EVALUATION OF CASE STUDIES IN EUROPEAN AGRICULTURAL LANDSCAPES - THE FEAL PROJECT

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Abstract: The FEAL project focused on demonstrating how multifunctional and sustainable agriculture works in practice, compiling twenty-eight case studies (CS) representing best practices. It resulted in the development of online training and educational material for young farmers. The project had ambition to collect a large variety of case studies in different European Agricultural Landscapes (EALs). The article aimed at quantitative data evaluation based on case studies to confirm the variety of EALs, natural conditions as well as the national differences in the state of landscape and nature protection. Case studies data were collected through interview campaigns (from October 2017 to March 2018) in five European countries. A contingency table was used for data processing and evaluation. The following criteria were applied for data classification from case studies: type of EAL, geomorphological characteristics (selected mesoscale landforms), land cover (CORINE Land Cover), a position of a case study inside a protected natural landscape area which pointed out to the importance of the presence of farms in protected areas. Moreover, we found out that the FEAL database of EALs, developed by the Institute for Research on European Agricultural Landscapes (EUCALAND) had to be enriched by a new EAL type. Minor consolidation of the definitions was suggested for a particular EAL.

Introduction

Agricultural landscapes are strongly related to past and/or present agricultural activities or to remains of agricultural activities in the past, which can still be perceived (directly or indirectly) today. It is highly anticipated that sustainable management of traditional agricultural landscapes helps to preserve both, cultural and natural heritage of landscapes. Furthermore, many historic landscape features and structures exhibit remarkable resilience against changes – as well as settlement pressures but also more important against climate change. As periods of economic growth often induce landscape changes, periods of stagnation and stability tend towards small-scale adaptation and often preservation (Renes, 2015). Therefore, the FEAL project aims at explaining why and how knowledge about the values of agricultural landscape can be implement into sustainable farming practices – also for the (financial) well-being of the farmers.

However, in this context, the term "agricultural" includes both, large-scale, industrial farming as well as the low-input (family) farms with marginal earnings (Kruse et al. 2010). Small farms support rural employment and can make a considerable contribution to territorial development, providing specialised local/regional products as well as supporting social, cultural, and environmental services (EC, 2016[a]). Changes in agriculture still influence large parts of the landscape – not only in Europe. At the European level, agriculture is organised under the umbrella of the "Common agricultural policy (CAP)" that was launched in 1962. Agriculture has rapidly moved from pure land management with the aim of producing agricultural products towards profit maximisation since the 50-ties of the 20th century. However, subsidies of Common Agricultural Policy have improved economic viability mainly of large farms, while medium-sized, small and family farms have made low profits

subsequently often at the edge of providing a stable, sustaining living for farmer. Hence, diversification of activities on small, medium-sized and family farms appears to be a solution. The Rural Development Programmes (RDPs, html1) provide first pillar payments focused on agricultural production while the second pillar payments are explicitly aiming at the diversification of farms' income, often at the boundary between agriculture and non-agricultural activities (Weltin et al. 2017). The great diversity of the implementation within RDPs shows that the shared management of rural development measures enables their adaptation to the very diverse agricultural conditions across the European Union (EC, 2016b).

Agricultural production depends on many natural conditions which are at the moment about to vary, due to climate change; and the (direct) sale of agricultural products from farms is not easy. These reasons motivate farmers to start doing complementary business in non-agricultural activities. Under the leadership of the Technical University Zvolen in Slovakia, the FEAL project (html2) presented in this article, brought together practitioners, researchers, teachers and multiplicators from six countries: Belgium, Germany, Italy, Slovakia, Slovenia, and Spain. FEAL means Multifunctional farming for the sustainability of European Agricultural Landscapes. FEAL provides as main outcome an education and training tool of how to apply knowledge on landscape values of different landscape types into daily farming activities through the example of case studies (Kruse et al. 2017). Agri-tourism activities and direct sale, often by using (or creating) regional trademarks and brandings, are the most important activities in the diversification of farmers' income (Majković et al. 2005), especially in economically marginal regions (Kruse et al. 2017). But there are also offers from the social sector realised on farms like agri-kinder gardens and integrated housing. However, this article will focus on the meaning of the knowledge on EAL and how it was considered at the farms of the FEAL case studies.

