LSIRD network

Collected papers of the European Network for

Livestock Systems in Integrated Rural Development

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Introduction

The workshop series of the LSIRD network

Established in 1996 to explore the future role that livestock farming will play in the development of the European less-favoured areas, and the implications of this for research, the LSIRD network is a project run under the Concerted Action programme of the European Commission, DGVI Agriculture. The network has organised a series of conferences and workshops to draw together the experience of a diverse group of experts working on different aspects of the development sustainable livestock farming systems appropriate for the European LFAs, and to develop perspectives on future collaborative research.

The LSIRD network held its first interdisciplinary conference in Greece (Nafplio) in January 1997. The programme explored the areas in which different research disciplines could be applied to address the specific problems encountered in LFA livestock production, and possible approaches to enhance the role of livestock in European rural development.

The Nafplio conference took a general approach, reporting some of the significant ongoing work and collecting views and ideas about agricultural research for the LFAs. The conference formed the basis for a series of four focused workshops, which examined in detail four of main issues likely to have a significant influence on future LFA livestock farming, and to identify specific areas in which future research will be needed. These factors are:

- agricultural and agri-environmental policy
- adding value to livestock products through on-farm processing and niche marketing
- incentives for environmental management
- rural development initiatives

The four workshops were held in: Granada, Spain (May, 1997), Witzenhausen, Germany (September, 1997), Tour du Valat, Arles, France (March, 1998) and Metsovo, Greece (July, 1998). Each involved presentation of prepared papers and discussion of research issues raised. This publication is a collection of the individual papers presented during the workshop series. The 31 contributions are diverse, reflecting a range of different perspectives and professional involvements in LFAs. As there was a certain inevitable degree of thematic overlap between the workshops, the publications here do not follow the original workshop structure, but are grouped by subject: Livestock systems, rural policy, adding value, environmental management, and rural development that form the basic structure to the work of the network.

The analysis of the workshop discussions and conclusions will be released in a separate publication in spring 1999. These show that scientific research needs to respond to the evolving concepts of the role of farming in the LFAs. It is increasingly recognised that farms and public support for agriculture in the LFAs have to fill many role, policy now aims not only to ensuring continued agricultural land use and viable rural communities, but also to preserve landscape and habitats, and maintain and promote sustainable farming systems. This demands multi-disciplinary approaches to bridge the gap between environmentally appropriate husbandry systems and achieving sufficient profitability to ensure economic sustainability.

The papers presented here collect together many diverse thoughts and approaches found in ongoing projects, and provide an important information resource for the development of future research approaches to underpin the development of viable and environmentally appropriate livestock farming systems for the LFAs

CONTENTS

Livestock systems in the European Less Favoured Areas

Rural Policy

Value-adding to the products of livestock systems in LFAs

Environmental management

Rural Development

Livestock systems in the European Less Favoured Areas

Current trends in animal production practices in northern European systems

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The nature and balance of pressures influencing animal production are constantly shifting and differ dramatically depending upon the context. Many factors influencing the way that farmers structure their business and undertake its tasks. There are many interactions between production systems and how farmers respond to policy, market and other external forces. One of the problems in examining any trends in production is identifying and measuring how external factors exert their influence. Predicting the impact of changes in policy and market conditions is clearly a major challenge. Differences between northern and southern Europe are reflected by different systems but also in different environmental and welfare concerns.

Environmental Influences

1) Incentives to farm in a more environmentally friendly manner include a range of options under the Agri-Environment Measures (EU reg. 2078/92). In the different member states these have been applied differently. Within the UK, Environmentally Sensitive Area and Countryside Stewardship schemes allow farmers to choose from a menu of options. Some of these have direct influence on production methods, e.g. those requiring later cutting dates for silage or hay and measures to re-create species rich pasture.

2) Increasingly large areas are being primarily managed for landscape or nature conservation. Agriculture is increasingly been seen as the most appropriate way of doing this, but sometimes rather differently than commercial farming on neighbouring land. Many new purchasers of land in the Highlands of Scotland are charities with environmental issues at the top of their agenda. The use of hardy breeds of cattle to graze heathlands in Holland, Belgium and Germany is well known and has shown potential for added value meat products from environmentally sensitive farming. The BSE crisis has created some difficulties here because the hardy breeds are usually British (Highland, Galloway, Luing).

3) Current farming practice is being criticised as degrading the environment. In the uplands of Britain and Ireland, increases in sheep numbers since the establishment of the EU Sheepmeat Regime are being linked to habitat loss. There is considerable polarised debate. Reduced stocking rates are being achieved through:

(i) limited uptake of the sheep extensification payments within the Agri-Environment package;
(ii) influence of nature conservation bodies on protected land;
(iii) landlords, both public and private, starting to change leases so as to limit sheep grazing, and;
(iv) cross compliance measures within the main livestock support measures. These measures have involved the setting of standards for overgrazing of upland semi-natural pastures and for damage done by supplementary feeding practices. They are being enforced more rigorously, but there is intense pressure from nature conservation bodies to tighten enforcement and to increase their scope and impact.

The net effect of these changes is a reduction in stocking rates. Some farmers are continuing to intensify management to compensate for this, whilst others are reducing labour and associated costs. Many upland farmers in the UK have taken the opportunity of making small reductions in breeding sheep numbers as Sheep Annual Premium (SAP) can now be claimed on unbred flock replacements. There may be a trend for some land abandonment to be occurring, perhaps fuelled by the value of sheep quota.

The environmental pressure is far from a simple one. In the intensively farmed lowland areas, livestock may no longer be present on many farms. Marginal areas on these farms are no longer grazed and vegetation change and habitat loss is occurring.

4) Policing of environmental pollution is becoming increasingly stringent. Wastes from housed animals, silage effluent and sheep dips are all of concern. Two approaches are possible. Upgrading of effluent control is being carried out by some producers, whilst others have adopted methods that avoid the

concentration of slurry and effluent. Use of big bale silage, with later cutting dates and longer wilting times to increase dry matter, is an alternative that reduces pollution risk.

5) The phasing in of an industry imposed ban on fishmeal in the UK gives an indication of how the farming and feed industries may also respond to wider public opinion.

Research is needed to understand better the biological relationships between production and environmental impacts. Multi-disciplinary research is needed to put this work in context and understand implications at the larger scale.

Welfare

Welfare is another hot debating point within the public domain in northern Europe. Within the disadvantaged regions, there is a general view that welfare is excellent but there is some understanding that this need not always be the case. Concerns over welfare and increased enforcement are leading to subtle changes in production methods in many areas. Cross-compliance of satisfactory lambing and calving rates as a requirement of Hill Livestock Compensatory Allowance payments is being used to encourage farmers and crofters in the harsh western fringe of Scotland to modify their production methods.

Research is needed so that methods designed to improve welfare can be practically applied.

Role of the marketplace

In Britain, organic production is still minor in scale, but in other northern Europe countries, such as Germany, the numbers of farmers adopting organic or ecological meat production is increasingly significant.

Much better tie-up between production and retail sector is moving ahead rapidly in the UK, fuelled by the BSE problems. Farm assurance, breed assurance (e.g. with the Aberdeen Angus), and traceability of beef and sheep is likely for large sections of the chain. Premium products are being produced. These require use of specified breeds, full traceability and changed practices, e.g. a voluntary ban of antibiotic feed supplements in beef diets. This process is being driven by the retail sector in Britain.

Other changes in breeding policy have occurred with larger, leaner cattle of high carcass conformation. There are also changes in the availability of breeding replacements, many of which have come from crossbred calves from the dairy herd. Many suckled calf producers have retained continental (Simmental/ Limousin/ Charolais) sired cows as breeding stock. Larger cows have resulted, with higher demands for concentrate feed and that are less able to withstand harsher conditions. As a result, these cattle may be less likely to fulfil an environmentally useful role. There are continued shifts in breeds of sheep led by market signals. These may require shifts in husbandry methods.

In addition to breed substitution, considerable technology uptake is occurring for breed improvement. The use of real-time ultrasound scanning over the loin area to predict proportions of lean and fat is becoming very widespread. Use of BLUP (Best Linear Unbiased Prediction) is allowing beef and sheep breeders who work at small herd sizes, to make genetic progress. Sire referencing schemes that genetically link a number of smaller sheep flocks are a particularly important development flowing from research. There are now referencing schemes underway in most of the more important British breeds; Suffolk, Texel, Blue-Faced Leicester and Scottish Blackface.

Research and development is needed to measure the role of local breeds and improve their value to the marketplace. Genetic improvement of livestock in disadvantaged regions is necessary to maintain competitiveness with the lowland and non-ruminant sectors. However, this improvement need not always be simply product-led. For example, there must be scope to improve the hardiness of non-local breeds whose products do meet market requirements.

Labour

Labour cost and availability are crucial issues. Between 1980 and 1994, the percentage of the population employed in agriculture has declined by 39, 35, 44 and 18% in UK, Eire, Germany and Netherlands, respectively. Numbers of livestock remain broadly the same or higher. Increases in herd/flock size per unit of labour are believed to be continuing despite recent declines in numbers of animals as described above. Many of the possibilities for intensification have decreased (e.g. land reclamation) but elements of intensification continue. Stocking rates of sheep on improved pastures in commercially recorded flocks are still tending to increase. It is noteworthy that levels of nitrogen used in these flocks have fallen dramatically because of an increase in the use of intensively-managed clover swards.

Increased mechanisation of feeding and other practices have occurred. The move to silage, and more recently to big bale silage for sheep and cattle producers is part of this pattern. Virtually every hill shepherd now has access to a 4 wheel motorbike to speed their work output. There is greater use of contractors to make fodder, increased flexibility in staffing with more contract shearing and contract lambing being undertaken.

Less intensive methods are taken up where appropriate. May lambing is growing in interest in UK. This system reduces winter feed for pregnant ewes and the need for lambing supervision, because lambing occurs well after the start of grass growth.

Changes are also occurring in small scale farming, where cattle numbers continue to decline because cattle are more labour demanding than sheep.

Research and technology transfer are needed to continue to maintain competitiveness by using labour cost-effectively but yet maintain product quality and environmental goals.

Current trends in animal production practices in southern European systems

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The most common form of traditional farming in Southern European Countries (SEC) is extensive rearing of sheep and goats, for milk and / or meat, and beef cattle with the livestock often herded in mixed flocks. This system covers much of the grazing land, and is especially significant for nature conservation in hill and mountain areas. Together with early woodland clearances and sporadic forest fires, low intensity livestock rearing is responsible for the mosaic of evergreen scrub, conifer forest and rough pasture which characterises much of the grazed area of the SEC. These "grazing areas" are vegetated with grass, shrubs, shrubs and forest with grass understorey, and forest with grass understorey. Thus, a proportion of this area is more suited for sheep and cattle grazing, while other parts are better suited to goats (as browsers). Furthermore, some land is usually left fallow for one or more years and is used for grazing, mainly by sheep. Arable systems are often combined with seasonal grazing by sheep on stubbles and fallow land. In many regions, extensive livestock systems make use of (or even depend upon) some form of common or public grazing land, usually of low productivity. The sources of forage include not only pasture, grass meadows and coarser forms of semi-natural vegetation, but also woodland in some areas. Some systems involve the cultivation of certain forage crops such as alfalfa and vetch (for hay-making), and traditional cereals (barley, oats). Maize forage is usually associated with more intensive systems (for silage-making).

Overgrazing has been identified as a severe problem, particularly in the lowlands, while in other areas, undergrazing can be a problem, particularly in mountain regions where livestock numbers are falling. The biomass produced in these undergrazed, or even ungrazed, regions has become a significant fire hazard.

There are certain environmental, socio-economic and technical limitations in SEC which are, to some extent, the main constraints on success, and which also explain the current trends in animal production practices. The percentage of Utilised Agricultural Area (UAA) suitable for grassland is less than 50% in SEC, with an output at farm level of about 1,000 kg DM/ha, while in Northern European Countries (NEC) this percentage is over 50%, with 8,000 kg DM/ha. This yield potential reflects extensive and intensive pasture use at farm level in SEC and NEC, respectively. Thus, the estimated share of grassland in meeting the total energy requirements of ruminant animals in SEC is much lower (from 30 to 55%) compared with that of NEC (from 47 to 97%).

Environmental factors, such as precipitation, temperature and soil/land conditions, combined with fertilisation of the grassland, are the major yield determinants. The permanent grazings of the southern European zone are subject to moisture stress with low annual production, zero fertilisation, very short grazing period and with stocking rates from the equivalent of 0.25 LU/ha in Portugal to as little as 0.05 LU/ha in the poorer forest ranges of Greece.

The limited availability of fodder makes ruminant farmers more dependent on conserved forage feeds, and more reliant on supplementary feeding, which consequently makes it hard to achieve satisfactory economic performance. In many pastoral areas which previously were grazed on a seasonal basis, there has been a tendency toward more sedentary systems for many years. This development often involves an overall increase in stocking density over the course of a year, achieved either by intensification of fodder production on the holding, or as a result of increasing dependence on purchased feeds. There has been a massive increase in the production and sale of dried fodder, mainly alfalfa hay. The use of supplementary feeds often permits farmers to carry more stock during the winter, which may lead to local overgrazing. On the other hand, the decline in transhumance has resulted in an overall reduction in grazing pressure in the traditional summer pastures in mountain regions.

The main factors which limit the possibilities of expansion and make these small holdings suffer the most severe financial constraints are:

- the small size of farms (the number of animals and the available land area per farm),
- the high land prices (competition of land from more economically viable crops),
- state ownership of rangelands with the current legislation of land tenure,

- the low genetic potential (low productivity) of some traditional breeds still used,
- inadequate nutrition (nutritional fluctuations and imbalances),
- inefficiency or lack of co-operative ventures between rural production and retailing enterprises,
- inadequate value-adding activities, such as regional and eco-labelling, on-farm processing and marketing, combined with an inefficient milk processing industry and a poorly-organised market.

Economic results obtained from extensive farming have not so far been encouraging, and farmers' income depends largely on subsidies, regardless of stocking rate. In most cases, intensive exploitation, located in the lowlands, with its high level of specialisation and integration of productive and well-organised processes, gives better economic results and leaves little room for extensification, as any change in one or more production factors would affect the economic return.

Intensification, therefore, of production systems appears likely to be a continuing trend, and it is important that efforts are made to keep these developments consistent with satisfactory flock management and attention to animal health. Extensive cattle, sheep and goat husbandry, operating under conditions with pronounced traditional characteristics, do not require excessive capital for feeding and housing, have the advantage of mobility and flexibility, are to a considerable degree independent of expensive borrowed money. Such systems thus meet the farmers needs better during difficult periods, and under unstable market conditions. The best economic management of farm enterprises of this category can be achieved by increasing flock size and improving the management and quality of natural rangelands.

The problems of the sheep and goat sectors stem from their structure and from the traditional framework within which they operate. The large numbers of units, often of complementary nature, makes the implementation of even simple improvement programs or new technical applications difficult. The future problem of sheep and goat farming, has also social dimensions which are associated with the unavailability of labour. This harsh profession offers few attractive elements to young people, and mechanisation and technological advances are unable to solve the problems associated with extensive ruminant farming.

Furthermore, the agricultural population in the SEC is declining and the retiring farmers are not being replaced. Nevertheless, the stock numbers (sheep, goats, beef cattle) are rather constant. The younger farmers look to more intensive farming systems, often with high total invested farm capital for modern housing and equipment (milking machine, small cheese making plant etc.), new and more productive breeds, and higher living standards for their families. Support measures should seek a more balanced approach to rural development, taking into account the broad spectrum of social, cultural and educational needs of the farming communities, as well as the production and marketing of their products.

Today, it is extremely difficult to persuade young people to practice extensive livestock farming in upland areas where there is no social life. Under these circumstances, a new strategy is needed to face the problems and the disadvantages of the semi-intensive and intensive livestock production systems used. However, effective protection measures should be taken in order to guarantee environmental sustainability and habitat diversity.

These measures include:

- estimation of the appropriate stocking density in each case,
- development of more efficient extensive grazing systems,
- extension of fallow periods in the cultivated land,
- fencing of some patches to be protected from grazing,
- very low use of agrochemicals and fertilisers,
- encouragement for forage crops cultivation (like alfalfa, vetch etc.) instead of cereal crops (wheat, barley) with support regimes,
- cultivation of the abandoned areas with forage crops in order to reduce the stocking pressure on the grazed land,
- delayed cutting dates of grass for hay making, etc.

A grassland premium could also be offered to farmers according to the environmental values which they maintain or create, but this issue needs research to define these environmental values in each case.

Apart from technical support on the matters mentioned above, pilot projects should be introduced and financed, and advice should be given to farmers on value-adding activities and on-farm processing and marketing of animal origin products. Such initiatives will give job opportunities, particularly for women, better social life, higher income and real rural development.

Ascendant technology in the milk-cheese sector : The case of cheese from small ruminants in disadvantaged areas

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The future of cheese production in severely disadvantaged areas faces numerous challenges. The small ruminant dairy sector in the mediterranean basin is a typical case, and a good example to show why and how the sharing of scientific, technical and economic information between different production areas can contribute effectively to the necessary organisation of the marketing chain (*filière*).

This sharing of information, which is essential in order for operators to appreciate their own situation within the industry, will undoubtedly be brought about through a redefinition of forms of dialogue, exchange and comparison.

Making an environment to safeguard traditional products

The sheep and goat dairy sector is highly diversified within europe; an old and well-structured industrial sector exists alongside traditional and artisan forms of production. However, the pastoral nature of this type of production is a fundamental characteristic of mediterranean culture which has universally led to the preservation of original and typical products associated with their place of production.

