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LAND TENURE MANAGEMENT: A KEY DETERMINANT IN SUSTAINABLE FARMING THE - EXAMPLE OF MARTINIQUE

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ABSTRACT: For the past fifteen years the notion of sustainable farming has become a constant reference in defining rural development policies. For many years, this concept was assimilated to that of the reproducibility of eco-systems and social and economic factors were not taken into consideration. Yet, in Martinique, as in many other insular states in the Caribbean, control over the way farmland is managed is a prerequisite in defining any so-called sustainable farming policy. The analysis of changes in the use of farmland shows that the intergenerational transfer of land is not ensured: the usable agricultural area has decreased by 38% in less than thirty years, with nevertheless substantial spatial variations. In the same way, it seems that more than 50% of farms are not economically viable because of their size. In addition, different studies on farming practises show that the land tenure structures of the farms may constitute an obstacle to the application of environmentally friendly practises. To address this problem, many regulations, tools and operators have been implemented in recent decades and at different territorial levels. In spite of everything, because of insufficient political will due to the paradoxical position of farmers and of their representatives (who speak out "in the name of the farming profession" for the preservation of farmland, but whose interests at the individual level are that their land should be declassified as building land), most of these measures have not had the desired effects. For 3 or 4 years, new initiatives have seen the light of day (implementation of the control of land tenure structures and definition of local sustainable development plans). The future of agriculture in Martinique – and therefore its sustainability – will probably depend on the rigour with which these measures are applied.

RÉSUMÉ: Depuis une quinzaine d'années la notion d'agriculture durable est devenue une référence constante dans la définition des politiques de développement rural. Pendant de nombreuses années, ce concept a été assimilé à celui de reproductibilité des éco-systèmes et les facteurs sociaux et économiques ont été déconsidérés. Pourtant, en Martinique, comme dans de nombreux autres états insulaires de la Caraïbe, la maitrise de la gestion du foncier agricole constitue un préalable incontournable à la définition de toute politique agricole dite durable. En effet, l'analyse de l'évolution du foncier agricole montre que la transmission inter-générationnelle du foncier n'est pas assurée : la surface agricole utilisée a diminué de 38% en moins de trente ans, avec toutefois de fortes variations spatiales. De même, il apparaît que plus de 50% des exploitations agricoles ne seraient pas viables d'un point de vue économique du fait de leur structure. En sus, différentes études sur les pratiques des agriculteurs mettent en évidence que les structures foncières des exploitations constitueraient un frein à l'application de pratiques plus respectueuses de l'environnement. Face à ce problème, de nombreux règlements, outils et opérateurs ont été mis en œuvre au cours des dernières décennies et cela, à différentes échelles du territoire. Malgré tout, du fait d'une volonté politique peu marquée et accentuée par la position paradoxale des agriculteurs et de leurs réprésentants (qui militent « au nom de la

profession agricole » pour une préservation du foncier agricole mais qui, individuellement, ont souvent intérêt à ce que leurs terres agricoles soient déclassées et déclarées constructibles), la plupart de ces mesures n'ont pas eu les effets escomptés. Depuis 3 ou 4 ans, de nouvelles initiatives ont vu le jour (application du contrôle des structures et définition de plans communaux de développement durable). L'avenir de l'agriculture martiniquaise - et donc sa durabilité - risque de dépendre fortement de la rigueur avec laquelle ces mesures seront appliquées.

SUSTAINABLE FARMING AND THE LAND TENURE MANAGEMENT

During the last fifteen years, the notion of sustainable development, defined by Brundtland (1987) as being the capacity to satisfy "the needs of the present without compromising the ability of future generations to meet their own needs" has become a constant reference in defining public policies. At the international level, following the Rio Earth Summit in 1992, many discussions were held during the World Summit on Sustainable Development in Johannesburg (26th August – 4th September 2002). At the level of France, this concept which led to the launching, on 3rd June 2003, of a national strategy for sustainable development within the framework of the inter-ministerial committee for sustainable development, was gradually taken into account in the elaboration of many general and sector-related policies. In the case of the farming sector, and in reaction to certain negative effects of productivity-based policies implemented since the end of the Second World War (degradation of soils, water pollution, etc.), this concept has gradually been adopted (hence the notion of sustainable agriculture) and resulted in adoption of new laws (the agricultural planning act of 1999 which recognises the multifunctional nature of agriculture), the defining of measures intended to reduce the negative effects of agriculture on the environment (official recognition of integrated farming, law of 25th April 2002, for example) and a gradual change of outlook on the part of public research organisations, etc.

