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EDEN: AN EASTER LILY WITH POTENTIAL

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Roy Larson wrote the last NC State Easter lily selection trial summary for the June 1992 issue of the Bulletin. Since that time, the Easter Lily Research Foundation continued perfecting Easter lily cultivars for growers and Roy continued to conduct selection trials until he retired in 1996. This year we evaluated two named cultivars and five numbered selections. 'Eden' looks very promising as a new cultivar for forcing as a flowering pot plant, so we felt it was time to write another trial summary.

Materials and Methods

Bulbs were received from the Easter Lily Research Foundation on 28 October 1997. They were case-cooled at 40 °F for six weeks beginning 6 November 1997. Bulbs were removed from the cooler on 18 December 1997 and potted into 6" standard pots containing Fafard 4P. Pots were placed in the greenhouse set to a 65 °F night temperature / 72 °F day temperature. The newly

planted bulbs were drenched with Subdue on 29 December 1997 as a root rot preventative. Plants were grown in a glass house with no light reduction. They were fertilized at each irrigation with 250 ppm nitrogen supplied from 15-0-15.

Granular Marathon was applied during mid-January to control aphids. No growth regulator was used and no effort was made to control plant height with negative DIF or with cool temperatures during the first two hours of light each morning. Plants were not moved to control timing. Plant heights were measured from the top of the pot to the top of the plant and recorded on January 23, February 6, and February 20. Final height was recorded when the first flower was open on each plant. Final heights reported include the pot height as well as the plant. Dates of shoot emergence and first open flower were recorded. Flowers and buds were also counted.

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Table 1. Growth and flowering of seven Easter lily selections or cultivars in 1998. Trials conducted at NC State University, Raleigh.

Selection	Bulb size (inches circumference)	Plant height (inches)				Days to shoot emergence	Days to 1st open flower	No. of flower buds	
		1/23	2/6	2/20	Final*			n**	n**
Eden	6 1/2 - 7 1/2	3.8	7.0	11.2	22.9	19.1	89.5	6.7	10
	7 1/2 - 8 1/2	4.1	7.8	12.4	24.8	18.9	87.9	8.2	10
	8 1/2 - 9 1/2	4.7	8.3	13.7	27.5	19.4	88.2	9.2	5
Nellie White	7 1/2 - 8 1/2	2.8	6.4	9.8	28.5	22.3	101.6	4.4	10
	8 1/2 - 9 1/2	3.9	7.4	11.7	28.5	20.2	96.4	5.4	10
93-19	9 1/2 - 10 1/2	6.9	11.2	16.8	31.9	14.0	94.0	11.6	5
93-24	7 1/2 - 8 1/2	6.8	12.0	19.7	34.1	13.6	87.2	8.2	5
94-24	7 1/2 - 8 1/2	5.1	8.1	11.6	25.3	16.2	98.9	5.2	10
	9 1/2 - 10 1/2	7.0	10.3	13.0	24.7	10.6	95.8	10.0	5
94-31	7 - 8	5.1	9.1	19.8	31.9	17.3	96.3	6.5	7
	8 1/2 - 9 1/2	7.5	13.3	15.2	36.7	16.7	97.3	11.3	3
94-36	6 1/2 - 7 1/2	5.0	9.3	13.9	26.4	15.4	92.3	2.7	7
	7 1/2 - 8 1/2	5.9	9.8	14.2	26.0	13.4	91.6	4.2	5

*Final height includes the pot; other heights do not.

**n = number of bulbs forced.



Figure 1. L-R: 94-36, 94-24, 'Nellie White', 'Eden', 93-24, and 94-31. The first five selections are 7 1/2 - 8 1/2 bulbs. The last is a 7 - 8. Plants photographed on 26 March 1998.



Figure 2. 6 1/2 - 7 1/2 '94-36 and 'Eden'. Plants photographed 26 March 1998.



Figure 3. 8 1/2 - 9 1/2 'Eden', 94-31, and 'Nellie White'. Plants photographed 26 March 1998.

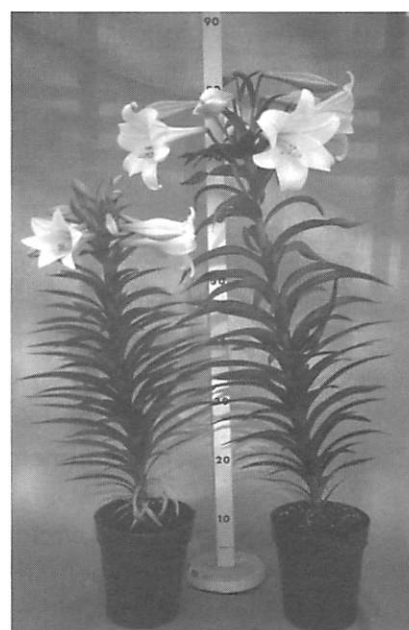


Figure 4. 9 1/2 - 10 1/2 '94-24 and '93-19'. Plants photographed 26 March 1998.