Mediterranean cheeses are popular with consumers and are sold in niche markets, often attracting significant added value (see tables 2 and 3); it is probably this added value which permits the continuation of this activity in regions of poor agri-climatic potential. This reasoning is also largely applicable to the cow's milk cheese sector in disadvantaged regions (mahon in the balearic islands, ragusano in sicily, beaufort in the alps, etc.).

However, in numerous regions, neither the production, nor the processing or marketing are organised. On the contrary, in others, three brands of industrial product dominate the market (see table 1.). Until recently, this situation did not pose a major problem; in a rapidly growing market, these three cheeses were well-known and had few marketing problems. But, for a number of years now, the situation has been different.

Three of the major cheeses produced in the mediterranean region have recently experienced commercial difficulties. The main causes of problems have been saturation of the internal market and the decrease in european export refunds (pecorino romano), changes in consumer habits in the overcrowded blue-cheese market (roquefort) and competition from dairy products made from cow's milk or other regions (feta) (a fall of 12% in the price of feta in 1996, 20% in ewe's milk in sardinia, etc.). In this context, in the absence of a common market organisation, the industrial sector is logically looking to diversify. Numerous imitations of traditional products are being offered to consumers, who are not always able to identify them clearly.

It is therefore necessary for the economic actors to organise themselves in order to promote recognition of the individuality of their local products and to ensure that they are promoted and distributed beyond local markets in areas where they are not widely recognised.

At a system level, agricultural development services have access to few specific models: in the case of sheep the main model available for reference is roquefort and for goats, the intensive poitou charentes model. These two cases may be of benefit for all mediterranean areas, but the implementation of a coherent transfer of technology implies the existence of effective follow-up by technical and economic services.

Increasingly, european regulations concerning health and hygiene standards will impose a rapid modernisation of equipment (directive eec 92/46). The financial burden and management of these investments are frequently the cause of instability for the farm or artisanal processing units.

The essential challenge which will put the sector back on its feet is undoubtedly that of its professionalism.

Organising the sharing of information.

Create the information and establish necessary references.

I. *Technical-economic data requirements.*

Goat/sheep farming in severely disadvantaged areas lacks the information necessary to

- describe and classify farms
- identify reserves of productivity
- offer producers coherent strategies for the future (choice of techniques, diversification, collective organisation etc.

To achieve this, it is essential that the development structures organise themselves and offer farmers and farmer/processors services which address their needs.

The establishment of technical-economic follow-up is essential so that the performance of the herd, and not simply an individual animal, is better taken into account. The establishment of a target market is vital and necessitates market research.

An increased emphasis on training and the organisation of apprenticeships and exchanges.

Ii. *Strengthen the position of these cheeses on the market and their reputation.*

It is imperative that the different regions look after their niche markets at the same time as improving their global competitiveness. In order to avoid imitation products destroying their reputation, the establishment of collective initiatives is vital.

This will involve the identification of products through, for example, the creation of quality labels and studies on cheese characterisation. These are also the type of collective initiatives which will ensure the promotion of products outside local markets and local marketing structures and facilitate regular distribution.

Numerous initiatives are emerging in several regions (the "*qualita latte*" program in sardinia, the creation of several marketing bodies, etc.), But they must be maintained through an active partnership between the actors in production, processing, development and research.

Establish opportunities for dialogue, exchange and confrontation.

In order to fulfil these objectives, an opening outside the areas of production, which are often isolated, is essential. It is necessary that networks are created in which researchers participate, as well as technicians, and economic actors (processors, farmers, and professional representatives.)

It is therefore a question of diversifying the opportunities and forums for exchange in order to overcome the enormous deficit of information.

New information technologies, such as the internet are often introduced as the solution to these questions. However, there are still many hurdles to be overcome before infrastructures, as well as attitudes, allow the real use of these tools outside the scientific sector. In diffusing simple and structured information through local networks, organising permanent co-operation between professionals, technicians and scientists, it is possible to identify the strategic margins for manoeuvre in a sector in jeopardy.

The dairy and cheese sectors in disadvantaged areas have no choice but to rapidly succeed in modernisation. Modernisation in this context is not a process leading towards an impersonal and anonymous machinery which destroys traditions and leads to a homogenous means of production, expertise and taste. Modernisation, as it is used here, is an approach which enriches tradition, which feeds collective innovation and takes into account the interests of those who implement it.

Sustainability of production systems

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Currently, there are many fashionable words, such as extensification, sustainability, biodiversity etc., used too frequently with little consideration of the actual situation. The degree of development in rural areas can vary greatly between areas, even over short distances. Such differences can obviously be even greater between regions or countries. Much of the variation can be attributed to the effects of different agricultural and rural policies.

While in some countries, the process of intensification was begun in the sixties and before, in others, especially those which joined the European Union late, the recent phase of agricultural intensification only began in the 1980s, and has also mainly been confined to the lowlands. Only limited intensification has taken place in upland and less-favoured areas. Extensification, therefore, may indeed be an appropriate alternative to improve economic and environmental sustainability in the developed, lowland situation. However, in areas which are already "less-favoured", including many common lands, with low-grade vegetation resources, calls to extensify production mean little more than "Please maintain your poor conditions and living standards". Even in fertile lowlands, extensification requires an adequate land base to maintain profitability, and this not always available.

Sustainability is in this context a more useful concept.

But how might it be possible to achieve sustainability in these less-favoured areas? At least 5 conditions must be met:

- An appropriate animal species must be chosen
- The product must be defined
- There must be a well-developed grazing strategy
- Predators must be controlled
- Social conditions must be improved.

The availability of land and vegetation are the main factors limiting the number of animals and herd size. When large areas are available, extensive systems producing low-nutrient requiring products, such as wool and other fibres, may be appropriate, but where land availability is restricted, intensification is essential to achieve economic sustainability. Thus the level of intensification required to achieve economic sustainability is inversely related to the quantity x quality of available land and vegetation.

Figure 1. Undesirable evolution of land use

Land type	Grazing system	Development process	Sustainability	Ecosystem effect
Less-favoured	Extensive	Extensification	Unsustainable	Desertification
Favoured	Intensive	Intensification	Sustainable	Pollution

Figure 2 Sustainable evolution of land use

Land type	Grazing system	Development process *	Sustainability	Ecosystem effect
Less-favoured	Extensive	Intensification	Sustainable	Biodiversity
Favoured	Intensive	Extensification	Sustainable	Biodiversity

* This stage will be dependent on the availability of land

Table 1. Main limits to sustainability.

- Available land in uplands: → quantity low or high
  → quality low

  whereas in the lowlands: → quantity low
  → quality high

- No land use planning (forestry, livestock)
- Lack of regulation on grazing management
- Uncontrolled predators (wolves)
- Changing social and living conditions

Figures 1 and two illustrate why there is a need for a different approach to agricultural development in the LFAs, in particular in the South of Europe, to that appropriate for the more technologically advanced lowland regions. It is only sensible to discuss extensification in cases which have already been subjected to a previous process of intensification. Particularly in the Mediterranean region, the urgent priority is still to improve farm incomes and to stem the continuing process of land abandonment.

Table 1 lists some of the main constraints acting against livestock agriculture in the Mediterranean LFAs. These together pose a formidable challenge to the development of sustainable farming systems.

Priorities for development of sustainable livestock systems in Spain:

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Research and development themes related to livestock production systems and the development of disadvantaged rural areas identified at the meeting promoted by a special action of INIA (12-May-97)

In line with the European LSIRD Concerted Action, I.N.I.A., the Spanish Institute of Agricultural Research of the Ministry of Agriculture, arranged a one day meeting to produce an assessment of the role of livestock production systems in rural development of disadvantaged areas of Spain.

The workshop of 12th. May was attended by 21 people of different backgrounds and expertise: six socio-economists and eight livestock production system researchers; three managers of national agricultural research programmes and four managers of private activities concerned with rural development. Participants were asked to prepare a short report with their reflections on the bottlenecks and problems they saw, from their own experience, in relationship with the Concerted Action's theme, which in their opinion deserved some useful R+D.

The meeting was conducted by three leading talks, namely:

Framework of agrarian and environmental policies, adapted to the Mediterranean region.
François de Casabianca, INRA., Corsica.
The livestock production systems in disadvantaged humid areas of the North of Spain.
Koldo Osoro, C.I.A.T.A., Asturias.
Tools of socio-economy on agrarian systems for rural development.
Javier Calatrava, C.I.D.A., Granada.

Once the large group was divided into three subgroups, taking into account a summary of all the participant's written reflections, a general discussion within each subgroup was held for almost two hours, the fruits of which have been summarised in the following list of objectives for R+D.

I. Analysis of the various extensive systems and the potential of other complementary and external initiatives in rural "pilot" zones to promote their integrated development.

I.1 Establishment of models of integrated rural development, harmonised with the preservation of biodiversity.
I.2 Social-structural limitations to rural development.- Ownership and succession, demographics, services, associated organisation.
I.3 Strategies to stabilise the rural population. The role of rural women.
I.4 Development of technological handbooks.(including health, genetics, pasture management) for each species managed systematically in extensive conditions.

II. Impact of agricultural and other policies supporting grazing systems on rural development.

II.1 Identification of undesirable effects of the CAP.
II..2 Identification of contradictions between policies.
II.3 Analysis of the impacts of aids or subsidies, and models to focus them to the improvement of the viability of the enterprises.

III. Evolution of the vegetation cover in less favoured areas with grazing animal species.

III.1 Soil - plant - animal interactions.
III.2 Mixed grazing - simultaneous by different species.
III.3 Improving forage production.

III.4 Combating erosion and deserfification
III.5 Maintenance of indigenous breeds.
III.6 Individual identification of the fitness of the grazing animals.

IV Products of extensive livestock systems.

IV.1 Analysis of potential markets
IV.2 Orientation of production to meet demand.
IV.3 Improvement of product quality through typificication and differentiation (and in this case, by their own qualities and/or by the establishment of their traceability to the consumer).
IV.4 Marketing strategies.

Research priorities for livestock production and rural development in the *montados* systems in Portugal

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The montados systems in Portugal must be considered as agrosilvopastoral systems deliberately created to achieve a range of socio-economic goals. It is important that this multi-objective conceptual framework is present in any study of the montados. That is, crops, trees, and livestock are only parts of the system that cannot be treated as the object of research as if other components do not exist. This is not to say that one cannot focus the research on livestock, but only that the other components and their interface with livestock cannot be forgotten.

Acknowledging that the less favoured areas of the South of Europe have specific geoclimatic, economic, demographic, social and cultural conditions, it is possible to summarise some research priorities. Referring to specific conditions, in the areas of the montados, means to be aware of the following features that roughly characterise these systems:

- a large percentage of the active population is aged and still engaged in agriculture, since economic activity in the region is mainly dependent on agriculture. That which is not farming is nonetheless related with agriculture, such as tourism and hunting, commercial and other services. Industrial activities not related to agriculture are rare, and a high unemployment rate is the rule;
- low densities of population and low natality rate indicates a trend toward human desertification;
- agricultural activity in the montado is irrelevant to the European agricultural surplus. It is enough to note that this is an agriculture mainly based on dry areas with a very low productive capacity;
- the montado is a fragile ecosystems arising from, and maintained by, patterns of human activity, cultivating the land by using long crop rotations, and using the fallow and the natural pasture under trees as well as the fruits of the holm-oak or the cork-oak to feed livestock.

Thus, one important line of research that has been absent concerns the diagnosis of the present relations between the montado systems and the social-economic environment. It is important, among other questions, to look at how livestock interface with crops and people in these systems. That is, to look at the problems arising from the CAP regulations and the foreseen economic liberalisation on the economic survival of the system. Research must not only characterise the present situation, but must make an appraisal of the potentialities of development under different conditions. There is also an urgent need to study the forms of technical management of the montado systems, particularly the livestock management. The studies at the micro level must be related with the current forms of agricultural marketing, and the bottlenecks that can exist at this level. An essential appraisal must be done relating the technical management with the economic management of these systems under the CAP regulations promoting extensification. That is, one must evaluate the perverse effects on these systems of the implementation of extensification policies.

Finally, a wide-ranging study should be made on the relations between the montado system and the preservation of the environment. Goals, like improving or maintaining the biodiversity and the sustainability of the system, i.e. to develop management systems that, while improving biodiversity, still generate sufficient economic activity to keep people in these zones.

Considering this aim, one of the main questions to be answered is "What forms of livestock management can be practised that, on the one hand, cause no harm to the natural regeneration of the forestry component of the system, but that, on the other hand, can assure shrub control, increase biodiversity and prevent fire ?". Reconciling these goals must be achieved while at the same time maintaining the survival of the economic operation.

POLICY

Agri-environment policy, and the integrated development of less-favoured areas

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Introduction and background

From the creation of the European Union, EU policy has given great importance to the agricultural sector, in particular to market and price policies. The objectives behind this policy, however, have generally not been related to markets and prices (like market stabilisation etc.), but to structural adjustment problems of the agricultural sector and, in particular, to income and social objectives. The price support policy originally pursued by the EU was, however, neither effective in relation to structural adjustments, nor to social and income objectives within the different regions of the European Union. The distribution of funds as a result of this policy was to a large degree dependent on the differences in agricultural productivity between the EU countries and between the various regions. The result was exactly opposite to generally accepted principles of fair distribution of income and equity and also to the requirements for structural adjustments in the regions.

Partly because of this, the European Union began during the 70s a process which intensified during the 80s to shift the emphasis of the so called structural policy, towards subsidising farm capital investments. In the 80s, price policy was modified in certain aspects, but the principle remained, and the expenditure on this policy increased, as did market surpluses, which created international problems. It was primarily due to this financial pressure and the criticism from third countries, including the General Agreement on Tariffs and Trade (GATT), that led finally to the reform of the Common Agricultural Policy (CAP) in 1992. Included in this reform, certain environmentally-orientated elements, in line with the requirement to reduce the level of agricultural production, were introduced. The present CAP however, is still very costly and contains still a number of conflicts and inconsistencies.

Parallel to these agriculturally-orientated activities, the EU decided to shift more financial resources to general regional policies, in order to develop disadvantaged areas. Special programs were introduced for the upland and less favoured areas (Hill Farm Programme) and for the southern countries (Greece, Spain, Portugal) through the Integrated Mediterranean Programmes for less-favoured areas. Later, several financial funds were merged to concentrate subsidies in disadvantaged rural and other areas. Beside the Structural Funds, specific initiatives, like the LEADER program and INTERREG, were introduced. These regional programs have increased in importance compared to purely agricultural subsidies.

Environmental policy is still receiving limited attention at the EU level within the agricultural programs, in spite of a certain amount of progress in the shape of the Flora - Fauna - Habitat (FFH) directive (92/43/EWG) and the Ecological Audit Initiative (Environmental Management System, EU Reg. 1836/93). It is essential that environmental issues and requirements become further integrated into the existing agricultural and regional policies (Bauer, 1997).

These various policies are still not well co-ordinated at the EU level, nor are they harmonised with national and regional policies. Deficiencies have also been experienced in implementing EU policy due to a lack of local competence and financial irresponsibility. From this point of view, a fundamental discussion about introducing an efficient and acceptable federal responsibility system at various policy levels seems necessary.

The reform of the CAP and its impact on environment and rural regions

The biggest reform so far of the EU agricultural policy took place in 1992, after long discussion, based on proposals put forward by EU commissioner MacSharry. The reform can be considered in two separate parts:

1. The price and market-oriented policy changes, consisting mainly of the following elements:

- a significant reduction of the internal intervention prices for most agricultural commodities, like 30 - 50 % for cereals, 15 % for beef, and about 10 % for milk,
- introduction of direct compensation payments for the farmer, mainly in relation to agricultural land (grant cultures) and per livestock unit,
- set-aside of agricultural land as a pre-condition for compensation payments to producers above a certain production level,
- several specific regulations for certain commodities regarding the level of production (quotas), prices and direct payments.

2. Complementary measures, as outlined in the EU regulations 2078/92, 2079/92 and 2080/92, aiming mainly at an additional reduction of agricultural capacities,
Regulation 2079/92 provides additional payments for early retirements of farmers (transfer of the land to expanding farms or set a side),
Regulation 2080/92 aims at accelerating afforestation of agricultural land in order to reduce agricultural capacity and to implement landscape elements in regions wherever necessary,
Regulation 2078/92, supports environmentally sound and nature protecting agricultural production practices, particularly:

- transforming arable land to grassland,
- extensification of arable land (reducing the levels of fertiliser and pesticide applications),
- extensification of grassland systems (reducing the levels of fertiliser and pesticide applications and stocking rates),
- conversion to organic farming.

The main part of the EU agricultural budget is still spent on market policy (intervention, export subsidies) and compensation payments (about 95 %). The complementary measures receive only limited attention. While the market expenditure including the area- and livestock- related compensation payments are fully paid out of the EU budget, the complementary measures are repaid only partly by the EU. For some measures, the major part has to be paid from the national or regional budgets. As a result, the positive aims of EU regulation 2078/92 in terms of integrating environmental aspects into agricultural policy, have not achieved much importance in practise. It appears that the complementary measures have been introduced more as a token gesture in order to demonstrate that the EU is doing something for environmentally-sound agriculture, than as a genuine commitment to the environment.

