Efficiency of Some Acaricides Used in Grape Erineum Mite Control in the Banu Maracine Wine-Growing Region

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Abstract

The grape erineum mite (*Eriophyes vitis* Page.) is one of the main pests for the vineyard in Oltenia region, the research regarding the control of the vine acarians, has been made during 2002-2004, at the vineyard belonging to the Didactical Station Banu Mărăcine, on the Italian Riesling variety. The attack average frequency (F%) has been ranged between 1,73%-5,00%, the attack intensity (I%) between 15,92%-21,54%, and the degree attack (Da%) beetween 0,27%-1,09%. For controling the grape erineum mite the best rest results has been obtained using the products: Nissorun 5 EC, conc. 0,06% (E%=94,96%), Neoron 500 EC conc. 0,05% (E%=94,06%) and Tedion V-18 concentration 0,15% (E%=93,16%).

Key words acaricides, control, grape erineum mite

Introduction

The grape erineum mite (Eriophyes vitis Page.) is one of the main pests for the vineyard in Oltenia (Mitrea I. 1997), his presence year by year in the vineyard from Banu Maracine also the damages produce justify the actions take in order to know the biology, morphology, attack and the control of this pest.

The chemical control of the erineum mite using the acaricides represent the most efficient method (Mirică, I. Mirică Afrodita. 1986, Stoian Elisabeta 2001), due to the ease of application and to the large scale of products authorized for their use in Romania. In this paper we try to make a classification of the most utilized acaricides used in the vticultural technology against this dangerous pest, from their biological efficiency point of view.

Material and methods

The research regarding the control of the grape *erineum mite*, has been made during 2002-2004, at the vineyard belonging to the Didactical Station Banu Mărăcine, on the Italian Riesling variety. In order to establish the biological efficiency of the acaricides used for controling the grape erineum mite (*Eriophyes vitis* Page.) has been set up on 1300 m2 vineyard, Italian Riesling variety, an experiment with 10 variants, with 132 m2/variant, each variant comprising 100 vine logs (placed on a raw), with a raw between the variant, using the following treatment diagram:

The variant	The acaricide	Active ingredient	The toxicity group	Concentration (%)
V1	Control variant	-	-	-
V2	Mitigan l8,5EC	Dicofol 1.8,5%	IV	0,2
V3	Demitan 200 SC	Fenazaquin 200g/l	III	0,05
V4	Kelthane l8,5EC	Dicofol 18,5%	IV	0,2
V5	Mitac 20 EC	Amitraz 20%	IV	0,2
V6	Nissorun 5 EC	Hexitiazox 50g/l	IV	0,06
V7	Torque 550 SC	Fenbutatin oxid 550 g/l	IV	0,05
V8	Tedion V -18	Tetradifon 8%	IV	0,15
V9	Apollo 50 SC	Clofurtezin 500g/l	IV	0,04
V10	Neoron 500 EC	Bromopropilat 500 g/l	IV	0,05

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The treatments has been applied at the end of may, when there has been recorded the damages economical treshold (PED= 4-6 acarians per leaf).After 72 hours and 120 hours from the treatments application, there has been made observations on 50 logs/variant, analyzing 10 leaves for each log in order to establish the attack frequency (F%) and intensity (I%) as well to determine the attack degree (Ga%), and the treatments efficiency (E%) has been calculated using the Abbot formula:

$$E = (1 - \frac{Nt}{Nn}) \times 100,$$

E = the efficiency %, Nt = the number of viable acarians in the treated variant, Nn = the number of the viable acarians in the control variant.

The results has been processed and statistically interpretated using the method of the variant analyse.

Results and discussion

Table nr.1 , present the frequence, the intensity and the attack degree produce by the grape erineum mite during 2002-2004 in the viticultural ecosystem S.D. Banu Mărăcine

During 2002, the attack frequency of the grape erineum mite has been of 39,8% at the untreated control variant V1. Following the acaricides apply the attack frequency has decrease to 2,0%-5,6%. The attack intensity of the erineum mite, in the viticultural ecosystem Banu Mărăcine, has been of 30,32% at the untreated control variant V1, after the acaricides treatments the attack intensity (I%) has decrease to 16,31%-23,21%. The attack degree of the erineum mite, at the control variant V1 has been of 12,6%, following the acaricides treatments the attack degree (Ga%) has decrease to 0,33%-1,29%.

