NEW STRATEGIES FOR THE PREVENTION AND CONTROL OF DISEASES AND PESTRIES IN THE CHERRY SPECIES

NOI STRATEGII DE PREVENIRE ŞI COMBATERE A BOLILOR ŞI DĂUNĂTORILOR LA SPECIA CIREŞ

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Abstract. *The research was carried out within the SCDP Iasi, in order to test ecological alternatives regarding the control of diseases and pests in the cherry species. The observations were made in 2019 having as research material 2 varieties of cherry (CĂTĂLINA, MARIA), grafted on mahaleb, the planting distance of 5X4 being in year VII from planting, the experience was placed on 4 experimental variants. The climatic conditions of this period were particularly favorable both for the evolution of the attack of the diseases (anthracnose and monilosis) and for pests. In the fight against diseases (moniliasis and anthracnose) the best results were obtained in the case of the chemical variant with Signum products 0.03%, Folicur Solo 0.075%, Mospilan 20 SG 0.03% and in the ecological variant the best results were obtained with the products Deffort 0.3%, Copfort 0.3%, Mimox 0.2%, Laser 240 SC 0.06%.*
Keywords: cherry, pathogen, ecological

Rezumat. *Cercetările au fost realizate în cadrul SCDP Iaşi, cu scopul de a testa alternative ecologice privind combaterea bolilor şi dăunătorilor la specia cireş. Observaţiile au fost efectuate în anul 2019 având ca material de cercetare 2 soiuri de cireş (CĂTĂLINA, MARIA), altoite pe mahaleb, distanţa de plantare de 5X4 fiind în anul VII de la plantare, experienţa a fost amplasată pe 4 variante experimentale. Condiţiile climatice din această perioadă au fost deosebit de favorabile atât pentru evoluţia atacului bolilor (antracnoză şi monilioză) cât şi pentru dăunători. În combaterea bolilor(monilioză şi antracnoză) cele mai bune rezultate au fost obţinute în cazul variantei chimice cu produsele Signum 0.03%, Folicur Solo 0.075%, Mospilan 20 SG 0.03% iar în cazul variantei ecologice cele mai bune rezultate s-au obţinut cu produsele Deffort 0.3 %, Copfort 0.3%, Mimox 0.2%, Laser 240 SC 0.06%.*
Cuvinte cheie: cireş, agent patogen, ecologic

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INTRODUCTION

Organic fruit growing is a part of agroecology, a science that studies the influence of environmental factors and technologies on the growth and productivity of crop plants. Its main objective is to prevent the occurrence of negative phenomena in industrial fruit growing, based on mechanization and excessive chemization.

In intensive fruit growing, 76% of energy consumption is recorded in the area of chemization. Considering that only 5 - 40% of herbicides come in contact with weeds, that only 1 - 3% of the active substance of pesticides is used in the plant protection of orchards and that only 30 - 40% of the chemical fertilizers are used by the trees. , we realize that the other part of the chemicals used pollutes the soil, air, water and food. In addition to the effect of pollution, some of the chemicals cause imbalances within the relationships established in the fruit crop. The use of insecticides results in the destruction of useful entomofauna and the creation of resistant strains for insecticides.

MATERIAL AND METHOD

The biological material on which the studies related to the achievement of the objectives will be undertaken is in the demonstration lot of cherry from SCDP Iaşi with a total area of 2.9 ha; the trees are in the VIII year after planting, are grafted on the mahogany, planted at a distance of 5 x 4 m and driven in the form of an improved vessel, without support system with irrigation system.

In the row of trees, the soil is mulched with biodegradable material, and between the rows of trees the soil is maintained as a grassy ground floor.The plantation comprises a number of 28 varieties, of which 24 are Romanian and 4 are of foreign origin.The following factors will be used to set up the experimental variants:

Two varieties of cherries with different ripening times r1 – Cătălina r2 - Maria

Treatment type: V1 - Treated with organic products + foliar fertilization + repellent plants (garlic and Tagetes. Within variant one (V1) - six treatments were applied with both fungicides, insecticides and foliar fertilizers (table 1)

To further protect the experience, in V1 we chose to plant two types of repellent plants on the row of trees: the flower species *Tagetes spp*., With a very important role to keep the insects away because it contains natural phytonic substances with an effect on nematodes. from soil and *Allium sativum* - garlic with role in removing insects, being proven over time the effect of this vegetable crop in the fight with certain pests.

