



AGROFORESTRY SYSTEMS:  
SILVOARABLE  
SILVOPASTORAL



Year of foundation	2009
Specialization	Crop production (cereals, rape, potatoes, sugar beet and fodder crops), orchards, fallow deer, mouflon, sheep, goat and cattle breeding
Farm area	39 ha
Number of employees	Farmer, his family and seasonal workers
Year of starting agroforestry practices	2012
Location	Jakartovice 96, 747 53, Opava

The Jiří Michalisko farm covers an area of 39 ha and is focused on both **crop and animal production**. Jiří started to breed mouflons and fallow deers in 2009 and gradually expanded his farm both by size and by adding other types of farming - crop production, other animal species. He started with agroforestry during the professional breeding of game. He has planted trees subsequently on pastures of farm animals. Soon enough, **Jiří discovered that the fields managed by him also needed protection, and therefore began to plant trees in lines** dividing the field and leaving the boundary to natural regeneration.





Jiří is a passionate hunter and for this reason he decided to establish a special breeding of fallow deer and mouflon in a smaller grassy area, at the edge of the forest, where **he gradually began to plant trees to provide shade for the game**. Jiří has registered as a farmer and began to expand his land and finally his hobby became the main profession. He started to grow forage and feed for his animals and also bought other types of livestock.

Jiří began to breed the first animals (mouflons and fallow deer) in the agroforestry system, although at that time, still did not know that this is called like this. He noticed that the animals sought shelter under grown trees and therefore he **decided to plant more trees around the perimeter and inside the pasture to improve animal welfare**. He extended subsequently this activity to **arable land where he either planted trees in the lines or leave the boundary for natural regeneration**.

Jiří would like to achieve **higher productivity through the diversification of production by introducing agroforestry systems**. Furthermore, he expects that agroforestry will improve the quality of his products, protect fields against harsh weather and increase the amount of organic matter in the soil due to leaf litter. He also expects to **sell wood and fruits from shade trees**. For Jiří, it is very important to stabilize the landscape, which agroforestry systems provide, because he lives in this landscape and would like to pass it to his descendants.



- The planting of trees on pastures resulted in **better structure of grasslands at Jiří's farm**. The animals can hide more easily under trees than before, so there is no soil compaction in one place, with a reduction of water erosion in sloping sites.
- Jiří also noticed that on arable land with some shade, the cereal plants **did not drop off tillers and the fodder beet leaves did not wilt which consequently led to better yields in agroforestry systems**.
- Jiří also noticed **higher harvest and content of oil in rapeseed grown in the agroforestry system** at the 2019 harvest.



Jiří always loved nature and since his youth he was a hunter. When he decided to start breeding deer, he wanted to make it in accordance with **welfare**. **The trees on the pastures provided the shade for game and give fodder to the animals**. Jiří liked this way of farming and so when he decided to expand his farm and include livestock and plant production there, he wanted also continue with planting new trees. For the first time, he learned that he was farming in an agroforestry way on the Facebook pages of the **Czech Association for Agroforestry**, where he also obtained information and learned about the first agroforestry seminar. He did not receive subsidies for agroforestry management, on the contrary, part of his land was set aside from agricultural land in LPIS (public register of agricultural land) and thus he lost part of subsidies for agricultural management.

Jiří has a minimal agricultural education and he also attended the seminar Potential and Perspectives of Sustainable Tree Growing on Agricultural Land and in 2019 he attended the Agroforestry conference in Prague.

## DESCRIPTION OF USED TECHNICS DURING ESTABLISHING OF AGROFORESTRY SYSTEMS

On the field boundaries were planted **lines of alder, sycamore, common walnut and black pine with a distance of 1-2 m**. **Coniferous trees were planted at windward places in multi-row plantings with the spacing 80x80cm**. Number of trees in this plantings was subsequently reduced.

Another type of planting was carried out on stony slopes and on the edges of streams, where **apple trees and plums were planted in wide spacing**. These trees have been replanted from the natural regeneration from nearby land or grown directly on the farm. Jiří has good experience with spread the remains of pressed apples (after the apple juice production) on the plowed soil and after process the land with the cultivator. The seeds germinated well and after two years he had replanted the small apple trees to the boundaries and other places that he needed to plant.



## THREATS/CHALLENGES

- The biggest problem is the **Czech subsidy policy and overall agricultural legislation that does not support agroforestry systems**.
- Another big problem is game. **Planted trees must be protected**. He recommends a combination of mesh fence and stakes to hold the mesh and prevent from being lifted by wild pigs.
- So far, **Jiří has not been able to assess the economic benefits of fruit trees**, as the trees do not produce yet.



Jiří expanded his farm gradually from the breeding of game (fallow deer, mouflon) to **the complex farming combining crop, tree and livestock production**. He has been trying to incorporate agroforestry systems into the management all the time and **his main motivation is to protect the soil and create a diverse landscape that he would like to pass to future generations**. It can be seen, from the example of this farm, that agroforestry systems can be introduced gradually, and the plantings can be implemented according to the skills and experience of each farmer. With the gradual introduction of agroforestry on his fields and pastures, he has the possibility to proceed by trial/error and to learn from his mistakes in the coming years.



## FUTURE PLANS

Jiří wants to expand the areas managed in the agroforestry system in the future. He is going to **introduce alley cropping** on the part of arable land, where he wants to plant a line of trees along a contour line with the spacing between rows that will allow him to use common agricultural mechanization.

## FINAL RECOMMENDATION

Jiří thinks that agroforestry makes sense because, besides the income from agricultural production, it also brings income from wood and fruit production and has many environmental benefits.

Farmer recommendation:

**„I keep learning and discovering new things all the time.“**

## KEY WORDS

Orchards, fallow deers, mouflons, sheep, goats, beef cattle, crop production, line planting, tree sowing, welfare



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