Some types of cultural landscapes are recognisable parts of the Earth's surface which are distinguished by the degree of anthropogenic influence and they are defined by a particular configuration of landform, soil, topography, climate, vegetation, land use, history and scenery (Meeus, 1995). Due to a huge diversity of landscapes, the development of flexible methodology covering both, natural and cultural landscape types in Europe, remains a challenging task. The Pan-European LANMAP2 is an ambitious project that represents a hierarchical classification with four levels, using 350 natural landscape types. The classification is determined by climate, topography and parent material (Mücher et al. 2006). Another classification focusing particularly on European agricultural landscapes (EALs) was introduced by Zanden et al. (2016) and EALs were geographically delineated throughout Europe. Authors used a top-down expert-based classification and a bottom-up approach based on automated clustering using self-organizing maps (the same input data were applied for the land cover, land management and landscape structure dimensions of agricultural landscapes).

A different approach on EALs classification was introduced by Kruse et al. in 2010. Authors joined in the EUCALAND association provided definitions including translation of 39 EALs and agricultural landscape related terms (Pungetti and Kruse 2010). Since, it has been updated, describing one European agricultural landscape type per year (Centeri et al. 2016, Kladnik et al. 2017a,b). The authors draw attention especially to historical and cultural links among EALs on the one hand and farmers shaping their landscape features, character and identity on the other, in order to create win-win situations between farmers and the landscape (Kruse and Pungetti 2007). This vision matches the basic principles of the European Landscape Convention (ELC) (html3) underlining participatory democracy and 'bottom-up' approaches in EALs assessment, planning, policy, and management. This is the reason why the EUCALAND typology on was applied in the FEAL project.

Although the people living in rural areas are surrounded by EAL, their knowledge about them in terms of cultural value, history, and the emergence of it as well as its environmental value is limited (Printsmann et al. 2012). Therefore, the core output of the FEAL project was the creation of an online database of case studies of farms situated in different EALs with specific regional and local features reflecting the variety of social and economic systems developed during their unique history.

Types of EALs classified by EUCALAND allow a comparison of EALs at the European level. Regional landscape types and specificities are reflected in national landscape typologies. The compiled case studies were located in different EALs/country. FEAL compiled at the same time national landscape typologies from Germany, Italy, Slovakia, Slovenia, and Spain (html4). The Landscape Atlas of the Slovak Republic (Miklós and Hrnčiarová 2002) and the Atlas of the Landscapes of Spain (Olmo and Herráiz 2004) represent comprehensive databases of national landscape types covering the variety of both cultural and natural landscapes. Both atlases are inspirational works for other European countries. Germany has no specific classification of landscape types dealing with the heritage of agricultural landscapes. A map developed by Gharadjedaghi et al. (2004), which comes closest to a classification, uses the criteria of physiographic boundaries, land cover (CORINE Land Cover satellite imaging project), and other locally applicable landscape boundaries. Landscapes are classified into landscape types using characteristic features that are easy to spot in the field. Since lately it is accessible via a map server (html5) and is used as a planning tool. Characteristic Cultural Landscapes of national importance which shall be protected are defined. Italy has a long tradition in research on agricultural landscapes. However, a national classification of landscape types does not exist. Hence, there are regional ones. The National Observatory of Rural Landscapes in Italy manages the National Catalogue of Rural Landscapes where outstanding rural landscapes are included. There exist several regional landscape atlases, covering parts of Italy, but with different methodologies. The atlas of Slovenian landscape types determinates the most valuable (outstanding) landscapes. It is an expert basis for the establishment of Slovenian Areas and Elements of Landscape Identity. This basis is used in national planning acts and in the planning of tourism development.

