Foliar Symptoms Associated with Botrytis Rhizome Rot of Iris

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Botrytis convoluta Whetzel & Drayton causes an important rhizome rot of bearded irises in North America. Whetzel & Drayton (3) described *Botrytis* rhizome rot in 1932, but only recently has new information been contributed to the knowledge of the disease cycle. Whetzel & Drayton (3) suggested that *B. convoluta* required wounds for infection, and that sclerotia were responsible for infection. Sclerotia caused infection of wounded iris rhizomes in the field and unwounded iris offsets under laboratory conditions (1). Sclerotia did not infect sound rhizome tissue under field conditions. *B. convoluta* produces abundant conidia on infected plant parts near the soil surface in spring and fall which could be carried by wind currents or splashing water to other plants. Maas (1) has shown that conidia may act as sources of inoculum, and cause infection of plants in the field. The purpose of this study was to determine how conidia may cause infection of iris rhizomes.

Offsets removed from field-grown bearded irises (*Iris variegata* L. 'Cotlet') were examined for decay, and those that appeared diseased or unthrifty were discarded. Healthy-appearing plants were stored at 24-28 C for 4 months. Prior to use, offsets were surface-sterilized in 0.8% sodium hypochlorite for 5 min, rinsed, and air-dried. Offsets were inoculated with 2-3 drops of a conidial suspension (approximately 50,000 spores/ml) placed on top of the offsets near the leaf bases and allowed to air-dry. Inoculated offsets were planted in plastic boxes ($23 \times 15 \times 10$ cm) containing nonsterile field soil moistened to approximately 50% of its moisture-holding capacity. The boxes were put into large perforated polyethylene bags to conserve moisture, and placed at various incubation temperatures (1, 3, 7.5, and 21-24 C) for 75 days.

At the end of the incubation period, the plants were removed and examined for infection. At 1 C, only 4% were infected, and these lesions were located on top of the rhizome away from the leaf bases. At 3 C, 28% of the offsets had lesions on or near the leaf bases, and 16% had lesions on top of the rhizomes, but not clearly associated with the leaves. Sixteen percent at 7.5 C and 8% at 21-24 C had lesions associated with the leaves, but none was present on the rhizomes at other locations. Noninoculated control offsets at all temperatures were free of lesions in these areas.

Leaf lesions developed where healthy young leaves were in contact with senescent leaves that were thoroughly colonized by *B. convoluta*. Evidently, conidia applied to the rhizome and leaf bases had germinated and colonized the senescent outer leaves before infection of young leaves occurred. Colonized senescent leaves were nearly completely covered with typical conidiophores bearing conidia. Lesions on young leaves were brownish, water-soaked areas which contrasted sharply with the uniform pale green of young leaves (Fig. 1). Lesions were generally located at leaf bases, but others were located several cm above the leaf bases. In addition, young leaf buds up to 1-2 cm tall were often

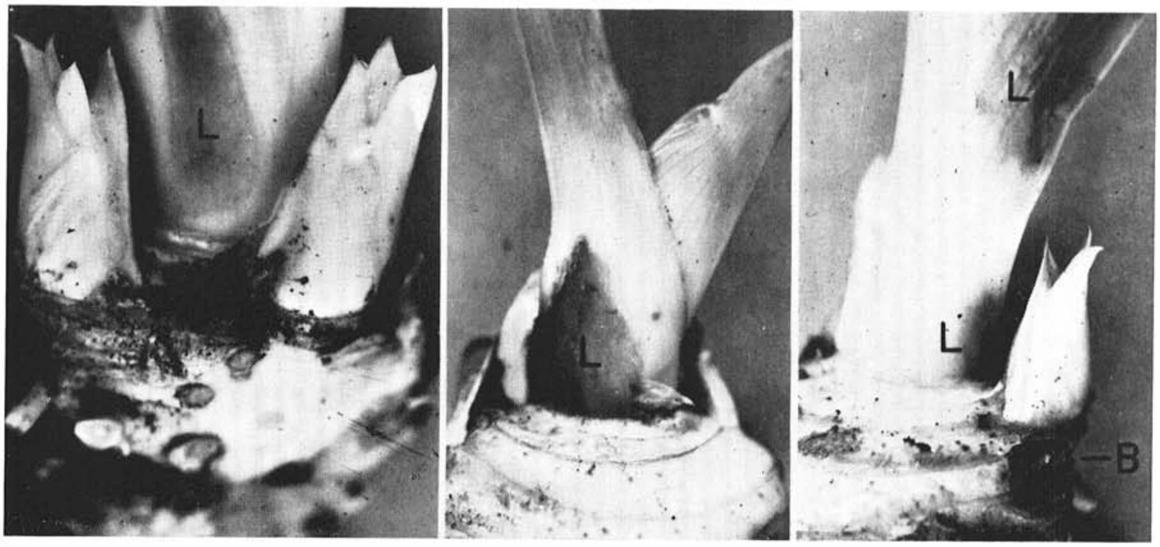

Fig. 1. Lesions (L) on young iris leaves caused by infection resulting from inoculation with *Botrytis convoluta* conidia. Young leaf bud (B) infected and killed by the same pathogen.

destroyed by *Botrytis* infection. Young leaf tissue is apparently susceptible to attack by *B. convoluta* when there is an adequate food base (colonized senescent tissue) for infection. Infections progressed into rhizome tissue from large leaf-base lesions. Saprophytic establishment in dead or senescent plant parts that serve as a food base or energy source for infection of healthy tissue is not unusual for other species of *Botrytis* (2), but heretofore has not been reported for *B. convoluta*.

LITERATURE CITED

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