In 2003, the attack frequency of the erineum mite at the control variant V1 has been of 35,8%. After the acaricides treatments the attack frequency has reduce to 1,8%-5,8%. The attack intensity at the control variant V1 has been of 28,44%, after the applying of the acaricides has decrease to 15,93%-23,14%. The attack degree at the control variant V1 has been of 10,18%, after the acaricides applying the value of the attack degree (Ga%) has decrease to 0,28%-1,34%.

During 2004, the attack frequency of the erineum mite at the control variant V1 has been of 27,2%. As a consequence of the acaricides treatments the attack frequency has decrease to 1,4%-3,7%. The attack intensity at the control variant V1 has been of 25,68%, following the acaricides treatments the attack intensity has decrease to 15,28%-18,78%. The attack degree produce by the erineum mite at the control variant V1 has been of 6,98%, after the acaricides applying the value of the attack degree (Ga%) decrease to 0,21%-0,69%.

During 2002 - 2004, the attack average frequency of the grape erineum mite, in the viticultural ecosystem S.D. Banu Mărăcine, has been 34,26% at the control variant V1. As a result of the acaricides applying the attack average frequency (F%) during the research period has increase from 1,73% to 5,00% (table nr.1).

The grape erineum mite attack intensity, at the control variant V1- has been of 28,14%, and after the acaricides applying the attack average intensity of the grape erineum mite, (I%) has decrease, being ranged between 15,92%-21,54%.

The attack degree (Da%) of the grape erineum mite, at the control variant V1 has been of 9,74%, and after the applying of the acaricides the attack degree (Da%) has decrease being ranged between 0,27%-1,09% (table nr.1).

Table nr.2 , present the acaricides efficiency used for controling the grape erineum mite, during 2002-2004, as well the differences comparative with the average of the experiment variants (Mx).

During 2002 it can be observed that the efficiency of the acaricide treatments has presented values ranged between 86,05% - 94,90%, the variant average being of 90,71%.

The efficiency of the acricide treatments in 2003 has presented values ranged between 85,35% - 95,55%, with an variant average of 90,71%.

In 2004 the efficiency of the acaricide treatments has presented values ranged between 86,15% - 94,45%, the varaint average being of 90,42%.

Table 1. The frequency, intensity and the degree attack of the grape erineum mite (*Eriophyes vitis* Page.) in the viticultural ecosystem Banu Mărăcine during 2002-2004

The Variant	The accaricide	Concentration %	2002			2003			2004			2002-2004 (average)		
			F%	I%	Da%	F%	I%	Da%	F%	I%	Da%	F%	I%	Da%
V1	Control variant	-	39,8	30,32	12,06	35,8	28,44	10,18	27,2	25,68	6,98	34,26	28,14	9,74
V2	Mitigan l8,5EC	0,2	3,1	17,86	0,55	2,6	16,63	0,43	2,4	16,91	0,40	2,7	17,13	0,46
V3	Demitan 200 SC	0,05	5,6	23,21	1,29	5,8	23,14	1,34	3,6	18,27	0,65	5,0	21,54	1,09
V4	Kelthane l8,5EC	0,2	3,6	17,21	0,61	3,2	17,82	0,57	2,2	16,13	0,35	3,0	17,05	0,51
V5	Mitac 20 EC	0,2	4,6	22,11	1,01	4,2	19,78	0,83	2,8	17,03	0,47	3,86	19,64	0,77
V6	Nissorun 5 EC	0,06	2,0	16,72	0,33	1,8	15,93	0,28	1,4	15,28	0,21	1,73	15,97	0,27
V7	Torque 550 EC	0,05	4,0	21,43	0,85	3,8	17,91	0,68	2,9	17,13	0,49	3,56	18,82	0,67
V8	Tedion V -18	0,15	2,6	16,91	0,43	2,2	16,12	0,35	1,9	15,98	0,30	2,23	16,33	0,36
V9	Apollo 50 SC	0,04	5,2	22,87	1,18	4,6	18,96	0,85	3,7	18,78	0,69	4,5	20,20	0,90
V10	Neoron 500 EC	0,05	2,2	16,31	0,35	2,0	16,03	0,32	1,7	15,44	0,26	1,96	15,92	0,31