The relative shift from price support to compensation payments has significant impacts on the regional situation and competition between regions. The impact of the EU agricultural policy reform on the relative situations of the different areas is shown in Figure 1:

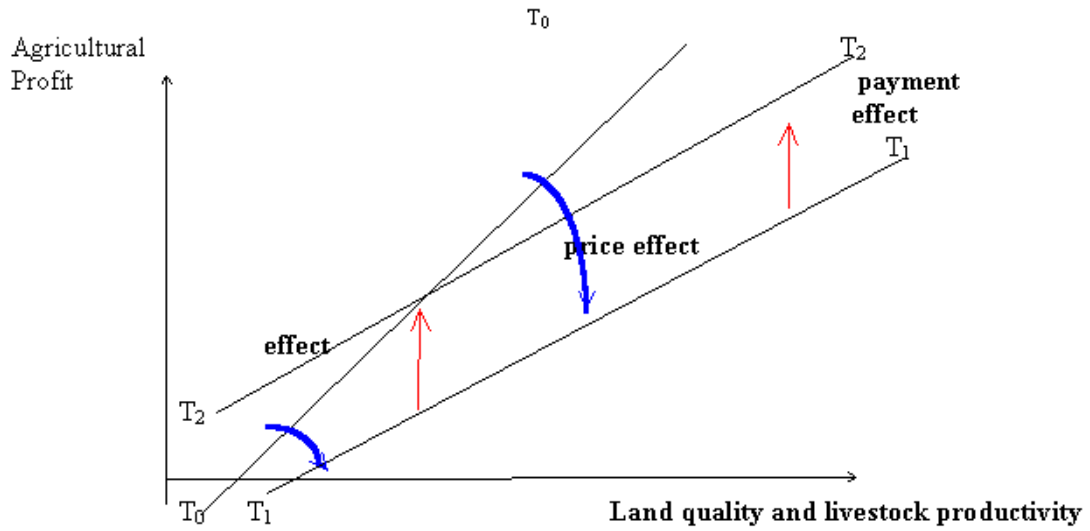

Figure 1: Impact of the agricultural policy reform on regional competition
The graph shows agricultural profitability as a function of land quality and the productivity of livestock farming. The situation before the reform is characterised by the line T_0T_0 . The decrease in agricultural price by the reform leads to a downward sloping change of the profitability curve, as indicated by T_1T_1, which means that better regions are affected by higher income loss than disadvantaged regions. In other words, the higher the land quality, the higher the average output per hectare, and thus the higher the forgone income per hectare. Consequently, this leads to a relatively lower income loss per hectare for less favourable land.

At the same time, farmers receive some compensation payments per hectare of land. These general payments can be represented by the upward shift of the T_1T_1 curve to T_2T_2. In comparison to the original situation, this leads to a increase of income per hectare, per livestock unit and finally per farm in disadvantaged areas. As can be seen from this figure, in the short term, the regional income situation in agriculture becomes more equitable, and the reform reinforces the stability of disadvantaged regions.

In the long term, however, the compensation payments cannot be expected to continue at their present level, as the Commission has already argued. If this is the case, marginal areas will have to struggle with their economic pressures and destabilising factors. Though the current policy relieves the financial pressure on farmers in disadvantaged areas, it has only a short term effect, and provides no general and long-term sustainable solution for the various problems facing disadvantaged areas.

On the whole, the reform has integrated neither the environmental and landscape problems of European agriculture, nor the long-term problems of disadvantaged regions into a comprehensive agricultural and environmental policy concept. It is even difficult to find elements of the reform which are in line with the conceptual framework of sustainable agriculture. On the contrary, the reform itself does not seem to be sustainable, since the discussion about the 'reform of the reform' started shortly after this reform was carried out.

There are still many problems which remain unsolved by the 1992 reform, and certain problems have additionally been created by the reform. The main criticisms of the reform are summarised as follows:

- The reform introduced new and additional bureaucratic and administrative elements in the agricultural policy system. Farmers are more dependent upon bureaucrats and the administrative burden has increased. Instead of introducing more market-orientated elements, the EU agricultural policy system is moving more and more towards a planned system.
- The massive transfer payments are intended to preserve the previously existing distribution of income. The public transfers are not oriented around any widely-accepted social or ecological criteria. This is an inefficient use of public money and is unlikely to achieve broad popularity, especially as this expenditure is so high as to be unsustainable in the long term.
- The set-aside program makes little sense, neither from the economic nor from the ecological point of view. Payments given for setting aside the principally scarce factor, land, is a waste of resources and does not fit with the principles of efficient and environmentally-orientated use of resources. The areas or plots set aside are not necessarily the most ecologically valuable, but are usually the least productive.
- From the regional and landscape point of view, the reform, particularly the compensation payments, will lead to some stabilisation of marginal areas. Many calculations show that in marginal areas, the effect of decreasing agricultural prices will be overcompensated by the transfer payments. This means that the withdrawal of agriculture from marginal areas will slow down. This positive effect from the regional point of view and also from an environmental and landscape perspective, however, is coupled with relatively high income transfers. However, it must be expected that these transfers are reduced drastically in the medium term. Were this to happen, a tremendous change of the land use pattern in marginal areas will take place. This change leads to economic, social and ecological problems of the respective peripheral and disadvantaged regions. From this point of view also, therefore, the reform is not sustainable, even though it has brought some short term benefits in marginal areas.
- Finally, the reform neither solves the ecological problems caused by intensification, specialisation and regional concentration in agriculture, nor does it stop the tendencies observed in the past.

The Common Agricultural Policy has been strongly criticised both by environmentalists as well as by economists. It is difficult to discern any clear orientation of the 1992 reform package towards the fundamental long-term problems of the agricultural sector. From this global point of view, the reform turns out to be a narrow and short-term superficial compromise. Since all affected interest groups can find some positive aspects within the reform package, they have more or less accepted the compromise without analysing the long-term consequences. However, the reform's inconsistency and the lack of long-term objectives also reflects the dilemma of agricultural policy, since, on the one hand, its knowledge of ecological interdependencies is incomplete, but on the other hand, the sensitivity and uncertainty of the economic, financial and ecological situation increases.

Regional Policies of the EU

The EU has shifted an increasing proportion of its whole budget to specific regional policies which are not exclusively aimed at the agricultural sector. Since 1988, the EU regulation 2052/88 has been implemented as a common action of various subject- orientated divisions of the EU. The aim has been to concentrate funds of the EU and to provide integrated support programmes according to regional objectives. In 1993, this regulation, the "Structural Fund", has been revised in order to combine financial resources from:

- the Fund for Regional Development,
- the European Social Fund
- the Agricultural Fund
- the fund of the Mediterranean Integrated Programmes.

In the present context, the Objective 5b areas and support programmes are most important. The aim is to promote rural development and structural adjustments in rural areas identified as backward regions. For example, in western Germany 21 % of the total area is classified as 5b region (the former East Germany belongs completely to Objective 1).

The main actions, which are carried in 5b regions include:

- diversification and structural adjustment of the agricultural sector,
- development and diversification outside agriculture,
- development of human resources,
- environmental and natural protection, including landscape measures

The Structural Funds can be seen as policy innovation, since they require initiative from the regions by constructing so called "regional development plans, support concepts and operational programmes" for the future development of the region from a regional perspective. In other words, the former "top down" support programmes have been partly revised by introducing "bottom up" elements in the regional policy. Another innovative element is the continuous evaluation and control of the efficiency of the programme and the various measures applied.

At present the policy is not implemented in all countries and regions in the same way. It requires an active involvement and participation of the regional authorities and also of the population and the key persons within the region. This new requirement and policy participation is still not realised in all regions affected. For example, within Germany, the structural funds are applied differently in the various states and the national regional policy is still not adjusted to the innovations from the EU. In part, national policy (e.g. the *Gemeinschaftsaufgabe*) acts contrary to the new policy.

Beside this innovative character of the structural funds, there are also certain aspects, which are open to criticism (Bauer 1996, SRU 1996):

- The criteria and the given classification of regions within and outside objective 5b has been criticised as being too static and rigorous.

- The concept of using objectives for regional classification and for allocating financial resources can also be viewed critically. Splitting regions up into different objective areas contradicts the integrative character and aim of this policy.

- In relation to sustainable development, environmental aspects are an integral part of all support measures. Instead of supporting specific environmental measures, we have recommended the introduction of certain environmental standards as a pre-condition for all support measures. It would also be possible to require an environmental management system (EMS, as defined by the EU regulation 1836/93) from all firms and organisation supported. The main argument is that public money should not be spent first to produce negative external effects and then again to ameliorate these negative effects.

- A more fundamental aspect concerns the question of whether the EU is the appropriate policy level to administrate regional policy. In other words, is it efficient to transfer first money from the regions to the EU, which is distributed and partly given back to the regions for certain actions? The question is also, whether the EU should evaluate and compare region-specific problems and finally control the policy which is supported. The criticism includes the argument that Brussels is too far away from the regions, and that there is no equivalence between the range of regional problems and the administrative and financial responsibility. The widely-accepted principles of subsidiarity and the "European Union of the regions", suggest that a more fundamental discussion about the appropriate policy levels seems necessary.

Conclusions

Reorientation of agricultural, regional and environmental policy into an integrated 'rural policy' should consider the following basic elements and principles:

- The market mechanism has to be regarded as the basic and most efficient driving force for efficient factor allocation and for structural and regional changes in the development of economies and society (market economy).
- From the social point of view, there are good reasons for financial compensations and transfers between individuals, as well as between regions, in Europe. However, these transfers should be based on clear social and income criteria (social market economy).
- From the environmental point of view, regional spill-over exists in the sense of positive and negative externalities between regions. For this reason, adequate financial compensations and incentive systems should be developed and implemented (social-environmental market economy).
- Finally, there are other public goods besides the environment with unbalanced regional burdens and utilities, such as for example cultural and educational institutions, which also require financial compensations.

The influence of the WTO negotiations on future policy development

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Pressures for change: GATT/WTO

Whereas the major reason for change during the 1980s, when milk quotas were introduced, was the increasing cost of the budget, the overriding pressure for fundamental reform of the CAP in the 1990s has been the need for the European Union to comply with the commitments made within the Uruguay Round of GATT. This need will be extended further for negotiated settlements within the WTO in the years ahead. Enlargement of the EU to the east also poses problems for the CAP, however, these must be seen within the context of future WTO agreements.

Internal pressures for change within the European Union also exist but are secondary in driving fundamental reform when compared to external trade pressures. Internal EU issues include budgetary pressure, environmental concerns, animal welfare concerns and, especially in the light of the BSE crisis, the demands and concerns of consumers within the EU. These concerns will all influence policy changes, though the WTO is likely to be the most significant factor in driving policy change in the agricultural industry.

Uruguay round of GATT

The aim of the 1992 reform of the CAP was to pave the way for a successful conclusion to the Uruguay round negotiations on trade liberalisation. It had become clear that European production of price supported commodities, most significantly cereals, milk and beef, was on a rising trend while internal consumption was at best static. In order to meet the demands for reductions in the volume and value of EU export refunds it was necessary to implement policies that at the same time as limiting EU production would realign support prices closer to world levels. The cereals sector experienced the most radical reduction in price with offsetting compensation in the form of direct payments and supply control via set aside being implemented. However, cereal support price cuts of the order of 30% drastically alter the comparative costs of production of intensive and extensive livestock. Hence simultaneously beef support prices were cut with offsetting increases in direct payments on suckler cows and male beef animals. Supply control in the beef sector was indirect via limits on the number of claims under the Suckler Cow premium and Beef Special premium being put in place. The dairy and sheep sectors were left relatively unscathed by the 1992 CAP reform with milk quotas being retained as the method for controlling production.

The next WTO round: due to begin in 1999

The most important factor that will influence livestock farming in less favoured areas in any future WTO round will be changes in the CAP to the beef, sheep and dairy regimes. However, it is likely that there will be less pressure to change the sheep regime, since this is based on deficiency payments and therefore not as heavily dependent on price support as the beef and dairy regimes. It would be fair to assume that the next WTO Round will continue in the same direction as the first, that is that it will be based on the same three areas; domestic support; export subsidies and tarrification. Further cuts in tariffs are likely to form a central part of the WTO round, this means that in some cases, depending on the size of the tariff reduction and the gap between European and world prices, EU support prices will have to be cut in order to prevent import penetration.

It is likely that as the next round of multi-lateral discussions over further trade liberalisation are due to commence within the WTO, the EU will begin to experience a re-emergence of significant surplus of stocks of cereals, dairy products and beef. Indeed, the recent market reports produced by the Commission (DGVI) suggest that if the CAP remains unchanged for the next 8 years, the EU will end up with intervention stocks of nearly 80 million tonnes of cereals and 1.5 million tonnes of beef by the year 2005. This forecast is made on the basis that there is no change in our GATT commitments over this period. If a new WTO round leads to further cuts in export subsidies, then the surpluses would be even higher by 2005.

Given the GATT commitments which progressively reduce the volume of EU exports, the long term choice is a relatively straightforward one. Either effective supply controls will have to be introduced which cut production in response to a shrinking export market. This strategy would have the advantage of enabling internal EU prices to

be maintained at a higher level but would require significant and progressive cuts in volume produced and would directly lead to a loss in world market share for EU agricultural products. Indeed, if further tariff cuts lead to a greater volume of imports Europe would even risk losing a share of its own internal market. The alternative is to develop methods of agricultural support which do not distort prices and international trade and allow EU agricultural production to expand. This approach would essentially mean reducing or even removing price support and abolishing supply control.

Implications of the 1996 US farm bill

A factor that will undoubtedly influence the next WTO round of negotiations is the change in direction of policy that occurred during the 1996 US Farm Bill. This significantly reduced the level of support in the US and decoupled it from production. A greater proportion of US policy instruments will now be eligible for the "green box" (as support measures de-coupled from production are known) and will be protected from future cuts in support. The US will therefore have no interest in prolonging "blue box" (production-linked support) measures into the next WTO round. The US are therefore expected to seek further significant cuts in the overall level of agricultural support within the WTO. Thus, either the EU will have to itself consider switching to more decoupled payments or it will have to make substantial concessions elsewhere to buy the prolongation of the "blue box".

Implications of the WTO for the beef sector

The recent Commission document "Long term prospects" suggests that beef stocks will rise to 1.5 million tonnes by 2005. The problem for the EU beef regime is that the option of disposing of this surplus onto world markets with subsidies has been closed off by the GATT agreement. If beef consumption fails to recover and resumes its downward trend then, against a background of GATT dictated cuts in exports and increases in carcass weights, by 1998/99 the regime will be in crisis. While the short term measures adopted so far could enable the regime to survive over the next three years longer term radical reform of the beef regime is inevitable.

While the mechanisms that could be used to attain the solution are myriad, in practice there are two possible basic routes that can be taken. The first involves rebalancing the internal market by ensuring that the supply of beef contracts to enable price support to be maintained and existing GATT commitments met. The second more radical option is to continue reform along the lines of the 1992 CAP Reform which began to switch agricultural support from price support to direct payments to producers. This second route would attempt to realign internal beef prices with world market prices and could well involve substantial price cuts.

The introduction of supply controls have enabled internal EU beef prices to be maintained significantly above prices obtained by farmers outside the EU. As a reform strategy, lower prices unaccompanied by compensation will never be the preferred option of beef producers as they are clearly made worse off. Further rounds of supply management to prolong the current regime will always seem superficially attractive, especially to those whose main concerns are short term. The benefits of price support are immediate whereas the alternative strategy would be fraught with uncertainty.

A policy of fully compensated price cuts would, in theory, be an ideal solution to the problems facing the beef sector. By reducing internal beef prices towards world levels the requirement to subsidise EU beef exports would be obviated. Such a policy would remove the GATT constraints on exports. Hence existing controls on production could be lifted and further cuts in production avoided. At the same time full compensation would protect the current levels of income within the sector. The question marks over this policy would be whether full compensation is politically achievable and the modalities of paying this compensation.

The compensation would be subject to a challenge at the World Trade Organisation were it not demonstrably non-trade distorting. The ideal policy would therefore be one in which not only were the price cut fully compensated but that this compensation were delivered in a manner compatible with the inclusion of these payments within the Green Box. This would not be the case if compensation for further price cuts simply added to the existing headage payment system. Hence the interest in developing decoupled support policies in the extensive livestock sector along the lines of those pursued in the arable sector.

Whether full compensation for radical price cuts in the beef regime could be funded under the existing CAP budgetary guidelines is a key question. Full compensation, even offset by reduced expenditure on storage of

intervention beef and export refunds, would increase expenditure on the beef regime considerably and would therefore not be budgetary neutral.

Conceivably compensation payments for beef could be related to any of the following:-

- Grazing Area
- Output in a base period
- Beef Special Premium and Suckler Cow Premium payments

There could be scope to attach environmental conditions to receipt of these payments, although the cut in output prices ought to reduce the incentive to intensify grazing. However, were these environmental conditions to impose additional costs on producers, then the compensation paid would no longer be sufficient to maintain pre-reform income levels and the additional costs could hamper the international competitiveness of the European beef industry.

Some commentators, and this would certainly reflect the view of the OECD and UK government, see decoupled support as a mechanism to allow subsidised European agriculture to achieve a transition to a more competitive world in which trade barriers would be lower, export subsidies abolished and agriculture less dependent on subsidy. At the end of the transition period, agriculture in Europe would be operating at much lower levels of public support, would in all probability produce substantially less overall output, would be characterised by larger production units and would take place at a much reduced level in more marginal upland areas in the absence of specific policies designed to counter this effect.

Implications of WTO for the dairy sector

Over the course of the GATT Agreement, and certainly over the course of the next WTO round, cuts in tariff levels will put the current EU dairy policy under considerable strain. If tariffs were cut by a further 36 per cent for butter in the next WTO round (a cumulative cut of 59 per cent between 1995 and 2009), landed prices of butter in the EU would be some 20 per cent below current EU intervention prices even if prices remained at the average level seen between 1993 and 1995.

It is recognised that milk quotas have helped both to improve and stabilise dairy farm incomes over the past 12 years. However, cuts in tariffs and subsidised exports will force milk prices to fall and quota to contract in the years ahead. Three options can be identified to resolve this problem:-

- Further cuts in the level of subsidised exports might be dealt with by a quota cut of, say, a further 2 per cent, but if combined with declining domestic consumption, then much larger cuts might be required to maintain market balance.

