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RESEARCH REGARDING THE INTEGRATE MANAGEMENT OF THE VINE MOTH (Lobesia botrana Den et Schiff.) AT THE DEALURILE CRAIOVEI VINEYARD

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Abstract

The vine moth *Lobesia botrana* Den et Schifff. Is one of the main pest of the Dealurile Craiovei vineyard, the damages produced by this pest can reach 25-30%.

The integrate management of the vine moth is an alternative to the excessive chemification in order to control the viticultural ecosystem during the past years, this paper frame within this curent.

During 2004-2006, the climatic conditions has been favourable for the develop of the *Lobesia botrana* species, in 2004 there has been recorded 4 maximum flights coresponding to 3 complete generations and the fourth one incomplete, in 2005 and 2006 there has been recorded 3 maximum flights coresponding for same number of generations.

The attack medium frequency, of the vine moth, recorded in 2004 has been of 20,66%, 19,0% in 2005, and of 17,83% in 2006. The attack medium frequency during 2004-2006 has been of 19,2% .

The efficiency of the control treatments has been ranged between 94,6% and 89,4%. The highest efficiency of 94,6% has been recorded at the V2 variant, there has been used only chemical products, followed by the V3 variant (91,4%) there has been used chemical products for controling the first 2 generations I and II of the vine moth and an biological product for the third generation III, and the fourth variant V4 (89,7%) there has been used the pyretroid product Bulldock 025 EC for controling the first generation, and the biological product Foray 48B (Biobit XL) for controling the second generation II and 8 pheromonals traps (atraBOT/ha) for controling the third generation III. For the fifth variant V5 there has been used the product Calypso 480 SC, an metamorphosis inhibitor for the arthropods, for controling the first generation and then the biological product Dipel 2xWP for the second generation II and 8 pheromonals traps (atraBOT/ha) for the third generation, at this variant there has been recorded the lowest efficiencyt 89,4%.

INTRODUCTION

Within the vine culture technology, one of the determinative link for obtaining high and quality yield is represented by the protection against the diseases and pests.

The vine moth *Lobesia botrana* Den et Schifff. Is one of the main pests of the Dealurile Craiovei vineyard the damages produced by this pest can reach 25-30%.

The integrate management of the vine moth is an alternative to the excessive chemification in order to protect the viticultural ecosystem during the past years, this paper frame within this curent.

MATERIAL AND METHOD

The research has been made during 2004-2006 at the Didactical Station Banu Maracine Craiova, on the variety Feteasca alba.

The evolution surveillance of the moth generations has been made on the captures recorded on the pheromonal atraBOT. The pheromonal traps has been produced by the Romanian

Institute for Chemistry Raluca-Ripan Cluj-Napoca. The pheromonal traps has been placed at the end of April beginning of May, 2 traps/ha. The reading of the traps has been made weekly, the captured butterflies being recorded and removed from the traps, the replacement of the capsule impregnated with synthetic pheromone has been made every 4-5 weeks, also the replacement of the adhesive parts of the traps has been made every 4-5 weeks.

For each generation of the pest has been applied only one treatment at 1-3 days after the recording of the flight maximum curve.

After 7-10 days from the treatments there has been made observations on 50 logs/variant analyzing 10 inflorescence (for G1) or grapes (for G2 and G3) on each log in order to establish the attack frequency and intensity as well the attack degree.

The treatments has been applied using an atomyzer Solo 546. The efficiency (E) of the treatments has has been establish using the Abbott formula:

$$E\ \% = (1 - \frac{a_2}{N - M_2}) \times 100$$

E % = the biological efficiency of the product;

a_2 = the number of inflorescences or grapes attacked at the treated variant;

N = the total number of the inflorescences or grapes analyzed;

M_2 = the number of inflorescences or grapes attacked at the untreated control variant.

The data regarding the control of the vine moth at the S. D. Banu Maracine during 2004-2006 has been centralized and statistically processed, using analyze variation programs.

