# NEW PARASITIC AND SAPROPHYTIC MICROMYCETES FOR THE MICOFLORA OF MOLDOVA

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**Abstract**

The researches regarding the study of the micromycetes in our country and their spread contribute to the control of the harmful pathogen agents, which cause diseases in plants, animals and humans, but also to enhance the use of pathogen agents such as edible mushrooms or pathogen agents producing antibiotics. Perennial or annual plants showed a particular sensitivity to pathogens during the period 2013-2015 due to climatic conditions - temperature and precipitation, which differed from the normal values area of Moldova. From the conducted researches five new pathogens for the country were reported, 11 new host plants for the micoflora of Moldova and two rarely reported pathogen agents in the country.

**Key words**: identification, fungus, host plant

Overseeing the development of pathogens from crop and from those of spontaneous plants revealed that in recent years due to continued changes of the climatic conditions, a number of new pathogens parasitic or sapropytic expanded to agents already known in the country have appeared. A number of fungal pathogens reported in older works resurfaced in recent years.

Reporting these pathogens is mandatory in order to know their potential infectious throughout Romania and beyond.

## MATERIAL AND METHOD

The species of fungi and host plants reported during 2013-2015 were determined by conducting micrometer measurements and microscopic sections of asexual or sexual organs multiplication, in order to establish systematic classification of fungal species parasitic or saprophytic. The names of species identified were checked against entries from monographs reference.

## RESULTS AND DISCUSSIONS

Perennial or annual herbs showed a particular sensitivity to pathogens in the period 2013-2015 due to climatic conditions - temperature and precipitation, which differed from of normal area of Moldova.

The phytosanitary observations has led to the alert of five new pathogens for the country, 11 new host plants for fungal micoflora and 2 rarely reported in the country.

*Lophodermium paeoniae* Rehm., Bot. Notes, p.463(1897); Vesterg. Bot. Notes,1897, p.259(1897); Sacc., Syll., XIV, p.720(1889).

Peony stems - *Paeonia officinalis* L. wintering on the ground present black spots on 28/04/2014 represented by fungal apothecia.

These elliptical black fructifications with a size of 450 x 250 μm have a central slot have. Through the cental opening the asca are set free. The asca is cylindrical claved 130 x 17 μm, containes eight filiform ascospores 60-80 x 2 μm. Between the asca hyaline parafises are present, with thin curly terminals.

Fungal systematically framed in the *Ascomycotina, cl. Leontiomycetes, ord. Rhytismales, fam. Rhytismataceae* and is new to the micoflora of Romania.

*Vermicularia trichella* Fr., S.V.S., p.420 (1849); Fuck., Symb. Myc., p.374 (1876); Sacc., Syll., III, p.221(1884);

Peony plants - *Paeonia officinalis* L. wintering shows on the base of former stems and leaves, a black efflorescence. Fungal spores present camps lined brown spines, diverging from 6.2 to 7 μm 70-150 x 2-3 septa. The spores that are released are fusoid, slightly curved, 18-20 x 4-5 μm.

In terms of systematic *Vermicularia* is an anamorphic fungi in *Ascomycotina,*

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*Pezizomycotina, Sordariomycetes, Sordariomycetidae, fam. Glomerellaceae* and is new to the micoflora of Romania.

*Alternaria malvae* Roumeguére et Letendre, *Rev. Mycol*., VII, p.177(1885); Joly, *Le Genre Alternaria*, Paris, p.208, 1964.

Leaves of damaged *Althaea rosa* (L.) Cav., harvested in Iasi on the 06/21/2014 show large brown areas with typical concentric area of the genus *Alternaria* fungus attack. Spores are arranged in chains and have dimensions of 35-50 x 9 to 12.5 µm. Tr. Savulescu et al. cites this fungal on the *Althaea* sp. on the *Alternaria alternata* (Fr.) Keissler. Fungal and it's host are new to micoflora Moldova.

*Golovinomyces cichoracearum* (DC.) V.P.Heluta, species in Catalogue of live-1988.

The leaves of *Solanum lycopersicum* L. harvested in Iasi on the 23.06.2015 are covered with a powdery white felt composed of the ectoparasite talum and the plurality of *Oidium* type conidia. In the Moldavian area to this date the mildew of tomatoes has benn produced by *Lerveillula solanacearum* Golovin conidial form *Oidiopsis taurica* (LEV) Arnaud. With the introduction of the culture of hybrid tomato seedlings this new mildew appeared both in the field and in greenhouses. Micromycetes can be related to *Erysiphe cichoracearum* DC., but we determined only *Oidium* type conidia 23-25 µm x 12 to 12.5 of the *Golovinomyces cichoracearum* mushroom. The pathogen agent is new to the fungal micoflora of Moldova.

