

**Work-package group 2:** High Natural and Cultural Value (HNCV) agroforestry

**Specific group:** Wood pastures in Southern Transylvania, Romania

**Date of meeting:** 12 June 2014

**Date of report:** 16 November 2014

**Location of meeting:** ADEPT, Saschiz, Romania

**Author:** Tibi Hartel, Babes-Bolyai University, Cluj-Napoca, Romania and Sapientia Hungarian University of Transylvania, Cluj-Napoca, Romania

**Contact:** [hartel.tibor@gmail.com](mailto:hartel.tibor@gmail.com)



## Contents

1. Context.....	2
2. Description of the system .....	2
3. Evolution of wood pasture management .....	4
4. Best practice interventions .....	6
5. Key challenges for wood pastures in Southern Transylvania .....	7
6. Steps made to overcome barriers.....	7
7. Potential research questions .....	7
8. References .....	8
9. Acknowledgements.....	8



AGFORWARD (Grant Agreement N° 613520) is co-funded by the European Commission, Directorate General for Research & Innovation, within the 7th Framework Programme of RTD. The views and opinions expressed in this report are purely those of the writers and may not in any circumstances be regarded as stating an official position of the European Commission

## 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 describes one of about 40 initial stakeholder workshops to address objective 2. Further details of the project can be found on the AGFORWARD website: [www.agforward.eu](http://www.agforward.eu)

## 2. Description of the system

The focus of this stakeholder group is the wood pastures of Southern Transylvania in Romania. It is argued that because of the cultural significance of this landscape, ‘best practice’ interventions need to understand the historical continuity of proposed practices and complement them with management practices to assure the economic, social and ecological sustainability.

### Origins of the wood-pastures from Southern Transylvania

The wood pastures of Southern Transylvania comprise pastures with scattered large trees such as oaks, pears, hornbeams and beech. The current structure of most of the wood-pasture in this region appears to derive from the second part of the 19th century. During the 18<sup>th</sup> century, most current areas now defined as wood pasture were described as closed forests in the military maps of the Habsburg Empire (Figure 1). These closed forests were dominated by oak (*Quercus robur* and *Q. petraea*) and were valued for the production of acorns, which were eaten by pigs (Dorner, 1910; Oroszi, 2004).

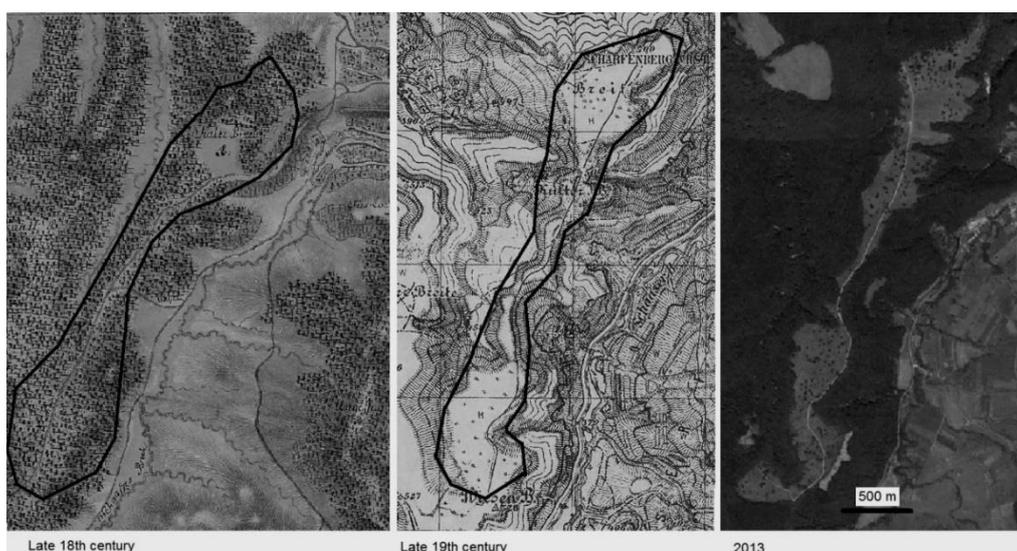


Figure 1. i) and ii) Military maps showing the emergence of the present structure of an ancient wood-pasture (the ‘Breite wood-pasture’) after the clearance of a forest in Southern Transylvania.