RESULTS AND DISCUSIONS

Table1

The evolution of the vine moth *Lobesia botrana* Den et Schif. at S.D Banu Mărăcine (2004-2006)

2004		2005		2006	
The observation date	Nr. of captured butterflies male	The observation date	Nr. of captured butterflies male	The observation date	Nr. of captured butterflies male
06.04	3	06.04	0	06.04	1
13.04	5	13.04	0	13.04	4
20.04	11	20.04	2	20.04	7
27.04	21	27.04	9	27.04	18
04.05	49	04.05	47	04.05	43
11.05	120*	11.05	98	11.05	89
18.05	91	18.05	103*	18.05	111*
25.05	39	25.05	68	25.05	56
01.06	67	01.06	53	01.06	42
08.06	89	08.06	71	08.06	54
15.06	97	15.06	85	15.06	79
22.06	139*	22.06	93	22.06	107*
29.06	71	29.06	101*	29.06	58
06.07	34	06.07	43	06.07	27
13.07	41	13.07	21	13.07	18
20.07	75	20.07	27	20.07	22
27.07	122*	27.07	34	27.07	19
03.08	92	03.08	37	03.08	36
10.08	84	10.08	59	10.08	62
17.08	67	17.08	71	17.08	81

24.08	40	24.08	87	24.08	93
31.08	72	31.08	96	31.08	78
07.09	98	07.09	70	07.09	61
14.09	87	14.09	42	14.09	51
21.09	42	21.09	39	21.09	43
28.09	21	28.09	22	28.09	27
05.10	17	05.10	5	05.10	14
12.10	6	12.10	0	12.10	3
19.10	3	19.10	0	19.10	1

*= the week when the treatments has been made

During 2004-2006 (table1, fig.1), the climatic conditions has been favourable for the developing of the *Lobesia botrana* species, in 2004 there has been recorded 4 maximum flights ensuring 3 complete generations with a fourth incomplete generation and in 2005 and 2006 there has been recorded 3 maximum flights coresponding to 3 complete generations.

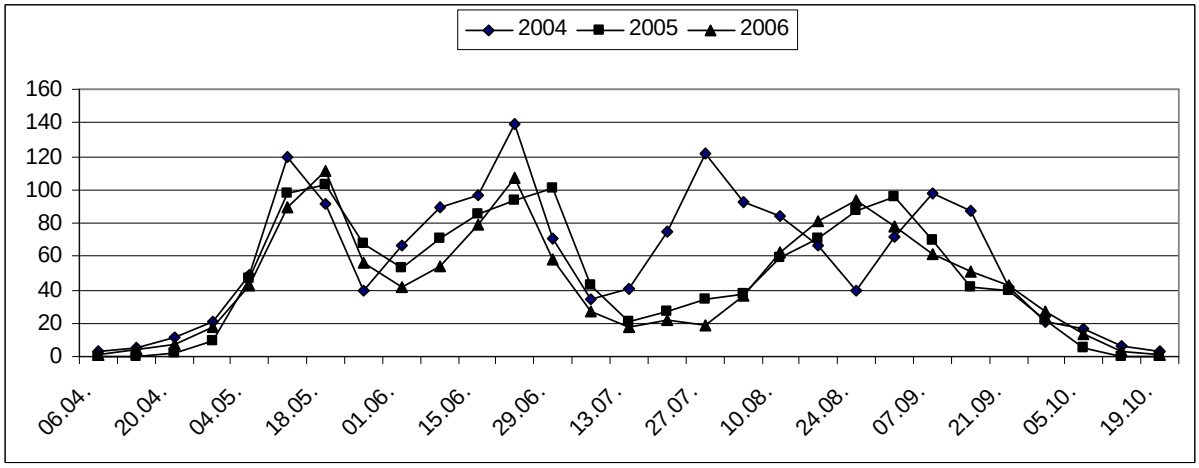

Fig. 1. The flight dynamic of the *Lobesia botrana* species at SD Banu Maracine during 2004-2006

The attack medium frequency, of the vine moth, recorded during 2004 has been of 20,66%, 19,0% in 2005, and 17,83% in 2006. The attack medium frequency during 2004-2006 has been of 19,2% (table 2).

