THE MICROMYCETES PRESENTED ON DIFFERENT VEGETABLES SEEDS, STORED IN VARIOUS ATMOSPHERIC CONDITIONS

MICROMICETE PREZENTE PE SEMINȚELE DIFERITELOR SPECII DE LEGUME PĂSTRATE ÎN CONDIȚII ATMOSFERICE NECONTROLATE

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Abstract. *The scope of the presented researches is to determinate the micromycetes spectrum on the next various vegetables seeds genus: Daucus carota L., Capsicum annuum L., Petroselinum crispum (Mill), Lactuca sativa L., Citrullus lanatus (Thunb), Allium sativum L., Lycopersicum esculentum L., obtained from the small producers which were stored in various atmospheric conditions. The samples have supported specifically phytophatological and mycological tests in the laboratory for the determination of the micromycetes spectrum presented on them. In this paper we try to relieve the micromycetes presence on the vegetables seeds which are part responsible for diseases appearance in the vegetation period.*

Rezumat. *Cercetările de față au ca scop determinarea spectrului de micromicete prezente pe semințele diferitelor specii de legume şi anume: Daucus carota L., Capsicum annuum L., Petroselinum crispum (Mill), Lactuca sativa L., Citrullus lanatus (Thunb), Allium sativum L., Lycopersicon lycopersicum L., provenite de la micii producători şi care au fost păstrate in condiții atmosferice necontrolate. Asupra acestor probe s-au efectuat teste fitopatologice şi micologice specifice de laborator în vederea determinării spectrului de micromicete prezente pe acestea. Lucrarea urmăreşte evidențierea micromicetelor prezente pe aceste semințe de legume şi care, în mare măsură, sunt responsabile de apariția unor boli în cursul perioadei de vegetație*

MATERIAL AND METHOD

The study has been made on the seeds of 9 vegetable genuses, obtained from the small producers which were stored in various atmospheric conditions.

From the medium samples taken, there have been obtained the analyses samples for the detailed phytopatological and mycological specifically tests, in order to establish the fungus spectrum presented on those. As a work method, it has been used the method of PDA nutritive media cultivation (potato – dextrose – agar), (The Ulster – Malone and Muskett method – 1964 mentioned by Ovidiu Constantinescu in 1974). The samples have been homogenized and 150 were random counted, respectively 90 seeds from each genus, using 3 repetitions of 50, respectively 30 seeds.

Those have been arranged in Petri dishes with PDA nutritive media (potato – dextrose – agar), spread on approximate equal distances of 1 cm, and then introduced in the thermostat for a 5 days period at 22°C.

After the incubation period, the dishes have been microscopically analyzed to establish the number of fungus colonies and the area occupied by them, respectively microscopically, for the exact evaluation of the micromycetes spectrum presented.

RESULTS AND DISCUSSIONS

The presence of funguses on vegetables seeds, generate, in mostly situation the appearances of some diseases in vegetation period. That for, the present study, follows to determinate and establish the fungus from seeds teguments, for the possible measurements which must be take to prevent the crop infestation in vegetation period. After the specifically laboratory analyses, their were point out some saprophytic and parasitic funguses, that so, after the incubation period, on the seeds surfaces were found an impressive number of fungus, especially saprophytic as the next:

Table 1

Fungus present on carrot seeds (*Daucus carota* L.)

No.ct.	Signalized fungus	R_1 50 seeds (%)	R_2 50seeds(%)	R_3 50 seeds(%)
1	*Rhizopus nigricans*	61,1	65,8	67,5
2	*Penicillium sp*	27,5	26,3	32,5
3	*Cladosporium sp*	-	3,9	-
4	*Alternaria sp*	7,6	-	-
5	*Thamnidium elegans L.*	3,8	-	-
6	*Rhizoctonia solani*	-	4	-

Fig.1. Microscopic images of dishes with *Daucus carota* L. seeds occupied by funguses

In the analyses samples with *Daucus carota* L seeds, were signalized 6 genus of funguses, several of those registering a higher proportion, as *Rhizopus* and *Penicillium* genus, the rest of genus being founded in reduced proportion.

The fungus which has been develop on the seeds surface are saprophytic and cosmopolite, but in the vegetation period can produce disease which generate a quality and quantity decreases of the productions.

