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●

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40 **1991**

Orion, D., Minz, G. 1968. The influence of systemic plant growth substances on the galls induced by the root knot nematode *Meloidogyne javanica*. — Phytopathology, **58**, N° 3, 384.
Peacock, F. C. 1960. Inhibition of root-knot development on tomato by systemic compounds. — Nematologica, **5**, N° 4, 219—227.
Sawhney, R., Webster, J. M. 1979. The influence of some metabolic inhibitors on the response of susceptible/resistant cultivars of tomato to *Meloidogyne incognita*. — Nematologica, **25**, N° 1, 86—93.

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20/VII 1990

Anu RIISPERE

GLOBODERA ROSTOCHIENSIS'E JA *HETERODERA TRIFOLII* ARENGU SÕLTUVUS PEREMEESTAIME AINEVAHETUSE INTENSIIVSUSEST

Kartuli kiduussiga (*Globodera rostochiensis*, patotüüp Ro1) ja ristiku kiduussiga (*Heterodera trifolii*) nakatatud taimi (kartulisordid: sustseptiilne 'Sulev' ja resistentne 'Spekula'; ristikud: sustseptiilne valge ristik 'Jõgeva 4' ja resistentne roosa ristik 'Jõgeva 2') kasvatati liivkultuuris, ainevahetuse regulaatorid lisati toitelahusele pärast taimede nakatamist. Kasutati järgmisi füsioloogiliselt aktiivseid aineid: kinetiini 0,1, 1, 10, 20, maleiinhüdrasiidi 2,5, 5, 10, 20, kloorkoliinkloriidi 250, 500, 1000, 2000, kloramfenikooli 2,5, 5, 10, 20 mg/l. Ainevahetuse inhibiitorid maleiinhüdrasiid ja kloorkoliinkloriid pidurdasid nii kartuli kui ka ristiku kiduussi emasisendite arengut, kusjuures enam inhibeeritud oli kartuli kiduussi areng. Kloramfenikooli lisamine kutsus esile kartuli kiduussi emaste arengu pidurduse ainult nõrgemate kontsentratsioonide kasutamisel, ristiku juurtes aga emaste kiire arengu, mis osutab larvide toitumistingimuste paranemisele juurte metaboliitilise aktiivsuse pidurdumise korral. Stimulaator kinetiin pidurdas emasisendite arengut mõlemal liigil.

Kartuli kiduussi suurem tundlikkus ainevahetuse pidurdumisele toitvas koes viitab selle liigi kaugemale arenenud biotroofsusele ristiku kiduussiga võrreldes.

Katsed resistentsete taimedega näitasid, et sordiline või liigiline resistentsus nende parasiitide suhtes ei ole seotud taimede ainevahetuse intensiivsusega.

Anu RIISPERE

THE INFLUENCE OF THE HOST'S METABOLIC ACTIVITY ON THE DEVELOPMENT OF *GLOBODERA ROSTOCHIENSIS* AND *HETERODERA TRIFOLII*

Potato cultivars 'Sulev' (susceptible) and 'Spekula' (resistant to pathotype Ro1), white clover cv. 'Jõgeva 4' (susceptible) and Swedish clover cv. 'Jõgeva 2' (resistant) were grown in sand cultures, and metabolic regulators were added to the nutrient solution after its infection with larvae of *Globodera rostochiensis* and *Heterodera trifolii*. The following compounds were used: kinetin 0.1, 1, 10, 20; maleic hydrazide 2.5, 5, 10, 20; chlorcolinchloride (CCC) 250, 500, 1000, 2000; chloramphenicol 2.5, 5, 10, 20 p.p.m. Growth retardants maleic hydrazide and CCC inhibited the development of the females of *Globodera rostochiensis* and *Heterodera trifolii*. The inhibitory effect of chloramphenicol was remarkable only on *Globodera rostochiensis*. The development of *Heterodera trifolii*, however, accelerated after the treatment of the roots with this compound — the number of adult females increased markedly. It indicates that the nutrition of larvae improved in clover roots under the conditions of moderate inhibition of the metabolic activity of the host. Stimulation of metabolism of the roots with kinetin inhibited the development of the females of both species.

Under the conditions of low metabolic activity of the host the development of *G. rostochiensis* is more notably inhibited than that of *H. trifolii*. It might suggest that the nutrition of the former is more dependent upon the host metabolism.

The experiments with resistant plants suggest that the genetically determined resistance of cultivars (potato) or species (clover) of host plants is not affected by their physiological state.

