RESULTS REGARDING THE INFLUENCE OF THE CLIMATIC CONDITIONS OF THE YEAR 2020 ON THE DYNAMICS OF THE ATTACK OF PATHOGENS FROM THE VINE CULTURE FROM THE SEGARCEA VITICULTURAL FARM, CRAIOVA ARCHDIOCESE, DOLJ COUNTY

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ABSTRACT

The Archdiocese of Craiova has cultivated with vines within the locality of Segarcea an area of 40 hectares, the most representative varieties being the varieties for red wines Merlot, Cabernet Sauvignon and white varieties Sauvignon Blanc, Romanian Tămâioasă and Chardonnay.

In the climatic conditions of the year 2020, the National Phytosanitary Authority, through the Phytosanitary Office Dolj, issued warning bulletins based on the phenological, biological and ecological criterion of the vine.

The main phytopathogenic agents of the vine (Plasmopara viticola, Uncinula necatox and Botryotinia fuckeliana), the evolution of the attack on the crop in correlation with the climatic conditions, the reaction of the varieties to their attack was observed.

INTRODUCTION

Viticulture is an important sector of agriculture that brings multiple benefits in the economy of our country, because it capitalizes very well on sandy, sloping lands and is an important source of raw materials.

In practice, the rational control of vine diseases and pests is based on four key elements: knowledge of the culture, knowledge of pests, risk assessment, application of prevention and control techniques(Tomoiagă Liliana,2013).

The manna, mildew and gray rot, caused by the pathogens *Plasmopara viticola, Uncinula necator* and *Botryotinia fuckeliana,* are the three diseases encountered in all vineyards, on all varieties of Vitis vinifera, whose attack in favorable environmental conditions, can be materialized in damage significant from the economic point of view (Mitrea Rodi and Tudose Roxana, 2011).

Cebeanu et al., 2007, Ioan Roşca, 2018, recommend for the success of the control programs, that they be based on the knowledge of the reaction of the varieties to the attack of each pest organism, and the warning of the treatments should be based on the concomitant use of the biological, ecological and phenological criteria.

Bădărău et al., 2007, recommends for obtaining high quality and good harvests, that the treatments against the pests in the vine plantations should be done strictly adhering to the recommended doses and the application techniques.

MATERIAL AND METHOD

In order to control the previously reported pests, in the Segarcea vineyard, Craiova Archiocese, 7 phytosanitary treatments were carried out according to the warning bulletins issued by the National Phytosanitary Authority, through the Dolj Phytosanitary Office and a series of products were applied within the treatment schedule shown in table 1.

Table 1

Treatment scheme applied in 2020 in the Segarcea winery, Craiova Archdiocese

No. treatment	Used product	Active substance %	Dose/ha	Target organism
1	Captan + Karatane Gold 350 EC + Nissorun 10 WP	Captan- 80% Meptyldinocap -0,35% Hexitiazol- 10%	1,250 kg 0,5l 0,5 kg	*Plasmopara viticola* *Uncinula necator* *Tetranycus urticae*
2	Ridomil Gold MZ 68 WG + Flint Max 75 WG + Cyperguard 25 EC	Mancozeb -64% and mefenoxam - 4% Trifloxystrobin - 25% and tebuconazole -50% Cipermetrin-25%	2,5 kg 0,17kg 0,2l	*Plasmopara viticola* *Uncinula necator* *Lobesia botrana*
3	Ridomil Gold MZ 68 WG + Systhane Plus 24 CE + Mospilan 20 SG	Mancozeb -64% and mefenoxam - 4% Myclobutanil - 24% Acetamiprid - 20%	2,5 kg 0,2 l 0,250 kg	*Plasmopara viticola* *Uncinula necator* *Lobesia botrana*
4	Mikal flash + Teldor 500 SC + Vivando	Fosetylal - 50% and folpet - 25% Fenhexamid - 50% Metrafenone - 35%	3 kg 1 l 0,2 l	*Plasmopara viticola* *Botryotinia fuckeliana* *Uncinula necator*
5	Mikal flash + Flint Max 75 WG	Fosetylal - 50% and folpet - 25% Trifloxystrobin - 25% and tebuconazole -50%	3 kg 0,17kg	*Plasmopara viticola* *Uncinula necator*
6	Funguran + Microthiol Special	Copper hydroxide -77% Micronized sulphur -80%	2 kg 3 kg	*Plasmopara viticola* *Uncinula necator*
7	Bouille Bordelaise WDG + Flint Max 75 WG + Cantus	Neutralized copper sulphate - 80% and cooper - 20% Trifloxystrobin - 25% and tebuconazole -50% Boscalid - 50%	5 kg 0,17 kg 1 kg	*Plasmopara viticola* *Uncinula necator* *Botryotinia fuckeliana*

The 7 treatments within the treatment scheme were applied to the following dates: 22.04.2020; 23.05.2020; 10.06.2020; 24.06.2020; 11.07.2020; 28.07.2020; 9.08.2020.

The estimation of the attack produced by the micromycetes *Plasmopara Viticola, Uncinula necator* and *Botryotinis fuckeliana,* was performed on the leaves and bunches as appropriate, according to the methodologies used in the Forecast and Warning Stations.

For each pathogen, within each variety, the frequency (F%), intensity (I%) were established and the degree of attack (DA%) was calculated, the data collected being processed according to the usual formulas.

