

# Using Leaf Counting to Track Lily Crop Development

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*Richard J. McAvoy*  
*Assistant Professor and Extension Specialist*  
*Greenhouse crops.*

**S**cheduling a lily crop for Easter is a notoriously difficult task for the greenhouse grower. Easter 1992 will be no exception. In 1992 Easter will be very late, April 19. Consequently, most growers will be faced with the prospect of holding the crop back without having it "stall out". By carefully monitoring the crop's progress and the temperature environ-

ment, this task will be easier to accomplish. Use the leaf counting technique as a tool to track the effect that semiweekly temperature adjustments have on the rate of crop development.

The leaf counting technique is based on the fact that lily shoots produce a set number of leaves before buds form. The actual number of leaves produced will vary considerably between cultivars and from season to season. However, once bud initiation occurs (late January to early February for Easter 1992) the number of leaves is set and will not change.

To summarize the procedure, leaf number is used to determine the rate of crop development. The current rate of leaf development is compared to the rate of leaf development required to finish the crop on time, and a decision is made to increase or decrease the rate. By constantly monitoring lily development and adjusting greenhouse temperature, lilies reach the visible bud stage on time.

Use the following step-by-step procedure to chart lily crop development.

1. Record the average date of emergence for the early, mid and late groups of lilies in the crop.
2. Record the average greenhouse temperature, on a daily basis, following shoot emergence.
3. Count and record the total number of leaves on the plant following bud initiation (approx. Feb. 2, 1991). If flower buds are not present, repeat the count in three to four days.
4. **Count leaves on three to five plants for each cultivar, bulb size and bulb source.** Use a needle to remove and count the smallest, unexpanded leaves.
5. Record the number of fully-developed leaves and the number of undeveloped leaves. How you define developed and undeveloped is arbitrary. Some growers count leaves which are at a 45° angle to the stem (or greater) as developed, and those at an angle less than 45° to the stem as undeveloped. The key is to be consistent. NOTE: 'Ace' will usually average 90 leaves, 'Nellie White' 80 leaves. Leaf number can vary by 10 or more (high or low) during any given season.
6. Divide the number of developed leaves by the number of days since shoot emergence. **This is the current rate of leaf development.**
7. Divide the number of undeveloped leaves by the number of days remaining until visible bud (March 8). **This is the**

**required rate of leaf development.**

8. **Adjust greenhouse temperature.** If the current rate of development is faster than that required to reach visible bud on time, lower greenhouse temperature. If the current rate of development is slower than that required to reach visible bud on time, increase the average greenhouse temperature.

9. Repeat this process weekly, twice weekly if possible. Determine a new current rate (the rate since last count) and a new required rate. **Note:** determine the new required rate by subtraction. You do not have to destroy any more plants. Simply subtract the number of developed leaves from the average total number of leaves previously determined. **Hint:** Use a string tied around the stem, mark a leaf with a marking pen or use a paper punch to mark the last leaf counted as developed.

10. From visible bud, lilies will flower in 30 days at 70°F and 35 days at 65°F.

11. Use the following table to chart leaf development:

Crop ID:					
Date	Leaves developed since last count	Current rate of development	Average temp. °F during interval	Total number undeveloped leaves	Required rate of development

