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Influence of Individual Tree Variability and Branch Age of Wild Cherry (*Prunus avium*) on Damage Caused by *Diaporthe eres*

Aleksandar Vemić[1], Sanja Lazić[2], Ljubinko Rakonjac[3], Aleksandar Lučić[2], Snežana Stajić[3], Marina Vukin[4], Vladan Popović[2]*

Addresses: (1) Institute of Forestry, Department of Forest Protection, Kneza Višeslava 3, RS-11000 Belgrade, Serbia; **(2)** Institute of Forestry, Department of Genetics, Plant Breeding, Seed and Nursery Production, Kneza Višeslava 3, RS-11000 Belgrade, Serbia; **(3)** Institute of Forestry, Department of Forest Establishment, Silviculture and Ecology, Kneza Višeslava 3, RS-11000 Belgrade, Serbia; **(4)** University Metropolitan, Faculty of Applied Ecology "Futura", Požeška 83a, RS-11000 Belgrade, Serbia

*** Correspondence:** e-mail: vladanpop79@gmail.com

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ABSTRACT

The occurrence of canker on wild cherry (*Prunus avium*) caused by *Diaporthe eres* raises several unresolved questions regarding the pathogen's pathogenicity, symptom development, disease progression, and management. This study demonstrated that symptom development differed among branch age classes and individual host trees. Dieback occurrence and necrotic lesion dimensions were analysed at the end of the trial, after 81 days. Perennial branches had the largest dimensions of necrotic lesions, followed by annual branches. The smallest necroses were recorded on leading shoots. There was a statistically significant difference in the dimensions of necrotic lesions and branch dieback at the individual tree level. Tolerant individual trees showed fewer necrotic lesions and lower dieback than sensitive individual trees. This study showed, for the first time, that *Diaporthe eres* symptoms develop differently on wild cherry depending on the part of the tree and the individual's tolerance to this pathogen. The results can be applied to improve monitoring strategies for *Diaporthe eres* and support further work on selecting and producing wild cherry trees tolerant to *Diaporthe eres*.

Keywords: susceptibility; selection; canker suppression; protection

INTRODUCTION

Wild cherry (*Prunus avium* (L.) L.) is a deciduous, medium-sized, short-lived, fast-growing species of exceptional decorative value. It is used as food and as a raw material for the production of parquet, furniture, and musical instruments (Welk et al. 2016). Various organs of wild cherry trees are rich in bioactive components used in the food and pharmaceutical industries (Jesus et al. 2020, Hu et al. 2021, Willig et al. 2022, Clodoveo et al. 2023).

Global changes influence plant pathogens, as evidenced by changes in forest health dynamics (Pautasso et al. 2015). Many unidentified fungal species have been recorded on wild cherry trees (Bien and Damm 2020). Additionally, new research indicates that the *Diaporthe eres* species complex causes cankers on wild cherry trees in China (Chen et al. 2023, Dai et al. 2024).

Fungi of the genus *Diaporthe* are parasites, saprophytes, or endophytes, and are dispersed worldwide (Udayanga et al. 2014, Dissanayake et al. 2017). In forestry, the most common hosts for pathogens from the genus *Diaporthe* belong to the genera *Acer*, *Eucalyptus*, *Fraxinus*, *Juglans*, *Prunus*, *Robinia*, *Rosa*, *Sambucus*, *Sorbus*, *Ulmus*, etc. (Santos et al. 2017, Yang et al. 2018, Abeywickrama et al. 2022, Zabiák et al. 2023a).

The mechanisms of infection caused by species of the *Diaporthe* genus depend on the host's defensive reactions, the degradation degree and modification of the host's cell wall, as well as detoxification of compounds, transporter activities, and toxin production (Mena et

al. 2022). The *Diaporthe eres* species complex produces many metabolites, including phytotoxic compounds such as cyclopaldic acid, altiloxin A and B, and their derivatives (Abramczyk et al. 2023). It also produces enzymes, the most common of which are hydrolases and oxidoreductases (Hilário et al. 2022).