Many methods were suggested for evaluating the "sustainability" of farming systems. Initially, most of them were principally focused on the evaluation of the environmental impact of farming activities. The comparative analysis of twelve of these methods (based on indicators) conducted by Hayo M.G. van der Werf and Petit J. (2002) reveals that only five methods took into consideration economic aspects and only two studied social aspects. In the same way, within the OECD, whereas work was started in 1994 on agricultural-environmental indicators, it was only very recently that economic and social components were integrated. Thus, a first working document, "A Framework for Indicators for the Economic and Social Dimensions of Sustainable Agriculture and Rural Development" (*« Cadre pour des indicateurs relatifs aux dimensions économiques et sociales d'une agriculture et d'un développement durables »* -[SEC (2001) 266]) was presented in February 2001 to the Council of Ministers. Gradually taken into consideration was the fact that farming is an open system that maintains with its environment, in the wider sense of the term, four types of relations: ecological, economic, social and intergenerational. These relations prefigure the four "pillars" of sustainability, which are respectively: reproducibility, viability, livability, and transferability (in French *reproductibilité, viabilité, vivabilité et transmissibilité*, Landais, 1999) (Figure 1).

Land tenure management is one of the key elements of the fourth of these pillars, in other words, transferability. Land tenure is an indispensable form of capital for farming and is often extremely sought after. The problems of land tenure security have been the object of many seminars and discussions around the world such as, for example, within the Permanent

Interstates Committee for Drought Control in the Sahel (*Programme Majeur* on Natural Resource Management / UDL / praia+9 / Land Tenure and Sustainable Farming). Moreover, it seems evident that the structures and the modalities of land tenure management can have a very strong impact on the three other components. For example, the size of farms can constitute a key determinant in terms of their economic viability. In the same way, system of land ownership often have significant consequences on farming practises and, indirectly, on the reproducibility of the system.

Land tenure management is therefore one of the key determinants of sustainability in farming. This is especially the case in countries where land resources are limited as in most of the Caribbean island States. Martinique is definitely concerned by the issue of defining land tenure management modalities consistent with sustainable farming. This issue can be broken down into the following questions: How to ensure the quantitative preservation of farmland and therefore permit the transferability of land tenure as well as the economic viability of farms? How to enable the qualitative preservation of farmland and therefore enable the reproducibility of eco-systems?

RELATION BETWEEN LAND TENURE MANAGEMENT AND TRANSFERABILITY

The evolution in the agricultural surface area in a given territory is an indicator of the degree of transferability between generations of farmland and therefore of the sustainability of agriculture. A quantitative regression of farmland areas indicates, among other things, that not all of the conditions for transferability are filled and that, as a result, that farmland has not been managed in a sustainable manner.

In Martinique, between 1973 and 2000, the Usable Agricultural Area (UAA) decreased by more than 19000 ha, a regression of 38% (AGRESTE 2000) (Figure 2).

In other words:

- 2 ha of UAA have disappeared per day,
- which, on average, is equivalent to the disappearance of a farm every 2 days.

Evolution in UAA is extremely variable from a spatial point of view. Two practically homogenous areas present cases of greater decline:

- the Central-Caribbean sector (5 *communes*[1]) characterised by the presence of the agglomeration of Fort-de-France
- the southern coastal region (6 *communes*) characterised by its appeal for tourism and housing mainly because of the climate.

