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Forcing Ace Lilies In Light Weight Media

James W. Boodley and Raymond Sheldrake
Departments of Floriculture and Vegetable Crops
Cornell University

Light Weight media has been shown to be practical and economical for production of annual flowering plants and also other selected florist crops (NYSFG Bul. 209, 210, 211). Although most bulbous crops can be forced in generally low nutrient soils without further fertilization, lily bulbs are somewhat unique in that a regular feeding program is needed during the forcing period. This is particularly true with the Croft variety because of the problems of leaf-scorch and tip burn.

Ace variety lily bulbs do not require this precision feeding. Since Ace do not readily show problems of leaf scorch there has been a tendency for commercial growers to prefer this variety for Easter forcing.

The purpose of this study was to compare the results of forcing Ace variety lilies in three light media with a regular soil mix. We were also interested in determining what effect the addition of superphosphate would have on growth. Phosphorus has been shown to be one of the causes of increased leaf scorch particularly with Croft lilies.

Ace variety lily bulbs of 8-9 inch size that had received a commercial cold storage treatment of 35°F from November 3, 1962 to January 2, 1963 were planted in 5-inch clay pots. One-half inch of gravel was placed in the bottom of the pots, the bulbs were placed on the gravel and media filled in around the bulbs. The pots were placed in a 60°F night temperature, 70°F day temperature greenhouse on January 3, 1963.

There were eight media-fertilizer treatments used with 10 pots in each treatment. The standard soil mix was composed of 9, 6, 4, 2 parts by volume of loam soil, sphagnum peat moss, horticultural perlite and coarse sand respectively. The light weight media were used in volume proportions. Prior to planting fertilizers were added to supply calcium, nitrogen and phosphorus as required by each treatment. The media-fertilizer treatments are given in Table 1.

Soil tests were taken at the time of potting. In Table 2 are the results of these tests according to Spurway analysis. From this table it is quite apparent that the small amount of phosphorus supplied as superphosphate resulted in a satisfactory level of phosphorus in the media. The addition of superphosphate substantially lowered the pH and also increased the soluble salt level of the soil.

To ensure an adequate nutrient supply during the growth of the plants a regular feeding program was started February 3, one month after potting. Weekly feedings were made using calcium nitrate at 2 pounds per 100 gallons of water alternated with potassium nitrate at the same rate. When the buds had developed to ¾-1-inch length, calcium nitrate only was applied at the rate of 2 pounds per 100 gallons of water weekly. Fertilization was continued until all plants were in bloom.

At the conclusion of the study, data were recorded on the days to emergence, visible buds, first bloom, flower size, number of flowers, plant height and fresh weight. These observations are presented in Table 3.

Table 1.—Treatment numbers, media combinations and fertilizers used in forcing trials with Ace lilies.

Treatment No.	Media	Fert. added/bushel of mix
1	9-6-4-2[a]	4 ozs. calcium limestone 4 ozs. dolomite limestone 1 oz. ammonium nitrate
2	50% peat moss 50% perlite	Same as 1 above
3	50% peat moss 50% No. 2 Terralite (vermiculite)	Same as 1 above
4	50% peat moss 25% perlite 25% No. 2 Terralite	Same as 1 above
5	Same as 1 above	4 ozs. calcium limestone 4 ozs. dolomite limestone 1 oz. ammonium nitrate 1 oz. pow'd superphosphate
6	Same as 2 above	Same as 4 above
7	Same as 3 above	Same as 4 above
8	Same as 4 above	Same as 4 above

[a]Loam soil, sphagnum peat moss, horticultural perlite and coarse sand, all by volume.

Results

Days to emergence. The average number of days to emergence were unusually few considering the bulbs were 1½-inches below the media surface. Variations among the treatments were much less than the variation among the 10 plants within any one particular treatment.

Days to visible buds and bloom. Visible buds were determined as that stage at which buds could just be seen when the terminal leaf cluster was parted. Days to bloom were when the tip of the first flower had cracked open. No

(*continued on page 4*)

Forcing Ace Lilies (*continued from page 1*)

Table 2.—Soil test results of media, taken at time of potting but prior to wetting. Parts per million in extracting solution, Spurway method.

Treatment No.	NO_3	P	K	Ca	Ph	TSS
1	84	trace	5–	200	7.7	26
2	102	trace	5–	100	7.1	24
3	77	trace	10	115	7.4	32
4	94	trace	5	100	7.4	32
5	118	3	5–	125	7.2	50
6	104	6	5	120	6.2	48
7	91	4	5	120	6.3	56
8	114	5	5	120	6.3	52

Table 3.—Physical data on Ace lilies grown in 8 media-fertilizer studies, potted January 3, 1963. Figures are averages of 10 plants.

Treatment	Days to Emerge	Days to Visible buds	Days to Bloom	No. of Flowers	Flower Size (in.)	Plant Height (in.)	Fresh Weight (oz.)
1	11	70	105	4.5	6.1	12.6	5.3
2	11	73	109	4.8	6.2	12.8	6.3
3	10	73	109	4.6	6.2	13.1	6.7
4	14	77	113	5.1	6.4	12.5	6.4
5	12	77	112	4.5	6.2	12.6	5.9
6	11	77	113	4.6	6.2	12.0	6.5
7	12	75	111	4.9	6.3	12.2	7.1
8	10	75	113	5.1	6.2	11.5	7.0
Avg.	11.4	74.6	110.6	4.8	6.2	12.4	6.4

extreme differences among the media treatments were noted for either of these factors. A slight temperature differential in the greenhouse affected the plants of treatments 1, 2 and 3 so that they developed somewhat faster than the plants in the other treatments.

Number of flowers. The soil grown plants produced the fewest average number of flowers. This was true with both soil treatments. The greatest number of flowers produced was with the plants grown in 50% peat moss, 25% perlite, 25% vermiculite combination. In both instances an average greater than 5 flowers per plant was obtained. Since flower number is important to commercial producers this high number of blooms obtained is economically significant.

Flower size. The size of the individual flowers did not differ greatly from one treatment to another.

Plant height. Height was obtained by measuring from the rim of the pot to the base of the first flower pedicel. The differences in height were too small to be considered important.

Fresh weight. As with flower number, the poorest growth as determined by fresh weight was in the soil grown plants. Since fresh weight is influenced by the moisture content of the plants, the heavier weight of the plants in the various media could be attributed to the better water holding capacity of these media.

Conclusions

From these studies it has been shown that light weight media were equal or superior to a soil mix as a growing medium for forcing Ace lilies. A 2:1:1 combination by volume of peat moss, vermiculite and perlite resulted in production of the greatest number of flowers. The plants that received superphosphate were heavier than the plants that did not receive superphosphate. However, plants grown in the light weight media were all heavier than those grown in soil whether superphosphate was added or not added.

In areas where top soil is of poor or unknown quality, the use of light weight media with the fertilizer treatments described are suggested for trial use by flower growers.

Editor's Note:

I would like to thank Jim Boodley for editing the Bulletin while I was on sabbatic leave. He did an excellent job and I'm sure all of the Flower Growers appreciate his efforts.

It is good to be back on the job. We had an enjoyable as well as educational sabbatic leave. In the next issue of the Bulletin I will have a little report on what we saw.

R.W.L.

In This Issue

YOUR EDITOR,

Bob Langhans