Table 2

The vine moth attack frequency at S.D Banu Maracine during 2004-2006

Year	The number of analyzed inflorescences or grapes/variety	GI		GII		GIII		F% (average)
		The number of attacked inflorescences	F %	The number of attacked grapes	F %	The number of attacked grapes	F %	
2004	200	41	20,5	42	21	41	20,5	**20,66**
2005	200	37	18,5	35	17,5	42	21	**19,00**
2006	200	35	17,5	41	20,5	31	15,5	**17,83**
F% (average)	**-**	**-**	**18,83**	**-**	**19,66**	**-**	**19,00**	**19,2**

From the table 3 it came out that during 2004-2006, the attack frequency of the vine moth larva at the untreated control variant has been 19,2%. After the treatments applying the

attack frequency has been ranged between 1,2% and 2,7%. The lowest value 1,2% of the attack frequency has been recorded at the V2 variant, where has been used only chemical products for controling the vine moth, followed by the variant V3 (1,7%), where there has been used chemical products for controling the first two generations of the vine moth and a biological product for controling the third generation, and the variant V4 (2,2%), where has been used the pyretroid Bulldock 025 EC for controling the first generation, the biological product Foray 48B (Biobit XL) for controling the second generation and 8 pheromonal traps (atraBOT/ha) for controling the third generation. For the variant V5 there has been recorded the highest attack frequency 2,7%. For this variant there has been used the product Calypso 480 SC, an arthropods metamorphosis inhibitor, for the first generation, the biological product Dipel 2xWP for the second generation and 8 pheromonal traps (atraBOT/ha) for the third generation.

The differences of the attack frequency comparative with the control variant has been very significant for the V2 varaiant and distinct significant for all the rest of the treatment variants.

Table 3

The biological efficiency of the products used for the integrate controling of the vine moth (*Lobesia botrana* Den et Schif.) at S.D. Banu Mărăcine during 2004-2006

Variant number	Treatment variant	Attack frequency (F%)			Efficiency (E%)		
		Average 2004-2006	Differences compartaive with the control variant (Mt)	Significant differences	Average 2004-2006	Differences compartaive with the control variant (Mt)	Significant differences
V1	Control variant Mt	19,2	0	Mt	0	0	Mt
V2	GI- Victenon 50 WP, 1 kg/ha GII- Fastac 10 EC, 0,075 l/ha GIII- Rimon 10 EC, 0,5 kg/ha	1,2	-18	000	94,6	94,6	xxx
V3	GI- Talstar 10 EC, 0,2 l/ha GII- Calypso 480 SC 0,1 l/ha GIII-Dipel ES, 1 l/ha	1,7	-17,5	00	91,4	91,4	xx
V4	GI- Bulldock 025 EC, 0,3 l/ha GII- Foray 48B (Biobit XL) 0,1% GIII-10 capcane atraBOT/ha	2,2	-17	00	89,7	89,7	x

V5	GI- Calypso 480 SC, 0,1 l/ha GII – Dipel 2xWP, 0,5l/ha GIII-8 capcane atraBOT/ha	2,7	-16,5	00	89,4	89,4	x
			DL5%= 15,6 DL1%= 16,9 DL0,1%=17,8			DL5%=87,5 DL 1%=90,7 DL 0,1%=93,8	

The efficiency of the treatments for controling the vine moth have been ranged between 94,6% and 89,4% (Table 3, Fig. 2). The highest efficiency 94,6% have been recorded at the variant V2 where there has been used only chemical products, followed by the variant V3 (91,4%) where there has been used chemical products for controling the vine moth first two generations and a biological product for the third generation and the variant V4 (89,7%) where there has been used the pyretroid Bulldock 025 EC for controling the first generation, the biological product Foray 48B (Biobit XL) for the second generation and 8 pheromonal traps (atraBOT/ha) for controling the third generation. For the variant V5 there have been recorded the lowest efficiency 89,4%, for this variant there has been used the product Calypso 480 SC, an arthropods metamorphosis inhibitor, for the first generation, the biological product Dipel 2xWP for the second generation and 8 pheromonal traps (atraBOT/ha) for the third generation.

The differences of the attack frequency comparative with the control variant has been very significant for the V2 varaiant and distinct significant for the variant V3 and significant for all the rest of the treatment variants.

