BIOGEA
Testing BIOdiversity Gain of European Agriculture with CAP greening

CAP Greening: Learning from the Local Level

Case study report:

Iberian Dehesa in Extremadura, Spain



2019

BIOGEA Project

BIOGEA aims to examine how the implementation of CAP greening measures introduced in the 2014-2020 period impact land use and in turn change Green and Blue Infrastructure (GBI) in the agricultural landscape. Through policy analysis on the EU and national level and biological monitoring and modelling in six case study areas in 3 Member States (Germany, Spain and Bulgaria), the impacts of policy on GBI and GBI on biodiversity are examined.

Funding

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BIOGEA Case study report: Iberian Dehesa in Extremadura, Spain

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Photo on front cover: Gerardo Moreno

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1. Introduction to BIOGEA project

The BIOGEA project investigates the impact of land use change on the Green and Blue Infrastructure (GBI) in the agricultural landscape. GBI includes landscape structures and habitats, essential for ensuring connectivity between habitats and allowing the movement of species, thus contributing to preserve biodiversity in agricultural landscapes. GBI also provides a range of ecosystem services, which are necessary for meeting environmental policy objectives. Hence, BIOGEA Biogea also aims at analysing how GBI relate to biodiversity and associated ecosystem services.

The research approach is a combination of policy analysis on the EU and national levels and local level implementation as well as biological monitoring and modelling in six case study areas in three Member States (Germany, Spain and Bulgaria). Collaborative work with stakeholders (farmers, advisors, administrators, researchers, experts and NGOs) across scales (EU, national and local) ensured that different opinions and experiences were integrated throughout the project's implementation.

Policy analysis

The policy analysis was carried out both vertically and horizontally: a top-down analysis, from an EU-wide scale to a local scale examining the EU targets for GBI and CAP Greening and their translations into national law. The policy research was based on literature reviews and document analysis at the EU and national levels. Interviews and meetings with EU and national policy experts provided additional views on relevant CAP measures.

Case studies

Targeted case studies were done in six paired intensive/extensive sites in Bulgaria (Plovdiv-Pazardzhik region and Western Stara planina), Germany (Tauber and Albstadt) and Spain (dry cereals croplands in Castilla-La Mancha and dehesas in Extremadura).

Biodiversity and GBI monitoring and modelling in case study areas

Biodiversity and habitat (GBI) field surveys were carried out in each case study area in order to evaluate how the implementation of different CAP Greening schemes impact on biodiversity. An area survey approach was used to obtain information at landscape scale on GBI as well as on specific biodiversity parameters. In plots of 500 x 500 m landscape elements were mapped, Key plant species and species groups were recorded via transect walks in arable land and grassland at up to 4 different points. Bird species were recorded at up to 5 points with a point-count method. Generalized linear models (GLM) were used to analyze the relationships between biodiversity (i.e., plant and bird species richness and Shannon's diversity index of birds) and habitat metrics across plots within each study region. Additionally, we used historical imagery to map changes on GBI occurrence in LTS from 2012 to 2018.

Analysis of CAP Greening implementation in case study areas

The local level implementation of CAP Greening scheme was analysed in participatory manner by involving farmers and local experts, farm advisors, and decision makers. Two structured questionnaires (containing both open and closed questions) were developed for

farmers and local stakeholders in each case study area. The questionnaires had similar structure and content to allow comparison between farmers' and stakeholders' results. Their experiences and views on changes in local land use practices and impacts of the CAP on green and blue infrastructure are integrated throughout this case study report.

Iberian Dehesa in Extremadura is the extensive land use case study area in Spain under BIOGEA project. Biodiversity data was collected in spring 2018 (April – June).. Case study agriculture and policy data for and from the region was collected in the period March - July 2018.

Meetings and interviews with local farmers, administrators, advisers and NGOs' representatives in Iberian Dehesa in Extremadura were organised in the period June-July 2018. A stakeholders' round-table to discuss the preliminary findings of the two Spanish case studies was organized in October 2018. The current report systemizes the findings and conclusions from these activities.

- **Interviewed stakeholders**

Five interviews with local stakeholders were carried out in the period 12-20 June 2018. They represented local/regional agriculture and environmental authorities, and farmers' organisation.

- **Interviewed farmers**

Fifteen farmers were interviewed in the period 14 June – 16 July 2018.

Ten respondents had large farms of over 100 ha, three had farms of size 30 – 100 ha, and smaller farms of 0.1 -10 ha and 10.1-30 ha were one each. Livestock farming systems were represented by seven farmers, mixed farming by five, and arable farming by three.

2. Iberian Dehesa in Extremadura case study area

The case study site is located in the region of Extremadura, Central-Western Spain. The case study area covers seven LAU2 municipalities, located in the counties of Trujillo (La Cumbre, La Aldea del Obispo, Trujillo, Torrecillas de la Tiesa) and La Serena (Retamal de Llerena, Higuera de la Serena and Zalamea de la Serena), with a total area of 134,447 ha.

The area is rather flat (slope 0-3%), with altitude mostly ranging 350-550 m (full range 209-781 m) in the Trujillo area. La Serena presents flat lands (slope 0-3%), with small hilly and undulated lands (slope 3-10%), with altitude mostly ranging 450-650 m. Climate is typically Mediterranean with mild winters and very hot summers. Natura 2000 areas cover 11.7% of the territory in the case study area.

The population density is 11 people per km^2, and 46% of the population lives in small towns and villages (with less than 10,000 inhabitants).

The region is still based on a very rural lifestyle and economy. Agriculture provides employment for 8.2% to 55.1% of the population in the different municipalities in the case study area (Figure 1).

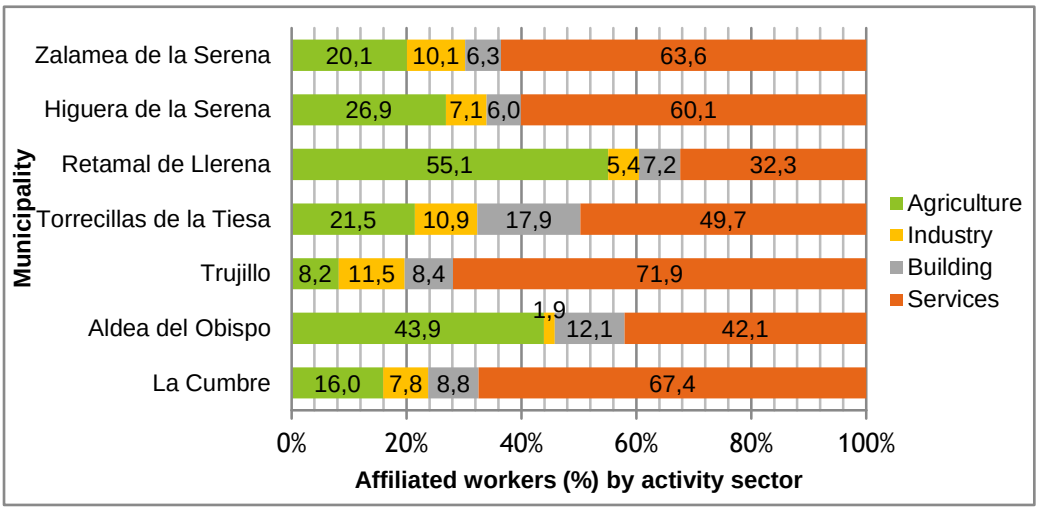
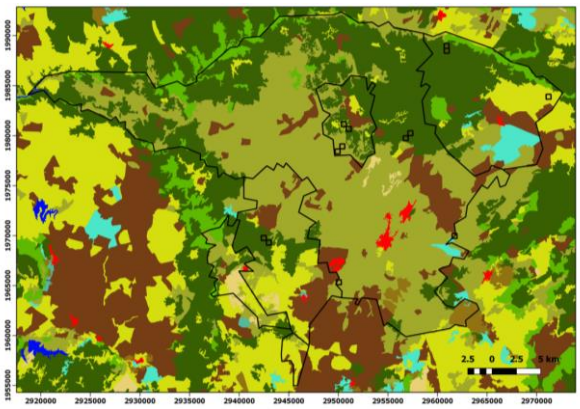
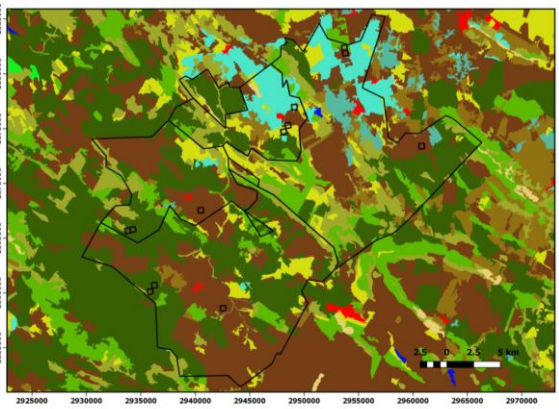


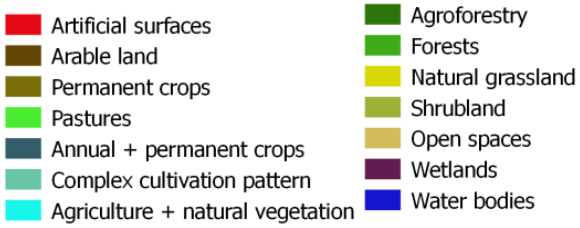
Figure 1. Affiliated workers (%) by activity sector (Oct-Dec 2017)

Agricultural lands, including agro-forestry areas and natural grasslands, cover the largest share of land in the case study area – 56.8% according to CORINE Land Cover 2012 (Figures 2 and 3). Forests and scrubland follow with 42.5%; wetlands and water bodies have minor share of 0.1%. The artificial surfaces cover 0.6%.





