



1. Conidiomata on stem ($\times 5$ approx.); 2, ascomata on stem ($\times 10$ approx.); 3, ascus ($\times 1200$); 4, ascospores ($\times 1200$); 5, conidia ($\times 1200$); 6, ascospores (scale = $10\mu\text{m}$). 1, DAOM 191027; 2, 191029; 3, 191001; 4, 6, 191025; 5, 191028.

Didymella bryoniae (Auersw.) Rehm, Ber. Naturhist. Ver. Augsburg, 26: 27. 1881.

≡ *Sphaerella bryoniae* Auersw., in Gonnermann & Rabenh., Mycol. Europ. 5: 15. 1869.

≡ *Didymosphaeria bryoniae* (Auersw.) Niessl, Oesterr. Bot. Z. 25: 130. 1875.

= *Sphaeria bryoniae* Fuckel, Jahrb. Nassau Ver. Naturk. 23, 24: 112. 1869 (1870).

= *Didymella melonis* Pass., Erb. Critt. Ital. Ser. II, No. 1465. 1885.

≡ *Mycosphaerella melonis* (Pass.) Chiu & Walker, J. Agr. Res. 78: 589. 1949.

= *Sphaerella citrullina* C.O. Smith, Delaware Coll. Agr. Expt. Stn. Bull. 70: 3. 1905, ut "(Chester) Smith", I.C.B.N. Art. 59.6.

≡ *Mycosphaerella citrullina* (C.O. Smith) Grossenb., N.Y. Agr. Expt. Stn. (Geneva) Tech. Bull. 9: 226. 1909.

= *Sphaerella melonis* Ferraris, in Ferr. & Massa, Ann. Mycol. 10: 286. 1912.

Anamorph: *Ascochyta cucumis* Fautr. & Roum., Rev. Mycol. 13: 79. April 1891.

≡ *Mycosphaerella cucumis* (Fautr. & Roum.) Chiu & Walker, J. Agr. Res. 78:98. 1949, I.C.B.N. Art. 59.3.

= *Phyllosticta citrullina* Chester, Bull. Torrey Bot. Club, 18: 374. Dec. 1891.

≡ *Ascochyta citrullina* (Chester) C.O. Smith, Delaware Coll. Agr. Expt. Stn. Bull. 70: 7. 1905.

≡ *Diplodina citrullina* (Chester) Grossenb., N.Y. Agr. Expt. Stn. (Geneva) Tech. Bull. 9: 226. 1909,

as *D. citrullina* (C.O. Smith) Grossenb.
= *Ascochyta melonis* Potebnia, Ann. Mycol. 8: 63. 1910.

ASCOMATA subepidermal in the cortex of stems, or in leaves and fruit, scattered to numerous, globose to subglobose to flattened, 125-212 μ m wide by 110-155 μ m high, dark brown to black, erumpent, papillate; neck somewhat conical, up to 30 μ m high; ostiole 30-55 μ m wide. Ascoma wall thickened at the sides and base, 18-21 μ m thick at the top, 20-30 μ m at the sides and 25-40 μ m at the base; outer zone consisting of 4-6 layers of brown to dark brown angular cells and inner zone of 2-5 (or more at base) layers of hyaline to subhyaline angular cells. Wall cells at sides and base up to 10 μ m across; cells smaller at the top and inner base. PSEUDOPARAPHYSES hyaline, septate at intervals of 3-10 μ m, 2.5-4.0 μ m wide, persisting. ASCI bitunicate, cylindrical to almost clavate, 50-70 \times 9-13 μ m, short stipitate. ASCOSPORES hyaline, biseriate in the ascus, ellipsoidal to nearly obovoid, 13-18 \times 4-6 μ m, straight or curved, ends rounded, 1-septate at the middle or slightly above or below, slightly constricted at the septum, upper cell often wider than lower cell, faintly guttulate, wall smooth.

CONIDIOMATA (PYCNIDIA): subepidermal in stems, leaves and fruit, scattered to numerous, subglobose to flattened to ellipsoidal, 125 \times 190 μ m in diam., dark brown, erumpent. Conidioma wall uniform in thickness, 4-5 μ m thick, consisting of 2-4 cell layers of yellow brown angular cells. CONIDIA hyaline, mostly short cylindrical, straight slightly curved or bent, 1-septate more or less in the middle, some conidia unicellular, 6-11.5(-12.5) \times 2.5-4.0 μ m, ends rounded, wall smooth.