An analysis of the factors behind this evolution in UAA (Scherer, 2003) has made it possible to identify the importance of the following factors:

Endogenous factors:

- regression of grasslands, sugar cane, and vegetable crops
- decrease in the number of farms of under 2 ha and over 20 ha (Figure 5)
- proportion of the number of farmers aged over 65
- surface area in ownership and co-ownership

1 *Commnune:* smallest administrative district in France.

Exogenous factors:

- contribution of the 40-59 age group within the population,
- the number of building permits delivered (mainly for individual homes)
- the number of revisions or changes made to the land-use plans (in French, *Plans d'Occupation des Sols - POS*).

This decline in UAA during at least thirty years clearly proves that there is no "transfer of farmland as such" from one generation to the next, even though the intensity of this phenomenon remains variable from a spatial point of view. This change is mainly due to a strong demand for land in other sectors than farming (especially housing) associated with supply, by farmers for whom real estate represents one of the main sources of revenue for retirement.

Differences in changes in UAA according to the *communes* is due to major spatial variations in the intensity of supply and demand, due respectively to:

- population change, to the regional development policies developed by the *communes*, etc.
- Also to the pedo-climatic conditions, to the degree of competitiveness of the different production sectors distributed in a non-homogenous manner over the whole of the territory, etc.

The combination of this supply and demand results in strong land speculation which in turn leads to high land prices; prices which make it difficult for young farmers to acquire farmland. This lack of transfer of farmland may, in the absence of any measures to counter this evolution, be the first factor in the disappearance (and therefore in the un-sustainability) of farming in Martinique. According to André Saurin, if the current trend continues, "Martinique will be an island without agricultural lands in 2030!"

THE RELATION BETWEEN LAND TENURE MANAGEMENT AND VIABILITY

The economic viability of farms depends greatly, even if it obviously is not the only factor, on the surface area of the farm. A simple linear model of farming income for a given type of farm (family farm, company farm, etc.) and a category of surfaces (between 5 and 10 ha, for example, for irrigated banana farming) has made it possible to determine, for each type of farm production considered, the minimum surface required for a farmer to be able to make a decent living, in other words that the farm should provide an annual income of 15,000 euros (Figure 4).

This model, based on advice from experts, repeated many times has made it possible to determine surface area thresholds beneath which the economic viability of a farm remains uncertain. Examples of the main thresholds are:

- Banana: 7.5 ha with irrigation (from 8.5 to 20 ha, without irrigation, according to where the farm is situated)
- Sugar cane: 8 ha
- Pineapple: 4 ha
- Arboriculture: 7 ha
- Vegetable farming: 2 ha

By comparing these results with the distribution of farms according to their surface area (DAF, 2001) it appears that at least half the farms in Martinique are not viable economically because they are too small. Analysis of the evolution in the number of farms according to their

surface area tends to confirm the non-viability of a large number of small farms : 76% of farms under 2 ha in area disappeared between 1973 and 2000. At this level, it should be noted that the disappearance of farms of less than 2 ha was one of the major determining factors in the reduction in UAA in Martinique (cf. "endogenous factors").

This structuring of farms is one of the main factors behind the un-sustainability of agriculture in Martinique. These small farms, which are generally not viable from an economic point of view, cannot be transferred to young farmers who would like to set themselves up. Because of that, when this typé of farmer stops farming, the land is sometimes, but rarely, integrated within other existing farms. In most cases the land is left uncultivated until it is transferred to another activity sector in need of land, mainly housing.

THE RELATION BETWEEN LAND TENURE MANAGEMENT AND REPRODUCIBILITY

To address new societal demands in terms of quality of products and the environment the French government and the European Union have initiated policies encouraging farmers to implement practises that are more respectful of the environment. Generally, the measures which have been proposed within the framework of these contractual policies (Agri-Environmental Measures, in French, *MAE : Measures Agri-Environnementales*, Contract for Territorial Exploitation or *CTE : Contrat Territorial d'Exploitation*, and Contract for Sustainable Farming or *CAD : Contrat Agriculture Durable*) use up land. For example, if one considers the main produce of the island from an economic point of view, the banana, the only measure proposed in the framework of agri-environmental measures is the "fallowing + vitro-plant" system. Even if in the medium term it would seem that this practise does not lead to a reduction in farming revenue, when applied it nevertheless leads to a decline in income. But small farms cannot afford the slightest reduction in cash flow. Therefore it is virtually only the large farms that have been able to implement these types of measures.