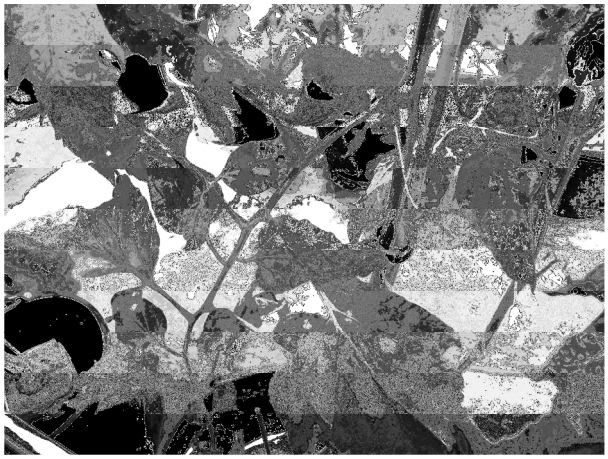

Figure 1 ***Golovinomyces cichoracearum* pe *Solanum lycopersicum* (original)**

*Macrosporium malvae* v.Thüm- *Ber. Bot., Ver. Landshut*, VII, p.178(1879); Sacc., Syll. IV, 526(1886); Migula, *Kr. Fl.* , bd.III, Pilze 4 teil.2 ab. *Fungi imperfecti,* p.406 (1934).

The leaves of *Althaea rosa* (L.) Cav. harvested in Iasi on the 06.21.2014, fungal produce large areas of discoloration on the surface conidiophores which are typical genre *Macrosporium* groups, multisepta, which branched after the release conidia form an expansion feature. These conidiophores support conidia brown transverse and longitudinal walls multicellular 57.5 x 17 µm. On hollyhock leaves are present in the mixture three micromycetes: *Puccinia malvacearum* Mont., *Alternaria malvae* Roum. et Let. şi *Macrosporium malvae* v.Thüm. Fungal and it's host micoflora are new to Romania and Moldova.

In the spring of 2014 and 2015 by the observations, but also signaled some known fungal hosts which quote us: In the spring the years 2014 and 2015 by the observations, but also signaled some known fungal hosts which quote us:

*Erysiphe cichoracearum* D.C. ex Merat, Fl. Fr. II, p.274 (1805), on *Zinnia elegans* Jacq., harvested in of Iaşi on 29 09.2013, the new host for micoflora Moldova.

*Erysiphe galeopsidis* DC- *Melissa officinalis* L. leaves on the Iasi 10.VI.2014. Fungal mycelium ectoparasite produce leaves a white powdery appearance due to *Oidium* type conidia 25-30 x 20µm.

The fungus is cited by several authors in the south of Hunedoara-Geoagiu 1944 County-1965 Caras Severin-1961. Later O. Constantinescu and G. publish this fungal Negrean in a work-Erysiphe Sydow under the name of Biocell Ehrenb.*Mellisa officinalis* L. is a new host for micoflora Moldova.

Figure 2 ***Erysiphe galeopsidis* pe *Mellisa officinalis* (original)**

*Monilinia laxa* (Aderh. Et Ruhl.) Honey, on the *Prunus pumila* L., harvested in Iasi on the 05.07.2014, micoflora new host for Moldova

*Septoria callycina* Kickx, *Dianthus barbatus* L. harvested on the Iaşi micoflora 5.08.2013- new host for Moldova.

*Alternaria alternata* (Fr.) Keissler, Beih. Bot. Zbl., XXIX, p.434 (1912), signal *Bergenia crassifolia* (L.) Fritsch. harvested in Iasi on the 15.03.2014, the host is new for micoflora Moldova.

*Alternaria alternata* (Fr.) Keissler, Beih. Bot. Zbl., XXIX, p.434(1912) on the *Hibiscus syriacus* L., harvested in Iasi on the 03.15.2014, the new host for micoflora Moldova.

*Alternaria tenuissima (Fries) Wiltshire* (Trans. Brit. Mycol. Soc., XVIII, p.157 (1933), *Convallaria majalis* L. on the plants whose leaves wintering ground, harvested in Iasi on the 03.13.2014. *Convalaria majalis* L. is a new host for the micoflora of Moldova.

