

THE APPEARANCE, WARNING AND DESTRUCTION OF THE MAIN DISEASES AND PESTS OF THE VINE FROM THE DIOSIG VINEYARD

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Abstract

In order to obtain a big and high quality of the vine a special attention must be given to the destruction of the diseases and pests. The most important diseases are: (Plasmopara viticola) aka the scourge, (Uncinula necator) aka the powdery mildew disease, (Sclerotinia fuckeliana) aka the grey must, and from the harmful agents, the grape moth (Lobesia botrana), the mites.

For an efficient destruction of the diseases and of the harmful agents, for an increase of economic efficiency of the treatments it is recommended to apply the destruction treatments only on warning, to use products that have a complex action and compatible products.

Key words: pathogen agents, scourge, grey must, mites, vine

INTRODUCTION

The vine plantations are every year subject to the attack of different pathogen agents and pests more and less known. Their number as well as the frequency and the intensity of the attack differ from one year to another and within the same year from one vine area to another according to the weather conditions and to the cultivated type of grape, etc.

The main factor which conditions the appearance and the evolution of the pathogen agents and of the pests remains the weather. That is why the establishment of relations between the weather conditions and the appearance of the pathogen agents represents an important link in the process of integrated destruction.

It is thus necessary that in each vine centre be ensured a rationing of the protection measures of the vine according to the specific conditions existent in the respective micro area.

The research done during the period 2000-2005 in the Diosig Vineyard have studied the causes that led to the appearance, evolution and spreading of the main vine pathogen agents and of the vine pests that can produce considerable damage if appropriate measures are not taken in due time.

The *Plasmopara viticola* fungus a pathogen agent of the vine scourge produces the biggest damage to this culture.

The Oidium, aka the powdery mildew disease is produced by the *Uncinula necator* fungus. Together with the scourge and the phylloxera, the powdery mildew disease had also produced a real vine crisis.

The pathogen fungus *Sclerotinia fuckeliana* produces the grey must of the vine and it is present every year on the grapes as well as on the grafted vines and in nursery vines.

In certain conditions the vine is highly affected by insects from which the most important is the grape moth, aka *Lobesia botrana* which produces damage to all the three generations starting with the bloom of the leaves until the grape harvesting.

In the conditions of the Diosig Vineyard the attack of the vine mites does not produce big damage.

MATERIALS AND METHODS

During the period 2000-2005, in the Diosig Vineyard from Bihor county a lot of observation has been done upon the frequency, evolution and spreading of the main diseases and vine pests according to the weather conditions. Having all these in view we have followed the evolution of the following fungi: *Plasmopara viticola*, *Uncinula necator* and *Botriotinia fuckeliana* as well as the following pests: *Polychrosis botrana* and *Panonychus ulmi* Koch.

For the execution of the prognosis and warning works during the vegetation period phenological and pathological observations have been done. The destruction treatments had been done in production conditions and only on warning being applied by spraying with the MPS3X300 pumps.

The surveys related to the frequency and intensity of the attacks on the leaves and bunches had been done periodically for the main types of vine from the production lots.

The development stages of the pests have been studied in natural conditions from the vine plantations. The observation upon the attack had been done before and after the treatments.

The appearance and evolution of the *Plasmopara viticola* fungus had been followed in areas with high humidity, on low altitude fields where alarm hubs had been placed. The hubs are of different types: Chasselas D'ore, Mustoasa de Maderat, Feteasca regala. For these types of vines we were interested in the dynamics of the scion growth as well as in the appearance of new leaves from one treatment to another.

The evolution of the *Uncinula necator* fungus had been followed on a lot with the Mustoasa de Maderat type of vine, a type very sensitive to the powdery mildew disease attack.

The evolution of the *Botriotinia fuckeliana* fungus had been followed for the majority of vine types, the treatments had been done on warning according to the weather conditions correlated to the phenology of the vine.

The appearance and the evolution of the *Lobesia botrana* and *Panonychus ulmi* Koch had been followed through surveys and the frequency and the intensity of the attack had been registered in percents.

RESULTS AND DISCUSSIONS

For the *Plasmopara Viticola* fungus the researches show that, in the Diosig Vineyard, primary infections are produced starting with the first decade of May.

According to the weather conditions, the appearance of the first oil like colored spots happens at the end of May. The intensity and the number of the scourge infections differ so that in the years with few rains during the summer the infections are lower while in the years with heavy rains 35 infections had been registered (Table 1).

Table 1

The evolution of the *Plasmopara viticola* fungus in the conditions existent at the Diosig Vineyard (2000-2005)

No. Crt	Conditions for the basic infection	The appearance of the oil like color spots	Number of infections	Treatments applied
1.	05.05.2001	25.05.2003	5/2001	3/2001
2.	06.06.2004	02.09.2005	35/2004	8/2005

The application of the treatments had been done differently according to the conditions specific to each year and only on warning, thus a number of 3 to 8 treatments are recommended during the vegetation period.

