Studies on Venturiaceae on Rosaceous plants

Author(s):
Menon, Radha

Publication Date:
1956

Permanent Link:

https://doi.org/10.3929/ethz-a-000092066 →

Prom. Nr. 2585 B

Studies on *Venturiaceae* on Rosaceous Plants

THESIS
PRESENTED TO
THE
SWISS FEDERAL INSTITUTE OF TECHNOLOGY
ZURICH

FOR THE DEGREE OF
DOCTOR OF NATURAL SCIENCES

BY

RADHA MENON
CITIZEN OF
INDIA

Accepted on the recommendation of
Prof. Dr. E. GÄUMANN and Prof. Dr. A. FREY-WYSSLING

1956

Druck von A. W. Hayn's Erben, Berlin SO 36

1. ***Gibbera rosae*** (de Not.) MÜLLER et MENON

The species is of significance in nomenclature since the genus *Venturia* was based on the species occuring on *Rosa pendulina* L. In the studies of MÜLLER and MENON (1955) this fungus has been identified as *Gibbera*. A new name could be suggested for the fungi occuring under the genus *Gibbera*. For the new combination *Gibbera rosae* the following synonyms have been retained.

Synonyms: *Venturia rosae* de Not. — Atti. Sci. Ital. 6, 484 (1844).
Pyrenophora rosae Sacc. — Syll. 2, 285 (1883).
Protoventuria rosae Berl. et Sacc. — Atti. Soc. Veneto-Trent (1886).
Gibbera rosae MÜLLER et MENON — Phytopath. Z. 25, 190 (1955).

The perithecia occur on the twigs of the host plant, solitary or in small groups, with a subcuticular hypostroma. The stroma very often rises deeper down. Perithecia lack ostioles, but a pore is formed by the hystolysis of the cells at the top of the perithecium. Deep, dark setae occur in clusters at the apex and sides of the perithecia. The fruit bodies vary from 120—200 × 150—250 μ. (cf. MÜLLER et MENON for description and figures.)

Cultural studies: In malt agar medium the growth of the fungus is very slow. Colonies are orbicular, cottony white, fluffy, turning to olive green and black. Mammelons are more than one in number, and the edges of the colonies are light coloured and thin. The hyphae at the outer fringe are fibrillar, closely adpressed to the substratum. On the reverse the mat is dark green. Aerial hyphae are light olive green, 1.0—2.5 μ in diameter, septate, with oil drops inside. The submerged mycelium is colourless, 0.5 μ in diameter, sparsely septate. Perithecia and conidia were not observed.

Summary

1. In this paper the family *Venturiaceae* occuring on *Rosaceous* hosts is discussed; the genera *Venturia* de Not. (emend. SACCARDO), *Coleroa* Rbh. and *Gibbera* Fr. are investigated in detail and are found to show morphological similarities.

2. Most of the species have been isolated and maintained in pure culture. Conidia of the *Fusicladium* type have been found to occur in the species *Venturia inaequalis, Venturia pirina* and *Venturia pruni-cerasi.* Ripe perithecia are formed in the above species and in addition in *Venturia palustris.*

3. Infection experiments were conducted with *Venturia inaequalis, Venturia pirina* and to some extent with *Venturia pruni-cerasi.* Further studies on *Venturia inaequalis* show that this species exhibit morphologically similar biotypes; these biotypes are described as "formae speciales" and we have distinguished f. sp. *mali* on *Pirus malus,* f. sp. *aucupariae*

on *Sorbus* species, f. sp. *crataegi* on *Crataegus* species and f. sp. *cotoneasteris* on *Cotoneaster integerrima.*

4. Two new species are described, *Venturia tomentosae* on *Cotoneaster tomentosa* (Ait.) Lindl. and *Venturia Mülleri* on *Rosa pendulina* L.

Zusammenfassung

1. In der vorliegenden Arbeit wurden die auf *Rosaceae* parasitierenden *Venturiaceae* aus den Gattungen *Venturia* de Not. (emend. SACCARDO), *Coleroa* Rbh. und *Gibbera* Fr. morphologisch untersucht und miteinander verglichen.

2. Die meisten Arten wurden auch isoliert und in Reinkultur verfolgt. Konidien vom Typus *Fusicladium* bilden folgende Arten: *Venturia inaequalis, Venturia pirina* und *Venturia pruni-cerasi.* Reife Perithecien bildeten in Reinkultur: *Venturia inaequalis, Venturia pirina, Venturia pruni-cerasi* und *Venturia palustris.*

3. Infektionsversuche wurden mit *Venturia inaequalis, Venturia pirina* und zum Teil auch mit *Venturia pruni-cerasi* durchgeführt. Aus den Versuchen mit *Venturia inaequalis* geht hervor, daß diese Art in einige morphologisch nicht unterscheidbare Biotypen zerfällt, welche als "formae speciales" beschrieben und entsprechend benannt werden. Wir unterscheiden demnach: f. sp. *mali* auf *Pirus malus,* f. sp. *aucupariae* auf *Sorbus*-Arten, f. sp. *crataegi* auf *Crataegus*-Arten und f. sp. *cotoneasteris* auf *Cotoneaster integerrima.*

4. Als neue Arten werden beschrieben *Venturia tomentosae* auf *Cotoneaster tomentosa* (Ait.) Lindl. und *Venturia Mülleri* auf *Rosa pendulina* L.

Literature cited

ADERHOLD, R., 1896: *Venturia pirina.* Ldw. Jb. **25**, 875.

— —, 1903: Kann das *Fusicladium* von *Crataegus* und von *Sorbus*-Arten auf den Apfelbaum übergehen? Abh. Biol. Abt. Land- u. Forstwirtsch. Kais. Gesundheitsamt **3**, 436—439.

ARX, J. A. VON, 1952: Studies on *Venturia* and Related Genera. Tijdschrift over Plantenziekten **58**, 260—266.

— —, 1954: Revision einiger Gattungen der Ascomyceten. Acta Botanica Neerlandica **3**, 83—84.

ASHCROFT, R., and FOTHERGILL, P. G., 1955: The Nutritional studies of *Venturia inaequalis* (Cke.) Winter. J. gen. Microbiol. **12**, 387.

COOKE, M. C., 1871: The Handbook of British Fungi **2**, 916.

FOTHERGILL, P. G., and ASHCROFT, R., 1955: Further Nutritional studies of *Venturia inaequalis* (Cke.) Winter. J. gen. Microbiol. **13**, 399—407.