SAPROPHYTIC AND PARASYTIC MICOMYCETES ON SUGAR BEET (*BETA VULGARIS* L.)

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The aims of this study was to isolate and identify all micromycetes genera developed on Libero sugar beet variety during the field trial localized on south region from Moldavian plain (Ezareni Farm Resort at the University of Agricultural Sciens and Veterinary Medicine "Ion Ionescu de la Brad", Iasi) and, also from five seed varieties of sugar beet (Libero, Merak, Victor, Barsa, Brasov) during germination using "Blotter method".

The "blotter method" is one of the incubation methods where seeds are incubated usually for 7 days at 22˚C. After incubation, fungi developed on each seed are examined under different magnification of a stereomicroscope and identified.

During the laboratory analysis 8 genera of micromycetes (Sclerotinia, Botrytis, Fusarium, Alternaria, Penicillium, Cladosporium, Volutella, Trichotecium) were isolated and identified. Volutella sp. and Trichotecium sp. are reported for the first time on sugar beet in Romania.

***Key words**: sugar beet, laboratory analysis, new micromycetes genera*

Reporting and identification of pathogens in sugar beet is one of the major objectives of plant protection because this can significantly reduce the economical losses. These activities help us to establish preventive measures, to realise the proper preparation of graphics for forecasting and warning for chemical treatment and to avoid the pollution with pesticides of agrobiocoenosis.

Seeds are the main source of the infectious inoculums and because of that, a special attention to prevent the dispersal of new pathogens in the territory is always given.

MATERIAL AND METHOD

Were harvested sugar beet roots (Libero) in October of 2008, from the experimental field of Ezăreni Farm for laboratory analysis. The collected samples were analyzed for presence of parasitical and saprophytical micromycetes. Micromycetes were examined microscopically to identify the genus and species. Micromycetes identified were included in *"C. Sandu-Ville" Mycological Herbarium of Moldova.*

At the beginning of 2009 5 genotypes of sugar beet seeds have been also analyzed. The material used in this study was represented by two varieties of sugar beet (Brasov and Barsa) and three hybrids (Libero, Merak and Victor). The seeds from the hybrids have been pelleted with Thiram, Hymexazol, Imidacloprid, Tefluthrin and calibrated to 3,50 - 4,75 mm. The varieties Barsa and Brasov have not been treated; instead they have been washed with water (V1) or treated with ethylic alcohol (V2).

The seeds were put to germination using "blotter method" that is one of incubation methods where seeds are plated on well water-soacked blotters (filter paper), and incubated in a humid room for 7 days at 22 degrees.

The germination and development of the micromycetes were observed on each seed. After that, the micromycetes have been examined under the microscope and identified. The identification of the fungi is based on the way they grow on seed "habits characters", and on the morphological characters of fruiting bodies, spores/conidia observed under microscope.

RESULTS AND DISCUSSIONS

After harvest, on sugar beet roots were identified the following species of micromycetes:

1. *Trichotecium roseum* (Pers.) Link., Obs.Myc. I. 16 (1890); Sacc., Syll.Fung. V, 178 (1886); Lindau, Rabenh., Kr. Fl. Deutschl. VIII, 365 (1907) ; Migula, Kr. Fl.Deutschl. Pilze.III.4.2131, Tab. XCII, fig. 1 (1934), Săvul. Et Sandu, Quatrieme contrib. a la conneseance de Mycromycetes de Roumanie, Mem. Sc., Acad. Roum. Ser. III, Tom XV Mem. XVII, 476 (1940); Săvulescu Tr. et al. – Starea fitosanitară în România, anul 1942-1943, ICAR, Metode, îndrumări, rapoarte, anchete, 96 (1947).

Fungus was found on sugar beet roots. Has conidiophores with conidia of 18-24 x 7,5-9 µm. Conidia hyaline, 2-celled, ovoid to ellipsoid, pink to brown in mass. *Beta vulgaris*. L, is a new host to our country of this micromycetes.

2. *Volutella roseola* - Cooke, Gilman, A manual of soil Fungi p.356 (1957). Fungus was found on sugar beet roots. It has white mycelium (sporodochia 300-500 µm with spines of 150-250 x 6.25 µm). Conidiophores layer was 30-50 µm height. Conidia are cylindrical with rounded ends, with a drop of oil at middle, hialine, 6-6,5 x 2 µm. Fungus is new found for the country and Moldavia area.

3. *Sclerotinia sclerotiorum* (Lib.) de Bary (Vergh. Morph. Biol. Der Pilze, Mycet. Bact., p. 236, 1884) -Has an abundant white-gray mycelium that develops both the surface and inside the bodies contested.

4. *Botrytis cinerea* Pers.- Fungus found on beet roots have long conidiophores, slender, branched and the apical cells enlarged; conidia hyaline, gray in mass, 1-celled, ovoid.

5. *Fusarium* sp. - Develop a mycelium branched, thin white in mass. Conidia 2 or 3-celled, oblong with both ends sharp and with several transverse bulkheads; tinge of pink in mass.

6. *Alternaria tenuis* Ness. (sin. *Alternaria alternata* (Fr.) Keissler) – Conidiophores dark, simple, elongate. Conidia dark, with both cross and longitudinal septa, variously shaped, ovoid.

7. *Penicillium sp*.- Developed a green mycelium on sugar beet root. Conidiophores arising from the micelyum are branched near the apex to form a brush-like. Conidia brightly colored in mass, 1- celled, globose.

8. *Cladosporium* sp. - Has conidiophores dark, branched variously near the apex. Conidia is dark, 1- or 2- celled, variable in shape and size.

It was assessed the germination and presence of micromycetes (Table 1). The examination of micromycetes developed on sugar beet seed, under a microscope revealed the presence of four types of saprophytic fungi: *Alternaria* sp., *Rhizopus* sp., *Penicillium* sp. *Aspergillus* sp.

Table 1

Evaluating proces of germination and presence of micromycetes on sugar beet seeds

Name of variety / hybrid/variant	Germination (%)	Name of identified species
Brasov – V_1	85%	*Alternaria* sp. *Rhizopus* sp. *Penicillium* sp. *Aspergillus* sp.
Brasov – V_2	85 %	*Penicillium* sp. *Rhizopus* sp. *Alternaria* sp.
Barsa – V_1	89%	*Alternaria* sp. *Rhizopus* sp. *Penicillium* sp. *Aspergillus* sp.
Barsa – V_2	89 %	*Alternaria* sp. *Rhizopus* sp. *Penicillium* sp.
Libero	98 %	-
Victor	100 %	-
Merak	100 %	-

V_1- seeds washed with distilled water;
V_2- seeds disinfected with alcohol.

CONCLUSIONS

1. In the autumn of 2008, after laboratory analysis that were made on the sugar beet roots, have been pointed out 8 genus of micromycetes which, 3 of them parasites (Botrytis cinerea Pers., Fusarium sp., Sclerotinia sclerotiorum (Lib.) de Bary) and 5 genus saprophytes (Alternaria tenuis, Ness, Penicillium sp., Cladosporium sp., Trichotecium roseum (Pers.) Link., Volutella roseola - Cooke).

2. From the surface of the seminal tegument belonging to these 5 genotypes (Libero, Merak, Victor, Barsa, Brasov) during the germination process have been identified 4 genus of saprophytes micromycetes (Alternaria sp, Rhizopus sp., Penicillium sp., Aspergillus sp.).

3. Pelleting of seeds Libero, Merak and Victor did not allow the installation of the micromycetes into the germination process.

4. The best germination (100%) has been recorded on Libero, Merak and Victor hybrids.

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