The FEAL database of case studies has the ambition to demonstrate a variety of EALs in five European countries joined in the FEAL project (Figure 1) and representing countries of Mediterranean Europe (Spain, Italy), Central Europe (Germany) and The Eastern Bloc where a group of communist states existed in the past (Slovakia and Slovenia) thus, giving a full coverage of different natural, historical, cultural and socio-economic settings within the EU.
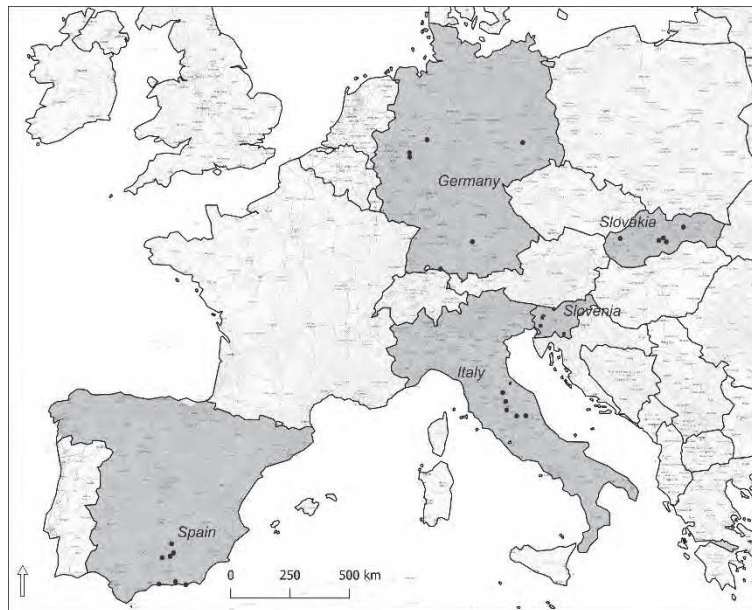
Figure 1 Location of FEAL case studies in five European countries: Germany (6), Italy (5), Slovakia (5), Slovenia (5), Spain (7). According to the partners roles, the Belge FEAL partner did not collect Case Studies. (Map by Slamova)

The article aims at confirming the variety of EALs, natural conditions and a state of landscape and nature protection presented in case studies using quantitative data evaluation from case studies. Therefore, a database derived from maps of CORINE Land Cover 2012, protected nature and landscape areas and national landscape types (geomorphological settings) was created. Maps containing these datasets were applied in interactive pdf extending the content of case studies on detailed landscape characteristics. A heterogeneous collection of case studies was promised as one of the FEAL outputs in order to bring users different case studies, from several landscapes, with different business plans and divers planning strategies. The project had to provide miscellaneous options to the later users so that they can profit from different experiences and learn from others in similar or comparable situations as was possible.

Materials and methods

Collection of case studies

The research basis is composed of interviews with 28 farmers, the collection of qualitative data and its frequency distribution within specified categories using a contingency table. In terms of content, similar but bigger research was conducted by Rois-Díaz et al. (2018): Authors performed 183 interviews in eight European countries and applied thematic narrative analysis as a categorizing strategy for qualitative data. The results from the interviews help to identify shared qualifying elements (Gullino et al. 2018).

The selection of the FEAL case studies did not happen randomly. It was a standard procedure, undertaken in the five countries in a similar way: In a first step, in 2017, communication via email and telephone with a wider range of potential farmers for cooperation proceeded. In a second step, from September 2017 to March 2018, farmers were personally interviewed during the field campaign. The interviews were conducted by means of structured questionnaires, farm data were gathered at the same time and a photo-documentation was elaborated to document the EAL in which the farm is located.

The characteristics of the case studies consist of three main sections:

- Data Section: a short introduction providing statistics or data related to the farmer, the farm and the multifunctional and sustainable farming activities maintaining and improving the EAL;

- Graphic Material: additional graphic material particularly focusing on the farming activity and the surrounding landscape.
- Personal recommendation: The farmers provide insight into how and why they have taken which decision and formulate key messages for colleagues.

An online database of case studies linked with EALs was elaborated. Search can be conducted according to different menus: country, multifunctional farming keywords or landscape types. The information is provided in the seven project languages: French, German, Italian, Slovak, Slovenian, Spanish as well as English.

