Minnesota Commercial Flower Growers Association Bulletin

48 Years of Service

Volume 48, Issue 4 - July-August, 1999

Special points of interest:

- New MCFGA member benefits
- Relevant info on how to produce primula, cyclamen and New Guinea impatiens
- Cultivar recommendations on cyclamen and New Guineas
- Summary of diseases of perennial crops and how to control them.
- MCFGA meeting schedules
- Editorial on the imminent emergence of a new sector of the plug industry.

Inside this issue:

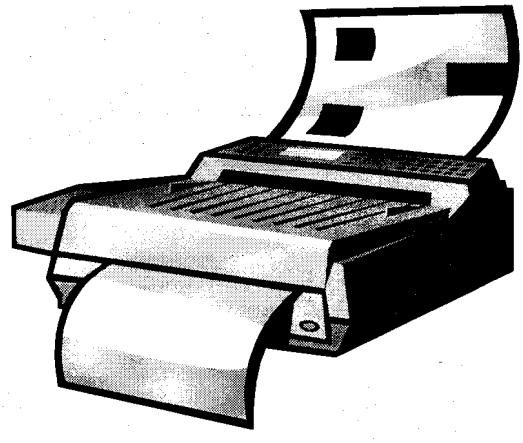
New Biweekly FAX System

John Erwin, Dept. of Horticultural Science, University of Minnesota

The University of Minnesota and the Minnesota Commercial Flower Growers Association have started a new member benefit program. All members will receive a biweekly FAX that will contain important items on greenhouse production, meetings and national/state information important to the greenhouse industries.

If you have not received FAXes please call me at 612-624-9703 or FAX me a note with your FAX number. We have sent 4 faxes thus far and if you have not received them 1) we have a wrong FAX number for you or 2) we don't have a FAX number at all for you. We also are interested in hearing any suggestions that you may have.

We have also hired a new Assistant Extension Specialist, Ryan Warner (see page 11). Ryan will be available to answer questions, will be calling soil test reports out, and will allow me to visit more greenhouses. Please note that there is a new meeting format for MCFGA meetings as well. These changes along with producing a new website will greatly increase the contact and helpfulness of both the University of Minnesota and the Minnesota Commercial Flower Growers Association to you.



Primula Production

John E. Erwin, Department of Horticultural Science, University of Minnesota

Introduction:

Commercial primula are in the Primulaceae family which is composed of 800 species. The genus *Primula* contains 400 of those species. Most of these primula are native to temperate regions of the Northern Hemisphere. Most primula are, therefore, adapted for cooler climates.

Significant Species:

Several primula species are commercially grown as floriculture crops:

1) *P. malacoides* (Fairy/ Baby Primrose.

2) *P. obconica* (German/ Poison Primrose.

3) *P. x polyantha/aucalis* (Polyantha Primrose).

4) *P. sinensis* (Chinese

Primrose).

5) *P. veris* (Cowslip Primrose).

6) *P. vulgaris* (English Primrose).

The three most significant Primula crops are *P. malacoides, P. obconica* and P. *x polyantha.* The most commercially significant is the *P. polyantha.* Literally, hundreds of varieties/cultivars of this interspecific hybrid have been developed. The remainder of this article will focus on these species.

Propagation:

Primula are commercially propagated from seed. Significant considerations when germinating Primula seed are outlined below:

1) Sow seed on the media surface.

2) Germinate most Primula seed at temperatures ranging from 59-70°F. Germinate *P. obconica* seed at temperatures ranging from 59-77°F.

3) Light enhances germination.

4) Potassium nitrate (2%), IAA+NAA, and GA seed soaks have been shown to increase percent germination.

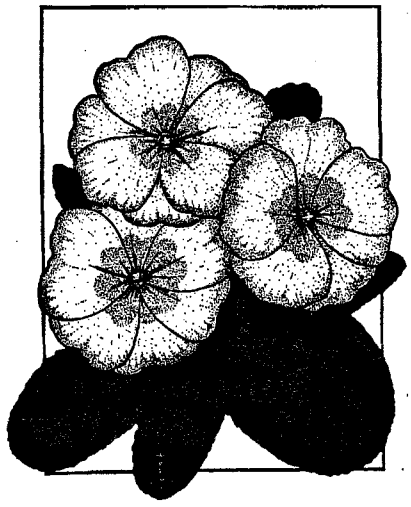
Flower Induction/Initiation:

Factors that affect flowering of primula vary with species. Factors that affect each significant species are outlined below:

1) *P. malacoides*—Day-neutral between 41-63°F, SD between 63-70, LD inhibits flowering.

2) *P. obconica*—Day-neutral

3) *P. x polyantha*—First 60 days under LD at 68°F followed by SD at 54-60°F.



4) *P. sinensis*—No information

5) *P. vulgaris*—SD at warm temperatures, LD at cool temperatures.

Optimal light intensity decreases as temperature increases. Flower initiation and development are optimal when plants are exposed to a minimum of 10 moles of light per day.

Nutrition:

Grow primula at a pH range between 5.5-6.5. Primula are not 'high feed' requiring crops. Feed most primula 60 ppm N and K starting 2 weeks after seeding, 200 ppm immediately before transplanting, followed by regular 90-100 ppm N and K after transplanting. *P. obconica* should be fed 250 ppm. All primula should be fed with a nitrate-based (as opposed to an ammonium-based fertilizer).