This limiting factor of a small surface area also has significant consequences in terms of the management of soil fertility. For example, in a study (Etienne, 2001) conducted among vegetable farmers in Martinique, it appeared that practises in the management of soil fertility were greatly dependent on two characteristics concerning the land, size of the farm and the system of land ownership. Indeed, the usable agricultural area determines to a great extent the degree of intensification of production. Generally, the "small farmers" only produce vegetable and food crops whereas very often on the big farms, livestock farming is associated with such crops, enabling substantial organic input. In the same way, the type of tenure (and the degree of land tenure precariousness associated with it) is a strong determining factor of the time-frames within which farmers fix their objectives. Thus, sharecroppers or farmers without a leasehold manage their production system in the very short term: their objective is to produce a great deal in the shortest period of time without any real consideration for the consequences in terms of soil fertility. For example, for vegetable farming this generally results in an absence of soil improvement, that is the land is left fallow for very short periods between 2 crops: on average 2 months, sometimes more if climatic conditions impose it (whereas this period can be as long as 2 years on big farms associating livestock farming with vegetable farming); frequent working of the soil: on average, 5 passages of machines per year (compared with an average of 2 on big farms).

A similar situation has been observed concerning pineapple producers (Testut, 2001). Planters having cultivated pineapples during several years on the same plots all noted a decline

in yields, a sign of the exhaustion of the soil. This leads to them seeking to diversify with livestock farming (with fallow land used for pasture) and/or food and vegetable crops (with the input of manure) to let the soil "rest" and allow it to "recompose." However, to implement such a strategy, most planters insist on the need to increase the size of their farms, since in terms of income, they cannot afford to decrease the surface areas for the production of pineapples and they do not have other land available.

Thus, it seems that land tenure management, because of the implications of the size of farms and of the type of tenure, can have a significant impact on the management of soil fertility. It is also obvious that these characteristics of land tenure structure have, in the same way as for the management of soil fertility, consequences on the use of pesticides. The fallowing of land (or certain crop rotations), conditioned by the usable area has impacts on parasite pressure and therefore on the use of pesticides. The land tenure structure of farms therefore is one of the determining factors concerning the amount of pollutants in an area. This has been largely demonstrated within the framework of the research programme on pollution caused by farming, conducted in the La Capot catchment basin (Houdart, 2003).

To conclude, it seems through these few examples that land tenure management does have consequences on the reproducibility of ecological systems and therefore, in the long term, on the sustainability of agriculture.

WHAT MEASURES HAVE BEEN PROPOSED IN MARTINIQUE TO ADDRESS THIS PROBLEM?

As a response to competition between the farming sector and other land-consuming sectors:

According to the scale of the intervention there are two main tools for regulating land use applicable in Martinique: the Regional Development Plan (in French *SAR, Schéma d'Aménagement Régional*) which is applicable to the territory as a whole and the local urban plans/land-use plans (in French PLU, *Plan Local d'Urbanisme* which recently replaced the POS, *Plan d'Occupation des sols*) defined at the level of each *commune*.

The Regional Development Plan

Legislation (law of 2 August 1984) elaborated on the initiative and under the authority of the Regional Council. It fixes the basic orientations concerning the development, enhancement and protection of the environment. Even though the regional development plan developed in Martinique fixes, as an objective, the protection of a 40000 ha area of UAA, its impact has actually been rather limited, principally for the following reasons:

- Land-use plans have not always complied with regional development plans whereas, normally, this is mandatory.
- The 40.000 ha of UAA to be protected have not been identified, nor have they even been distributed quantitatively between the *communes*. Because of this, this "constraint", applicable to all of the territory of Martinique, cannot easily be applied at the level of a *commune*, except if there is a strong political will to do so locally.