Development of an interactive online EALs database

The development of the online database followed the previous work of the EUCALAND authors who defined 39 EALs and terms related to agriculture and cultural landscapes (Kruse et al. 2010). The established database is called E-Atlas. It contains main characteristics of (EAL) types and detailed characteristics of national EALs as well as photo-documentation, links, information about the national state of the art, related cultural values to name only a few points. The database is still in progress of uploading. Search can be done per country and / or an EAL type on the FEAL E-Atlas website: https://www.feal-future.org/eatlas/en.

During the interview campaign and associated field research in autumn 2017 – spring 2018, FEAL experts identified together with the interviewed persons the EALs in which the farm respectively the business place are located. In the next step, the EALs determined in the different countries were discussed with EUCALAND experts and they were compared with the existing database of 28 landscape types to ensure a proper classification within each case study. As a result, it was necessary to define "Mountain Landscapes" as a 29th landscape description (html6).

Laboratory work using geographic information systems (GIS)

In order to provide handsome and self-explanatory material and also for locating the case studies, maps of CORINE Land Cover, protected nature and landscape areas and national landscape types were processed by using Quantum GIS (QGIS). Maps were downloaded from online web map servers (WMS) (Table 1). All maps were used in interactive PDF documents which are available on the web sites of the FEAL case studies (e.g. https://cs.feal-future.org/en/case-studies2).

Table 1 WMS services, datasets, and coordinate systems

| | Names of datasets | | | EPSG code |
CORINE Land Cover	Nature and landscape protection (National name)	National landscape type	WMS service	
Germany				
			http://sg.geodatenzentrum.de/wms_clc10_2012	
	Naturschutzgebiete		http://www.geodienste.bfn.de/ogc/wms/schutzgebiet	4839
		Landschaftstypen	http://www.geodienste.bfn.de/ogc/wms/landschaften	
Italy				
WGS84-UTM33 / WGS84-UTM32			http://wms.pcn.minambiente.it/ogc?map%3D/ms_ogc/WMS_v1.3/raster/IGM_25000.map	3003

Siti protetti - VI Elenco ufficiale aree protette – EUAP		http://wms.pcn.minambiente.it/ogc?map%3D/ms_ogc/WMS_v1.3/Vettoriali/EUAP.map	
Siti protetti - Zone umide di importanza internazionale (Ramsar)		http://wms.pcn.minambiente.it/ogc?map%3D/ms_ogc/WMS_v1.3/Vettoriali/RAMSAR.map	
	Zoning of the rural areas in Italy	https://www.reterurale.it/areerurali	
Slovakia			
Corine Land Cover 2012 raster		http://image.discomap.eea.europa.eu/arcgis/services/Corine/CLC2012/MapServer/WmsServer	5514
Atlas krajiny SR	Atlas krajiny SR	http://maps.geop.sazp.sk:80/geoserver/ows?	
Slovenia			
Corine Land Cover 2012 raster		http://image.discomap.eea.europa.eu/arcgis/services/Corine/CLC2012/MapServer/WmsServer	
Environmental atlas of Slovenia		http://gis.arso.gov.si/atlasokolja/profile.aspx?culture=en-US&id=Atlas_Okolja_AXL@ARSO	3912
	Landscape types in Slovenia, Drago Perko, 2002	georeferenced raster	
Spain			
		http://servicios.idee.es/wms-inspire/ocupacion-suelo?	
Espacios Naturales Protegidos		http://wms.mapama.es/sig/Biodiversidad/ENP/wms.aspx?	4258
	Atlas de los Paisajes de España	http://wms.mapama.es/sig/Biodiversidad/Paisaje/wms.aspx	

Analysis of FEAL - case studies and data evaluation

We analysed the following criteria derived from maps of CORINE Land Cover, protected nature and landscape areas and national landscape types (geomorphological settings). Characteristics deriving from these maps were evaluated in a contingency table using MS Excel 2010^{TM}. Rows represented EALs types which were indicated in case studies (the total number was 16) and CLC land cover categories which were found within EALs. Columns represented basic geomorphological settings and a position of a farm in protected nature and landscape areas.