Further studies of the *Diaporthe eres* pathogenesis in wild cherry are necessary to prevent and reduce damage to trees that may occur due to its spread. Firstly, it is necessary to determine the role of individual trees and branch age in the development of necrotic lesions (i.e., cankers). In woody plants, young branches exhibit higher rates of respiration and cell division, as well as higher concentrations of growth hormones and a more active phloem than older branches (Evert 2006). Moreover, young branches contain higher levels of phenolic compounds, which play a key role in plant defense responses (Feucht et al. 1986, Evert 2006). In contrast, older branches contain a greater proportion of lignified fibers, thicker cell walls, and fewer living parenchyma cells than younger branches, and their bark is thicker, providing greater mechanical resistance (Evert 2006). Thus, young tissues rely primarily on stronger chemical defenses, whereas structural defenses are more pronounced in older tissues. Given these physiological and anatomical differences among leading shoots, annual branches, and perennial branches, it is important to investigate whether branch age influences susceptibility to the poorly studied pathogen *Diaporthe eres* in wild cherry. Understanding this relationship will provide insight into the decline of wild cherry trees and serve as a foundation for developing protection methods that do not rely on chemical treatments. Also, the findings can represent a starting point for further research of different cultivars and varieties of wild cherry, as well as cultivation measures that promote the growth of specific branch types.

In light of the above rationale, this study examined the pathogenicity of *Diaporthe eres* on wild cherry branches of various ages. The research was conducted in the living archive of the Lipovica Research Station. The tested null hypotheses were as follows: (i) there is no difference in the susceptibility of wild cherry individual trees to *Diaporthe eres*; (ii) there is no difference in the dimensions of necrotic lesions caused by *Diaporthe eres* between leading shoots, annual, and perennial branches of wild cherry.

MATERIALS AND METHODS

Plant Material

The study included ten naturally regenerated wild cherry (*Prunus avium*) trees growing in a natural stand of Hungarian oak (*Quercus frainetto* Ten.) and Turkey oak (*Quercus cerris* L.). Test trees were located at the "Lipovica" research station of the Institute of Forestry in Belgrade, Serbia (44°38'06''N, 20°24'50''E, 285 m.a.s.l.). The trees originated from the same local population and grew under similar ecological conditions. Trees of approximately the same age, size, and health status were selected to minimize the influence of ontogenetic and physiological differences on disease development. The trees were estimated to be approximately 20 years old. For three representative trees, age was determined by counting annual growth rings in increment cores collected with an increment borer, whereas the age of the remaining trees was estimated based on their similar dimensions, growth habits, and the approximate timing of their natural regeneration. The wild cherry trees were isolated trees, thereby reducing the risk of natural infection by other pathogens. Tree health status was assessed in accordance with the ICP Forests Manual (2020–2022), the version in force at the time of the experiment. The selected trees appeared visually healthy. They showed no signs of damage.

Wild Cherry Inoculation

The experiment was conducted from June to September 2024. The mean air temperature during the experimental period was 25.4°C, the mean relative humidity was 1.7% (RHMSS 2025), and the cumulative precipitation was 204.7 mm (RHMSS 2025). A total of 186 branches were inoculated, with 10 to 20 branches from each wild cherry tree. This included 49 leading shoots, 48 annual branches, and 89 perennial branches. A smaller number of leading shoots and annual branches than perennial branches were inoculated in order to preserve the young parts of the crown and prevent crown deformation following completion of the experiment. The *Diaporthe eres* isolate (strain U11MNE, GenBank accession numbers MK352454 and MK358120) from the mycological collection of the Institute of Forestry in Belgrade was used for this trial. The isolate was selected for its pronounced pathogenicity (Vemić 2020) and to reduce variability within the tested material (Udayanga et al. 2014). This increased the precision of data analysis. Cultures of *Diaporthe eres* 10 days old, grown on 3% malt extract agar (MEA) nutrient medium (Biolab, Hungary; Torlak, Serbia), were used for inoculation. The inoculation method involved making a 5×5 mm bark incision approximately 2 mm deep in the middle of each branch with a sterile scalpel. Mycelium fragments measuring 5×5 mm were inserted into the incision. The inoculated places were wrapped with Parafilm® M laboratory film (Bemis Company Inc., Neenah, Wisconsin, USA) and aluminum foil. Additionally, a control group was established by inoculating 15 branches on each wild cherry tree with sterile, pure 3% MEA nutrient medium. This was done in the same manner as for *Diaporthe eres* inoculation. A total of 150 branches were inoculated in the control group.

The trial ended after 81 days. During this period, all inoculated trees showed disease symptoms. Inoculated branches were cut to the stem collar. The presence of dieback and the dimensions of necrotic lesions were analysed. The dieback on each branch was assessed visually. Before measuring the necrotic lesions, the bark was removed. Immediately after debarking, necrotic lesions were estimated based on cambium discoloration. The length of the necrotic lesions was measured vertically from one edge of discoloration to the other. The width was measured as the circumference at the points of the greatest discoloration. Branch mortality was estimated by observing the occurrence of wilted wood. The tested

branches were classified as sensitive when they exhibited extensive necrotic lesion development, defoliation, and branch dieback, whereas branches were classified as tolerant when necrotic lesions remained localized and complete defoliation and branch dieback did not occur.