Primula can frequently have nutrient deficiency problems. In particular, primula have the following nutritional problems:

1) Iron Deficiency—Interveinal chlorosis on youngest leaves due to either high pH or insufficient iron in the media. Decrease pH and supply iron by applying an acidic fertilizer as an overhead feed (acts as foliar feed as well).

2) Ammonium Toxicity—General leaf edge yellowing of lower leaves. Occurs when ammonium based fertilizers are used during low light periods of the year. Leach and switch to a nitrate-based fertilizer.

3) Boron Deficiency—Young leaf distortion. Overhead water with fertilizer containing boron and/or apply Borax (0.5 oz/100 gal, or Solubor 0.25 oz/100 gal.).

4) Calcium Deficiency—Upper leaf chlorosis, necrosis or leaf edge burn. Switch to a calcium nitrate based fertilizer.

(continued on page 8)

Cultural Step	Production Time (weeks)	Temperature (°F)
Seeds germinate	4-6	60
Plugs transplanted into 4" pot. Space pot to pot.	2-3	60
flower induction and space when plants have unfolded 6-10 leaves.		
Buds with color	2	60
Total time to flower	18-23	

temperature and light conditions throughout a year. As a result, inconsistency in flowering time of seedlings can occur. Recently, growers have improved consistency of some of their young plants by providing a more consistent light intensity and photoperiod to crops by adding supplemental high-pressure sodium lighting. The addition of lights can dramatically improve young plant quality by increasing dry weight, can result in earlier flowering on the day-neutral seed geranium, and will induce flowering on receptive long-day plants. In contrast, these same lights can delay flowering of short-day plants. However, our understanding of how light intensity impacts flowering of most bedding plants is lacking.

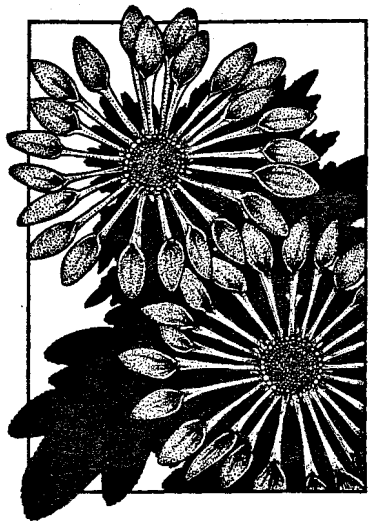
EMERGENCE OF A NEW PRODUCT AND INDUSTRY:

As new information becomes available, both plug growers and annual/minor potted crop finishers will be able to precisely schedule crops, maximize flowering and produce young plants that are prefinished for different container sizes. A new segment of the young plant industry will emerge that will produce prefinished young plants with guaranteed flowering dates when forced under a given set of conditions. Evidence of this is already occurring with young plant growers who vernalize large perennial plugs and sell them as pre-induced plants to be finished at another facility. Similarly, rooted and cooled Regal geranium cuttings have been sold preinduced for finishing at another facility for some time.

Plug growers who will use this information most effectively will have to 1) invest in greenhouse structures that enable them to provide different photoperiod/lighting/cooling treatments and 2) change their production schedules to accommodate different lighting/temperature treatments during the life of a young plant in their facility. Such facility and production schedule changes will allow a young plant producer to grow premium seedlings specialized for different size containers. For instance, young plant producers will prefinish seedlings for use as a flatted, 4", 6", basket or large container product. Seedlings destined for larger containers may be kept vegetative longer to increase branching and plant size to enable plants to fill a container at a finisher's facility and then flower. In contrast, immediate flowering may be desirable for some flatted materials so prefinishers may induce those seedlings as soon as the juvenile phase has ended. In addition to growing seedling for specific product sizes, environmental manipulation will allow more precise scheduling of flower induction/initiation of many annual species that will allow a plug producer to guarantee a flowering time for the finisher under specific temperature conditions.

CONCLUSION:

Those growers who take advantage of this information will step in front of the rest of the 'pack' (rather than keep 'plugging' along – sorry) and produce superior, high quality plugs specifically suited for a finishers needs. These growers will fill a new specialized niche in the floriculture industry that will grow in the years to come and make finishing crops more simple and predictable. The growth of this new sector of the industry is a natural outgrowth of more efficient production and follows advances made in the potted and cut flower industries.



PRIMULA PRODUCTION

(continued from page 2)

Growth Retardants:

Growth retardants are used to control peduncle/pedicle elongation on primula as well as excessive leaf expansion. B-9 is effective (1000-2000 ppm) on P. *vulgaris, x polyantha, sinensis and malacoides*. B-9 is ineffective on *P. obconica*.

Insects and Diseases:

Primula can develop aphid, thrip, fungus gnat and/or mite infestations. Of most significance is the spread of tomato spotted wilt virus (TSWV)/impatiens spotted wilt virus (INSV) by Western flower thrips. There is no cure for either of these viruses.

Symptoms include general stunting of plant growth and/or spotting of foliage. Control is achieved by removing infected plants, controlling thrips and not shipping in infected materials.

Postharvest:

Harvest primula when 5-7 florets have opened. Application of a spray of 0.25 mM silver thiosulfate (STS) 5 days prior to harvest will increase postharvest life. Ship at temperatures of 36-43°F.

Scheduling:

A schedule for *P. x polyantha* production is shown below. Contact me for schedules for *malacoides* and *obconica*.

Other Sources of Information:

Information of Primula varieties and culture can be found on the following web sites:

1) www.goldsmithseeds.com
2) www.daehnfeldt.com