In the conditions existent in the Diosig Vineyard, the *Uncinula necator* fungus goes during March and August through a number of 10 to 45 generations, the development period of a generation being of 12 days. (table 2)

Table 2

The evolution of the *Uncinula necator* fungus in the conditions existent in the Diosig Vineyard (2000-2005)

No. Crt	Conditions that shutter the evolution of the fungus	The development period of a generation	Number of generations	The period of unbudding for the Mustoasa de Maderat type of vine	Treatments applied
1.	01.03.2001	12 days	12/2002	23.03.2000	4/2004
2.	29.04.2000	12 days	18/2004	29.04.2004	8/2000

Best conditions, of 12 Celsius degrees for the shutter of the pathogen agent are registered at the beginning of March. The observations show that the warning of the first destruction treatment is to be done at the end of April, a period when the length of the Riesling Italian scion is of 3 to 5 cm. the following treatments are recommended to be applied on warning together with the treatments against the scourge and the grey must.

The *Botriotinia fuckeliana* or *Botrytis cinerea* fungus finds favorable evolution conditions during rainy autumns. Regardless of the weather conditionsthe application of the safety treatment after the bloom is compulsory.

The next treatment is recommended at the grape bunch compaction and the third treatment before the grapes begin to ripe.

In the Diosig Vineyard, the *Lobesia botrana* pest presents three generations a year. The presence of the larvae from the first generation are signaled at the end of May and on the first decade of June, the second generation of larvae appears starting with the second decade of July and the third generation appears at the beginning of September rescheduling during the ripe period.(Table 3)

Table 3

Evolution of the *Lobesia botrana* pest in the Diosig vineyard (2000-2005)

No. Crt.	The period when the larvae appear			Treatments applied
	GI	GII	GIII	
1.	21.05.2001	14.07.2001	10.09.2003	1+1+0
2.	08.06.2005	02.07.2002	07.09.2005	1+2+0

The destruction treatments had been applied on warning being mixed with those against the powdery mildew disease and those against the scourge.

During the study period the evolution of the weather especially in the Diosig Vineyard led to the appearance, development and spreading of the vine mites one of the most dangerous pests of the vine. The mite attack is harmful during the whole vegetation period but

especially from the budding until the blooming when the mites are voracious but also vulnerable. In the second half of the vegetation period the growth of the vine is more rapid, the losses are less important although during this period a number of 5 up to 9 generations of mites appear.

The time period analyzed the weather conditions had negatively and positively influenced the activity of the pathogen agents and of the vine pests and their attack degree is conditioned by the reaction of each type of vine specifically.(table 4.)

For an efficient destruction of the vine mites 2 or 3 acaricides treatments are necessary from which the first treatment shall be applied before the buds are swollen and the other two treatments shall be applied during the vegetation period while the scions grow till they bloom and even after that according to the density of the population. (table 5).

Table 4

The phytosanitary estate of the main types of vine from the Diosig vineyard
2000-2005

No. Crt	Type of vine	Degree of attack on grape bunch, %			Degree of attack on grapes, %	Degree of attack on grapes, %
		Scourge	Powdery mildew disease	Grey Must	Grey Mold	Mites
1.	Chasselas dore	0.54	0.29	0.95	0.35	1.18
2.	Feteasca Regala	0.29	0.35	5.01	0.23	0.58
3.	Mustoasa de maderat	0.24	1.20	1.81	0.20	0.60
4.	Cadarca	0.47	0.92	3.25	0.33	2.22

Table 5

The integrated destruction scheme for the main diseases and pests of the vine in the Diosig Vineyard

No. Crt.	Disease or pest	Recommended product	Dose in kg /hectare Conc. %	Moment of treatment application
1.	Mites, mold	Oleocarbotox	3	During the vegetative repose
2.	Powdery mildew	Tilt	0.02	When it starts to ripe
3.	Scourge, powdery mildew, mites	Ridomil plus 48 PU Soluble brimstone Neoron	0.25 0.4 0.1	Before it blooms (safety treatment)
4.	Scourge, powdery mildew, grey must	Turdacupral Soluble brimstone Ronilan Polyvinyl acetate	0.6 0.4 0.1 0.2	After it blooms (safety treatment)
5.	Scourge, powdery mildew	Dithane Soluble brimstone	0.2 0.4	10-15 days after the treatment for the after blooming
6.	Scourge, powdery mildew	Captadin Soluble brimstone	0.25 0.4	10-15 days after the previous treatment
7.	Scourge, powdery mildew, grey must	Turdacupral Tilt Rovral	0.6 0.02 0.15	When it starts to ripe
8.	Grey must Mites	Sumiles Plictran	0.1 0.1	Three weeks before harvet

CONCLUSIONS

The researches done over a period of 5 years in the Diosig Vineyard show that here, the main diseases and pests that produce huge and important damage in the years

favorable for the evolution of the vine are the following: The scourge, the grey must, the grey mold and the mites, the powdery mildew.

On the basis of the results obtained within the Diosig Vineyard, according to the weather conditions a number of 3 to 8 treatments are recommended for the scourge , a number of 5 to 9 treatments for the powdery mildew and 3 treatments for the grey must.

Against the *Lobesia Botrana* pest the following treatment schemes are recommended: 1+1+0, 2+1+0 at a normal larvae attack from the first two generations and 2+2+0 when the attack of the larvae is extremely strong.

The mites can be destroyed by applying the treatments according to the density of the population, considering a PED limit 15 mobile forms on a bud when it blooms and 2-3 mites on a leaf while the scions grow, until the vine becomes leafy; after it is leafy, within the critical limit there are 4-6 mites on a single leaf.

In order for the treatments to be efficient and for an economical efficiency the production sector is recommended to apply the destruction treatments only on warning and to use complex action products and compatible products (table 5).

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