- A policy of steep price cuts, similar to the 1992 cereal reform, accompanied by the removal of quota, would not require a cut in prices as great as 50 per cent, which is the average gap between EU and world prices. This is both because prices may be higher in the future, and because even with a price differential some higher value-added products may be exported without subsidy.

- B-Quotas would enable the dairy industry to maintain its current size in the face of tightening constraints under the GATT. However there are several major draw-backs to such a policy. These include its complexity, its compatibility with the GATT, its longevity, given reduced tariffs, and its uneven effect between Member States.

The decision as to which policy option is the best will differ between individual producers. The age of an individual producer, his financial situation and any plans he may have for the future of his dairy enterprise are all important considerations. Those producers who have no plans to expand, and only hope to remain in the industry for another 5-10 years, are more likely to be attracted by the stability and relative security provided by a milk quota system. However, a producer with long-term plans within the dairy industry and who may have the ability to expand and develop his business is more likely to be attracted to other options. The same is probably the case for new entrants.

Implications of WTO for disadvantaged areas

During the Uruguay Round of negotiations, the European Union gave notice that they were determined to resist imposed cuts in Hill Livestock Compensatory Allowances (HLCAs) paid in Europe's disadvantaged areas. These would have to be regarded as Green Box measures, as they were essentially social in nature.

In the event, this argument was never put to the test because the final Agreement in Agriculture specifies that internal support cuts could be made on an aggregate basis rather than commodity by commodity and programme by programme. The support price cuts in cereals and beef in the EU effectively met the 20% cut in total support which the EU was required to make.

This argument may resurface in the next WTO Round. Although some may argue that payments in disadvantaged areas are social or environmental, in practice they are paid on individual livestock units and would certainly not fit into the Green Box as currently defined. Indeed, some environmentalists in Europe argue that because they are paid per livestock unit, they encourage over-stocking, which can result in actual environmental damage.

There may therefore be some pressure to change the nature of HLCA payments to ensure that they are exempt from WTO cuts. This could be done in a variety of ways:

- by making them regional assistance programmes
- by making them environmental programmes
- by paying them as decoupled income support

In each case, the payments would have to be decoupled from livestock units.

Integration of new central and eastern European member states

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Less Favoured Areas (LFA) and their potential importance in the EU acceding countries (EUAC)

The LFAs of Europe are only vaguely defined, as was pointed out by Brouwer *et al.* in their paper presented at the LSIRD Nafplio conference. Although it is indisputable that the LFA consists of mountains, moorlands, wetlands, heaths and rough pastures, areas which are perceived as LFA in France may not qualify as LFA in, for example, Spain. The mountain-defined LFA starts in France from 600 m., in Germany from 800 m. and in Spain from 1000 m. above the sea level; also, different values of slope (from 20% in most countries to 25% in Portugal) are used to define a given area as LFA.

Taking into account that criteria for counting a given area as the LFA differ across the EU member states, it is difficult at this point to quantify how much of the farmland in the EUAC will be classified as LFA. Taking into account only the altitude criteria, the differences may be significant. For example if all the areas above 500 m. in Poland were to class as LFA, this would be equivalent to 3.1% of the area of Poland. But if only farmland above 1000 m. counted as LFA, only 0.2% of Poland would qualify. Taking into account that the total area of Poland is about 323 thousand square kilometres[1], the difference is significant and represents nearly 1000 km^2 (100,000 ha). It can be expected that other criteria give similar differences and that the cumulative effect can be large. Because the criteria have not yet been specified for each EUAC, it is not possible to calculate the total amount of EUAC farmland by adding together the LFA in each country.

However, for many reasons (for example budgetary implications) it is important to have a vague idea of how large the LFA can be expected to be in the EUAC. It is estimated that the LFA in the European Union represents about 56% of total farmland. Assuming that there is no significant reason to expect that this share is much different in the EUAC, an estimate of the LFA in the EUAC can be calculated. If all ten EUAC countries[2] are counted together, then the resulting area of LFA would amount to approximately 0.5m km^2. However, counting only those countries most advanced in the process of integration (Czech Republic, Hungary, Poland and Slovenia[3] - EUAC-4) the LFA would be around 0.25m km^2.

Based on this simplistic but useful calculation, it can be concluded that the LFA is an important issue in the integration of the new member states and should be much better researched than it is at the moment.

Current status of the LFA in the EUAC

There are considerable differences between the EUAC, both with regard to share of the LFAs in total farmland, and in the way that national agricultural policies treat these areas.

Czech Republic has a farm structure comparable with the UK; the average farm size is 57 ha (in the statistics, only farms larger than 1 ha are counted), share of agriculture in GDP is around 7.0%, and employment in agriculture reaches about 8.0% of total working population. From this figures it appears that labour productivity in agriculture is at the national average level.

There are some measures used in the Czech Republic to support the LFA. The support covers about 35% to 50% of the farmland. Subsidies are given for conservation of grassland and a type of set-aside scheme. Farmers in the LFA were paid to switch from cereal production to grassland. This action was taken in 1994 when 200m KC (4m $US) was spent to establish grassland on previously arable areas. In 1995, the

[1] Area of Poland is 322 577 km^2.
[2] Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Rumania, Slovakia and Slovenia.
[3] It is argued that these countries are the most advanced in the integration process because economic reform is well advanced in these countries, and all of them will soon start negotiation on accession to the EU.

expenditure was lower, as it was mainly aimed at conservation of the newly-created and previously-existing grasslands. There is also a large programme in place for landscape management; in 1994 this amounted to about 11m $US, rising in 1995 to 27.5m $US. A significant amount is also spent on afforestation: 0.3m $US in 1994, 0.65 m US$ in 1995.

In *Hungary*, agriculture represents some 9% of GDP, and employs 15% of the Hungarian work force. Labour productivity is considerably below the national average. Agricultural policy in Hungary is not directed to assist the LFA specifically. Subsidies to agriculture are spent mostly for market intervention, and almost none address LFAs (see the OECD report).

The contribution of *Polish* agriculture to GDP is about 6% and the sector employs about 25% of work force. From these figures it is clear that labour productivity is about one quarter of the national average. This is especially evident in areas which can be defined as LFA. Average farm size is about 7 ha (in the statistics, only farms larger than 1 ha are counted).

With respect to LFA, the situation is similar to that in Hungary; market intervention and farmers' pension schemes get priority. However, the government provides some assistance for farmers who have decided to derive income from outside agriculture[4]. The assistance covers transfer of know-how and information on existing business opportunities outside agriculture. The assistance is not tied to the LFA, but for economic reasons, farmers use the government help in areas which could be defined as LFA. Economic forces (quite unfavourable, especially for small farmers) and government encouragement have already pushed some farmers out of agriculture.

The problem of LFA in *Slovenia* is very important and the government devotes considerable support to them. There are about 20 regional projects to create so-called 'vine roads'. Under these programmes, most of the funds are spent to create and improve tourist facilities, and in this way to provide an alternative (or supplementary) income for farmers. These 20 programmes are run in highland, mountains and high altitude regions.

Future development and perspectives

Future development of the LFA in the long-term is determined by the accession to the European Union. If price levels in the EUAC are aligned to the EU levels, there is a danger of encouraging significantly higher agricultural production. The implication is that farmers in the LFA would have an incentive to raise production. Thus, the desired trends of falling production in LFA or extensification may be reversed. Therefore it is argued, in line with the Common Agricultural Policy (CAP) reforms and World Trade Organisation (WTO) principles, that money which is spent to help farmers (including those who farm in LFAs) to raise their income should be granted in a production de-coupled way. As stated by many authors, WTO constraints are a serious problem if unreformed CAP would be applied to the EUAC. Production would increase to such extent that an enlarged Union would not be able to meet WTO commitments and would have to bear enormous budget costs. The qualitative analysis suggests that, potentially, supply control can be a solution[5]. But it is a problematic measure. Having set prices, setting the level of supply would freeze two important economic variables which, for many reasons[6], is not desirable.

It is also difficult to implement supply control for practical reasons. The production of only a few products is controlled in the EU. Once the EUAC join the European Union, supply controls will have to apply equally to all countries. It is debatable if the application of supply controls for the whole Union would be politically acceptable. But perhaps even more difficult is the problem of how to control supply using administrative measures. It is not clear if supply control should restrain the number of animals on the farm, or the sale of these animals. Should the restrictions be calculated on the basis of output, land or even

[4] Agri-tourism can serve as an example; some farms are totally converted into a place which serves tourists. Some farms treat tourist services as an additional source of income. In such cases traditional farm products are often sold together with accommodation services.

[5] In some products (eg. milk) it will be necessary anyway, but if all EU prices were applied to EUAC, the problem would appear for most agricultural commodities.

[6] Such as undermining market competition, freezing the structure of the industry, and imposing administrative costs of introducing and monitoring the fulfilment of supply control.

the capacity of cowsheds? There are no easy answers and it is not an accident that production quotas which operate within the CAP relate only to sugar-beet and milk. These products have features which help supply control; sugar-beet is practically useless if unprocessed, and milk is perishable. Supply control for other products (which can be relatively easily processed) can for example induce dual markets. The example from the centrally-planned economy demonstrates that, if supply control led to a large imbalance in the official markets, alternative markets emerge to compensate for this effect and no administrative bans on these markets can stop people trading outside the official system. In addition, even if there would be a way of effective supply control, agricultural production in some EUAC (Poland, Slovenia) is characterised by a low number of animals per farm and it would be difficult and costly to control supply. Certainly, some small meat processors would probably willingly take the risk of illegal trade in return for some extra income. Clearly, introduction of supply control would not be easy, but that does not mean that it cannot be introduced at all.

Factors affecting the uptake of beef cattle extensification premium in a less favoured area (LFA): a case study in Shropshire, England

Graham Tate and Julian Park*
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Summary
The issue of farming intensity and the EU livestock subsidy system is discussed and illustrated. The evidence shows that Extensification Premium was a relatively small sum of money when compared with other potential forms of subsidy and that its relative value is set to decline if the proposals under 'Agenda 2000' are implemented. As a result its influence in promoting environmentally friendly cattle production may fall in favour of a renewed emphasis on headage payments and more intensive production systems.

Introduction
The balance between the intensity of hill and upland grazing and the conservation value of livestock farming has been acknowledged for sometime (Webster and Felton 1993). Problems with overgrazing, particularly with respect to subsidy claims, have received official attention which can lead to such claims being reduced (MAFF 1992). The EU provision of an incentive to livestock producers to extensify production was not unexpected. Extensification Premium was introduced in the EU via the Beef Support Regulation 3886/92, amended by subsequent regulations (CAP Monitor 1997).

At present in the UK it is only cattle that are eligible for Extensification Premium, the payment being made to producers claiming Suckler Cow Premium Scheme (SCPS) payments and /or Beef Special Premium Scheme (BSPS) payments in cases where farmers are thought by the UK Ministry of Agriculture, Fisheries and Food (MAFF) to be farming in an extensive manner. Both of these payments are subject to 'regional ceilings' to prevent overproduction in specific parts of the EU. Farms in both Less Favoured Area (LFA) and non LFA districts are eligible for Extensification premium.

Livestock support payments
The rate of payment for SCPS is 144.9 ECU (£117.36) per cow and for BSPS 108.7 ECU (£88.04) per male animal respectively (Nix 1997a). The total grazing density for all grazing livestock on the available forage hectares must not exceed 2.0 LU/ha and only the first 90 head of cattle are eligible for BSPS. Farmers keeping stock in severely disadvantaged parts of the LFA are also eligible to receive payment of Hill Livestock Compensatory Allowances (HLCAs) on appropriate breeds of stock at the rate of £97.50 per cow and £5.75 per ewe.The maximum payment in these areas is £121.49/ha (Nix 1997a). Extensive production is determined by the overall stocking rate on the farm of both beef and sheep- see Table 1.

Table 1: Livestock Units for Cattle and Sheep (source: MAFF 1997)

Stock and Appropriate Subsidy Scheme	Livestock Units (LU)
Suckler Cows (SCPS)	1.0
Male Cattle aged<2 years (BSPS)	0.6
Male Cattle aged > 2 years (BSPS)	1.0
Female Sheep (SAPS)	0.15

The overall stocking density determines whether the Extensification Premium is paid to a producer. If the stocking rate is less than 1.0 LU/ha then the higher rate of 52 ECU per animal (£42.12) is paid, otherwise farming between 1.0 LU/ha and 1.4 LU/ha will allow a payment of 36 ECU per animal (£29.16). The premium is only payable with respect to beef cattle. Sheep production is excluded from payment and female cattle less than two years old are neither eligible for BSPS nor used in the calculation of stocking density. Any number maybe kept without affecting subsidy claims.

Table 2 illustrates the potential gross margins for a farm which stocks suckler cows at three levels of intensity. This takes into account the level of payment of subsidies and market receipts the farmer may accrue.

There are several issues arising from the data presented in Table 2. Firstly there is a reduction in gross margins with the extensification of the farming from £544/ha at 2.0 LU per hectare to £351/ha at 1.0 LU per hectare. Second, the low level of Extensification Premium will not improve the level of income for more extensive farm businesses. Third 'Agenda 2000' states that headage payments will be increased with the SCPS increasing by 70 ECU from 145 to 215 ECU and BSPS increasing 123 ECU from 109 to 232 ECU (European Commission 1998). These data suggest that current policy may be discouraging extensification.

The next step in the paper is to apply similar payments to an actual farm which was surveyed and recorded in 1997 to see how the payments will have effect in a real farm business. To explore this issue a case study is described below in which the effect of beef and sheep payments on the farm business are discussed.

Table 2: Beef gross margins on a suckler farm at 3 different stocking rates (figures rounded to the nearest £)

	2.0 LU/ha	1.4LU/ha	1.0LU/ha
Scheme:	£	£	£
SCPS	235	164	117
HLCA	121	121	98
Extensification premium payment	-	41	42
Total Subsidies received	356	326	257
Other receipts (Nix 1997b)	188	131	94
Beef Cow Gross Margin / Ha	544	457	351

Case Study

Extensification premium has only been payable to livestock farmers since April 1994 when the first payment was made to producers. Access to the Extensification payment is determined by the farmer in that the farmer chooses the overall rate at which the farm is stocked with sheep and beef cattle. There is a some conflict between the operation of the Extensification premium and the headage based schemes in that farmers must operate the farm business within one of the stocking rate levels referred to above in order to successfully claim the relevant payment. It is this which has been examined in a farm case study carried out between July 1996 and February 1997.

A stratified randomised sample of 43 wool producers farming within the severely disadvantaged area of the Shropshire Hills Environmentally Sensitive Area (ESA) (MAFF 1996) was selected. On farm visits were carried out to establish the type and intensity of farming. The holdings ranged from 1ha to 546 ha with a mean of 72ha. All of the holdings kept sheep and 30 out of the 43 farms kept beef cattle, including 24 farms with suckler cows.

Farmers were asked to confirm both the number and type of livestock on their farms, together with the cropping, fertiliser applications and grazing systems practiced and whether or not they rented other land or bought and sold fodder. As a result of this the grazing densities of the 43 individual holdings were calculated and the eligibility for livestock sudsidies determined, assuming that the production quotas were held where these were necessary-see Table 3.

Table 3: Shropshire LFA survey-Stocking rates and holding size(ha) of 43 farms in sample

	Total LU	Stocking Rates LU/ha	Size of Holdings (ha) in sample
Mean	85.7	1.33	72
Standard Deviation	107.7	0.56	88

Within this sample of 43 farms 12 were eligible for the higher rate (£42.12 per animal) of Extensification Premium on the hectares deemed to be for cattle, 16 were eligible for the lower rate (£29.16 per animal) and the remainder were farming too intensively to qualify for either payment.

A farm which reflected as closely as closely as possible the mean of the 43 in terms of size and stocking rate was selected as a case study. The farm covered 83 ha in total of which 70 ha was grassland. The stocking rate was 1.19 LU/ha with 220 ewes, 40 replacements, 5 rams, 40 suckler cows, 30 beef calves under 12 months and 30 beef calves from 12 to 24 months of age and one bull. Appendix A shows the detailed calculations of subsidy entitlement.

The farmer operating the business at 1.19 LU/ha was eligible to receive Extensification Premium at the lower rate which came to a total of £2041 on all eligible cattle. If the farmer had decided to pursue a more intensive approach (and a move to farm at 2.0 LU/ha) the Extensification Premium would be foregone. However the farmer could:

1. keep a further 379 ewes and be eligible for SAPS and HLCA payments of £7220 or

2 keep a further 56 suckler cows and be eligible for SCPS and HLCA payments of £9692.

Conclusions

This study raises several issues related to the current payment mechanisms of both the Extensification Premium and other beef and sheep subsidies in the United Kingdom.

The Extensification Premium is a relatively small sum of money when compared with other potential forms of subsidy payment. A question mark may hang over long term viability of the farm business where the farmer conciously chooses to farm in such a way to claim Extensification Premium as he appears to forego the payment of much larger sums available to more intensive producers.

The EU is set to increase the level of the livestock subsidies discussed in this paper under the reforms outlined in Agenda 2000 (European Commission 1998). The influence of Extensification Premium in promoting environmentally friendly cattle production may decline as it's value relative to SCPS and BSPS diminishes.

With few farmers attracted by the payments themselves it is surprising to find 28 farmers out of a group of 43 farming in a way that qualifies them for the payment.This group of producers in the survey were making a contribution to lower input/lower output farming. Further research needs to be carried out on the whole farm business effects of extensive farming systems and payments.

A payment mechanism that ignores young female cattle both for the calculation of stocking rates and for sudsidy payments will lead to distortions at the farm level. Further work is required on the eligibility of low input systems for sheep production as this sector is presently ineligible for Extensification Premium in the UK.

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Conversion rate:1.234666 ECU to the £ Sterling.