*Tubercularia vulgaris* Tode, reported on the *Rosa* sp. strains harvested from of Iaşi on the 11.20.2013. In terms of systematic *Tubercularia* is an anamorphic fungi in *Ascomycotina, Pezizomycotina, Sordariomycetes, Hypocreomycetidae, ord. Hypocreales, fam. Nectriaceae.* Although fungal is well known on the various hosts, the rose is a new host for the micoflora of Moldova.

*Torula herbarum* (Pers.)Link. Et S.F. Gray, Nat. Arr. Br. Pl., 1, p.557(1821); Ellis, *Dematiaceous Hyphomycetes*, p.337 (1971).

The fungus is signaled on *Spiraea prunifolia* Sieb. et Zucc. harvested in Iasi on the 30.06.2014.

Micromycetes is polivore with a wide circle of host plants. On dry shoots *Spiraea prunifolia* Sieb. et Zucc the pathogen produces a brown-gray bloom consists of mycelium forms toruloide slightly brown, smooth, 5-6 µm conidia. On the same shoot is found *Alternaria alternata*.

*Puccinia porri (Sow.)Wint.*

Leaves of *Allium sativum* harvested in Iasi L. 14/06/2014, produce discoloration spots that appear pustules surrounded uredospore teliospori subsequent ones.

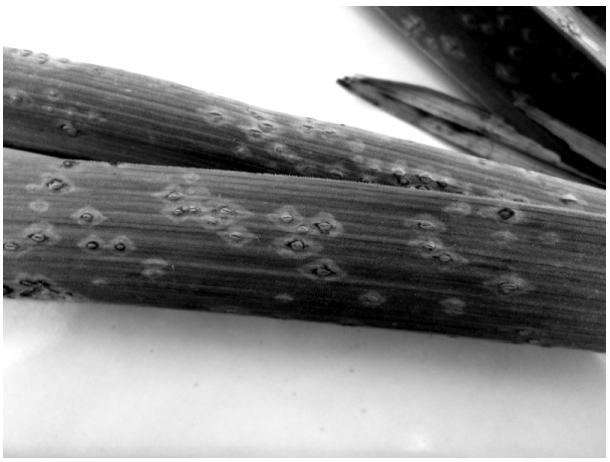

Figura 3 **Puccinia porri pe Allium sativum (original)**

Spherical or elliptical uredospore sizes 24-30 x 20-25 µm. Teleupustules are 2 mm long, 1 mm wide and contain teliospori elliptical 35-60 µm x 15-20.

Micromycetes on garlic was reported on the since 1919 in Bucharest, afterwards Tr. Săvulescu and Olga Savulescu quotes in 1941 and 1953. In the Moldova Mycology Herbarium fungal exists in on the Oltenia on *Allium porrum* L., *Allium cepa* L. on the Bucharest and *Allium* spp. (ornamental) of Iaşi Botanical Garden. *Allium sativum* L. is a new host for the micoflora of Moldova.

*Alternaria dianthicola* Neergaard

Micromycetes harvested in of Iaşi on 08/05/2013. *Dianthus barbatus* on the L has been rarely reported in Moldova (2007 and 2012).

*Vermicularia schoenoprasi* Auersw. et Fuck.,

*Allium schoenoprasum* L. plants after flowering and fructification fruit appear at the base rods, bearings vermicular specific form of blackheads 90 x 10 micrometres discolored areas arranged on stems. The camps were long spikes, black, protecting sharp conidia unicellular, 25 x 3 mm, hyaline.

Micromycetes was taken on the 07.01.2014 in of Iaşi Botanical Garden., Where *Allium schoenoprasum* L. is cultivated as an ornamental plant. On the dried leaves of plants 2 more fungal have been reported a *Alternaria dauci f. sp. porri* (Ellis) and *Cladosporium herbarum* Neergard (P.) Lk. This micromycetes is rare for the micoflora of Romania being cited only once in 1957.

## CONCLUSIONS

The climate of the years 2013 - 2015 were a favorable habitat of the increasing number and spread of pathogens on plants grown in fields and greenhouses and the plants of spontaneous.

Ornamental plants were infested 14 new or rare fungal micoflora reported in the country: *Lophodermium Paeoniae , Vermicularia trichella, Alternaria alternata, Al. dianthicola, Al. malvae, Al. tenuissima, Macrosporium malvae, Erysiphe cichoracearum Monilinia laxa, Septoria callycina, Torula herbarum, Vermicularia Schoenoprasi.*

The introduction of hybrid tomato culture must be followed by preventive and curative treatment against mildew caused by *Golovinomyces cichoracearum*. The necessity of testing fungicides to determine the most effective of them.

Protection works in parks and gardens of ornamental plants must prevent the expansion of

these pathogens, observing integrated control of pathogens.

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