

INTEGRATED SYSTEM FOR VINE PROTECTION IN 2006

SISTEM INTEGRAT DE PROTECȚIE A VIȚEI DE VIE ÎN 2006

**STOICA MIHAIELA-CARMEN, STOICA G,
VASILE ANCUȚA, ZALDEA GABI**

The Station of Research for Wine growing and Wine production Iași

Abstract. *The introduction and generalization of the integrated system for vine protection has as purpose the limiting of the elements that lead to the disturbance of the natural biologic balance.*

The pesticides are an indispensable element of this system and represent a way for fighting the pathogen agents and the viticultural pests. The efficient use of these includes an integrated management at the farm or lot level, function of the pests and pathogen agents profile.

A phytosanitary program performed at lot level in an exhibition lot of A.C.D.V.V. Iasi acknowledges by means of the obtained results the new tendencies for long term wine growing.

Rezumat. *Introducerea și generalizarea sistemului integrat de protecție a viței de vie are ca scop limitarea factorilor care duc la dereglarea echilibrului biologic natural.*

Pesticidele, componentă indispensabilă a acestui sistem, constituie un mijloc de combatere a agenților patogeni și a dăunătorilor în viticultură. Utilizarea eficientă a acestora presupune un management integrat la nivel de fermă sau parcelă, în funcție de profilul dăunătorilor și agenților patogeni.

Un program fitosanitar constituit la nivel de parcelă, în cadrul unui lot demonstrativ al S.C.D.V.V. Iași, confirmă prin rezultatele obținute noile tendințe de viticultură durabilă.

Because of the ecologic plasticity, the harmful organisms demonstrate a major evolutionary potential compared to the culture plants.

The human intervention on the natural ecosystems perturbed the naturally constituted ecological equilibriums, and as a result, in order to prevent this phenomenon people use more and more the concept of integrated control.

In viticulture, the application of the new concept is based on trophic, ecologic, and technological elements of regulation and rationalization of treatments.

As a result, in the agricultural year 2005-2006, within the Polygon for the protection of plants of S.C.D.V.V. Iași, a demonstrative lot was organized, in which the program of pathogen agents and pests management included agro-technical, biological and chemical methods, in order to reduce and maintain the harmful organisms at a tolerant level and at the same time, to keep the environment quality.

MATERIAL AND METHOD

The experimental parcel, cultivated with Aligoté variety on a surface of 2 ha belongs to the Polygon of Plant Protection and S.C.D.V.V. Iași.

We executed eight phyto-sanitary treatments, on warning, using the MPSP – 300 spray pump, equipped with air nozzles MVL 10.01 type, at the pressure of 2.5 Bars. The main climatic elements were monitored (maximum, minimum air, soil, temperature; precipitations ; hygrosopicity and isolation, the dynamics of the vine shoots growth and the soil phenology were monitored)

The technological works specific to the viticulture plantations, cutting, encircling and tying cords, revising the support system, the soil maintenance, weeding and orienting the vine shoots, pinching, cutting the leaves and harvesting works were carried out in tight correlation with the development of grape vine vegetation phenophases. We made observations regarding the frequency and intensity of the attack at the main pathogen agents (mildew, powder mildew and the grey mould of grapes), pheromone traps were installed and the acarian reserve was established.

RESULTS AND DISCUSSIONS

Both from the thermal and precipitations point of view, 2006 was characterized as “normal”, because of the monthly average values similar to the monthly normal values. When appreciating the moment of phyto-sanitary interventions the determinant role was represented by the precipitation distribution, March and April being “excessively rainy” and July “very rainy”.(table 1)

Table 1

The climatic data in the vine center Copou Iași during the 2005-2006 agricultural year.

Month	Monthly average t ° C		Maxima abs. (t° C)	Minima abs. (t° C)	Precipitations (l/m ²)		Hygroscopicity (%)		Insulation (hours)	
	Normal	2005 - 2006			Normal	2005-2006	Normal	2005-2006	Normal	2005-2006
X	10,1	10,2	25,5	-4,6	34,4	34,8	73	70	155,0	153,6
XI	4,1	3,7	14,0	-6,2	34,6	39,5	78	82	65,6	62,2
XII	-0,8	0,9	14,5	-11,0	28,9	24,1	82	79	55,9	58,4
I	-3,6	-7,0	8,6	-25,1	28,9	28,7	81	79	71,7	78,7
II	-1,9	-2,9	11,2	-17,3	27,4	5,4	79	78	72,3	92,8
III	3,3	2,1	22,2	-13,2	28,1	89,0	72	75	130,3	110,4
IV	10,1	11,1	21,6	0,8	40,3	61,4	62	64	171,3	177,9
V	16,1	15,3	32,0	5,1	52,5	42,0	62	63	220,9	227,4
VI	19,4	19,3	32,2	7,7	75,1	74,6	63	68	264,6	279,1
VII	21,3	21,5	31,0	10,9	69,2	92,2	62	65	294,4	330,5
VIII	20,6	21,0	34,5	10,1	57,6	56,5	63	69	272,0	269,2
IX	16,3	16,2	27,2	7,8	40,8	14,8	66	67	215,4	207,5

Under these conditions, the beginning of vegetation was delayed with approximately one week, beginning with the date of 26th of April. The blooming began on the 14th of June, and the ripeness around the date of 15th of August (table 2).