The Land-Use Plans

The land-use plan is an urban planning document, created at the instigation of the *communes*, which establishes the general rules and rights concerning the use of land. In Martinique, 33 *communes* out of 34 have a land-use plan. However, the impact of such plans is particularly limited when it comes to the protection of farmland. Different reasons may explain this:

- The constant revision of the land-use plans (in 20 years, 24 *communes* have conducted at least one revision, 13 have conducted two revisions and 3 have conducted three revisions). This clearly illustrates the fact that the land-use plan in Martinique is not tool used for development planning but rather a tool for regularising actual situations.
- The fact that 30 to 40% of constructions have been made without building permits and that no sanctions have been applied.
- The non-compliance with regulations which forbid connecting illegal constructions to public utilities.

The lack of precision and instability of these land management tools that are the regional development plans and the land-use plans (or local urban plans) is illustrated by a lack of global land management planning. Because of this the real-estate market in Martinique today could literally be assimilated to a "free trade" market which, given the average income per hectare, benefits the housing market more than the farming sector.

At this level, it seems therefore that only a great deal of rigour in the definition and application of these tools will effectively protect farming land. Without seeking to implement an authoritarian solution, there is an urgent need to define precise rules for the use of land and to avoid constantly "changing" these rules. Such an approach could take inspiration from the "Commission for the Protection of Farmland in Quebec" which must give its authorisation before any piece of farmland may be declassified and whose authority seems to be strict and well respected.

In response to problems of transferability and economic viability of farms:

The Departmental master plan of land tenure structures (in French, *Shéma Directeur Départemental des Structures*, SDDS). After more than 20 years of operating illegally, the authorities in Martinique decided to implement a verification of land tenure structures. This master plan, developed by decentralised government and validated by farming representatives and the General Council, is aimed at defining the rules for the distribution of the rights to farm lands (and not property rights) between the different potential candidates. The principal rules which were selected in Martinique are the following:

- To favour the settling of young farmers (transferability)
- To favour the development of small farms into larger units in order to consolidate their economic viability (and indirectly to favour their reproducibility).

This verification of land tenure structures will enter into application in 2004.

Rural Land Development Board

The main objective of the Rural Land Development Board (in French, *SAFER, Société d'Aménagement Foncier et Rural*) is to acquire and retrocede land in order to contribute to the constitution of viable farms. To do so it has the right of pre-emption. Between 1977 and 1992, SAFER Martinique acquired 1600 ha and retroceded 1800, which enabled the settling of a hundred farmers. Later, its activity declined considerably since its operations concerned only 23 ha in 1999 and 27 ha in 2000. With 1.5% of the real-estate market notified, the intervention of SAFER therefore remains modest and it seems difficult to imagine it increasing due to the following reasons:

- The organisation of sales to escape from the right of pre-emption (division, for example);
- The strategy among the "big landowners" of seeking land appreciation;
- Of "arrangements" between speculators and town halls;
- Of management problems encountered by SAFER (limited land and funding).

Many other tools or rules relating to land tenure management have been implemented in Martinique. For example the founding of a land bank by the Regional Council of Martinique, the law on fallow land, all of the laws concerning coastal land (in French *la zone des 50 pas*), the implementation of Agricultural Land Groupings (AGL), etc.

Currently, the latest political orientations seem to privilege the creation of public land administrations and the definition of farmland areas to be protected.

It seems, however, that the resolution of land management problems is to be found more in seeking to increase compliance with the laws and the implementation of policies announced than in developing new tools or operators. This requires the emergence of a true political will on the part of State administrations to ensure laws are complied with (building permits, connection to public utilities of housing without building permits, laws protecting coastal land, etc.), and also on the part of territorial authorities (*communes,* Regional Council and General Council) to define and implement regulations governing land use.

In order for these policies to be properly implemented, firstly, farmers and their representatives should truly promote and demand a real policy for the preservation of farmland. However, farmers often find themselves in a paradoxical situation since at the time of settling on their farms they demand access to land, and later many of them encourage land speculation: "the farm activity which is most profitable is the declassification of land within the context of land speculation!" This ambiguity is quite evident at the level of certain farmers' unions which seek to preserve farmland whilst trying to limit as much as possible control over its management.