APPENDIX A - FARM No 39

220 ewes 40 replacement sheep, 5 rams, 240 lambs sold with 40 suckler cows, 30 calves< 12 months of age and 30 cattle> 12 -24 months of age and one Simmental bull. Overall stocking rate 1.18 LU/ha.

	Numbers	Class of stock	payment/head	total payment
Scheme			£	£
SAPS	260	Ewes and reps.	13.30	3458
HLCA	260	Ewes and reps	5.75	1495
SCPS	40	Suckler cows	117.36	4694
HLCA	40	Suckler cows	97.50	3900
BSPS	15	Calves<12m	88.04	1321
BSPS	15	Calves12-24m	88.04	1321
Extensification	15	Calves<12m	29.16	437
Extensification	15	Calves12-24m	29.16	437
Extensification	40	Suckler cows	29.16	1167

Total payments at existing stocking levels £16 189 with a payment of Extensification Premium on top of £2041 making £18 230.

At a stocking rate of 2.0 LU/ha the farmer may keep a further 56.85 livestock units which corresponds to 379 extra ewes. This would allow the farmer to claim £5041 extra SAPS (£13.30*379) and £2179 extra HLCA (£5.75*379), making a total of £7220 higher subsidy claims.

Alternatively a further 56 suckler cows could be kept which would attract a further £6 572 of SCPS (£117.36*56) and a further £3120 of HLCA (£97.50*32), achieving the maximum HLCA payment of £121.49/ha. This makes a total of £9692 extra subsidy income from extra beef cattle.

Facteurs affectant l’attrait pour la prime d’extensification des cheptels bovins dans les zones moins favorisées (LFA): une étude de cas en Shropshire, Angleterre

Graham Tate et Julian Park

Résumé

La question de l'agriculture intensive et du système de subventions agricoles de la Communauté Européenne est discutée et illustrée. Il est montré que les Primes à l'Extensification représentaient une somme relativement faible comparitivement à d'autres types de subventions potentiels, et que leur valeur relative diminuera encore si les
propositions de l'Agenda 2000 sont appliquées.

En consequence, leur rôle d'incitation à la promotion de méthodes de production animale non agressives vis-à-vis de l'environnement pourrait disparaître, au profit d'un intérêt renouvelé pour les primes par tête et les systèmes de production plus intensives.

Value-adding to the products of livestock in LFAs

Concepts and approaches to adding value

Brian Revell,
SAC Aberdeen, UK.

Conceptual Issues of Added Value

Two types of added value can be distinguished:

*Creating "new" added value for a product
*Recovering added value from the marketing chain

Added value can be achieved in a number of ways, such as by:

*enhancing the " intrinsic quality" of basic product (i.e. productivity, usability, acceptability, taste etc)
*adding services to basic product (extrinsic attributes/qualities)
*improving the efficiency of service delivery

The following is a series of figures illustrating concepts in value adding used at the Witzenhausen workshop.

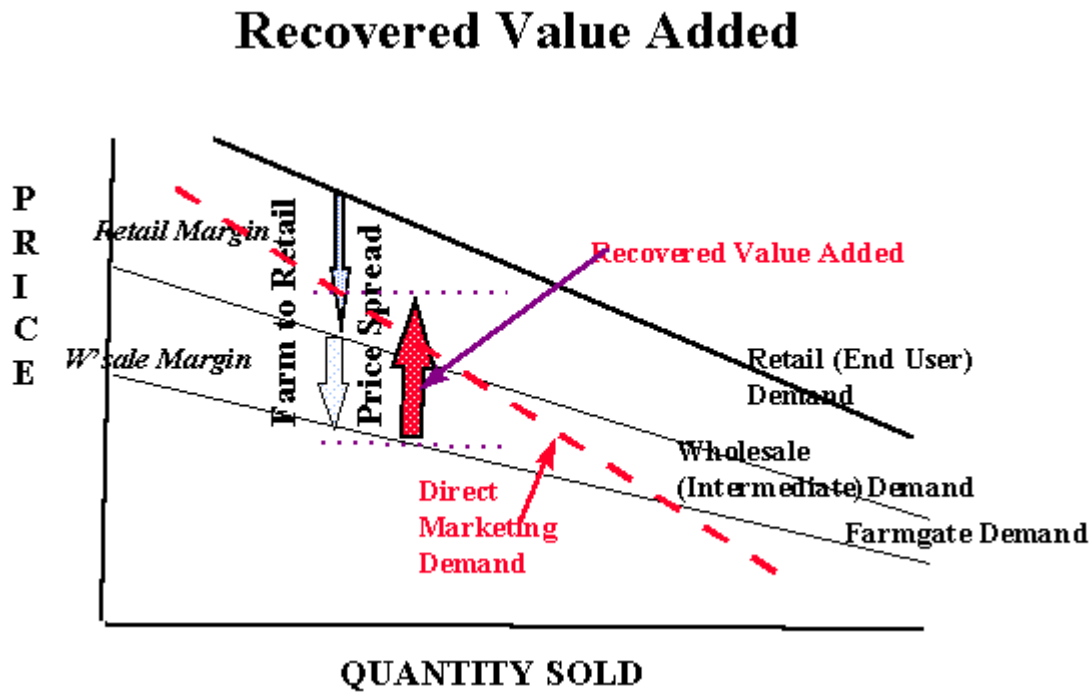

Figure 1. For which element of the marketing chain is value added ?

TOTAL CUSTOMER VALUE	*(Product, Services and Image Values)*
Minus	
TOTAL CUSTOMER COST	*(Monetary, Time, Energy, Psychic Costs)*
Equals	
CUSTOMER DELIVERED VALUE	*"Profit to the Customer"*

Figure 2. Customer Delivered Value

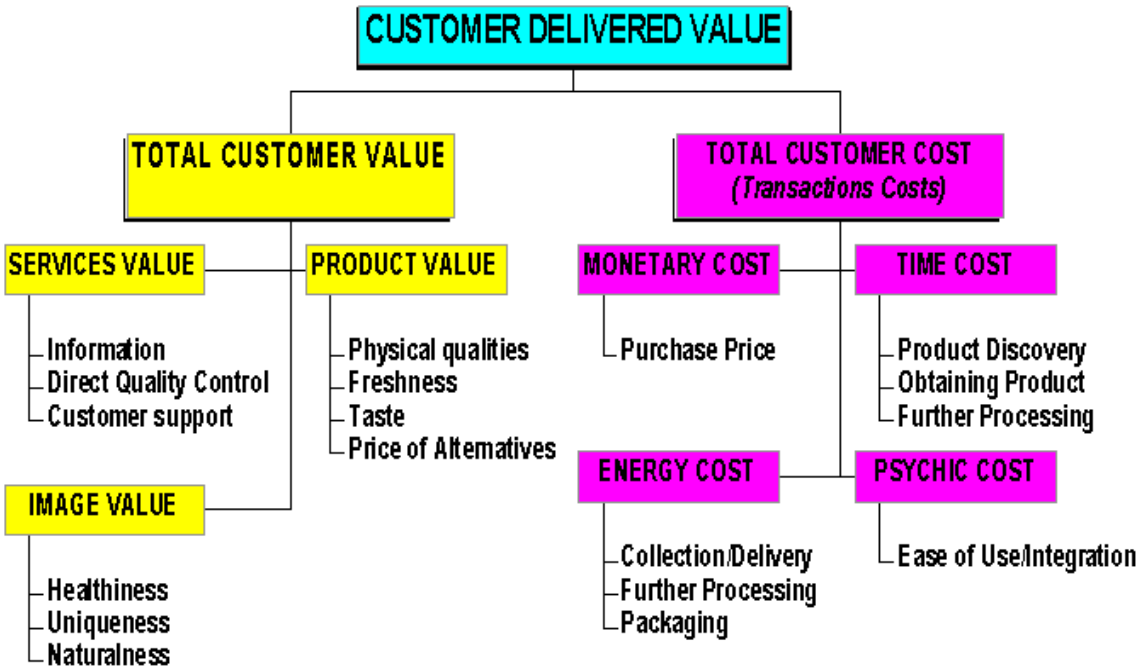

Figure 3. Customer Value Components

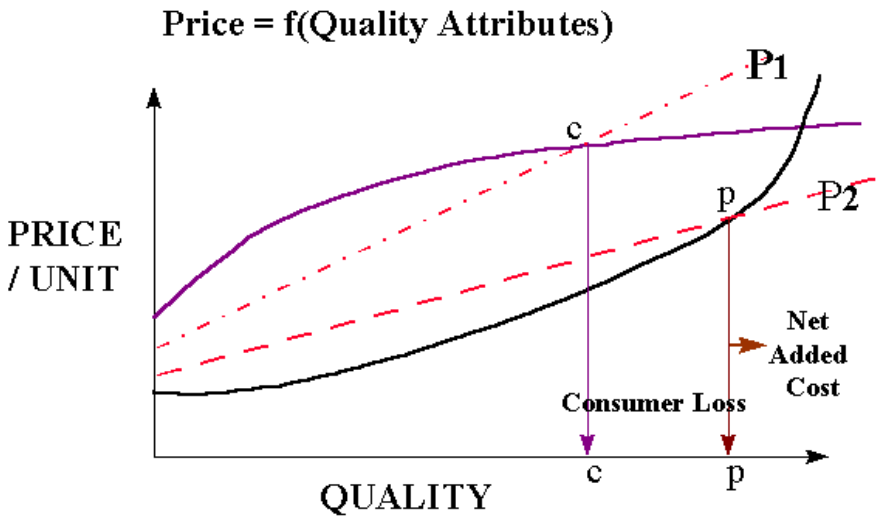

Figure 4. Potential Value added

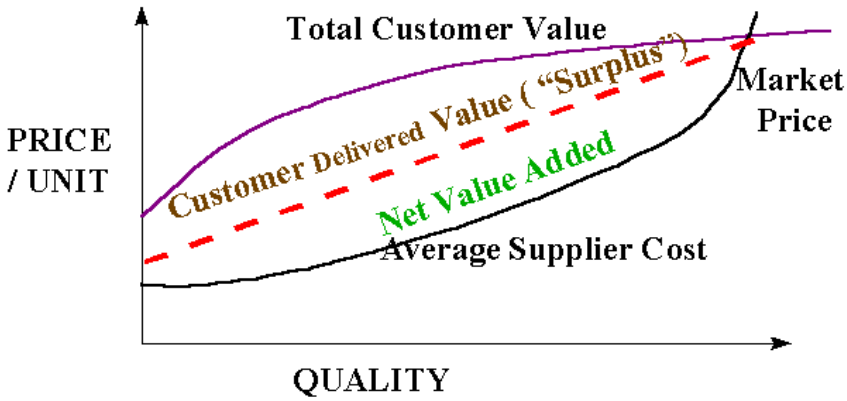

Figure 5. Hedonic Price Function

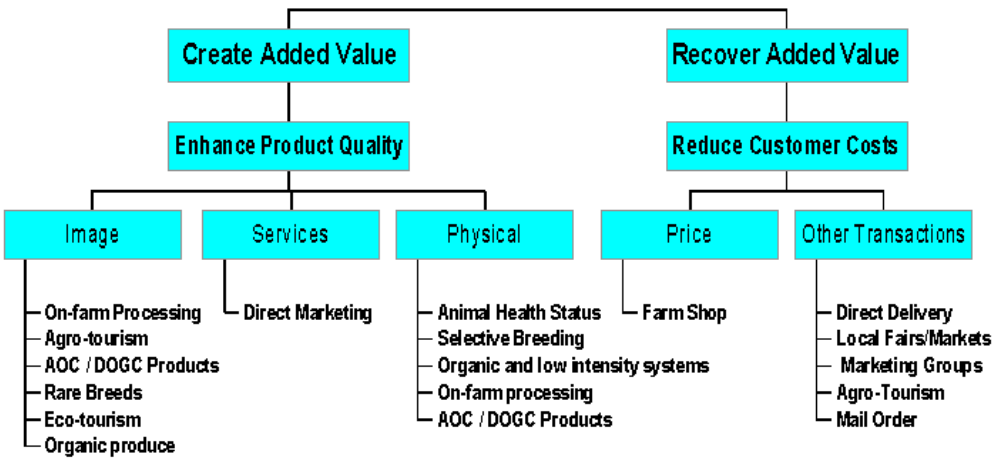

Figure 6. Classification of types and sources of added value for livestock products

Diversification of agricultural activities in livestock systems in Less Favoured Areas

Martine François
GRET, France

Remote small and medium sized farms in rural areas and niche markets in urban or periurban areas

In less favoured areas, the agricultural activities of livestock husbandry and processing mainly concern small and medium sized farms. The main form of diversification in these systems is the processing of agricultural products; principally milk into cheese. Farming families also process other products into local specialities. Rural tourism is developing in certain regions[7]. If the volume is sufficient, products may also be eligible for a quality label, either at a national (for example, the French *Appellation d'Origine*) or a European level (Geographical Indication of Origin or a certificate of specificity). These quality designations are designed to preserve the specificity and the typicality of products for consumers, to "create rarity" and thus to maintain prices which, from the point of view of producers, reflect production structures.

These production systems have two common characteristics: the fact that production is remote and scattered throughout rural areas and that products are sold on niche markets. As far as production is concerned, producers are scattered throughout rural areas, isolated, often still individualistic, even where collective initiatives (co-operatives) or processing industries, which collect milk from several producers, exist and are developing.

The majority of products are sold locally, through local markets or farm gate sales or through the network of producer contacts[8]. Nevertheless these networks do not involve all producers and do not facilitate the sale of all the produce concerned. According to a study carried out in 1993 in 4 different European countries, local sales only accounted for 70-85% of the production in France, Germany and Belgium (in the United Kingdom, where on average farms are much larger and much closer to small industries, only 30% of production was concerned).[9]

Nevertheless the market for these products exists and is growing[10]. A study of the market for farm produce in France, Germany, Belgium and the United Kingdom shows that it is bought by between 35-60% of the population. According to a study by AND for the EEC, the market share of products of a specific quality is as high as 10-12%. However, the majority of areas with expanding markets are urban. The question is therefore how to sell urban or periurban consumers products, whose flavour, typicality, links with the countryside or region of origin, nature or conservation of the environment are valued, something which necessitates different methods of production, distribution and sale to those which producers are used to.

On the other hand, if the production of these traditional products were to increase it would contribute to the relative saturation of local markets, not least because rural exodus has limited the number of potential customers. However, producers who wish to generate a profit from this activity are obliged, notably in order to comply with European standards, to increase production.

In order to realise the potential for market growth, both production and marketing structures need to adapt. It is necessary to move away from rural production destined for rural areas and to make products suited to distribution networks and the habits of urban consumers. This necessitates profound changes, which have to a large extent already been implemented in some areas, although to a lesser extent in others. Even where niche markets are concerned, traditional products are not in practice suited to urban consumers or to

[7] DGVI keeps a record of the initiatives under taken in the context of Leader programmes and this record shows that of the funds committed for the development of activities in rural areas a large percentage have been for the development of tourism (after the processing of local products)
[8] Certain producers also use informal networks with links to immigrant populations in urban areas or even abroad. For example the particular case of the producer from Mythilcne who used this method to sell his Ladothiry cheese - ewe's milk cheese matured in olive oil - for export.
[9] François et al. "Agro -alimentaire Paysan Européen" Final Report CAMAR 0120, 1994
[10] Sylvander (B) and Mellet (I) : Le marché de l'agro-Alimentaire Paysan Européen, Inra 1993

conventional distribution networks. The quality of cheeses, even their size is not uniform. The volume on offer is often low. The packaging used is not suitable for long journeys. The small processing units, do not in general come up to European standards. A marketing structure is required in order to make the presentation and quality of products more uniform and ensure sufficient volume to interest distributors and enable processing units to conform to European standards.

Diversification also reflects new crafts and presupposes new skills and knowledge, new information networks and even new attitudes towards the environment. In fact the collaboration and the collective organisation of producers often becomes necessary: collective investments in processing which respect European standards, collective marketing and collective advertising etc.

Shared research, development and training for the development of diversification in rural areas

Where changes are necessary, the actors who develop the activities implied in diversification are faced with numerous questions. The solution implies at the same time appropriate inter-disciplinary research, the accumulation of relevant information and the communication of this information to the actors developing the activities. These three elements are necessarily very closely linked. However, making the results of the research accessible to the actors is not easy. The focus of the research must be closely linked to farmers preoccupation's, it must take into account existing knowledge and that the results are intended for communication to the end users.

What technology is available that can reconcile the dispersed nature of production, the numerous isolated actors in rural areas and the niche marketing of quality produce?

Technologies currently available are largely designed for production on a far larger scale, and technological advances which permit production on a small scale are recent. Less research is carried out on small scale production as small-scale technology does not interest the large groups in the agri-food industry who carry out the majority of research in this area.[11]

What means are available that can reconcile quality products, technical expertise, hygiene and scattered low cost production rural areas?

Is the "zero microbe" technology the best way to guarantee the health of the consumer?

How will farmers, and in particular those in less favoured areas, manage at the same time to satisfy European standards and conserve landscapes, employment and local products?

How can the market for these products be developed?

The purchasing behaviour of consumers of this type of product, particularly in the case of direct sales, is not totally rational. Consumers of these products do not use them to maximum effect. They buy a food product and at the same time a little piece of countryside or contact with the producer. The classic models which describe consumer behaviour do not apply as they do else where.

How can we avoid these products being produced more efficiently compared to the large distribution chains and at a lower cost to the industry, depriving numerous rural producers of their livelihoods?

How can we use and manage quality designations to protect the products?

Diversification is for farmers in rural, less favoured areas, involves contact and mediation.

It involves the coming together of two different worlds: the rural world where production takes place, the world of values, symbols and quality products, and the urban/periurban world, from where and above all from where tomorrow demand will come for these products (this is also the case for rural tourism). Very little research has been done on these types of diversification, despite the fact that they are innovative and

[11] Feillet, La recherche agro-alimentaire en France 1993

the farmers involved ask themselves numerous questions which the current system of research, development and training does not help them to answer.

