New or Interesting Downy Mildews found in Mt. Ajara, Aomori, Japan

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Since some years, the author and Y. Harada have been engaged in studies of fungus flora in Aomori Prefecture and have published some lists of plant parasitic fungi in several localities as a serial report. The present paper was intended to report the species of downy mildew new to science or interesting, collected in Mt. Ajara and her vicinities. Mt. Ajara carrying a skiing ground (Owani-suki-jo) at her northern slope and Owani, a hot-spring-town, at her foot, rises to a height of 709 meters above the sea-level and is situated at 12 kilometers from the south-east of Hirosaki City.

1. A new species of Peronospora parasitic on Clinopodium

The author collected a downy mildew fungus inhabiting Clinopodium sachalinense Koidz. at the foot of Mt. Ajara, Oct. 10, 1974. Diagnosis of the disease is as follows: mycelial tufts hypophyllous, grayish-violet or dirty-violet, angular or rounded, often limited with nerves, then total surface occupied; conidiophores solitary, through stomata, slender, 300-500 μm high, dichotomously 3-7 times branched, base slightly swollen, trunk \( \frac{1}{5}-\frac{3}{5} \) of total altitude, 150-300 μm long, 7-13 μm thick, ultimate branchlets rectangular, similar to sigma curved or sometimes straight, almost inequitable, 7-40 μm long; conidia broadly elliptic or globose, slightly yellow or hyaline, 15-26×15-22 μm; oospores unknown.

E. Gaumann\(^1\) described 7 species of Peronospora parasitic on Labiatae. Among these 7 species, the author picked out *Peronospora calaminthae* Fuckel (conidial dimensions: 15-25×9-18 μm) to compare with the present fungus for the reason that the host plant of the present fungus might be systematically most related to the plant inhabiting *Peronospora calaminthae*. On the other hand, according to Ito\(^2\) *Peronospora* parasitic on Labiatae in Japan has been put together as *Peronospora lamii* group containing the following two species, viz. *Peronospora lamii* A. Braun (conidial dimensions: 18-30×14-25 μm) and *Peronospora perillae* Miyabe (conidial dimensions: 15-25 μm).

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Comparing the present fungus with *Peronospora calaminthae*, conidia of the former are similar to the latter in length but fairly broader from the latter in width. *Peronospora lamii* and *Peronospora perillae* are evidently larger than the present fungus in the conidial dimensions. From the above mentioned facts, the author proposes to treat the present fungus as a new species to science and to name it *Peronospora clinopodii* Terui sp. nov. Latin diagnosis is as follows: caespitulis hypophyllis, maculis in foliis, griseo-violaceo, angularibus vel rotundatis, sape a nervis limitatis, dein totam superficiem occupantibus; conidiophoris fere singulis e stomatibus erumpentibus, gracilibus, 300-500 µm altis, superne 3-7-ies dichotome ramosis, basi leviter tumida, trunco 1/2-3/5 totius altitudinis, efficienti, 150-300 µm longis, 7-13 µm crasso, ramulis ultimis rectangulis, literae sigma similiter curvatis vel interdum rectis, fere inaequalibus, fere 7-40 µm longis; conidiis late ellipsoideis vel globosis, leviter flavis vel paene hyalinis, 15-26×15-22 µm; oosporis ignotis. Hab. on living leaves of *Clinopodium sachalinense* Koidz. (miyama-tobana), Mt. Ajara, Owani, Aomori Prefecture, Japan (M. Terui, Oct. 10, 1974-type). Distrib. Japan (Honshu)

2. Interesting downy mildew fungi inhabiting the genus *Pilea*

The author collected a downy mildew fungus inhabiting *Pilea hamaoi* Makino in Mt. Ajara, Oct. 10, 1977. Diagnosis of the disease is as follows: mycelial tufts hypophyllous, scattered, white, floccose, then total leaves occupied; conidiophores solitary or fasciculate, through stomata, slender, 400-900 µm high, 4-7 times branched, monopodial, ultimate branchlets forked or trifurcated, conical awl-shaped, short, 3-10 µm long; conidia globose or ovoid, hyaline, 12-23×12-18 µm, germinating by zoospores; oospores unknown.

E. Gäumann\(^{3)}\) described that a downy mildew fungus parasitic on *Pilea pumila* discovered in Japan is a fungus belonging to genus *Peronoplasmopara* (=*Pseudoperonospora*). After that, S. Ito\(^ {4)}\) expressed the opinion concerning the Gäumann's description of the fungus that the fungus might be the same or closely resembling species *Pseudoperonospora urticae* Salmon et Ware, though he did not examine that fungus. On the other hand, S. Ito and Y. Tokunaga\(^ {5)}\) described a species of *Plasmopara* parasitic on *Pilea viridissima* Makino named *Plasmopara pileae* S. Ito et Tokunaga. As mentioned above, the present fungus had monopodial branching conidiophores and its spores germinated by zoospores. Accordingly, the author considered that it is more appropriate to adopt *Plasmopara* than *Pseudoperonospora* as the genus of the present fungus. From these facts and the other morphological characters, the author identified the present fungus with *Plasmopara pileae* S. Ito et Tokunaga.

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