- We took into account the following geomorphological settings from characteristics of landscape types: mountainous landscapes and sub-mountainous regions or hills (m), valleys (v), alluvial flats of rivers or lakes (f) and coastal areas (c).
- A position of a case study in a protected natural and landscape area was characterised as: inside (yes), on its border (border), or outside (no). Abbreviations in brackets were applied in the contingency table.

Finally, a number of case studies were summarized in given classes of geomorphological characteristics (m, v, f, c) and a number of case studies were summarized in given categories characterizing their nature and landscape protection status.

Results and discussion

As mentioned before, in total, 28 case studies were collected from five countries in Germany (DE) (6), Italy (IT) (5), Slovakia (SK) (5), Slovenia (SI) (5), and Spain (ES) (7). Thus, we ensured that the variety of EALs is presented in case studies. The 28 case studies were situated in 17 different types of EALs from 39 types defined by EUCALAND (Kruse et al. 2010): Dehesa, Delta Landscapes, Farmland, Heathland, Highlands, Huertas, Meadow, Mountain Landscapes, Orchards, Open Field, Pasture, Rural Areas, Semi Bocage, Terraced Landscape, Transhumance, Vineyard, Wooded Grasslands.

The FEAL case studies show the wide range of EALs, national landscape types and specific landscape characters in interactive pdfs (available at https://cs.feal-future.org/en/case-studies2, open one case studies, under point 4 you can download an interactive pdf) where a user can learn more about landscape values in different landscape types reported at national level and linked with a particular EAL.

- "Farmland" was the most frequent EAL; nine case studies chose "Farmland" as main landscape type for their farms; another eight case studies have chosen "Farmland" in combination with other EALs (Terraced Landscapes, Rural Areas, Pastures, Wooded Grasslands, Mountain Landscapes and twice Orchards).
- One case study was assigned to the following EAL: Delta landscapes (Orchards), Dehesa (Pastures), Heathland (Huertas) and Highlands (Meadows, Transhumance).
- Open Fields were altered with Semi-bocage, or Orchards and in the third case with Terraced Landscape.
- Pastures appeared in one case study and further were combined with Meadow or with Rural areas.
- Orchards were found in Mountain Landscape altered with Terraced Landscapes or with Vine Yards.
- One farm possessed solely Vine Yards and no other landscape type.
- Rural areas appeared individually only in one case study, mostly it was combined with Pastures or Wooded Grasslands.

The topography of Europe's mountains varies greatly, from the high mountains (the Alps, Pyrenees, Romanian Carpathians, etc.) to the 'middle mountains' that are far greater in extent. Mountain municipalities cover 40.6% of the total area of 29 European countries and they are inhabited with 19.1% of the total population (European Commission, 2004). A prevailing part of the FEAL case studies was situated in mountainous, sub-mountainous regions or hills (17), some case studies are located in valleys (5), in river or lake alluvial plains (5) and 1 case study had a coastal position (Figure 2). The 28 case studies show nicely the variety of topographic characteristics of European countries, perfectly matching with those presented in the report of the European Commission (2004).
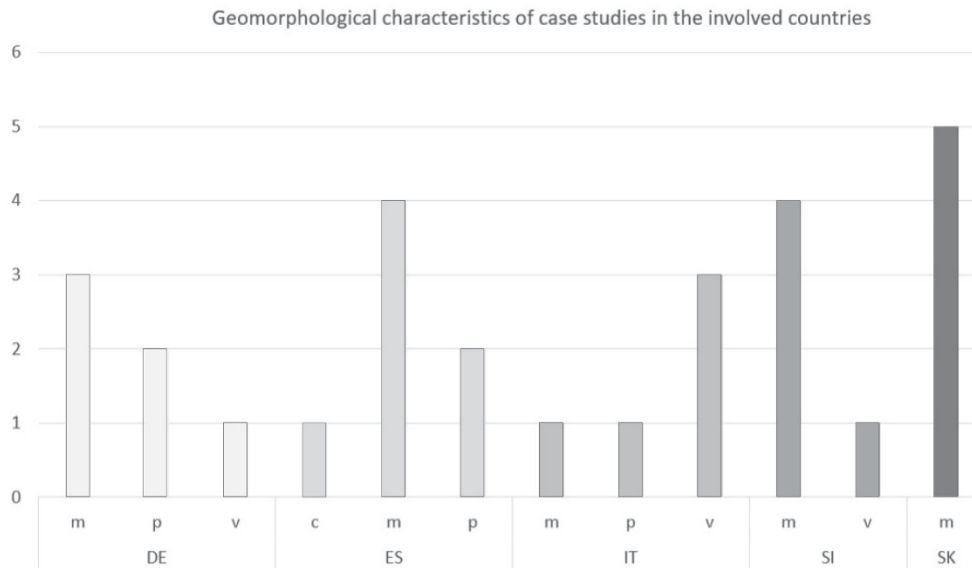
Figure 2 Analysis of the FEAL case studies considering their geomorphological characteristics: mountainous, submountainous regions or hills (m), valleys (v) alluvial flats (f) and coast (c) in the case studies countries: Germany (DE), Italy (IT), Slovakia (SK), Slovenia (SI), and Spain (ES)

