

1959 - 1960 Tests for the Control of Lily Root Rot

by Ralph Baker

Last year results were reported which indicated that deep planting of lily bulbs was instrumental in the control of root rot¹. The data reported below are the results of the third year's testing of this means of control.

The methods and experimental design were essentially those used in previous years. Bulbs were planted at 2 different depths: The conventional depth and at the bottom of the pot. Two different types of material were used as potting media. The first type was a soil with no amendments, very poorly drained, and the second was a mixture of 1/3 peat, 1/3 sand, and 1/3 base soil by volume. The soil was not steamed.

Data were collected on the length of time until the opening of the first bud on each plant. The height was recorded in

inches from the rim of the pot to the junction of the bases of the pedicels. The extent of the root system was estimated (0 = no roots, 3 = extensive roots) and the number of buds was recorded. Disease severity was determined by noting the number of plants with foliage symptoms and/or wet rot of the roots.

Bulbs from 2 sources were used.² The first lot (designated source I) was divided

¹Baker, Ralph. 1959. The influence of depth of planting and soil drainage on the development of lily root rot. Colo. Flow. Gro. Assoc. Bulletin 112: 1-30.

²Appreciation is expressed to The Park Floral Company and Vaughan's Seed Company for the plant material used in these investigations.

into 4 replications: each treatment containing 40 plants. The other (source II) was divided into 3 replications and 30 bulbs were used in each treatment. The 2 sets of plants were placed in different parts of the greenhouses. The first lot was kept in a greenhouse with a night temperature of 60° F. The second lot was placed in the corridor where temperature control was poor. Night temperature in this case was approximately 50° F. Day temperatures in both cases were between 60-85° F.

Bulbs from source I were planted December 9, 1959 and bulbs from source II were potted November 27, 1959.

Nutrients were supplied as in previous years.

The results of this year's study are recorded in Tables 1 and 2 and these, combined with the results of the previous 2 years, may be summarized as follows:

1. No appreciable difference in the height of plants as influenced by depth of planting has been noted at any time. There was a tendency in some instances (for example in bulb source I) for plants in un-amended soil to be shorter than those in the soil mix.
2. In all cases deep planted bulbs in the soil mix initiated a much more extensive root system.
3. No significant differences in bud count between deep and conventionally planted bulbs has been noted until this year. Plants from bulb source I developed more buds from deep planted bulbs.

Table 1.--The general characteristics of Craft lilies from bulbs planted at 2 depths and grown in two different types of potting media.

Depth of planting and type of potting medium ^{a/}	Avg. height of plant (inches)		Avg. extent of root system ^{b/}		Avg. bud count		Avg. days to bloom	
	Source		Source		Source		Source	
	I	II	I	II	I	II	I	II
Conventional depth								
Base soil	11	11	1.6	1.2	3.4	4.1	137	112
Soil mix ^{c/}	10	11	2.1	1.3	3.2	4.5	129	115
Deep planting								
Base soil	9	9	1.6	1.3	4.3	4.4	156	135
Soil mix ^{c/}	12	10	2.8	2.1	4.7	4.7	152	138

^{a/} Total number of plants in each treatment in bulb source I was 40; in bulb source II 33.

^{b/} Extent of root system estimated visually on a 0-3 scale with 0 = no roots, 3 = extensive roots.

^{c/} Soil mix consisted of 1/3 peat, 1/3 sand, and 1/3 base soil by volume.

4. Deep planting has consistently delayed the appearance of the first open bud. This year buds were delayed an average of 13 to 23 days.
5. Conventional plantings have consistently contained a higher incidence of root rot as evidenced by foliar and/or root symptoms. This year for the first time a few plants from bulbs planted at the bottom of the pot developed foliar symptoms.

Commercial tests were conducted also in 1960. In this instance 200 bulbs were

planted conventionally and 200 were placed at the bottom of the pot. The results were complicated by severe nutritional disorders, but just before Easter, 39 of the conventionally planted bulbs and 66 of the deep planted lilies were marketable.

The results over the last 3 years thus, would indicate that deep planting of lily bulbs has a number of advantages. Symptoms of root rot are reduced. If a well drained potting medium is utilized, a more extensive root system is assured. Other factors influencing quality lily production such as height and bud count are not appreciably different. The increased time required for forcing deep planted bulbs, however, must be kept in mind.

Table 2.--Symptoms of root rot on Craft lilies originating from bulbs planted at 2 depths and grown in 2 different types of potting media.

Depth of planting and type of potting medium ^{a/}	Number of plants with foliage symptoms		Number of plants with wet root rot	
	Source I	Source II	Source I	Source II
Conventional depth				
Base soil	12	33	21	9
Soil mix ^{b/}	18	34	26	9
Deep planting				
Base soil	2	4	11	4
Soil mix ^{b/}	1	4	5	6

^{a/} Total number of plants in each treatment in bulb source I was 40; in bulb source II 33.

^{b/} The soil mix consisted of 1/3 peat, 1/3 sand, and 1/3 base soil by volume.