

PRELIMINARY RESULTS CONCERNING THE CONTROL OF VINE PERST AND DISEASES UNDER THE CONDITION AGROCLIMATIC OF DEALU BUJORULUI VINEYARD

REZULTATE PRELIMINARE PRIVIND COMBATEREA PRINCIPALELOR BOLI ȘI DĂUNATORI AI VIȚEI DE VIE ÎN CONDIȚIILE AGROCLIMATICE DIN PODGORIA DEALU BUJORULUI

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***Abstract.** At the Research Station for the vine growing and Bujoru, in to 2008 does experimentation have a program of combat integrate has principals pests and diseases of vine in the plantation Dealu Bujorului or has introduction of the pesticide has last generation as are: Equation, Coragen, Talendo, Curzate F, Kocide. This products plant health to apply in a number to low of treatments has to ensure effectiveness exceptional in the combater's principal of agent's pathogen and pests and diseases one in the wine plantation.*

Key words: grapevine, pathogens, vineyard

***Rezumat.** În anul 2008 la S.C.D.V.V. Bujoru a fost experimentat un program de combatere integrată a principalelor boli și dăunători ai viței de vie din podgoria Dealu Bujoru în care au fost introduse pesticide de ultima generație cum ar fi: Equation, Coragen, Talendo, Curzate F, Kocide etc. Aceste produse fitosanitare aplicate într-un număr redus de tratamente au asigurat o eficacitate deosebită în combaterea principalilor agenți patogeni și dăunători din plantațiile viticole.*

Cuvinte cheie: vița de vie, agenți patogeni, podgorie

INTRODUCTION

The pest control of vineyard represents a technological measure important for the production's quality maintenance as well as for the maintenance of the productive potential of the vineyard plantations. Because now days the pesticides are found in a large variety, to establish the specific kind of pest-killers to be used it is necessary to consider their biological and economical efficiency as well as the extent in which they are able to reduce the grapes' pollution as well as the entire ecosystem's pollution. The purpose of using new pesticides was to combat the main pathogens in Dealu Bujorului vineyard in a context in which the climate factors' deviation from the usual annual average affects their biology, their occurrence, as well as their evolution.

MATERIALS AND METHOD

The experimental lots were located within a plantation started in 1980 including three grape vine sorts: Merlot, Feteasca Neagra, and Cabernet Sauvignon which have as a partner the mother plant Berlandieri X Riparia S04-4 with a semi-tall bilateral cordon leading form and a plantation distance of 2/1, 20 m. The experimental design included the following lots:

1. V1 - The Witness/ The Untreated Lot
2. V2 - The Conventional Chemical Treatment Lot
3. V3 - The Du Pont Product Experimental Lot

To establish how badly the diseases such as vine manna, vine mildew, and grape moth attacked the grape wine, observation have been made on the intensity and frequency at which these diseases damaged the grape leaves and grape clusters.

a) The attack intensity (I %) is a relative value that gives the degree in which the attack spreads on the plant by comparing the attacked surface to the whole observed surface. To report the attack intensity a six category intensity scale is used; each category represents a grade of the attack intensity.

The results of the observation that has been made on the lots regarding the attack intensity have been interpreted using the following calculus formula: $I\% = \frac{\sum (i \times f)}{n}$. The symbols in this formula represent:

n - the number of plants or plants organs being attacked

I - the grade or the percent of attack on the plant

f - the number of plants attacked for each grade/percent

b) The attack frequency (F %) is the relative value representing the number of attacked plants (grape vines) compared to the number of the observed plants, determined by using the following formula: $F\% = \frac{n \times 100}{N}$. The symbols of this formula stand for the following variables:

n - the number of plants or plant organs being attacked

N - the number of plants being observed

c) The Attack Degree (AD/GA %) represents the extent of the attack spreading on the whole plantation or the total number of plants under observation, and it is given by the following formula: $GA\% = \frac{F\% + I\%}{100}$.

RESULTS AND DISCUSSIONS

Under the climatic conditions of the vegetative period of 2008 there have been advertised seven phyto therapeutic treatments to combat grape vine pathogens and diseases.

During the vegetative period there have been observations made on the intensity, the frequency and the degree of the attack of the vine manna, the vine mildew, and the grape moth on the grape leaves, as well as on the grape clusters. The data have been calculated and interpreted in the laboratory for the following grape vine sorts: Feteasca neagra, Merlot and Cabernet Sauvignon.