The road to a solution lies therefore not only in inter-disciplinary research, but also in a close collaboration between the three different worlds: that of research where the methods, concepts and models are formulated; that of development, where the pertinent questions are asked about the problems encountered by those in the field and where the professionals' first responses are formulated, and that of training, where information is communicated to the economic actors and where exchange between producers allows the expertise gained from practice to be understood and valued.

Synergistic approaches to the development of livestock products in the regional economy: links with tourism

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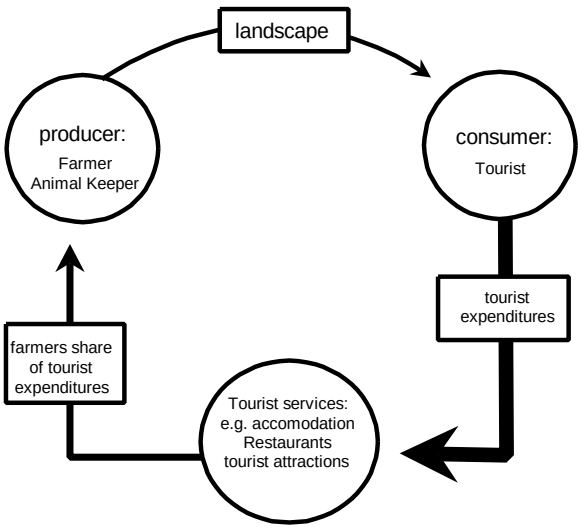
- What is a Less Favoured Area? Many areas are not favoured for farming because the yield is low but are favoured for tourism. For example in the rural council of the Werra Meißner Kreis the tourists spend more money than the farmers earn. So this council is more favoured than the high yielding areas of "Hildesheimer Boerde", where no tourist would go for recreation. Even other parameters for LFAs are not always negative: for example low human density.

- Animals play an important role in many LFAs even for tourism. Preferred landscape are often pastures, because of steep or low fertile conditions for crop production. Grassing animals are more than meat, milk or fibre production. They produce rural atmosphere, landscape preservation, biotope maintenance and resource protection. The absence of grassing animals in many areas has shown the importance of these "products". So, two different levels of products can be identified: direct and indirect products.

- Indirect products are related with the way of animal keeping. These can be special landscapes, good air, resource protection (ground water and soils) but even individual relations to farmers or the location, recreation etc.. These indirect products, produced by farmers with his animals, cannot be bought, they are immaterial and often immobile goods.

- Rural tourism plays an important role in the local economy of many LFAs. Tourists spend money in hotels, restaurants, sight seeing places and others. Beside the consumption of accommodation and food they consume landscape and rural atmosphere, but without payment. Farmers produce this landscape, but are not paid for it. It is seen as a side product of farming. In LFAs the problem occurs that farming is abandoned more and more, particularly the small scale farming which is very attractive for rural tourism.

- Touristic enterprises like hotels and restaurants rarely use regional products, because they are to expensive or to difficult in use (product quality, seasonality, internationality). Farmers in LFAs can seldom compete with products from better production areas. They are leaving farming, land becomes fallow. Tourists enterprises (hotels and restaurants) who are living on the attraction of the farm related landscape are losing their economic backbone with the farming.



Questions arising from the mentioned aspects:

1. Must we specify LFA with more attention to regional issues?

2. Should the production of “indirect products“ become more important as “direct products” for farmers in touristically attractive LFAs?

3. Must pastures, landscapes, farming and at least animal keeping measured/valued for direct and indirect products? Of course, for every region individually.

4. Should the tourist pay for landscape consumption?

5. Should tourist enterprises support farmers via buying regional products for a higher price (indirect payment)? If so, how can that be granted?

6. Should tourist enterprises pay for landscape consuming direct (e.g. via taxation or direct contracts between tourist enterprises and farmers)?

Regional images and the promotion of quality products and services in the lagging regions of the European Union[12]

Nick Tzamarias, SAC, Aberdeen, UK

Project Background

Over the past ten years, there has been considerable change in the way rural development is viewed (as well as practised) by institutions, academics and others involved, both at national and EU level. The reforms of the Common Agricultural Policy and the associated reduction of agricultural production subsidies have been coupled with a more "integrated" philosophy of rural development.

The increased exposure of rural areas to "global" markets and competition meant that support to rural lagging economies would not longer be viewed in a principally "agricultural" context, but in broader terms encompassing other sectors important to the rural economy, namely food processing, light manufacturing and crafts, tourism. In addition, environmental sustainability and social/cultural development have also grown in importance.

Since the mid-1980s rural areas have been facing what a number of researchers have conceptualised as the post-productivist transition (Shucksmith, 1993; Ilbery and Bowler, 1993). Ilbery and Kneasfey (1997) referred to the following theoretical characteristics of post-productivist transition:

- A reduction in food output and growing concerns over food quality
- Progressive withdrawal of state subsidies for agriculture
- The production of food within an increasingly competitive international market
- Growing environmental regulation of agriculture
- The creation of a more sustainable agricultural system

The reforms of the Common Agricultural Policy (CAP) are set to continue in the light of the 1996 US agricultural policy reform and the next round of the World Trade organisation 1n 1999 (Ilbery and Kneasfey, 1997). For example, further cuts in guaranteed prices and the introduction of an upper ceiling on income aid have been suggested in the latest proposals of the European Commission (Agenda 2000, 1997). In this context, rural communities need more than ever to both add value to existing production as well as to identify alternative economic opportunities.

Whilst considerable research has been conducted on different aspects of household pluriactivity and rural economic diversification, there has been little analysis of the marketing and promotion of quality products and services from the lagging regions of the EU. Indeed, much investment in rural development has occurred without a realistic assessment of the market for new products and services; existing policy has tended to ignore the marketing gap between producers and consumers. Yet, marketing and the promotion of 'place images' need to become important elements in future rural development measures, especially if further socio-economic desertification in the lagging regions of the EU is to be arrested.

The GENERAL OBJECTIVE of this project is to help public and private institutions develop strategies, policies and structures to aid the successful marketing and promotion of quality products and services in the lagging regions of the EU. Innovatively, it will link together work on regional imagery and marketing in relation to the relative success and failure of quality products and services, of both an agricultural and non-agricultural nature. The project will examine the producers and consumers of quality products and services, as well as the institutions marketing them. Information from these surveys will be modelled in an expert system to produce a good guide for the future development of regional images and the marketing of quality products and services in the lagging regions of the EU. The project will last for 30 months and the

[12] This project involves collaborative research by the following: the Departments of Geography at the Universities of Coventry, Leicester, Lancaster, Caen, Valencia, Galway and Trinity college Dublin; the Scottish Agricultural College (Aberdeen); the Institute of Rural studies (Aberystwyth); CEMAGREF (Clermont-Ferrand); Teagasc (Dublin); the Department of Economics (University of Patras (Greece); and the Institute for Rural Research and Training (University of Helsinki).

widest dissemination of results is envisaged, with target groups including relevant EU and national government agency personnel in the areas of rural development, agriculture, food, tourism and quality policy; the academic community and social sciences in particular; and the producers and consumers of quality products and services.

Objectives

The main aim of this project is to help public and private institutions develop strategies, policies and structures to aid the successful marketing and promotion of quality products and services in the lagging regions of the EU. In more detail, the research has four interrelated objectives.

- To measure the local and regional cost-effectiveness of current marketing strategies and promotional activities among small and medium rural enterprises (SMEs), both farm and non-farm, in selected lagging regions of the EU; and to assess the perceptions of the owners/managers of the SMEs on existing activities for the promotion of a regional image in relation to particular quality products and services ***(INITIAL AND INTERMEDIATE PRODUCERS OBJECTIVE)***.

- To explore consumers' perceptions, wants and needs in relation to the purchase of quality products and services from specific lagging regions; to examine consumers' perceptions of the links between location, quality image and actual product and service characteristics; and to identify the social, psychological and economic factors influencing consumer behaviour as regards the products and services of lagging regions ***(CONSUMER OBJECTIVE).***

- To examine the marketing environment, strategies and activities, and institutional structures developed by both local authorities and development and marketing agencies to improve the marketing of quality products and services in selected lagging regions of the EU; and to identify both good practice of quality policies used today and barriers and threats to the image of quality products and services in the lagging regions ***(INSTITUTIONAL OBJECTIVE).***

- To provide and overall evaluation of regional marketing initiatives for quality products and services produced by SMEs (farm and non-farm) in the lagging regions of the EU; to evaluate the cost and effectiveness of such schemes and elements of good practice; and to develop and forecast the impact of future regional marketing strategies for quality products and services under different scenario and policy contexts ***(POLICY OBJECTIVE).***

To accomplish these main objectives, the following detailed objectives will be followed:

1. A 20 year economic review on the selected study regions within each country. The intention is to highlight any local variations in socio-economic development and to examine past and current regional and local marketing schemes and initiatives, both as an important context for an examination of the marketing and promotion of quality products and services. This initial review will also help to measure the relative success and/or failure of institutional and business behaviour at different spatial scales and to reflect possible regional and local differences in consumers' wants and needs.

The large-scale study regions in each participating country (either of Objective 1, 5b or 6 status) are the following:

Finland - South-Ostrobothnia and Northern Savo
France - Basse Normandie and Auvergne
Greece - Achaia/Korinthia and Arkadia
Ireland - Southwest Region and Northwest Borders
Spain - Valencia and Aragon
United Kingdom - West Wales and Grampian Region

In combination, the study regions will permit the examination of a number of quality products and services.

2. The use of concepts on place images and marketing to develop a theoretical framework for the project. This will require the review and integration of national literatures on place images, agricultural and business marketing, and rural development. The adopted conceptual framework will need to incorporate producers, consumers and institutions and to permit and examination of their potential roles in the development of regional images for quality products and services.

3. A formal analysis of the existing marketing structures for the products and services of the study regions. The objective is to apply relevant concepts and models from the business and marketing to the existing marketing structures which producers and institutions are using to define a regional image for their quality products and services. This will help to establish a theoretical background for the empirical work undertaken below.

4. A business survey of both initial and intermediate producers of quality products and services in the two study regions within each country. This will involve a survey of up to 100 businesses in each region involved in the production of specific quality products and services. The survey will help to measure the cost-effectiveness of current marketing and promotional policies in the respective study regions. It will also allow an assessment of the producers' perceptions of policies for the marketing and promotion of a regional image in relation to specific quality products and services.

5. Examination of the social, psychological and economic factors influencing consumer behaviour in relation to the purchase of quality products and services from specific lagging regions. This will involve a survey of around 200 consumers, possible drawn from urban areas adjacent to the selected study regions. The research also presents an ideal opportunity to ask consumers adjacent to the study region (in one country) about their perceptions of quality products and services from the other study regions (in the other countries). The survey will permit an analysis of the expectations of consumers, the type of quality products and services that fulfil these expectations, the effects of local culture on consumer attitudes, and the consumers' perceptions and images of the selected study regions.

6. Examination of the marketing strategies developed by institutions for the promotion of images for quality products and services in the selected study regions. A survey of approximately 20 institutions (e.g. local authorities, development bodies, marketing groups) will help to measure their expenditure on the promotion of either a regional image and/or specific quality products and services, in terms of staff, time and money. A particular feature of the institutional survey will be the institutions' views on why some quality products and services and sub-regions, and some ,marketing strategies and institutional actions, are more successful than others; thus the opportunities and constraints for particular products/services and regions will be explored.

7. Recommendations on policies and strategies that could (better) promote particular quality products and services in the lagging regions in the future. Using some of the results from the producer, consumer and institutional surveys, an expert system will be developed to model and forecast the future development of regional images and the promotion and marketing of quality products and services in the lagging regions of the EU. In turn, the results generated by the modelling exercise will be compared, through focus group interviews, with those aspects of image promotion and marketing that agency representatives and selected producers of quality products and services think should be developed in the future.

Adding value through marketing and distribution: artisanal and farm-processed livestock products from the less-favoured areas of France

Prof. Louis Lagrange,
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The objective of this paper is to present the products and the geographical areas on which we are currently working. However, as a start, I wish to insist on the creation of added value and methodological aspects.

1- To get back some added value or to create some added value?
To get back some added value is a recurrent question for the economical agents, especially in the food industry system (or food chain) from the farmers, even from the food industries.

They understand that the part of the added value, which should "normally" come back to them, was deducted by some economical agents down in the chain, the distributors in particular. The causes of this "deduction" would be due to some favouritism for the distributors.

To counterbalance this tendency (so to create a different economical regulation) the farmers can use the market or its institutions. Generally, they think that the market does not allow them to gain back this added value which was deducted. Therefore they constitute a lobby which pressurises the national government and European institution to obtain more interesting agricultural prices.

But the most important question is to create some added value, instead of trying to gain it back from agents down the chain. Therefore, it is important to incorporate services in the product to increase its value.

2-A methodological difficulty
At the macro-economical level, data from the national accountancy allow to calculate the added value brought by different parts of the food chain. For example, in 1988 for France (L. Mallassis and G. Ghersi, 1996), in 100 F of food products bought by the consumers, 21 F went to the farmer, 17 F to the food industry, 34 F to the external supplier of the food chain(industries supplying farmers).

However, at the level of the sub-groups of the food chain (beef chain, milk chain…) the national accountancy cannot be used, or with a lot of difficulties. It is therefore necessary to know the constitution of the value chain by surveys in enterprises and prices' observations at different level of the chain. The price difference among 2 stages of the chain allows to see a margin (without tax selling price - without tax buying price) which could be a first evaluation of the added value at this particular level of the chain.

3-The heritage food products from difficult areas : example of the Massif Central

Our information sources : the Observatory of the heritage food products of the Massif Central

As this presentation concerns the added value of craft products and farm products in the difficult French areas, the data from our Observatory of heritage food products in the Massif Central is used. The aim of the obervatory is to collect, treat and analyse the economical data for products with an official quality label (AOC, Red Label, Conformity certificate, Organic label) and also products with a heritage connotation (farm products…).

Principal characteristics of the production economy of the Massif Central

This region, situated in the centre of France, is constituted by mountain areas and piedmonts which form a same geographical, economic and social entity (bill of the 20 September 1985). It is gathering 2 administrative regions (Auvergne and Limousin) and also parts of other administrative regions. The mountain area covers roughly 60% of the farms and agricultural areas. The Massif central, with 13% of the agricultural population and 14% of the French agricultural areas (table 1) only represent 7% of the final French agricultural production; this justifies that it is nearly entirely entitled to EU FEOGA 5b measures.

The animal production is the principal production and represents 85% of the final agricultural production. It is characterised by an important beef herd (suckling herd which uses the Red Label, cheese production which uses the AOC) and sheep herd (Roquefort cheese). These productions allow to valorise the permanent pastures (2/3 of the agricultural area).

Table 1 : Principal characteristics of the economy of the animal production in Massif Central:

	Massif Central (1994 estimations)	%Massif/France (1994 estimations)
total population	3 700 000 inhabitants	6.5%
agricultural population	350 000	13%
Agricultural area	4 000 000 ha	14%
agricultural farms:		
number	105 000	13%
average area	38 ha	/
number of food industries	202 (1)	5% (1)
number of milking cows	593 000	13%
number of suckling cows	1 250 000	31%
number of ewes	2 700 000	39%
number of poultry	11 300 000	4%
number of sows	72 000	7%
finale animal production (a)	17 billions F	12%
finale agricultural production (b)	20 billions F	7%
a/b	85%	/

Source: Agricultural, Fisheries and Food Ministry (SCEES and DRAF-SRSA Auvergne)
(1) enterprises of 10 and more employees, only for Auvergne and Limousin.

Importance of the cheese production
10 AOC are used. It is representing 65500 tonnes and is concerning 15 000 farms.

Importance of the cattle production
6 Red labels and 4 Conformity certificates were counted for cattle in the Massif Central. They represent respectively:

-40% and 36% of the number of Red labels and Conformity Products certificates used for the cattle in France

-45% and 17% of the tonnage labelled in France

Within the Massif Central, more than half of the cattle breeders produce under label or conformity products certificates. However, the labelled production remains modest with 12% of the cattle produced in Massif Central.

Importance of veal production
3 red labels for the veal have been counted compared with the 7 national ones.
The red label for veal represents:

- 11% of the veal produced in Massif Central and concern 31% of the breeders
- 1.5% of the French veal produced
- 82% of the French red label veal

No conformity product certificate was found for veal in the Massif Central.

Importance of lamb production
The Massif Central counts 3 red labels for the lamb, which is a quarter of the French labels and 76% of the production.

Conclusions
These above elements were all described to emphasise the Massif Central as an observation terrain for the added value of quality animal products.

The importance of region of origin in influencing consumer behaviour for food products - a survey in three German regions

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Preliminary notes

This study is not yet completely analysed. In this workshop some interesting results shall be presented and discussed. The authors have decided to present some findings already at this stage as they believe that the regional aspect for consumers purchase behaviour is especially important considering the development of regional marketing concepts in less favoured regions.

The research was initiated due to the growing importance of regional marketing concepts which they obtain in the context of regional planing concepts. It is necessary to examine, whether the regional 'trump card' actually deserves the consideration which is given to it by policy.

Introduction

In Germany and in other countries of the EU it is increasingly recommended for single regions to develop regional marketing concepts. These could be concepts for products or services, which are based on the image of the individual regions.

The development and the adoption of regional concepts is supported by government policy in the hope to promote the development of the - mostly less favoured - region. In this context, it is assumed that a considerable part of the consumers show a purchase behaviour favouring the product originating from their own region. Up to now there are only a few studies (HENSCHE et al. 1993, WOLFRAM 1997 and HAMM et al. 1997), which furthermore present partly varying findings towards the importance of the regional aspect for the food purchase behaviour of consumers.