RESULTS AND DISCUSSIONS

In the climatic conditions of the year 2020, following the 7 treatments, as shown in table 2, the degree of attack of the *Plasmopara viticola* fungus registered

different waves depending on the variety and the attacked organ.

Table 2

Biological efficacy of some products in combating *manna* in some vine varieties

Variety	Attack on the leaf			Attack	< on the bunches	
	F%	I%	DA%	F%	I%	DA%
Merlot	20,40	6,50	1,36	12,83	5,60	0,70
Cabernet Sauvignon	22,30	7,34	1,64	15,24	5,77	0,88
Chardonnay	40,79	10,50	4,30	28,32	8,96	2,54
Romanian Tămâioasă	49,89	11,24	5,60	25,81	11,39	2,93
Sauvignon Blanc	35,30	9,10	3,23	24,02	7,41	1,78

The incidence of the attack on the leaves recorded values ranging from 20,40% in the Merlot variety to 49,89% in Romanian Tămâioasă, while the virulence of the attack had values between 6,50% and 11,24% in the same varieties.

After calculating the degree of attack (DA%), it can be seen that the varieties with the best reaction to the attack on the leaves of the *Plasmopara viticola* fungus were Merlot and Cabernet Sauvignon, at the opposite pole being the varieties for white wines, in which the maximum value of the degree of attack was 5,60% (Romanian Tămâioasă).

The attack on the bunches manifested with a lower incidence and virulence, the maximum degree of attack being 2,93% (Romanian Tămâioasă), and the minimum 0,70% (Merlot).

The year 2020, characterized as a warm year but also with precipitation, was less favorable for the development of the *Uncinula necator* pathogen, so that the 7 treatments applied during the vegetation period controlled the mildew(table 3).

Table 3

Biological efficacy of some products in combating *mildew* in some vine varieties

Variety	Attack on the leal			Attack on the bunches		
	F%	I%	DA%	F%	I%	DA%
Merlot	21,30	0,97	0,20	20,41	1,46	0,28
Cabernet Sauvignon	21,94	1,60	0,34	20,67	2,18	0,45
Chardonnay	24,52	3,74	0,92	22,32	4,35	0,97
Romanian Tămâioasă	33,74	3,02	1,02	25,64	4,73	1,20
Sauvignon Blanc	30,24	2,78	0,83	25,21	3,49	0,88

For red wines, DA values on leaves were between 0,20% for Merlot and 0,34% for Cabernet Sauvignon, while for white wines, they were slightly higher, by 0.83% in the Sauvignon Blanc variety, respectively 1,02% in the Romanian Tămâioasă variety.

The values of the degree of attack on bunches were slightly higher, being between 0,28% in the Merlot variety and 1,20% in the Romanian Tămâioasă variety.

The degree of attack regardless of the variety and the analyzed organ was influenced to a greater extent by the incidence of the attack, compared to its virulence.

Thus, the frequency of the attack (F%) on the leaves, as seen from the data in the same table, had values between 21,30% and 33,74%, while the intensity values (I%) of the attack on the leaves were between 0,97% and 3,74%.

The frequency of the attack on bunches had values between 20,41% and 25,64% respectively, and the intensity of the attack oscillated between 1,46% and 4,73%.

The analyzed vine varieties showed a weak attack of the micromycete *Botryotinia fuckeliana,* because during the period of maximum favorability (the period of accumulation of sugar in the grains) a

dry weather occurred, which made the 2 preventive treatments applied in the scheme treatment have good biological efficacy (table 4).

Table 4

Biological efficacy of some products in combating gray rot in some vine varieties

Variety	Attack on the bunches		
	F%	I%	DA%
Merlot	11,01	0,81	0,08
Cabernet Sauvignon	12,12	0,99	0,12
Chardonnay	13,24	2,42	0,31
Romanian Tămâioasă	15,00	3,73	0,56
Sauvignon Blanc	13,99	3,36	0,47

This year, the values of the degree of attack on bunch ranged between 0,08% and 0,12% for red wine varieties and between 0,31% and 0,56% for those for white wines.

The incidence of the attack did not exceed 15%, while the virulence of the attack ranged from 0,81% to 3,73%.

The climatic conditions of the year 2020 favored the attack of the *Guignardia Bidwellii* fungus responsible for the appearance of the black rot, which was reported in all the analyzed varieties.

The introduction in the treatment scheme of the Flint Max 75 WG product by the end of May, it managed to keep the attack within limits that did not cause production losses.

CONCLUSIONS

The location of the experience is characterized by ecopedological conditions favorable to the cultivation of vine but also to the development of key pathogens for this plant *(Plasmopara viticola, Uncinula necator* and *Botryotinia fuckeliana).*

The 5 varieties of vines studied under the direct influence of the applied treatment scheme and the climatic conditions, behaved differently at the attack of the 3 pathogens.

Of the group of varieties with higher values of the degree of attack in the case of the phytoparasite *Plasmopara viticola,* they are part of Romanian Tămâioasă, with 5,60% attack on the leaves and Chardonnay with 4,30% attack on the leaves and attack the bunches with values between 2,93% and 2,54%,respectively.

Good resistance to the attack of the Uncinula necator pathogen not only on the leaves but on the bunches, especially the Merlot and Cabernet Sauvignon varieties, and since it concerns the attack on grains of the micromycete Botryotinia fuckeliana, this was a subunit of all the analyzed varieties.

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