The integrated management approach of protected areas implements cultural values of landscapes into models promoting their sustainable development and these models shall reflect in a valorisation policy (Saviano et al. 2018). A deep-rooted relationship of residents with the landscape and their identity are necessary to understand the importance of cultural and natural values protection (Fagerholm et al. 2019). Hence, the role of small and family farmers to provide adequate maintenance to common and protected landscape is very important as well. The FEAL project brought a set of case studies; in protected nature and landscape areas were located 10 case studies, 10 case studies were in landscapes without any protection and 8 were located on the border of protected areas (Figure 3). Thus, we documented successful implementations of landscape maintenance by farmers proportionally distributed in protected landscapes and in "common" landscapes as well.
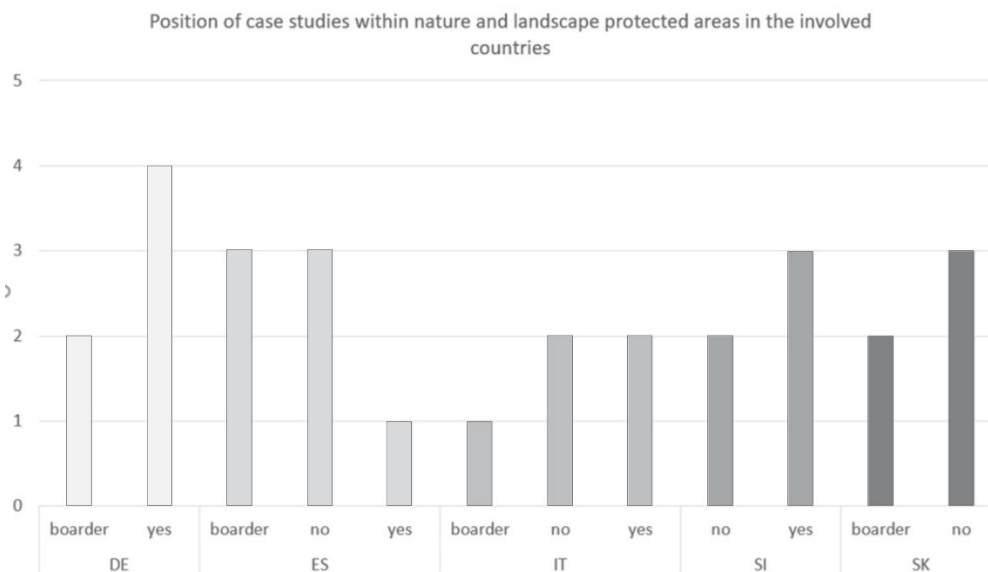
Figure 3. Analysis of the FEAL case studies according to their position within nature and landscape protected areas: inside (yes), on the border, outside (no), in the case studies' countries: Germany (DE), Italy (IT), Slovakia (SK), Slovenia (SI), and Spain (ES)

