Initial Stakeholder Meeting Report
Trees with arable crops and grassland in Greece

Work-package 4: Agroforestry for arable farmers
Specific group: Trees with arable crops and grassland in Greece
Date of meeting: 11 July 2014
Date of report: 20 October 2014
Location of meeting: Eratyra, Voio, Western Macedonia, Greece
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The report contains additions and comments from all team members.

Contents

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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

2. Description of system

Agroforestry is a traditional land use system in Voio in Northern Greece where farmers have traditionally integrated arable production with tree species (Figure 1). In Voio, arable fields containing field beans, cereals and grassland are bordered by walnut trees and fast growing poplars (Figure 2). The Municipality of Askio has a large variety of traditional silvoarable systems (Dupraz et al 2005).

Figure 1. Map of Greece; red dot shows location of meeting

Figure 2. General photo of system

3. Participants

The network meeting brought together farmers and other stakeholders with a potential interest in the co-cultivation of trees with arable crops. The initial meeting was attended by 14 stakeholders and five presenters. Eight described themselves as farmers, five were scientists (agronomists and foresters), and six were representatives of Voio Municipality. Only eleven completed a survey form however, one only made comments without answering the questions. Concerning the age range of the participants, there were two aged 20-35, seven aged 35-50, and one aged 50-65 years old. Six

answered that were responsible for the management of the farm, but only three characterized it as agroforestry. There were three women among the participants. The stakeholders were all from the local area.

Figure 3. The stakeholder meeting was attended by 19 people

4. Introduction session

Dr. A. Pantera 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 AGRFORWARD, its objectives, priorities, the development of the participatory research and development networks (PRDN) and the purpose of meeting.

Dr. V. Papanastasis chaired the meeting and made a short introduction on the benefits of co-cultivating trees with crops on arable land and the importance of listening the opinion of stakeholders on this subject. He mentioned that agriculture has changed over recent decades. EU policy is currently directed to more greener and sustainable land use systems which combine economic returns with protection of the environment. This dictates a change from monocultures to polycultures that can also include woody species. Based on experimental results, the use of multiple species, in the same piece of land, can result in higher income than monocultures while simultaneously protecting the environment. He also mentioned that the land consolidation that took place in the village of Eratyra in the 1990s resulted to the uprooting at least 6000 mature oak trees. Finally, he mentioned the results of the SAFE project (Dupraz et al., 2005) which was implemented in the former Municipality of Askio, now part of the larger municipality of Voio.

Dr. G. Fotiadis said that there are at least 1000 plant species in the nearby Mount Siniatsiko, many of which had medicinal uses. He indicated that whilst Greece could not compete with other large European countries in product quantity, there were opportunities in terms of quality, and the production of organic food with organic fertilizers and lower energy cost. He noted that agroforestry systems can increase biodiversity, and improve soil health.

Dr. A. Papadopoulos referred to the particularities of Greek agriculture (small plots, low production) and the need for quality and branded products. He pointed to the environmental value of agroforestry systems and their connection with tourism in general. He particularly indicated the

landscape aesthetics enhancement accomplished by the introduction of trees in the fields. He noted the need to use trees of selected genotypes to produce quality wood but also species whose water needs do not exceed soil available water level. He referred to the compatibility of the new common agricultural policy (CAP) to agroforestry for an agriculture that was more environmental and ecological oriented and which could help address problems such as desertification.

Dr. K. Mantzanas said that trees have a positive role in the dry bean production which is the main crop in the village of Sissani of Voio municipality. He noted that during the high temperatures in the summer of 2011, there was widespread failure of dry bean production in Prespa of the prefecture of Florina, where trees have been removed in the past due to land consolidation. This destruction did not happen in Variko, another village of Florina as well as in Sissani because dry beans are co-cultivated with trees. He concluded that the trees shaded dry beans from the high temperatures.

5. Field visit

All participants visited the area where the SAFE project experiments were established. Dr. Papanastasis and Dr. Mantzanas explained the experiments that took place and the results (Mantzanas et al. 2005). The participants had the opportunity to walk between the rows of the walnut trees and see their growth, ask questions and discuss possibilities of establishing a similar system.

Figure 4. Visit to the plots established in the SAFE project (2001-2005)

Figure 5. Photo from the field trip

Figure 6. Growing maize

Figure 7. Integration of trees and cropping systems

6. Ranking of positive and negative aspects of silvoarable systems

The participants were asked to complete a brief questionnaire which sought to highlight the key positive and negative aspects of silvoarable systems. Ten participants completed the form in a consistent way; one only made comments. In this case the participants ranked different aspects with similar scores; for example one participant ranked eleven aspects as "1st". Hence to help identify the key factors, the scoring system used by Crous-Duran et al. (2014), based on Formula 1 racing scores, was used (Table 1).

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 highly ranked positive aspects were the opportunity for hunting, and enhanced animal health and welfare. Although the focus was originally on arable systems, the participants possibly commented on the positive effect of agroforestry to animal health and welfare because grazing is practiced in the area, as seen in Figures 2, 6 and 7 where areas of grassland and legumes such as alfalfa are mixed with cultivated fields. The other highly ranked issues were the general environment and the quantity and quality of tree products (Table 2).

Negative aspects

The most highly ranked negative issues were the labour requirements, the management costs, and losses by predation (Table 3). Issues related to inheritance and tax were ranked highest by two participants. Mechanisation and the complexity of work also ranked highly. Surprisingly tourism was perceived as a negative aspect of the system.

7. Issues and challenges

During the workshop, the group also orally discussed the key issues and challenges that they found in relation to agroforestry. Six key topics were identified.

