Calyx-end Rot of Apples

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ABSTRACT

Two types of calyx-end rot were observed on immature McIntosh apples. An Alternaria sp., which was weakly pathogenic, was isolated from the small, dark lesions. Sclerotinia sclerotiorum was isolated from the larger, light-brown lesions, and was highly pathogenic. Phytopathology 60: 1152.

A calyx-end rot of apples was a problem in New Hampshire orchards in 1968 and again in 1969. It was observed most frequently in early summer on small green McIntosh apples (Fig. 1).

In 1968, the affected area around the calyx was small, dark, and corky. It closely resembled Wilkinson's (2) description of dry eye rot of apples caused by Botrytis cinerea. Alternaria sp. was commonly isolated from affected apples in 1968, but pathogenicity studies were not carried out.

In 1969, two types of rot were observed. One resembled the 1968 form, and isolates of Alternaria were obtained from it. The other type was characterized by lesions that were larger, lighter brown, and softer in texture. Sclerotinia sclerotiorum (Lib.) deBry was consistently isolated from this form.

Fig. 1. Immature McIntosh apples exhibiting typical symptoms of calyx-end rot caused by Sclerotinia sclerotiorum, above, and Alternaria sp., below.

Fig. 2. 3. 2) Alternaria sp. on apple. Upper left, naturally infected immature McIntosh stored in refrigerator at 4 C for 4 weeks. Lower left, naturally infected immature McIntosh incubated in moist chamber at 20 C for 3 weeks. Center, Alternaria sp. isolated from naturally infected apple and inoculated into apples at right. Right, immature Early McIntosh apples inoculated with Alternaria sp. and incubated in moist chamber at 20 C for 3 weeks. 3) Sclerotinia sclerotiorum on apple. Upper left, naturally infected immature McIntosh stored in refrigerator at 4 C for 4 weeks. Lower left, naturally infected immature McIntosh incubated in moist chamber at 20 C for 3 weeks. Center, S. sclerotiorum isolated from naturally infected apple and inoculated into apples at right. Right, immature Early McIntosh apples inoculated with S. sclerotiorum and incubated in moist chamber at 20 C for 3 weeks. Apple at lower left and apples at right are rotting completely.

Immature Early McIntosh apples were inoculated with either Alternaria sp. or S. sclerotiorum, placed in moist chambers, and incubated at 20 C. Alternaria was weakly pathogenic and produced a slowly developing, brown dry rot (Fig. 2). Sclerotinia, on the other hand, was highly pathogenic. The inoculated apples rapidly developed a watery, soft rot, and sclerotia developed on the fruit surface (Fig. 3).

Calyx-end rot caused by S. sclerotiorum was reported from Nova Scotia in 1959 (1), but apparently its occurrence in the United States has not been reported previously.

LITERATURE CITED