

LEAF SCORCH OF CROFT LILIES AND APPLICATION OF LIME

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Ground limestone added to the soil before potting was most effective in reducing leaf scorch of Croft lilies. (Table 1) Four applications of lime during forcing significantly reduced leaf scorch only when no lime was added to the soil prior to potting. Results indicated that in addition to regular fertilization with nitrogen, lime was necessary before potting to reduce or prevent leaf scorch.

A field soil with a pH of 5.2 and low fertility was used to pot 7 to 8-inch Croft lily bulbs on December 17, 1953. Soil treatments were as follows: #1 - no lime added; #2 - no lime added before potting, four applications (1 tablespoon per 6-inch pot) of lime during forcing; #3 - two ounces of lime per bushel of soil added before potting; #4 - same as #3 plus four applications of lime during forcing; #5 - four ounces of lime per bushel of soil added before potting; #6 - same as #5 plus four applications of lime during forcing. Three replications per treatment with nine plants per replication were grown in this experiment plus an additional four pots per treatment for soil tests.

Superphosphate was applied to all soils before potting at the rate of 2 ounces per bushel. At a height of approximately four inches, all of the lilies were fertilized at ten day intervals beginning January 29, 1954 with a solution of $\frac{1}{2}$ pound ammonium nitrate, $\frac{1}{4}$ pound potassium nitrate, and $\frac{1}{4}$ pound calcium nitrate per 50 gallons of water. A total of six applications of liquid fertilizer were made. The lilies were in flower approximately April 20.

In soils receiving no lime, an average of 13 scorched leaves per plant occurred. By adding 4 ounces of lime per bushel of soil before potting plus four tablespoons per pot during forcing, this leaf scorch was reduced to an average of two leaves per plant. In this treatment (#6) ten plants of a total of 27 were completely free from leaf scorch as compared to 1 of 27 in the other lime treatments.

Plants receiving lime during forcing had approximately one half as many scorched leaves as plants of the same treatment receiving no lime or lime only at potting. Except in the treatment (#1) where no lime was added before potting, these additional applications of lime were not statistically significant although a consistent trend toward reduction was indicated. Considerable variation in the amount of leaf scorch between individual plants, also noted by other research workers (2) (3), may have accounted for this lack of significance.

Regular applications of nitrogen did not reduce the number of scorched leaves unless lime was added before potting or during the forcing period. Plants in soil receiving no lime (Treatment #1) but regular nitrogen fertilization had an average of 13 scorched leaves per plant, while any of the lime applications reduced the number of injured leaves.

The highest pH level was recorded in the soil to which 4 ounces of lime per bushel were added. In all treatments, the pH of the soil increased during the progress of the experiment.

Review of Literature

The results of the experiment recorded here are in agreement with research on leaf scorch at other experiment stations. In a cooperative experiment at Beltsville, Md., and Columbus, Ohio, Stuart, Skou, and Kiplinger (4) determined that the amount of leaf scorch varied in one lot of bulbs grown in two different locations. Moderate amounts of nitrogen together with lime were effective in reducing leaf scorch. Excessive amounts of nitrogen and phosphorus increased the number of scorched leaves, particularly if the nitrogen carrier lowered the soil pH level. It was recommended that ground limestone or hydrated lime be added to the potting soil if the pH was much lower than 7.0.

Earlier work by Stuart, et al. (3) indicated that heavy applications of lime (8 ounces per bushel of soil) before potting combined with frequent nitrogen applications during forcing produced plants with the least scorch.

Seeley and Valazquez (2) noted that a decrease in leaf scorch occurred when ammonium sulfate and nitrate of soda were added in small amounts every two weeks during the growing period. Adding an organic source of nitrogen at potting to a soil low in organic matter did not reduce leaf scorch