Trujillo **La Serena**



Figures 2 and 3. CORINE Land Cover in the case study area

2.1. Agriculture land use

The case study area main land use is charactertic of the Dehesa system - wood pastures where livestock breeding is the main activity. These farms can also include open pastures, scrubland, and even annual and permanent crops, but are always dominated by wood pastures. The Land Parcel Identification System (LPIS) in Spain, which is used for the CAP payments, considers wood pastures as one of the three categories of permanent pastures, together with open pastures and scrub-encroached pastures.

Permanent pastures are the main agriculture land use in the case study area covering 67% of the utilised agricultural area (UAA) (Agriculture Census, 2009). Arable land covers 19% and other agricultural land uses 14%. The overall UAA is 103,602 ha, indicating a high share (77%) of the agricultural land in the case study area (Table 1).

Table 1. Agriculture land use types in the Dehesa case study area

Land use types	UAA (ha)	Share in total UAA (%)
Arable land	20,029	19
Permanent crops	0	0
Permanent pastures	69,203	67
Other	14,371	14
Total	**103,602**	**100**

Source: Agriculture Census, 2009

The CORINE Land Cover data for 2012 provides more details about the agriculture land cover although at lower resolution. The Dehesa system is categorised as Agroforestry lands (code 244) in CORINE, which represents 55% of the agriculture land cover in the case study area. (open) pastures and natural grasslands cover 13.9%, while arable land is 23.2% (Table 2 and Figures 2 and 3).

Table 2. Agriculture land cover types in the Dehesa case study area

Land use types	Share in all agriculture land (%)
Arable land	23.2
Permanent crops	3.9
Pastures and natural grasslands	13.9
Heterogenous agriculture areas	59.0
-- *Annual crops associated with permanent crops*	*0.0*
-- *Mosaics: complex cultivation patterns*	*1.7*
-- *Land principally occupied by agriculture*	*2.3*
-- *Agroforestry*	*55.0*
Total	**100**

Source: CORINE Land Cover, 2012

2.2.Farms and farming systems

In the Trujillo area, most of the farmland is concentrated in large estates, with over 50% of the land in farms sized between 100 and 500 ha, and over 30% of the lands in farms sized above 500 ha. Only 0.9 of the lands are in farms smaller than 10 ha. 65% of lands are farmed by the owners. The dominant land uses in the Trujillo area are wood pastures and open pastures, followed by forest and shrublands and arable lands.

In La Serena, traditionally farm estates were very large (hundreds to thousands hectares), and integrate multiple uses, such as annual crops, livestock breeding, hunting, and extraction of firewood, charcoal and cork, among others. In more fertile soils, land tenure progressed to more specialized land use and usually in small holdings. Nowadays, roughly half of the farms are less than 5 ha, mostly worked by the owners but they manage only 3.1% of the land (Table 3).

Table 3. Farms and agricultural land per farm size in the case study area

Sub-area	Trujillo				La Serena			
Farm size	Number		Area (ha)		Number		Area	
		%	(ha)	(%)		%	(ha)	(%)
Up to 5 ha	92	18.5	247.01	0.3	395	56.1	972.79	3.1
5.1 - 10 ha	50	10.1	449.23	0.6	101	14.3	900.90	2.9
10.1 - 30 ha	70	14.1	1,763.47	2.5	78	11.1	1,668.64	5.3
30.1 -100 ha	114	23.0	9,603.00	13.6	59	8.4	3,890.94	12.4
Over 100 ha	170	34.3	58,568.36	82.9	71	10.1	23,978.74	76.3
Total	**496**	**100**	**70,631.07**	**100**	**704**	**100.0**	**31,412.01**	**100.0**

Source: Agriculture Census, 2009

2.3.Farming systems intensity

Information about the input and use of mineral fertilizers and manure as well as livestock density index is not available at local level in the Agriculture Census 2009.

The livestock systems intensity is calculated based on Agriculture Census 2009 data.

The grazing density is calculated using the livestock units of grazing animals (49,702 LU) and the area of permanent pastures (69,203 ha). The estimated grazing density is 0.72 LU/ha.

The livestock density is calculated using the livestock units of all livestock (57,913 LU) and the total utilised agricultural area (103,602 ha). The estimated livestock density is 0.56 LU/ha.

3. Characteristics of the Green and Blue infrastructure in Iberian Dehesa

3.1. Green Infrastructure policy in Spain

The concept of Green Infrastructure (GI) is included as a new model for territorial development in the national legislation in Spain. The definition of the EU Biodiversity Strategy 2020 is adapted, specifying green infrastructure as a "network of terrestrial, aquatic and marine areas (blue infrastructure) designed, planned and managed to preserve the biodiversity and to ensure a wide range of ecosystem services".

Spain is developing a National Green Infrastructure Strategy based on article 15 of the Spanish Biodiversity Law. It considers several interrelated basic concepts about biodiversity, habitat connectivity, ecological restoration, ecosystem services and global change factors. Moreover, the future Spanish Green Infrastructure Strategy includes a set of guidelines, an economic-financial dimension, and a monitoring programme so that GI can be implemented successfully by public administrations on their territories.

The spatial planning of GI requires cartography at national, regional and local levels, which includes different GI territorial elements – core areas, buffer zones, lineal corridors, stepping stones, landscape corridors, multi-functional areas. It is under development by the Ministry of Ecological Transition.

The Land Parcel Identification System (LPIS) maintains the following GI elements as relevant from a CAP perspective – ecological focus areas (EFA), permanent pastures as well as landscape features, which are merged all together. The LPIS system maps also areas with limitations for the use of nitrates and phytochemicals. However, they do not represent all GBI elements and features on agricultural land.

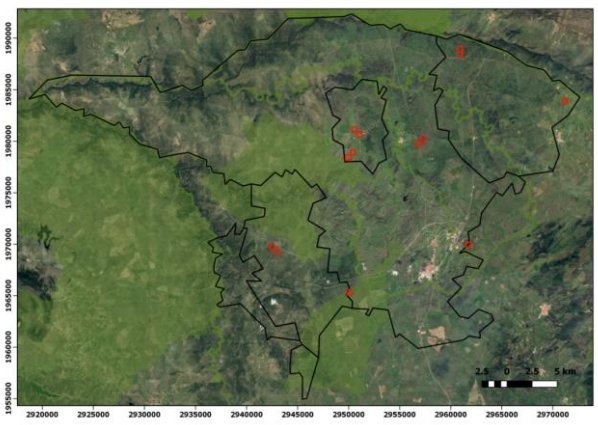
3.2. Biodiversity designations and management requirements

In the GI spatial planning, Natura 2000 sites are considered as core areas, together with other high environmental value zones and habitats that provide multiple ecosystem services. The Iberian Dehesa is protected by the EU Habitat Directive as habitat type 6310. However, only around 50% of all Dehesa systems in Spain are within Natura 2000 sites.

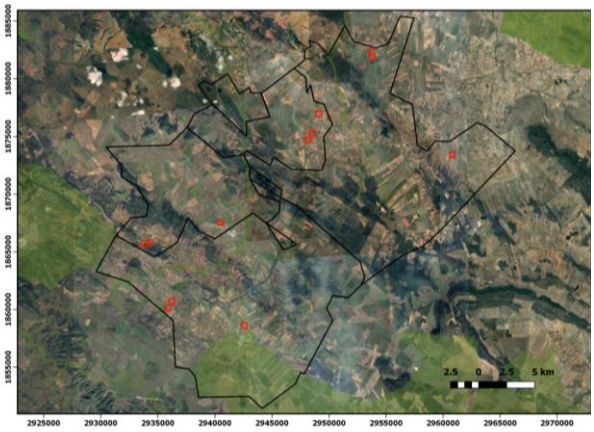
In the case study area, most of the Dehesas are not within Natura 2000 sites. The territory within the Natura 2000 sites is 18,585 ha, which represents 11.7% of the CS area.

The Trujillo area holds a large percentage of Natura 2000 sites (Figure 4). The protected areas are: Llanos de Trujillo (code ES0000332), Magasca (code ES0000425), Riberos del Almonte (ES0000356), Río Almonte (code ES4320018) and other of minor importance. Besides, the study area is adjacent to two additional very important protected areas - Llanos de Cáceres (code ES0000071) and Monfragüe (code ES4320077). The area is occupied by up to 147 protected vertebrates species: 3 species of fish, 6 species of amphibians, 11 species of reptiles, 101 species of birds, and 29 species of mammals. Besides, two invertebrate species and 3 plant species listed in their respective red lists are present in the zone.