1. Do we want trees inside the agricultural area or not?
2. If we decide to intercrop, which tree species should we use? And what crop? What about walnuts with vines?
3. What trees to plant and with which crop?
4. What about plots which are not cultivated by the owners but by other farmers who rent them
5. Does shadow affects crop production?
6. Would economic incentives help the introduction of trees in arable crops?

One participant did not answer the questionnaire but commented that he would be interested in trying an alternative combination of species such as spinach or aromatic herbs between vines.

Table 2. Positive aspects of silvoarable system as ranked by 10 participants. Note that the participants ranked different issues with the same ranking.

Aspect	Ranking by 10 respondents										Summary
Animal health and welfare	1	6	5	1	2	3	3	2	2	5	162
Opportunity for hunting		1	1			1	7	2	1	2	142
Disease and weed control	3	1	4	3	3	2	7		2	4	136
Timber/wood/fruit/nut quality	2	6		2	3	2	2	5	1	7	136
General environment	4	8	2	5	5	1	4		1	8	120
Timber/wood/fruit/nut production		4			2	2	1		1	2	116
Carbon sequestration		1			2	2	2		1	4	116
Animal production		4	4		3	2	4	4	1	6	114
Tree regeneration/survival			7		2	1	1		2	3	107
Water quality		4	4		4	2	4	5	2	4	106
Crop or pasture production		8	5		4	3	8	3	2	2	96
Soil conservation		6	3		4	4	3		2	3	95
Biodiversity and wild life habitat		10			4	5	1	4	1	7	91
Crop or pasture quality/food safety		7	6	4	4	5	6	4	3	7	89
Subsidy and grant eligibility		1			5	5	3	2		6	86
Diversity of products		5			3	1	5		1		85
Income diversity					5	2	1	7	1		84
Relationship between farmer/owner		1	6		5	4	8	1			84
Losses by predation		1	3				1		2		83
Runoff and flood control		8	5		5	3	2		2	6	83
Local food supply			4		3	4	2		2	6	83
Relationship between farmer/hunter		1	3		5	2	9	4			82
Project feasibility					4	3	3	5	2	6	78
Climate moderation		8			5	1	6		2	4	77
Profit		1	6		4		4		3		72
Landscape aesthetics		9			4	2	5		1	8	71
Reduced ground water recharge		2			4	3	7			3	66
Originality and interest			9		4	2	2		3		65
Change in fire risk					3	3	8	5		2	62
Business opportunities					3	4	5		1		62
Rural employment		3			5	2	10	3			59
Cash flow		1			5	3	6				58
Control of manure/noise/odour		6			5	2	3				51
Labour		3						1		6	48
Farmer image					5	3			2		43
Regulation		2			5	3					43
Complexity of work		2								3	33
Inheritance and tax						1					25
Market risk		1									25
Marketing premium			4		5		10				23
Tourism					5	5					20
Mechanisation								2			18
Inspection of animals										4	12

Table 2.Negative aspects of silvoarable system as ranked by 10 participants. Note that the participants ranked different issues with the same ranking.

Aspect	Ranking by 10 respondents										Summary
Labour	1		2	1	5	6	3		3		116
Management costs		8	1		4	4	4	3	2	3	113
Losses by predation					1	1	1	3		3	105
Mechanisation	2	6	6		4	3	5		3	3	101
Complexity of work			5		4	3	2	2	3		88
Inheritance and tax		8	7		1		1		3	8	79
Administrative burden		6	6		3	5	3		3	8	75
Inspection of animals		6	8		3	4		3	2		72
Market risk			8		2		2	7	3	7	67
Tourism		6	6					7	2	3	55
Marketing premium		6				4		1		6	53
Farmer image		4	4					2		6	50
Control of manure/noise/odour			1					3		6	48
Business opportunities		6	6					3		3	46
Change in fire risk		7	4						2		36
Income diversity		6	3							5	33
Relationship between farmer/owner									2	3	33
Regulation			9						2	4	32
Originality and interest		6						5		4	30
Profit						5		5		6	28
Rural employment			6						3	8	27
Diversity of products			6					7		4	26
Cash flow			5							3	25
Local food supply		3						5			25
Opportunity for hunting					1						25
Timber/wood/fruit/nut production			4					4			24
Tree regeneration/survival		6						4			20
Relationship between farmer/hunter									4	6	20
Project feasibility		4	8								16
General environment								4			12
Reduced ground water recharge			5								10
Runoff and flood control								5			10
Soil conservation								5			10
Subsidy and grant eligibility			5								10
Biodiversity and wild life habitat			6								8
Climate moderation			6								8
Landscape aesthetics			6								8
Timber/wood/fruit/nut quality			7								6

8. Best practice, innovations and next steps

In terms of intercropping, the group identified the current examples of interesting or best practice.

- Trees can be combined with aromatic plants
- Land consolidation is needed in Voio but it should be done along the rows of the trees without removing them

Looking forward, the group proposed a potential innovation

- Need to investigate new intercrops with aromatic plants

All participants expressed their wish to participate again in future meetings and to be informed for the progress/results of the project. Seven farmers indicated that would be willing to the possibility of cooperating with the AGFORWARD team on experiments to be conducted in the area. In particular two came forward after the meeting expressing their interest to participate. The plan is to identify the researchable issues before the end of 2014.

The meeting was transmitted by the local TV and is on-line at:
http://www.tovoion.com/news/tovoion-tv-ημερίδα-με-θέμα-συγκαλλιέργεια-δέντρων-μ/ (part A)
http://www.tovoion.com/news/tovoion-tv-ημερίδα-με-θέμα-συγκαλλιέργεια-δέντρων-μ1/ (part B)
and on
https://www.youtube.com/watch?v=pCaSqwQdT5s

9. References

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10. Acknowledgement

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