

Leaf spot disease of iris

Randolph Keim

Iris plants are extremely rewarding to home gardeners who culture and enjoy them. They are exotic and offer a rainbow of color for every taste. To those gardeners who thrive on deeper involvement, iris may be hybridized for limitless possibilities of colors and color combinations.

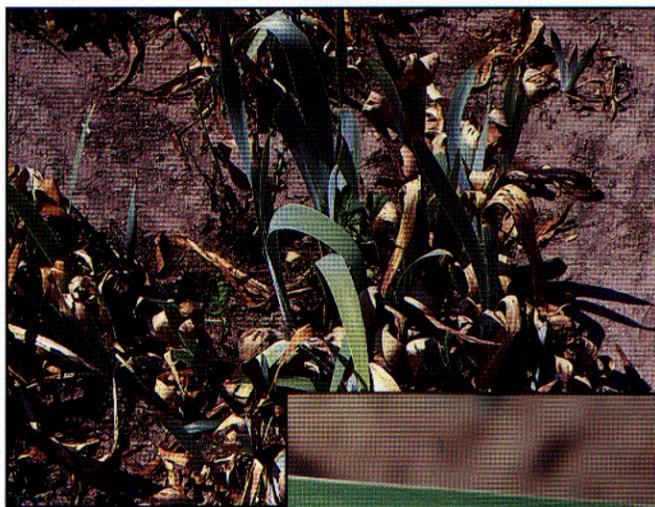
A disease of rhizomatous iris has recently become serious in gardens of southern California. It generally attracts attention by the random occurrence of dying leaves. Upon closer inspection, there can be seen subcircular or elliptical areas of off-color shades within the background of the dead or dying tissue. Also, discrete spots may be observed on otherwise healthy leaves. They start as circular water-soaked areas with tiny necrotic centers; as spots enlarge, the necrotic centers enlarge, and zones of yellow, yellow-brown, or water soaking continue to spread. Often tiny black specks may be seen in the centers; these are fruiting bodies of a secondary, noncausal fungus. Several such spots on a leaf will cause it to die, and an entire clump may be decimated.

Procedure

Because handbooks and research papers list several causes of iris leaf spots, we conducted a comprehensive study of the problem. Lesions were cut from leaves and cleaned in a dilute solution of household bleach. Because there was a sporulating organism on the dead tissue in the center of the spots, just the water-soaked and chlorotic zones of the spots were plated for isolations. They were cut into pieces about 2 millimeters square and placed on culture media in sterile petri dishes. The fungi that grew out of the tissue sections were transferred to special media for identification.

Several fungi were identified, but one was selected for testing based upon evidence found in previously published material. That fungus was *Heterosporium iridis*, which had been reported on iris in Arkansas in 1982. It was grown in pure culture on a special medium until it sporulated. The spores were collected by whirling the growth colonies in a blender with sterile water, and were checked for viability on fresh sterile medium. They germinated at a rate of nearly 100 percent and often from more than one of the several cells. The heavily pigmented spores are cylindrical with rough, thickened outer walls and at least two or three cross walls.

Testing consisted of inoculating healthy plants to determine if the organism selected was capable of inciting infection. Several iris cultivars had been previously planted outdoors and in large plastic pots in a greenhouse. These were sprayed with a freshly prepared suspension of *Heterosporium iridis* spores and allowed to incubate under plastic covers for 72 hours. Within 15 days, both the indoor and the outdoor plants were covered with circular spots showing the typical water soaking, often with tiny brown centers. The spots occurred on all cultivars tested. To be certain that these new



Iris decimated by leaf spot (above), and advanced stage of disease before leaf starts to die.



spots were caused by the spores of the organism sprayed on the foliage, tissue sections from the water-soaked areas were placed on fresh sterile media. From them, colonies of a fungus grew out that produced spores identical to those used in the inoculations.

The tested cultivars that proved susceptible to the disease were Iris White, Patricia Craig White, Blue Purple, Launching Pad, Blue River, and Piety. In addition, many other varieties were affected by the disease in the gardens of Orange County iris growers. Natural resistance to the disease does not initially appear to be a readily available genetic trait, but hybridizers should be alert to the possibility.

Chemical control

In lieu of natural resistance, the use of chemical fungicides should be considered for control of *Heterosporium* leaf spot disease of iris. Gardeners will find a variety of fungicides in retail nurseries and garden stores that are registered for use on ornamental plants, and one, at least, that is registered for leaf spot of iris.

To be able to provide some guidance in the selection of fungicides, this study included a laboratory screening of five products sold in a retail nursery. The screening consisted of spraying a suspension of spores from *H. iridis* onto culture plates on which were placed small filter discs saturated with the different fungicides diluted to label use rates. The generic names of the fungicides tested were folpet, chlorothalonil, benomyl, mancozeb, and PCNB. They all showed some activity, but folpet, benomyl, and mancozeb were rated superior. Since the manufacturers of benomyl recommend that other fungicides be used with it to reduce selection for resistance, a

combination of benomyl with mancozeb or folpet should give good control. Results of the study also indicate that periods of continuous high moisture and rain, coupled with mild temperatures, are most favorable for infections to occur. Where leaf spot is a known problem, such periods should be anticipated with a preventive fungicide application and continued according to label directions. None of the above chemicals showed any phytotoxicity on the cultivars tested.

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