is to rub the seed on sandpaper prior to sowing which allows water to immediately penetrate the seed coat. Seed germinates best at 63-67°F in the dark (above 72°F, germination is inhibited). The pH of the germination medium should be 6.0 or above for optimum germination, so check that any soilless germination medium has been amended with adequate lime. Seeds germinate in 20-30 days. When the cotyledons begin to stretch, move the seedlings to a shaded, humid area in the greenhouse at 68°F. Transplanting generally occurs about 3 months after seedlings have been moved to the greenhouse. The challenging and lengthy seed germination protocol may take purchasing cyclamen plugs an appealing alternative. Cyclamen plugs can be stored up to 6 weeks at 37-41°F. A 5-7 day delay in flowering may occur if plugs are stored in the dark.

Vegetative Growth

After two true leaves have unfolded, the rate of leaf initiation will be about 1.3 leaves per week through leaf number 17. This is useful information to help you time when flower initiation will occur. After 17 leaves have developed, the total leaf count increases at an even faster rate because axillary branch shoots in the axils of the first leaves develop also.

What Induces Flowering?

In most cyclamen cultivars, flower buds initiate in the axil of the sixth true leaf while the tenth to thirteenth leaves are initiated and developing. Flowers continue to initiate at the nodes as more leaves develop. Thus, any environmental factors which generally hasten plant growth will result in faster flowering, like optimum light intensity and temperature. Actual flowering does not occur until 30 or more leaves have unfolded. Photoperiod does not control flowering. Applications of gibberellic acid (GA₃) have been found to hasten flowering and improve uniformity of flowering by increasing the number of flowers which open simultaneously.

Peduncles, or the stalk below the buds, should be no longer than 1 inch long at the time of the time of application. The GA solution should not be applied to the leaves, but directly to the crown. One-quarter ounce of GA solution per plant is adequate. Rates of GA₃ application are recommended to be 25 ppm for open-pollinated varieties and 10 ppm for F1 hybrids and miniature cultivars. For growers who have not used GA previously, trial on a limited portion of the crop is recommended to perfect the system and determine cultivar response.

A General Schedule

At transplant (approximately 16 weeks after sowing seed), temperature is dropped to 62-64°F. About eight weeks later, plants are in the 10-12 leaf stage. At this time, temperature can be lowered again to 60-62°F and gibberellic acid applied. Plants will flower and be ready for sale about 8 weeks later, depending on pot size and season of the year. As a worst case scenario, allow 7.5 months for 4 inch pots, 8 months for 5 inch pots, and 8-9 months for 6 inch pots from seed. Subtract 3.5-4 months off of these times for production from plugs. Some research indicates that bottom heating may promote earlier flowering during winter. Root medium temperatures of 66 to 70°F with air temperatures of 50 to 60°F are recommended, which provides a strategy to reduce fuel costs.

Nutritional Considerations

Cyclamen is a crop which benefits from altering fertilization rates over the course of production. Before transplant, applications of about 100 ppm nitrogen and potassium applied every three weeks will benefit young plants. One month after transplant, begin regular fertilizer applications. Increase fertility rates to 150 ppm nitrogen when roots reach the edge of the pot (2.5-3 months after transplant), and to 200 ppm 4 months after transplant. It is reported that 25 to 50 ppm more potassium than nitrogen in the fertilizer solution will result in maximum leaf and plant size. Adding additional potassium from potassium sulfate or

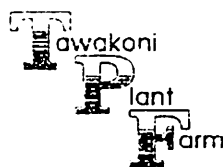
potassium chloride to a complete fertilizer like 20-10-20 is one strategy to shift to N:K ratio from 1:1 to 1:1.5 or so. The cooler temperatures under which cyclamen are produced make it more important for growers to not over-apply ammonium fertilizer, thus avoiding complications of ammonium toxicity. Select a fertilizer with no more than 40% nitrogen in the ammoniacal form.

Other Tidbits

Do not allow cyclamen to wilt; if this happens, some leaves will turn yellow. To avoid leaf scorch (pale, chlorotic foliage with necrotic areas on the leaves), plan on shading from April to October to provide a light intensity no greater than 4,000 foot candles. Inadequate light, on the other hand, will cause weak, spindly growth.

Sources of Information

- Gerritsen, H.A. 1998. Cyclamen. In: *Ball RedBook*, 16th ed. V. Ball, ed.
- Heins, R. and N. Lange. 1993. How to store cyclamen plugs. *Greenhouse Grower* 11(5):96-97.
- Karlsson, M.G. 1996. The importance of day length and light level for flowering in cyclamen. *GrowerNotes* 1(1):6-7.
- Widmer, R.E. 1992. Cyclamen. In: *Introduction to Floriculture*, 2nd ed. R.A. Larson, ed. Academic Press.



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All meetings held at the Oklahoma Botanical Garden and Arboretum Education building, except for Tuesday sessions. Maps will be sent with registration materials.

Monday, June 22

8:00-8:30 AM	Registration
8:30 AM	Welcome/Terri Webb
9:00-9:45 AM	Aloe to Zinnias - A Photo Tour of Oklahoma Greenhouse Crops by Dr. Mike Schnelle
9:45 AM	Break
10:00-11:30 AM	Art and Science of Growing by Dr. John Dole
11:30 AM - 12:30 PM	Greenhouse Design, Structure and Coverings by Tom Sullivan
12:30-1:45 PM	Lunch
1:45-2:30 PM	Growing Containers, Media and Mixes by Wayne Pianta
2:45-3:15 PM	What's in the Water? by Dr. John Dole
3:15-4:00 PM	Nutrition Management by Haldor Howard
4:00-5:00 PM	Greenhouse, Conservatories and Public Gardens by Allan Storjohann

Evening Cookout at *Oklahoma Gardening Set* with Brenda Simons

Tuesday, June 23 - Meet at Teaching Greenhouses

8:30 AM	Propagation Lab by Dr. Janet Cole
10:00 AM	Break
10:15-11:00 AM	Greenhouse Environ. Equipment and Maintenance by Tim Clark
11:00 AM - 12:00 PM	Insect and Disease ID/Hands on Session by Dr. Mike Schnelle, Dr. Ken Pinkston, and Betsy Hudgins
12:00-1:30 PM	Lunch
1:30-2:15 PM	Heat Stress by Dr. Jim Criswell
2:15-3:00 PM	Pesticide Application by Brent Suttles
3:00-3:30 PM	Break
3:30 PM	Getting Your Bedding Plant Crops Started by Bob Miller

Wednesday, June 24

8:30 AM	Herbs and Edibles by Ron Hoggard
9:30-10:30 AM	Hydroponics by Tim Clark
10:30-10:45 AM	Break
10:45 AM - 12:00 PM	Proven Winners by Jack Hildinger, Jr.
12:00-1:30 PM	Lunch
1:30-2:15 PM	Greenhouse Cut Flowers by Dr. John Dole
2:15-3:00 PM	Grapes and Small Fruits for Oklahoma by Allan Storjohann
3:00-3:15 PM	Break
3:15-4:00 PM	Woody Production by Allan Storjohann
4:00-5:00 PM	Ground Cover Production by Rick Kerbo

Evening - MEET US AT JOES!!

Thursday, June 25

9:00-11:00 AM

Tour of OSU Facilities:
Diagnostic Lab,
Research Greenhouses,
Cut Flower Plots with
OSU Staff

11:00 AM - 1:00 PM

Lunch - Drive to Guthrie

1:00-3:00 PM

Tour of Guthrie
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Suhering

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