**Lilium longiflorum**

Easter Lily
A major flowering potted crop

www.easterlily.org

### Cultivars

- ‘Nellie White’
- ‘Ace’
- Easter Lily Research Center in Oregon tests new cultivars
- Single-nosed vs. double-nosed

### Imbricated or Nontunicate bulb

- Apical meristem
- Scales
- Basal plate
- Roots

### Packing Bulbs

- In crates of moist peat for shipment
- 200 8-9 size bulbs/crate
- Larger bulbs have greater leaf and flower number and a faster leaf unfolding rate

### Planting

- Place one bulb in the middle of a **standard** 6-inch pot, deep with only about ½-inch of media below the bulb
- Allows for root development from the stem and improves plant vigor

### Crop Production

- Harvesting
- Packing
- Shipping
- Programming (cold storage)
- Planting
- Emergence
- Flower initiation

The apical meristem continues to produce leaves during all of these stages.
Flower Induction

- Cold moist treatment
- 35-45°F for 1000 hr or 6 week
- Packed in cases or planted in pots
- No cooling/>70°F no flowers
- No cooling/<70°F flower eventually
- 40-45°F for ‘Nellie White’

If cooling is not for 6 weeks

<table>
<thead>
<tr>
<th>Over cooled</th>
<th>Under cooled</th>
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</thead>
<tbody>
<tr>
<td>Fewer leaves</td>
<td>More leaves &amp; flowers</td>
</tr>
<tr>
<td>Longer internodes</td>
<td>Longer lower leaves</td>
</tr>
<tr>
<td>Shorter lower leaves</td>
<td>Shorter internodes</td>
</tr>
<tr>
<td></td>
<td>Delayed flowering</td>
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</tbody>
</table>

Ways to cool lily bulbs

- Natural cooling
- CTF = controlled temperature forcing
- Case cooling
- Or a combination
- IC = interrupted cool i.e. cool/root/cool
- Moist media
- Advantages & disadvantages (Table page 419)

CTF

- Uncooled bulbs are potted in October
- Rooted at 63-65 °F for 1 to 3 weeks*
- cold treated at 35 to 40 °F in a cooler for 6 weeks

*This time can be adjusted depending on bulb arrival and date of Easter

Economical production of Easter lilies requires rapid and uniform shoot emergence, which is the result of a cold treatment.

“No-Shows” Reasons for Late Emergence

- Growing tip has been damaged
- Maturity of bulb at harvest
- Summer sprouting in field (double holed bulb, one for normal sprout, one for summer sprout)
- Bulb mites
- Sprouts present at harvest and broken
- Freeze injury during or prior to cooling
- Poor ventilation in cooling
**Long-day Photoperiod**
- LD to the shoot can program plants to flower
- LD and cold can substitute on a week-for-week basis after bulbs are treated with 1 to 2 weeks of cold
  - Ex: 6 wks cold = 2 wks cold + 4 weeks LD
- At temperatures > 70°F the LD treatment can not be perceived
- If bulbs have 6 weeks cold, LD will only increase height and decrease bud count

**More Facts about Flowering**
- **Insurance policy** = use LD lighting for 1-3 weeks, starting at emergence
  - Good for an early Easter or when plants have not received 1000 hours of cooling, but will increase plant height
- **Flower initiation** occurs in late January when shoot is 4 - 6" tall

**Leaf Counting**
- In late January, when plants are 4 to 6-inches tall, randomly select 5 to 10 plants of each major lot of bulbs.
  - Cut the stem off at the soil line. Using a pen or hole punch, mark the youngest unfolded leaf. Count all unfolded leaves. Record.
  - An unfolded leaf is one that the leaf tip has bent 45° away from the spindle of younger vertical leaves.

**Timing with Leaf Counting**
- **VB to Easter = 5-6 weeks**
- **Leaf counting to VB = days to unfold remaining leaves**
- **leaves to unfold / days to unfold = leaves /day**
- Raise greenhouse temp. to unfold faster and vice versa

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Easter Lily Culture

- Temperature (see schedule)
- Light - maximum sunlight
  - Light intensity decrease = height increase & bud abortion
  - Excessive use of incandescent = height increase
- Water - tolerant of dry media
- CO₂ fertilization - not beneficial

Effect of Light Quality on Plant Height

More about Temperature

- After FI, plant development is controlled by temperature
- From FI to VB, leaf unfolding rate increases linearly with increasing average daily temperature
- From shoot emergence to VB, is time to control height with temperature

Easter Lily Culture

- Nutrition - 200 ppm N and K
- pH - 6.0 - 6.5
- Avoid fluoride (in perlite & superphosphate)

Factors affecting Height

- Water stress (air & media)
- Temperature
- Plant growth regulators
- Photoperiod
- Mechanical stress
- Light intensity
- Light quality

Plant Growth Regulators

- Arest drench at 0.25 mg a.i./pot or 2-4 ppm when 2 to 6 inches tall up to 12 inches
- Late applications can produce a “palm-tree” appearance
- Sumagic spray (3-15 ppm) or drench 0.25-0.5 ppm

Take home: Black out to eliminate twilight
Spacing

• Stacked in cooler if necessary
• Pot-to-pot until leaves touch
• 8” X 8” to 12” X 12” to finish

Leaf Yellowing
Gradual or Catastrophic

• Starts after visible bud (VB)
• Occurs more with close spacing
• Use BA + GA 4+7
• Promalin, Accel or Fascination
• Promalin or Accel:
  – 10 ppm GA4+7 at VB
  – Spray lower leaves only
  – 15-20 ml/plant
  – 100 ppm Fascination sprayed over top of plant prior to cold storage

Physiological Disorders

• Lower leaf yellow
  • Root loss, nutrient or moisture stress, crowding
• Leaf scorch
  • high fluoride levels
• Bud abortion and blasting
  • root loss, low light, ethylene, high temperature

Postharvest

Plants can be stored at 32°F for 14 days
EthylBloc (1-MCP) extends the life of flowers

Characteristics of a High Quality Easter Lily Plant

• Green foliage all the way to the bottom
• Strong, thick stem
• Centered in the pot
• Uniform, even flower bud display