To maintain the health of the grape vine from the experimental lots, treatments with systemic and contact phyto therapeutic products have been applied. These products are as follows: Sulfavit 80 PU, Sulfavit 95 PP, copper sulfate, Ridomil Gold Plus 42,5 WP, Equation, Coragen, Talendo, Curzate F, Kocide etc.

The treatments have been applied when advertised using the MPSP 3 machine; the chemical products being combined depending on the pathogens that

needed to be eliminated. The amount of solution used was 400 l/ha for the two first treatments, and 900- 1000 l/ha for the next treatments.

In order to characterize the climatic conditions of 2008 from the Dealu Bujorului vineyard, the data recorded at the meteorological station S.C.V.V. Bujoru have been used. Thus, analyzing the recorded climatic data, it has been noticed that during the vegetative repose period the absolute minimum temperatures did not drop under the cold resistance limit of grape vine (-18, 0°C).

On 05.01.2008 there have been recorder -14, 5°C; temperature which did not affect the viability of the grape vine's buds from the experimental lots.

The vegetative period has started with abundant precipitations, but irregularly scattered through it. Also during this period the recorded precipitations have been higher than the monthly regular average and so, during March, April, and May, a precipitation surplus of 11, 4 mm has been recorded.

With regard to the precipitations' evolution, there has been noticed an irregular distribution of them throughout this period of time, with an excess during May (60, 6 mm compared to a multiannual average of 31, 2 mm), a value close to the normal average during June and July, and a deficit during August, September, and October.

In the context of scarce biological reserves and swinging climatic conditions during the vegetative period (high temperatures, abundant precipitations, high atmospheric humidity, dew etc.) the following results have been recorded:

- **The Vine Manna** (*Plasmopara viticola* - Bert et Curt)

In 2008 the vine manna's occurrence and evolution have been favoured by the climatic conditions during May, June, and July. The primary infections occurred in the first decade of May, while the symptoms (brown spots and the fructifications of the vine manna) occurred during the second decade of May.

The pathogen had a strong evolution during the blooming period; the attack could be seen on the blossoms as well as on the young grape clusters (favoured by the abundant and frequent precipitations); this stage called the "rot - gris" has produced important damage in the vineyards where the phytotherapeutic treatments have not been applied at the right time using the adequate products.

Under the climatic conditions during the research period it has been noticed that the manifestation of the pathogen's attack on the grape leaves and clusters has been weaker for the grape vine sorts that have been studied. Therefore the vine manna's attack on the grape leaves has varied from 0, 05 % for Cabernet Sauvignon (V2) and 0, 13 % for Merlot; while the attack on the grape clusters has varied from 0, 18 % for Feteasca Negra and 0, 47 % for Cabernet Sauvignon (table 1). For the Merlot sort a G.A (Attack Degree) of 8, 49 % on the leaves and 14, 07 % on the grape clusters has been registered.

The evolution of the pathogen has been kept under control by applying six phytotherapeutic treatments. During the vegetative period of 2008, 43 secondary infections have been recorded among which 33 occurred during May, and June, and 10 during July.

Table 1

**Vine Manna's and Vine Mildew's Attack Degree on the Grape Vine
on 18. 07. 2008 in the Dealu Bujorului Vineyard**

Lot	Grape Vine Sort	Vine Manna's Attack (<i>Plasmopara viticola</i> - Bert et Curt)		Vine Mildew's Attack (<i>Uncinula necator</i> - Schw- Burr)	
		Leaves (G.A %)	Grape Clusters (G.A %)	Leaves (G.A %)	Grape Clusters (G.A %)
V 1	Untreated - Merlot	8,49	14,07	7,65	4,85
V 2	Merlot	0,09	0,75	0,06	0,01
	Fetească neagră	0,09	0,18	0,27	0,66
	Cabernet Sauvignon	0,05	0,19	0,03	0,13
V 3	Merlot	0,13	0,67	0,03	0,0
	Fetească neagră	0,12	0,68	0,34	0,04
	Cabernet Sauvignon	0,10	0,47	0,28	0,03

- **The Vine Mildew** (*Uncinula necator* - Schw-Burr)

The vine mildew has good conditions of evolution during the vegetative period, the attack being noticed after budding and the coppices' growth. Later on 15 generations of vine mildew have been recorded and they have been controlled using seven phytotherapeutic treatments. The vine mildew attack degree on the leaves varied from 0, 27 % for Feteasca neagra (V2) and 0, 34 % for Feteasca neagra (V3), while on the grape clusters varied from 0, 66 % for Feteasca neagra (V2) and 0, 04 % for Feteasca neagra (V3). For Merlot a G.A. of 7, 65 % on the leaves and 4, 85 % on the grape clusters has been recorded.

