

# Agri-environment measures and Agroforestry European main agricultural driver is the Common Agricultural Policy (CAP)

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## Abstract

CAP delineates a common framework to pay the funds to the European Farmers. CAP is divided in two main parts: Pillar I and Pillar II. Pillar II is dealing with the environment and usually linked to the agroforestry implementation. However, Member states have to select from a series of options (i.e. measures) to adapt this CAP to their own environments but also socio-economic situations. One of the most used option to promote agroforestry is the agrienvironment measure identified with the number 214 in the CAP 2007-2013 and with the number 10.1 in the 2014-2020. This paper, aims at to evaluate how agroforestry is promoted through agrienvironment measures in the Mediterranean area of Europe in the CAP.

**Keywords:** silvopasture, silvoarable, hedgerows, forest farming and homegardens.

## 1. Introduction

The CAP is the most important driver of European Agriculture. The CAP was initially created to provide food to European citizens, so payments were based in the delivery of products. However, after the signature of the Kyoto protocol the concept of sustainability was clearly introduced and payments have been switched from sector (livestock, cereals...) to surface payments. Eligibility has become an important issue, as the surface of the farms have to fulfil some requirements to receive the CAP payments. Unfortunately one key point of these requirements is the amount of trees/shrubs that a land has, promoting the destruction of these key elements because they are discounted from payments if persist. This has avoided the sustainable use of woody perennials as part of the farming systems, avoiding to use trees/shrubs that are indeed used to promote sustainability (i.e. legume woody perennial species).

Agroforestry has been recognized in the CAP with the measure 222 and 8.2. in the CAP 2007-2013, respectively. However, this measure was not very successful for various reasons, among which the lack of a clear definition of agroforestry. The lack of a clear definition of agroforestry

has conducted to promote woody perennials through the CAP in more than 27 measures, from which, the agrienvironment measure is the most used. Agrienvironment measure is identified with the number 214 in the CAP 2007-2013 and with the number 10.1 in the CAP 2014-2020. The definition of agroforestry is the deliberately integration of woody vegetation an agricultural product in at least two vertical layer and it has has different practices, known as silvoarable, silvopasture, hedgerows and riparian buffer strips, homegardens and forest farming (Mosquera-Losada *et al.* 2009).

The objective of this paper was to evaluate the use of the agrienvironment measure as promoter of agroforestry practices across Europe during the CAP 2007-2013 and 2014-2020.

## 2. Materials and methods

The paper was carried out by reviewing all agrienvironment measures of the previous (2007-2013) and current CAP (2014-2020) Rural Development Programmes, with the exception of Cyprus and Greece. It has to be noticed that there are 88 and 118 RDP, from which 20 are national, and in France, Italy, Germany and Spain that has 9 national programmes besides the regional programmes. The increase from 88 to 118 regional RDP is mainly to the regionalization of France. The analysis consisted in the reading and interpretation of the percentage of regions (86 and 116 in the 2007-2013 and 2014-2020 measures, respectively of a total of 88 and 118) that uses agrienvironment measure to pursue agroforestry practices identified as silvoarable, silvopasture, hedgerows and riparian buffer strips, homegardens and forest farming (Mosquera-Losada *et al.* 2016). When evaluating forest farming, apiculture measure was considered, as woody perennials are usually part of the diet of bees, as providers of pollen during the expanding flowering period they provide.

## 3. Results and Discussion

Forest farming

Forest farming, understood as forested areas used for production or harvest of natural standing speciality crops for medicinal, honey, ornamental or culinary uses, including those integrating forest and agricultural lands is not promoted by measures 214 or 8.2 in the previous and current CAP. However, measures 122 and 123 in the CAP 2007-2013 and measure 8.6 in the current CAP 2014-2020 were used for this purpose. On the other hand, honey production was promoted by the 20% (17 out of 86) and 29% (34 out of 118) of the environment measures of the EU regions in the previous and current CAP respectively. In the CAP 2007-2013 the agrienvironment measure was the most used to promote apiculture following by 121 measure (mainly used by Italy) and involving regions from Bulgaria, Spain, Italy, Malta, Latvia and Sweden. In the CAP 2014-2020, the regions promoting apiculture through the agrienvironment measure were Northern Ireland, Malta, Portugal, Ireland, France, Spain and Belgium.

Forest farming is recognized by the Rural Development programs but not associated to the agrienvironment measure with the exception of apiculture. Countries promote forest farming under other measures, making really difficult to link agroforestry practices to the final use of the land, which complicates the evaluation of current measures with regard to agroforestry if forest farming is aiming at being evaluated.

#### Silvoarable

Silvoarable practices are usually associated to isolated trees but can also be related to hedgerows. Hedgerows are placed as another type of agroforestry practices because they are usually in the borders of the plots (then limiting the reduction of competition for light between some crops and the woody perennial component) or close to water bodies and have a high relevance.

Regarding isolated trees it is promoted by the 22.7% of the Rural Development Programmes, including Luxembourg, United Kingdom, Spain, Denmark, Italy and France in the CAP 2007-2013, while these figures goes to a 27.9% in the CAP 2014-2020 (33 out of 118), meaning 30.2% if only 109 Regional Development Programmes are considered. United Kingdom, Malta, Italy, France, Spain, Germany and Belgium are the Rural Development Programmes that used agri-environment measures to protect, establish and manage isolated trees in arable lands. Isolated trees protection is an important type of preserving these landscape features. However, the measures are usually linked to protection, management and not to the creation of isolated trees in farms. Moreover, in those areas where these landscape feature has to be protected, farmers are not keen to introduce more trees because they imply a protection since established and the tenants do not wish to compromise the land for the future.

