SOME ASPECTS CONCERNING *VENTURIA INAEQUALIS (*Cke Wint) AND *PODOSPHAERA LEUCOTRICHA (*Ell.et Ev.Salm) CONTROL IN APPLE PLANTATION

UNELE ASPECTE PRIVIND COMBATEREA RAPĂNULUI (*VENTURIA INAEQUALIS* Cke Wint.) ŞI FĂINĂRII (*PODOSPHAERA LEUCOTRICHA* Ell.et Ev.Salm.) ÎN PLANTAŢIA DE MĂR

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Abstract. *Currently the UE wants to ban pesticides used in combating fitopathogen agents considered as toxic to humans in terms of endocrinology, are carcinogenic, mutagenic and toxic for reproduction. For this purpose, knowing the action of deuterium-depleted water on different tumours in humans with good results, studied the influence of water and the evolution of fungi as apple's scab (Venturia inaequalis- Cke Wint.) and apple's powdery mildew (Podosphaera leucotricha- Ell.et Ev.Salm.) at culture apple. Deuterium-depleted water is the result of research in water isotopic separation held for years by a team of specialists from the National Institute of Research - Technology Development for Isotopic and Criogenetice Râmnicu Vâlcea . It is microbiological pure water with an isotopic concentration under natural water concentration. The study was conducted using the biological material of the variety Jonathan March, and as fungicides, comparative fungicidele classic used DDW-30ppm.*

Key words: apple, *Venturia inaequalis*, *Podosphaera leucotricha*, fungicide.

Rezumat. *In prezent UE vrea să interzică folosirea pesticidelor în combaterea agenţilor fitopatogeni, ca fiind considerate toxice pentru om din punct de vedere endocrinologic, sunt cancerigene, mutagene sau toxice pentru reproducere. În acest scop, cunoscându-se acţiunea apei sărăcite în deuteriu asupra diferitelor tumori la om cu bune rezultate, s-a studiat influenţa acestei ape şi asupra evoluţiei unor ciuperci ca rapănul (Venturia inaequalis-Cke Wint.) şi făinarea (Podosphaera leucotricha – Ell.et Ev.Salm) la cultura mărului. Apa sărăcită în deuteriu este rezultatul cercetărilor în domeniul separării izotopice a apei desfaşurate de-a lungul anilor de către un colectiv de specialişti din cadrul Institutului National de Cercetare – Dezvoltare pentru Tehnologii Criogenetice şi Izotopice Râmnicu Vâlcea. Este o apă microbiologică pură cu o concentraţie izotopică aflată sub concentraţia apei naturale. Studiul s-a realizat folosind ca material biologic soiul de mar* Jonathan, *iar ca fungicide, comparative cu fungicidele clasice, s-a folosit DDW-30ppm.*

Cuvinte cheie:măr, *Venturia inaequalis*, *Podosphaera leucotricha*, fungicide

INTRODUCTION

In March of orchards with varieties susceptible to Apple's Scab - *Ventura inaequalis* and Apples's powdery mildew - *Podosphaera leucotricha*, in years with normal weather conditions these fungi attack a limiting factor in increasing the productivity of plantations is a permanent concern for fruiter and specialists in the field of plants.

Chemical treatments applied several years caused environmental pollution, lead to natural biological balance disorders, which externalize through the emergence of virulent forms of pathogens agents and some races effective at fungicides (Lefter Gh., Minoiu N., 1990).

Therefore in 70 years since the discovery of deuterium in natural water, were initiated numerous studies in order to establish the deuterium action on plant (Butnaru et ali., 1997; Butnaru 1998; Bontescu et ali.) and animal (Somlyai et ali.1993,1997; Haulica et ali. 1998).

MATERIAL AND METHODS

Surveys were conducted during the vegetation period of 2007-2008 in plantation variety Jonathan on apple - in the demonstration group Unity Phytosanitary Gorj.

It was observed the efficacy of DDW30 ppm, tested as a fungicide to combat apple's scab and apple's powdery mildew.

Scheme variants are presented below, each variant is composed of three trees. Between variants were left untreated two trees to avoid overlapping treatments. In experiments were performed treatments according to warnings issued by the Gorj Fitosanitary Unit.

