

SCHEDULES 1994

John Erwin
University of Minnesota
 and
Royal Heins
Michigan State University

Schedule 1, Natural Cooling, Easter 1994

General:

- a) Uncooled bulbs are used. Bulbs should arrive during the first week of October, 1993. Dip bulbs for control of bulb mites. (See Pest Control section.)
- b) Pot bulbs 1/2 to 1 inch from the bottom of the pot. Drench with a fungicide for control of *Pythium* and *Rhizoctonia*. Bulbs should be potted by October 18, 1993 for wholesalers or October 22, 1993 for retailers. Keep soil moist and at a temperature of 63-65°F for optimal rooting. The rooting period is responsible for longer lower leaves and the higher flower bud counts.

Cooling:

- a) Potted bulbs should be placed on a substrate such as gravel to elevate the base of the pot above the surface of the field, covered frames, shed or uncooled greenhouse. Potted bulbs are then exposed to naturally occurring, fluctuating temperatures. Exact temperature records must be kept. Record temperatures daily. Use thermometers inserted in pots next to the bulbs. Bulbs require 1000 hours of temperatures between 35° and 45°F. Two hours of temperature between 45° and 50°F should be counted only as one hour of cooling. The medium should not be allowed to freeze. Keep the medium moist, but not wet. A light mulch or shading over the top of the pots aides in maintaining uniform temperatures and moisture levels.

Start of Forcing:

- a) Greenhouse forcing can start after 1000 hours of cooling. **Do not overcool!** The inability to achieve desired media temperatures during any time during the cooling period will delay the beginning of the greenhouse forcing stage.

- b) Media temperatures should be maintained between 63° and 65°F until the shoot meristem is above the soil surface. Because Easter is early this year, try to maintain a 63° to 65°F media temperature. A warmer media temperature will hasten emergence. The bulk of your lily population should be emerged by December 27, 1993 if you're a wholesaler or December 31, 1993 if you're a retailer. Lower temperatures may limit root development. High temperatures may delay flower initiation or negate the vernalization treatment entirely. Maintain 65°F air temperature between emergence and initiation. Flower initiation should occur by January 18, 1994 for wholesalers and January 23, 1994 for retailers.

- c) At shoot emergence you may want to place plants under long day conditions to insure that plants have been induced to flower. Expose emerged shoots to long days by placing plants in an area where they will receive 10 foot candles of night interruption lighting from 10:00 p.m. to 2:00 a.m. Because of the potential for shoot elongation when night lighting with incandescent lamps, we recommend that you light for only 1 week unless plants received less than 6 weeks of cooling. Fluorescent lamps are preferable to incandescent lamps and are equally effective.



Schedule 2. Controlled Temperature Forcing (CTF), Easter 1994**General:**

- a) Uncooled bulbs are used. Bulbs should arrive during the first week of October, 1993. Dip bulbs for control of bulb mites. (See Pest Control section.)
- b) Pot bulbs 1/2 to 1 inch from the bottom of the pot. Drench with a fungicide for control of *Pythium* and *Rhizoctonia*. Bulbs should be potted by October 18, 1993 for wholesalers and October 22, 1993 for retailers. Keep media moist and at a temperature of 63-65°F for optimal rooting. The rooting period is responsible for longer lower leaves and the higher flower bud counts.

Cooling:

- a) Start cooling on November 1, 1993 for wholesalers or November 5, 1993 for retailers. Drop the soil temperature to 40°F for 'Ace' and 40-45°F for 'Nellie White' bulbs. Place thermometers in the media next to the bulbs. Record temperatures daily. Make sure the media is moist at all times; the bulb will not perceive the cooling treatment if the media is not moist.