CONCLUSION

The majority of the Caribbean States is or will soon be faced with a similar problem. High population growth, a large proportion of the working population in the farming sector, the development of infrastructures and housing, low competitiveness of the farming sector compared with other tropical countries, etc. are the characteristics encountered at varying degrees in all of the Caribbean islands. At first sight this phenomenon of the disappearance of farmland seems hard to reverse. It would therefore seem useful to learn from the experiences of neighbouring countries in order to avoid repeating the same mistakes.

On the other hand, one must not forget that the management of farmland does not only have an impact on the development and sustainability of farming. Because of the charm associated with farming activity (impact on the landscape, "local" production, agri-tourist activities, etc.), changes in farmland areas will have an impact on the development of tourism. In this respect, it should be noted that certain tourists who recently visited Martinique (especially people who had come 10 or 20 years earlier) expressed the opinion that there was "too much concrete", that certain "landscapes were too spoiled"... in other words there is a risk that the sustainability of farming will correlate with the sustainability of tourism.

Of course, the sustainability of farming does not depend exclusively on land tenure management. Many other factors will also have to be taken into account, whether it is at the level of reproducibility (defining the best farming practises, for instance) or livability (better recognition of the farming profession). In a nutshell, controlling the management of farmland is a prerequisite for sustainable management.

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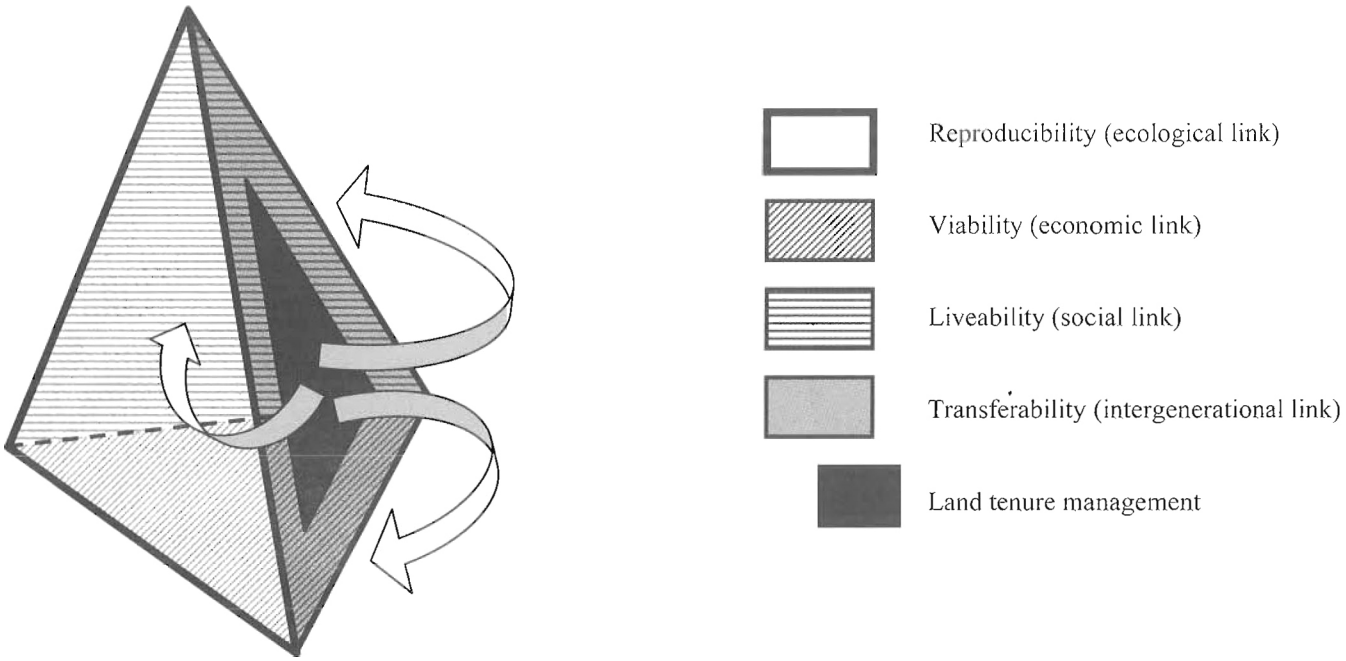