Re-isolation was tried in all branches used in the trial. The re-isolation of leading shoots and annual branches included cutting them into rings, coating them with 96% alcohol, and exposing them to a flame for a few seconds. After that, the bark was peeled off, and the procedure was repeated. These sections were placed on a 3% MEA nutrient medium. In the case of perennial branches, the parts with the appearance of necrotic lesions were cut into sections. Then, the part containing the necrotic lesion and the surrounding asymptomatic tissue was cut from each section. These fragments were sterilized like leading shoots and annual branches and mounted on a 3% MEA nutrient medium. In perennial branches from the control group, which did not develop necrotic lesions, randomly selected parts were sterilized and similarly placed on the nutrient medium. During re-isolation, the presence of *Diaporthe eres* was confirmed based on morphological characteristics, including colony appearance, growth pattern, sporulation, and conidial morphology, all of which were identical to those of the original isolate used for inoculation, which had previously been identified by molecular methods (Vemić 2020). The morphological characteristics of the re-isolates and the original isolate were compared according to the descriptions provided by Udayanga et al. (2014) and Vemić (2020).

Statistical Analysis

The dimensions of necrotic lesions within individual trees and branches of different ages were tested for normality of distribution using the Kolmogorov-Smirnov test with Lilliefors correction. In the same way, the normality of the residuals was tested for the application of the general linear model (GLM) and standard multiple regression. The homogeneity of variances was tested using Levene's test. Since the conditions for applying parametric tests and models were not met, non-parametric tests were used to compare the dimensions of necrotic lesions between different groups.

The Mann-Whitney U test was used to compare the dimensions of necrotic lesions between the *Diaporthe eres* inoculated group and the control group. The Kruskal-Wallis test was used to assess differences in the length and width of necrotic lesions between individual trees inoculated with *Diaporthe eres* and the control group. Dunn's post hoc test was used to determine differences between different pairs of individual trees in necrotic lesion dimensions.

The Chi-Square Test of independence was used to test the association between branch inoculation with *Diaporthe eres* and mortality. The Z-test was used to compare dieback occurrence between individual trees and branches of different ages.

All statistical analyses were performed using Microsoft Excel 2021 and SPSS 27.

RESULTS

General Observations

Wild cherry trees inoculated with *Diaporthe eres* exhibited dieback, cankers, and premature leaf shedding, often accompanied by branch mortality (Figure 1). The Mann-Whitney test showed that there was a statistically significant difference in the length of necrotic lesions ($U = 3164{,}500$, $p<0.001$; Figure 1) and width of necrotic lesions ($U = 8331{,}000$, $p<0.001$; Figure 1) between wild cherry branches inoculated with *Diaporthe eres* and branches in the control group. Re-isolation was successful from all branches inoculated with *Diaporthe eres*. In the control group, no re-isolation of *Diaporthe eres* was recorded.

Influence of Wild Cherry Individual Tree on *Diaporthe eres* Development

The Z-test showed a statistically significant difference in the proportion of branch dieback between the individual trees (Table 1, Figure 1). The Kruskal-Wallis test showed a statistically significant difference in the length ($H = 40.306$, $p<0.001$) and the width of necrotic lesions ($H = 48.127$, $p<0.001$) on the total number of branches between individual trees inoculated with *Diaporthe eres* (Table 1, Figure 1). Among individual trees, based on the total number of inoculated branches, 10% showed the shortest or longest necrotic lesions, while the rest were in the transition between the most tolerant and the most sensitive (Table 1). Therefore, the width of necrotic lesions showed similar variation, with 80% of the trees at the transition between the most sensitive and the most tolerant, as determined by the total number of inoculated branches (Table 1). That is, individual tree 9 was the most sensitive, while individual tree 10 was the least sensitive. In addition, 50% of the trees did not show a statistically significant difference in lesion width compared to the control group (Table 1).

Moreover, between the individual trees, there was a statistically significant difference in the length of necrotic lesions and the width of necrotic lesions on leading shoots ($H = 21.870$, $p<0.001$; $H = 27.525$, $p<0.001$), annual branches ($H = 29.674$, $p<0.001$; $H = 34.804$, $p<0.001$) and perennial branches ($H = 39.158$, $p<0.001$; $H = 38.403$, $p<0.001$) based on the Kruskal-Wallis test (Table 2). However, only 10-20% of the individual trees showed the smallest length or width of necrotic lesions within a particular branch age, i.e., similar to the total number of inoculated branches (Table 1, Table 2).

