



## Research and Development Protocol for the Wood Pastures in Hungary

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## 1 Context

The AGFORWARD research project (January 2014-December 2017), funded by the European Commission, is promoting agroforestry practices in Europe that will advance sustainable rural development. The project has four objectives:

1. to understand the context and extent of agroforestry in Europe,
2. to identify, develop and field-test innovations (through participatory research) to improve the benefits and viability of agroforestry systems in Europe,
3. to evaluate innovative agroforestry designs and practices at a field-, farm- and landscape scale, and
4. to promote the wider adoption of appropriate agroforestry systems in Europe through policy development and dissemination.

This report contributes mainly to the second, the third and partly to the fourth objective. It contributes to the initial research and development protocol ([Milestone 4 \(2.3\)](#)) for the participative research and development network focused on the use of agroforestry in high nature and cultural value agroforestry.

## 2 Background

Wood pastures and grazed forests as part of the silvopastoral systems have always been an integral part of land use in Hungary as demonstrated by a number of archive and historical sources. The economic and social value of such systems is hinted by the name “*Glandifera Pannonia*” (meaning ‘acorn bearing Pannonia’) to denominate Transdanubia in the Roman Age. The significance and operation of silvopastoral systems has reduced substantially in the past 100 years, and common ownership of pastures in forested areas has vanished almost entirely (Saláta et al. 2009a,b, Varga and Bölöni 2009) . It is estimated that there is currently only around 5500 ha of used or abandoned wood pasture in Hungary; with a third in a protected area (Bölöni et al. 2008, 2014; Varga and Molnár 2014). Grazing in forests is prohibited in areas officially qualified as forests.

In recent years, agri-environment subsidies, nature conservation management practices, and the rising demand for organic food mean that some formerly abandoned areas are now farmed again as wood pastures. However in places this change is hindered by legal impediments such as complicated legal ownership structures. Benefits of silvopastoral systems can include high quality food products and the preservation and maintenance of high natural and cultural values. Hence when granting subsidies to tree planting, planting only and exclusively native tree species and local fruit varieties indigenous in the forestry landscape should be permitted, while preserving the natural values of the grassland (Varga 2014).

The term agroforestry is not widely used in Hungary but there are traditional wood pasture and wood meadow systems. Although there is significant interest in the benefits of agroforestry, there is a lack of basic knowledge about agroforestry practice and little information about who has established systems or is engaged in agroforestry research. It is evident that there is a need for a national agroforestry network in Hungary to disseminate information and set the basis for cooperation between agroforestry stakeholders.

