THE ATTACK QUANTIFICATION OF SOME HARMFUL ORGANISMS ON THE GROWTH AND DEVELOPMENT OF THE EVÉLIN VARIETY ROSE

CUANTIFICAREA ATACULUI UNOR ORGANISME DĂUNĂTOARE ASUPRA CREŞTERII ŞI DEZVOLTĂRII SOIULUI DE TRANDAFIR EVÉLINE

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Abstract*. The attack of the harmful organisms on the suprateraneous organs of the rose produce high disturbation in the plant metabolism with influence on the growth and development. The results of the attack effect quantification of the pathogens Sphaerotheca pannosa var. Rosae, Diplocarpon rosae, Phragmidium mucronatum and of the aphid Macrosiphon rosae on the Evelin variety have shown a negative influence of these ones with repercusion on the quality and comercial feature of the flower. The modification of the biological features of the attacked organs comparative with the healthy organs have oscilated function the harmful organism, the attacked organ proportionally with the attack degree.*

Key words: pathogen, pest, rose, quantification

Rezumat. *Atacul organismelor dăunătoare asupra organelor supraterane ale trandafirului produce puternice dereglări în metabolismul acestora cu influenţe asupra creşteri şi dezvoltării. Rezultatele cuantificării efectului atacurilor patogenilor Sphaerotheca pannosa var. rosae, Diplocarpon rosae, Phragmidium mucronatum şi a afidului Macrosiphon rosae asupra soiului de trandafir Eveline au ilustrat influenţa negativă a acestora cu repercusiuni asupra calităţii şi aspectului comercial al florii. Modificarea însuşirilor biologice ale organelor atacate comparativ cu cele neatacate au oscilat în funcţie de agentul de dăunare, organul atacat proporţional cu valoarea gradului de atac.*

Cuvinte cheie: patogen, dăunător, trandafir, cuantificare

INTRODUCTION

In the rose crop, as in the case of other ornamental species crops, during the vegetation period, can be signalized the attack of manz harmful organisms, whith a negative influence on the growth and development of the plants.

In order to emphasize the fact that the control measures for plant protection are essential for the rose crop, in this paper we present data related to the diminishing of some features at the Eveline rose variety as a consequence of the attack produce by some harmful organisms considered to be „key organisms" for this species.

MATERIAL AND METHOD

There observation regarding the attack produced by the pathogens: *Sphaerotheca pannosa* var. *rosae, Diplocarpon rosae, Phragmidium mucronatum* and the pest *Macrosiphon rosae* has been made in the „Green Spot" section of the „Nicolae Romanescu" Park, Craiova on the Eveline rose variety cultivated in open field.

The attack frequency and intensity has been calculated for each harmful organism, analyzing 30 attacked plants.

The attack degree has been percentage expressed function the (F) frequency and intensity (I) reported to 100. The data has been interpreted with the results regarding the attack quantification on the growth and developemnt of the rose plants, which has been made through measurements at 30 attack plants comparative with healthy unattacked plants.

The measurements has been made at the end of August and focused on the stem height, leaf dimensions (length, width) and flower diameter.

The results has been statistically calculated using the variation row.

The features diminishing has been calculated using the formula:

$$P\% = \left(1-\frac{b}{a}\right) \times 100$$

where: b= values at the unattacked organ;
a= values at the attacked organ.

RESULTS AND DISCUSSIONS

The attack of the fungus *Sphaerotheca pannosa* (Wallr.) Lev. var. *rosae* Woron which produce the rose powdery mildew has a negative influence on the growth and development of the organs (stems, leaves, buds), the quantification of the negative effect on the Eveline variety are presented in the table 1.

As it can be observed, the average made of tenattack degree has been of 23,52% which has been materialized on the decrease of the stem height with 16,34 cm, of the leaves length with 4,90 cm and of the leaves width with 2,44 cm comparatively with the unattacked plant. Also, it came aut that the effect of the attack on the leaves and flowery buds produce a decrease of the flower diameter at the attacked plants from 11,06 cm at the unattcked plants to 8,63 cm at the attacked plants.