Influence of Wild Cherry Branch Age on Diaporthe eres Development

There was a statistically significant difference in the length ($H = 60.445$, $p<0.001$; Figure 2; Figure 3) and width of necrotic lesions ($H = 72.918$, $p<0.001$; Figure 2; Figure 4) between leading shoots, annual, and perennial branches of wild cherry.

The leading shoots had the smallest length and width of necrotic lesions, followed by annual branches, while perennial branches had the largest dimensions of necrotic lesions (Figure 2, Figure 3, Figure 4).

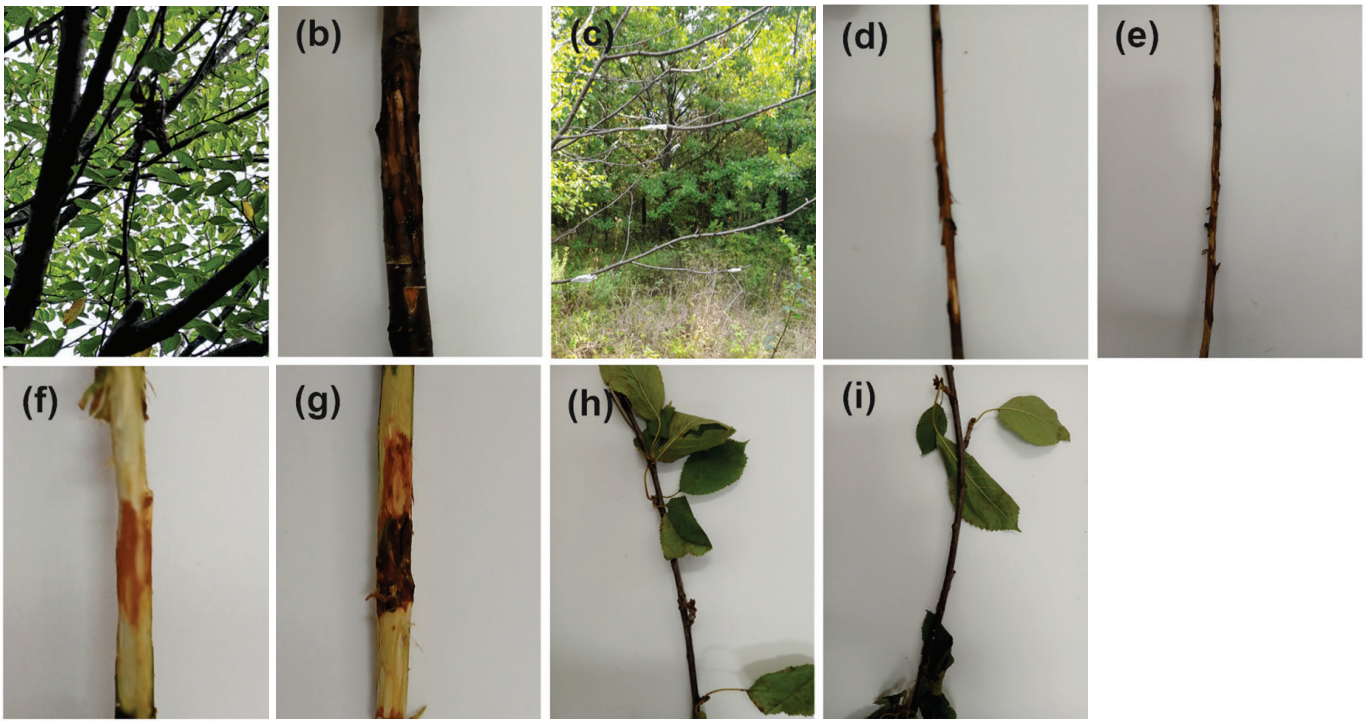

Figure 1. Symptoms on wild cherry (*Prunus avium*) trees inoculated by *Diaporthe eres* 81 days after inoculation: **(a)** branch dieback; **(b)** branch canker; **(c)** premature leaf falling and branch drying; **(d-e)** necrotic lesions on sensitive trees; **(f-g)** necrotic lesions on tolerant trees; **(h-i)** control.

Table 1. Dimensions of necrotic lesions caused by *Diaporthe eres* on wild cherry (*Prunus avium*) individual trees 81 days after inoculation.

