

**CERCETĂRI PRIVIND DENSITATEA MICROBIOLOGICĂ A FUNGILOR ÎN PERIOADA SEPTEMBRIE 2007 – FEBRUARIE 2008, PE LOTUL EXPERIMENTAL DE CĂPȘUN DE LA ICDP PITEȘTI**  
**RESEARCHES ON MICROBIAL DENSITY OF THE FUNGI DURING SEPTEMBER, 2007 – FEBRUARY, 2008 IN THE STRAWBERRY EXPERIMENTAL FIELD OF RIFG MARACINENI**

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## Abstract

In the original paper are addressed these key issues. Comparative study between soil type Biophan-Baiculesti Curtea de Arges (standard) and at the RIFG Maracineni characteristics: Of microbiologically microflora all soil samples have all the same type and degree of fungal load, with small variations in fungal density. Microflora of fruit (strawberry) in the three developmental stages (ripe, ripening, harvest) has fungus of the genus *Penicillium spp*, and yeasts of the genus *Candida spp* and *Rodotorula spp*. Microbiologically active coal contain yeast like *Candida spp*. Activated charcoal may be used to study agriculture because it is devoid of plant pathogens and the human factor. Fungal density is minimal in the field in December and maximum in the months analyzed early and late cold season in February. Fungal density is highest in the solar form of cloth, which indicates contamination in the solar maximum, which ensures their infected plants for planting in the field. We recommend lowering the concentration of solar fungi aseptic processes by planting out before cold weather, as to reduce density of fungal reserve over the winter and to ensure a material with a low contamination in the relocation field.

**Keywords:** microflora, *Candida*, *Penicillium*, *Rodotorula*

**Cuvinte cheie:** microflora, *Candida*, *Penicillium*, *Rodotorula*

## 1. Introduction

The soil is generally a suitable environment for the development of microorganisms, as demonstrated both in number and their diversity much higher than in the aquatic environment. Heterogeneity, allows soil microorganisms colonizing population of different biochemical and biological features that are competing for fluctuating concentrations of nutrients, (Borlan Z. 1984, Teaci et al) distributed unevenly and insoluble.

Micropopulations consist of soil bacteria (eubacterii, actinomycetes, cyanobacteria), microfungi (Montini C 2007) Popovici L. 1994) algae and protozoa.

Their frequency is greatest in the upper layers, except the very surface of the soil, where the number of microorganisms is low due to the action of solar ultraviolet radiation and temperature and humidity variations. Fungi in soil are indigenous microorganisms living freely or in association with plant roots. They are spread mainly in the top 10 cm of surface soil with organic matter in litter decomposition in progress, in cultivated soils in the forest, as in the acid pH. Their number decreases with depth to 30 cm and be rare at present in small numbers, even to 100 cm. In the absence of nutrients useful and appropriate conditions, pass into a state of latent until conditions become again favorable for growth.

They participate in soil structure formation by the effect of mechanical restraint and aggregation of soil particles, ensuring their stability. Some fungi act as predators, and can participate in maintaining biological balance in soil.. (Sridher Sursala et al 2002, Zarnea G. 1994).

## 2. Material and method

Fungi experiences in strawberry species were placed on a brown clay soil with a sandy texture in depth in the first 60-80 cm depth. Prismatic surface soil structure, friable, porous. Soil content in the main elements which contribute to the mineral nutrition of strawberries: soil reaction is acidic (5.6), humus is 1.82 and decreases in depth. There is a low nitrogen supply, which is increasing the profile, mobile phosphorus content is also low - the soil surrounding the category of poor soils (Samples were taken from experimental batch of strawberry plantations RIFG Maracineni. Soil sampled were taken and samples microaeroflora so that they can quantify microflora in soil and their reserve before the start of treatment related to the strawberry crop in 2007. The soil samples were collected in sterile bags, and samples were taken by exposing microaeroflora plates with Sabouraud isolation medium for 15 minutes at critical points in the experimental group of strawberry plantations. Further soil samples were processed in the

laboratory in sterile 0.1% peptone water. Preparations obtained for each soil sample were inoculated Sabouraud dispersion. Both soil samples and those microaeroflora Sabouraud medium were inoculated at 25 ° C thermostat to identify fungal pathogens and yeasts class. Readings were performed at 3, 5, 7, 10 days after inoculation on agarose gel. Thermostatic microscopic preparations were made in order to confirm the most accurate mold colonies developed on the surface environment of isolation. Microscopic preparations were made by fingerprinting with the application of transparaenta tape to the surface colony studied, which was then deposited on a microscope slide film lactophenol. Microscopy was performed with an optical microscope-10x40 magnification and pictures were taken on camera with 0.5 x magnification The macroscopic analysis of culture medium on the surface identified colonies of the genus *Mucor* spp consistent, high 0.3 to 1 cm, which at maturity are whitish gray. Microscopic analysis of the colonies on the soil samples confirmed the presence of fungi of the genus *Mucor* spp , Microaeroflora samples were taken further in December and, finally, samples were collected in February 2008. warmed by exposing open Petri plates for 15 minutes then incubated at 25 ° C for 10 days.