#### Hedgerows

Hedgerows are key elements linked to the introduction of linear woody elements in arable lands. Around 37.5 (39 out of 88 RDP) and 44.9 (53 out of 118 RDP) percent of the Rural Development Programmes included hedgerows promotion and management as part of their programmes. If we consider that regional development programmes are

only 109, then the percentage in the CAP 2014-2020 is around 48.5%, meaning a significant increase of the promotion of hedgerows across Europe, as almost the 50% of them promotes this type of activity under measure 2014-2020. The countries that included hedgerows as part of the agrienvironment measure 214 (CAP 2007-2104) were United Kingdom, Portugal, Luxembourg, Latvia, Italy, Ireland, France, Spain, Germany, Czech Republic and Belgium while under the agrienvironment measure 10.1 were United Kingdom, Italy, Ireland, Hungary, France, Spain and Germany.

Hedgerows is the most promoted agroforestry practice under the agrienvironment measure used in many countries and regions, but, as an agroforestry practice should be included within the agroforestry measure to better integrate crop production with the hedgerow promotion.

#### Silvopasture

Three types of activities have been recognized as part of the agrienvironment measures when the silvopasture agroforestry practice is identified: Forest grazing and silvopasture with permanent crops (mainly fruit trees and short rotation coppice as mentioned in the Annex 1 of the CAP) and mountain pastoralism.

Forest grazing was promoted in 21.5% (19 out of 88) of the Rural Development Programmes of the CAP 2007-2013 by using the agrienvironment measure in different regions of Germany, Denmark, Spain, France, Italy, Portugal, Slovenia, Sweden and United Kingdom and Finland. Only 16% (14 out of 118) RDP used agri-environment measure to promote forest grazing including countries such as France, Italy, United Kingdom and Portugal. The reduction of this percentage can be explained because Spain used measure 8.3 to promote forest grazing, and therefore if we consider Spain (10 regions implementing forest grazing), then 20.3% of the RDP (24 out of 118) used 8.3 and 10.1 to promote forest grazing reaching 31.2% if only regional programmes are considered (109 out of 118).

Forest grazing is a useful measure for those areas with a large percentage of Forest but also to those areas that are forest with sparse trees. It is essential to reduce the load of the forest in those regions with high fire risk. Under measure 8.3 reducing fire risk is promoted through mechanical clearing (not agroforestry) or with animal grazing (agroforestry). A predominant adoption of the last one should be carried out and promoted as it is cheaper (10 times cheaper grazing than mechanical clearing) and produce less greenhouse gases emissions when clearing (machinery fuel).

Silvopasture linked to permanent crops were used by 42 out of the 88 Rural Development Programmes of 2007-2013, representing almost the 50% (47.7%). Countries using agrienvironment measure 214 to foster silvopasture under permanent crops were United Kingdom, Portugal, The Netherlands, Luxembourg, Italy, Hungary, France, Spain, Germany, Bulgaria, Belgium and Austria. In the current period around 44% (52 out of 118) of the Rural Development programmes promoted grazed orchards (i.e. silvopasture linked to permanent crops) reaching a 47.7% (52 out of 109) if only regional programmes are considered

in the period 2014-2020. Countries adopting the agrienvironment measure to foster permanent crops linked to grazing were United Kingdom, Slovenia, Romania, Portugal, Luxembourg, Malta, Italy, Ireland, Hungary, France, Spain, Germany, Belgium and Austria.

The inclusion of fruit trees / short rotation coppice as part of the agroforestry promotion is essential as this does not have problems with eligibility nowadays, reduces the needs of fertilizers, herbicides and pesticides in both trees and understory vegetation.

Mountain pastoralism was also considered as a way to foster agroforestry, as usually woody perennials are included in mountain areas as part of the farming systems usually linked to animal welfare and as a bank fodder. This type of silvopasture practice is usually associated to marginal lands. Portugal, Italy, Spain, Bulgaria and Sweden activated a measure in 2007-2013, representing 16 out of 88 Rural Development Programmes (18.2%), while Slovenia, Hungary, Romania, Spain, Germany and Austria activated the same in 17 out of 118 (14.4%) countries or 109 (15.6%) regions of their respective rural development programmes RDP. The least degree of implementation when compared with other agroforestry practices can be associated to the lack of agriculture in mountain areas, that should be fostered.

Mountain pastoralism is essential for marginal rural lands where no arable farming can be developed in order to stabilize population and preserve autochthonous breeds.

#### Homegardens

The identification of measures fostering homegardens is not easy due to the lack of funds available for homegardens in the Pillar I or Pillar II directly. However, there are some measures linked to the promotion of traditional products usually associated to agroforestry, fostering ecotourism as it is carried out in Italy, that uses funds from the rural development programmes to improve value chains. Homegardens, should be promoted through the rural development programmes as a way to foster bioeconomy. Moreover, concepts linked to km 0 should be also fostered to better link forest and agricultural lands and citizenships within a global agriculture and forestry concept.

#### 4. Conclusion

It is difficult to identify agroforestry in the whole CAP as such and in spite of the woody vegetation preservation and promotion is seen as a positive aspects for a more sustainable agriculture. Agroforestry can be identified in over 30 measures in the different Rural Development Programmes. The same measure can approach different agroforestry activities and different measures can foster the same agroforestry activity, which make rather complex to promote in an adequate way agroforestry and evaluate the results of policies to be improved. It is proposed that only one specific measure promotes all types of agroforestry, if an adequate plan management is developed, which will make easier the accountability of agroforestry within the agreements linked to the Kyoto protocol and the successive COPs.

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