In 2007 were conducted the following treatments in: 22.04.2007, 06.05.2007, 17.05.2007, 24.05.2007, on variants:

V1: Treatment I: *Water + Bouillie bordelaise -0,5%;* Treatment II: *Water + Carbendazim 500 SC -0,1%*; Treatment III; *Water + Systhane forte 0,02%*; Treatment IV: *Water + Carbendazim 500 SC -0,1%;*

V2: Treatment I: *DDW (30ppm) + Bouillie bordelaise -0,5%*; Treatment II: *DDW (30ppm) + Carbendazim 500 SC -0,1%;* Treatment II: *DDW (30ppm) + Systhane forte 0,02%:* Treatment III: *DDW (30ppm) + Carbendazim 500 SC -0,1%*

V3: Treatment I: *DDW (30ppm)*; Treatment II: *DDW (30ppm)*; Treatment III *DDW (30ppm)*; Treatment IV: *DDW (30ppm)*;

V4: Treatment I: *Water + DDW - 0,5%;* Treatment II: *Water + DDW - 0,1%;* Treatment III: *Water + DDW - 0,02%;* Treatment IV: *Water + DDW - 0,1%;*

V5: untreated sample;

In 2008 were conducted the following treatments in: 17.04.2008; 14.05.2008; 17.06.2008; 06.08.2008, on variants:

V1: Treatment I: *Water + Topsin 70 PU – 0,07%;* Treatment II: *Water + Bravo 500 SC – 0,15% + Shavit F72WP-0,2%;* Treatment III: *Water + Topsin 70 PU – 0,07%;* Treatment IV: *Water + Bravo 500 SC – 0,15% + Shavit F72WP-0,2%;*

V2: Treatment I: *DDW + Topsin 70 PU – 0,07%;* Treatment II: *DDW + Bravo 500 SC – 0,15%+Shavit F72WP-0,2%;* Treatment III: *DDW + Topsin 70 PU – 0,07%;* Treatment IV: *DDW + Bravo 500 SC – 0,15%+Shavit F72WP-0,2%;*

V3: Treatment I: *DDW;* Treatment II: *DDW*; Treatment III: *DDW*; Treatment IV: *DDW;*

V4: Treatment I: *Water + DDW – 0,07%;* Treatment II: *Water + DDW – 0,25%;* Treatment III: *Water + DDW – 0,07%;* Treatment IV: *Water + DDW – 0,25%;*
V5 : Untreated sample.

Observations and numbering during the vegetation period in the years 2007 and 2008 have endorsed the attack rate, the attack rate from sample and the efficiency of biological treatment. Results were reported to sample variant. Determining the efficiency of biological treatment was done in accordance with the requirements of methodological guidelines for testing chemical and biological protection of plants.

RESULTS AND DISCUSSIONS

Experimental data on efficacy testing of biological treatment with DDW - 30ppm as a fungicide to combat some of the mushrooms of apple is presented in tables 1 and 2.

Table 1

Apple's scab attack (*Venturia inaequalis*) on apple leafs 2007 – 2008

Variant	2007					2008				
	No. leafs. observed	No. leafs. attack	F %	I %	G.A.	No. leafs. observed	Nr. leafs. attack	F %	I %	G.A.
V1	300	25	5,7	3	0,17	300	9	5,3	3	0,15
V2	300	18	4,7	3	0,11	300	2	2,7	3	0,08
V3	300	19	3,7	3	0,09	300	9	3,7	3	0,09
V4	300	19	5,7	3	0,17	300	9	5,7	3	0,17
V5	300	24	10,1	5	0,5	300	16	5,3	4	0,21

Table 2

Apple's scab attack (*Venturia inaequalis)* on apple fruits 2007 – 2008

Variant	2007					2008				
	No. leafs. observed	No. leafs attack	F %	I %	G.A.	No. leafs. observed	No. leafs. attack	F %	I %	G.A.
V1	50	3	4,1	3	0,1	50	0	0	0	0
V2	50	0	0	0	0	50	0	0	0	0
V3	50	3	0,2	2	0,004	50	2	0,6	2	0,1
V4	50	4	0,2	3	0,1	50	2	0,2	2	0,1
V5	50	9	5,1	3	0,2	50	7	6,2	2	0,1

Note that the frequency of attack on the leaf variants V5 - witness untreated - and V1, which were used fungicides, is 10.1% and 5.7%, compared with V2 and V3 variants, which we used as a fungicide DDW - 30ppm, frequency was 4.7% and 3.7%.