### 3. Results and discussion

Fungal load was assessed by macroscopic and microscopic soil samples taken from the experimental strawberry field at RIFG Maracineni. Photos 1-3 show that the whole batch and experimental plantation of RIFG Maracineni, has entirely the same type and degree of fungal load, with slight variations in loading density The macroscopic analysis of culture medium on the surface identified colonies of the genus *Mucor* spp consistent, high 0.3 to 1 cm, which at maturity are whitish gray. Microscopic analysis of the colonies on the soil samples confirmed the presence of fungi of the genus *Mucor* spp(Photos 1-3)

Dominant genera of fungi in early September (09/09/2007) are: *Penicillium* spp, *Aspergillus niger*, *Fusarium* spp, and, with a low frequency are present in fungi of the genera: *Acremonium* spp, *Alternaria* spp, *Botrytis cinerea*, *Candida* spp, spp *Rodotorula*, and *Scopulariopsis* spp,. They are detailed in fig.3.1 (a - c) and Table 3.1. At the end of September (9/27/2007) microbial density was greatest in all five samples taken from strawberry plantation fig.3.2 (ae) and tab.3.1. Fungi like as *Aspergillus* spp, *Botrytis cinerea*, *Fusarium* spp, *Penicillium* spp, *Rhodotorula* spp, *Penicillium* spp *Acremonium roseum*, are dominant genera.

In December microaeroflora samples were collected from plot of experimental strawberry culture. Prelevates samples from harvest time and collected samples from the field shows as a maximum density in the form of cloth fungal Fig. 3 (a - e) fig.3.4 (a - e). The dominant fungal prelevatel from the field is reduced by represented fungi of the genera *Aspergillus* spp, *Penicillium* spp and yeasts of the genus *Candida* spp and *Rodotorulla* spp of fig.3.4.

Microaeroflora samples collected from strawberry field in February,( cold weather) show as the dominant fungal prelevate from the field reduced to fungi of the genera *Aspergillus* spp, *Penicillium* spp and yeasts of the genus *Candida* spp and *Rodotorulla* spp of fig.3.4,table 1). This explain as that was in a month earlier.

### 4. Conclusions

In the soil samples analyzed, the dominant fungal genus was represented by *Mucor* spp.

The samples microaerofloră dominance was the genera of fungi *Penicillium* spp, *Mucor* spp, *Fusarium* spp *Botrytis* spp, *Acremonium* spp and *Aspergillus* spp, *Acremonium* spp, *Penicillium Citrine*, and yeast of the genus *Rodotorula* spp.

Fungi identified in soil and air samples in areas of C1-C5 is qualitatively the microbial load condition during winter.

After each treatment will take samples of shoots, leaves, fruit and fungal contamination assessment of the possibilities of reducing infection in the fruit after the application of chemicals biofungicide.

From the analysis carried out in strawberry plantation during September 2007-February 2008 results following aspects: Fungal density field is minimal in December and maximum in autumn months and analyzed at the end of the cold weather in February.

At solar maximum density is fungal form of cloth, which indicate contamination in solar maximum, which provides an infected plant to plant them in the field.

It is recommended to decrease the concentration of fungi in solar processes aseptic subculturing before winter crops because it reduces the density of fungal reserve over the winter and make sure to obtain a material with a low contamination in the relocation field.

Samples in February with a maximum fungal density in that area is built coal plant in the soil, and this is not a generalization of microbial density present in the air.