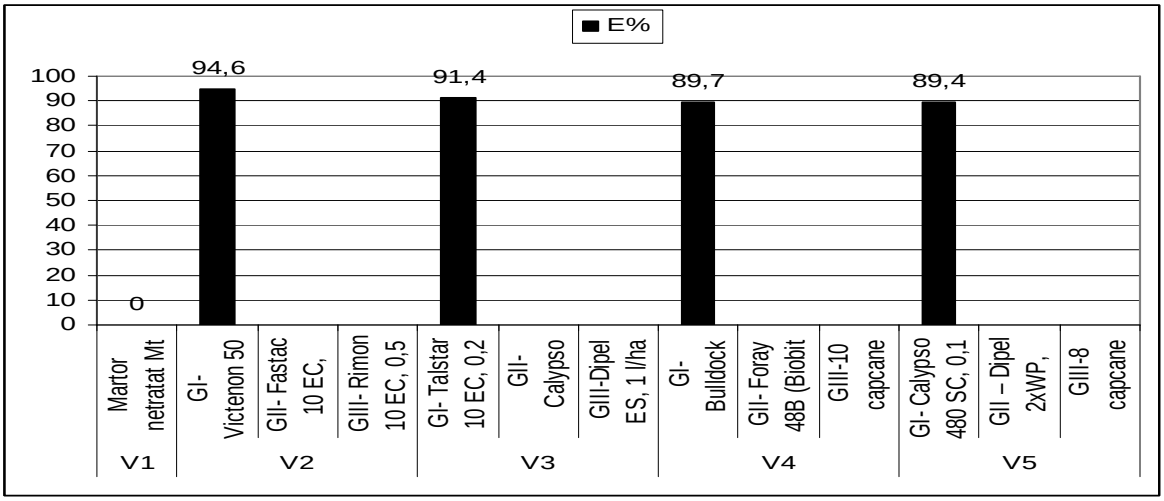

Fig. 2 The biological efficiency of the products used for the integrate controling of the vine moth (*Lobesia botrana* Den et Schif.) at S.D. Banu Mărăcine during 2004-2006

CONCLUSIONS

The highest efficiency 94,6% have been recorded at the variant V2 where there has been used only chemical products, followed by the variant V3 (91,4%) where there has been used chemical products for controling the first two generations of the vine moth and a biological

product for the third generation and the variant V4 (89,7%) where there has been used the pyretroid Bulldock 025 EC for controling the first generation, the biological product Foray 48B (Biobit XL) for controling the second generation and 8 pheromonal traps (atraBOT/ha) for controling the third generation.

At the variant V5 there have been recorded the lowest efficiency 89,4%. For this variant there has been used the arthropods metamorphosis inhibitor Calypso 480 SC for controling the first generation, the biological product Dipel 2xWP for controling the second generation and pheromonal traps (atraBOT/ha) for controling the third generation.

Even though at the variant where has been used only chemical products for controling the 3 generation of vine moth there have been recorded the highest efficiency we recommend to use chemical products for controling the first generation of the vine moth, combined with products or biological methods for controling the next two generations, especially for vthe third generation due to their nontoxic effect on the grapes and on the viticultural ecosystem in generally.

BIBLIOGRAPHY

Filip I. şi colab., 2003, Strategies of integrated control of the grape moth (Lobesia botrana Den et Schiff.) in Murfatlar vineyard. Analele Univ. din Craiova, Seria Biol., Horti., TPPA, vol VIII (XLIV) p.432.

Stan C., 2002, Combaterea integrata a moliilor vitei de vie cultivata pe nisipurile din Oltenia Analele Univ. Craiova seria Biol.Hortic. TPPA. Ing. Med., vol VII(XLIII), p.279, Craiova.

Stoian Elisabeta, 2001, Principalele pesticide omologate pentru combaterea dăunătorilor viței de vie. Rev. Sănătatea plantelor nr. 3/2001.

Şandru I., 1995, Protejarea culturilor agricole cu ajutorul pesticidelor. Editura Helicon, Timişoara, Viță de vie. Pag. 190, 318, 415.

*** ,2004, Codexul produselor de uzfitosanitar omologate a fi utilizate în România. Ministerul Agriculturii şi Alimentației, Bucureşti.