Some of the trees were cleared in order to extend the pasture, which was grazed by cattle. Before this, the woodland was grazed by pigs. The delineations on the map are included to allow comparison with iii) a Google Earth satellite image of the wood pasture in 2013.

In the middle of the 19<sup>th</sup> century and later, the closed forests were opened as the demand for agricultural products increased (Figure 1). Scattered trees (mostly oaks) were left on the pastures, which eventually became old, forming the current (ancient) wood-pastures (Figure 2). Most of the oaks from this region have an age between 200-400 years (Hartel, unpublished data based on ring counts), thus fitting with the historical maps. The 19th century also marks the transition towards modern intensive forestry and the start of the prohibition of grazing in closed forests, which has continued until the second part of the 20th century. In the 19th and 20th centuries a large number of pear trees were planted on the pastures for their fruits while the wild ones were pruned. They were used as a source for fruits (used for alcoholic drinks and pig feed) and for protection against soil erosion.



Figure 2. Ancient oak wood-pasture in Southern Transylvania currently grazed traditionally, with cattle, horse and buffalo.

Until about 30 years ago, the fruit (mostly pear) trees were of high value mainly because they were used to produce alcoholic drinks. Their value has decreased as local communities have become less dependent on such resources. There has been a similar dramatic loss in other two tree related management practices: the coppicing (i.e. cutting the tree stems on the base of the tree, and allowing the regeneration of multiple stems – this is an ancient forestry practice) and the pollarding (the same action applied at higher levels of the tree, to avoid the effect of browsing animals – this practice was applied on wood-pastures). Coppicing and pollarding were applied mainly on hornbeams and willows as these trees have high regenerative potential. These activities largely ceased in the 1960s.

The above section demonstrates that the wood pasture landscapes in Southern Transylvania are dynamic systems which have largely derived from previously closed woodlands during the past two centuries. Increasing demand for timber and agricultural products have been the key factors driving landscape change. The weakening of the rural communities further reduced the multifunctional use of these landscapes (e.g. the value of the trees decreased: fruit trees lost their traditional value, and coppicing and pollarding was abandoned). However despite this, wood pastures are still ecologically

valuable due to the hundreds of ancient trees - in practice more than half of the wood-pastures can be described as 'ancient'.

### **3. Evolution of wood pasture management**

The management of wood pastures in Southern Transylvania has evolved. This section described i) historical practices, ii) practices at the end of the 19th century, and iii) current practices.

#### **Historical practices**

Historically Transylvanian Saxons used cattle, buffalo, horse and pigs for grazing. Although they occasionally used sheep and goats, they were not the typical livestock for this region. During the eighteenth and nineteenth centuries when there was an increase in buffalo numbers, many villages prohibited the grazing with sheep to avoid the erosion of the pasture. This shows that local communities were aware about pasture erosion and they tried to find solutions for its avoidance whilst keeping the pastures profitable.

At this time there were clear rules regarding the grazing of the wood pastures. For example, the grazing of the cattle/buffalo pastures was restricted to between 24 April and 11 November, although occasionally sheep grazing was allowed before and after these periods. . For that time, this livestock density was higher than, for example, Hungary but lower than for example the Netherlands. Other examples of rules included the number of days that one should spend on the removal of shrub from the pasture (based on the number of livestock owned), and the maintenance of roads across hay fields and pastures to provide good accessibility. There is also evidence that burning was applied in very controlled way from the 16th century.

In conclusion, the above mentioned management interventions on wood pastures in Southern Transylvania affected i) the carrying capacity of the pastures, ii) the grazing phenology, iii) livestock profitability and iv) shrub and possible young tree removal. There appears to have been little written or verbal evidence from this region about the pro-active maintenance of tree seedlings or planting trees to allow tree regeneration. This is despite such activities being practised in other traditional rural landscapes of Romania and in parts of Hungary. Although it is not possible to exclude the possibility that Saxons pro-actively encouraged tree regeneration, the absence or very low number of viable oak trees aged less than 150-200 years in most of the wood-pasture suggests that its effect was minimal. One reason for the lack of a focus on tree regeneration could be that the longevity of the oak trees (which can live many centuries) means that only two to three centuries of wood pasture management (emerging from previous forests) had not led to a tree loss that is so significant that it affects management. Tree regeneration on these wood pastures appears to be triggered by various shocks on the social system, which weakened the management (e.g. by reducing, temporarily the number of livestock). The last such massive tree regeneration in wood-pastures happened with the collapse of the communism (in the past 25 years). At this time most of the pastures were abandoned and/or the grazing intensity was sharply reduced, allowing trees to regenerate.

