

THE INFLUENCE OF SOME FACTORS ON GROWTH AND DEVELOPMENT OF *BOTRYOTINIA FUCKELIANA* (DE BARY) WHETZEL FUNGUS

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In lab experiences it was tested some nutritive media, in view of using the most favorable of them for testing the Botryotinia fuckeliana fungus needs against temperature, light and pH.

It counts a series of aspects like:

- *The percent of total surface of Petri dishes by Botryotinia fuckeliana fungus;*
- *The number of sclerots, the form and dimensions of those ones;*
- *The dimensions of conidiophores with conidia of the fungus;*
- *The growth and sporulation of fungus.*

The obtained results confirm some references existed in specialty literature, but in the same time are bringing some new contribution.

Key words: *(nutritive media, fungus, temperature, light, pH).*

The work paper was made to observe and signalize some potential transformation regarding the biology of *Botryotinia fuckeliana* pathogen, aspect which where less studied in the last few years, inside of the country and abroad.

In the work paper it was followed the aspect regarding the epidemiology and ecology of the pathogen. So, it was trying to identify the fungus needs against physiological and biochemical factors, being tested the most important carbonic and nitrogen sources and also the mineral source preferred by the fungus, in increase process and also the optimal report of those ones.

MATERIAL AND METHOD

The material studied was collected from Ampelografic collection of Horticultural Faculty Iași, from different variety of grape vine, represented by vine bunch, leaves, bunch and berried with symptoms.

The samples were collected yearly, and the pure culture of *Botryotinia fuckeliana* was possible by direct isolation.

The nutritive media used for isolation and growth of *Botryotinia fuckeliana* fungus where P.D.A. and Malt-extracted.

For the experience were used Petri dishes having the same dimensions with a calculate surfaces.

The surface of Petri dishes was calculate by the formula: πR^2

The radius: (R) = 4,6 cm

The surface of the dishes (S) = 66,4424 cm²

The experience was made on 19 th of April 2007 and the observations and photos were made at 5 and 12 days after cultivation.

RESULTS AND DISCUSSION

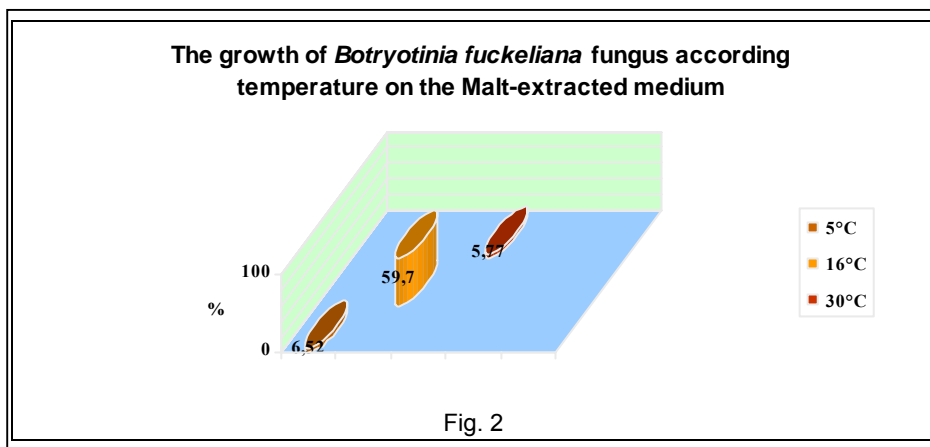
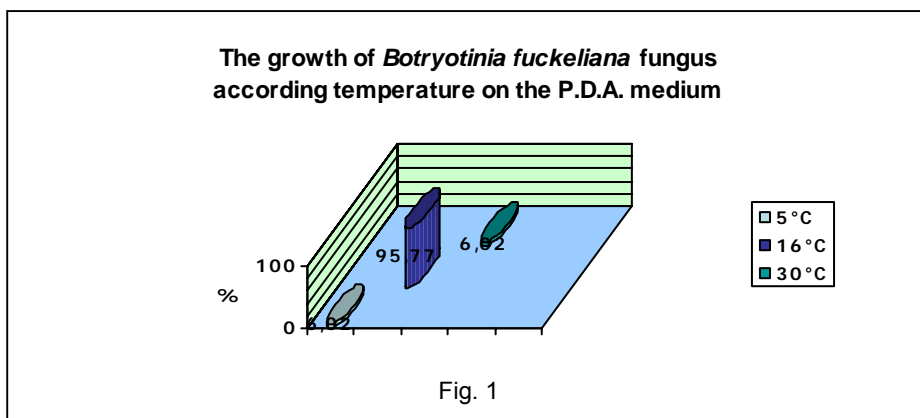
The actions of *Botryotinia fuckeliana* fungus against temperature and light

The fungus needs against the two factors were tested in lab condition using two medium cultures very favorable for fungus growing such as P.D.A. and Malt-extracted medium.