Proc. Estonian Acad. Sci. Biol., 1991, 40, N 2, 84–90

УДК 595.771

Olavi KURINA *

MYCETOPHILIDAE (DIPTERA) REARED FROM MACROFUNGI IN ESTONIA

The fruit bodies of Macrofungi form a special habitat and food for the fungivorous larvae of numerous species of various dipterous families; when decaying the same fruit bodies also serve as the substrate for the saprophagous flies though they can occur also in other decomposing objects. *Mycetophilidae* have a principal position among the families containing fungivorous species. In general the fungus fauna has been studied in several countries of Europe. *Mycetophilidae* have been particularly well investigated in Finland (Hackman, Meinander, 1979), England (Buxton, 1960; Hutson et al., 1980), Germany (Landrock, 1940; Plassmann, 1969), Hungary (Dely-Draskovits, 1974), Karelia (Яковлев, Осипова, 1985), Tataria (Халидов, 1984), the Moscow Region (Сахарова, 1977), and also in Siberia, the Asian part of the USSR (Островерхова, 1979).

In Estonia *Mycetophilidae* have been studied by A. Dampf (1924), K. Landrock (1924) and P. Lackschewitz (1937), but without special rearing of imagines from fruit bodies. The list composed by Lackschewitz is more complete containing 143 species from Estonia, three of the included species being described as new to science. The list by Dampf (1924) contains 39 species from the Estonian raised bogs. The paper by Landrock (1924) includes four species of *Mycetophilidae*, among them two new ones. Some species are also mentioned by H. Remm (1959) in the list of the *Diptera* of the Avaste Fen.

The material for the present work was obtained by breeding the imagines of fungus gnats from fruit bodies collected from 8 sites in Estonia: Revoja in the Lahemaa National Park (1988), Oonga south-east of Haapsalu (1988, 1989, 1990), the Viidumäe State Nature Reserve in the Island of Saaremaa (1988), Kabli (1988, 1990) and Rannametsa (1988), both south of Pärnu, the Nigula State Nature Reserve (1990), the Järvselja Experimental Forestry Enterprise south-east of Tartu (1989), and Apja east of Valga (1988).

Fruit bodies collected for laboratory rearing were placed in plastic and glass containers of the size of 0.2, 0.5 and 1 litre. Pure peat was used as substrate for pupation. The breeding containers were covered with nylon gauze. The emerged imagines were either pinned or preserved in 70% ethanol. The material is deposited at the Institute of Zoology and Botany of the Estonian Academy of Sciences, Tartu.

101 fungus species were infested with insects, and 83% of them, i. e. 84 species, were infested with the larvae of *Mycetophilidae*. All in all 2031 male specimens of fungus gnats and 1056 females of only 4 species (*Rondaniella dimidiata* Mg., *Cordyla fusca* Mg., *Tarnania tarnanii* Dz. and *Mycetophila fungorum* Deg.) were bred and identified. Among them there were 1004 ♂♂ and 1013 ♀♀ of *M. fungorum* Deg. The reared material contained altogether 40 species. A new species of the genus *Sciophila* Mg. is described in this paper. 17 species are new to Estonia. Asterisks before their names indicate them in the list. Three species, *Allodia lundstroemi*

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Edw., *Boletina gripha* Dz. and *Exechiopsis fimbriata* Lundst. have been recorded from fungi for the first time. The larvae of *Mycetophila blanda* Winn. were found only on two closely related species of fungi — *Lactarius deterrimus* and *L. deliciosus*. *Cordyla flaviceps* Staeg. was reared only from the species of *Russula*, *Exechia contaminata* Winn. only from *Lactarius*, *Exechia seriata* Mg. only from *Russula*, and *Exechiopsis indecisa* Walk. only from *Suillus*. *Mycetophila fungorum* Deg. was the most abundant species forming approximately 41% of all the registered specimens of the fungus gnats.

