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EASTER LILY CROP SURVEY OF MASS. GROWERS

In March 1961 a survey of 18 greenhouse ranges was made to determine what common practices were followed by growers in culture of lilies for Easter and to what degree leaf scorch was prevalent in the lily plants of the different growers; also, whether occurrence of scorch could be related to cultural methods or correlated with our experimental findings.

In the survey, note was made of the variety grown, bulb size used, number of bulbs planted, the soil mixtures, fertilizer practices, condition of plants and amounts of leaf scorch. Where permissible one plant of each variety of lily with soil was collected from the grower for laboratory study. If leaf scorch was evident a plant with and without symptoms was taken.

Bulbs and Media

The total crop planting of growers surveyed amounted to 50,000 Ace and 3,700 Croft. Individual grower plantings varied from 500 to 15,000 bulbs. The data collected further showed that the bulb sizes used were predominantly 8-9's, with a few growers using 7-8's or 9-10's. Cultural media used varied with the grower particularly as to ratios of soil, peat and sand. Some used a mix of 3-1-1, 4-1-1, 2-1-1, or 1-1-0. The extreme as to media varied from a straight soil to a peat-sand mix. One grower used chrysanthemum soil well fortified with rotted manure. Another used old poinsettia stock plant soil and one used soil and leaf mold.

Fertilizer

The kinds of fertilizer used and frequency of application were as diverse as the different cultural media. Some growers had fed the plants once, some twice, and others three or four times. Fertilizers used varied from calcium, sodium or potassium nitrate on through a gamut of the following analyses: 15-30-15, 25-5-20, 20-20-20, 20-0-30, 12-6-12, 14-4-12, XL36, 50 and 60. One grower used only fish oil emulsion and claimed this was the way he kept the plants short. Most all the growers applied some lime; a number of growers used an initial application of phosphate to soil mixtures.

The survey findings showed considerable variability among growers as to several cultural practices; yet the lily plants in the majority of the greenhouses visited showed

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Easter Lily Crop (Continued)

excellent growth and set of flower buds. Nine out of 18 growers grew Ace and nine grew Croft. Scorch symptoms were observed in three ranges on Ace plants and in five ranges on Croft. The amount of scorch observed on both Ace and Croft plants, generally, was low; however, in one range symptoms were quite prevalent on a planting entirely of Ace bulbs. On both varieties the number of leaves per plant showing scorch lesions varied from a low of six to a high of 53, the latter count being made on an Ace plant.

Weight Determinations

On each of 24 plants collected from growers, fresh and dry weight determinations were made as well as amount and color evaluation of basal and stem roots. Nutrient elements in the soil of each plant were tested by the Morgan Method. Fresh weight of individual plants from the different growers was rather variable; however, very little difference was observed as to dry weight in relation to fresh plant weight. Root mass and color was considered satisfactory particularly in the basal root system. Mass and color of stem roots were more variable than basal roots. Research has shown this to be related to planting depth.

Nutrients

The nutrient element tests made on soil from individual plants from 18 growers were variable. Tests showed that 11 out of 18 samples were low in nitrogen and seven were medium to high; as to phosphorus, 15 were in the medium to medium-high range, one was high and two were low; with potassium, five were medium to medium-high, five were high and eight were low. Calcium tested consistently high to very high for all the samples. The pH range varied from 6.0 to 7.0 except for one or two which were 5.2.

The variability in cultural conditions of lilies such as growing media, fertilizer use and soil nutrient levels, as revealed by this survey, are what one might have predicted for other crops. Also, one might have anticipated the low incidence of scorch in the lily plants since, in most instances, nutrient element levels were well within optimum limits during most of the plant growth period. The fact that a certain number of the soil samples showed a low

test in particular nutrient elements does not imply that such a condition existed during the entire plant growth period. In experimental work it is necessary to use a wide range of nutrient levels in order to determine specific factors affecting plant growth. Such an extreme range is rarely encountered under commercial cultural conditions; hence, injury symptoms caused by nutrients are seldom as severe on commercially grown plants.

Scorch and Calcium

In our survey the fact that fewer cases of leaf scorch were observed on Ace lilies would indicate that this variety, while not as prone to show symptoms as Croft, is not immune to the trouble. Our experimental work this past year with Croft and Ace show that severe scorch symptoms can be induced on Ace. From our study and agronomists' reports on differences in uptake of calcium from different sources of lime, we are at least more conscious of the importance of calcium in plant nutrition. Research findings of other workers as well as ours show that calcium is a causal factor for scorch. What the direct action of calcium is in the lily plant to cause scorch we still do not know.

Summary

The value of this survey may be summed up as follows: (1) We have a broader, first-hand, realistic view of the economic aspects of the lily leaf scorch problem to the grower. For this particular growing season this problem is not considered of importance; but the observance of scorch in commercial ranges on the Ace lily could, in the future, change the economic status.