NEWLY ESTABLISHED AGROFORESTRY SYSTEMS

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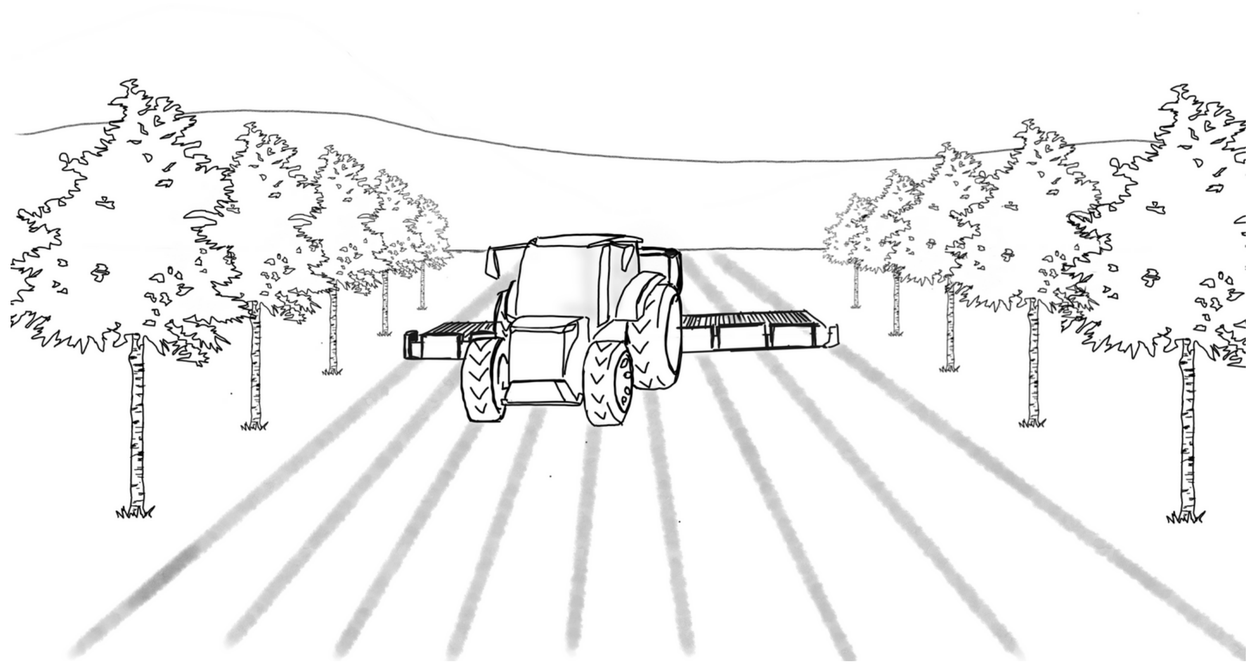


The term **AGROFORESTRY** refers to a type of land use that combines trees and agricultural crops and/ or livestock on the same area of land. Integrating trees into the agricultural landscape offers several positive ecological effects such as carbon sequestration, increased biodiversity, reduced nutrient leaching and pesticide drift, improved microclimatic conditions, improved water availability in the agroecosystem, protection against wind and water erosion (Torralba et al., 2016; Kay et al., 2019).

SILVOARABLE AGROFORESTRY includes, in terms of timber production, systems in which tree species and crops are grown in the same area to produce different qualities of raw material – timber.

CHARACTERISTICS OF THE SYSTEMS

	ŽABČICE	ROSTĚNICE
Woody component	*Populus* x *canadensis*, *Juglans nigra*, *Ligustrum vulgare*	*Sorbus torminalis*, *Prunus avium*, *Acer platanoides*, *Tilia platyphyllos*, *Ligustrum vulgare*
Design	6 rows of trees á 18 or 36 m	5 rows of trees á 18 or 36 m
Total area	3,7 ha	5,5 ha
Biogeographical region	Pannonian	Pannonian
Elevation	182-183 m. a. s. l.	270-260 m. a. s. l.
Soil type	Chernosem Arenic	Chernosem Luvic
Precipitation	500-600 mm	550-650 mm
Prevailing wind direction	N->S	N->S
Orientation of tree rows	N->S	NW->SE

Realization of the first research oriented to the quantification of the benefits of silvoarable agroforestry systems in the conditions of the Czech Republic is a subject of the last few years only. Practical and research findings from establishing and managing agroforestry systems can contribute significantly to effective management, guiding subsidy support, and thus further expansion of agroforestry systems.