HOSTS: *Cucumis sativus* L., *Cucurbita maxima* Duchesne and *Cucurbita pepo* L. (Cucurbitaceae).

DISTRIBUTION: Quebec, Ontario, British Columbia.

COLLECTIONS: *Cucumis sativus*. **Que.**: Ste-Foy, Oct. 1956, DAOM 54677 (D. Leblond 38). **Ont.**: Essex Co., Leamington, 7 July 1984, DAOM 191001 and 191025 (W.R. Jarvis), July 1984, DAOM 191029 (K. Slingsby), Summer 1984, DAOM 191002 (W.R.J.); Harrow Research Station, 1982, DAOM 187988, and 29 May 1984, DAOM 191027 (W.R.J.). **B.C.**: Alberni Valley, Vancouver I., 1984, DAOM 191028 (Wendy Riggs). *Cucurbita maxima*. **Ont.**: Essex Co., Malden Twp., 26 Oct. 1984 (W.R.J.). *Cucurbita pepo*. **Ont.**: Essex Co., Malden Twp., 26 Oct. 1984, DAOM 191491 (W.R.J.). **B.C.**: Saanichton, 12 Dec. 1941, DAOM 118313 (I. Mounce).

NOTES: *Didymella bryoniae* is a serious pathogen of long English greenhouse cucumbers throughout Canada, causing the disease 'gummy stem blight'. Pale fawn coloured lesions develop at stem nodes on which conidiomata (pycnidia) and ascomata occur abundantly and together. On leaves it causes conspicuous V-shaped yellow-brown lesions extending from infection points at guttation drops on the leaf margin. It can infect fruit at either end, causing a softish rot with blackish discoloration of the flesh. The latter symptoms may appear after harvest on improperly stored fruit. In certain years serious losses due to fruit rot have been reported (Punja & Ormrod, Can. Pl. Dis. Surv. 59: 22. 1979). Epidemics occur in poorly ventilated greenhouses, especially those with overhead irrigation. Conidia are readily dispersed by splashing and on contaminated tools and fingers. Airborne ascospore dispersal occurs mainly during evening hours (Fletcher & Preece, Ann. Appl. Biol. 58: 423-430. 1966; van Steekelenburg, Ann. Rept. Glasshouse Res. Stat., Naaldwijk 1980: 95; van Steekelenburg, Euphytica 30: 515-520. 1981). Olsen & Stanghellini (Pl. Disease 65: 157-159. 1981) achieved reciprocal infections between isolates from *Cucumis sativus* and from a species of *Opuntia*. According to Connors (An Annotated Index of Plant Diseases in Canada, Res. Br. Publ. 1251, Can. Dept. of Agriculture, Ottawa, 1967) gummy stem blight is primarily a disease of greenhouse cucumber and is only occasionally recorded on field crops of the Cucurbitaceae in Canada. This accords with our experience.

C.O. Smith (Del. Coll. Agr. Expt. Stn. Bull. 70: 10. 1905) referred to a *Laestadia cucurbitacearum* (Schw.) Sacc. which Saccardo (Syll. Fung., addenda ad vol. 1, 2: XXXIII. 1883) gave as its basionym, *Sphaeria cucurbitacearum* Schw., in Fries (Syst. Myc. 2: 502). The epithet published in the Systema (as *S. cucurbitacearum* Fr.) in 1823, would predate the epithet *bryoniae* (1869) if these names proved to be synonymous as suggested by Smith. A collection in the Schweinitz herbarium (PH), labelled *Sphaeria cucurbitacearum* Fr., from Bethlehem (presumably Pennsylvania, U.S.A.) is predominantly anamorphic, possessing *Ascochyta* conidiomata and a few unidentifiable ascomata with immature asci. Saccardo was in error in crediting Schweinitz as the authority for *S. cucurbitacearum* Fr. Fries (op. cit.) provided only a very brief description which did not refer to the spores. Therefore, at this time we consider *Sphaeria cucurbitacearum* to be of doubtful status and not a synonym of *Didymella bryoniae*.

Additional taxonomic and descriptive information has been provided by Corlett (Can. J. Bot. 59: 2023-2024. 1981).

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