Referring to the fungus need against temperature, the fungus growth was followed at 3 different temperatures such as: 5°C, 16°C and 30°C.

The fungus needs against light were tested at the room temperature, on the same medium cultures.

After 5 days from cultivation, it was determined the percentage occupied by the fungus from the total surface of the dish.

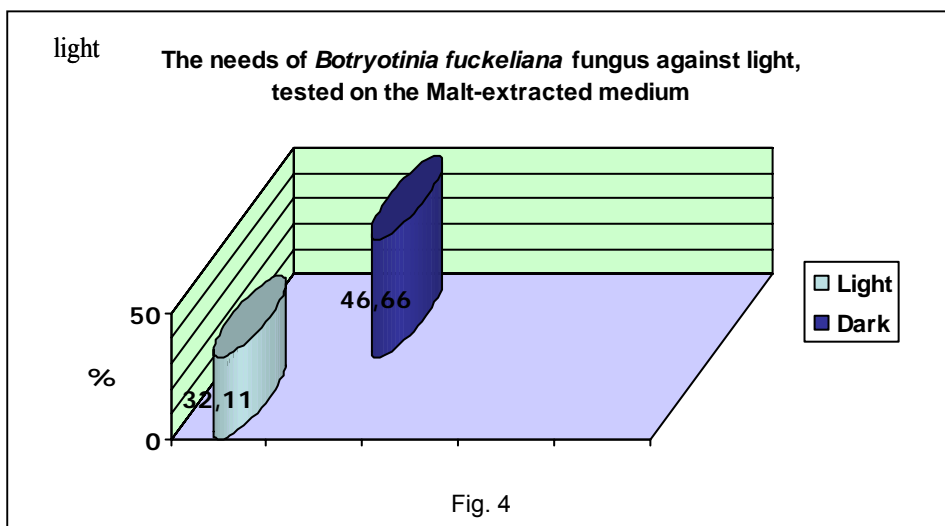


After the made mesurements, at those 3 different temperatures (5°C, 16°C and 30°C), it was found that the fungus was best developed at 16°C, but in this case it was developed less then at 22°C, temperature that we consider to be optimal.

Reffering at the aspect of the colony, this one is different according to the temperature.

At 30°C, the fungus fructified very quickly, but as the surface it was spread very little. The conidiophores and conidia were mature after 5 days, by changing theirs color in gray.

At 5°C and also at 16°C, after 5 days, the colony of the fungus had a whitely aspect (were not complete mature), but as the surface, it was more spread at 16°C.



Carlile 1965, cited by Galet P – 1977, consider that is difficult to enounce conclusions about the positive or negative effect of the light, because sometime it can be seen in the grape plantation, that the brown is developing sometimes on the grapes that are in the shadow of the leaves, where the temperature is not too high and the humidity is maintained at important level, while in light conditions is reversed.

In lab experience, regarding the fungus needs against light, it was found that the fungus was extended more in the dishes that were put in the dark, the difference being evident specially on Malt-extracted medium (Fig. 4).

Table 1

The number of formed sclerots, according temperature, on the tested medium, at 12 days from cultivation

| Temperature | Medium | R1 | R2 | R3 |
|-------------|---------------------|----|----|----|
| 5°C | P.D.A. medium | 0 | 0 | 0 |
| | Average on variants | 0 | | |
| | Malt-extract medium | 0 | 0 | 0 |
| 16°C | Average on variants | 0 | | |
| | P.D.A. medium | 10 | 15 | 11 |
| | Average on variants | 12 | | |
| 30°C | Malt-extract medium | 32 | 27 | 40 |
| | Average on variants | 33 | | |
| | P.D.A. medium | 0 | 0 | 0 |
| 30°C | Average on variants | 0 | | |
| | Malt-extract medium | 0 | 0 | 0 |
| | Average on variants | 0 | | |

Table 2

The number of formed sclerots, according light, on the tested medium, at 12 days from cultivation

| | Medium | R1 | R2 | R3 |
|-------|---------------------|-------|----|----|
| Light | P.D.A. medium | 0 | 0 | 0 |
| | Average on variants | 0 | | |
| | Malt-extract medium | 3 | 2 | 5 |
| | Average on variants | 3,3 | | |
| Dark | P.D.A. medium | 16 | 11 | 14 |
| | Average on variants | 13,67 | | |
| | Malt-extract medium | 35 | 44 | 39 |
| | Average on variants | 39,33 | | |

Referring to the number of formed sclerots, it was found that those one, were not formed at 5°C or 30°C after 12 days from cultivation, but at 16°C, it was formed sclerots on both culture mediums, but more on Malt-extracted medium.

