

Pointers on Croft Root Rot

A. W. Dimock

Department of Plant Pathology
Cornell University

During the past few years a great deal has been written and a lot more said about the root rot problem on Croft lilies. A review of the published papers leaves one quite puzzled both as to the cause of the root rot and procedures for controlling it. Because of this dilemma a cooperative test was undertaken last year with the hope of clearing up some of the confusion. Eight research workers at points throughout the United States cooperated, and bulbs from the same two or three western fields were supplied to each. In each location the bulbs were separated into test lots and some grown in sterilized soil, some in raw soil. Some of the bulbs were treated in ferbam-Terraclor mixture, some were not. Lots of untreated bulbs were grown in raw soil given each of the soil drenches or soil treatments which had been suggested in the published articles. In all cases, a very light mixture—1/3 soil, 1/3 sand, 1/3 peat—was employed.

The results of the tests, unfortunately, did very little to clear up many of the questionable points. This was because in the large majority of cases little or no serious root rot developed with any of the three bulb sources. In the one case where the report indicated that serious root rot did develop, it developed only in the raw soil series, not where the soil was steam sterilized. In fact, in 5 of the 8 locations sterilization showed definite advantage on the basis of height of plant, extent of root system, general appearance of root system or freedom from scorch. In only one of the remaining three cases was performance definitely poorer in steamed soil.

As far as bulb and soil treatments were concerned, the ferbam-Terraclor bulb treatment showed definite advantage only in the California tests. Soil treatments, in general, did not produce any appreciable effect except in Missouri, where considerable wet root rot developed. Here, an appreciable reduction in root rot was noted in soil treated with copper Omadine, a material which, unfortunately, is not available. No other materials gave clear-cut or consistent improvement. Other materials employed included oxyquinoline sulfate and Panogen 15 as drenches, and captan as a soil mixture.

Perhaps the most interesting question raised by the tests was that of explaining the general absence of serious root rot. It seems quite unlikely that important root rot organisms were not introduced either with one or more of the lots of bulbs or with the raw soil in places other than Mis-

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souri, even though such an explanation is admittedly possible. To the writer it seems most likely that the explanation is to be found in cultural conditions, specifically, the use in all locations of a light, well-aerated soil mixture, with drainage assured by gravel in the bottom of all pots. This would favor good aeration of the root zone, which would promote vigorous root development but would not favor development of water-mold root rot fungi.

Suggestions for Root Rot Prevention:

On the basis of the above observations, and studies of previous years, we would offer the following suggestions for this year:

1. *Do not* depend on chemical treatments of the bulbs or soil to solve the root rot problem. Results are too erratic; what seems to work in one grower's situation may not work in another.
2. *Do* prepare a well-aerated soil mixture for potting. If the soil is a very sandy soil, add sphagnum peat to improve aeration. If the soil is not sandy add *both* sand and peat. While we have found a 1:1:1 ratio of soil to sand to peat satisfactory, it may be that with some soils a 2:1:1 ratio might be better. The important thing is to provide a mixture which will retain its open, aerated structure but which also will retain adequate moisture for a reasonable length of time. Add proper amounts of lime and fertilizer to the mixture.
3. *Do* sterilize the potting mixture to eliminate disease organisms.
4. *Do* provide for adequate drainage of excess water. Put considerable *coarse* drainage material in the bottom of each pot as well as on the benches. It does little good to provide a well-drained, well-aerated soil if the water has no place to go.
5. *Do* water and fertilize adequately throughout growth of the plants. With a loose soil which is high in sand and peat, fertilization will have to be carefully watched.

The above suggestions probably will not completely eliminate root rot, but we feel that from a practical point of view, any really serious development of this disease will be prevented.