Table. 2

Fungus present on pepper seeds *(Capsicum annuum L.)*

No.ct.	Signalized fungus	R_1 50 seeds (%)	R_2 50seeds(%)	R_3 50 seeds(%)
1	*Penicillium sp*	89	86,2	86,9
2	*Cladosporium sp.*	11	13,8	13,1

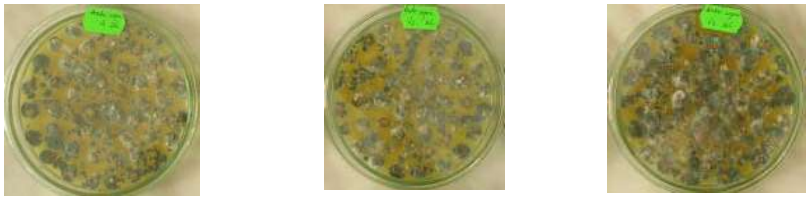

Fig.2. Microscopic images of dishes with *Capsicum annuum* L. seeds occupied by funguses

To the all three varieties of pepper *Capsicum annuum* L, were signalized only two genus of saprophytic and cosmopolite fungus, but the Penicillium genus has been develop extremely fast occupied the analyzed dishes, starting with the first days from the incubation.

Table. 3

Fungus present on tomato seeds (*Lycopersicum esculentum* L.)

No.ct.	Signalized fungus	R_1 50 seeds (%)	R_2 50seeds(%)	R_3 50 seeds(%)
1	*Rhizopus sp.*	42,1	49,2	66,7
2	*Penicillium sp.*	26,5	23,3	20
3	*Mucor sp.*	4,4	4,1	2,7
4	*Alternaria sp.*	15,5	10,4	6.7
5	*Trichotecium sp*	-	2,6	-
6	*Fusarium sp.*	4,4	-	3,9
7	*Cladosporium sp.*	7,1	5,2	-
8	*Rhizoctonia sp.*	-	2,6	-
9	*Stemphyllium herbarum*	-	1,6	-
10	*Scopulariopsis sp.*	-	1	-

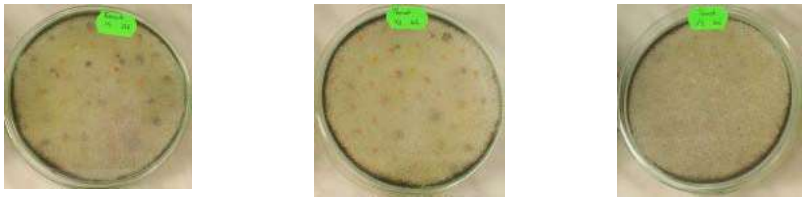

Fig.3. Microscopic images of dishes with *Lycopersicon esculentum* L. seeds occupied by funguses

On *Lycopersicum esculentum* L. has been development a big variety of fungus, but in reduced proportion, except two genuses, respective Rhizopus and Penicillium, which had an evolution much more intense than the rest of the fungus.

Table. 4

Fungus present on pimpernel seeds (*Petroselinum crispum* (Mill)

No.ct.	Signalized fungus	R_1 50 seeds (%)	R_2 50seeds(%)	R_3 50 seeds(%)
1	*Rhizopus sp.*	74,6	69,4	15,4
2	*Aspergillus sp.*	1,5	1,4	7,7
3	*Penicillium sp*	5,9	16,7	26,9
4	*Alternaria sp.*	2,9	5,6	19,2
5	*Cladosporium sp.*	4,5	2,8	15,4
6	*Rhizoctonia sp.*	1,5	2,8	-
7	*Mucor sp.*	5,9	-	15,4
8	*Fusarium sp.*	3,2	-	-
9	*Stemphyllium sp.*	-	1,3	-

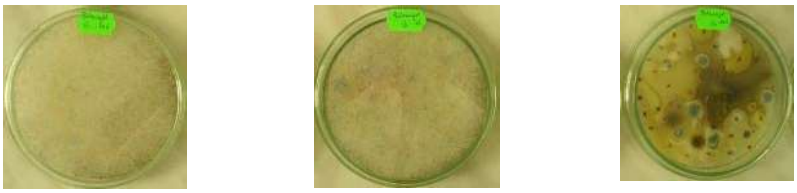

Fig.4. Microscopic images of dishes with (*Petroselinum crispum* (Mill), seeds occupied by funguses

In the experiences with *Petroselinum crispum* seeds, were relived that the fungus spectrum was big, being signalize 9 genus of saprophytic fungus. Many of those have been develop in reduced proportion except *Rhizopus* genus, which had occupied complete the dishes starting with first three days.