Start of Forcing:

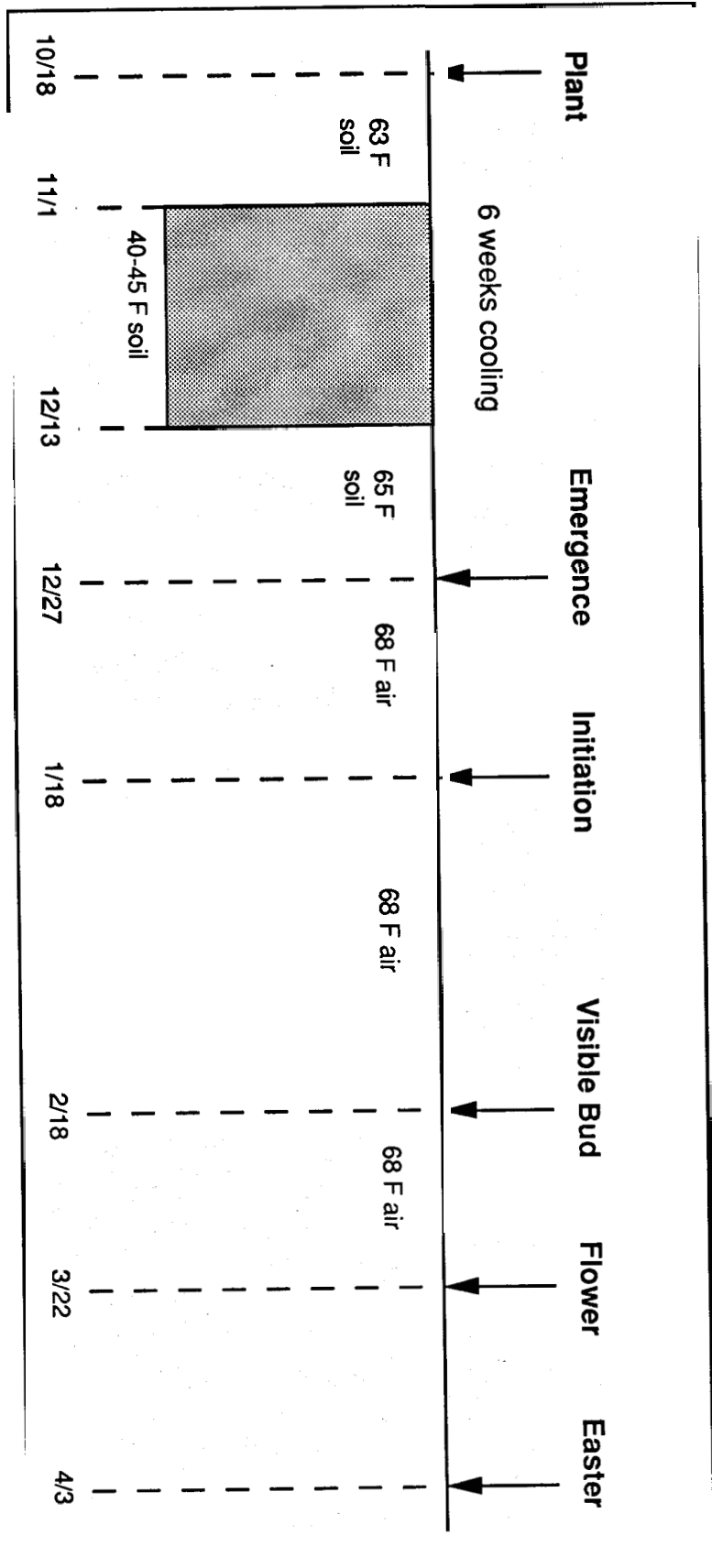
- a) Bring potted bulbs out of the cooler after 42 days (1000 hours). This year potted bulbs should be brought into the greenhouse on December 13, 1993 for wholesalers and December 17, 1993 for retailers. Between Christmas 1993 and Easter Sunday 1994 there are 100 days.
- b) Media temperatures should be maintained between 63° and 65°F until the shoot meristem is above the soil surface. Because Easter is early this year, try to maintain a 63° to 65°F media temperature. A warmer media temperature will hasten emergence. The bulk of your lily population should be emerged by December 27, 1993 if you're a wholesaler or December 31, 1993 if you're a retailer. Lower temperatures may limit root development. High air temperature may delay flower initiation or negate the vernalization treatment entirely. Maintain 65°F air temperature between emer-

gence and initiation. Flower initiation should occur by January 18, 1993 for wholesalers and January 23, 1993 for retailers.

- c) At shoot emergence you may want to place plants under long day conditions to insure that plants have been induced to flower. Remember that both cooling and long days can induce an Easter lily to flower. Expose emerged shoots to long days by placing plants in an area where they will receive 10 footcandles of night interruption lighting from 10:00 p.m. to 2:00 a.m. Because of the potential for shoot elongation when night lighting with incandescent lamps, we recommend that you light for only 1 week unless plants received less than 6 weeks of cooling. Fluorescent lamps are preferable to incandescent lamps and are equally effective.