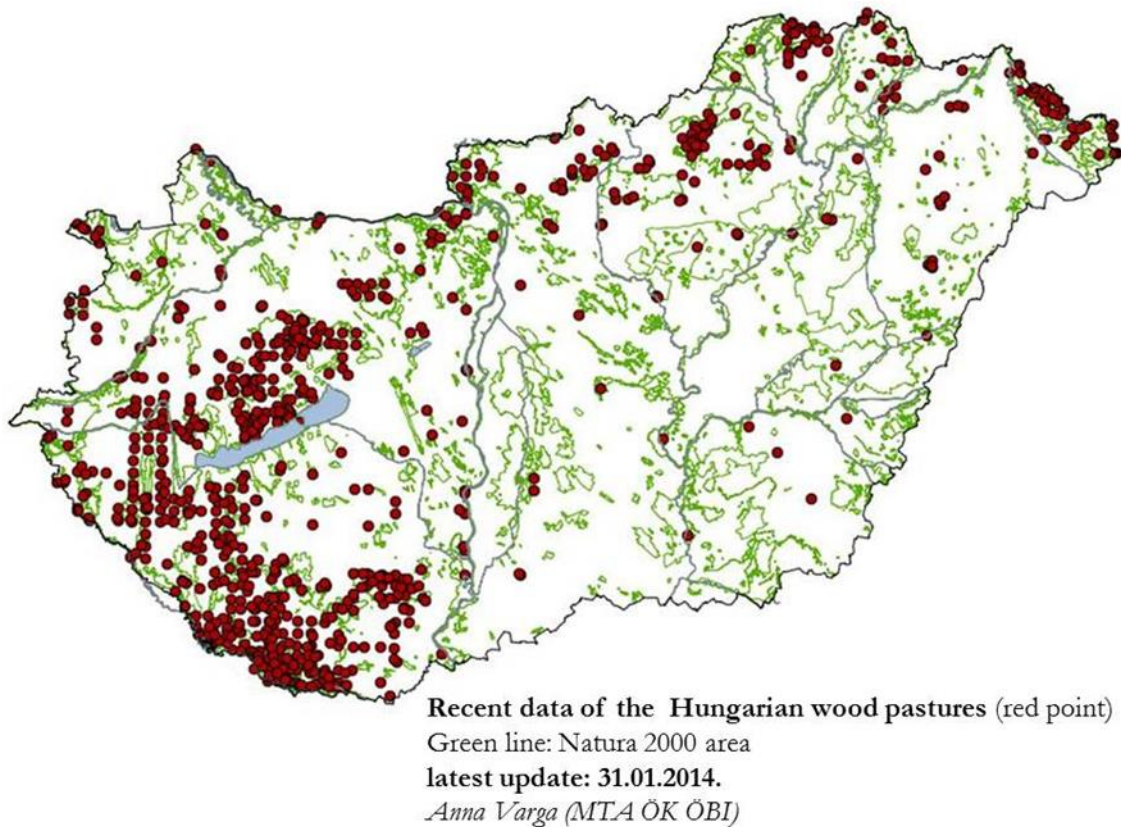


Figure 1. Presence of wood pastures in Hungary (Varga et al. 2014)

The first meetings of the “Wood pastures in Hungary Stakeholder Group” were held on 30 August 2014 in Fajsz and Bogyisló. This research protocol was developed on the basis of this stakeholders meeting and other consultations with farmers by the researchers from the NYME KKK Ft (Vityi and Varga 2014). The challenges and the innovations which were expressed by the stakeholders are taken into account this research protocol. These are expected to contribute to more effective system management and/or essential experiences useful for both farmers and researchers. These are outlined in Table 1. The first issue to be considered were: best practices for establishing and managing a high nature and cultural value wood-pasture. This includes issues such as renewing abandoned, infilled wood pastures, ensure tree regeneration, and background information for enhancing biodiversity and sustainability of the management. The second area of focus was to increase the awareness of the different nature and cultural value of the Hungarian wood pastures. This includes issues such as understanding consumer interest, branding HNCVA products, and the recognition of ancient trees.

Table 1. The research topics and questions based on the preliminary survey of the needed innovations of the wood pastures in Hungary (Vityi and Varga 2014).

Focus 1: Best practices for establish and manage a high nature and cultural value wood-pasture
<p><i>1.A. System Design &amp; Management / Tree layer management / Renewing encroach-abandoned wood pastures</i></p> <p>What are the best practices and steps to renew an abandoned and infilled wood pasture?            How it influence the renewing management of the vegetation in a wood pasture?            Why is it worth to renew or establish a wood pasture (<i>products, goods and other values</i>)?</p>
<p><i>1.B. Tree Protection &amp; Regeneration / Reconciling grazing with trees (cost-efficient protection of saplings)</i></p> <p>What are the best practices for protection of sapling?</p>
<p><i>1.C. Grazing Schemes. Cost Efficient Herding / More efficient and even use of extensive forage resources / Best practice and solution of pannage. Cost-efficient herding. Technology</i></p> <p>What are the best practices for cost-efficient herding and pannage?</p>
<p><i>1.D. Pasture Quality / Carbon measurement</i></p> <p>How does the soil differ in the carbon level under tree and on open grassland?</p>
<p><i>1.E. Nature Conservation / Biodiversity conservation</i></p> <p><i>Effects of different livestock on the vegetation structure and biodiversity</i></p> <p>How does different livestock grazing effect on the vegetation structure and biodiversity?</p>
Focus 2: Increase awareness of the nature and cultural value of the Hungarian wood pastures
<p><i>2.A. Farm Profitability / Branding HNCV AF product. Trademark. Valuing product / Improved knowledge of customer and tax payer interest</i></p> <p>What kind of products are related to HNCV AF in Hungary?            Where could customer buy HNCV AF products in Hungary?            Why customer are not buying HNCV AF products?            What are the best branding and marketing methods to improve knowledge of customer?</p>
<p><i>2.B. Nature Conservation / Protection of ancient trees</i></p> <p><i>Testing the openness of local communities to value/protect ancient trees on wood pastures</i></p> <p>What the local community know about the ancient trees of the closest wood pasture?            What are the values of the ancient trees for the local community?            What are the best methods to improve their awareness of the ancient trees on wood pastures?</p>

