



## AGROFORESTRY SYSTEMS: SILVOARABLE



|   |   |
|---|---|
| Year of foundation                      | 2014  |
| Specialization                          | crop production   |
| Farm area                               | 2,5 + 2,3 ha  |
| Number of employees                     | 3   |
| Year of starting agroforestry practices | 2016  |
| Location                                | Pécs  |
| Web page                                | <a href="https://www.okohaz.com/en/agroforestry/">https://www.okohaz.com/en/agroforestry/</a> |

The **Paulownia tree plantation** was established in May 2015, for industrial and energy purposes, coupled with agroforestry practices, ie. **alley cropping with vegetables, specifically garlic**, which has been proven to produce higher yields in the agroforestry system compared to the traditional arable field. Besides, shelterbelts will be established to mitigate the local effect of climate change and protect our arable land.





In this farm, agroforestry has been started on the basis of practical and experiential facts. In the "kitchen garden" of that time, plants that were accidentally shade evolved better than those were exposed to the sun all day. From next year, they planted garlic under the paulownia trees, and they also established field controls and saw **an increase in yield in favor of the vegetables planted under the trees**. Before the plantation of the woody vegetation, grain was grown in the area. The arable land was extremely dry and the drought was already measurable four days after a three-week long rainy period. This was one of the local consequences of climate change which has been solved by using trees in the production system.

Recently, there are two plots involved in agroforestry within the farm. The first one operating since 2016 is a 0,2 ha area of alley cropping in the interior. It mixes *Paulownia tomentosa* var. robust4 timber trees with vegetable production. However, the area of agroforestry in their farm is plan to be enhanced soon.



- **Higher yields** that we have already proven with garlic production in alley cropping.
- **Wider range of products** and source of income



The farmers have been able to obtain information through internet research and then a meeting with Dr. Andrea Vityi who is researcher at the University of Sopron. Later on became founding members of the Hungarian Agroforestry Civil Association through which they joined the European AgroForestry Federation (EURAF) and the national agroforestry network developed within the frame of H2020 AFINET project. Thanks to this, they are now “in the flow” of agroforestry, connected with several domestic and foreign AF farmers. Each kind of skills is an advantage. The desire to do things, the motivation, creativity, conscious climate protection, serious commitment are the most important, also sharing practical experience because more eyes see more..

## DESCRIPTION OF USED TECHNICS DURING ESTABLISHING OF AGROFORESTRY SYSTEMS

- tree density varies: **1x1 m or 1x 3 m or 4 x4 m**;
- trees were **irrigated during the first two years**;
- tree planting method is conventional, completed with using hole-borer and placing organic manure in the planting hole of each tree;
- protecting trees with **electric fences**
- machines used: **rotary tractor, rotary hoe, hole-borer**
- propagation material: **self-bred tree varieties** (*Pauownia tomentosa* robust4)
- **sowing garlic** using traditional manual technology (it is important to sow at least 10 cm deep)



## THREATS/CHALLENGES

- In Hungary, planting of Paulownia varieties for the purpose of tree plantations and shelterbelts is not supported by law.
- Providing irrigation during planting is essential in view of the risk of trees drying out.
- Protecting against wildlife damage by using electric fences is costly and for the time being the use of protective equipment placed around the trunks (such as tree protectors) seems to be the only solution

Trees are extremely useful for the agricultural production systems: they experienced that agroforestry **definitely result in higher yields!** It is not only the weather extremities, but also the higher UV radiation which adversely affects the growth of plants and these negative effects can be effectively mitigated or prevented by shading and improving the microclimate with trees. **Fast growing tree species such as Paulownia provide protection for crops, but also high value timber and fuelwood for the farmer or the market, in a shorter time, reducing payback time.** Besides, since we have been engaged in agroforestry, we are well aware of the increase in biodiversity.



### FUTURE PLANS

Increase agroforestry system coverage by establishment of **shelterbelts around the farm**. In spring 2020 they will establish a shelterbelt of around 0,5 ha consists of 3 rows of Paulownia (360 saplings), on the Southern side of a 2.3 hectare arable land. Preparations for tree planting has already begun in this year.

### FINAL RECOMMENDATION

„The desire to do things, the motivation is the most important.”

*Ildikó Kanyó, farmer*

### KEY WORDS

organic farming, Paulownia tomentosa, agroforestry, environmental protection, climate change, crop yield, UV



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