

Cold injury to magnolia foliage

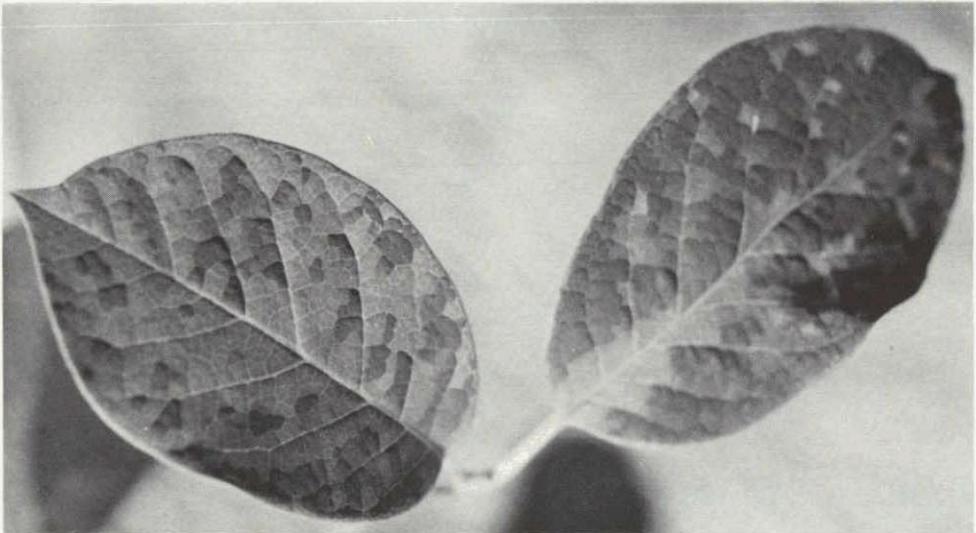
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During late May 1985 we noted a mosaic symptom on the leaves of magnolias located in our nursery and on potted magnolias that had been removed from cold storage and held in an outdoor lathhouse. This occurred at the Brooklyn Botanic Garden Research Center at Ossining, New York (zones 5-6).

The symptoms consisted of angular patches of light and dark green tissue in an irregular mosaic pattern. The individual patches were delimited by leaf veins. The mosaic usually appeared at random on scattered expanded leaves. Occasionally it was more concentrated along the mid-vein, and sometimes only one of a pair of leaves was affected. The magnolias affected were *Magnolia acuminata*, *M. acuminata* × 273 (*x brooklynensis*), *M. x brooklynensis*, *M. 'Elizabeth'*, *M. 'Yellow Bird'* × 273 (*x brooklynensis*), and *M. sieboldii*. We noted similar mosaic symptoms on a few saplings of the tuliptree, *Liriodendron tulipifera*.

We first suspected virus infection. Transmission attempts with magnolia leaf extracts did not induce infection in virus indicator plants. The mosaic sometimes accompanied marginal and tip scorch symptoms typical of those caused by cold injury to magnolias. Our outdoor temperature recorder revealed two nighttime frost incidents in May: -1C on May 4th and -2C on May 9th. The recorder was located in an open but covered structure, so the actual temperatures at the tree sites may have been slightly lower. These two cold incidents were preceded by a generally warm period. From April 23 to May 3 the daily highs ranged from 6C to 30C, with an average high of 21.5C. From the scattered scorch symptoms on young leaves, the magnolias clearly had been injured by frost. We then suspected that the forcing of the magnolia leaves during the warm period of late April to early May, followed by one or both low temperature incidents in early May, may also have been responsible for the mosaic symptoms.

We exposed potted magnolias, and



Pictured is mosaic pattern on magnolia plant leaves caused by cold injury. Photo Brooklyn Botanic Garden.