Table 2. Final height, days to 1st open flower, and number of flower buds per plant comparisons within bulb sizes.

Bulb size/ selection	Final ht. (inches)	Days to 1st open flower	No. of flower buds n*	
6 1/2 - 7 1/2				
Eden	22.9 b**	89.5 a	6.7 a	10
94-36	26.4 a	92.3 a	2.7 b	7
7 1/2 - 8 1/2				
Eden	24.8 c	87.9 d	8.2 a	10
Nellie White	28.5 b	101.6 a	4.4 b	10
93-24	34.1 a	87.2 d	8.2 a	5
94-24	25.3 c	98.9 b	5.2 b	10
94-36	26.0 c	91.6 c	4.2 b	5
8 1/2 - 9 1/2				
Eden	27.5 b	88.2 a	9.2 b	5
Nellie White	28.5 b	96.4 a	5.4 c	10
94-31	36.7 a	97.3 a	11.3 a	3
9 1/2 - 10 1/2				
93-19	31.9 a	94.0 a	11.6 a	5
94-24	24.7 b	95.8 a	10.0 b	5

*n = number of bulbs forced.

**Mean separations within columns conducted for each bulb size. Means followed by different letters are significantly different at $\alpha = 0.05$.



Figure 5. 7 1/2 - 8 1/2 'Eden' and 'Nellie White' at flowering. 'Eden' was photographed 20 March 1998 and 'Nellie White' was photographed 7 April 1998. Note the differences in height, flower number, and canopy architecture.

Results and Discussion

We did not receive the same bulb sizes for every selection, so we could not compare all selections to our commercial control, 'Nellie White' (Table 1). Direct comparisons were made among selections within each bulb size we received (Table 2).

There were definite height differences among the selections, and bulb size did affect final height for some (Figures 1-4). 'Eden' tended to be shorter than the other selections for all three bulb sizes evaluated. The 6 1/2 - 7 1/2 and 7 1/2 - 8 1/2 'Eden' were significantly shorter at first flower than 'Nellie White', our commercial control. Both bulb sizes of 94-24 and 94-36 produced plants shorter than 'Nellie White' while the 93-19, 93-24, and 94-31 plants were taller than the commercial control. Plant height increased with bulb

circumference for 'Eden' and 94-31; bulb size did not affect height of 'Nellie White', 94-24, or 94-36. What is the desired height for an Easter lily? I like Bill Miller's assessment of the perfect height: "The best height for your plants is the height your customer wants them." An informal poll of lily growers this spring indicated that a general target height (including the pot) is about 22 inches. All of the selections in our trial exceeded this height indicating that they all would need some type of height control.

The only significant differences in forcing time observed was among the plants arising from the 7 1/2 - 8 1/2 bulbs (Table 2). 'Nellie White' was slower than the other selections followed by 94-24, 94-36, 'Eden', and 93-24. Due to greenhouse space constraints, we had to force our lilies at warmer-than-desired temperatures, so our ability to target the Easter marketing date was nil. However, although our timing was off, the study does give a good comparison among the selections with respect to relative timing during forcing for case-cooled bulbs.

All bulb size / selection combinations averaged more than four flower buds per plant, with the exception of 94-36. Four seems to be the minimum number of flower buds required for the mass market while many high-end retail shops require five to six buds. 'Eden' averaged more than six buds per plant, regardless of bulb size tested. Among the plants produced from 7 1/2 - 8

1/2 bulbs, 'Eden' and 93-24 averaged over eight buds, almost twice the number found on the other selections, including 'Nellie White'. The 94-31 and the 9 1/2 - 10 1/2 94-24 plants averaged over 11 buds per plant; a very impressive bud count.

There were other differences among the selections that we were unable to quantify -- leaf width, leaf color, and canopy architecture (Figure 5). For example, 'Eden' has relatively broad leaves and the foliage tends to curl downward slightly at the leaf tip. This is definitely different than 'Nellie White', but who is to say which canopy architecture is more desirable? We did not observe any differences among selections or bulb sizes with respect to lower leaf loss or leaf yellowing nor were there any clear difference in

flower morphology (though 'Eden' tended to have a more open appearance than other selections).

The conclusion from this report differs from Roy's 1992 evaluation. This time there does appear to be a lily selection better than 'Nellie White'. The greater number of buds plus less height and slightly shorter forcing gives 'Eden' a definite edge over the commercial control. Hopefully future studies and other trials around the country will confirm this and we can look forward to a new cultivar for future Easters.

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