- HENSCHE et al. (1993, S. 127) state that in North Rhine-Westfalia (NRW) there is a consumers preference for food produced in their local region. 30 % of the interviewees would preferably buy food products originating from their own region.

- WOLFRAM (1997, Sonderbeilage 2) states from his research as well this preference of NRW-consumers for regionally produced food. However, his findings show a strong limitation considering the willingness to pay. Only one third of the interviewees preferring products from NRW would also be prepared to pay a higher price for them.

Preliminary results

The following pages briefly summarize the main preliminary results of our survey in three different German regions (see figure 1):

Figure 1: Regions in Germany of the consumer survey

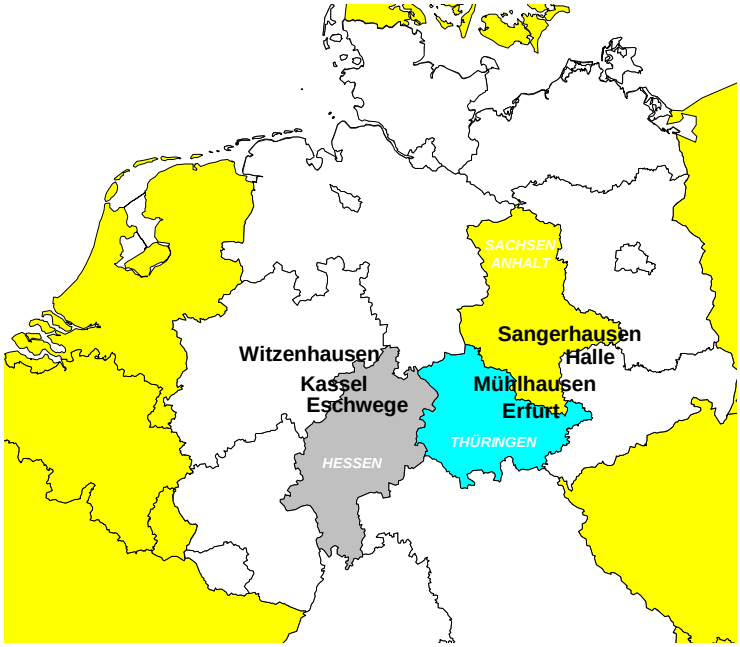


Table 1 shows the research design of the project. The originally planed East-West-comparison with North Hesse and Thuringia was extended to a second East-German region Saxony-Anhalt. The extension was necessary as the research showed, that food from Thüringen has an outstanding regional image. The research regions are neighbour countries. In each region the population of cities and small towns was equally interviewed by direct consumer survey.

Table 1: Research design of the study **„***Buying behaviour for regional food products*“

Objective:	Importance of the regional origin for the purchase decision
Survey:	Consumer survey by face to face interviews
Place of survey:	The survey was undertaken in three regions: West-Germany: North Hesse as LFA (except Kassel) and East-Germany: Thuringia and Saxony-Anhalt as objective 1 areas
Sample:	328 interviews with one third in each region: only housekeeping persons sex: 70 % females and 30 % males age: 4 quotas for age-groups with further restrictions
Object of research:	Regional food products (defined as produced in the region – not depending on the raw material) by means of a presented product list (see table 3)
Analysis methods:	Cross tabulations Factor analysis Cluster analysis Regression analysis
Criterion for measuring the relevance of consumers attitudes for their purchase behaviour:	Purchase intensity of regional products with the help of a purchasing index

The following table 2 presents the varying importance of criteria when purchasing food. These criteria were asked at the beginning of the interview. The attributes were read to the interviewees and ranked by them in terms of five-pole-scale from 1 (very unimportant) to 5 (very important). The flavour- and health-orientated criteria have greater importance for the interviewees than the more altruistic motives. The aspect „regionally produced" was classified as altruistic.[13] Aspects concerning flavour are still of greater importance than health criteria. This was already stated in other research findings. Marketing criteria such as price, mark of origin and quality marks are still seen as less important.

Referring to the regional differences it shall be mentioned that

- the criterion "regionally produced" is of higher value for East German consumers than for the average of the sample; North Hesse consumers on the other hand ranked this aspect lower than the average;
- the price criterion seems to be of greater importance for East-Germany than for West-Germany, which means that the East German consumers are usually more price sensitive than the West Germans;
- there seem to be regional differences as well concerning the aspect „healthy". Thuringia showed the highest mean values. Compare here also table A2 in the appendices where the regional factor values are shown as deviation from the mean value.

Table 2: Importance of purchase criteria when buying food (North Hesse, Thuringia, Saxony-Anhalt)

Criteria	**Means[1)2)]**
Egoistic, hedonistic orientated criteria	
- Freshness	4.7
- Flavour	4.6
- Appearance	3.5
Egoistic, health-orientated criteria	
- Healthy	4.3
- Not genetically modified	(4.0)[3)]
- No preservatives	4.0
- Organically produced	3.7
Altruistic criteria	
- Environmental packaging	4.0
- Not genetically modified	(4.0)[3)]
- Organically produced	3.7
- Regionally produced	3.6*
- Producer known	3.4
Marketing criteria	
- Price	3.8*
- Mark of origin / country of origin	3.8
- Quality mark	3.6
- Brand	2.7

[1)] Significant regional differences with a confidence level of 95 % are marked with *. [2)] Scaling: 1 (very unimportant) to 5 (very important). [3)] Mean value is only of very limited validity as many interviewees showed a lacking knowledge about the expression – in these cases the statement was marked after explanation.

Question: How important are the following criteria for your food purchase?
Source: WIRTHGEN et al. 1997, University of Kassel

Table 3 presents a list of all products and product groups which were used to measure the actual purchase behaviour for regionally produced food products. This list covers approximately 60 to 65 % of all food expenditure of an average 4 head consumer household.

13 The classification of "egoistic" and "altruistic" is not always clear. For instance the preference of regionally produced food could also underlie egoistic motives in case the consumer buys it as he believes that the product is of more freshness and better taste.

Table 3: Product list in order to estimate the actual purchase behaviour for regional food products

Vegetables	Meat
Fruits	Milk
Potatoes	Cheese and other milk products
Bread, cakes and pastries	Eggs
Sliced cold meat and sausages	Honey and jam

Questions: Which of these products do you buy intentionally with origin from your region? How much of the total amount of each product group do you spend on food originating from your region (more than 30, 50, 80 or 100 %)?
Source: WIRTHGEN et al. 1997, University of Kassel

Figure 2 presents the findings of the measuring of attitudes. An attitude matrix including 24 items towards the regional purchase was developed (for the most important statements see appendices) and read to the interviewees for ranking. This was done by means of a five-pole-scale from 1 (I do not agree at all) to 5 (I totally agree). The factor analysis was used to cut down the numerous statements into four factors which are presented in figure 2. The four factors were examined towards their contribution to the explanation of the purchase intensity and the purchase behaviour for regionally produced food products. This led to following important findings:

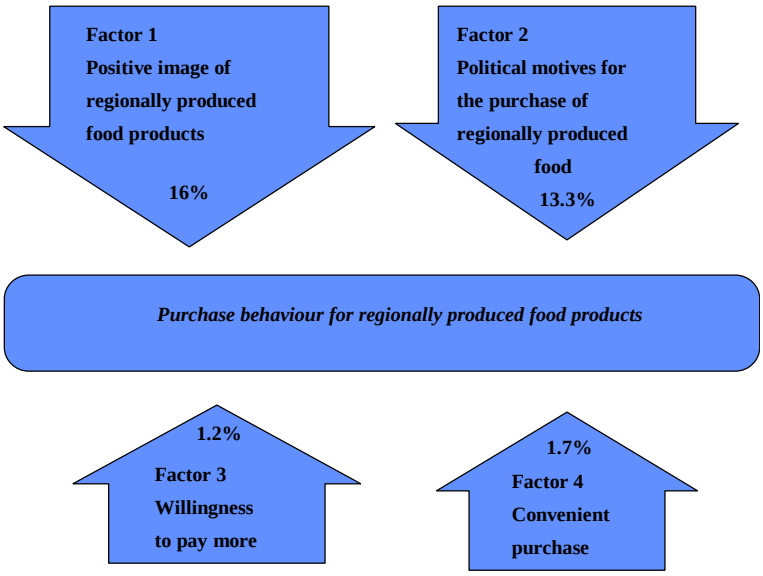
- **Factor 1**, which reflects the regional image and the regional identity contributes most to the explanation of the shown purchase behaviour for regionally produced food.
- **Factor 2** expresses the political aspects of the regional purchase, in other words the will to support the region with one´s own purchase. This factor as well explains a high part of the purchase behaviour for regionally produced food. Compared to table 2, this factor seems obviously to be of greater influence for the interviewees in this approach than in the direct evaluation of the main general purchase criteria.
- **Factor 3**, the willingness to pay more for food products originating from one´s own region, and
- **Factor 4,** the convenience aspect when purchasing food, can only explain a little of the purchase behaviour. This could be caused by the fact that the willingness to pay more is only partly of relevance for the examined product line from the region, hence in the covered East German regions the majority of the interviewees stated to buy regionally produced food products cheaper than the comparable products from other origins.

The small factor value of **factor 4**, the quick and convenient purchase, is a consequence of the relative good availability of regional products at retailers, bakeries and butchers. The direct purchase from the farmer, which is usually connected with higher effort, seems to play an only less important role. Only on average 10 % of the interviewees who buy regional food products (from North Hesse more than from the other regions) indicate to buy these direct from the farmer (this usually means at the farm gate). In contrast to this, the convenience factor plays the important role for the purchase of direct marketing products. This is shown in earlier researches of KUHNERT, WIRTHGEN and ALTMANN 1990, S. 75ff.

All four factors together explain 33 % of the purchase behaviour for regionally produced food products ($r^2 = 0.326$). Such a low r^2 does not provide a statistical ensured result for the correlation of the attitude structure (factors) and the purchase behaviour. However, such results can offer helpful approaches for marketing decisions.

The r^2 obtained of 0.326 is quite acceptable considering the fact of a psychological approach towards the examination of food products which are not or only rarely marked and from the fresh food assortment. Generally considering this kind of research, first there are difficulties when trying to cover all possible behaviour-relevant attitudes as independent variables and later problems come up due to the time pressure for the interviewees answering the question after the actual purchase behaviour as dependent variable. This is especially valid for not clearly defined products such as “regionally produced food products”.

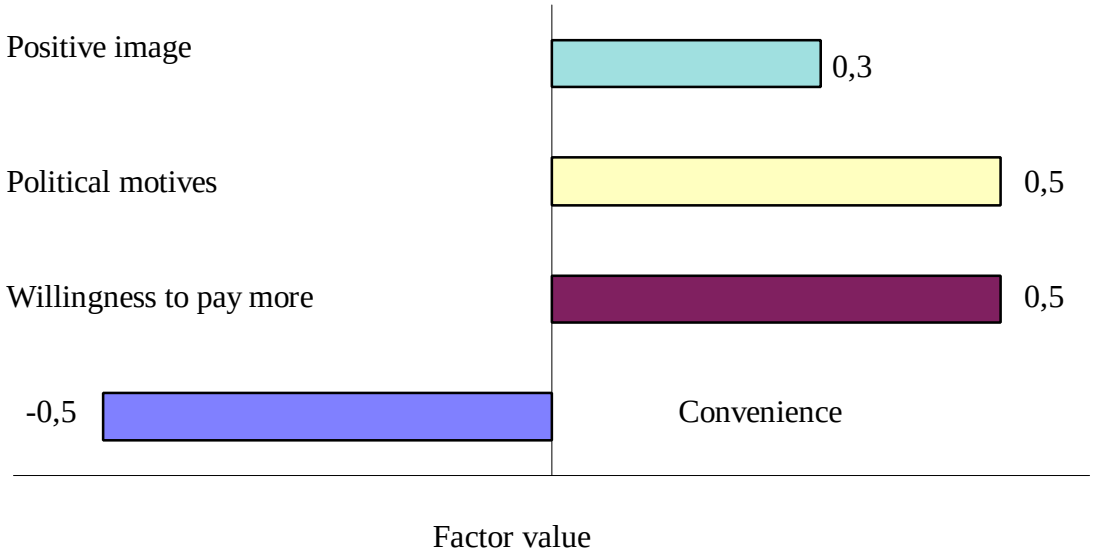
Figure 2: Contribution of the factors to the explanation of the purchase behaviour when buying regionally produced food products
$r^2 = 0.326$



Source: WIRTHGEN et al. 1997, University of Kassel

In further analysis it was tried to group the sample in different types of buyers in other words in consumer segments. Using the cluster analysis it is possible to group interviewees with similar attitudes (in this case concerning the regional product). As an example, cluster 5 is presented in figure 3. This cluster showed the highest purchase intensity for regional products. All here underlying scores favour an on average higher purchase intensity of these products. This cluster includes all these interviewees who in addition to their positive attitude towards their own region target to actively support the region with their purchase. Therefore this cluster is named the „Regional Patriot“. The structures of attitudes of the other clusters are made available in the appendices.

Figure 3: Cluster 5 “Regional Patriot” (n = 112)
Selected cluster with the highest purchase intensity of regionally produced food products



Source: WIRTHGEN et al. 1997, University of Kassel

Further characteristics of this cluster:

- The major part of the interviewees are from Thuringia;
- this group is of a higher age than the average and does not include any apprentices/students;
- other socio-demographic data represent the average of the total sample;
- A total of 89 % of the interviewees said that food products from their region play an important/very important part in their food purchase.[14]

Conclusions

- As a clear purchase criterion, the characteristic „regionally produced" does not play the important role. The aspects freshness, flavour and health seem to have much greater importance than the regional origin.
- However, the purchase intensity of regional food is relative high, particularly of product groups like
  - bread, cakes and pastries; ⎫ artisanal
  - meat and sausages; ⎭ products
  - eggs.

On average 80 % or more of these products are intentionally bought from their own region by 50 % of the part of the interviewees who buy intentionally regional products and could also state roughly how much they usually buy. These regional buyers usually purchase on average about 6 food products originating from their own region. Only roughly 5 % of the interviewees do not buy any regional food products with the initial intention to buy some.

- The high part of regional food purchases can probably be explained by the freshness- and quality image of these products. This is usually also the case for regional artisanal products. Often the reason for purchasing these products is their freshness and not their regional origin.
- The importance of the regional aspect concerning food purchases can highly fluctuate depending on the region.
- Regionally produced food products do not have to be more expensive. Here exist regional differences.
- Both attitude-dimensions concerning the region – 'image' and 'political attitude' – contribute almost equally to the explanation of the purchase behaviour towards regional food products.

- **The ideal consumer of regional food products should have the following attitudes:**

- Positive attitude towards the region as the production location of food products (image);
- positive political attitude towards support of the region;
- willingness to pay more for regionally produced food products, although it is not necessary at all for many of these products;
- acceptance of longer shopping distances, in case the desired regional product is not available at the usual point of sale.

- **Consequences for regional marketing:**

- The emphasis of the political component of the regional aspect is of equal importance as the image component (in East-Germany even more than in West-Germany).
- Labelling products with a mark of origin (especially for products originating from a specific region) should get more consideration as it is currently the case. This is especially valid for North Hesse.
- Conventional retailers should take more regional food products in their assortment.
- In West-Germany the price of regional products plays a secondary role. It seems that there, the regional products could be priced higher than products from other origins. This is of particular validity for farmhouse products and organic products.

[14] Question: Today it is often talked about food products with regional origin. Which part do food products from North Hesse/Thuringia/Saxony-Anhalt play in your food purchase? Scaling: 1 (very unimportant) to 5 (very important).

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APPENDICES

Table A1: Results of the factor analysis

Factor 1	**Positive image of regionally produced food products**	**Factor loading**	**Means[1)]**
v 113	I have high confidence in food products from North Hesse/Thuringia/Saxony-Anhalt.	0.8	4.1
v 117	I am proud of our regional specialities.	0.8	3.9
v 128	Products from our region belong traditionally to us.	0.64	4.1
v 114	I feel happy in this region.	0.6	4.4
v 112	I especially enjoy products from this region.	0.56	3.5
v 124	Food products from my region guarantee freshness.	0.46	3.8
Factor 2	**Political motives for the purchase of regionally produced food products**	**Factor loading**	**Means**
v 131	I buy regionally produced food products in order to avoid long transport distances.	0.7	3.8
v 129	I buy regionally produced food products in order to support local farmers.	0.66	3.8
v 126	I buy food products originating from my region in order to ensure/preserve jobs.	0.61	3.7
v 119	I always want to know, where the food products – which I buy – come from.	0.61	3.6
Factor 3	**Willingness to pay more for regionally produced food products**	**Factor loading**	**Means**
v 120	I am not willing to pay more for a product originating from this region.	-0.75	2.6
v 116	I would accept a higher price for food products with guaranteed freshness.	0.72	3.9
v 130	I would accept a higher price for a product which is labelled with a mark of origin from my region.	0.57	3.4
Factor 4	**Importance of convenient and fast purchase when buying food products**	**Factor loading**	**Means**
v 123	Convenience plays the most important role when I buy food.	0.68	2.8
v 115	I don't think a lot about my food purchase, I just want to have it done.	0.65	2.2
v 118	For a certain food product, I would even go and have a look in several shops, if it's necessary.	-0.6	3.7

[1)] Scaling: 1 (I don´t agree at all) to 5 (I totally agree).