The same is observed in Table 2 and where frequent attacks on fruit in V2 and V3 variants is lower.

Study of fig.1 is observed that in 2007 the attack against the witness was reduced in variants V2, V3 and V4, where the treatment was used DDW-30ppm.

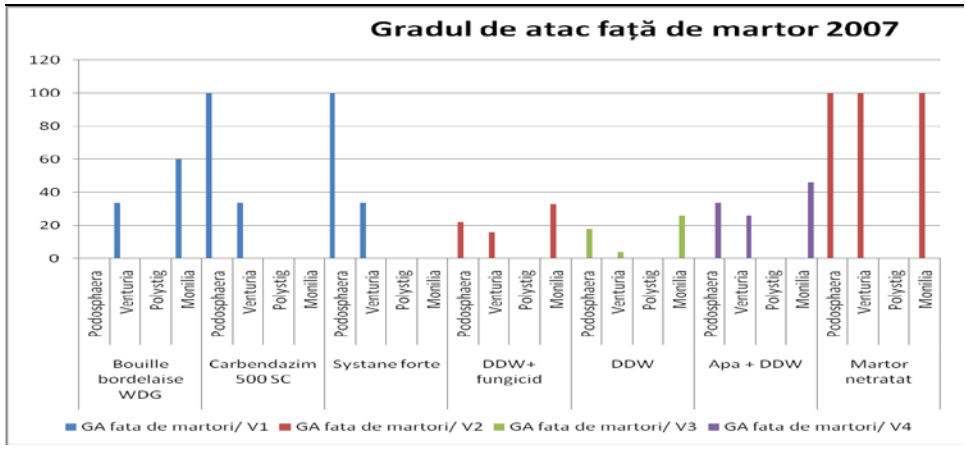

Fig.1. Apple's scab (*Venturia inaequalis*) rate attack on sample and apple's powdery mildew (Podosphaera leucotricha) 2007

Fig.2 analyzed, note that the efficacy of treatment was between 62% - 98% where used DDW-30ppm.

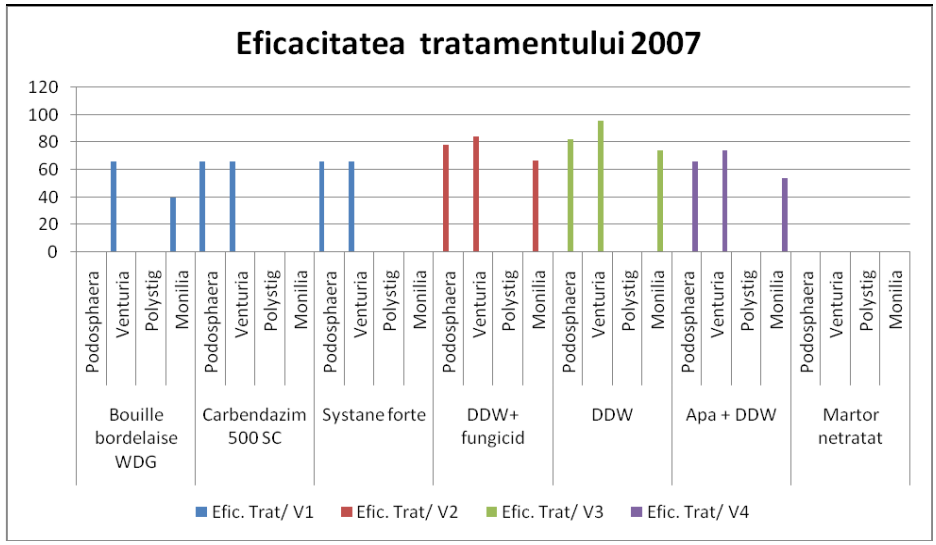

Fig.2. Eficacity of treatment apple's scab control (*Venturia inaequalis*) and apple's powdery mildew (*Podosphaera leucotricha*) 2007

Analyzing fig.3 and fig.4 note that in 2008 the results were similar.

