

**Work-package 2:** High Natural and Cultural Value Agroforestry

**Specific group:** Valonia oak silvopastoral systems

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The report contains comments and additions from all team members.



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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 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 system

Agroforestry and specifically silvopastoralism is a traditional land use system in Xeromero, Aetoloakarnania, Western Greece where livestock breeders used the valonia oak forest for grazing and for the dye industry by exporting acorn cups. In this way they ensured a steady and enhanced economic return each year irrespectively of weather conditions. Presently it is only used for grazing by livestock. The forest is characterized by the dominance of old valonia oak trees. Pantera et al (2008) identified that valonia oak forests cover about 29,630 ha in continental and insular Greece. However the combined use of valonia oak forest and grazing is gradually being abandoned, sometimes being replaced with monocultures of olive groves. The AGFORWARD meeting attempted to bring a number of farmers and other stakeholders with a potential interest in silvopastoralism.

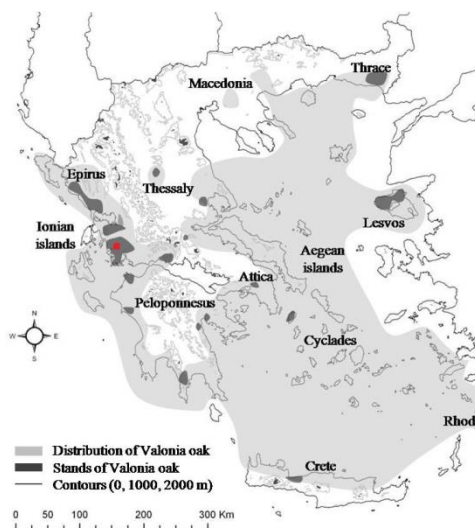


Figure 1. Distribution of valonia oak and its stands (most of which form silvopastoral systems); red dot shows location of meeting (Pantera et. al. 2008)



Figure 2. Photo of the valonia oak silvopastoral system

### 3. Participants

The initial meeting was attended by 25 stakeholders and three presenters. Of the 25, twenty described themselves as farmers, six were scientists (foresters), and two were representatives of Xeromero Municipality. Only eleven completed a survey form. There was a broad age range with two under 20, one aged 20-35, three aged 35-50, one aged 50-65, and one over 65 years old. Eight answered that were responsible for farm management, of which six identified their system as “silvopastoral”. There were no women among the attendees. The stakeholders were all from the area. A lively conversation of four hours took place and many interesting issues were raised and discussed. All participants expressed their wish to participate again in any other future meeting and to be informed for the progress/results of the project.

### 4. Introduction session

Dr. A. Pantera (Scientific Responsible) chaired the meeting. She explained the meaning of agroforestry, the various agroforestry systems existing throughout Europe as well as the advantages and disadvantages of this land use system. She also introduced AGFORWARD, the network involved, its objectives, priorities, the concept of a participatory research and development network (PRDN), and the purpose of the meeting (AGFORWARD, 2014). EU policy is currently directed to greener and more sustainable land use systems which combine economic returns with protection of the environment. This dictates a change from monocultures to polycultures that also include woody species. Based on experimental results, the use of multiple species in the same land can result in higher income than monocultures, while simultaneously protecting the environment. She also mentioned that Xeromero is the last remaining valonia oak forest in the Balkans and its preservation is of major environmental, cultural and economic importance. She explained the role of grazing for forest fire prevention as it removes the flammable understory vegetation, the economic opportunities that exist from the use of acorns and trading, the possibility of local development by the sustainable management of the forest such as for ecotourism, and the promotion of local dairy products. She presented some results from a previous research program conducted in the area which recorded poor tree regeneration. She also presented her actions so far in collaborating with the newly elected mayor and the local veterinarians employed by the Government in order to help farmers with critical issues/problems they face with their livestock.



Figure 3. Photos of the group. The network meeting was attended by 28 people

Dr. A. Papadopoulos referred to the economic and environmental value of the Xeromero forest, which can be characterized as the largest one within the species distribution range. He explained that there is an environmental dimension in the new common agricultural policy (CAP) and the emphasis placed on the production of quality organic products, environmental protection, and the enhancement of biodiversity. Within these frames he explained, in broad terms, the development and exploitation possibilities that exist in the region, which is composed of forests interspersed within farmland and intense farming. He also referred to the combination of uses, production (agriculture, livestock, forestry) and activities (ecotourism, environmental education) that take place. He even stressed the possibility of resilience against climate change and desertification.

