Fungi Inhabiting Fagaceous Trees III*

Coniella Leaf Blight of *Quercus* and *Castanea* Caused by *Coniella* *castaneicola***

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金子 繁***: ブナ科樹木に寄生する菌類 III*. *Coniella castaneicola*
によるナラ類およびクリのコニエラ葉枯病**

Since 1974, a previously unknown leaf blight of deciduous oaks (*Quercus* spp.) has been found by the author in Shiga, Tottori and Shimane Prefs. in Japan. This paper describes the disease and the results of etiological studies.

Symptoms and signs of the disease The first symptom appears in summer as small spots (Fig. 1). These are pale brown, becoming grayish white in color. The boundary between the spot and the healthy area is clear, but there is no distinct brown margin. The spots increase in size and coalesce to form irregular-shaped lesions (Fig. 2), and marked leaf blight results (Fig. 3). In a fairly early stage of the lesion enlargement, many pycnidia are produced in the lesions on both leaf surfaces as minute black points (Fig. 4). Each pycnidium apex opens to a single prominent ostiole (Fig. 5). Usually, the disease does not result in premature defoliation.

Morphology and taxonomic position of the fungus The pycnidia are globosal, being composed of brown pseudoparenchymatic cells (Fig. 6). From a convex, hyaline pseudoparenchymatic cushion restricted to the base of the pycnidium, cylindrical sporogenous cells are formed (Figs. 7 & 8). The conidiogenous cells are phialidic in nature (Fig. 9), and produce fusiform conidia (Fig. 10) from the apex. The fungus was isolated from the lesions on the PSA medium. Upon culture for about one month at 25 C, black sclerotial masses made up of the pycnidia were produced in brownish white colonies (Fig. 11). The morphology of the conidia *in vitro* was identical with that on hosts. The fungus was identified as *Coniella castaneicola* (Ell. & Ev.) Sutton (Coelomycetes - Phialopycnidiineae)¹⁾ (Syn. *Gloeosporium castanicolum* Ell. & Ev.²⁾). *G. castanicolum* was established based on a collection on *Castanea vesca* found in the U. S. A. von Arx³⁾ transferred the fungus into *Pilidiella* as *P. castanicola* (Ell. & Ev.) von Arx through type studies. However, Sutton⁴⁾ regarded *Pilidiella* as being synonymous with *Coniella* Höhnelt, and he¹⁾ proposed the new combination *C. castaneicola*. "*G. castanicolum*" has been

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reported previously as the pathogen of chestnut-leaf anthracnose^{5,6)} in Japan. However, the fungus causing the anthracnose is apparently different⁷⁾ from the original *G. castanicolum*, namely, the present *Coniella* species.

The conidia can germinate on distilled water (Fig. 12). Frequently, a septum is formed in a germinating conidium (Fig. 13). The mycelia of the fungus show optimum growth at 25–27°C on PSA medium. No other spore states associated with this disease were found.

Inoculation experiment To confirm the pathogenicity of the isolated fungus, inoculations were carried out in July, 1977, onto the leaves of potted plants such as *Castanea crenata* (Kuri, "Ibuki"), *Quercus acutissima* (Kunugi), *Q. mongolica* var. *grosseserrata* (Mizunara), *Q. myrsinaefolia* (Shirakashi) and *Q. serrata* (Konara). Just before inoculation, the leaves were wounded by means of a sterilized needle. The inoculum had been isolated from *Q. acutissima* (TMI cult. 70010). Conidia from a one-month culture on a PSA slant were diluted with sterilized water, and applied to both surfaces of the wounded leaves with a brush. The plants were kept in a moist chamber for 2 days at 25–28°C, then transferred to a glasshouse. Pale brownish spots began to develop 3–4 days after the inoculation around the wounds on the leaves of all inoculated plant species except for *Q. myrsinaefolia*. The spots then coalesced to form irregular-shaped lesions resembling the disease in the field. Pycnidia of the *Coniella* began to appear in the lesions 20 days after the inoculation. Moreover, the fungus was reisolated from the lesions. These results confirm that the *Coniella* species functions as the pathogen of the leaf blight of *Quercus* spp. found in the three prefectures. Furthermore, the fungus is pathogenic for *Castanea crenata*. As the common name of the disease, I propose "*Coniella* hagarebyo" (*Coniella* leaf blight). The detailed morphology and hosts of the fungus are as follows.

***Coniella castaneicola* (Ell. & Ev.) Sutton** Lesions are circular at first, enlarge to irregular shape, grayish white. Pycnidia amphigenous, immersed, subepidermal, dark brown, globose, up to 190 µm diam.; wall 2–3 cells thick, composed of dark brown pseudoparenchymatic cells; ostiole single, protruding. Conidiogenous cells phialidic, with thickened apex, collarette lacking, hyaline, cylindrical, 8–12 × 2–3.5 µm, restricted to a convex cushion of small celled, hyaline pseudoparenchyma at the base of the pycnidium. Conidia formed successively from each conidiogenous cell, aseptate, fusiform, 12.5–16.5 × 2.5–3 µm, pale brown, smooth, obtuse at both ends, straight or slightly curved.

Host plants in Japan *Castanea crenata* (Kuri), *Quercus acutissima* (Kunugi), *Q. mongolica* var. *grosseserrata* (Mizunara), *Q. rubra* (Akagashiwa), and *Q. serrata* (Konara).

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Explanation of Plate

- Figs. 1-3. Symptoms. 1 & 2. On *Quercus mongolica* var. *grosseserrata*. 3. On *Q. acutissima*.
Fig. 4. Pycnidia in a lesion on *Q. acutissima*. $\times 2$.
Fig. 5. Pycnidia on *Q. mongolica* var. *grosseserrata*. $\times 10$.
Figs. 6-8. Longitudinal section of a pycnidium in Fig. 5. 6 & 7. $\times 350$. 8. $\times 450$
(interference contrast).
Fig. 9. Conidiogenous cells producing conidia. $\times 1,100$ (interference contrast).
Fig. 10. Conidia. $\times 700$.
Fig. 11. Colony with pycnidia on a PSA slant.
Figs. 12 & 13. Germinating conidia, a septum is shown in the conidium in Fig. 13. $\times 700$.