

Managing the 1994 Easter Lily Crop

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Crop management recommendations for the Easter lily often concentrate on bulb cooling and forcing techniques. However, after bud initiation is complete (late January), attention should shift to proper crop timing and height control. In this article I will concentrate on these two areas of crop management, plus crop nutrition and bulb storage.

If predictions are correct and this year's bulbs were dug with low leaf counts, growers may expect the rate of leaf development to be slow. Tracking lily development with the leaf counting technique is the best way for growers to time their crop.

Leaf Counting

The leaf counting technique is based on the fact that the lily is a determinant plant and, once flower buds initiate, leaf number is set and will not change. Actual leaf number will vary with cultivar, year or bulb "lot" (i.e. a "lot" may represent bulbs from a different source, cooler or greenhouse forcing zone).

Begin leaf counting by recording the average date of emergence for the early, mid- and late groups of lilies in your crop. On a daily basis, record the average greenhouse temperature following shoot emergence. After flower buds initiate, select five lilies for every 1,000 plants cropped from each "lot". Select lilies which appear to represent the overall development of the crop.

Remove, count and record the total number of leaves on your lilies. Use a needle to remove and count the smallest, unexpanded leaves. (**Note:** The shoot tip should show evidence of tiny flower bud formation. If this is not the case,

you started counting too early. Wait one week and try again.) Record the number of fully developed leaves and the number of undeveloped leaves. 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.

Divide the number of fully developed leaves by the number of days since shoot emergence. This is the current rate of leaf development. Divide the number of undeveloped leaves by the number of days remaining until visible bud (approximately week six). This is the required rate of leaf development.

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

Each week, determine a new current rate (the rate since last count) and a new required rate. Determine the new required rate by subtraction; you do not have to destroy any more plants. Simply subtract the number of fully 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 fully developed on your indicator plants.)

Height Control

Controlling the final height of the lily crop is a key concern for growers. The weekly heights listed on the *1994 Easter Lily Schedule* are designed to yield a final height of about 16 inches. Some growers may prefer shorter lilies and some may prefer taller lilies than those listed on this schedule. These growers must adjust the targeted height at each week of development accordingly. For example, if a final lily height of 10 inches is preferred (not including the pot height), growers should aim for a lily approximately 5" tall by week six or seven on the 1994 schedule. Remember that half of the final height is attained by the time lilies reach visible bud.

The plant growth regulators (PGRs) A-Rest and Sumagic can be used to control lily height. Apply PGRs when shoots are 3" to 5" tall. Apply A-Rest at a rate of 1 fl.oz. per gallon of solution and Sumagic at a rate of 0.07 to 0.13 fl.oz per gallon of solution. Apply both as a drench at 4 fl.oz. of solution per 6" pot. A-Rest can be applied as a split application (0.5 fl.oz./



gal.) at one-week intervals.

Sumagic can also be used as a spray, 10 to 30 ppm (2.5 to 7.5 fl.oz./gal). For split applications, spray Sumagic when lilies are 3" tall and, if needed, repeat when lilies reach 6". See 1994 Notes on the accompanying lily

schedule for additional height control tips.

Media, Fertilization and Irrigation

Proper plant nutrition is dependent, not only on the fertilizer used, but also on the irrigation practices and the potting media used.

Mix and test your potting medium before bulbs arrive. If the mix is especially low in phosphorus, incorporate up to three pounds of superphosphate per cubic yard. If leaf scorch has been a problem in the past, do not add superphosphate. Instead, use a water-soluble phosphorus formulation in your fertilizer program.

If the pH is in a good range but calcium is low (below 100 ppm), incorporate gypsum at 2 to 4 lbs. per cubic yard. Ten to thirty percent mineral soil added to the potting medium (volume basis) will decrease leaching of many nutrients under acidic water conditions. Leaf scorch problems can be

minimized by limiting the use of perlite and maintaining the proper pH range (i.e. 6.5 to 7.0).

Start fertilizing with a soluble formulation when lilies emerge and continue to within seven days of sale. Calcium nitrate (3 parts) may be combined with potassium nitrate (2 parts) to make a 15-0-18 soluble fertilizer. If phosphorus was not added to the medium, a 20-10-20 formulation can be used on an alternating basis with a 15-0-15. Fertilizer rates should range from 200 to 300 ppm nitrogen. Lilies are sensitive to high salt levels. Do not allow medium EC to exceed 2 mmho/cm based on a 1:2 soil:water extract (i.e. Spurways analysis) or 3.5 mmho/cm based on a Saturated Media Extract.

Do not withhold water or fertilizer to slow development, or poor crop quality will result. Do not overwater (i.e. water too frequently) or root rot problems may occur.

Disease and Pest Control

Disease and insect problems are predictable with lilies. Growers should be on the lookout for these problems and, if they do arise, use the recommendations as outlined in the *1994 Easter Lily Schedule* (and related articles in this issue) for controlling the diseases *Pythium* and *Rhizoctonia* or insect pests such as aphids, bulb mites and fungus gnats.

Lily Storage

Lily storage is the final step before the crop is sold. Hold early lilies by storing at 35° to 45°F (in the dark) when buds turn white but before they open. At these temperatures, lilies can be held in good condition for 10 days. During storage, spray with Chipco (4 to 8 oz./25 gal.) or dust lightly with Daconil 2787 WP for *Botrytis* control (see related articles in this issue for additional details). Follow label directions. Water thoroughly before storage and place in a **shady** location after removal to avoid excessive wilting.

The key word in good Easter lily production is "monitoring". Growers who monitor nutrition and pest problems, and monitor or track lily height and rate of development, have a production advantage over those who do not. Continuous monitoring of the crop is the only way growers can identify problems or deviations in lily development early and then take the steps necessary to get back on track for quality lily production.