THE INCIDENCE OF *DIPLOCARPON ROSAE* ON *ROSA CANINA* SHRUBS ON SOUTH WESTERN PART OF ROMANIA.

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Abstract. *Rosa canina well known as dog rose, together with other wild roses from different species of Rose family, grow on reference area as shrubs which populate almost all areas within the open space valleys of the hilly and mountain regions of South West part of Romania. Plants prefer sunny places within meadow areas with medium and fertile soils but never the less it is known to be a good competitor for other plants like blackberry on the lower altitude places where the trees where cleared. It could be very easy considered from this point of view as an invasive weed. One of the dog rose major pathogen is fungus Diplocarpon rosae f.c. Marssonina rosae because of the black spots formed on the leaves which can't be confused or missed during the plant diseases screening. This pathogen attack symptoms start to show on the early days of June and persist until the leaves are falling in the end of autumn. It is obvious that the leaves affected by pathogen are dry soon because and the plant shrub will show an acute leaf loose starting from the middle of August. Also as a second effect, the pathogen affect the green plant shoots by producing black spots. On the area of this black spots on the young green cane, the cuticle is broken and show deep lesions. During the winter inside this lesions the water will freeze and the affected shoots will be found dry on the next spring. The disease is spread by wind and insects and affects also the ornamental roses. It is easy to see that because of such a wide distributed host as dog rose, this pathogen will have no problem at all to survive and produce important damages to any rose flower culture on the area. This is one of the reasons why the people which take care about some roses will have to pay attention during entire vegetation period to the pathogen Marssonina rosae.*

Key words: *Diplocarpon rosae, Rosa sp, wild roses*

INTRODUCTION

The data regarding wild rose pathogens were collected during the summer of 2017 on South Western part of Romania The area where the observations concerning the assessment of dog rose pathogens in general is situated on the basin of town Anina, the confluence area between Natural Park Caras River Canyon and Natural Park Nera River Canyon.

It is well known that in the neighborhood there was found on wild flora 9 different species of the genus Rosae: *Rosa arvensis Huds., Rosa gallica L., Rosa spinossissima L., Rosa tomentosa Sm., Rosa micrantha Sm., Rosa agrestis Savi, Rosa canina L., Rosa pendulina L.* and *Rosa stylosa Desv.* (DĂNEȚ CARMEN ELENA, 2008). But never the less it is also a fact that *Rosa canina* has many anatomic similarities with species *Rosa micrantha Sm., Rosa tomentosa Sm., Rosa stylosa Desv. Rosa arvensis Huds.* and *Rosa agrestis Savi*, and also all this species are most frequently found on the wild flora.. At the same time there are big differences between previous species and species like *Rosa gallica L., Rosa spinossissima L., Rosa pendulina L.* and for this reason this species are exempted from any possibility to be observed during this summer disease assessment on the interest area.

The objective of these researches is to fiind aut if there is a potential difference of pathogen behavior on the different wild roses populations on the same region as there was found in other cases (LAINE ANNA-LIISA, 2004). Also this information's are useful for people which are interested on growing roses on their gardens because the wild roses have the same pathogens with roses varieties from gardens and parks. And for this reason it is well to know about pathogens infectious pressure from wild flora, taking in consideration that plants through the breeding process loose some of their natural disease resistance.

MATERIAL AND METHOD

For a better quantification of pathogens attack frequency and intensity values on the reference area we preferred to define previously some representative populations for the plants which are the subject of the observations (BORCEAN A., COLCEA M., DAVID GH., 2016). These populations were named after the closest known location on the area and so there are five locations: population of Anina North, population of Marila, population of forester house "Lup", population of Crivina and population of Steierdorf East. At all this populations, for interpretation accuracy of statistical data we introduce another sinstetic variable, the populations average.

The values of the attack frequency and intensity for each repeat are in fact an average of ten determinations (BORCEAN A., COLCEA M., DAVID GH., 2016), both for attack frequency and intensity. Statistics was calculated after the method for one factor experiences with three repeats. The same method was also used for other diseases of medicinal plants from wild flora.

We chose to have 10 determinations for each variant. This number if determinations are considered sufficient in specialized literature, because errors values in this case are very low, according to the literature (ELZINGA C. L, ET AL, 1998). Locations where we done all measurements were relatively small in size, lesser than 1 hectare, which also led to the hint that 10 evaluation marks made on each point are sufficient to obtain relevant data and to avoid errors. We chose as control for data comparing after statistic calculations, the average of the populations.

RESULTS AND DISCUSSIONS

It is necessary to remark that, as it may be observed from pathogen attack frequency and attack intensity data tables, the pathogen was present on all *Rosa sp.* populations. Affected plants present black spots both on leaves and on young shoots. Also on older and dead shoots it could be remarked wood deep lesions produced by the same pathogen exactly like the literature (DOCEA E., SEVERIN V., 1990)describe the attack (figure 1).