### 5. References

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### Tables and figures



Fig.3.1 a - C1



b - C 2



c - C 3



Fig.3.2 a - C1



b - C 2



c - C 3

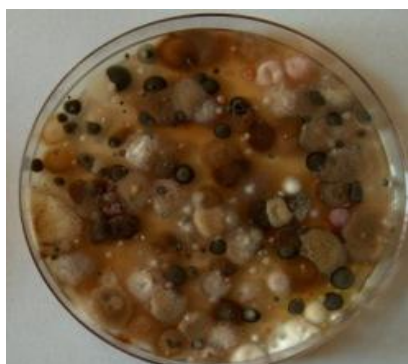


Fig. 3.2 d - C4



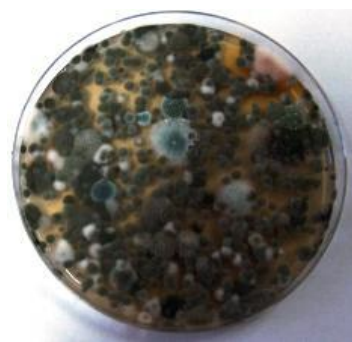
e - C5



Fig.3.3 a - C1



b - C2



c - C3



Fig.3.3 d - C4



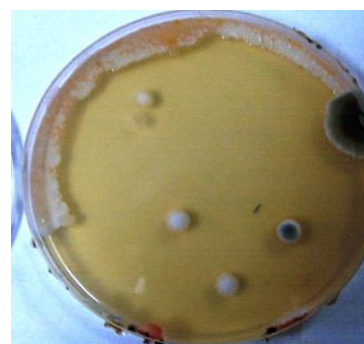
e - C5



Fig.3.4 a - field-C1



b - C2 field



c - C3 field

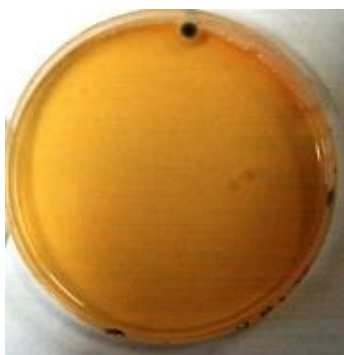
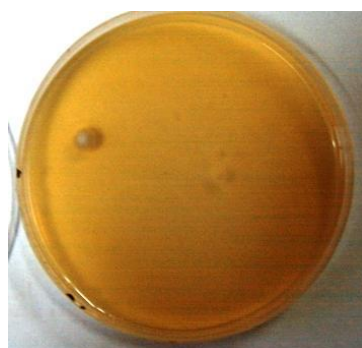


Fig.3.4 d - C4 field



e - C5 field



Fig.3.5 a - C1



b - C2

Table 1. Microflora present in strawberry plantation in September 2007 – February 2008

Variety	Vari- anta	Microorganisms identified
Strawberry 09.09.2007	C <sub>1</sub>	<i>Alternaria spp</i> , <i>Candida spp</i> , <i>Penicillium spp</i> , <i>Penicillium roseum</i> ;
	C <sub>2</sub>	<i>Aspergillus niger</i> , <i>Botrytis cinerea</i> ,, <i>Fusarium spp</i> , <i>Penicillium spp</i> , <i>Rhodotorula spp</i> ;
	C <sub>3</sub>	<i>Acremonium spp</i> , <i>Aspergillus niger</i> , <i>Fusarium spp</i> , <i>Penicillium spp.</i> , <i>Rhodotorula spp</i> ;
Strawberry 27.09.2007	C <sub>1</sub>	<i>Acremonium spp</i> , <i>Aspergillus niger</i> , <i>Fusarium spp</i> , <i>Penicillium spp.</i> , <i>Rhodotorula spp</i> ;
	C <sub>2</sub>	<i>Aspergillus niger</i> , <i>Fusarium spp</i> , <i>Penicillium spp.</i> , <i>Rhodotorula spp</i> ;
	C <sub>3</sub>	<i>Acremonium spp</i> , <i>Aspergillus niger</i> , <i>Fusarium spp</i> , <i>Penicillium spp.</i> , <i>Rhodotorula spp</i> ;
	C <sub>4</sub>	<i>Acremonium spp</i> , <i>Aspergillus spp.</i> , <i>Penicillium spp.</i> , <i>Rhodotorula spp</i> ;
	C <sub>5</sub>	<i>Aspergillus niger</i> , <i>Fusarium spp</i> , <i>Penicillium spp.</i> , <i>Rhodotorula spp</i> ;
Strawberry solar 07.12.2007	C <sub>1</sub>	<i>Aspergillus spp.</i> , <i>Fusarium spp</i> , <i>Penicillium spp.</i> , <i>Rhodotorula spp</i> ;
	C <sub>2</sub>	<i>Aspergillus niger</i> , <i>Fusarium spp</i> , <i>Penicillium spp.</i> , <i>Rhodotorula spp</i> ;
	C <sub>3</sub>	<i>Fusarium spp</i> , <i>Penicillium spp.</i> , <i>Monillia spp.</i> , <i>Rhodotorula spp</i> ;
	C <sub>4</sub>	<i>Aspergillus niger</i> , <i>Fusarium spp</i> , <i>Penicillium spp.</i> , <i>Rhodotorula spp</i> ;
	C <sub>5</sub>	<i>Aspergillus spp.</i> , <i>Fusarium spp</i> , <i>Penicillium spp.</i> , <i>Rhodotorula spp</i> ;
Strawberry field 07.12.2007	C <sub>1</sub>	<i>Aspergillus spp.</i> , <i>Candida spp</i> ,
	C <sub>2</sub>	<i>Candida spp</i> , <i>Rhodotorula spp.</i> , <i>Penicillium spp.</i>
	C <sub>3</sub>	<i>Candida spp</i> , <i>Penicillium spp.</i>
	C <sub>4</sub>	<i>Candida spp</i> , <i>Penicillium spp.</i>
	C <sub>5</sub>	<i>Candida spp</i> ,
Strawberry 25.02.2008	C <sub>1</sub>	<i>Penicillium spp</i> . <i>Candida spp</i> , <i>Rhodotorula spp.</i> , <i>Aspergillus niger</i> ,
	C <sub>2</sub>	<i>Penicillium spp</i> . <i>Candida spp</i> , <i>Rhodotorula spp.</i> , <i>Aspergillus niger</i> ,
	C <sub>3</sub>	<i>Penicillium spp.</i> , <i>Rhizopus spp.</i>
	C <sub>4</sub>	<i>Acremonium spp</i> , <i>Aspergillus niger</i> , <i>Fusarium spp</i> , <i>Penicillium spp.</i> , <i>Rhodotorula spp</i> ;