The black spots produced by the fungus *Diplocarpon rosae* Wolf. it is another frequent disease in the rose crops from the Nicolae Romanescu Park, which in the case of the Eveline variety has been recorded with an average attack degree of 15,42%.

The results regarding the quantification of the negative effect on the Eveline rose variety are presented in table 2. Thus, the stem height decrease to 74,22cm at the attacked plants comparative with 87,54 cm at the healthy unattacked plants; the leaves dimensions at the attacked plants are considerably reduced: length/width 11,41 cm respectively 8,10 cm comparatively with dimensions of the unattacked plants 13,01cm/11,41 cm. As a results the physiological processes in the leaves are affected materialized in to an reduce

growth rythm with implication in the flower features, with a diameter of 9,25 cm at the attacked plants comparatively cu 11,00 cm at the healthy unattcked plants.

Another pathogen in the crop rose has been *Phragmidium mucronatum* (Pers.) Schlecht. Which produce the rose rust, that has been recorded with an average attack of 11,21%, with the most powerful attack recorded at the end of the summer (August).

From the results presented in the table 3, it come out that the diminishing of the attacked leaves dimensions to 12,01 cm/9,00 cm (length/width) comparatively with the unattaked leaves 13,02 cm/10,01 cm, in relative values the decrease of the leaves dimensions being of 16% respectively 12%.

Due to the diminishing of the leaves dimensions (length/width), there has been recorded the deacreasing of the stem height and finally as a consequence of the rust attack on the leaves and stems the flower diameter at the attacked plants has deacresed to 9,97 cm comparatively with 11,03 cm recorded at the healthy unattcked plants, loosing their comercial and esthetic value.

The attack of the aphid *Macrosiphon rosae* L. produce powerful disturbation of the metabolism in the attacked organs, especially through the phytotoxic effect of the proteolitic enzymes introduced by the insect together with their saliva.

In field conditions, the average attack degree of the aphids on the Eveline variety has been of 7,34%. In such infestation conditions there has been quantificated the attack effect on the growth and blossom of the plants (table 4). The attack on the leaves has affected the growth rythm, thus the leaves dimensions (length/width) has been smaller with 13% respectively 11% at the attacked leaves comparative with the healthy unattacked.

The height of the stem has been negatively affected by the attack of the aphids on the copses and leaves, the healthy unattacked plants presented an average stem height of 87,59 cm, with 11% more than the attacked plants with an average stem height of 79,02 cm.

The most important diminishing has been recorded for the diameter of the flowers, 8,98 cm at the attacked plantswith 18% smaller than the diameter of the healthy unatckked plants of 11,04 cm.

Analyzing the data regarding the decreasing of some biological features at the Eveline rose variety following the natural attacks of the harmful organisms (table 5) we can acertain that the attack of the pathogen *Spaerotheca pannosa* var. *rosae* has produced the most accented diminishing of all the analyzed biological features. The attack of the *Diplocarpon rosae* fungus has affected the developemnt rythm of the leaves while the attack of the aphid *Macrosiphon rosae* had repercussions that affected the flowers diameter.

Table 1

The attack effect quantification produced by the fungus *Sphaerotheca pannosa* (Wallr.) Lev. var. *rosae* Woron on the growth and development of the Eveline rose variety

Variable	Stem		Leaf				Flower		DA%
	Height cm		Length cm		Width cm		Diametru cm		
	$\overline{X} \pm S \overline{X}$	S%	$\overline{X} \pm S \overline{X}$	S%	$\overline{X} \pm S \overline{X}$	S%	$\overline{X} \pm S \overline{X}$	S%	
Unattacked	89,4±1,23		13,06±0,2	0,87	10,30±0,19	1,05	11,06±0,12	0,62	
Attacked	73,06±1,41		8,86±0,19	1017	7,86±0,19	1,32	8,63±0,13	0,88	23,52
P%	19%		33%		24%		22%		

