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Tomographic Analysis of *Ginkgo biloba* L. from the Historical Garden of the Baroque Palace of Oradea, Romania

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Abstract:

Ginkgo biloba L., is considered a valuable tree from the garden of the Baroque Palace of Oradea, therefore this study presents the importance of its currently health status monitorization process.

• Introduction

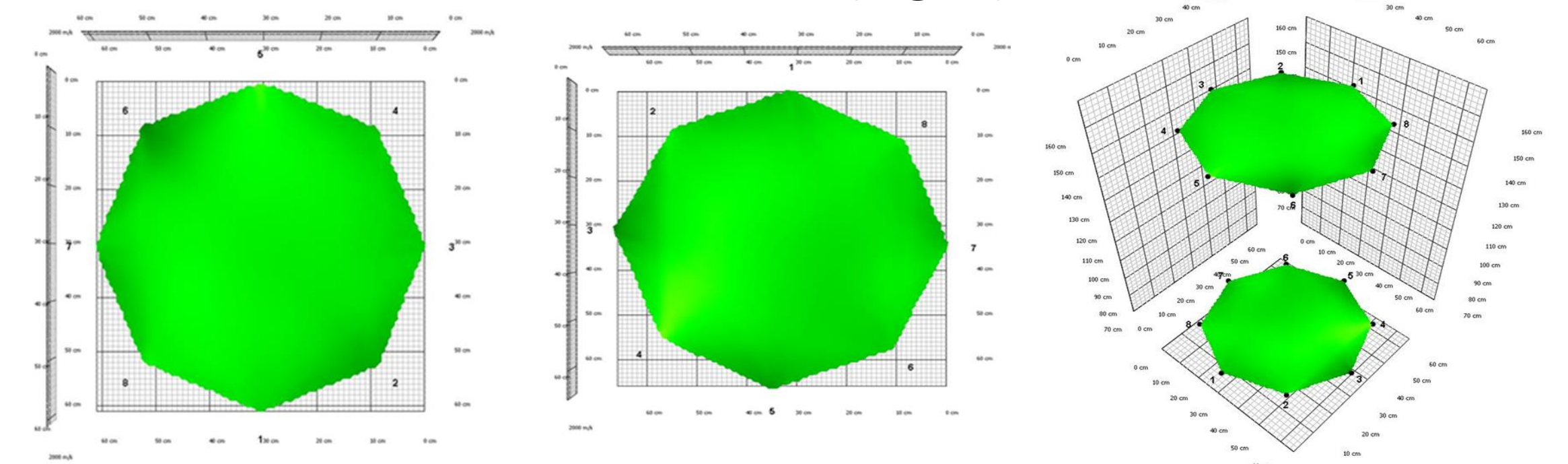
The *Ginkgo biloba* L. is a living fossil, which lived 65 million years ago and unlike its peers, survived the last ice age. The sacred, healing tree of Buddhist monks began its world-conquering journey from China, and since 1738 it has been gladly grown in Europe as well. The *Ginkgo biloba* L., can live up to a thousand years, its old specimens are 50 meters high, its foliage expands when the tree becomes older, and its fan-like leaves fall off in the fall. Until recently, the garden of the Baroque palace in Oradea was home to a hundred- year-old, another 20 years old and their numbers increased ever since.

• Material and method

The biological material used for this research was one of the first specimens, planted at the beginning of the 20th century. The device with which inner trunk analysis have been used is the Fakopp Arborsonic Bt. acoustic tomograph. The tomograph is a system that measures the speed of the sound through the wood stem. This process consists on inserting metal sensors on the trunk, then connected to the amplification boxes and the cables so as to form the analysis network. The last cable was connected to the main amplifier linked to the laptop so that the process starts. The sound is generated by a metal hammer, each time all sensors when received the sound a high pitch note is also confirms to continua with all sensors left. The faster the sound goes thru the wood stem, the heathier the tree is. For more accurate information, there should be analysed at least 2 layers at different heights. In this case, at 163cm and 70cm from the base of the tree.

• Results and discussions

On average, the corresponding time for healthy species must be less than 35 microseconds. For this *Ginkgo biloba* L. specimen the timeframe was consistent between 2-5 nanoseconds. The tomograms are generated in 2D (Fig 1) for both lavers and 3D combined.(Fig 2.)



The final result of the analysis carried out that physical-geographic factors present in this area impact the specimen (climate, landscape position, air pollution) generates a final conclusion if the tree is a risk for the biodiversity where it is located. As already seen on the tomograms, the *Ginkgo biloba* tree is healthy inside, but despite its great crown, trunk and height which can cause problems later, are not harming the tree.

Layer name	Measurement height	Decomposition rate	Safety rate	Risk rate
1 st layer	163 cm	0%	166%	Low
2 nd layer	70 cm	0%	183%	Low

• Conclusions

The *Ginkgo biloba* L. from Oradea might be considered exotic and young in comparison with other thousand year old species from Europe, but has great vital results, despite the historical events that took place in the 20th century thruought Eastern Europe.

Therefore, in the historical garden of the Baroque Palace in Oradea, tomographic analysis were carried out on most valuable species in the landscape regularly.

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