Table 2 Analysis of the FEAL case studies in EALs with respect to their geomorphological characteristics and position in protected areas

European agricultural landscapes (EALs)	Geomor-phological character	Protected nature and landscape areas			
Corine Land Cover 2012		no	border	yes	**Sum**
Dehesas, Pasture				1	1
- Agroforestry systems	m			1	1
Delta Landscapes, Orchards			1		1
- Agricultural areas, arable land, permanently irrigated land	f		1		1
Farmland		1	2		3
- Heterogeneous agricultural areas and land principally occupied by agriculture, with significant areas of natural vegetation	m		1		1
- Heterogeneous agricultural areas and land principally occupied by agriculture, with significant areas of natural vegetation - Agricultural areas, pastures	m	1			1
- Non-irrigated arable land - Heterogeneous agricultural areas and land principally occupied by agriculture, with significant areas of natural vegetation	m		1		1
Farmland, Orchards				1	1
- Heterogeneous agricultural areas, land principally occupied by agriculture, with significant areas of natural vegetation - Agricultural areas, pastures - Discontinuous urban fabric	f			1	1
Farmland, Orchards, Mountain Landscapes		1			1
- Forest and semi-natural areas, scrub and/or herbaceous vegetation associations, sclerophyllous vegetation	m	1			1
Farmland, Pasture		1			1
- Heterogeneous agricultural areas and land principally occupied by agriculture, with significant areas of natural vegetation - Agricultural areas, pastures	m	1			1
Farmland, Rural Areas				1	1
- Agricultural areas, pastures - Non-irrigated arable land - Forest and semi-natural areas, coniferous forest	m			1	1
Farmland, Terraced Landscapes				1	1
- Agricultural areas, pastures - Forest and semi-natural areas, coniferous forests - Discontinuous urban fabric	m			1	1
Farmland, Wooded Grasslands			1		1
- Agricultural areas, permanent crops, fruit trees and berry plantations - Forest and semi-natural areas, scrub and/or herbaceous vegetation associations, sclerophyllous vegetation	f		1		1
Heathland, Huertas		1			1
- Forest and semi-natural areas, scrub and/or herbaceous vegetation associations, natural grasslands	c	1			1
Highlands, Meadow, Transhumance				1	1
- Agricultural areas, non-irrigated arable land - Forest and semi-natural areas, scrub and/or herbaceous vegetation associations, natural grasslands	m			1	1

	*				
- Agricultural areas, pastures					
Open Fields, Orchards		1			1
- Heterogeneous agricultural areas, complex cultivation pattern	v	1			1
- Forest and semi-natural areas, broad-leaved forest					
Open Fields, Semi Bocage			1		1
- Non-irrigated arable land	m		1		1
Open Fields, Terraced Landscapes		1			1
- Non-irrigated arable land	m	1			1
- Agricultural areas, pastures					
Orchards, Terraced Landscapes, Mountain Landscapes			1		1
- Olive groves	m		1		1
Orchards, Vine Yards, Mountain Landscapes		1			1
- Agricultural areas, permanent crops, fruit trees and berry plantations	m				
- Forest and semi-natural areas, scrub and/or herbaceous vegetation associations, sclerophyllous vegetation		1			1
Pasture		1	1		2
- Agricultural areas, pastures	f		1		1
- Agricultural areas, pastures	m				
- Forest and semi-natural areas, scrub and/or herbaceous vegetation associations, transitional woodland-shrub		1			1
Pasture, Meadow		1			1
- Forest and semi-natural areas, broad-leaved forest	f				
- Heterogeneous agricultural areas - complex cultivation pattern		1			1
Pasture, Rural Areas				1	1
- Agricultural areas, pastures	v				
- Non-irrigated arable land				1	1
Rural Areas				2	2
- Forest and semi-natural areas, coniferous forest	m				
- Land principally occupied by agriculture, with significant areas of natural vegetation				1	1
- Forest and semi-natural areas, mixed forests					
- Land principally occupied by agriculture, with significant areas of natural vegetation	m			1	1
Rural Areas, Pasture				1	1
- Agricultural areas, pastures	m			1	1
Rural Areas, Wooded Grasslands				1	1
- Forest and semi-natural areas - broad-leaved forest	v			1	1
- Agricultural areas - non-irrigated arable land					
Terraced Landscapes, Orchards			1		1
- Agricultural areas, olive groves	v		1		1
Vine Yards		1			1
- Heterogeneous agricultural areas, complex cultivation patterns	v	1			1
- Forest and semi-natural areas, mixed forests					
Total		10	8	10	28