La Serena area (Figure 5) covers partially three Natura 2000 protected sites: Río Guadamez (code ES4310024), Río Ortiga (code ES4310064), and Campiña sur - Embalse de Arroyo Conejos (code ES0000325). Additionally, it contacts with the border of a fourth protected area - Sierra Grande de Hornachos (code ES0000072). In the area there are up to 130 protected vertebrates species: 10 species of fish, 6 species of amphibians, 10 species of reptiles, 82 species of birds, and 22 species of mammals.



Trujillo



La Serena

Figures 4 and 5. Natura 2000 sites in the case study area

Farming-related requirements in the Natura 2000 management plans

Most of the relevant farming systems within the Natura 2000 sites in the case study area are open and wooded pastures used for livestock breeding and dry cereal crops. Habitats include wooded pastures (Dehesas with evergreen *Quercus* spp.) and pseudo-steppic habitats. Species in agricultural land comprise steppic birds and raptor populations, which depend on Dehesa habitats.

The management plans for the Natura 2000 sites in the case study area include various requirements and restrictions for the farming operations[1], which are compensated to farmers by the rural development programme. The management requirements and restrictions comprise:

[1] http://extremambiente.juntaex.es/files/planes_gestion/31_PG_Llanos_de_Trujillo.pdf
http://extremambiente.juntaex.es/files/planes_gestion/30_PG_Magasca.pdf
http://extremambiente.juntaex.es/files/AnexoV/40_PG_Almonte.pdf
http://extremambiente.juntaex.es/files/planes_gestion/49_PG_Rio_Guadamez.pdf
http://extremambiente.juntaex.es/files/AnexoV/51_PG_Rio_Ortiga.pdf
http://extremambiente.juntaex.es/index.php?option=com_content&view=article&id=1115&Itemid=461
http://www.mapama.gob.es/es/desarrollo-rural/temas/programas-ue/pdrdeextremadura-18122014versionii_tcm30-131151.pdf
http://www.juntaex.es/filescms/ddgg002/uploaded_files/fondos_europeos/FondosEuropeos2014_2020/Programa_de_Desarrollo_Rural_Extremadura_2014_2020.pdf
http://eunis.eea.europa.eu/habitats/10129

a. Harvest delay (cereals - 1st of July, legumes - 1st of August) in order to avoid disturbances to nesting birds;
b. Establishment of natural vegetation permanent strips;
c. Limitation of agricultural work during the steppic birds' breeding season (March-August);
d. Use of seeds not chemically treated;
e. Minimize disturbances derived from agricultural activities around nests of endangered raptors (Spanish imperial eagle *Aquila adalberti*, Bonelli's eagle *A. fasciata*, red kite *Milvus milvus*) during the breeding season (January-August);
f. Limitation on land use changes and development of infrastructure that would lead to landscape transformation;
g. Prohibition to change from rain-fed to irrigated production system;
h. Reduction of the use of agrochemicals and fertilizers and, when applied, respecting a minimum-security space of 5 m from water sources;
i. Recovery, increase and maintenance of structural agrarian landscape elements important for biodiversity such as hedges, streams, ponds, grassy and woody strips;
j. Tree cutting is not allowed, except under exceptional permissions
k. No pruning is allowed on trees which hold red kite nests or roosts;
l. Support tree regeneration of wooded pastures (Dehesas with evergreen *Quercus* spp);
m. Limitation of livestock density levels in wooded pastures.

3.3. Water designations and management requirements

In the framework of the future Green Infrastructure National Strategy, surface water bodies (rivers, wetlands, transitional and coastal waters) are considered as GI core areas, and fluvial spaces and flood zones as ecological corridors.

The GI National Strategy also includes "nature-based green infrastructure solutions", with special relevance in urban and peri-urban areas (e.g. Sustainable Urban Drainage Systems).

- **River-basin management plans**

There are two Basin Management Plans for the case study area, the Tajo River-Basin and the Guadiana River-Basin Plans. Tajo River Management Plan indicates that agriculture and livestock pressures are affecting underground water, which is in bad condition. The Programmes of Measures include special procedures for irrigation crops and livestock holdings:

- Priority criteria and compatibility of uses;
- Limitations on concessional terms for the use of irrigation (up to 40 years);
- Establishment of maximum water allocations for irrigation;
- Indication of irrigation efficiency aims;

- Establishment of water reference allocations for livestock.

- **Flood-risk maps**

The case study area is not included in any flood risk map according to the Flood Risk Basin National System[2]. All plots and administrative boundaries are outside of flood risk areas (T=10, 100 or 500 years). Only preventive measures are applied in situ.

- **Nitrate vulnerable zones**

There are no nitrate vulnerable zones (NVZ) in the case study area[3]. Extremadura regional government has published a Code of Good Agricultural Practices as well as an Action Programme for nitrate vulnerable zones, which is compulsory for farmers within NVZ. Farmers in the case study area are not obliged to implement them.

3.4.Climate mitigation and/or adaptation measures

There are several actions[4] related to climate mitigation and adaptation at local and regional levels. Agenda 21 Local Programme is developed as a tool to act against climate change at the level of a municipality or group of municipalities. Moreover, the regional Extremadura Government has created the Extremadura Climate Change Observatory to promote policy actions and coordinate all society sectors at the regional level to fight climate change.
The regional Climate Change Strategy for 2013-2020 specifies that climate change mitigation and adaptation actions in the agricultural sector must focus on:

- Reduction in the use of nitrogen fertilizers;
- Promotion of energy efficiency and efficient technologies in irrigation systems;
- Promotion of organic agriculture and livestock farming;
- Promotion of the exploitation of agro-livestock waste;
- Promotion of CO_2-sink crops and improvement of soil management;
- Support research in agriculture for mitigation and adaptation to climate change;
- Support outreach and dissemination of information related to good agricultural practices related to climate change.

[2] http://sig.mapama.es/snczi/

[3]https://www.fega.es/sites/default/files/imported/PwfGcp/imagenes/es/Fega_ZVmapa_tcm5-27467.pdf

[4] http://rurex.juntaextremadura.es/agenda21.php
http://www.observatorioclimatico.es/index.php?option=com_content&view=article&id=35&Itemid=37
http://www.observatorioclimatico.es/files/Estrategia%20de%20Cambio%20Clim%C3%A1tico%20de%20Extremadura%202013-2020%20OK.pdf

3.5. Green and Blue Infrastructure assessment in BIOGEA project

The Iberian Dehesa case study region has a high presence of Green and Blue Infrastructure (GBI) elements and features[5]. Agroforestry areas with variable tree density are the main in-field GBI. Grassy and woody strips, as well as streams, ponds and stonewalls, are abundant. Opengrassland and scrubland are also present.

3.5.1. Biodiversity assessment

The preliminary results of the modelling[6] of GBI-biodiversity relationships in the case study area provide the following highlights:

- Tree density is positively related to plant species richness, but negatively to steppe and farmland birds.
- Ponds benefitted threatened farmland birds.
- Agroforestry was marginally detrimentral for steppe birds, wheras open grassland was positively related to the abundance and richness of steppe and farmland birds.
- Woody strips were marginally positive for threatened birds.
- Stream affected negatively farmland birds.

The results of the biodiversity-GBI modeling relationships demonstrated positive relationships between biodiversity and the presence of ponds and woody strips. Agroforestry was also positive, with contrasting effects of tree density on biodiversity (positive for plants and negative for open-country birds). Open rather than wooded grassland was required for steppe and farmland birds. Hence, maintenance of complex landscapes including open and wooded grassland and provided with ponds would be recommended for regional biodiversity enhancement. Promoting grassland to support more specialist and threatened farmland specie,s and maintenance of woody strips to support threatened (non-farmland) bird species should be the best policy option for this system[7].

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[5] Pardo, A.; Rolo, V.; Concepción, E.D.; Díaz, M.; Aneva, I.; Lukanov, S.; Oppermann, R.; Schraml, A.; Ullrich, B.; Moreno, G. 2019. Farmland biodiversity across diverse European agricultural systems: assessing the effect of Green and Blue Infrastructure. 1st Iberian Meeting on Agroecological Research, Évora, November 2018. https://www.biogea-project.eu/biogea-findings-presented-1st-iberian-meeting-agroecological-research-ibagreco

[6] Concepción, E.D.; Aneva, I.; Lukanov, S.; Moreno, G.; Oppermann, R.; Pardo, A.; Rolo, V.; Schraml, A.; Ullrich, B.; Díaz, M. 2019. Green and blue infrastructure and farmland biodiversity: Optimizing CAP greening as conservation tool. Oral presentation. 1st Meeting of the Iberian Ecological Society & XIV AEET Meeting. Ecology an integrative science in the Anthropocene. 4-7 February, Barcelona, Spain.https://www.biogea-project.eu/biogea-presentation-green-and-blue-infrastructure-and-farmland-biodiversity-optimizing-cap-greening

[7] Concepción, E.D., Aneva, I., Jay, M., Lukanov, S., Marsden, K., Moreno, G., Oppermann, R., Pardo, A., Piskol, S., Rolo, V., Schraml, A. y Díaz, M. 2019. Optimizing biodiversity gain of European agriculture through regional targeting and adaptive management of conservation tools. Biological Conservation, submitted

3.5.2. Assessment of stakeholders' and farmers' awareness on GBI

The BIOGEA project assessed stakeholders and farmers' awareness about the terminology "green and blue infrastructure". During the interviews, stakeholders and farmers were first asked about the term. When they stated their level of awareness, the definition was presented and examples were provided. After that respondents were asked about the recognition of the presence of GBI elements and features in the region (by stakeholders) or on farms (by farmers); as well as the knowledge about appropriate management practices for the GBI elements and features.