The significant differences regarding the form of sclerots, were found at testing the needs of fungus against light, finding that the sclerots formation take place preferential at dark.

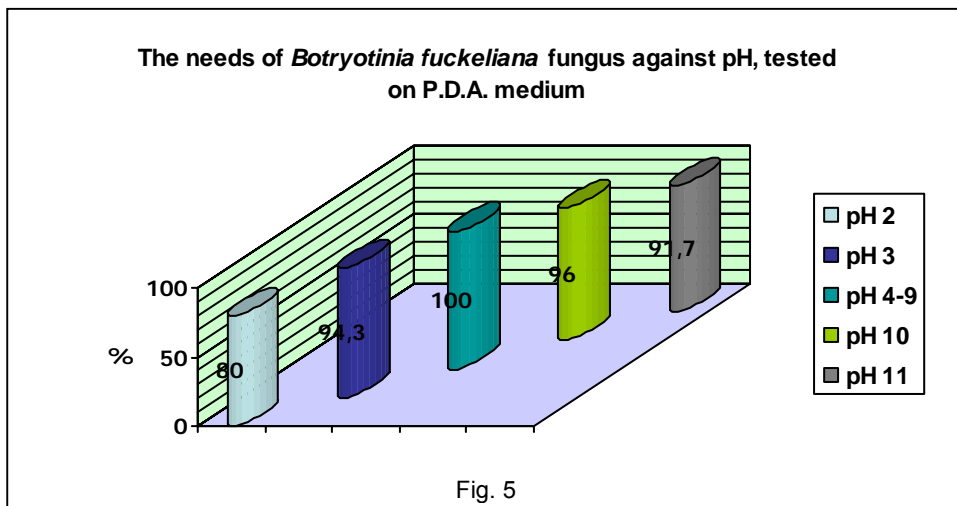
The actions of *Botryotinia fuckeliana* fungus according pH

The test was made on P.D.A. medium, starting from 2 to 11 pH values.

Bringing the pH reaction to an usually values, was made with a HCl and NaOH solution.

Botryotinia fuckeliana fungus cultivation was made in a Petri dish, with P.D.A. medium, on 11 th of May 2007, and the samples were kept in an incubator, at 22°C temperature.

The observation were made daily, and after 5 days from cultivation, it was measured the percentage occupied by the fungus, from total surface of the dish.



It was also found that, at 2 or 3 pH values, the culture medium doesn't solidified, but the fungus was developed well enough under a pellicle form at the surface of the medium.

At 4, 5, 6, 7 and 8 value of pH, the fungus extended on the whole surface of dishes, in all variants as a cloth form.

Starting with 8 until 11 value of pH, the fungus was extended the same as the precedent variants, with the note that it was fructified in the center of the dishes more and more abundant, direct proportionally with the pH modification of culture medium.

After these observations the conclusion is that the fungus is developing very well regardless of the substratum pH value, being still preferred the weak acid to neuter pH (with values of 5, 6 and 7).

Table 3
The number of formed sclerots, according pH on P.D.A. medium, at 12 days from cultivation

| Mediu m | Rep | pH value | | | | | | | | | |
|------------|-----|----------|---|------|------|------|----|------|----|----|----|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| P.D.A. | 1 | 0 | 0 | 37 | 36 | 37 | 60 | 40 | 11 | 0 | 0 |
| | 2 | 0 | 0 | 26 | 26 | 37 | 34 | 33 | 4 | 0 | 0 |
| | 3 | 0 | 0 | 19 | 36 | 42 | 23 | 28 | 27 | 0 | 0 |
| Average | | 0 | 0 | 27,3 | 32,7 | 38,7 | 39 | 33,7 | 14 | 0 | 0 |

The determination of sclerots number, formed on P.D.A. medium according pH, it was realized at 12 days from cultivation.

On the mediums with 2,3,10, and 11 pH values, the fungus doesn't formed sclerots, while between 4 and 9 pH values, the sclerots were formed, being more numerous on 6 and 7 pH values.

CONCLUSIONS

- Referring to the need of fungus against temperature, after measurement at 3 temperature values (5°C, 16°C and 30°C), it was found that the fungus was best developed at 16°C, but in this case it was developed less then at 22°C, temperature that we consider to be optimal.
- Referring to the number of formed sclerotots, it was found that those one, were not formed at 5°C or 30°C after 12 days from cultivation, but at 16°C, it was formed sclerotots on both culture mediums, but more on Malt-extracted medium.
- Completing the information referring to the fungus action against light, it was found that the fungus was extended more on the dishes put on the dark, the difference being evident on Malt-extract medium.
- Important differences were registered at sclerotots forming according light, being found that those formations take place preferential at dark.
- Referring to pH, the fungus was developing very well regardless of the substratum pH value, being still preferred the weak acid to neuter pH (with values of 5, 6 and 7).

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