* Geomorphological characteristics: m: mountains/hills; f: river/lake flat; c: coast; v: valley

Mountainous regions dominate as landscape types within the FEAL case studies. Among archetypes of mountain ranges, exist several cultural patterns with close correlation to the relevant environment variables (Hreško et al. 2015). Generally, we can say that traditional agricultural landscapes often occur in mountainous and sub-mountainous regions. We found the following land cover CORINE classes indicating presence of traditional landscapes in mountainous and sub-mountainous regions presented in case studies: agroforestry systems

(Elevitch et al. 2018) (EAL of Dehesas); heterogeneous agricultural areas and land principally occupied by agriculture, with significant areas of natural vegetation (Špulerová et al. 2018) (EALs of Farmland, Orchards, Pastures, Meadow); olive groves (Maldonado et al. 2019) (EALs of Orchards, Terraced Landscapes, Mountain Landscapes), heterogeneous agricultural areas - complex cultivation pattern (Levers et al. 2018) (EALs of Vine Yards, Pasture, Meadow), and agricultural areas, permanent crops, fruit trees and berry plantations (Orchards, Vine Yards, Mountain Landscapes, Farmland, Wooded Grasslands). From the other aspect, some traditional landscapes as Transhumance or Semi-Bocage were not particularly characterised by a class land cover CORINE 2012 which could indicate the presence of the traditional landscape. Therefore, to characterise landscape types of case studies comprehensively, EALs landscape types were enriched in land cover CORINE 2012 classes and vice-versa. Totally, we found land cover CORINE 2012 classes indicating traditionally cultivated landscapes in 14 case studies. However, we realize that this dataset does not contain sufficiently detailed information about the characteristic features of traditionally cultivated land that may locally occur in any type of EAL. Therefore, information on landscape types was supplemented by photo documentation representing the characteristic features of the country in case studies.

As mentioned before, in 2017, Weltin et al. published a broader study based on an empirical approach and a survey of 2154 farms from 11 European regions. The authors explained on and off-farm diversification choices in relation to the CAP. Their findings confirmed the importance of the adaptation of environmental management and diversification measures by young farmers. The FEAL case studies show the same result but provide also some more ideas and experiences from praxis which will hopefully inspire farmers from across Europe. Therefore, examples of success stories documenting best practices of multifunctional and sustainable farms in case studies - www.feal-future/casestudies2/en are powerful educational and training tools on how to learn from real successful business strategies of case studies promoters.

Conclusion

Agricultural production depends on many natural conditions, and the sale of agricultural products from farms is not easy. Mountain regions are economically handicapped due to their difficult topography and their special climate conditions (European Commission, 2004). Today, mountainous and sub-mountainous EALs suffer from residents' exodos and abandonment of the countryside more than EALs in intra-mountain basins or lowlands. These reasons motivate farmers especially in mountain and sub-mountain areas to start doing additional business in the non-agricultural sector. Farmers widen their activities in order to receive a stable income which is self-sustainable, not that much depending on CAP-subsidies and not too much depending on perfect climate conditions. The results of the analysed case studies underline this finding. The case studies presented in the FEAL project brought insight on diverse EALs located in different geographical regions and geomorphological characteristics. Nature and landscape conservation were proportionally distributed throughout all the case studies and in every country involved in the research. We can conclude, that the FEAL project will enrich the existing database of EALs developed by EUCALAND. However, besides the presented results we would like to note that increasing the EALs awareness by experts and the public still remains a challenging task for future projects based on international cooperation.

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