### **Second part of the 19th century and the early 20th century**

Since the second part of the 19th century, there are identifiable examples of poor management interventions by the traditional Saxon communities. This includes the use of the chemical fertilizers and machinery to increase production. An illustrative quote originating from 1910 (Dorner, 1910) shows the contrasting 'visions' about economic development and overall appreciation of 'wealth' between the old generation and the new generation of Saxons in the 19th century. It is important to consider the appearance of new attitudes and aspirations between generations of people as these are major drivers of economic and landscape change.

'In the village, there are two competing directions: that of the old persons, especially women, and that of the young persons. The principle of the old persons: to respect the money, to be thrifty, to give the respect to who deserve it, to the church, to the school, to the community...and to keep away every innovation. The principle of the young persons: to work, to engage in economic development, and to put emphasis only on what promises money and results. To educate the children, to send them in the town to learn good manners, to use machineries in agriculture, to adopt new types of crops, new types of livestock, to apply chemical fertilizers, to dress well, to have a pretty house, to have a good life, to increase the professional knowledge to allow satisfaction of the increased needs, and to extract more benefits from the land than before' (Dorner, 1910).

Whereas it is thought that traditional societies adjusted the livestock number to the carrying capacity of the pastures, societal demand and opportunities provided by new technologies, have led to more intensive pasture production and the degradation of both forests and pastures, as the new generations of farmers aspired for more western type of wealth and landuse practices. The existence of communism and dictatorships provided strong institutional and political drivers that restrained and altered the activities of once vibrant rural communities.

### **Current practices**

It is arguable that current wood pasture management in Southern Transylvania undermines the positive aspects of traditional wood pasture management. The key issues include:

- i) After 1989, the cattle and horse number decreased and the buffalos virtually disappeared from this region (after the collapse of communism in Romanian and the emigration of the last wave of Saxons).
- ii) In many regions, the sheep number increased to a number, not seen before, causing overgrazing and erosion.
- iii) The timing of grazing changed as sheep were grazed for the whole year. In addition the sheep were allowed to graze on cattle pastures (where they had been restricted previously) and on hay meadows (which are privately owned), causing local conflicts.
- iv) The management of shrub was largely abandoned in many wood-pastures resulting in reforestation especially of their marginal parts.
- v) Large, old trees in the wood pastures were cut, resulting in serious loss of these trees.
- vi) Uncontrolled pasture burning led to a massive loss of a high number of ancient trees.

#### 4. Best practice interventions

One organisation which has had a significant role in helping farmers as bridging organization to access EU money for pasture clearance is ADEPT. ADEPT is also providing technical help to farmers for shrub cutting and grass mowing (Figure 1), as well as playing a significant role in promoting local products, building milk collecting centres, and helping farmers to work together. For these reasons, the stakeholder group in Romania is working closely with ADEPT.



Figure 1. Using small mowing machineries (photo: ADEPT)

The section describes the best practice interventions and the key challenges as identified by the members of ADEPT who are working with wood-pastures in Southern Transylvania. As argued before, best practice interventions need to address both a historical and a current perspective. They should be based on well-known ancient and historic management, whilst addressing current issues that are negatively effects on productivity and resilience.

To determine potential best practice interventions, the team reviewed both historical records (e.g. Dorner 1910, Oroszi 2004, Öllerer 2014) and current practices (including also 120 interviews with farmers from eight villages to learn more about the management of wood-pastures from this region). From both sources of information, the wood-pastures were largely referred to as 'pastures'. A dominant management objective was to maintain the 'pasture condition' through grazing and shrub clearance. Neither the historical records nor the current rural societies in Southern Transylvania directly mention tree management practices such as coppicing or pollarding, although there are several ancient trees (mostly hornbeams) which have been clearly coppiced and pollarded. The lack of such references suggests that tree management techniques are (and probably were not) not of primary importance.