- **Awareness about the terminology "green and blue infrastructure"**

All five interviewed stakeholders – both agriculture and environmental- stated that they were aware about the terminology of green and blue infrastructure.

In contrast, only two of the interviewed farmers (N=15) were definitely aware about it; eight were aware only to some extent. Five respondents were not aware at all – they were mostly representatives of large farms (over 100 ha) and in mixed farming systems.

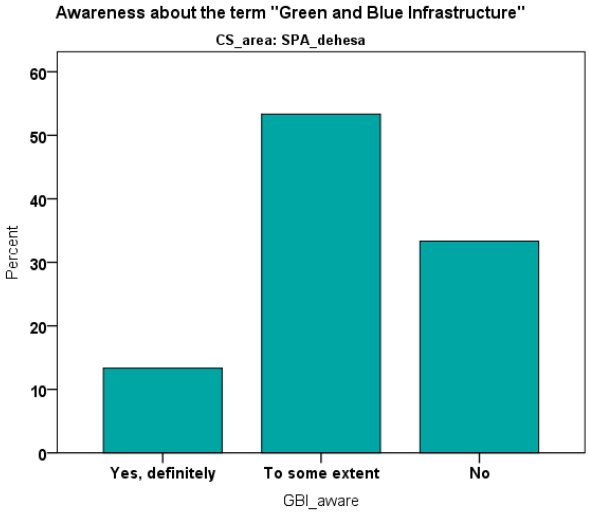


Figure 6. Farmers' awareness of GBI (N=15)

- **Recognition of the presence of GBI elements and features in the region by stakeholders**

The interviewed stakeholders recognised between 13 and 17 (mean value of 15) GBI elements and features in the case study area as a whole. The GBI features identified by all stakeholders comprised permanent pastures and grasslands, land left fallow, agroforestry, areas with nitrogen fixing crops, scrubland and field margins, trees in groups and isolated trees, ponds and traditional stonewalls.

- **Recognition of the presence of GBI elements and features on farms by farmers**

The interviewed farmers (N=15) recognised between 1 and 14 (mean value of 6) GBI elements and features on their individual farms. The GBI features present on most farms (73%) were permanent pastures and grasslands, and land lying fallow. Trees in groups and isolated trees, agroforestry and traditional stonewalls were present on 53% of the respondents' farms; ponds on 47%; and scrubland and areas with nitrogen fixing crops on 33%.

- **Farmers' knowledge about appropriate management practices of GBI elements and features from environmental point of view.**

Farmers were asked to self-assess their knowledge about the appropriate management of GBI elements on their farms from an environmental perspective. Stakeholders were asked to assess in general whether farmers in the case study area knew how to manage GBI elements from environmental perspective.

Farmers' perspectives. The majority of interviewed farmers stated they were aware about GBI management from an environmental perspective – seven were definitely aware and seven were "aware to some extent". Farmers' management examples included maintenance of woody strips including wild pear bushes, leaving non-cultivated field margins, maintaining ponds with water throughout the year; protecting and restoring traditional stone walls, cutting and pruning holm oaks during the appropiate months as well as placing rocks to prevent soil erosion by intensive runoff. One farmer "protects permanent pastures through extensive cattle breeding". Another respondent explained that he used "traditional local farming practices" to maintain GBI elements.

Stakeholders' perspectives. Four of the five interviewed stakeholders said that farmers were fully or somewhat aware about GBI management from environmental point of view; one stakeholder thought they were not aware. Stakeholders pointed to practices such as "maintaining woody strips and respecting vegetation patches within crops", "repairing gates in masonry walls" as well as "creating and maintaining ponds". One stakeholder referred to "the daily work on their farms", which assumingly integrates also maintenance of GBI features. He also pointed to "the reduction of livestock loads" as a GBI management practice. One of the stakeholders commented that farmers in the area maintained GBI individually as opposed to common /group initiatives.

4. Implementation of the CAP Greening scheme in Iberian Dehesa case study area

4.1. CAP Greening scheme in Spain

The CAP Greening scheme in EU has three main elements and respective requirements – diversifying crops and ensuring ecologically focused areas on arable land above certain size as well as maintenance of permanent pastures. The specific requirements and the implementation choices in Spain are summarized below.

- **Crop diversification**

  Crop diversification requires farmers with arable land of over 10 ha to grow at least two crops for the areas up to 30 ha, and at least three crops for the areas over 30 ha.

Spanish authorities carry out controls to check the number of crops on farmland and their respective shares between May and July each year. The different regional authorities may adapt the period taking into account the specific agro-climatic conditions in their region.

- **Ecological focus areas**

  Farmers with arable land over 15 ha must ensure that at least 5% of their land is in an ecological focus area (EFA) among which are ecologically beneficial productive land uses and landscape features. National governments define the list of EFA, from which farmers can choose what to implement on their farms.

The Spanish list of EFA is comprised of the following options: fallow land; nitrogen-fixing crops; afforested areas and agro-forestry areas under the rural development programmes; as well as *Miscanthus* areas; *Silphium perfoliatum* areas; and fallow land with melliferous plants (species, which contain pollen and nectar for bees).

Landscape features are not in the EFA list in Spain because they are included in the standards for good agriculture and environmental conditions (GAEC). The landscape elements in GAEC cover hedges, isolated trees, trees in lines and in groups, field margins, ponds and natural livestock drinking points, patches of natural vegetation or rock, terraces, dry stonewalls or other traditional structures as defined by the regional authorities.

- **Permanent pastures**

  There are two requirements for permanent pastures. The first one requires national or regional governments to maintain the ratio of permanent grasslands to the total agricultural area. The ratio may not be reduced by more than 5% compared to the reference year. The second one requires national governments to designate Environmentally Sensitive Grasslands, that include the grasslands within the Natura 2000 protected areas, and in certain cases they may also be outside Natura 2000 areas. Environmentally sensitive grasslands cannot be ploughed or converted.

In Spain, the first requirement is implemented at national level with 2012 set as a reference year and any additional area declared in 2015 (Beaufoy, 2015[8]). If the ratio is not met, then farmers that have converted permanent pastures must restore the cropland to grasslands.

The requirement for the designation of Environmentally Sensitive Grasslands (ESG) is regulated at national level. It specifies the ban on ploughing or conversion as well as that only permanent pasture within Natura 2000 areas are to be considered ESG in Spain. The identification of the specific grasslands to be designated as ESG is a competence of the regional authorities (Beaufoy, 2015).

- **Institutions and administrations**

National level. Spain had one ministry for both agriculture and environment until 2018. As of then there are two ministries – the Ministry for Agriculture, Fisheries and Food, and the Ministry of Ecological Transition, and all issues concerning agriculture and farmers are dealt with by the Ministry of Agriculture.

Regional level. The Regional government of the autonomous community Extremadura has agriculture and environment departments.

The Environment, Rural Development, and Agrian Policy and Territory Department of Extremadura (regional level) is where farmers submit their applications for CAP and other support, and where regional requirements related to both agriculture and environment are defined, regulated and controlled. The Regional administration has created an information tool to facilitate the processing of CAP application (plataforma arado[9]).

Farm advisory services. Advisory services for farmers in Spain can be both public and private. The main public advisory services in Extremadura comprise the Agricultural county offices. The agriculture unions are also considered a key source of information for farmers. Additionally, there are other thematic advisory bodies such as the Organic agricultural and livestock advisory network, and the Irrigation advisory services.

[8] Beaufoy, G. (2015) Country report on the implementation of the new CAP and its possible effects on permanent pastures: Spain. European Forum on Nature Conservation and Pastoralism (EFNCP)

[9] https://arado.juntaex.es/aradoi/inicio.aspx

4.2.CAP Greening scheme implementation in Iberian Dehesa case study area

Two of the elements of CAP Greening scheme apply to arable land over certain size (crop diversification on farms with land over 10 ha, ecologically focus area on land over 15 ha) and one applies to permanent pastures of any size.

Permanent pastures (67%) dominate the agricultural land in the case study area. The Greening scheme requirement is to maintain its area and preserve it from ploughing or conversion. It does not require actual changes in the pasture management practices. The classification of the Dehesa system as permanent pasture indicates that the CAP Greening scheme protects its area from reduction due to ploughing or conversion and the 5% ratio rule is applied. At the same time, Beaufoy (2015) stresses that the main threat to the Dehesa system is abandonment, which is not directly addressed by the current CAP Greening scheme. Insuficient tree regeneration is also considered as a serious threat for the long-term maintenance of wooded pastures[10], a problem that is not addressed by Greening either.

