MICROMYCETES PARASITIC AND SAPROPHYTIC ON *GLYCINE HISPIDA* (Mnch.) Max.

MICROMICETE SAPROFITE ŞI PARAZITE PE *GLYCINE HISPIDA* (MNCH.) MAX

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Abstract. *The area cultivated with soybean has increased significantly in the last few years and with this many pathogenically agents and saprophytic micromycetes that settle on different plant organs during vegetation have made their presence felt.*

Both the micromycetes on classical soybean and those on genetically modified soybean, which we are obliged to give up in the future, have been studied.

Considering the signalize crops damages in Moldavia area, the researches had been extended on both types of soybean.

Rezumat. *Suprafața cultivată cu soia a crescut simțitor în ultimii ani şi odată cu aceasta s-a făcut simțită şi prezența mai multor agenți patogeni şi micromicete saprofite care se instalează pe diferite organe ale plantelor în timpul vegetației.*

Au fost luate în studiu micromicetele apărute pe soia clasică cât şi pe cea modificată genetic la care suntem obligați să renunțăm pe viitor.

Având în vedere pagubele semnalate în culturi, în zona Moldovei, cercetările au fost extinse asupra celor două tipuri de soia.

MATERIAL AND METHOD

The observed soybean crops presented a lot of classical symptoms of disease under the conditions of years 2005-2006.

The stems, pods, seeds and roots gathered from the field were brought to the laboratory, where they were subjected to the specific mycological tests until the genus and species of the micromycetes that induced the attack symptoms were correctly determined.

The microscope samples and the attack symptoms were photographed in view of presenting them and the materials were included in the Moldavian Mycological Herbarium "C. Sandu-Ville".

RESULTS AND DISCUSSIONS

The most cultivated classical types in the area were Danubiana and Columna, and from the genetically modified types AG.0801 or S.2254 RR, recommended and sold by the Monsanto Company.

In the last few years the following micromycetes have been spotted on soybean in Moldavia:

- *Peronospora manshurica* (Naumov) Syd. – on classical and genetically modified types;

- *Gibberella zeae* (Schw.) Petch. – on classical and genetically modified types;
- *Sclerotinia sclerotiorum* (Lib.) de By.- on the classical and genetically modified types;
- *Sclerotium bataticola* Taub. – on the classical and genetically modified types;
- *Diaporthe phaseolorum* (Cke. et Ell.) Sacc. *var.soja* (Lehm.) Welm. – particularly on the genetically modified types;
- *Melanospora leucotricha* Corda – on the genetically modified types;
- *Fusarium acuminatum* Ellis and Everhart – on classical types;
- *Fusarium oxysporum* (Schlecht) Sn. f. *tracheiphilum* (E.F.Smith.) Sn. ert Hansen – on classical and genetically modified types;
- *Vermicularia dematium* (Pers.) Fr. – on classical types;
- *Trichotecium roseum* Lk. – on the genetically modified types;
- *Corynespora Casseicola* (Berk. et Curt.) Wei. – on the genetically modified types;
- *Gliocladium penicilliodes* Corda – on the genetically modified types;
- *Epicoccum neglectum*-Desm. – on classical types;
- *Epicoccum purpurascens* Ehrenberg – on classical types;
- *Torula herbarum* (Lk.) – on classical types;
- *Colletortrichum glycines* Hori – on classical types;
- *Ascochyta sojaecola* Abramov - on classical types;

As the cultivation of genetically modified soybean has much extended in the last few years, an alarming increase in the attack of *Peronospora manshurica, Gibberella zeae, Sclerotinia sclerotiorum* and *Melanospora leucotricha* on the surface parts of the plants has been noticed, and also the formation of resistance organs, oospores and perithecium during the winter period, with ample attack possibilities in the following year.

On the soybean roots left in the field the following fungus were spotted, in the case of the genetically modified types: *Corynespora Casseicola, Trichotecium roseum, Gliocladium penicilliodes* and *Fusarium oxysporum* (Schlecht) Sn. f. *tracheiphilum*.

At the request of some Agricultural Societies in Moldavia, Roundup-Ready soybean seeds have recently been analysed, which displayed whitish beans to an extent of 20%, as a result to the attack of *Peronospora manshurica* (Naumov) Syd. The surface of the beans displayed a flour-like film made up of mycelium and numerous oospores, which are the resistance organs of the micromyceta. The same spores were also spotted on the inside walls of pods (fig. 1 and 2).

After that it was precede the incubation of soybean beans at a temperature of 22 °C, by placing them in Petri dishes with a PDA medium. After performing the mycological and phytopathological analyses, the presence of many micromycetes was noticed, such as:

- *Alternaria atrans* Gibson (Fig. 3, 4);

- *Cladosporium herbarum* (Pers.) Lk. (Fig. 3);
- *Sporotrichum sp.* (Fig. 3)

If the first two micromycetes (*Alternaria atrans* (Gibson) and *Cladosporium herbarum* (Pers.) Lk) are cosmopolitan, saprophytic, we cannot say the same thing about the *Sporotrichum* genus which is parasitic on plants and animals. Among the soybean seeds sclerots of *Sclerotinia sclerotiorum* (Lib.) de By were also found, which means that there was an attack of white mould in the field in that cultivation year (2005-2006), either because of the practice of soybean one-crop system, or because of the fact that soybean followed after a sunflower crop that was strongly attacked by this micromycete.

Our mycological and phytopathological analyses spot only the micromycetes, for which we also annex the images photographed from Petri dishes and from the microscope.

Fig. 1 - Soybean hulls atacked by *Peronospora manshurica*

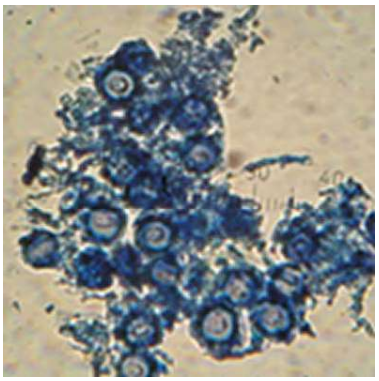

Fig. 2 - *Peronospora manshurica* Oospores on berried

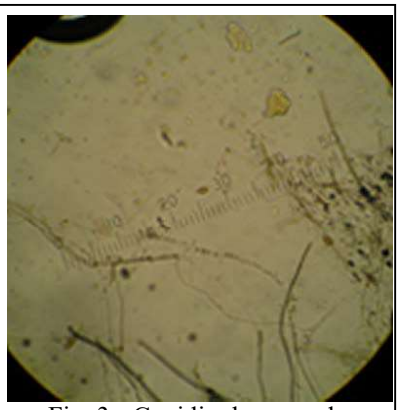

Fig. 3 - Conidiophores and conidia of *Sporotrichum, Cladosporium* and *Alternaria*

Fig. 4 – Conidia of *Alternaria atrans*

Fig. 5 - Soybean berries germinated and infested by some micromicetes

Fig. 6 - Soybean hulls atacked by micromicetes mycelia

CONCLUSIONS

As a result of the synthesizing of the data from the last few years, and also as a result of the performed analyses, the following conclusions emerge:

- a number of 7 micromycetes were spotted on the classical types, 5 on the genetically modified ones, and other 5 micromycetes were encountered both on the classical and on the genetically modified types;
- the total number of micromycetes spotted in Moldavia in the case of soybean crop was 17, to which other 3 micromycetes identified on the seeds on which the analyses were performed are added;
- from the micromycetes spotted on the analysed seeds, the greatest damages were produced by *Peronospora manshurica* (Naumov) Syd, where the frequency of the attacked seeds was about 20%.

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