Individual tree	*Diaporthe eres*			Control		
	Dieback frequency (%)	**Necrosis length** (mm) Mean [min-max]	**Necrosis width** (mm) Mean [min-max]	**Dieback frequency** (%)	**Necrosis length** (mm) Mean [min-max]	**Necrosis width** (mm) Mean [min-max]
1	37.50a	32.00 [5.00-93.00]aeA	6.31 [2.00-15.00]acgA	0	4.53 [0.00-8.00]aB	3.20 [0.00-6.00]aB
2	35.29a	14.29 [0.00-40.00]bcA	4.94 [0.00-15.00]bdgA	0	3.53 [0.00-8.00]aB	2.47 [0.00-6.00]aA
3	75.00b	74.30 [0.00-210.00]adfA	10.25 [0.00-22.00]aeA	0	4.80 [0.00-8.00]aB	2.80 [0.00-6.00]aB
4	35.00a	31.15 [0.00-200.00]bceA	4.85 [0.00-20.00]bcfA	0	3.33 [0.00-8.00]aB	2.40 [0.00-5.00]aA
5	30.00a	25.55 [0.00-90.00]cefA	4.90 [0.00-12.00]bdgA	0	2.60 [0.00-7.00]aB	2.33 [0.00-6.00]aB
6	75.00b	52.60 [6.00-240.00]adfA	9.00 [3.00-17.00]aeA	0	3.00 [0.00-7.00]aB	2.66 [0.00-6.00]aB
7	35.20a	38.30 [7.00-200.00]cefA	7.35 [2.00-20.00]adfA	0	5.47 [0.00-10.00]aB	4.27 [0.00-7.00]aA
8	36.84a	16.26 [0.00-38.00]bceA	4.26 [0.00-13.00]bcA	0	4.13 [0.00-9.00]aB	3.33 [0.00-6.00]aA
9	80.00b	177.74 [5.00-400.00]dA	21.47 [3.00-65.00]eA	0	3.07 [0.00-7.00]aB	2.47 [0.00-5.00]aB
10	40.00a	10.67 [0.00-17.00]bA	3.13 [0.00-9.00]bA	0	4.20 [0.00-8.00]aB	3.20 [0.00-7.00]aA

Note:
- Different lowercase letters within rows indicate statistically significant differences ($p<0.05$);
- Different uppercase letters within columns indicate statistically significant differences ($p<0.05$);
- Values between the highest and lowest values are marked with multiple letters;
- Values sharing at least one lowercase letter are not statistically significantly different ($p>0.05$).

Table 2. Dimensions of necrotic lesions caused by *Diaporthe eres* on wild cherry (*Prunus avium*) branches of different ages 81 days after inoculation.

Individual tree	Necrosis length (mm) Mean [min-max]			Necrosis width (mm) Mean [min-max]		
	Leading shoots	Annual branches	Perennial branches	Leading shoots	Annual branches	Perennial branches
1	15.40 [5.00-35.00]ac	26.40 [15.00-50.00]ac	50.50 [20.00-93.00]ad	4.00 [2.00-7.00]ac	5.80 [3.00-7.00]acd	8.67 [4.00-15.00]acd
2	10.40 [5.00-15.00]ac	6.40 [0.00-12.00]bd	22.71 [0.00-40.00]ab	3.80 [3.00-5.00]ad	1.80 [0.00-4.00]ac	8.00 [0.00-15.00]acd
3	11.00 [0.00-17.00]ac	16.50 [12.00-25.00]ad	124.09 [18.00-210.00]de	3.40 [0.00-5.00]ac	4.00 [3.00-6.00]acd	15.64 [6.00-22.00]bd
4	0.00b [0.00-0.00]b	5.60 [0.00-16.00]bd	59.50 [16.00-200.00]ae	0.00b [0.00-0.00]b	2.20 [0.00-5.00]b	8.60 [3.00-20.00]acd
5	4.25 [0.00-12.00]abd	18.40 [0.00-60.00]ad	36.55 [20.00-90.00]ae	1.50 [0.00-4.00]bc	2.40 [0.00-4.00]bd	7.27 [4.00-12.00]ac
6	9.80 [6.00-15.00]ac	110.60 [11.00-240.00]ac	45.00 [20.00-155.00]ae	5.20 [3.00-8.00]a	9.80 [6.00-17.00]a	10.50 [7.00-15.00]ad
7	9.80 [7.00-12.00]ac	36.40 [10.00-70.00]ace	53.50 [28.00-200.00]ae	2.80 [2.00-3.00]bcd	4.40 [4.00-5.00]cd	11.10 [6.00-20.00]bd
8	12.80 [10.00-15.00]c	13.60 [0.00-22.00]ad	19.67 [0.00-38.00]ab	2.20 [2.00-3.00]bc	3.20 [0.00-6.00]bd	6.00 [0.00-13.00]acd
9	13.20 [5.00-27.00]cd	200.60 [200.00-202.00]c	229.44 [40.00-400.00]d	3.40 [3.00-4.00]ac	20.40 [20.00-21.00]acd	32.11 [10.00-65.00]b
10	15.40 [12.00-17.00]c	6.00 [0.00-12.00]de	9.83 [5.00-12.00]b	2.60 [2.00-3.00]bcd	1.50 [0.00-2.00]bc	4.67 [3.00-9.00]c

Note:
- Different lowercase letters within rows indicate statistically significant differences ($p<0.05$);
- Values between the highest and lowest values are marked with multiple letters;
- Values sharing at least one lowercase letter are not statistically significantly different ($p>0.05$).

