

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.) dBy. was consistently isolated from this form.

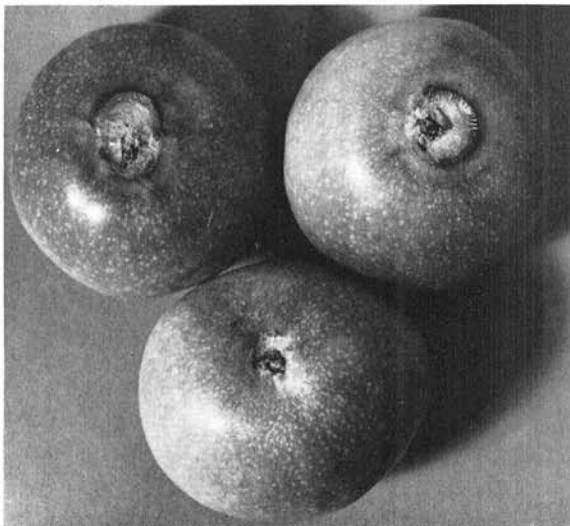


Fig. 1. Immature McIntosh apples exhibiting typical symptoms of calyx-end rot caused by *Sclerotinia sclerotiorum*, above, and *Alternaria* sp., below.

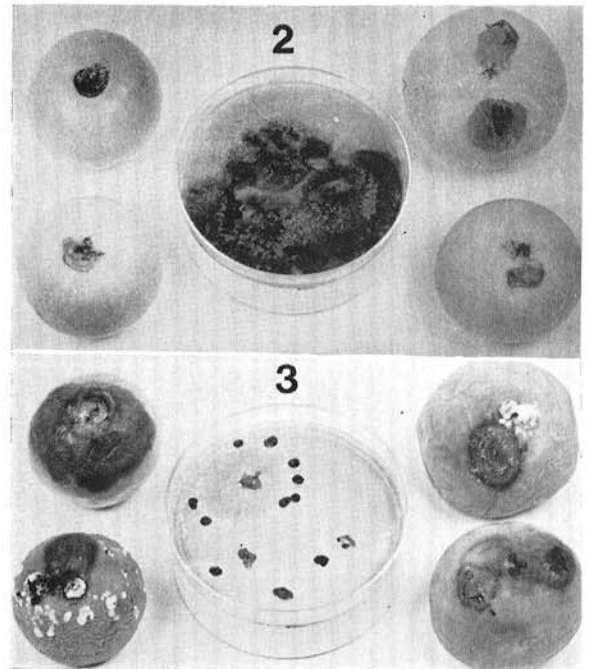


Fig. 2-3. 2) *Alternaria* sp. on apple. Upper left, naturally infected immature McIntosh stored in refrigerator at 4 C for 4 weeks. Lower left, naturally infected immature McIntosh incubated in moist chamber at 20 C for 3 weeks. Center, *Alternaria* sp. isolated from naturally infected apple and inoculated 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 rotted 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

1. HOCKEY, J. F. 1959. Calyx-end rot of apples. *Plant Dis. Repr.* 43:804-805.
2. WILKINSON, E. H. 1943. Dry eye rot of apples caused by *Botrytis cinerea* Pers. *J. Pomol. Hort. Sci.* 20:84-88.