- **The Grapes' Gray Rotten** (*Botrytis cinerea* Pers.)

In 2008 the disease had a weak evolution because it has not been favored by the climatic conditions during the grapes maturation's period (low atmospheric humidity, low level of precipitations, etc.) as well as because of the weak attack of the grape moth. Therefore, the attack degree on the grapes was 0, 31 % for Cabernet Sauvignon (V2), 0, 07 % for Cabernet Saugvinon (V3), and 1, 54 % for untreated Merlot (table 2).

- **The Grape Moth** (*Lobesia botrana* Den et Schiff)

The grape moth remains the main pathogen met in the Dealul Bujorului vineyards, producing significant damage, especially for 2nd and 3rd generation favouring the occurrence of the grapes' gray rotten.

In 2008, even though the biological reserve of the grape moth from the previous years has been very large, the medium number of moths captured surpassed the economical damage edge (100 captured moths/ trap/ week) on for generation (GI) and generation (GIII) only. The maximum of the flight curve for 1st Generation (GI) reached 07.V.2008 la $\sum (tm - t_0) = 60,5^{\circ}C$ with 215 captured

moths which involved the advertising and the application of a combating treatment using Reldan 40 EC for V1 (lot1) and Coragen for V2.

For the 2nd generation, the flight peak was reached on 25.06.2008 at $\sum (tm-t_0) = 484,4$ °C with 72, 12 captured moths. The 3rd generation (G3) reached the flight peak on 13. 08.2008 at $\sum (tm-t_0) = 1101,7$ °C with 179 captured moths/ trap/ week. A significant growth of the number of the male captured moths of 3rd generation has been observed compared to the previous generation which did not surpass the economic damage edge. Regarding the larvae's frequency, the following data can be read from table 2:

- the larvae's frequency of the 1st generation (G1) had close values for all grape vine sorts; a minimum of 2, 0 % being recorded for Merlot (V2), and a maximum of 6, 0% for Feteasca neagra (V3).

- for the 2nd generation (G2) low and close values have also been recorded for the majority of the grape vine sorts observed, except for Merlot (V2) that showed a larvae's frequency on the grape clusters of 10%.

- for the 3rd generation (G3) the attack had medium and close values for all grape vine sorts that have been studied.

Table 2

The Grape Gray Rotten's (*Botrytis cinerea Pers*) and the Grape Moth's Attack (*Lobesia botrana Den et Schiff*) at S.C.D.V.V. Bujoru during 2008

Lot	Grape Vine Sort	Grape Gray Rotten's Attack			Grape Moth's Attack (the attack on grapes frequency %)		
		F	I	G.A %	G al a	G all a	G all a
V 1	Untreated - Merlot	13,66	11,33	1,54	11,66	13,66	22,66
V 2	Merlot	4,66	6,03	0,28	2,00	10,00	6,00
	Fetească neagră	3,33	4,94	0,16	5,00	0,66	4,66
	Cabernet Sauvignon	6,66	4,77	0,31	3,50	0,00	7,00
V 3	Merlot	2,66	5,33	0,14	6,00	0,00	5,00
	Fetească neagră	3,00	6,11	0,18	6,00	0,66	6,00
	Cabernet Sauvignon	2,00	3,77	0,07	3,33	0,00	7,00

CONCLUSIONS

1. The climate conditions during the research period favored the attack of the criptogamic diseases (grape manna and grape mildew) requiring the application of six treatments for grape manna and seven treatments for grape mildew which kept the grape vines in a good phytotherapeutic condition.

2. Even though the biological reserve of grape manna from the previous year has been small, the climatic conditions favorable to the occurrence and the evolution of the pathogen determined the occurrence of the symptoms in the vineyard during the second decade of May, the attack being observed on the blossoms and on the new grape clusters as "rot-gris".

3. The grape mildew had favorable conditions of evolution during the vegetative period; the attack has manifested with a greater intensity on the grapes.

4. The monitoring of the grape moth has shown that even though the biological reserve from the previous year has been significant, the pathogen's occurrence evolution in 2008 has been modest, surpassing the economic damage edge (PED) (100 captured moths/ trap/ week) for 1st and 3rd generation only. For this reason, it was necessary to advertise and apply one treatment for the larvae's combat for GI (1st generation) of V1, and two treatments for V2 (1st and 3rd generation).

5. The experiments involving the use of the phytotherapeutic products ensured a good protection of the grape vine against the pathogens and diseases under changing global climatic conditions.

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