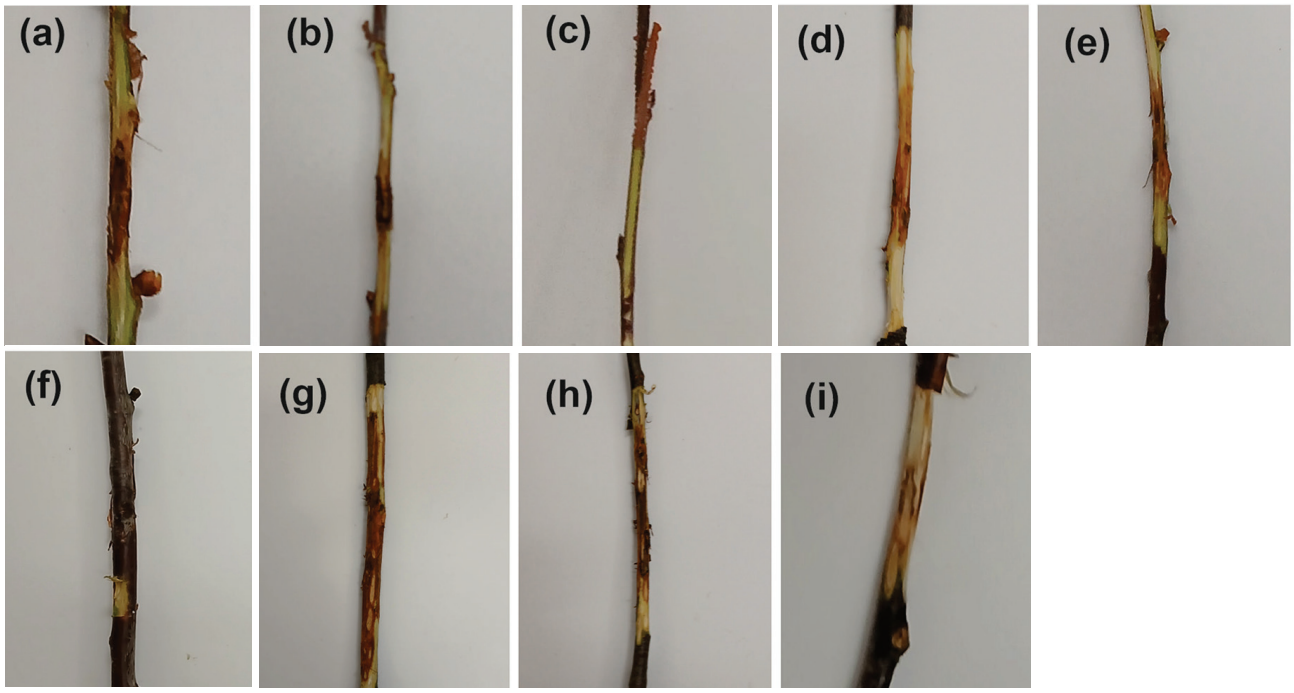

Figure 2. Dimensions of necrotic lesions on wild cherry (*Prunus avium*) branches inoculated by *Diaporthe eres* 81 days after inoculation: **(a-b)** necrotic lesions on leading shoots; **(c)** control on leading shoots; **(d-e)** necrotic lesions on annual branches; **(f)** control on annual branches; (**g-h)** necrotic lesions on perennial branches; **(i)** control on perennial branches.