The treatments were applied according to the climatic conditions because the spring being a rainy one did not apply them at the right time, greatly influencing the results from the experience.

Table 1

V1 - TREATED WITH ORGANIC PRODUCTS + FOLIARY FERTILIZATION + REPELLENT PLANTS (*Allium sativum* şi *Tagetes spp*)

No. treatment	Phenophase / treatment application period	Products	Concentrations %
I. (21.03.2019)	Before the breakup	Ovipron Top	0.15%
		B. Bordelaise	0.5%
		Wetcit	0.3%
II. (10.04.2019)	The beginning of flowering	Laser 240 SC	0.06%
		Algobor	0.1%
		Altosan	0.25%
		Wetcit	0.3%
III. (22.04.2019)	Beginning of the petals shaking (20% shakes	Funguran OH 300 SC	0.066%
		Deffort	0.3%
		Kerafol EVO	0.3%
IV. (20.05.2019)	10-15 days after the previous treatment	Wetcit	0.3%
		Mimox	0.2%
		Ovipron Top	0.01%
		Prev-AM	0.2%
V. (10.06.2019)	Ripen	Laser 240 SC	0.06%
		Altosan	0.3%
		Wetcit	0.3%
		Copfort	0.3%
VI. (12.07.2019)	After harvesting	Ovipron top	0.01%
		Funguran OH 300 SC	0.066%
		Laser 240 sc	0.06%

V2 - Ecological treaty with substances approved for organic fruit growing + foliar fertilization; ecological pesticides were used to control pathogens and pests and for the proper nutrition of the trees ecological foliar fertilizers were used. some products also having a repellent effect (tab. 1).

V3 - Untreated variant (control).

V4 -Chemical treatment - treated with chemicals and foliar fertilization (tab. 2).

Table 2

V4 - TREATED WITH CHEMICALS

No. treatment	Phenophase / treatment application period	Products	Concentrations %
I 21.03.2019	Before the breakup	B. Bordelaise	0.5%
		Mospilan 20 SG	0.03%
		Boro ET	0.1%
II 22.04.2019	Beginning of petal shaking (10-15%)	Signum	0.05%
		Decis 25 WG	0.0045%

		Rezistevo	0.3%
III 10.06.2010	Ripen	Decis 25 WG	0.0045%
		Folicur Solo	0.06%
		Kerafol	0.3%
IV 12.07.2019	Post harvest	Decis 25 WG	0.003%
		Funguran	0.65%

Each experimental variant will be represented by two repetitions (r1. r2).

Climatic data recorded during the observations (January-October 2019) are shown in table 3.

The study period was characterized by low precipitation (deviation from the multiannual average being - 66.6 l / mm) distributed unevenly. with hail droughts with prolonged drought periods in March (- 64.0 mm). April (-7.8 mm). June (-29.7 mm) and July (-49.7 mm). being considered deficient months from this point of view. and in January. May. August. September and October there was a excess of precipitation. the values of deviation from the multiannual averages being between + 5.8 mm and + 28.9 mm (tab. 1).

It should be noted that although June registered a deficit in terms of rainfall compared to the multiannual average. they were unevenly distributed. especially during the cherry ripening and ripening phenomena. favoring fruit cracking and installing monilose.

The average temperature recorded during the period studied (January-October) ranged from -3.0 ° C (in January) to 21.8 ° C (in August) (tab. 1). The lowest value was recorded on January 8. 2019 (-14.8 ° C). and the highest value was 35.4 ° C recorded on July 2.