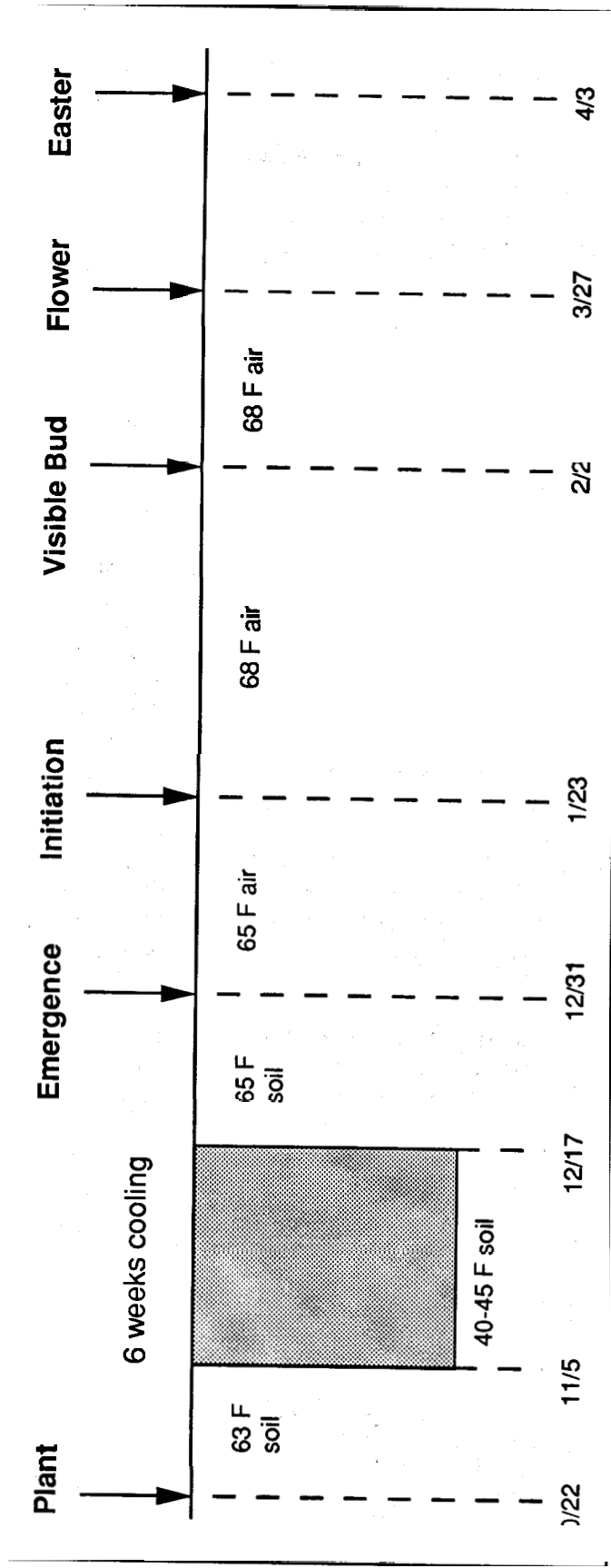


Lily Schedule 1994 - Wholesale Controlled Temperature Forcing (CTF)



This schedule is an example. Temperatures are based on an Easter lily which has 90 leaves with 35 leaves unfolded at flower initiation. Forcing temperatures are as shown. Actual temperatures will depend on the leaf number per plant of your Easter lily crop and the ability of your greenhouse to maintain temperatures. Forcers who retail their crops directly may cool bulbs later and/or force their crop at lower temperatures to flower plants later.

Lily Schedule 1994 - Retail Controlled Temperature Forcing (CTF)



This schedule is an example. Temperatures are based on an Easter lily which has 90 leaves with 35 leaves unfolded at flower initiation. Forcing temperatures are as shown. Actual temperatures will depend on the leaf number per plant of your Easter lily crop and the ability of your greenhouse to maintain temperatures. Forcers who retail their crops directly may cool bulbs later and/or force their crop at lower temperatures to flower plants later.