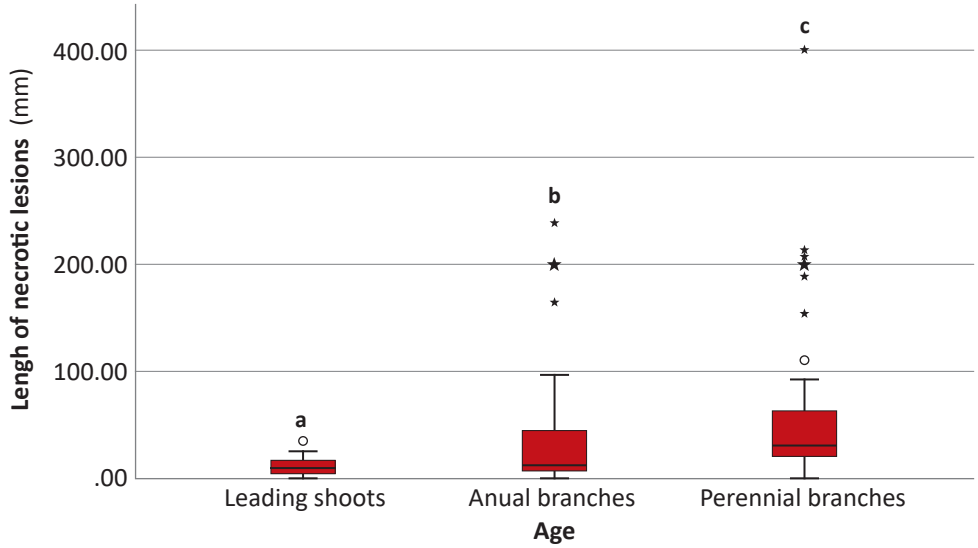

Figure 3. Length of necrotic lesions caused by *Diaporthe eres* on wild cherry (*Prunus avium*) branches of different ages.

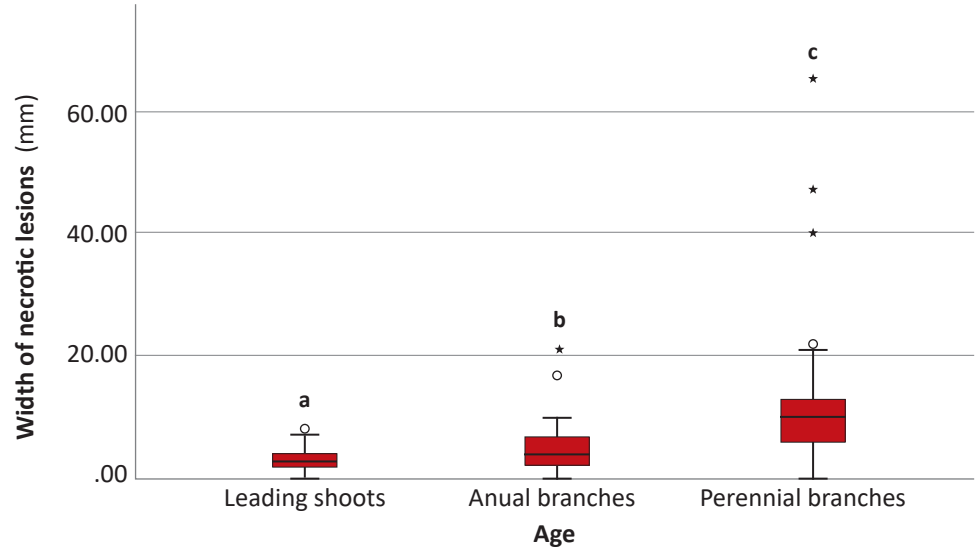

Figure 4. Width of necrotic lesions caused by *Diaporthe eres* on wild cherry (*Prunus avium*) branches of different ages.

There was a statistically significant association between the inoculation of leading shoots, annual and perennial branches with *Diaporthe eres* and mortality ($\chi 2 = 15.338$, $p<0.001$, Figure 1).

DISCUSSION

This study provides a more detailed examination of the influence of wild cherry individual trees and branch age on the development of *Diaporthe eres*. For the first time, it was found that cankers develop at different rates depending on the age of the branch on which they appear. Individual trees also showed differences in individual tolerance to the pathogen. Therefore, the first two null hypotheses were rejected. The alternative hypotheses were accepted: (i) there is a difference in the susceptibility of wild cherry individual trees to *Diaporthe eres*; (ii) there is a difference in the dimensions of necrotic lesions caused by *Diaporthe eres* between wild cherry leading shoots, annual, and perennial branches. This variability provides a valuable basis for future wild cherry selection and breeding programs.

One aspect that warrants attention, although it was not directly addressed in the present study, is the potential application of these findings to monitoring *Diaporthe eres* in wild cherry. Many models can be used to predict the spread of various pathogens affecting woody species (Oliva et al. 2013, Zhao et al. 2020, Webb et al. 2023). The prediction of *Diaporthe eres* development relies on understanding the influence of temperature, relative humidity, and precipitation (Thomidis and Michailides 2009, Arciuolo et al. 2021, Camardo Leggieri et al. 2022, Zabiák et al. 2023b). Therefore, in addition to these variables, models should also incorporate host tissue age and individual variability in wild cherry as predictive parameters. In any case, field monitoring can be directly improved. The interval between monitoring activities

should be shorter for trees that have shown symptoms and have denser crowns composed of perennial branches. Additionally, monitoring can be further improved by prioritizing the inspection of perennial branches, i.e., the most susceptible parts of the crown, which enables earlier detection and reduces the number of inspections required within a stand or plantation. Future studies based on the proposed and related research directions will help determine the most effective approaches for predicting the spread and development of *Diaporthe eres* in wild cherry.