Table 2

The phenology of the Aligoté variety for the agricultural year 2005-2006

Variety	Disprout	Blooming	Ripeness	Maturation	Leaves falling
Aligoté	26-30 IV	14-21 VI	15-24 VIII	24 VIII - 29 IX	19 X - 06 XI

The vine shoots measurements began on the 18th of May, when the vine shoots had 20.8 cm length and 9 leaves (table 3).

As a result of the evolution of climatic conditions, the phytosanitary interventions were executed on the dates mentioned in table 4.

Table 3

The growth dynamics of vine shoots in the agricultural year 2005-2006

ELEMENTS	May			June					
	18	23	28	2	7	12	17	22	27
The average length of vine shoots	20.8	32.7	42.0	46.6	50.5	57.5	72.6	85.7	100.0
No. of leaves	8.7	9.9	11.2	12.1	13.0	13.6	16.2	18.8	21.2
The growth speed	-	11.9	9.3	4.6	3.9	7.0	15.1	13.1	14.3

Table 4

Program of phytosanitary interventions in the demonstrative lot and the comparative parcel, in the agricultural year 2005-2006

The phenologic moment and the date of the treatment execution	The pathogen agents and pests to control	Phytosanitary products	Dose kg,l/ha
10.05 – vine shoots 5-10 cm	Powdery Mildew, Acarians	Polisulfura Ca + Envidor	20 + 0,4
30.05 – vine shoots 20 -30 cm	Powdery Mildew, Moths	Mikal Flash + Falcon + Proteus	3,0 + 0,3+0,4
15.06 – had begun the blooming	Mildew Powdery, Mildew	Verita + Folicur Solo	2,5 + 0,4
29.06 – end of blooming	Mildew Powdery, Mildew	Eclair	0,5
11.07 – growth of beans	Mildew Powdery Mildew, Mould	Folicur multti + Decis 25 WG	2,5 + 0,03
19.07- pea	Mildew Powdery Mildew	Antracol + Falcon	2,5 + 0,3
01.08 – coagulated grape	Mildew Powdery Mildew	Antracol+ Folicur Solo	2,5 + 0,4
31.08 – ripeness	Mould	Mythos	3,0

We disposed of a comparative parcel, cultivated with Aligoté and of an untreated sample variant. We must mention the fact that, during 2005, the phytosanitary intervention program for the two parcels was different.

Thus, after the observations carried out regarding the main pathogen agents, mildew, powdery mildew, and grey mould of grapes, we calculated the intensity, frequency and degree of attack of the pathogens, both within the demonstrative lot, the comparative parcel and also the untreated control sample (table 5).

We notice the obvious difference between the values obtained at the attack degree of the three pathogens compared to the values registered in the untreated control sample. Also, we notice a slight difference between the values of the attack degree registered at the comparative parcel compared to the demonstrative lot. This thing attests the fact that the fungicides used within the program of combating protected very well both the leaves and the grapes, the production obtained in 2006 in the comparative parcel being of 12 t/ha. The production increase was of 2 t/ha from the variant of the demonstrative lot and, as we can notice from table 6, the grape maturation took place in the appropriate manner.

Table 5

Results regarding the intensity, frequency and degree of attack of the main pathogen agents of the vineyard in the demonstrative lot, in the comparative parcel and untreated control sample

Monitored agents	Demonstrative lot			Comparative parcel			Untreated control sample		
	I %	F %	G.A.	I %	F %	G.A.	I %	F %	G.A.
Mildew on leaves	15,91	41,60	6,61	39,07	44,44	17,36	54,33	100	54,13
Mildew on grapes	3,0	5,7	0,17	3,64	14,57	0,53	24,09	79,41	19,12
Mildew on leaves	17,91	24,81	4,44	13,67	33,15	4,53	56,52	100	56,52
Mildew on grapes	0	0	0	3,0	3,36	0,10	14,58	78,26	11,41
Grey mould on grapes	3,0	9,09	0,27	3,97	9,64	0,38	18,16	96,0	17,43
Obtained productions	14			12			-		

Because of the healthy vegetal apparatus we registered a normal but superior accumulation of reducing sugars. The reducing of the acidity during the period of maturation registered a smooth decreasing value ensuring equilibrium appropriate to the technical requirements.

Table 6

The physical and chemical characteristics of wines obtained from Aligoté variety

Variety	Production t/ha	Must		Wine	
		Sugar g/l	Acidity g/l H ₂ SO ₄	Alcohol % vol	Acidity g/l H ₂ SO ₄
Aligoté- demonstrative lot	14	181	5,1	10,7	4,1
Aligoté- comparative parcel	12	155	5,7	9,1	4,7

Because of a smaller biological reserve, the Acarine tetranychid and eryophite populations were maintained under control and as a result of the treatment carried out at the phonologic moment of vine shoots 5-7 cm, with the complex products Calcium polysulphide and Envidor. The flight of grape vine moths was monitored with the help of traps with pheromones, the efficacy of insecticides Proteus and Decis 25 WG ensuring the maintenance under control of pests.

CONCLUSIONS

1. Envidor acaricide, used in the interval comprised between the opening of the shoot and the completely developed inflorescence, in a dose of 0,4 l/ha maintained under control the populations of Acarine tetranychid and eryophite.
2. The efficacy of Proteus and Decis 25 WG insecticides ensured the maintenance under the economic damage threshold of grape vine moths.
3. The production of 12 t/ha obtained in the comparative parcel and the production increase of 2 t/ha in the demonstrative lot, conform the good efficacy of the products used and the importance of observing the programs of phytosanitary control.

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