Valonia oak (*Quercus ithaburensis* subsp. *macrolepis* (Kotschy) Hedge and Yaltirik) is relatively resilient to climate change, and it can provide, through the silvopastoral system it forms, forage for livestock. He mentioned that the local Forest Service is responsible for the management of the area and a fruitful cooperation with livestock farmers is of major importance. The local population could gain from the development of ecotourism in the area, possibly with the support of the local Forest Service and TEI. Dr. A. Papadopoulos presented some dendrochronological results from valonia oaks in the area stressing the fact that this is an ancient forest, where most trees are over 100 years old but there is low natural regeneration. He mentioned some actions that local people could adopt to enhance their income.

Dr. G. Fotiadis said that there are at least 1000 plant species in the Xeromero valonia oak forest, some of them rare while their majority being medicinal. He mentioned that such agricultural systems were unlikely to compete with other large European countries in product quantity but it could compete on quality, with a focus on organic food or new products e.g. local medicinal plants, and low energy costs. Agroforestry systems also benefited from animal manure being a valuable fertilizer and soil conditioner. Agroforestry systems could also increase biodiversity and improve the water regime. He indicated that Greek agricultural systems are characterized by high biodiversity and this is something to invest in. He mentioned that it makes sense to have high numbers of *Phlomis fruticosa*, a local dwarf shrub, in the area since soil is degraded due to overgrazing. He emphasised the opportunities that local livestock breeders have in promoting the unique flavour and quality of their dairy products, derived in part on numerous aromatic herbs consumed by livestock, when compared to other areas of Greece and Europe. He also commented the poor tree regeneration in contrast to the formation of dense, invading, Jerusalem thorn (*Paliurus spina-christi*) stands throughout the forest.

Chief of Messologi Forest Service. He mentioned that there are problems with illegal lumbering in the area and the importance of a sound cooperation between the local state authorities and the local stakeholders. There are rare plant species that have become locally extinct due to land degradation. He also expressed his willingness to support local stakeholders (for example in acorn cup collection) within the framework of local development, environmental protection, law and rules. He also emphasized the environmental, historical and cultural uniqueness and value of this forest. He also emphasized problems such as land degradation and poor tree regeneration in the area.



## 5. Field visit

The stakeholders meeting took place in the premises of a local environmental protection society, in the middle of the valonia oak forest so no field trip took place.



Figure 4. Photo of the valonia oak system grazed by sheep



Figure 5. Photo of the valonia oak system grazed by goats



Figure 6. Valonia oaks are present in the background, but a dense, invasive understory can be seen in the foreground

## 6. Ranking of positive and negative aspects of silvopastoral systems

The participants were asked to complete a brief questionnaire which sought to highlight the key positive and negative aspects of silvopastoral systems. Eleven participants completed the form in a consistent way. Whilst the positive aspects broadly followed the oral and written comments, the negative aspects highlight the complexity of the systems and management costs. At the Portuguese Montado meeting, Crous-Duran *et al* (2014) used the scoring system in Table 1 to get an overall ranking. Twenty-five points were given to the item ranked first and one point to the item ranked tenth. For each item, the points were added and the total points indicated the overall assessment in terms of positive and negative aspects of agroforestry: Table 2 (positive) and Table 3 (negative).

Table 1. Scoring points for each the rank

Rank	1	2	3	4	5	6	7	8	9	10
Points	25	18	15	12	10	8	6	4	2	1

**Positive aspects:** the most positive aspects were the animal health, welfare and production. This is logical since livestock represents their major source of income so their well-being is of major importance. Livestock breeders also emphasized the diversity of products which not only contributes to their income, but also ensures it by minimizing any destruction hazard of a specific product. Most of their answers are directly connected with production line such as pasture production, quality/food safety, nut production, inspection of animals, and labour load. Tree regeneration was also important for them as well as the feasibility of the project. Tourism, among others, was not so important for them (Table 2).

Table 2. Positive aspects of a silvopastoral system, which received a “first” ranking from at least one attendee. Note: attendees were able to give different aspects the same ranking.

Aspect	Ranking												Sum
Animal health and welfare	1	1	3	1	1	1	1	3	1	1	3		200
Animal production	1	1	4	1	1	1	1	4		2	1		175
Diversity of products	1	2	2	1	1		1	3	3	4	4		166
Crop or pasture quality/food safety	1	2	2	1	2		1	2	2				165
Labour	1	2	2	1	1		1	4					148
Timber/wood/fruit/nut quality	1	1	3		1	2	1	3					148
Complexity of work	1	2	4	1	1		1						130
Project feasibility	1	1	6	1	1		4		4				124
Inspection of animals	2	2	3	1	1	6	2	4					119
Originality and interest	2	3	6	1	2		1	3		5	6		116
Landscape aesthetics	2	3	5		1	5	2	2		9			94
Water quality	2	2	3		1			2	8				94
Tree regeneration/survival	4	1	4	1	3		4	5		6	7		81
General environment	2	2	6		1		2						79
Disease and weed control	1	3	6	1	3	2	1	4		3	2		75
Business opportunities	5	3	7		1	8	3	5					75
Inheritance and tax	1	3	8		3		3	4					67
Crop or pasture production	1	1	3		1		1	3					55
Farmer image	4	4	4		1		3	5					55