There is significant variability in the physiological, morphological, pomological, anatomical, and biochemical parameters of wild cherry (Khadivi et al. 2019, Miljković et al. 2019, Azizi-Gannouni et al. 2020, Corneanu et al. 2020, Stojnić et al. 2022, Dangi et al. 2024). Specifically, genetic variability exists among different trees of this species (Campoy et al. 2016, Patzak et al. 2019). Therefore, it is necessary to utilize the existing gene pool by selecting trees that naturally confer tolerance within local populations. A reduction in genetic diversity has been observed in isolated stands (Lobo et al. 2018). In such stands, the introduction of wild cherry individual trees tolerant of *Diaporthe eres* may be justified. However, source and reproductive material should be selected from ecologically similar populations to avoid adverse effects on the genetic pool of the trees. The necrosis width in half of the individual trees did not differ from that of the control group, whereas the lesion length in all individual trees was greater than that of mechanical-damage-induced lesions in the control group. Therefore, both parameters should be considered during selection to avoid errors in assessing suitable individual trees. Since this study showed that necrosis intensity varied with branch age, we believe that the technique and intensity of pruning can be of great importance in protecting wild cherry trees from the development of cankers caused by *Diaporthe eres*. This may be beneficial given that selective pruning of wild cherry does not negatively affect tree growth (Sprengel et al. 2018, Fernández-Moya and Urbán-Martínez 2022).

Wild cherry fruits can be extensively damaged by *Diaporthe eres* (Liu et al. 2024). Additionally, various fungi, viruses, and bacteria damage the trees and fruits of wild cherry (Marković 2012, Serradilla et al. 2021, Reinhold and Pscheidt 2023, Cancino et al. 2023, Marroni et al. 2024, Liu et al. 2024). Furthermore, certain species from the genus *Phytophthora* cause root rot and infection symptoms in the wild cherry crown (Kurbetli 2014, Milenković 2015, Jung et al. 2016). Some of the fungicides effective in controlling *Diaporthe eres* are prochloraz, tebuconazole, pyraclostrobin, thiophanate-methyl, carbendazim, and thiram (Thomidis and Michailides 2009, Król et al. 2019, Tao et al. 2020). Some other substances, such as silver nitrate and AgSe nanoparticles, have also been used to control *Diaporthe eres* (Štůsková et al. 2022). We believe it is necessary to investigate whether measures based on individual tree selection and the regulation of the number of branches of different ages can reduce symptoms caused by other agents associated with wild cherry decline and reduce fungicide use.

In summary, the results of this study indicate that although differences among individual trees were observed and, in some cases, substantial, they were limited compared to those among branches of different ages. Additionally, a limitation of this study is that it relies on a single isolate of *Diaporthe eres*, which allows for assessing the effects of individual tree and branch age on host susceptibility; however, to investigate the response of wild cherry populations, it is necessary to include multiple strains of *Diaporthe eres*. Accordingly, management strategies should not rely solely on either of these factors. As indicated above, a combined approach that includes selecting more tolerant individuals and regulating crown structure may improve monitoring efficiency and protect wild cherry from *Diaporthe eres*, while potentially enhancing control measures against other diseases affecting wild cherry.

CONCLUSIONS

This study examined wild cherry trees' tolerance to the development of cankers caused by *Diaporthe eres*. The results indicated differences in the size (length and width) of necrotic lesions caused by this pathogen across all branches and among branches of varying ages. Furthermore, leading shoots, annual branches, and perennial branches of wild cherry developed cankers, which varied in size across individual trees. Most wild cherry individual trees showed similar tolerance to *Diaporthe eres*. Therefore, the developmental stage of the tissue may be more important for the development of *Diaporthe eres* than host origin. The larger cankers were recorded on perennial branches, with the size decreasing as the age of the branches decreased. The findings enable a better understanding of the *Diaporthe eres* bioecology and, as such, have wide application in further studies of this pathogen and in reducing damage to wild cherry trees.

Author Contributions

AV, VP conceived the research, AV, VP and SL designed the research, AV and SL carried out the field measurements, AV and SL performed laboratory analysis, AV, SL, LjR, AL, SS, MV processed the data and performed the statistical analysis, LjR, AL secured the research funding, supervised the research and helped to draft the manuscript, AV, VP and SL wrote the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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