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Featuring For May, 1983

Monthly Feature 1
May's feature story presents a cook-book approach to growing quality early flowering cyclamen.

Marketing & Promotion 3-4
Gives statistics and analyzes vegetable gardeners in the U.S.

Offers some suggestions to develop those late season sales.

Industry News 4-5
Lists coming events, and introduces a new research and display garden at the Univ. of Georgia.

Introduces a new column designed to inform growers of new products in the industry.

Production 6-11
Provides research results on acceptable mixing methods for STS.

Discusses the effect of various stresses on first fruit and total yield of tomato seedlings.

Reviews research on leafminers.

Reminds growers to use caution when working with wood preservatives, herbicides, and paints in the greenhouse, taking care to use the proper equipment.

Discusses pH and peat-lite mixes.

Gives pros and cons for biological control of greenhouse insects.

Business Management 12-13
Discusses motivation and presents one retailer's approach to working with his employees.

Association News 14-16
Recognizes award winning advertising.

Outlines Auxiliary activities during Grand Rapids '83.

Early Flowering Cyclamen

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Cyclamen have been rediscovered in the past decade by growers and consumers alike. The efforts of Dr. Richard E. Widmer and co-workers at the University of Minnesota have cut the traditional production time in half, making this crop popular once again. Furthermore, even though many "tried and true" older cultivars are still available, the resurgence of commercial interest has spurred the development of new, improved varieties.

Many greenhouse crops have come under scrutiny because they are either not energy-cost profitable or they lack versatility. When the recent trend towards smaller pot sizes emerged, an event which saw the introduction of the 4" flowering plant, cyclamen was not excluded. Miniatures and several standard size cultivars fit this concept attractively and profitably. Furthermore, with the exception of very warm regions, cyclamen can be grown year round, in addition to the traditional Christmas crop.

Sowing & Germination

To begin, use fresh seed from a reputable dealer and try to estimate your needs ahead of time. One can expect the germination percentages for most cultivars to fluctuate between 80% and 90%, but even this figure decreases if seed is stored for over a year.

The sowing medium should ideally be nutrient-amended, 100% moss peat (Table 1). Sow seeds in flats (3" x 3" spacing) or in individual cell packs; the latter keep transplant shock to a minimum. Whatever the container, cover with ¼" medium, place in the dark and maintain a constant 68°F. Light and temperatures above or below 68°F inhibit germination. A constantly moist medium is essential for optimum results, but if fungal growth appears, drench with Benlate rather than Captan.

Even though an average of 30 days is required for germination, many cultivars are highly non-uniform. This is when the "art" of cyclamen

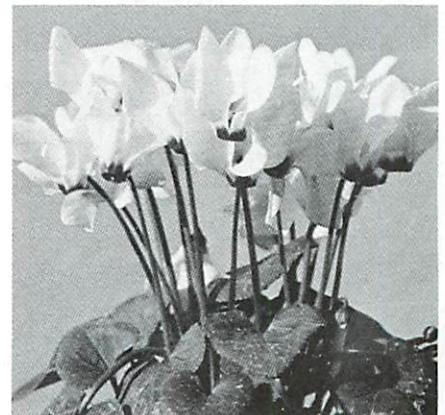
growing comes into play. When should flats be removed from darkness to prevent excess etiolation of the first-germinated, without inhibiting the later seeds from coming up? A good rule is to wait until 50% of the total lot is visible before removing from darkness.

Growing-on Seedlings

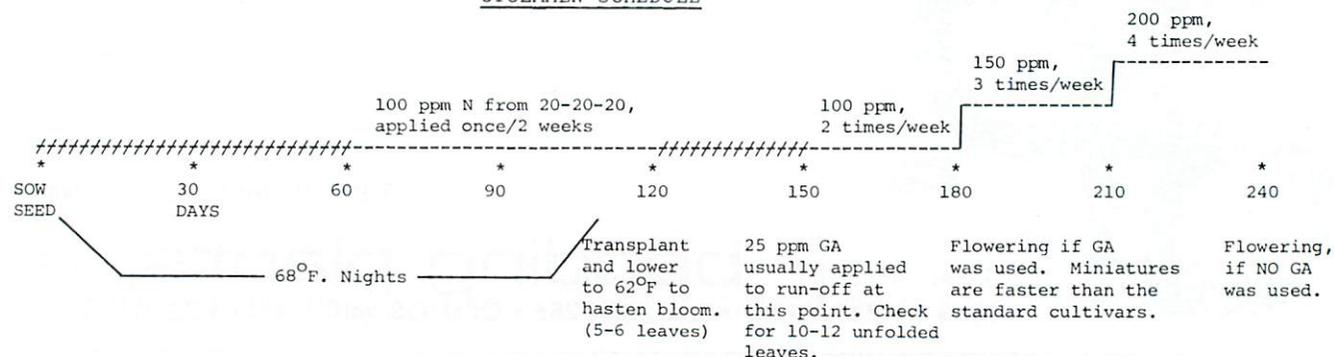
The next step is into a shaded location with 50% relative humidity or greater. Drier environments cause symptoms similar to damping-off, which ultimately leads to death. Night temperatures should be maintained at 68°F during the first 120 days after seeding. This is, admittedly, high by many other plants' standards, and will limit the choices to begin crop production for many growers. However, cyclamen are developing very slowly at this time and lowering the thermostat only serves to set them back.