### 3 Systems description

The research and development for the wood pastures in Hungary is carried out at three levels: **country**, **regional** and **local** level. The **country** and **regional** level is focused on on-line, social media (FB: [Wood pastures in Hungary](#)) forums and different food, agricultural, forestry or nature conservation markets and festivals.

At the local level the research is taken place at two field site. The first is the Tűzkövesbörç Wood Pasture Farm (Figure 2, Table 2) near Pénteszgyőr village, Veszprém county in Hungary. This area was a community pastureland. It was started to be abandoned at the end of the 1980s. For the next 20 years, it lacked management and the wood pasture infilled with woody vegetation.



Then in 2007, the current owner and farmer started to renew and manage this area as a high nature value wood pasture system. Today the area is a mosaic of open grassland, renewed wood pasture with ancient trees and young trees and grazed closed canopy wood pasture and not grazed forest. The owner lives on a farm in the wood pasture and keeps only traditional breeds for the Carpathian-basin. The owner, Tibor Nagy, took part at the stakeholder meeting in Fajsz (Vityi and Varga 2014). At the meeting he shared his experiences about renewing abandoned wood pasture and branding, selling wood pasture products at local food market.



Figure 2. Winter grazing in the renewed part of the Tűzkövesbörnc Wood Pasture Farm. Some wild pear trees were left on the pastureland consciously.

The second is the Bogyislói Wood Pasture (*Akasztói ancient oak woods*) (Figure 3, Table 3), near Bogyisló village, Tolna county in Hungary. It was the community pastureland of the Bogyisló village. The extension of the pastureland was larger at this time. Now, it is managed by a local agricultural company (the Bogyisló Production and Sales Cooperative). The larger part of the pastureland is grazed by sheep; the other part is grazed by cattle. The pastureland is of a parkland habitat type with large, ancient oak and pear trees and a non-significant shrub layer. The regeneration of the oak tree is not successful. The local people know the area and some of them collect wild pear for eating and making brandy.

Table 2. Description of the Túzkövesbörç Wood Pasture Farm site, with soil, tree, understory, livestock, and climate characteristics.

Site characteristics	
Area (ha):	120 ha
Co-ordinates:	47°12'47.55"N 17°47'28.93"W
Site contact:	Anna Varga
Site contact email address	<a href="mailto:varga.anna@gmail.com">varga.anna@gmail.com</a>
Site info at the web	<a href="http://www.nagybirtok.hu">www.nagybirtok.hu</a> , FB: <a href="https://www.facebook.com/TuzkovesborcTanya">Túzkövesbörç Tanya</a>

Soil characteristics	
Soil type (WRB classification)	Cambisol, Leptosols

Tree characteristics	
System	Renewed and abandoned wood pasture mosaic
Tree species	<i>Quercus petrea</i> , <i>Fagus sylvatica</i> , <i>Pyrus pyraster</i> , <i>Carpinus betulus</i> , <i>Prunus avium</i> , <i>Acer campestre</i> , <i>Fraxinus spp.</i> , <i>Sorbus spp.</i>
Shrub species	<i>Pyrus pyraster</i> , <i>Prunus spinosa</i> , <i>Cornus mas</i> , <i>Crataegus spp.</i> , <i>Rosa spp.</i>

Understorey characteristics	
System	Renewed and abandoned wood pasture mosaic
Species	<i>Anthyllido-Festucetum rubrae</i> is the dominant herb layer (217 species, Saláta et al. 2007)

Livestock characteristics	
System	Renewed and abandoned wood pasture mosaic
Species	Hungarian great grey cattle, Hucul horse, Racka sheep, Cikta sheep, Cigája sheep, Buffalo, Goat (only traditional breeds of the Carpathian-basin)

Climate data	
Mean annual temperature	8.5 °C
Mean monthly temperature in vegetation time	15.5°C
Mean annual precipitation	750 (± 50 SD) mm

