

Subsidised planted hedgerows as part of construction of rural landscape in Brittany (France)

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Objectives: Farmers effort for hedgerow planting is quite important since twenty years, but the evaluation is complexe and not properly carried out. The aim of this study is to analyse how farmers have taken part to the public policy of planting hedgerows and how it affected the construction of rural landscape.

Method: The research is based on a case study, the subsidised hedgerows plantation in the departement of the Côtes d'Armor, in Brittany. As there is no statistic analysis of this policy, we have work on all files of subsidies from 1988 to 2000: 5 547 files have been analysed, according to a list of criteria: who is planting, where, how long, what types of species etc. We have tried as much as possible to propose a spatial repartition of these informations, in order to understand the impact on rural landscape. This main reflexion at regional scale is completed with two case study where we mapped at local scale the evolution of the hedgerow network.

Context: The place of hedgerows in rural britton landscapes is very important. The density of hedgerow network in the Côtes d'Armor was around 326 meters/hectare in 1961, with a traditional bocage of very small fields enclosed with rather large hedges.

Hedgerow removal was necessary to improve agriculture and the density went down to 87m/ha in 1981 for the departement of Côtes d'Armor. Hedgerow removal has been very intensive with a regression of 73% of the network from 1961 to 1981, and often carried out without proper reflexion on the environmental impact on soil erosion or shelter for the cattle. As wood land is rather rare in this region (less than 10% of the surface) linear trees have also an important role as habitat for wildlife préservation. Hedgerow removal is a very important background to explain this politic of hedgerow plantation, although both are subsidised with public stocks. Both participate to the idea of pushing farmers no improve agricultural landscape with enlarged fields and the construction of a new hedgerows network.

The subsidised hedgerows: the first public aids for planting hedgerows started in 1978, but became really efficient after 1991, when more money was involved in: from 1978 to 1991, the average hedgerow plantation per year is around 30km, and after 1991 around 150km. After the neighbouring department of Ille et Vilaine, where 200km of hedgerow per year are subsidised, the department of the Côtes d'Armor is one of the first in France for this replanting policy. As a general result, 5m/hectare are planted every year.

Farmers participation: The programme is based on the individual will to participate: the local concil (commune) bring together the demands and all the files are transmitted to the departemental level, responsible of this policy. Around 60% of the cost of the hedges is subsidised. Some technical aid is also provided to explain how planting.

This program is open to public plantations, but 96% of the subsidies are undertaken by private people, mainly farmer. The average plantation is around 260 meters per person wich is not important, but the positiv aspect is the participation, around 500 people every year [GRAPH 1].

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Where and what for ? The main results of this research is to analyse the spatial impact of these new hedges on landscape construction.

- **At regional scale**, the presence of new hedges is not systematic, as 20% of the commune did not participate to the program of subsidized hedgerows.

We can analyse the density of planted hedgerow in comparison with the existing rural landscapes. There is obviously a strong correlation, as most of the hedgerows are planted where farmers work in a rather open landscape. The landscape units with very dense bocage mainly correspond to poor soils on granitic hills, where it wasn't worth improving the landscape structure: few hedges have been removed and it's nearly impossible to plant more. On the opposite side, where the agricultural potential was good, farmers have improved the landscape structure with land regrouping, fields enlargements and hedgerows removal since 1956. 80% of these communes then participate to the program of hedgerow plantation, but of course not in the same proportions: hedgerow removal when up to 3 750 km per year, when the subsidized planted hedgerow was maximum at 175 km per year.

[MAP 1: total of planted hedgerows from 1988 to 2000 per communal surface on the departement of the Côtes d'Armor;

MAP 2: landscape units from landsat TM image on the department of the Côtes d'Armor

MAP 3: correlation of subsidized hedgerows and land regrouping]

- **At local scale**, it's very interesting to examine where hedges have planted, and consequently what for. As farmers are free to plant the subsidized hedegrow where they want, 1/3 of the new hedges are not in beetween fields but close to the farm buildings.

[GRAPH 2: localisation in fields or close to constructions]

The aesthetic motivation is very important and most of the farmers declare planting hedges in order to mask some buildings, have nice looking house and planted path.

This amenity purpose is also noticable trough the chose of species, wich are mainly ornemental species, without any correlation to the traditional hedges.

[GRAPH 3: repartition of species in the new hedges].

The official aim of the subsidies for hedges is not so clear, but environmental questions (soil erosion, water polution, biodiversity...) are generally consider as the main end. This is hardly achieve, as most of the 2/3 of the so called "field hedges" are in fact along the roads, or along the farm property border, but without taking account of the slope or the existing network. The analyse of the following maps show the evolution of landscape construction and the tendance due to the subsidized hedgerows.

[MAP 3-4-5: hedgerow network on the commune of Plémy mapped from aerien photography 1952, 1966, 1998].

Conclusion: the role and place of hedgerows in the farms now is quite complex, and the landscape management must be adapted as shows the example of the Côtes d'Armor, where the policy slowly changed: no subsidies for ornemental species, global planning, spatial data base...

[GRAPH 4 evolution of planted species

TABLE 1: new process for planting].