Arable land covers only 19% of the agriculture land in the case study area, but over 92% of it is on farms over 10 ha. Therefore, the main changes in the land management practices because of the CAP Greening scheme are expected to occur on arable land farms rather than on dehesa states.

The total number of CAP Greening scheme beneficiaries in the case study area is 659 in 2016[11], which is around half the number of farms in 2009 (Agriculture Census).

The farmers interviewed in the BIOGEA project were asked to state their participation in the different elements of the CAP Greening scheme:

- **Greening scheme: Permanent pastures**

The respondents that implement the permanent pastures element were 11. Only one of them stated that part of his permanent pastures were designated as environmentally sensitive grasslands, indicating that they were in Natura 2000 sites. Two respondents were not sure about the designation of their permanent pastures. All other respondents indicated that their permanent pastures were not environmentally sensitive grasslands.

- **Greening scheme: Crop diversification**

The respondents implementing the crop diversification element were eight. Only one had two crops. Five respondents grew three crops. There were two respondents with four crops, and one with five crops. The main crops grown were wheat, oats and barley as well as vetch.

[10] Campos, P., Huntsinger, L., Oviedo, J.L., **Díaz, M.**, Starrs, P., Standiford, R.B. y Montero, G. (eds.). 2013. Mediterranean Oak Woodland Working Landscapes: Dehesas of Spain and Ranchlans of California. Springer, New York. ISBN 978-94-007-6706-5.
[11] https://www.fega.es/en/node/41221

The motivations for the crop choice were based mostly on the crops' adaptation to the specific local agro-climatic conditions (n=5); improvement of soil quality (n=2), animal feed (n=2), and purely productive reasons (n=1).

Table 4. Crops grown on respondents' farms (n=8)

Crops	Respondents								no. respondents
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
wheat	x	x		(x)	x	x	x	x	**7**
oats	(x)*	x	x	x	x	x		x	**7**
barley	x	x	x	x	x		x		**6**
vetch	x			(x)	x		x		**4**
peas				x			x		**2**
rye	(x)				(x)				**2**
yellow lupin					x			x	**2**
corn		(x)							**1**
lucern		(x)							**1**
triticale						x			**1**
fallow land								(x)	**1**
total no. of crops	**3**	**3(5)**	**2**	**3**	**5**	**3**	**4**	**3**	

*The crops in brackets (x) were indicated as used in the rotation in the different years.
Source: Farmers' interviews

- **Greening scheme: Ecological focus areas**

The respondents implementing the ecological focus areas element were eight. Almost all of them chose fallow land (n=7), complemented by nitrogen fixing crops (n=5) and agroforestry (n=1). Four farmers chose more than one EFA option to fulfil the requirement for EFA on 5% of the arable land.

The ecological focus areas were the element of the CAP Greening scheme expected to bring the highest new environmental benefits on arable land. Therefore, farmers' motivations for the EFA options choice was of particular interest for the assessment of the scheme effectiveness.

Interviewed farmers were asked to assess seven statements about their motivations for EFA choice using Likert scale, where 5 stood for strongly agree; 4 – somewhat agree; 3 – neutral; 2 – somewhat disagree; and 1 – strongly disagree.

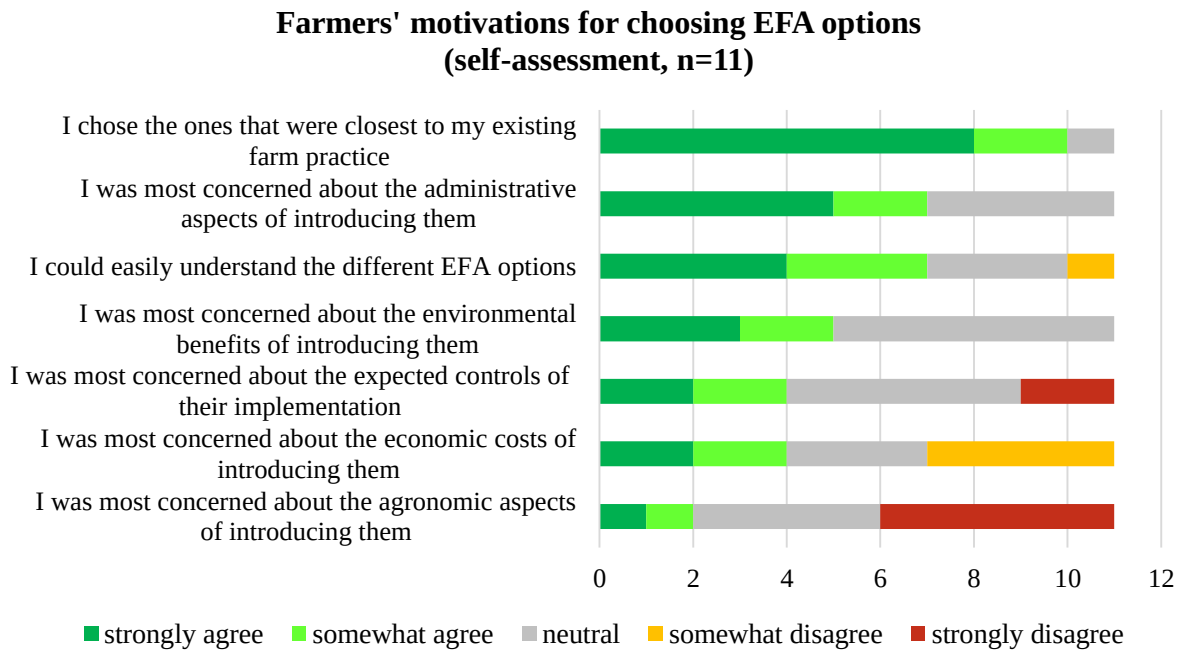


Figure 7. Farmers' self-assessment of motivations for choosing EFA options

The choice of EFA options that were closest to the existing farming practices was the strongest motivation for farmers. One respondent explained that he chose peas as nitrogen fixing crop because he could also use it as animal feed. Other respondent said, "I was not particularly worried about Greening implementation because I was already sowing nitrogen fixing crops and implementing crop rotation".

The other two concerns about the EFA choice related to the administrative requirements for the introduction and the understanding of the different EFA options that would help meet the requirement. One stakeholder explained that his motivation was to receive the full CAP payments, for which he "understood that it was compulsory to implement EFA".

The motivation for environmental benefit, which was the main goal of the CAP Greening scheme and EFA element, comes fourth in the list of seven statements. However, more respondents had "neutral" positions about it, than "strong agreement" or "some agreement".

The results indicated that the agronomic aspects of EFA introduction caused the least concern in the choice consideration. However, the examples that farmers provided referred to several agronomic concerns. For example, one farmer explained that he was concerned "if some pea varieties implemented as nitrogen-fixing crops were going to adapt well to the local land characteristics". Another farmer was concerned that "many people implement land lying fallow but without herbaceous cover (they plough it). This leads to higher erosion, higher water evaporation and less biodiversity". He thought that land lying fallow should be implemented with herbaceous cover. Another farmer explained that he "started with nitrogen fixing crops as EFA, but due to the difficult adaptation of these crops to local soil and climatic conditions he decided to change EFA option for land laying fallow (no production) instead".

Stakeholders' perspectives on farmers' motivations for EFA choice

Interviewed stakeholders were asked to assess the same seven statements, using the same Likert scale. The difference was that stakeholders assessed the EFA choice motivations of farmers in the case study area in general.

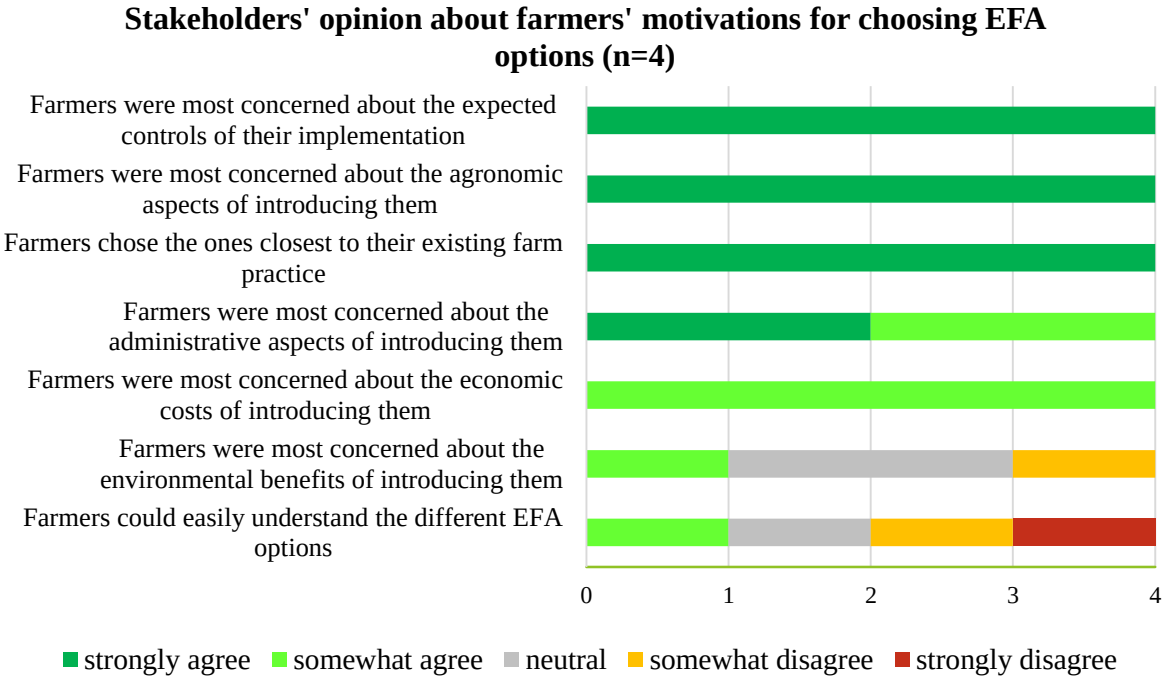


Figure 8. Stakeholders' assessment of farmers' motivations for choosing EFA options

The results of stakeholders' assessment revealed three key motivations, where all four stakeholders expressed "strong agreement". The EFA options closest to farmers existing practices coincided with farmers' key motivation. Farmers' concern about the controls was high in the stakeholders' assessment, most likely because some of them represented the administrations dealing with the implementation and had practical observations of all farmers in the area. One stakeholder indicated that farmers were concerned of "not reaching the minimum surface needed for greening payment". Another stakeholder explained, "farmers were afraid of the administrative paperwork and implementation controls".