Table 2. The efficiency of the acaricides use for controling the grape erineum mite (*Eriophyes vitis* Page.) in the viticultural ecosystem Banu Mărăcine during 2002-2004

The Variant	The acaricide	Concentration %	E% 2002	E% 2003	E% 2004	E% average 2002-2004	Percent average given Mx	Difference given Mx	Signification
V1	Untreatred variant	-	-	-	-	-	-	-	-
V2	Mitigan l8,5EC	0,2	92,25	92,55	91,00	91,93	101,45	1,32	-
V3	Demitan 200 SC	0,05	86,05	85,35	86,15	85,85	94,74	-4,76	000
V4	Kelthane l8,5EC	0,2	91,15	90,60	91,40	91,05	100,48	0,44	-
V5	Mitac 20 EC	0,2	88,40	88,15	89,05	88,53	97,70	-2,08	00
V6	Nissorun 5 EC	0,06	94,90	95,55	94,45	94,96	104,80	4,35	***
V7	Torque 550 EC	0,05	89,60	89,30	89,15	89,35	98,60	-1,26	-
V8	Tedion V -18	0,15	93,25	93,50	92,75	93,16	102,81	2,55	**
V9	Apollo 50 SC	0,04	86,50	87,15	86,25	86,63	95,60	-3,98	000
V10	Neoron 500 EC	0,05	94,30	94,25	93,65	94,06	103,80	3,45	***
Mx	The variant average	-	90,71	90,71	90,42	90,61	100	0	Control
							DL 5% = 1,35	DL 1% = 2,02	DL 0,1% = 3,25

The efficiency of the treatments, against grape erineum mite, during 2002-2004, has value ranged between 85,85% - 94,96%, the variants average (Mx) being of 90,61%. The highest efficiency has been recorded for the following variants: V6- Nissorun 5 EC (conc.0,06%) E%=94,96%, V10- Neoron 500 EC (conc. 0,05%) E%=94,06% and V8- Tedion V-18 (conc.0,15%) E%=93,16%.The lowest efficiency has been recorded for the variants: V3- Demitan 200 SC (conc.0,05%) E%=85,85%, V9- Apollo 50 SC (conc.0,04%) E%=86,63%,V5- Mitac 20 EC (conc.0,2%) E%=88,53% and V7- Torque 550 EC (conc.0,05%) E%=89,35%. The variants: V6- Nissorun 5 EC (conc.0,06%) and V10- Neoron 500 EC (conc.0,05%) have recorded differences very significantly positive comparative with the variants average (Mx).The variant: V8- Tedion V-18 (conc.0,15%) has presented a difference distinctly significantly positive comparative with the variants average (Mx). The variants: V3- Demitan 200 SC (conc.0,05%) and V9- Apollo 50 SC (conc.0,04%) have realized differences very significantly negative comparative with the variants average (Mx), and the variant: V5- Mitac 20 EC (conc.0,2%) has realized a difference distinctly significantly negative comparative with the variants average (Mx).

Conclusions

During 2002 - 2004, in the viticultural ecosystem S. D. Banu Mărăcine the grape erineum mite attack average frequency (F%) has been ranged between 1,73% and 5,00%, the attack intensity (I%) between 15,92% and 21,54%, and the attack degree (Da%) between 0,27% and 1,09%.

For controling grape erineum mite, the best results has been obtained using the products Nissorun 5 EC conc.0,06% (E%=94,96%), Neoron 500 EC conc.0,05% (E%=94,06%) and Tedion V-18 conc.0,15% (E%=93,16%).

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