Table 3

THE CLIMATIC CONDITIONS OF 2019

Month	**Multiannual average temperature 2005 – 2015 (^{o}C)**	**Temperature 2019 (^{o}C)**			**The deviation from the multiannual average (^{o}C)**
		mean	high	low	
I	-1.9	-3.0	10.1	-14.8	-4.9
II	-1.2	1.9	17.6	-8.5	0.7
III	4.7	7.4	23.2	-6.2	-2.7
IV	11.4	10.5	26.3	-0.3	0.9
V	17.0	15.8	28.5	2.7	1.2
VI	20.5	21.6	34.4	9.7	-1.1
VII	22.4	20.9	35.4	9.1	1.5
VIII	21.9	21.8	35.0	9.3	0.1
IX	16.8	16.9	34.6	1.6	-0.1
X	10.3	11.5	26.3	1.0	-1.2
Mean	12.2	12.5	35.4	-14.8	-0.3

Month	Multiannual average precipitation 2005-2015 (mm)	Rainfall 2019 (mm)	Deviation	Number days with rainfall	Humidity 2019 (%)
I	35.5	47.6	+12.1	13	87
II	32.1	28.2	-3.9	8	79
III	71.2	7.2	-64.0	6	55
IV	51.4	43.6	-7.8	12	60
V	71.1	86.6	+15.5	13	75
VI	82.9	53.2	-29.7	13	77
VII	64.7	15.0	-49.7	7	67
VIII	50.8	56.6	+5.8	8	22
IX	36.5	65.4	+28.9	10	63
X	2.4	28.6	+26.2	10	82
Amount	498.6	432.0	-66.6	100	66.7

RESULTS AND DISCUSSIONS

In the cherry varieties studied in the project. four determinations were made on the attack of the pathogen *Stigmina carpophilla (lev.) M.b. ellis*. Thus. on May 6. May 20. June 10 and July 12. leaves were taken from each variety with the 4 variants to determine the degree of attack of the pathogen (tab. 4).

Table 4

The frequency. intensity and degree of attack of the pathogen Stigmina carpophilla (lev.) M.b. ellis in cherry varieties studied on different variants (SCDP Iasi, 2019)

V	Variety	06 may			20 may			June 10 th			Julie 12		
		F %	I %	GA %	F %	I%	GA %	F%	I%	GA %	F%	I%	GA %
V 1	Cătălina	12	2	0.24	64	2	3.1	88	3	3.4	100	5	5.0
	Maria	32	2	0.64	72	2	2.8	76	3	3.9	72	5	6.9
V 2	Cătălina	24	2	0.48	60	2	3.3	88	3	3.4	76	5	6.6
	Maria	44	2	0.88	44	2	4.5	92	3	3.3	96	5	5.2
V 3	Cătălina	60	2	1.20	52	2	3.8	88	3	3.4	80	5	6.3
	Maria	40	2	0.80	24	2	8.3	96	3	3.1	84	5	5.9
V 4	Cătălina	16	2	0.32	52	2	3.8	100	3	3.0	72	5	6.9
	Maria	48	2	0.96	52	2	3.8	96	3	3.1	84	5	5.9

The degree of attack was influenced both by the variety and by the applied products. so that within the first observations (tab. 4) the lowest degree of attack was obtained in the case of the ecological variant + plants repellent to the Cătălina variety 0.24. the same variety registering the highest degree of attack of 1.2 in the case of the witness variant. On May 20. the highest degree of attack was

registered in the Maria variety - V1. the smallest also in the Maria variety but in the untreated variant V3.

When determining the number 3 of June 10. the highest degree of attack was in the Maria-V1 variety and the lowest degree of attack in the Cătălina - V4 variety.

In the last observations. the highest degree of attack was the chemical variant Cătălina variety. the same degree of attack of 6.9% being registered also the variety Maria-V1. and the smallest was the ecological variant + repellent plants. the variety Cătălina - 5%.

CONCLUSIONS

1. We can conclude that a major influence has both the variety and the treatment variant used.

2. The ecological variant + repellent plants showed some resistance regarding the attack of the diseases registering a small degree of attack in 3 determinations of the 4, on the other hand the Maria variety proved to be somewhat more sensitive to the pathogen compared to the variety Catalina.

3. The control variant registered the highest degree of attack in two of the determinations. The chemical variant registered a high degree of attack only in the case of the last determination, respectively post-harvest.

4. These results can encourage fruit growers to introduce organic products into the treatment scheme, even though more treatments must be performed compared to the conventional treatment scheme, the benefits being greater on the health of the consumer.

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