## 5. Key challenges for wood pastures in Southern Transylvania

Five key challenges were identified during the meeting. These were:

- Reintroduction of the traditional cattle and buffalo grazing and stopping intensive sheep grazing causing soil vegetation erosion. This is a crucial challenge and it largely depends on the financial incentives.
- Bridging the gaps between the tree age categories: most of the wood pastures have old trees (oaks) and there is no regeneration of young trees. This poses serious threats for sustainability. This challenge can be addressed either by (i) reducing grazing in various parts of the wood-pasture to allow tree regeneration or (ii) actively planting young trees and protecting them via thorny shrubs (less expensive) or fences (more expensive).
- Reducing the removal of large, hollow trees. These trees are keystone structures with outstanding ecological and cultural value. However each year, such trees collapse and cut and burned. There is a need for local campaigns to increase awareness of the benefits of such trees.
- Excessive removal of shrubs in some places.
- A shift from communal pasturing towards individual pasturing where different portions are rented by different people. This represents a departure from traditional rules and procedures of communal pasture management towards a mostly individualistic type of pasture management. This is important from the social-perspective as it can create conflicts around the use of the pastures.

## 6. Steps made to overcome barriers

One important issue to be addressed in order to simultaneously address many other issues related to the wood-pastures in this region and Romania, is their formal recognition as grazed treed landscapes (with young and old trees and some shrubs) with high ecological, economical and cultural importance. If this formal recognition is achieved, it is expected to generate a number of other changes that will benefit wood pastures and local communities. In this respect, Tibor Hartel together with the Pogány-Havas Association met with the Environment Minister Attila Korodi and the national Head of the Environmental Protection Agency of Romania to discuss about these values related to wood pastures and the need for their formal recognition. As a result, the importance of protecting wood pasture systems in Romania was highlighted in a press release of the Romanian Government. Tibor Hartel had also planned to meet with the Minister of Culture to address the protection of the veteran trees in Romania and their potential inclusion in the list of the historical monuments of Romania. Unfortunately this meeting had to be cancelled, at short notice, due to the resignation of the Minister. Overall, the issue of assuring the sustainability of wood pastures in Romania is gaining recognition, and is starting to receive support from key members of important political, institutional and NGO levels both in Romania and abroad.

## 7. Potential research questions

The following three research questions could be tested by research:

- To explore economic and socially viable strategies to increase tree regeneration on wood pastures. This could be done through developing a strategy of delineating pasture areas where grazing is prohibited or significantly reduced (and 'moving' that area across the pasture in various temporal cycles), and/or via manually placed thorny shrubs (for example, those which were removed) to protect young trees till they grow out the browsing height of the livestock

while allowing grazing around them. Both approaches can be applied in different wood pastures and their efficacy assessed and compared to control sites. Fencing is not recommended as it can be stolen. Regardless the approach applied, the success of such initiatives will depend on the existence of a proper social capital and need at the local scale.

- To test the effect of different livestock on the vegetation structure and biodiversity. Here wood pastures grazed traditionally by cattle can be compared with wood-pastures grazed by sheep and abandoned wood-pastures.
- To test the openness of local communities to value and protect ancient trees (including dead trees) on wood pastures.
- To find ways to promote the social value of the wood-pastures for the local communities.

## 8. References

Dorner, E.B. (1910). *Az Erdélyi Szászok Mezőgazdasága* [The Agriculture of the Transylvanian Saxons]. Győr.

Oroszi, S. (2004): *Az erdélyi szászok erdőgazdálkodása* [The forest management of the Transylvanian Saxons]. *Erdészettörténeti Közlemények* 63: 1–153.

Öllerer, K. (2014). The ground vegetation management of wood-pastures in Romania – Insights in the past for conservation management in the future. *Applied Ecology and Environmental Research* 12: 549-562.

## 9. Acknowledgements

The AGFORWARD project (Grant Agreement N° 613520) is co-funded by the European Commission, Directorate General for Research & Innovation, within the 7th Framework Programme of RTD, Theme 2 - Biotechnologies, Agriculture & Food. The views and opinions expressed in this report are purely those of the writers and may not in any circumstances be regarded as stating an official position of the European Commission. This document was edited by Paul Burgess.