KEY CONSIDERATIONS FOR THE 1990-91 LILY FORCING SEASON

by John Erwin [1], Frank Pfleger [2], and Mark Ascerno [3]

1. **Inspect Bulbs on Arrival - The peat or soil should be** moist during the cold treatment for proper flower induction to prevent water loss on all bulbs.

2. Bulb Mites - Dip bulbs for 1/2 hour in 1-1/3 pounds of 35% wettable Kelthane powder per 100 gallons of water (do not use emulsifiable concentrates). If Kelthane is unavailable Avid as a soak or drench and Vendex as a drench appear effective in controlling bulb mites. Do not take a chance, dip or drench your bulbs! Use protective gloves for all operations. Call your state Entomology specialist if you have questions.

3. Medium - Pot in an open well-drained medium. Adjust pH to 6.5-7 for soil base media and above 5.8 for soilless media using dolomitic limestone. Use no perlite or superphosphate, but add gypsum at 2 lb/yd 3 in soilless media. These precautions should prevent leaf scorch if adequate nitrogen is applied during forcing. Phosphorous can be added through your regular nutritional program with a starter fertilizer and/or phosphoric acid treatments. Boron in the limestone should be avoided. Do not use fertilizer which contains ammonium, particularly if you have soil in your media.

4 Test Soil - The soil should be tested before the bulbs are potted. This is common sense! Test soil every 2-3 weeks throughout the life of the crop.

5. Bulb Cooling - The cold treatment is a cold-moist procedure. Make sure all pots are uniformly moist throughout cooling. Use soil thermometers in several locations. Remember that bulbs must receive a total of 1000 hours of temperatures at 40°F and 40-45°F for Ace and Nellie White bulbs, respectively. If you cool in growing structures, use black poly over the outside of the house to reduce radiant energy penetration and heat buildup inside the house. Stacking of pots is not recommended so temperature and moisture variation does not occur. Use exhaust and turbulator fans. Uniform temperature control here means a uniform crop later.

6. Root rot control- These diseases are controlled by various fungicides applied as soil drenches. The following combinations of fungicides should be applied every 4 weeks: Benelate (50% DF-16 oz/100 gallons) plus Truban (30%-8 oz/100 gallons) or apply Banrot (40% WP-8 oz/100 gallons) only. Alternatively, use Benlate (50% WP-Benlate, 8 oz/100 gallon) and Subdue (Subdue 2E, 1/2 oz/100 gal). Subdue is a systemic and should be used early in forcing and again at visible buds when source/sink shifts and old roots seem to senescence and stem roots become active. Plants have a propensity to develop root rot problems from visible bud onward. When using Subdue, use at 0.5 oz/100 gal and do not repeat for 8 weeks. Higher rates of Subdue can result in leaf tip burn. Always read and follow label instructions prior to use of any fungicide. Call your state plant pathologist if you have any questions concerning disease control.

7. Soil Temperature - For optimal root growth use a 62o-65oF (16o-18oC) soil temperature before and after cooling until mid- January. Use soil thermometers at this time. A temperature of 65oF (17oC) is preferred for this early Easter.

8. Insurance Policy - At shoot emergence, use 1 week of long days. This means mum photoperiod lights (10 foot-candles) turned on from 10:00 p.m. to 2:00 a.m. or second best is from 5:00 a.m. to 8:00 a.m. This treatment makes up for any inadequate cooling.

9. Insect Control - Aphids can be a pest on Easter lilies. Use an insecticide - do not wait for aphids to become a problem. A good time to apply is mid-January to early February. Dithio or nicotine sulfate smokes maybe safe when flower buds are present, provided plants are dry and temperatures are not above 75o. Most other chemicals will damage buds and open flowers.

10. Nutrition - Soil tests are recommended every 2 to 3 weeks! Track your nutrient levels. Weekly pH and soluble salt readings should be taken. Plot on a graph your weekly readings. If pH or salts are rising or falling to undesirable levels, act based on the trends. Don't wait until a problem exists to test your crops!

11. Timing - Flower buds form, i.e. flower initiation occurs, during the last week of January. After flower initiation count the number of leaves which have yet to unfold and the number that have unfolded. Mark the last unfolded leaf and count leaves weekly through visible bud. How many leaves are you to unfold weekly? Cool if you're unfolding leaves too fast. Warm it up a bit if you're unfolding leaves too slowly.

12. Day and Night Temperature- The difference between day temperature and night temperature (DIFerence =DT-NT) strongly controls the amount of stem elongation in the lily. A positive DIF, warm days and cool nights, promotes stem elongation while a negative DIF, cooler days than nights, decreases stem elongation. Height control is much easier when the DT and NT are similar (DIF) or plants are grown with a small negative DIF.

Because of the early Easter this year most growers may want to grow plants with equal DT and NT in combination with a morning drop in temperature during the first 3 hours of the morning. In this way you will get a considerable amount of height control while maintaining a high leaf unfolding rate. See more information on this in the following article on graphical tracking.

1 Assistant Professor and Floriculture Specialist, 2 Floriculture Plant Pathologist, 3 Floriculture Entomologist. The University Of Minnesota, St. Paul, Minnesota, 55108. (612)-624-9703.