Available sources	
Land use history	Saláta et al. 2009b
Botanical survey before 2007	Szabó et al. 2007



Figure 3. Resting and feeding place under an ancient oak tree at the Bogyiszlói wood pasture

Table 3. Description of the Bogyiszlói Wood Pasture (*Akasztói ancient oak woods*) site, with soil, tree, understory, livestock, and climate characteristics

Site characteristics	
Area (ha):	87 ha
Co-ordinates:	46°23'34.11"N 18°51'50.88"W
Site contact:	Anna Varga
Site contact email address	<a href="mailto:varga.anna@gmail.com">varga.anna@gmail.com</a>
Site info at the web	<a href="http://www.bogyiszlo.hu">www.bogyiszlo.hu</a>

Soil characteristics	
Soil type (WRB classification)	Gleysols, alluvial soil

Tree characteristics	
System	Wood pasture with ancient trees
Tree species	<i>Quercus robur</i> , <i>Pyrus pyraster</i> , <i>Salix alba</i> , <i>Populus spp.</i>
Shrub species	<i>Pyrus pyraster</i> , <i>Prunus spinosa</i> , <i>Crataegus spp.</i> , <i>Rosa spp.</i>

Understorey characteristics	
Habitat type	Mesotrophic wet meadows, Uncharacteristic semi-dry grassland and mesic meadow communities

Livestock characteristics	
Species	Merino sheep, Cattle

Climate characteristics	
Mean annual temperature	10.7 °C
Mean annual precipitation	600 (± 50 SD) mm

#### 4 Measurements

In order to address the issues outlined in Table 1, a number of tasks have been identified (Table 4). The vegetation survey method is based on previous field work on abandoned and used wood pastures and other woodland vegetation surveys (Varga et al. 2015). This involved collection of data of the tree-stand structure and herb layer composition (Ádám et al. 2013). The landscape and land use history analyses will be conducted using the methodology of Biró 2006, Puri 2011, Biró et al. 2013, and Bürge et al. 2013.

The types of data analysis will focus on features of the past and current grazing regimes and practices. There will be quantitative and qualitative data of past vegetation type and cover, traditional ecological knowledge of wood pasture management (Biró 2006, Bürgi et al. 2013). The methodology of the interviews, the participatory research and the on-line questioners are based on Newing et al. 2011. Data types of the social surveys include quantitative and qualitative; traditional ecological knowledge; opinion and best practices (Varga and Molnár 2014).

Table 4. Tasks and methods, and the location of those tasks, to address the research needs identified by the WP2 Hungarian stakeholder group.

Task		Location	Methods
1.A	Renewing encroach-abandoned wood pastures	Local: Pénzesgyőr	Vegetation survey, Landscape history, Interview with local farmer and herders , Interview at the local food market
1.B	Reconciling grazing with trees (cost-efficient protection of saplings)	Local: Bogyiszló	Testing at field different protection practices, Interview with herders --- nursery shrubs, artificial thorny protectors
1.C	Cost Efficient Herding & Pannage	Local: (Pénzesgyőr and Bogyiszló) and on-line country	Interview with farmers, herders in Pénzesgyőr and Bogyiszló. Online questionnaire for mangalica (extensive pig ) keeper about the pannage management
1.D	Carbon measurement	Local: Bogyiszló	Soil measurement under 6 trees under the canopy and outside - <a href="http://accurate.kiwi/soil/auger.htm">http://accurate.kiwi/soil/auger.htm</a>
1.E	Effects of different livestock on the vegetation structure and biodiversity	Local: Pénzesgyőr, Bogyiszló	Vegetation survey, Landscape history, Interview with local farmer and herders
2.A	Branding HNCV AF product. Trademark. Valuing product / Improved knowledge of customer and tax payer interest	Local: Pénzesgyőr and Bogyiszló, regional, on-line country	Interview with farmers, producers and consumer at local food market and festival, Online questionnaire Database upbuilding of the products
2.B	Protection of ancient trees Testing the openness of local communities to value/protect ancient trees on wood pastures	Local: Bogyiszló	Participatory methods, collaboration with the local school, interviews with different age groups of the local people. Establish a model project for local school.



## 5 Acknowledgments

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