Figure 1. Importance of land tenure management within the main components of sustainable farming

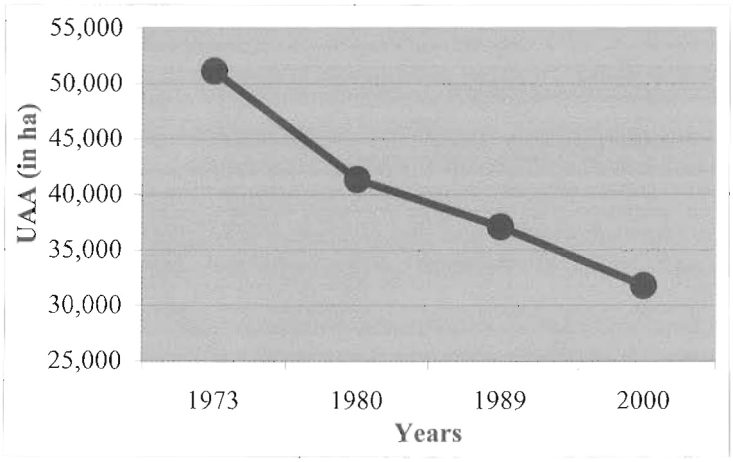

Figure 2. Evolution of UAA ➔

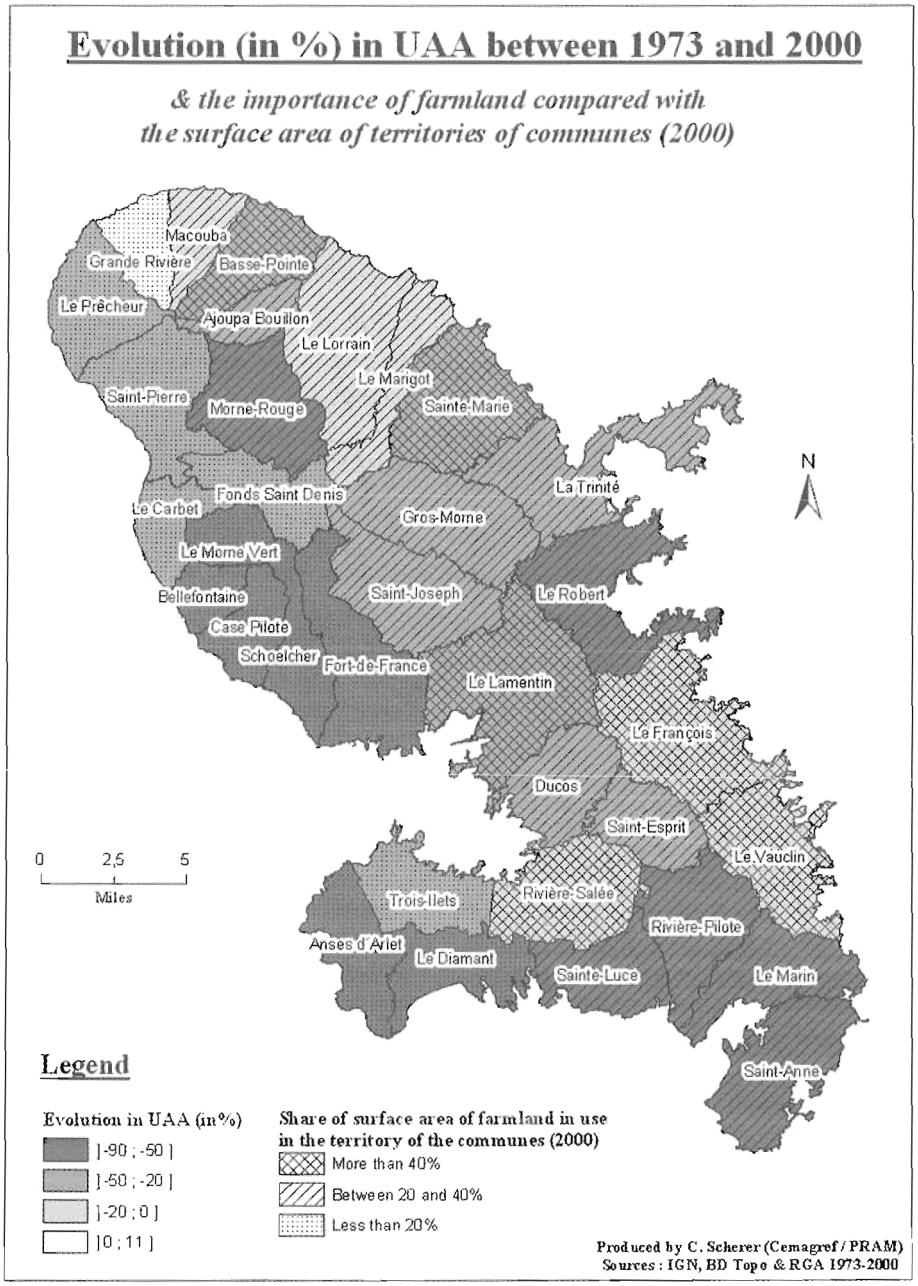

Figure 3. Evolution of UAA (in % and by *commune*)