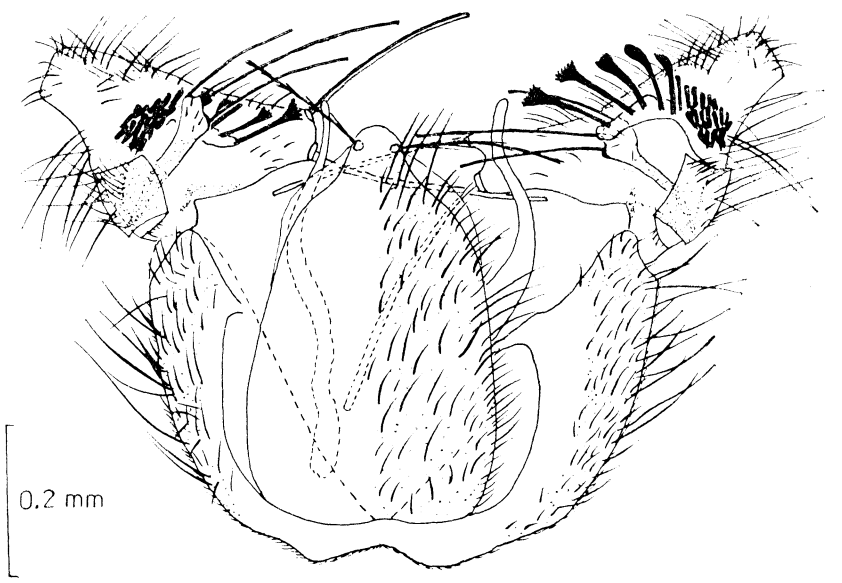
Literature data about the host fungi of Mycetophilid species are given in the following list mainly by Krivosheina et al. (Кривошеина et al., 1986).

Acknowledgements. I am greatly indebted to Ms. M. Reitalu, Director of the Viidumäe State Nature Reserve, to Mr. H. Vilbaste, Director of the Nigula State Nature Reserve and to Mr. G. Ahas, Deputy Director of the Järvselja Experimental Forestry Enterprise for their help during my field work. I express my best thanks to Ms. M. Vaasma and Mr. V. Liiv for their valuable help in the identification of fungi. My very special thanks are due to my scientific supervisor Cand. Biol. K. Elberg for his kind help.

List of species

***1. Sciophila pseudoflexuosa** sp. n.

Male. Body length 4.5 mm, wing length 3.8 mm. Head black. Vertex with long bristles. Mouthparts brownish, palps brownish basally, yellow apically. Antennae bicoloured: scape, pedicel and three first flagellar segments yellow, remainder brown. Flagellum with short hairs. Sternopleuron, mesopleuron, pteropleuron, pleurotergite and mediotergite brown. Propleuron yellowish. Mesonotum dull blackish brown. Wing membrane with micro- and macrotrichia. Veins pale. M petiole subequal rm. Sc_2 ending in R_1 at its beginning. Small cell nearly square, as long as wide. Halteres pale. Legs yellow. Abdomen brownish black with indistinct brown spots. Hypopygium figure.



Sciophila pseudoflexuosa sp. n., hypopygium, dorsal view.

Holotype, male, Estonia, the Nigula State Nature Reserve, emerged from *Lactarius helvus* 7. 9. 1990. Fruit body was collected 6. 8. 1990.

Sciophila pseudoflexuosa sp. n. is very similar to *S. flexuosa* Zaitzev, 1982, described only by the type specimen (♂) from the Primorsk Territory in the Soviet Far East. The new species may be distinguished from *S. flexuosa* by the dull mesonotum, by the short small cell of wing and by the male genitalia (figure; Зайцев, 1982, fig. 6, 6). The basis of the IX tergite is relatively broad. The apex of the IX tergit has two shortly pubescent bristles. The small medial appendage of gonostylus has three long blunt bristles of different lengths. The new species is a little larger as *S. flexuosa*. Body length of *S. flexuosa* is 3.0 mm, wing length 3.1 mm.

Larvae of *S. flexuosa* were recorded on the surface of fruit body of *Pleurotus citrinopileatus*.

2. Boletina gripha Dziedzicki, 1885
The first record from fungus.
Material: Rannametsa, *Suillus bovinus* 17. 9. 1988, 1 ♂ emerged 21. 9. 1988.

3. Rondaniella dimidiata (Meigen, 1804)
The species has been bred frequently from a variety of fungi. My original material not numerous. Also females were determined.
Material: Nigula, ex *Boletus edulis* and *Lactarius helvus*. 2♂♂ 2♀♀.

4. Mycetophila alea Laffoon, 1965
Formerly recorded on *Russula*, *Lactarius*, *Collybia*, *Hebeloma*.
Material: Viidumäe, ex *Russula densifolia*; Järvselja, ex *R. adusta*. 51♂♂.

*__5. Mycetophila assimilis__ Matile, 1967
Formerly recorded from *Russula*, *Lactarius*, *Boletus*, *Leccinum*.
Material: Oonga, ex *Leccinum scabrum*; Nigula, ex *Xerocomus subtomentosus*, *Paxillus involutus*, *Boletus edulis*; Järvselja, ex *Leccinum aurantiacum*. 9♂♂.