Table 2

The attack effect quantification produced by the fungus *Diplocarpon rosae* Wolf. on the growth and development of the Eveline rose variety

Variable	Stem		Leaf				Flower		DA%
	Height cm		Length cm		Width cm		Diametru cm		
	$\overline{X} \pm S \overline{X}$	S%	$\overline{X} \pm S \overline{X}$	S%	$\overline{X} \pm S \overline{X}$	S%	$\overline{X} \pm S \overline{X}$	S%	
Neatacat	87,54±1,3	0,6	13,01±0,4	1,01	9,94±0,22	0,80	11,0±0,23	0,69	
Atacat	74,22±1,09	0,78	11,41±0,12	1,02	8,10±0,34	1,76	9,52±0,25	1,66	15,42
P%	16%		20%		21%		17%		

Table 3

The attack effect quantification produced by the fungus *Phragmidium mucronatum* (Pers.) Schlecht. on the growth and development of the Eveline rose variety

Variable	Stem		Leaf				Flower		DA%
	Height cm		Length cm		Width cm		Diametru cm		
	$\overline{X} \pm S \overline{X}$	S%	$\overline{X} \pm S \overline{X}$	S%	$\overline{X} \pm S \overline{X}$	S%	$\overline{X} \pm S \overline{X}$	S%	
Neatacat	87,34±1,05	0,67	13,02±0,31	1,26	10,01±0,20	0,72	11,03±0,24	1,25	
Atacat	78,03±0,87	0,71	12,01±0,30	1,42	9,00±0,24	1,25	9,97±0,20	1,24	10,02
P%	12%		16%		12%		16%		

Table 4

The attack effect quantification produced by the aphid Macrosiphon rosae L. on the growth and development of the Eveline rose variety

Variable	Stem		Leaf				Flower		DA%
	Height cm		Length cm		Width cm		Diametru cm		
	$\overline{X} \pm S\overline{X}$	S%	$\overline{X} \pm S\overline{X}$	S%	$\overline{X} \pm S\overline{X}$	S%	$\overline{X} \pm S\overline{X}$	S%	
Neatacat	87,59±0,28	0,18	12,95±0,20	0,85	9,44±0,34	1,02	11,04±0,18	1,04	
Atacat	79,02±1,32	0,94	11,78±0,31	1,23	8,52±0,27	1,34	8,98±1,44	1,32	7,34
P%	11%		13%		11%		%		

Table 5

The diminishing of some biological features at the Eveline rose variety following the natural attacks of the harmful organisms

Harmful organism	Diminuarea însuşirilor (P%)				DA%
	Stem	Leaf		Flower	
	Height cm	Length cm	Width cm	Diametru cm	
Sphaerotheca pannosa var. *rosae*	19	33	24	22	23,52
Diplocarpon rosae	16	20	21	17	15,42
Phragmidium mucronatum	12	16	12	16	10,02
Macrosiphon rosae L.	11	13	11	18	6,84

CONCLUSIONS

1. The natural attacks of the harmful organisms identified in the field rose crop, Eveline variety have determined growth and development changes comparative with the unattacked control variant.

2. The average degree of the attack of the pathogen *Sphaerotheca pannosa* (Wallr.) Lev. var. *rosae* Woron, has been of 23,5% and led to the diminishing of some biological features, 19% for the stem height, 33%/ 24% for the leaf length/width and 22% for the flower diameter.

3. The Eveline rose variety attacked by the fungus *Diplocarpon rosae* Wolf., had recorded the highest diminishing of the leaf area of 20%/ 21%, while the attack of the pathogen *Phragmidium mucronatum* (Pers.) Schlecht. had afectted the flower diameter and the leaf length with a decrease of 16%.

4. The yield features losses quantification of the rose plants following the aphids attack has emphasize the diminishing of the stem height with 11%; of the leaves dimensions – length/ width (cm) with 13% respectively 11%; the flowers diamter (cm) with 18%.

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