Schedule 3. Home Case Cooled Bulbs, Easter 1994**General:**

- a) Uncooled bulbs are used.
- b) Bulbs should arrive during the first week of October, 1993. Make sure that the peat in the crate is moist. If dry, moisten the peat. The peat must be moist for the bulbs to perceive the cooling treatment.

Cooling:

- a) Place the packing crate in the cooler immediately.
- b) Drop the temperature to 40°F for 'Ace' and 40-45°F for 'Nellie White' bulbs. Place thermometers in the case next to the bulbs. Record temperatures daily. Make sure the media is moist at all times; the bulbs will not fully perceive the cooling treatment if the media is dry. Check bulbs every week for evidence of shoot emergence. If shoots begin to emerge, lower temperatures to 36° to 38°F.
- c) Bring the packing crates out of the cooler after 42 days (1000 hours). This year bulbs should be brought out of the cooler into the greenhouse on December 13, 1993, for wholesalers and December 17, 1993 for retailers assuming cooling starts November 1, 1993 or November 5, 1993 respectively.

Start of Forcing:

- a) Dip bulbs for control of bulb mites. Pot bulbs 1/2 to 1 inch from the bottom of the pot. Drench potted bulbs with a fungicide for control of *Pythium* and *Rhizoctonia*.

- b) Media temperatures should be maintained between 63° and 65°F until shoot emergence. High media temperatures promote shoot emergence before adequate rooting. Poor rooting results in short lower leaves. After shoot emergence, media temperature should be maintained about 63°F to 65°F until the meristem is above the media surface. The bulk of your lily population should be emerged by December 27, 1993 if you're a wholesaler or December 31, 1993 if you're a retailer. High air temperature may delay flower initiation or negate the vernalization treatment entirely. Maintain 65°F air temperature between emergence and initiation. Flower initiation should occur by January 18, 1994 for wholesalers and January 23, 1994 for retailers.

- c) At shoot emergence you may want to place plants under long day conditions to insure that plants have been induced to flower. Expose emerged shoots to long days by placing plants in an area where they will receive 10 footcandles of night interruption lighting from 10:00 p.m. to 2:00 a.m. Remember that both cooling and long days can induce an Easter lily to flower. Because of the potential for shoot elongation when night lighting with incandescent lamps, we recommend that you light for only 1 week unless plants received less than 6 weeks of cooling. Fluorescent lamps are preferred to incandescent lamps and are equally effective.



**Schedule 4. Commercially Case Cooled Bulbs,
Easter 1994****General:**

- a) Cooled bulbs are used.
- b) Bulbs should arrive early-mid December 1993. Make sure that the peat in the crate is moist. If dry, moisten the peat. The peat must be moist for the bulbs to perceive the cooling treatment. Dry peat suggests that bulbs may not have been cooled adequately and/or have been cooled unevenly.

Start of Forcing:

- a) Dip bulbs for control of bulb mites. Pot bulbs immediately after receiving them. Drench potted bulbs with a fungicide for control of *Pythium* and *Rhizoctonia*.
- b) Media temperatures should be maintained between 63° and 65°F until shoot emergence. High media temperatures promote shoot emergence before adequate rooting. Poor rooting results in short lower leaves. After shoot emergence, air temperature should be maintained at about 63° to 65°F until the meristem is above the media surface.

The bulk of your lily population should be emerged by December 27, 1993 if you're a wholesaler or December 31, 1993 if you're a retailer. Lower temperatures may limit root development. High air temperature may delay flower initiation or negate the vernalization treatment entirely. Maintain 65°F air temperature between emergence and initiation. Flower initiation should occur by January 18, 1994 for wholesalers and January 23, 1994 for retailers.

- c) At shoot emergence you may want to place plants under long day conditions to insure that plants have been induced to flower. Expose emerged shoots to long days by placing plants in an area where they will receive 10 foot candles of night interruption lighting from 10:00 p.m. to 2:00 a.m. Remember that both cooling and long days can induce an Easter lily to flower. Because of the potential for shoot elongation when night lighting with incandescent lamps, we recommend that you light for only 1 week unless plants received less than 6 weeks of cooling. Fluorescent lamps are preferable to incandescent lamps and are equally effective.