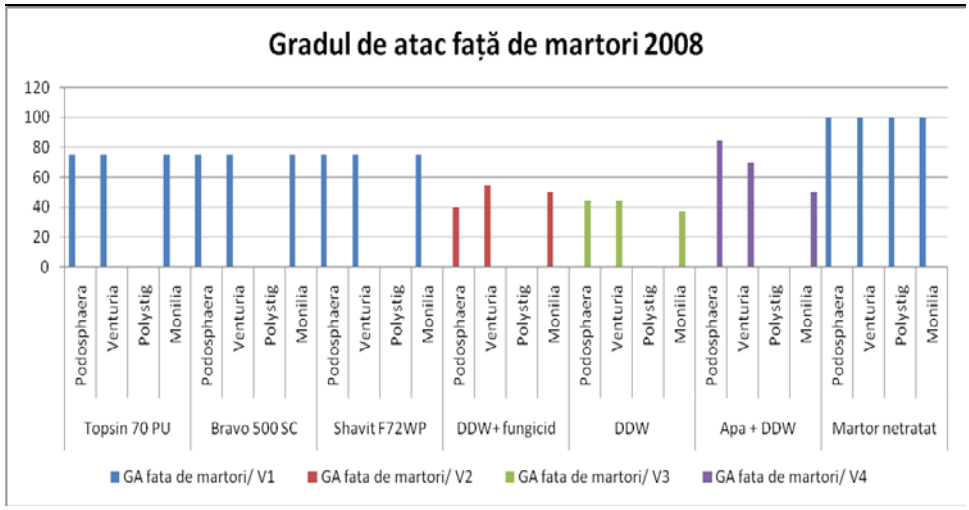

Fig.3. Apple's scab (*Venturia inaequalis*) rate attack to sample apple's powdery mildew (*Podosphaera leucotricha*) 2008

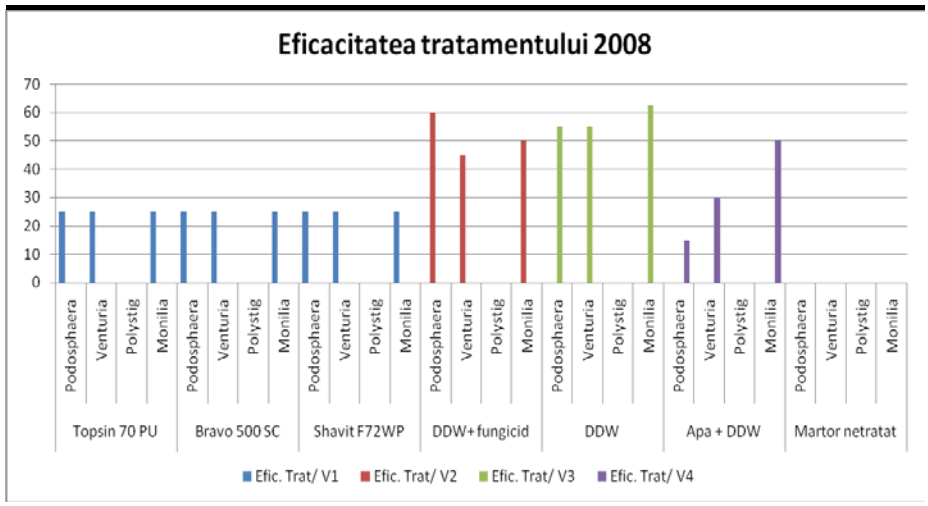

Fig.4. Eficacity of treatment apple's scab control (*Venturia inaequalis*) and apple's powdery mildew (*Podosphaera leucotricha*) 2008

CONCLUSIONS

Statistical analysis of experimental results obtained allow to conclude that simple DDW and DDW + fungicide, tested as fungicides against fungi *Ventura inaequalis* and *Podosphaera leucotricha*, showed a good biological efficiency. Therefore they can be recommended as protection against the two plants of mushrooms apple's.

As a general conclusion, we recommend further experiments on the combination of preventive treatments with the curative ones, with DDW, on larger groups of plants, which can lead to the establishment of an environmental program to combat diseases.

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