Stakeholders' assessment of the environmental benefits as farmers' motivation was rather neutral, with no strong agreement or disagreement about the statement.

The statement that received most disagreement in the stakeholders' assessment was farmers' easy understanding of the different EFA options. One stakeholder said "farmers were not aware that EFA areas, for example, land lying fallow, could not be used to feed cattle". The other stakeholders connected the challenge of understanding actual EFA implementation with the expected controls and paper work.

4.3.Changes resulting from the implementation of CAP Greening scheme

Farmers and stakeholders were asked to assess the potential environmental, economic and administrative improvements resulting from CAP Greening scheme implementation based on their experiences and observations. There were seven statements, which farmers assessed for their own farms and stakeholders for the case study area. Likert assessment scale was used: 5-strongly agree, 4-somewhat agree, 3-neutral, 2-somewhat disagree, 1-strongly disagree.

- **Farmers' assessment of Greening scheme implementation on farms**

The results from farmers' assessment are presented on Figure 9. Overall, the statements received more "neutral" and "strong disagreement" assessments suggesting that farmers perceived minor improvements as a result of the CAP Greening scheme.

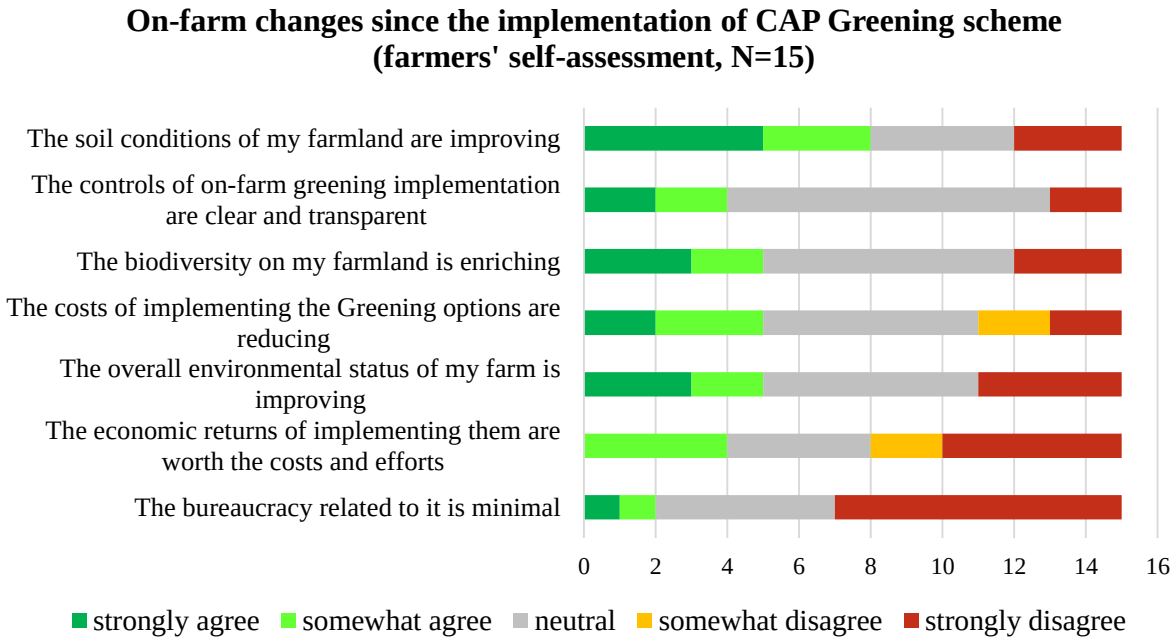


Figure 9. Farmers' assessment of on-farm changes resulting from Greening scheme

Environmental perspective. Eight stakeholders agreed with the statement about improvement of soil conditions. At the same time, one farmer commented, "with or without EFA options I maintain traditional way of dry cereal cropland management". However, other farmers said that there was "lower use of nitrogen fertilizers" as well as that "since sowing nitrogen-fixing crops, there are higher yields in the following year". In terms of biodiversity enrichment, farmers gave positive examples (n=5) as "development of autochtonous vegetation" and "improvement in floral resources", but again the dominant position of interviewed farmers was "neutral" (n=7).

Administrative implementation and controls. Respondents' assessment of the clarity and transparency of controls received the highest number of "neutral" responses (n=9) of all seven statements. One respondent commented that it was "the same as in the beginning".

The highest number of "strong disagreement" responses related to the minimal level of bureaucracy. Farmers explained that "the legislation and bureaucracy are excessive" and that Greening led to "higher bureaucracy and farm controls".

Economic perspective. The results indicated higher disagreement than agreement about the statement on the economic returns from CAP Greening scheme. One respondent commented, "income is lower due to reduction of the cultivated area". Other respondents shared "the financial gains from Greening implementation improved over time" and they had "higher income".

- **Stakeholders' assessment of Greening scheme implementation in the region**

Environmental perspective. Overall, stakeholders thought that there was "no important environmental or agronomic improvements". The only benefits they recognised related to the "increase in crop diversification" and "nitrogen fixing crops leading to higher soil productivity" and "soil regeneration".

Stakeholders also shared that on-farm improvements related to the requirement for farmers to "respect patches of seminatural vegetation within crops, which leads to higher biodiversity" and "creation of ponds". However, these were not part of the CAP Greening scheme in Spain, but part of GAEC and/or agri-environmental measures.

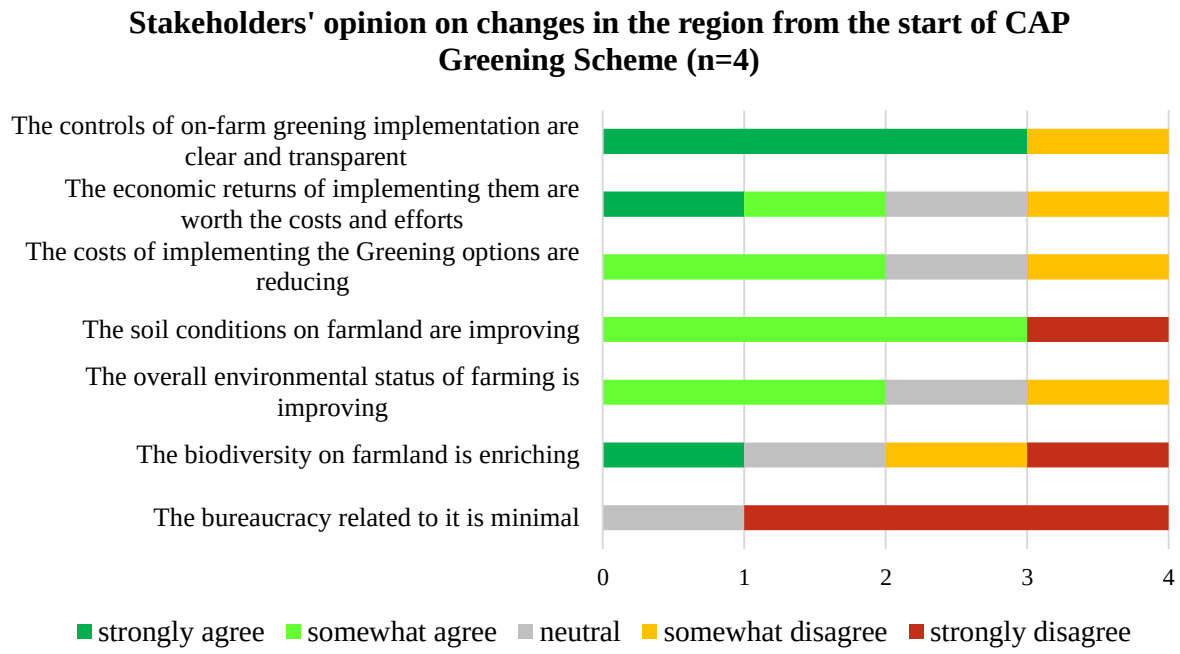


Figure 10. Stakeholders' assessment of Greening scheme implementation in the region

Administrative implementation and controls. Stakeholders' assessment of the administrative aspects was quite interesting. They expressed "strong agreement" that the on-farm controls were clear and transparent; however, they "strongly" disagreed that the bureaucracy related to it was minimal. On the contrary, three of them shared that the "administrative conditions have worsened due to excessive bureaucracy and implementation controls".