Refer to Figure 1 for the total fertilization scheme, but it is worth noting that fertilization is minimal during the earlier stages of growth.

The effect of the cotyledon on crop timing can be amazing. Damage to, or removal of this first leaf can delay bloom up to one month. It's a good idea to avoid the temptation of "helping" seedlings by picking off stubborn seed coats;



CYCLAMEN SCHEDULE



- * **NOTES:**
1. Mat watering is possible, but will require careful soil nutrition monitoring.
 2. ##### = plants are in nutrient enriched peat and no supplemental fertilization necessary.
 3. This schedule is tailored to a 4 to 5 inch pot production.

allow them to drop off unassisted. Also, remember that for the first 2-2½ months most seedlings will normally have only one leaf, presumably because the small corm is enlarging.

Transplanting

When a crop of plants averages 5-6 leaves (usually after 120 days), two events should occur. First, transplant into the final pot size; intermediate potting needlessly increases production costs. Do not bury the corm entirely and use the same medium formulation as for seed sowing. Secondly, drop night temperatures to 62°F to hasten flower bud development and set the day temperatures 5-10° higher. Bench spacing may begin by leaving one pot size distance between plants, but as the crop matures, provide additional space to

Table 1: Nutrient Additions to Moss Peat

Fertilizer	Grams*/Bushel	/Cubic Yard
Ground Limestone	200	9.7 lb.
Magnesium Sulfate	20	1.0 lb.
Potassium Nitrate	7	5.5 oz.
Superphosphate	12	10.0 oz.
Osmocote (14-14-14)	16	12.5 oz.
Peters Fritted Trace Element Mix	1	0.75 oz.

*28.35 grams/ounce

avoid crowding, poor air circulation, and inevitable Botrytis incidence.

Gibberellic Acid

A critical stage of development occurs when plants have 10-12 leaves (often 150 days after seeding). Close inspection of the crown reveals the presence of the first flower buds, resembling "pinheads" in the lower leaf axils. A full month or more can be lopped off the production time if GA₃ is used at this time. Most recent experimental evidence indicates that cyclamen are now receptive, but not overly responsive, to GA₃. In other words, flowering can be accelerated with little fear of producing excessively long, weak flower stalks.

The technique is simple and obtaining the desired response is almost mistake-proof at this stage of growth. Prepare a 25 ppm GA₃ solution from any commercial preparation and try the method on a small group of plants the first year. Fill a hand sprayer and apply enough to just wet the crown, assuring contact with the flower buds. It is doubtful that any excess solution or higher concentrations of GA₃ applied at this stage will cause problems. Research has shown that concentrations up to 1250 ppm GA₃ accelerate flowering without over-elongating the flower stalk.

DO NOT make repeated treatment applications. Since flower buds become increasingly sensitive to GA₃ as they age, multiple applications greatly increase the likelihood of producing undesirable flower stalk lengths. If GA₃ is used, most cultivars will bloom seven months after seeding, miniatures even earlier. Untreated plants require 7-8 months.

Additional Cultural Notes

Other notes of cultural importance include the beneficial use of evaporative fan and pad cooling in the summer, and CO₂ injection (1000 ppm) in the water. When appropriate, shading should be used to reduce light intensities to 4000 ft-c since excessive irradiation results in hard and pale foliage. Insufficient irradiation, on the other hand, leads to soft, leggy, poor-flowering plants. Never allow cyclamen to dry out, especially to the wilting point. Bud blast is a certainty which is often accompanied by the development of a ring of yellowed lower leaves which will never recover.

Cyclamen are here to stay as long as they are properly grown and marketed.

This paper was presented at the VGGA meeting in Richmond, VA on October 31, 1982.

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