6. Mycetophila blanda Winnertz, 1863
Formerly recorded on *Lactarius*, *Russula*, *Panus*, *Hygrophoropsis*.
According to my original data, in Estonia registered only on two very closely related species *Lactarius deterrimus* and *L. deliciosus*. By some mycologists, these fungus species are concidered only varieties of a single species (Kalamees, 1979).
Material: Viidumäe, ex *Lactarius deliciosus*, 1♂; Viidumäe, Nigula and Järvselja, ex *L. deterrimus*, 59♂♂.

7. Mycetophila confluens Dziedzicki, 1884
Earlier recorded on *Leccinum* and *Xerocomus*.
Material: Kabli, ex *Suillus granulatus*; Nigula and Järvselja, ex *S. variegatus*. 4♂♂.

8. Mycetophila finlandica Edwards, 1913
Formerly, according to the literature, also on the basis of the new original data feeding only on *Tricholomopsis rutilans*.
Material: Kabli and Järvselja, ex *T. rutilans*, 61♂♂.

9. Mycetophila fungorum (De Geer, 1776)
More than 120 species of the *Agaricales* s. str. and the *Boletales* are registered as food substrate of *M. fungorum*. Known also from *Peziza* and *Cantharellus*. According to my original data, in Estonia from 40 species of the *Agaricales* s. str.
Material: Viidumäe, Oonga, Rannametsa, Kabli, Apja, Järvselja, 1004♂♂ and 1013♀♀.

10. Mycetophila ichneumonea Say, 1823
Formerly reared from fungi of 13 genera of the *Agaricales s. str.* According to my original material, from 11 species of various genera.
Material: Viidumäe, Kabli, Nigula, Järvselja, 83♂♂.

11. Mycetophila laeta Walker, 1848
Formerly bred from *Fomitopsis*, *Polyporus* and *Lactarius*.
Material: Nigula, *Phellinus igniarius*, 12.10.1990, 8♂♂ emerged 19.10.1990.

12. Mycetophila luctuosa Meigen, 1830
Formerly reared from *Peziza*, *Fomitopsis*, *Stereum*, *Rozites*, *Lactarius*, *Russula*, *Paxillus*, *Tricholoma*.
Material: Viidumäe, ex *Russula densifolia*, 27♂♂; Oonga, ex *Lactarius theiogalus*, 1♂.

***13. Mycetophila lunata** Meigen, 1804
Formerly (Халидов, 1984) and, according to my original data, only from *Hygrophoropsis aurantiaca*.
Material: Nigula and Järvselja, ex *H. aurantiaca*, 14♂♂.

***14. Mycetophila ruficollis** Meigen, 1818
Earlier reared only from *Armillaria*.
Material: Nigula, ex *Oudemansiella platyphylla*; Järvselja, ex *Entoloma* sp. and *Pholiota aurivella*. 8♂♂.

15. Mycetophila sigillata Dziedzicki, 1884
Formerly registered on *Russula* and *Lactarius*.
Material: Viidumäe, ex *Laccaria laccata*, 1♂; Nigula and Järvselja, ex *Russula delica*, 25♂♂.

***16. Allodia (Allodia) lundstroemi** Edwards, 1921
Formerly no records about feeding.
Material: Järvselja, *Laccaria laccata*, 27.8.1989, 2♂♂ emerged 7.9.1989.

***17. Allodia (Allodia) pyxidiiformis** A. Zaitzev, 1983
A species closely related to *A. ornaticollis* Mg., distinguished only by the hypopygium. The species is absent in the Catalogue of Palaearcic Diptera (1988). Earlier recorded only on undetermined fungi *Agaricales* s. str.
Material: Nigula, ex *Boletus edulis*, *Amanita muscaria*, *Russula flava*, *R. paludosa*, *R. vinosa*; Järvselja, ex *Suillus bovinus*, *Comphidius glutinosus*, *Amanita citrina*, *A. muscaria*, *A. porphyria*, *Russula fragilis*, *R. velenovskyi*, R. sp. 36♂♂.

18. Allodia (Brachycampta) alternans (Zetterstedt, 1838)
Polyphagous. Feeding on many species of *Agaricales* s. l.
Material: Kabli, ex *Tricholomopsis rutilans*; Nigula, ex *Hygrophoropsis aurantiaca*; Järvselja, ex *Russula xerampelina* var. *elaeodes*. Total 3♂♂.

19. Allodia (Brachycampta) czernyi (Landrock, 1912)
Earlier known on *Kuehneromyces* and *Dermocybe*.
Material: Nigula, *Cortinarius* sp., 8.8.1990. 1♂ emerged 27.8.1990.