Economic perspective. One stakeholder considered that farmers received higher incomes with CAP Greening scheme. Another stakeholder referred to the benefits of "higher soil productivity due to nitrogen-fixing crops". One stakeholder also saw "economic detriment due to failure of EFA in Dehesa system".

- **Long-term changes on farms as a result of CAP Greening scheme**

Farmers were asked if CAP Greening scheme implementation leads to long-term changes on their farms (Figure 9); stakeholders had to respond about all farms in the case study area (Figure 10).

Farmers' perspectives. Over half of the interviewed farmers (n=8) replied that they would not implement CAP Greening management practices in the long-term. Some respondents indicated definite changes (n=3) and some changes (n=4). One farmer explained that he would continue with "the introduction of nitrogen-fixing crops and change in harvesting times". Another farmer was going to keep "land laying fallow but in locations where sheep cannot enter". One of the respondents stated that "Greening implementation has not really changed the way I manage the farm. I implemented many changes to improve soil quality and biodiversity but outside the CAP Greening scheme, driven by my own motivation to preserve the land".

Stakeholders' perspective. The interviewed stakeholders expected long-term changes in land management practices because of the CAP Greening implementation. They explained that the "Greening scheme has resulted in farmers making more difficult changes in their farm management practices" and that "some farmers have adopted Greening measures as they see them as a good opportunity". However, Greening also "forces farmers to leave portions of land with no production or to sow crops not adapted to local conditions", which they would most likely change in the long-term.

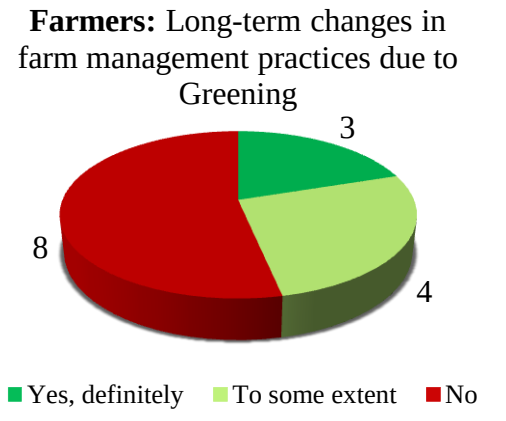


Figure 11. Farmers assessment of long-term changes on their farms due to Greening (N=15)

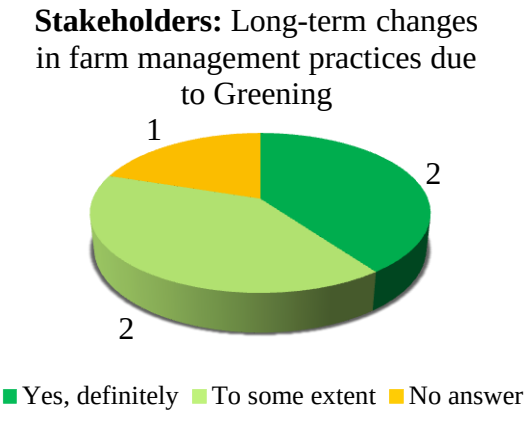


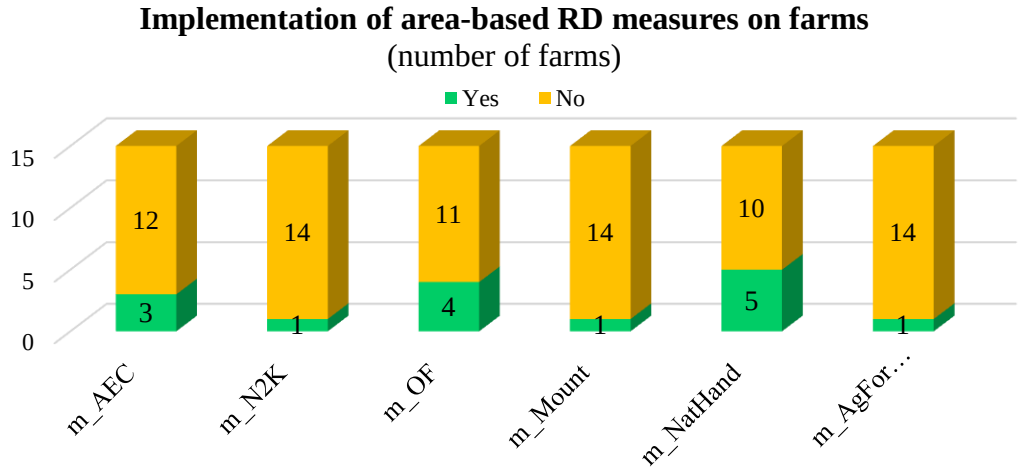
Figure 12. Stakeholders assessment of long-term changes on farms due to Greening (N=5)

4.4.Implementation of other CAP environmental measures

We asked farmers if they participated in other environment-related CAP measures and the similarities and/or differences they could find between CAP Greening scheme and the other measures.

- **Rural development measures**

Few of the interviewed farmers implemented agri-environmental measures (n=3), organic farming measure (n=4), agro-forestry (n=1) and Natura 2000 compensatory measures (n=1).



Legend: **m-AEC**: agri-environment and climate measure; **m_N2K**: Natura 2000 compensatory measure; **m_OF**: organic farming measure; **m_Mount**: Compensatory payments for mountainous areas; **m_NatHand**: Compensatory payments for areas with natural handcaps

Figure 12. Respondents participation in environment-related area-based rural development measures (N=15)

The similarities farmers observed between the CAP Greening scheme and rural development area-based measures related to "the same environmental goals to achieve more sustainable agricultural practices", "both schemes aim to improve biodiversity" and "both schemes try to help farmers financially".

The differences observed by farmers were more favourable about the CAP Greening scheme than the rural development measures:

- ✓ "from an administrative point of view, rural development measures are more complex";
- ✓ „there is more bureaucracy and intitutional controls after implementation in rural development measures"; and
- ✓ „it is more difficult to obtain rural development payments".

- **Assessment of CAP schemes or measures appropriateness to address the environmental objectives on farmlands in the case study area**

Both farmers and stakeholders were asked to assess from their own perspective which CAP scheme or measure was most appropriate to address the environmental objectives on farmland in the case study area (Table 5).

Table 5. Respondents' ranking of the CAP schemes or measures that are most appropriate to meet environmental objectives on farmland.

Farmers' ranking		Stakeholders' ranking
1. Basic Payment Scheme		1. Agri-environment measure
2. Organic farming measure		2. Natura 2000 measure
3. Greening scheme		3. Basic Payment Scheme
4. Agri-environment measure		4. Greening scheme
5. Natura 2000 measure		5. Organic farming measure
6. Cross Compliance		6. Cross Compliance

The ranking of CAP schemes and measures' appropriateness for environmental objective on farmland made by farmers and stakeholders differred considerably with one notable exception – the cross compliance. Both groups of respondents considered the cross compliance instrument as the least appropriate to contribute to environmental objectives on farmland.

Farmers placed at the top the Basic Payment Scheme and stakeholders ranked it third, despite its lack of specific environmental objectives. The high place of the Basic Payment Scheme in both ranks potentially positioned it as an important policy instrument counteracting the threat of land abandonment in the case study area, where the most supportive measures for biodiversity in farmlands was to maintain the agricultural activity.

The two measures with higher environmental goals – agri-environment and Natura 2000 - were lower in farmers' ranking, but at the top of stakeholders' ranking. The results implied that farmers' rank was influenced more by the easiness of implementation than the appropriateness for environmental objectives.

The CAP Greening scheme was in the middle of both ranks, probably reflecting the neutral assessments of the changes resulting from its implementation (Figures 9 and 10).

4.5.Training and advice on CAP Greening scheme

CAP Greening scheme introduced both new requirements about farmland management and new approach to claiming Pillar I subsidies. We asked farmers whether they received training on Greening or EFA options, which were their sources of information and advice about the CAP schemes and measures, and the environmental aspects of farming. Stakeholders were asked if their organisations provided training and/or advice on environmental aspects of farming and Greening to farmers.

Farmers' perspectives. All but one respondents (n=7) implementing the crop diversification and EFA elements of the CAP Greening scheme had some training on them. The rest of the respondents, implementing only the permanent pastures element of the CAP Greening scheme, did not have dedicated training.

Farmers' main sources of information and advice on CAP schemes and measures in general were the farmers' associations (n=14), agriculture county office (n=7) and Internet (n=6). Actual training and information days were less used (n=4). The main sources of information on the environmental aspects of farming, in general, were again farmers' associations (n=12) and Internet (n=8). Public advisory services (n=3) and private advisors (n=2) were less used.

Farmers' preferred forms of advice were farm visits (n=10) and telephone contacts (n=7), where they "can receive specific information about their own situation by competent technicians".