**Negative aspects:** the most negative issues were losses by predation, the reduced groundwater recharge, and the administrative burden (Table 3). Livestock breeders are concerned by the number of animals they lose due to predation by wild predators and from disease. They complained about the lack of scientific support by the veterinarians working for the government. Interestingly soil conservation and runoff and flood control were also seen as negative issues but mostly as issues of concern. The silvopastoral system is mostly confined to the hilly areas of the region as most, if not all, of the flat area is cultivated. Even in areas where livestock graze, there are severe soil erosion problems. Participants mentioned the low water recharge not as caused by the system but rather as a problem they face with lower precipitation for the past few years. The rest of the negative answers concerned problems with the practice of the systems. Tourism was mentioned as a negative for its lack rather for its presence. They orally commented that development of basic infrastructure such as road construction-repairs, would enhance tourism which, in return, could potentially further contribute to their income.



Table 3. Negative aspects of a silvopastoral system, with received a ranking of at least 3, as identified by eight attendees. Note: attendees were able to give different aspects the same ranking.

Aspect	Ranking								
Losses by predation	1	1	2	1		1	3	4 x 1st, 1 x 2nd, 1 x 3rd	133
Reduced groundwater recharge	1			1		1	4	3 x 1st, 1 x 4th	87
Soil conservation				4		4	2	1 x 2nd, 2 x 4th	42
Runoff and flood control				4		4	3	1 x 3rd, 2 x 4th,	39
Administrative burden					1		5	1 x 1st, 1 x 5th	35
Cash flow				3				1 x 3rd	15
Disease and weed control							3	1 x 3rd	15
Labour							3	1 x 3rd	15
Mechanisation							3	1 x 3rd	15
Change in fire risk							3	1 x 3rd	15
Control of manure/noise/odour							3	1 x 3rd	15
Farmer image							3	1 x 3rd	15
Profit							3	1 x 3rd	15
Tourism							3	1 x 3rd	15

## 7. Key issues and challenges and best practice

In the discussion that followed the field trip, the group identified key issues and challenges that were related to agroforestry. Eight key topics were identified.

1. Do we want valonia trees or not?
2. Will olive orchards or wood harvesting and trading provide more benefits than valonia oak silvopastoral systems?
3. What are the reasons for the poor tree regeneration?
4. What issues or practices have changed over time?
5. What are the problems that stakeholders are presently face and why traditional practices are underestimated?
6. How can they deal with flea outbreak from which their livestock suffer in the past 5 years (with epidemic numbers this year)?
7. How can scientific support by the local state officials (veterinary and agricultural services) to the stakeholders be improved?
8. To what extent economic incentives (based on provision by the government of drugs for the livestock or fertilizers for the trees) would support the continuation of the system?



### Potential examples of interesting or best practices

Specifically for silvopastoralism, the group identified certain potential examples of interesting or best practices.

- Jerusalem sage (*Phlomis fruticosa*) was manually harvested in the past and used as a ground bed in the animal sheds for improving the housing conditions of livestock.
- Aromatic and/or medicinal plants are harvested and can be cultivated in certain areas
- Traditional tree management practices such as pruning and tree shaking to bring down acorns, may enhance acorn production.
- Grazing regulation including fencing of the forest for some time may enhance tree regeneration.

### Potential innovations looking forward

Looking forward, the group proposed four areas for potential innovation

- Tree management?
- Grazing regulation?
- Need to investigate *Phlomis fruticosa* harvested and used as ground bed in the sheds
- The improvement and certification of animal husbandry products originated from valonia oak silvopastoral system

### 8. Next steps

Seven farmers positively answered to the question posed by Dr. Pantera on the possibility to cooperate with the AGFORWARD team on the experiments to be conducted in the area. However, only two came forward after the meeting expressing their interest to participate.

Of the eleven people completing a form, two indicated that they would be interested in supporting research related to silvopastoral systems. From the AGFORWARD project perspective, the plan was to identify such researchable issues before the end of 2014.

### 9. References

- AGFORWARD (2014). AGFORWARD website. [www.agforward.eu](http://www.agforward.eu)
- Crous-Duran, J., Amaral Paulo, J., Palma, J. (2014). Initial Stakeholder Meeting Report Montado in Portugal. Instituto Superior de Agronomia (ISA), Universidade de Lisboa, Portugal
- Pantera A., Papadopoulos A., Fotiadis G., Papanastasis. V.P. (2008). Distribution and phytogeographical analysis of *Quercus ithaburensis* ssp. *macrolepis* in Greece. *Ecologia Mediterranea* 34:73-82.

### 10. Acknowledgements

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