20. Allodia (Brachycampta) grata (Meigen, 1830)
Feeding on various *Agaricales* s. str.
Material: Kabli, *Tricholomopsis rutilans*, 15.8.1990, 28♂♂ emerged 4.9.1990.

***21. Allodiopsis (Allodiopsis) pseudodomestica** (Lackschewitz, 1937)
Formerly recorded only from *Lycoperdon*.
Material: Järvselja, *Lepista gilva*, 4.9.1989, 2♂♂ emerged 25.9.1989.

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Olavi KURINA

EESTIS MAKROSEENTEST VÄLJAKASVATATUD SEENESAASKLASED (*DIPTERA, MYCETOPHILIDAE*)

Senised andmed seenesääsklastest Eestis ei ole saadud nende väljakasvatamise teel seentest. Siinses uurimuses on kindlaks tehtud 40 seenesääsklase liiki 84-st makroseene liigist. Neist 17 on uued liigid Eestile. On kirjeldatud uus liik *Sciophila pseudoflexuosa* sp. n. ühe isase järgi, mis kasvatati välja sooriisikast (*Lactarius helvus*). Kolme liigi vastsed on leitud esmakordselt seentest. Mõnede seenesääsklaste puhul on selgunud uusi substraatseeni. Kõige tavalisemaks ja arvukamaks seenesääsklaseks on *Mycetophila fungorum* Deg.

Олави КУРИНА

ГРИБНЫЕ КОМАРЫ (*DIPTERA, MYCETOPHILIDAE*), ВЫВЕДЕННЫЕ В ЭСТОНИИ ИЗ МАКРОМИЦЕТОВ

Данные о грибных комарах Эстонии, существующие в литературе, не были получены путем выведения имаго из плодовых тел грибов. В настоящей работе изучены 84 вида макромицетов, в которых установлено 40 видов грибных комаров, при этом 17 из них являются новыми для Эстонии. Описывается новый вид *Sciophila pseudoflexuosa* sp. n., выведенный из гриба *Lactarius helvus*. Личинки 3 видов были найдены впервые в грибах. Для некоторых видов грибных комаров установлены новые субстратные грибы. Самым обычным и многочисленным видом оказался *Mycetophila fungorum* Deg.

Edw., *Boletina gripha* Dz. and *Exechiopsis fimbriata* Lundst. have been recorded from fungi for the first time. The larvae of *Mycetophila blanda* Winn. were found only on two closely related species of fungi — *Lactarius deterrimus* and *L. deliciosus*. *Cordyla flaviceps* Staeg. was reared only from the species of *Russula*, *Exechia contaminata* Winn. only from *Lactarius*, *Exechia seriata* Mg. only from *Russula*, and *Exechiopsis indecisa* Walk. only from *Suillus*. *Mycetophila fungorum* Deg. was the most abundant species forming approximately 41% of all the registered specimens of the fungus gnats.

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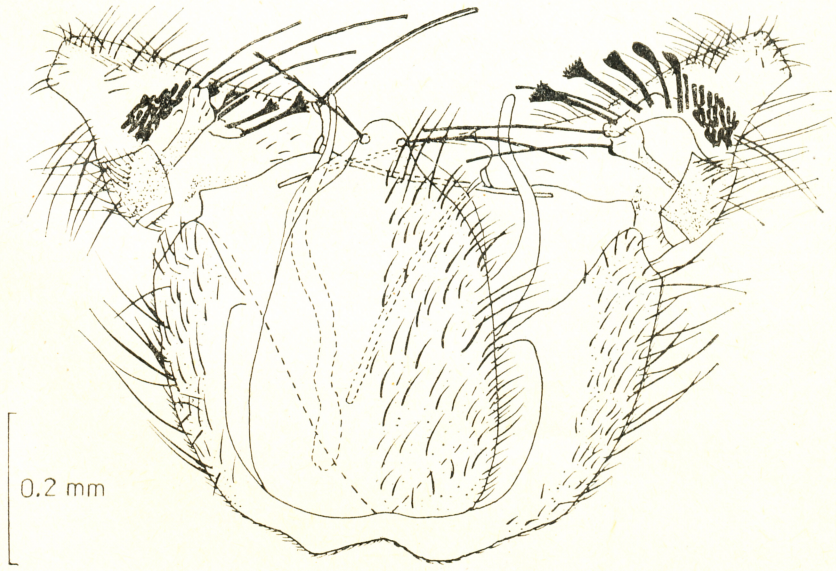

Sciophila pseudoflexuosa sp. n., hypopygium, dorsal view.