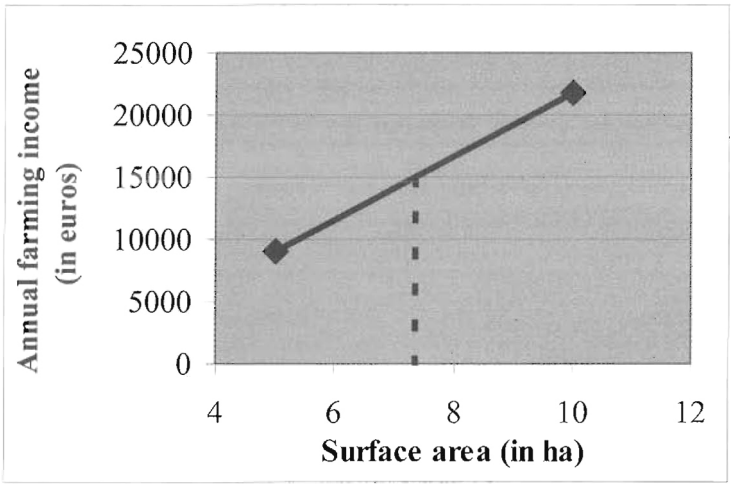

Figure 4. Annual farming income according to surface area.

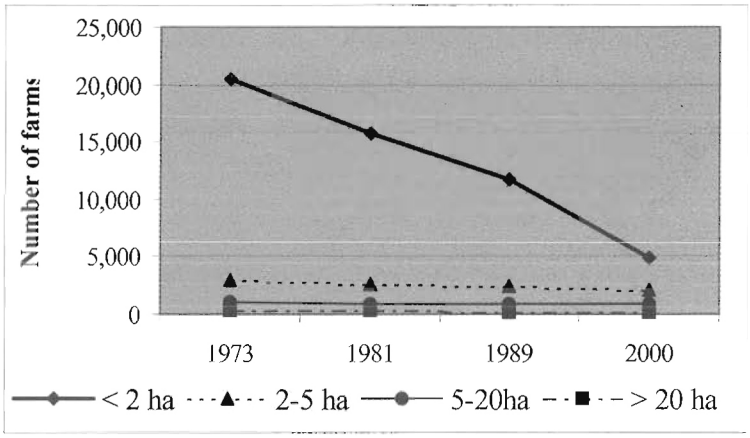

Figure 5. Evolution of the number of farms according to their surface area.