Stakeholders' perspectives. Four of the five interviewed stakeholders stated that their organisations provided training and/or advice to farmers on CAP Greening scheme. The forms varied from courses and information days, to outreach activities and online forums, as well as farm visits.

4.6.Involvement in national level decision-making about CAP Greening scheme

Both farmers and stakeholders were asked if they were involved in the consultation or decision-making about CAP Greening scheme in 2014. None of the interviewed farmers or stakeholders from the case study area were involved in the national-level consultation or decision-making process about CAP Greening scheme in 2014. Most farmers (n=11) assumed that farmers' associations were involved in the process (Figure 11). Few farmers believed that local administrations and/or local agriculture and environmental authorities were involved. However, in most cases farmers were not aware if some of the local institutions were involved in CAP decision-making or not, indicating potential disconnection between the local level practitioners and national level policymaking.

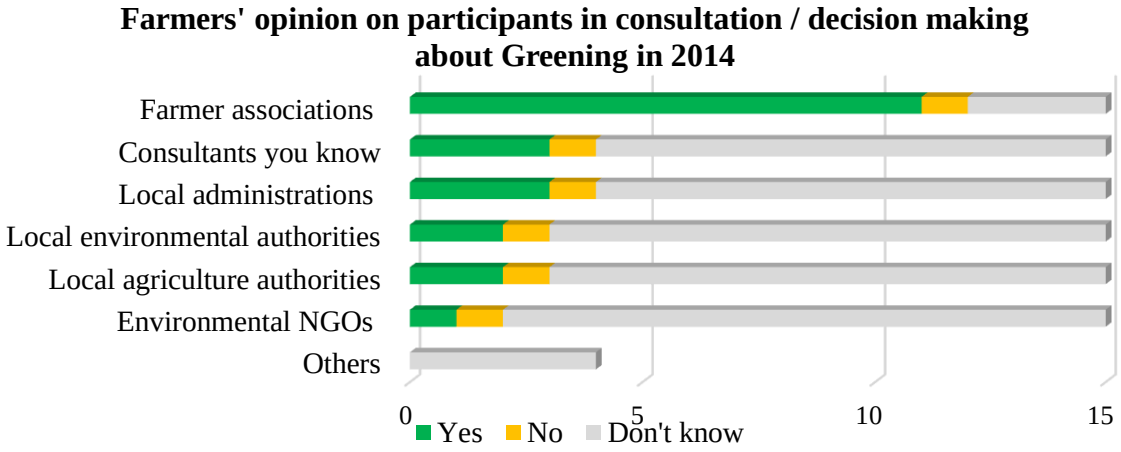


Figure 11. Farmers' knowledge about local participation in the CAP Greening decision-making in 2014

5. Conclusions from BIOGEA findings in Iberian Dehesa case study area

The Iberian Dehesa in Extremadura is the extensive land use case study area under BIOGEA project in Spain. The agricultural land is dominated by permanent pastures, most of which are wooded pastures managed according the Dehesa system.

GBI features and elements in Iberian Dehesa case study area

- The Iberian Dehesa in Extremadura case study area has a high diversity and presence of GBI elements and features. Agroforestry areas with variable tree density are the main in-field GBI. Grassy and woody strips, as well as streams, ponds and stonewalls, are abundant. Open grassland and scrubland are also present. Arable lands are marginal but the most susceptible to be enhanced by Greening.

- The preliminary results of the modelling of GBI-biodiversity relationships demonstrated positive relationships between biodiversity and the presence of ponds and woody strips. Agroforestry was also positive, with contrasting effects of tree density on biodiversity (positive for plants and negative for open-country birds). Open rather than wooded grassland was required for steppe and farmland birds. No effects of arable land managmente option on biodiversity were found. Maintenance of complex landscapes including open and wooded grassland, provided with ponds, would be recommended for regional biodiversity enhancement. Promoting grassland to support more specialist and threatened farmland species, and maintenance of woody strips to support threatened (non-farmland) bird species should be the best policy option for this system.

Farmers and stakeholders' awareness about GBI

- The interviewed stakeholders indicated awareness about the GBI terminology, while farmers were less aware or not aware at all. Stakeholders recognised between 13 and 17 (mean value of 15) GBI features or elements in the case study area, supporting the findings of the BIOGEA biodiversity assessment of high presence of GBI elements and features.

- When the specific GBI elements and features were named, interviewed farmers identified between 1 and 14 (mean value of 6) GBI features on their farms. Most interviewed farmers had permanent pastures and land laying fallow. Overall, the mixed farming systems hosted the highest average number of GBI elements in our sample.

- Farmers are not very aware about the GBI terminology, but in general have some knowledge on the environmental management of its elements and features. This was

mostly due to the management requirements under GAEC[12] – maintenance of woody strips or ponds, leaving uncultivated field margins or repairing of stonewalls.

CAP Greening scheme in the Iberian Dehesa case study area

- The Spanish implementation of the CAP Greening scheme supports only five GBI elements – permanent pastures and environmentally sensitive grasslands; land lying fallow; nitrogen fixing crops, afforestation and agro-forestry. This is the lowest number among the three member states included in BIOGEA project.
- Many of the landscape features and elements in Spain are theoretically protected by the standards of the good agriculture and environmental conditions (GAEC). However, it is not known whether all of them are included in the registered agricultural area. Furthermore, both interviewed farmers and stakeholders perceived cross compliance, including GAEC, as the CAP environmental instrument that is least appropriate to address environmental objectives on farmland.
- The number of CAP Greening beneficiaries in the Iberian Dehesa CS area was 659 in 2016. This was around half of the farms reported in the Agriculture Census in 2009.

Permanent pastures.

- The share of permanent pastures in the Iberian Dehesa CS area is very high – 67%, the majority of which is wooded pastures. However, few of them are included in Natura 2000 sites in the area, and thus they are not classified as environmentally sensitive grasslands.
- The classification of the Dehesa system as permanent pasture indicates that the CAP Greening scheme protects its area from reduction due to ploughing or conversion and the 5% ratio rule is applied. The main threats to the Dehesa system are abandonment and insufficient tree regeneration in wooded pastures, which are not directly addressed by the current CAP Greening scheme.

Crop diversification.

- The typical arable crop scheme among the interviewed farmers in the case study area was barley, wheat, oats and vetch. Peas, rye and yellow lupin were also grown.
- Interviewed farmers explained their crops' choices with adaptation to local agro-climatic conditions, the possibility to improve soil conditions and to provide feed for the animals. They perceived that the crop diversification element of the CAP Greening scheme did not influence the number of crops grown on their farms as they already had three and more crops.

EFA element.

[12] GAEC 7 covers hedges; isolated trees, trees in lines and in groups; field margins; ponds and natural livestock drinking points; patches of natural vegetation or rock; terraces; dry stonewalls or other traditional structures.

- The EFA Greening elements introduced were mostly fallow land and nitrogen-fixing crops. One respondent declared agro-forestry.
- Overall, interviewed farmers chose the EFA options closest to their existing farm practices. This was especially relevant with nitrogen-fixing crops, which farmers either used as animals feed or had already planted them before Greening introduction.
- The other important concern for farmers was the compliance with the administrative requirements in order to receive the full CAP support.
- The environmental benefits from the EFA element (if any) seemed to be an extra rather than planned for or targeted at farm level.

Implementation of the CAP Greening scheme.

- Farmers had more "neutral" and "strong disagreement" statements than "strong agreement" in the assessment of the changes due to the CAP Greening scheme.
- The highest support was expressed for the improvement of soil conditions on farms. Some farmers explained that they would maintain in the long-term those practices that have proven beneficial for their farms in agronomic and/or economic terms.
- The highest disagreement was about the minimal level of bureaucracy related to CAP Greening implementation.
- Despite the complaints about the heavy bureaucracy in the implementation of the CAP Greening scheme, farmers stressed that the implementation of the rural development area-based measures was even heavier from administrative perspective.
- Overall, farmers perceived the Basic Payment Scheme as the most appropriate to address environmental issues on agriculture land, given that the main threat to the Dehesa system is abandonment due to low economic viability.
- Cross compliance instrument was considered as the least appropriate to contribute to environmental objectives on farmland despite its contribution to farmers' knowledge about GBI management from environmental perspective. One explanation could be its mandatory implementation tied with the lack of payments for the environmental requirements.

Training, advice and consultation on CAP Greening scheme

- The interviewed farmers that had to adapt or change their farm management practices on arable land due to the CAP Greening scheme received training and/or advice about it.
- The main source of information for farmers about CAP schemes and measures as well as the environmental aspects of farming were farmers' organisations, the county agriculture offices and Internet.

- Farmers prefer direct forms of advice – farm visits or telephone contacts, whereby they can receive specific information about their own situation and farm needs.

Participation in CAP Greening scheme decision making

- None of the farmers or local stakeholders were involved in the national level decission making about the CAP Greening scheme in 2014, indicating potential disconnection between the local level practitioners and national level policymaking.
- Most interviewed farmers believed that the farmers' associations were involved the the CAP Greening decision-making. A few interviewed farmers thought that the local administrations were also involved.