Table. 5

Fungus present on salad seeds (*Lactuca sativa L.*) - var. capitata

No.ct.	Signalized fungus	R_1 50 seeds (%)	R_2 50seeds(%)	R_3 50 seeds(%)
1	*Alternaria sp.*	37,7	33,3	26
2	*Mucor sp.*	14,2	17,9	16,3
3	*Cladosporium sp.*	33	25,6	29,2
4	*Fusarium sp.*	9,4	17,9	19,5
5	*Stemphyllium sp.*	3,8	3,1	5,2
6	*Trichotecium sp*	1,9	2,2	3,8

Fig. 5 Microscopic images of dishes with Lactuca sativa L.- var. capitata seeds occupied by funguses

On salad (*Lactuca sativa* L), the fungus spectrum was variable, being identified 6 genus, but in highly proportion only the next: Alternaria, Cladosporium, Fusarium, Mucor, which can produce significant problems, in the germination stadium, if it is use to disseminate untreated seeds.

Table 6

Fungus present on water melon seeds (*Citrullus lanatus* (Thunb)

No.ct.	Signalized fungus	R_1 30 seeds (%)	R_2 30seeds(%)	R_3 30 seeds(%)
1	*Alternaria sp.*	37,5	34,5	35,5
2	*Rhizopus sp.*	15	14,4	12,9
3	*Mucor sp.*	7	11,5	11,6
4	*Cladosporium sp.*	30	25,9	27,1
5	*Fusarium sp.*	8	-	-
6	*Stemphyllium sp.*	2,5	4,6	3,9
7	*Rhizoctonia sp.*	-	-	2,6
8	*Penicillium sp*	-	9,1	6,4

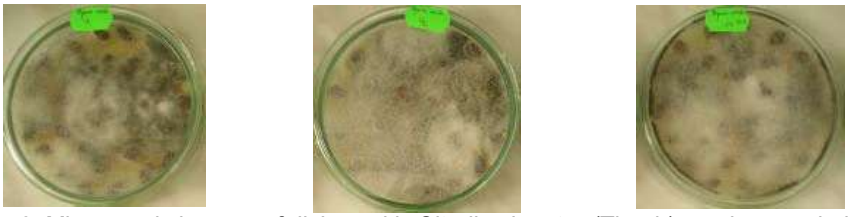

Fig.6. Microscopic images of dishes with *Citrullus lanatus* (Thunb) seeds occupied by funguses

The saprophytic fungus genus, founded in analysis samples with *Citrullus lanatus* (Thunb) were: Alternaria, Rhizopus, Mucor, Cladosporium, Penicillium, Fusarium, Rhizoctonia, in different proportion, but the most dangerous diseases on cucurbitaceae are produced by the species which belong to Alternaria, Cladosporium and Fusarium genus, because of the quantity and quality decreases of production in vegetation period, if those found favorable conditions for development.

Table. 7

Fungus present on garlic seeds (*Allium sativum* L.)

No.ct.	Signalized fungus	R_1 30 seeds (%)	R_2 30seeds(%)	R_3 30 seeds(%)
1	*Trichotecium sp*	12,5	10,3	6,4
2	*Alternaria sp.*	79,2	77,6	78,4
3	*Mucor sp.*	5	6,9	3,2
4	*Stemphyllium sp*	3,3	5,2	8
5	*Rhizopus sp.*	-	-	4

Fig.7. Microscopic images of dishes with Allium sativum L seeds occupied by funguses

In the analysis dishes with *Allium sativum* L. seeds were pointed out 5 species of fungus. Two species which belong to Alternaria and Trichotecium genus were founded in big proportion, and Mucor, Stemphyllium and Rhizopus genus were signalize in reduced or insignificant proportion.

CONCLUSIONS

1. It is know the fact that *Allium sativum* L.), is resistant to some pathogenic agents attack, but if to the dissemination are used untreated seeds, the risk of diseases appearance in vegetation period is highest and also if are not respected the cultural hygiene measurements.

2. To the all three varieties of pepper *Capsicum annuum* L, were signalized only two genus of saprophytic and cosmopolite fungus, but the Penicillium genus has been develop extremely fast occupied the analyzed dishes, starting with the first days from the incubation.

3. On salad (*Lactuca sativa* L), the fungus spectrum was variable, being identified 6 genus, but in highly proportion only the next: Alternaria, Cladosporium, Fusarium, Mucor, which can produce significant problems, in the germination stadium, if it is use to disseminate untreated seeds.

4. The vegetables cultures from the rural small farms, are many times disseminated using seeds from own production, which were stored in different places and improper conditions.

5. Because of this fact, we recommend that the seeds to be treated before dissemination to have a crop without pathogenic agents, or it are recommended to be use certificated and treated seeds, which is spread trough the specialized units.

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