

## UNIVERSITY OF LIFE SCIENCES "KING MIHAI I" FROM TIMISOARA





# **Production of Acer saccharinum L. seedlings** using different substrates

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Abstract: The experiment was carried out in the greenhouse of the Arboriculture discipline, at the Didactic and Research Base of the "King Mihai I" University of Life Sciences from Timisoara. The seeds of Acer saccharinum L. represented the biological propagation material. The method used to stimulate germination process was hydrothermal wetting 24 h. The purpose of this study was to identify the best substrate for the germination of Acer saccharinum L seeds. The substrates used were: TS 3 Medium Basic peat (Standard), TS 4 Plus medium peat with perlite and clay, TS4 Brut plus Greenfibre peat, Baltic peat, TS 4 medium peat + Clay + Greenfibre.

Following the analysed data, it can be concluded that the TS 4 Plus peat substrate medium with perlite and clay, was the most efficient in the growth of seedlings, having the highest values and significant positive differences for most of the analysed criteria. The analysed features were: seedling height, crown diameter, number of roots, root length, number of leaves and leaf area.

#### Introduction

*Acer saccharinum* L. - silver maple is native from the eastern and central United States and central Canada [15]. Species is a relatively fast-growing deciduous tree and is widely planted in green spaces both in its native area and in Europe. The aim of the present research was the identification of a proper substrate for the production of seedling of silver maple for practical purposes.

### Material and method

The biological material considered in the present research and subjected to analysis was represented by the seeds of Acer saccharinum L. The seeds of silver maple were harvested on May 15, 2024, from trees growing in the Park of the University of Life Sciences "King Mihai I" from Timisoara. After harvesting, the seeds were prepared in the laboratory of the Arboriculture discipline at the Didactic and Research Base of the University where they were conditioned by removing the wings and placed in a container with warm water, at temperatures of 50 °C for 24 hours, in order to stimulate the germination process. After soaking, the seeds were selected and dried slightly. There were placed 30 seeds per variant in sowing cells, in three replicates, in the greenhouse of Arboriculture discipline. There were used different nutritive substrates: V1 - TS 3 Medium Basic peat (Standard) (Control), V2 - TS 4 Plus medium peat with perlite and clay, V3 - TS4 Brut plus Greenfibre peat, V4 - Baltic peat, V5 - TS 4 medium peat + Clay + Greenfibre. After 45 days from the emerging of the seedlings, respectively on June 25, 2024, biometric measurements were made on 25 plants, considering the following features: seedling height, diameter at the crown, number of roots, root length, number of leaves and leaf area per seedling. The measurements were aimed the identification of the best type of substrate that can be recommended to be used for the germination and growth of Acer saccharinum L. seedlings.

#### **Results and discussions**



Figure 1. Boxplots representing plant height (cm) for silver maple seedlings at 45 days after germination (SD and outliers displayed)



Figure 2. Boxplots representing crown diameter (mm) for silver maple seedlings at 45 days after germination (SD and outliers displayed)



Figure 3. Boxplots representing root length (cm) for silver maple seedlings at 45 days after germination (SD and outliers displayed)



Figure 4. Boxplots representing foliar surface (cm2) for silver maple seedlings at 45 days after germination (SD and outliers displayed)

#### Conclusions

The general conclusion is that the V<sub>2</sub> (TS 4 Plus peat substrate medium with perlite and clay) has the best results for the growth of silver maple seedlings, showing the best values for most of the considered biometric features, respectively plant height, crown diameter and root length. In the case od foliar surface, the best result was obtained in the case of substrate V<sub>5</sub> (TS 4 medium) peat + Clay + Greenfibre), but it was followed very closely by  $V_2$ 



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