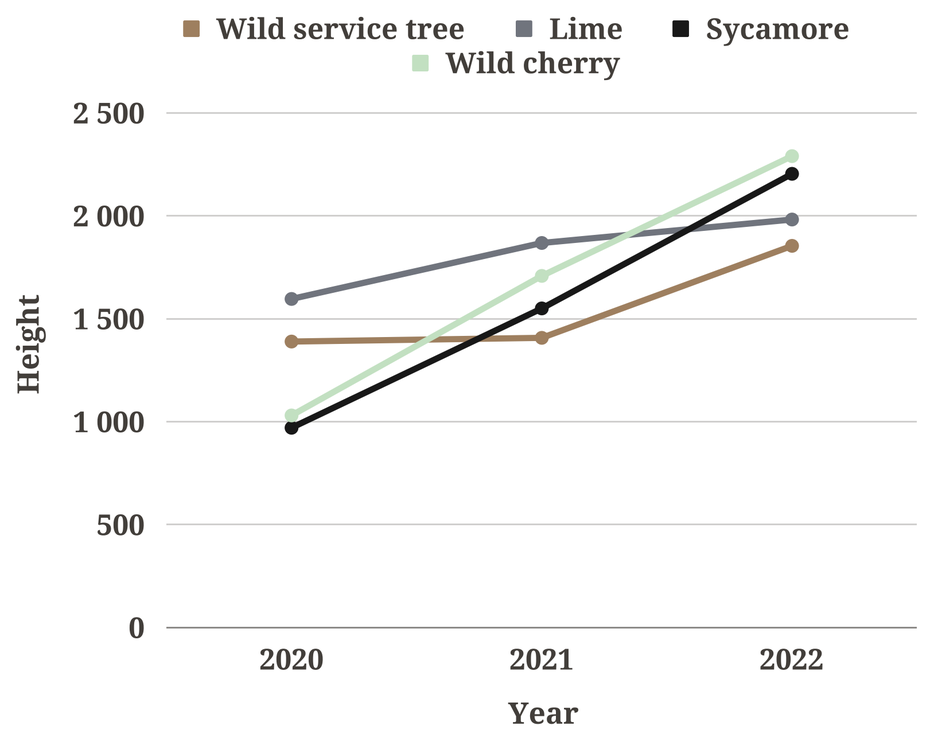
This project has therefore focused on obtaining initial knowledge from the establishment and maintenance of young systems in Žabčice and Rostěnice. Both plots are in the South Moravian region. The basic attributes and design of both plots are listed in the table above. It is important to mention that both plots do not have any artificial irrigation.

The research findings show that when establishing an agroforestry system, it is necessary to respect certain aspects and to build on the knowledge in the field of forestry, landscaping, etc. These are also some of the first data recording tree growth in modern silvoarable agroforestry systems in the Czech Republic. They will be essential for the establishment and management of similar areas in the future.

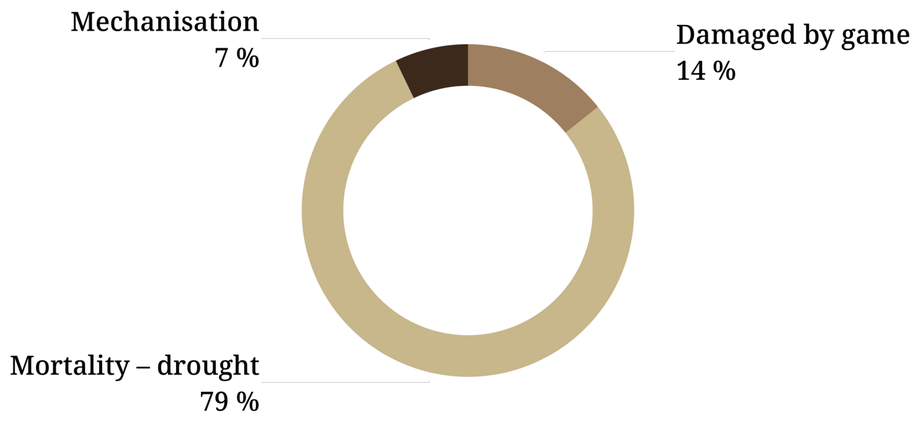
REFERENCES:
TORRALBA, Mario et al. 2016. Do European agroforestry systems enhance biodiversity and ecosystem services? A meta-analysis. Agriculture, Ecosystems & Environment [online]. 230, 150-161. [cit. 2022-04-27]. ISSN 01678809. Available from: https://doi.org/10.1016/j.agee.2016.06.002
KAY, Sonja et al. 2019. Agroforestry creates carbon sinks whilst enhancing the environment in agricultural landscapes in Europe. Land Use Policy [online]. 83, 581-593. [cit. 2022-04-27]. ISSN 02648377. Available from: https://doi.org/10.1016/j.landusepol.2019.02.025

Pictures 1-3: Different types of tree protection and damage in Žabčice

GROWTH OF TREES IN ROSTĚNICE



CAUSES OF POPLAR MORTALITY IN ŽABČICE



Wild cherry (*Prunus avium* L.) and sycamore (*Acer pseudoplatanus* L.) have made the largest height increments in the first years in Rostěnice as seen in the line diagram.

The ring diagram depicts the causes of poplar mortality in Žabčice. The share of individuals damaged by mechanisation accounts for 7%. Together with the individuals damaged by game, the total share of "preventable losses" is as high as 21%.

The results from Žabčice show that the correct selection of planting material and type of protection in accordance with local conditions determine the successful establishment of the system (among other aspects such as management). The most effective protection against game has proven to be the two-point anchoring with welded mesh (first picture).

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