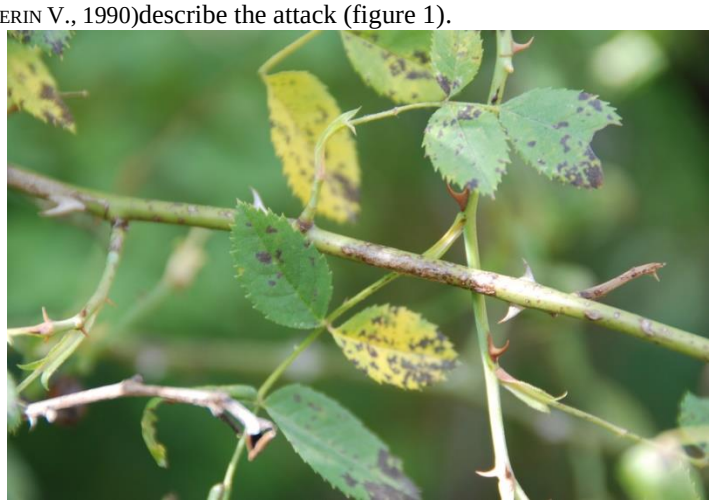

Figure 1. Leafs and young shoot affected by black spots produced by fungus *Marssonina rosae* (original photo)

In table 1 are notes for rose leaf black spot (*Marssonina rosae)* frequency of attack. The general idea of these values is that over the analyzed time period frequency values of the

fungus *Marssonina rosae* ranged between 10% and 60%. These values clearly indicate that the pathogen is well adapted both to the climate conditions and blackberry host species.

Table 1

Values of dog rose black spot(*Marssonina rosae*) attack frequency (%) at various local populations

Nr. crt.	Factor A Population	Repetition 1	Repetition 2	Repetition 3	Averages of factor A	Differences	Significance
1	Population Average	23	34	18	25	Control	-
2	Population of Anina North	45	60	40	48.3	23.3	***
3	Populatia of Marila	25	35	10	23.3	-1.7	-
4	Population of forester house “Lup”	15	45	10	23.3	-1.7	-
5	Population of Crivina	15	20	15	16.7	-8.3	oo
6	Population of Steierdorf East	15	10	15	13.3	-11.7	ooo

DL 5% = 3.6 DL 1% = 6.4 DL 0,1% = 9.2

The averages of fungus *Marssonina rosae* attack frequency point out very significant differences in the pathogen aggressiveness. Populations of wild roses from Marila and forester house “Lup” point out the same attack frequency average, with the lowest value of difference to control and for this reason those values was under the significance threshold. On the same time the higher value of the wild roses black spot attack frequency was registered at the Anina North population, with a very significant difference to control. The lowest values of fungus attack was registered to population of Crivina, with an average placed at a distinctly significant negative difference to control, and at population of Steierdorf East which registered an attack frequency value situated at a very significant negative difference to control.

The second set of measurement performed on those three populations was those concerning the attack intensity of the to fungus *Marssonina rosae* which express the virulence of the pathogen. The figures from the assessment of this indicator (table 2) point out that the plants populations shown a different behavior as the case of pathogen attack frequency

Table 2

Values of dog rose black spot (*Marssonina rosae*) attack intensity (%) at various local populations

Nr. crt.	Factor A Population	Repetition 1	Repetition 2	Repetition 3	Averages of factor A	Differences	Significance
1	Population Average	13	13	17	14.3	Control	-
2	Population of Anina North	25	15	35	25.0	10.7	**
3	Populatia of Marila	5	15	10	10.0	-4.3	-
4	Population of forester house “Lup”	10	25	20	18.3	4.0	-
5	Population of Crivina	10	5	10	8.3	-6.0	o
6	Population of Steierdorf East	15	5	10	10.0	-4.3	-

DL 5% = 4.4 DL 1% = 7.4 DL 0,1% = 11.2

. If the population of Anina North have also the highest intensity average value with a distinctly significant difference to control, the lowest value of attack intensity was registered at population of Crivina which placed at a significant negative difference to control. With an averages of attack intensity between 4 % (Population of forester house "Lup") and 4.3 % (populatia of Marila and population of Steierdorf East) the fungus *Marssonina rosae* virulence uncover the real infectious potential and the constant infectios preasure to *Rosa sp*. regional populations.

CONCLUSIONS

1. Leaf black spot of *Rosa sp*. produced by fungus *Diplocarpon rosae f.c. Marssonina rosae* affect the plants in all five populations analyzed where the assessment was performed, but the differences between those populations show the sensitivity of the relations between plants and pathogen to some microclimatic environment factors.
2. A pathogen like *Diplocarpon rosae* is very dangerous because it causes a premature aging of the plants and previously could damage severally the plants by exposing to frost young shoots which are incomplete prepared to resist to winter frosts because of the premature defoliation of the affected leaves and also because the wood of these young shoots presents deep craks where water will froze.

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