Source: WIRTHGEN et al. 1997, University of Kassel

Table A2: Factor values in comparison of the regions concerning the importance of the regional aspect, ⌀ = 0,00

	North Hesse	**Saxony-Anhalt**	**Thuringia**
F 1 Positive image	-0.50	0.15	0.38
F 2 Political motives	0.00	-0.15	0.16
F 3 Willingness to pay more	-0.04	-0.12	0.17
F 4 Convenient purchase	-0.23	0.07	0.17

Source: WIRTHGEN et al., 1997, University of Kassel

Table A3: Factor values in comparison of the clusters concerning the importance of the regional aspect, ⌀ = 0,00

	Cluster 1 n = 91	**Cluster 2 n = 53**	**Cluster 3 n = 49**	**Cluster 4 n = 23**	**Cluster 5 n = 112**
F 1 Positive image	0.69	-1.34	-0.80	0.63	0.30
F 2 Political motives	0.18	-0.19	-0.21	-2.29	0.50
F 3 Willingness to pay more	-0.76	-0.35	0.51	0.30	0.50
F 4 Convenient purchase	0.52	-0.66	1.30	-0.65	-0.55
Purchase intensity of regional food	**0.10**	**-0.53**	**-0.40**	**-0.75**	**0.51**

Source: WIRTHGEN et al. 1997, University of Kassel

Organic grazing livestock production: possibilities and prospects

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Introduction

Organic farming is best understood by referring to the concept of "farm as an organism" and not by the use of organic fertilisers. This refers to a self containing unit where the different parts of the farm are connected and which does not or only to a lesser extent rely on external inputs, such as nitrogen fertiliser. Organic livestock production is mostly land based, and frequently the animals, especially grazing livestock are seen as an essential part of the system. With the emergence of stockless organic rotations (by including a sufficient time period of growing legumes) this has to be questioned as an overall necessity but in many areas livestock based farming systems are certainly the most site appropriate form of agriculture.

The organic management in general differs from conventional agriculture because of its reliance on the management of internal farm derived resources as compared to external inputs. Grazing animals help to provide economic return for the forage legumes that are grown because of nitrogen fixation. However, in the past the main focus of research and development has been on organic cropping systems, the use of farm yard and other organic manure, techniques for mechanical weed control and biological control of pests and diseases. This reflected also the more rapid development of the markets for vegetables and cereals. Less attention had been paid to the management of the animals in the farming system and specialised livestock farmers were in a minority and had to find their own solutions.

Fortunately, the situation has changed and there is some indication from Germany, Denmark and Austria that recent growth of the organic sector is due to an increasing number of livestock producers (7.5% of all Suckler cows in Germany are now managed organically) and producers in the marginal areas converting to organic production (AGÖL, 1997; Schulze Pals, 1994). At the same time an increasing number of researchers have began to work with livestock systems for organic farms and the markets for milk and meat are developing.

Even though the same principle applies for all organic systems, the practical questions that arise on a specialised livestock farm are very different from mixed or cropping oriented farms. Changes during conversion are most likely to arise in the area of forage production, ration composition and diet, animal health, breeding. In the following paper I will briefly discuss each of these areas and highlight the most important changes that are likely to occur during conversion from conventional to organic agriculture, and highlight the strategies for marketing and the likely financial success of the system. In the end I will briefly summarise where research can further assist the development of organic livestock production as a truly sustainable alternative.

Converting to organic livestock production

Grassland productivity and stocking rates

The first important question that farmers with grazing livestock usually come up with once they consider conversion is: "what will happen to my stocking rate?". Forage production has to rely on nitrogen fixation of legumes, mainly clovers and the clover content is therefor one of the important factors in forage productivity on organic farms (Newton, 1995); other factors are soil type, soil nutrient content (P,K) and climatic conditions. The sward type has an influence on the yield, the productivity of short term leys (Red clover/Italian Ryegrass mixtures) for cutting is in most cases higher and the quality (energy and protein content) better than that of long term grazing fields either with permanent pastures or long term leys (Haggar and Padel, 1996).

Forage production during conversion to organic production will, apart from the above mentioned factors, depend on the intensity of the previous conventional management; the seasonal production pattern of the swards is also likely to change with a reduction in early spring growth. Despite the lack of clear experimental evidence of lower forage yields feed shortages are reported frequently during the process of conversion (Haggar and Padel, 1996; Rantzau et al., 1990; Schulze Pals, 1994). In established organic dairy systems stocking rates are on average at about 80% -90% of the conventional system (1.6 to 2.0 LU/ha). In Beef and Sheep systems the variation is even greater ranging from similar levels of production

as conventional to reductions of up to 60% (Elliot and Keatinge, 1997; Lampkin, 1993; Medcalf et al., 1996; Younie, et al., 1990). Reduction in stocking rate appears to be more dramatic on poorer soils than on better soils (Schulze Pals, 1994) but depends also on the intensity of the conventional system. However, the stocking rate can be a very inaccurate measures for forage productivity, because changes in other farm inputs such as concentrate and purchased forage and improved grazing management can mask changes in the forage productivity of the farm. Frequently farms diversify by including another species of grazing animals, such as beef into a purely sheep based system.

In summary it can be said that the grassland productivity (in terms of stocking rate) is likely to be lower on organic than conventional farms, the degree of reduction will depend on clover content, soil and climatic conditions and the intensity of the conventional system with which the organic system is compared.

The main problem in the management of permanent grassland and long term swards is weed control, especially the control of deep rooting species such as docks (*Rumex sp.*) and creeping and spear thistles (*Cirsium arvense* and *vulgare*). The farmers need to return to traditional husbandry methods, such as good grazing management to form a close competitive sward, mixed grazing and frequent topping for their control. However, weed control of deep rooting weeds in permanent pastures and long term leys is frequently mentioned as an unsolved problem after conversion (Haggar and Padel, 1996) even though the farmers vary in their perception of what consists a problem.

All standards allow some, usually slow releasing P and K fertilisers to be applied but the application should be based on nutrient budgets rather than blanket recommendations. The establishment of clovers in the sward has also frequently been reported as a problem during conversion, especially on soil conditions which are not the natural habitat of white clover.

There are a number of environmental benefits to be expected once grassland is under conversion to organic management. Firstly, the absence of any nitrogen fertiliser and exclusive reliance on legumes is likely to lead to more species diverse grassland even though some "modern" clovers have a vigorous growth and can be quite competitive in the sward. The absence of nitrogen fertiliser is also likely to reduce the risk of ground water pollution with nitrates which has increasingly been recognised by water companies (Hess et al., 1992; Redman, 1992). The lower stocking and the introduction of other species of grazing animals rates are likely to further increase bio-diversity in the sward, with positive implications for other wildlife. In some support schemes this has been considered by offering the possibility to combine organic management with other environmental or conservation objectives and/or to offer organic farming it as a "qualitative" method to fulfil the requirements of the scheme.

Feeding regime and diet

The conversion to organic management is likely to have some implications on the feeding regime, especially if the previous conventional system was to a large extent relying on external inputs. The aim in an organic grass based farming system usually is to maximise the production from home grown forage. However the standards do not exclude the use of ready mixed concentrates but place some restriction on the components and the proportion of conventional feed.

Dairy farms often reduce the amount of concentrate by up to 40%, reductions appear to be related to the levels of concentrate feeding before conversion; in cases of very low levels before conversion increased use of concentrate feeding has also been reported (Lampkin, 1993; Schulze Pals, 1994, Haggar and Padel, 1996). There is little research available about the concentrate use of other grazing livestock systems such as beef and sheep enterprise under organic management. Reduced concentrate feeding will lead to a higher demand in forage (in quantity as well as quality) so the planning of the forage supply of the farm needs some careful consideration.

Little is known about what types of concentrate are best suited to supplement the forage in order to maximise its utilisation. Currently the decision on what concentrate to feed is taken on grounds of availability and price. Not in all areas are companies supplying farmers with concentrate mixes that fulfil all requirements of the standards, so that some farmers might need to change the feeding regime and in some cases the farmers decide to grow cereals for feeding in order to reduced the reliance on externally produced inputs, even though this is not a requirement of the standards. There also is some uncertainty on what other protein sources can be used in concentrate mixes, either on the farm or by commercial

suppliers, that fall within the standards. Most recently the introduction of genetically modified Soya has restricted the choice, because not all suppliers are in a position to source Soya that is not affected and the organic standards do not permit the use of GMO.

There is no clear evidence that the forage quality changes as a result of the conversion to organic farming (Kristensen et al., 1994; Veauthier and Krutzinna, 1992) even though it is likely that the higher proportion of legumes in the sward and the potentially later cutting date might have some effect. The high legume content in the diet is likely to be beneficial for forage intake, due to a more rapid microbial digestion in the rumen (Sheldrick et al., 1987), even though these effects have not always been confirmed in larger scale experiments and system studies (Bax and Brown, 1995). There is some evidence that the overall diet fed on organic farms is more diverse than on conventional farms, with a higher proportion of hay and root crops (Swedes and fodder beet) and a reduction in silage in addition to the reduction in concentrate (Ebbesvik and Loes, 1994; Krutzinna et al., 1995). The converting livestock farmers might than also be faced with the decision on what alternative crops can be grown on the farm to improve the diet and performance of the stock.

Animal health and breeding

Conversion to organic production implies a changes in animal health management, best characterised by a move away from therapeutical treatment to preventive management. This represents potentially the most difficult area for many farmers to comply with. On the other hand, problems with animal health, are apart from soil erosion one of the most frequently mentioned motivations for farmers to convert to organic methods (Fischer, 1982; Vogtmann et al., 1993; Wernick and Lockeretz, 1977). By improving the level of stockmanship within the organic herd or flock and improving the immunity of the animals to disease, many problems can either be prevented or detected in the early stages of development and effectively treated with alternative remedies without the need to routinely use conventional medicines. In many cases, the key issue during the conversion period is the confidence to stop routine medication, such as dry cow therapy or routine use of anthelmintics, in favour of alternative approaches.

Organic standards contain detailed animal welfare provisions, which are an important component of successful organic management. Outside access and housing appropriate to behavioural needs are required. Depending upon the system on the farm, some changes to the housing conditions might therefore be inevitable; a change to loose housing for the dairy herd, even though not strictly prescribed, might be seen as beneficial by the individual farmer and implemented as part of the conversion process.

Detailed studies on the health situation of animals under organic management are rare and usually focus on dairy cows. There is some indication of lower incidence of ketosis, milk fever, mastitis and lameness in organic herds (Ebbesvik and Loes, 1994; Haggar and Padel, 1996; Offerhaus et al., 1993), even though the result in terms of mastitis are not conclusive. There appears to have been a slight improvement in fertility and age of the cow on the organic and in conversion holdings (Ebbesvik and Loes, 1994). The biggest health problems mentioned by dairy farmers are mastitis, hoof disorders (Baars and Buitink, 1995; Haggar and Padel, 1996) and infertility (Roderick et al., 1996). Poor nutrition (structure, energy and protein supply) often underlies health problems and it has therefore been suggested that a recommendation for regular forage analysis should become part of organic standards (Ebbesvik and Loes, 1994).

The situation is somewhat different on farms with sheep and beef enterprise, where parasites are likely to represent the biggest challenge. The control of internal parasites can be successfully achieved with management practices such as clean grazing systems, mixed stocking, rotational grazing and selection of resistant stock and breeds. A reduction in stocking rate will also have an effect in reducing the parasite burden of pastures. Drenching of particularly stressed and therefore more vulnerable animals such as ewes with twin lambs is considered to be acceptable. The situation is slightly more difficult with regard to the control of external parasites, where up until now management practises are not so well developed and farmers have to resort to using conventional treatment on a more regular basis, such as for the treatment of sheep scab, or to comply with legal requirements.

However, overall organic livestock farms appear not have major health problems, other than similar to conventional herds. The farmers use a combination of preventative management, good supervision for early detection and alternative treatment, especially the use of homeopathy and, in severe cases, the use of conventional veterinary treatment to maintain animal health.

In the area of breeding, emphasis is given to maintaining a closed herd, the rearing of the herd's own replacements and the feeding of whole milk to calves (Lampkin and Measures, 1995). Both in dairy and in other grazing livestock systems organic farmers frequently choose more robust or sometimes even rare breeds. There is very little research that addresses the suitability of breeds for the organic farming systems and there is no clear evidence that high intensity breeds can not be farmed successfully under organic management. However, the development of special breeding programmes for longevity (for other animals than diary cows in the German speaking countries) would be beneficial.

Animal productivity

The reported milk yield in organic systems varies widely with reductions of about 10% as compared to conventional yield (Lampkin, 1993), reductions up to 25% (Augstburger et al., 1988; Winckler and Steinback, 1991) as well as lower or no differences in yield between the two system (Haggar and Padel, 1996; Kristensen et al., 1994; Schulze Pals, 1994). The effect seems to be more marked on intensively managed systems with more intensive breeds, such as HF, and high levels of concentrate feeding. Yield reductions can be the result of a combination of all the different factors mentioned above, but the main influence is likely to come from reduced concentrate feeding and low forage supply (in quantity and/or quality, lack of continuity).

The animal productivity in other grazing livestock systems is more difficult to compare as the production patterns can vary widely and farms often combine a variety of different enterprises on one farm. In addition the variance between breeds can be considerable so that it is difficult to find a sample of farms for a comparative study. There is no clear evidence that, apart from a potentially lower stocking rate, the productivity of individual animals is lower under organic management. In contrary, in some cases a similar or even better daily live weight gain in a clover based system was found (Bax and Brown, 1995; Younie, 1991).

Marketing

After the conversion period of the land and the livestock the farmer can apply for certification and will be entitled to use registered trademark for organic production. Once the EU livestock regulation (Amendment to EU Reg. 2092/91) is in place this will be legally enforceable.

However, even though research shows and increasing demand for organic milk and meat, many organic farmers in Europe are still not able to sell all their livestock produce with a premium. In many cases only a small proportion of milk or meat can be sold to an established organic outlet. Marketing is therefore a very important issue on livestock farms during conversion as access to premium has a significant beneficial effect on the financial performance. The farmers are exploring a variety of strategies.

Direct marketing of meat usually relies on good access to slaughter facilities and close co-operation with a local butcher. The farm might either sell fresh quarters for home freezing directly from the butcher, which usually requires no or little investment on the farm. If the farm wants to sell frozen meat parcels or selected cuts and/or a range of meat produce such as sausages, salamis or mince meet, a considerable amount of investment might be need to fulfil the high hygiene requirements, both in the case of meat and milk. Some farms in the UK that started initially with the processing of only their own products have grown substantially and are now processing for other farms as well, either under their own label or under contract. They seem to illustrate a dilemma, faced by many: in order to find technological solutions to fulfil the hygiene requirements a certain production volumes appears to be necessary. This implies that the on farm processing becomes a major enterprise and can dominate the farming activities (Revell et al., 1996).

It can therefor be concluded that the necessary investment to fulfil the hygiene requirements in the milk and meat sector are restricting the possibilities to develop on farm processing and direct marketing for the majority of many organic meat and milk producing farms.

An alternative strategy, which increasingly is becoming more popular is co-operation to develop a joint marketing initiative, either by investing in a shop or other outlet of their own or by organising continuous supply for larger byres. This approach has been successfully developed in the case of the organic milk producers in Denmark and with the organic milk and livestock marketing co-operatives in the UK.

In all these marketing initiatives the organic certification will be an advantage by setting a defined quality for which consumers are willing to pay a premium. But, and this applies equally to all the above mentioned different marketing strategies, the organic certification will not replace the need to produce high quality in all other terms of quality standards.

Financial performance

Apart from the realised premium in the market place the financial success of any organic livestock production will depend upon the above discussed parameters of production and variable and fixed costs. The most significant saving in the variable cost will be achieved through reduced spending for fertiliser. Savings because of reduced concentrate use will often be cancelled out by higher prices (or opportunity costs for those farms that produced their own concentrate) for organic cereals and higher costs for other components and mixtures as a result of a lack of economic scale.

Where no premiums for the produce can be achieved the livestock gross margins are likely to be lower than conventional (Huus, 1992; Weber, 1993) or can in the case of dairy herds be similar, when the savings in forage costs are high enough to balance losses in production (Lampkin, 1993; Padel and Lampkin, 1994). Even individual cases of dairy farms outperforming conventional comparisons without access to premium have been reported, where the overall management of the herd is very good (Winter, 1991) but are certainly not the average. Enterprise gross margins for beef and sheep enterprises are showing similar trends, with access to premiums higher gross margins than under conventional management can be achieved, without a specialist market there are likely to be equal or lower.

Decreases in stocking rate lead to almost uniformly lower gross margins per hectare on organic than on conventional farms, indicating the lower intensity of the organic system and may result in lower whole farm gross margins. During conversion the farmers will in addition face some learning costs and costs of the adjustment of the farm, which can be in the range of 10-30% of gross margin (Diers and Noell, 1993). During this period they are unlikely to have access to premium prices for livestock products. Depending on the standards in each country the conversion period for meat producing farms can be quite long, since on top of the conversion period for the land the livestock also has to undergo a conversion. Rapid conversion strategies, where all land is included in conversion in one or two year, will allow earlier access to premiums and can therefore be financially advantageous, even though the risk can not be spread and learning costs can potentially be higher (Medcalf et al., 1996). However, these reductions are not likely to exceed the current rate of payment for conversion to organic production that is available in all countries of the EU under the Agri-environement programme (Reg. 2078/92).

Summary and conclusions

Grazing livestock producers who want to convert to organic management have to adjust their farming system so that reliance on external inputs, namely fertiliser, concentrate and routine use of veterinary drugs is replaced through management and farm derived resources.

The forage production will depend on the successful establishment of legumes in the swards, mainly white clover for permanent pastures. The forage production in terms of stocking rate is likely to be reduced, depending on factors such as intensity of the previous conventional management, soil and climatic conditions.

High emphasis should be given to maximise the production from home grown forage so that concentrate inputs can be reduced, but do not need to be replaced completely. This might include some diversification in what forage crops can be produced on the farm, such as making of more hay instead of silage, growing of fodder crops.

The biggest challenge during conversion is likely to be the move away from routine veterinary treatment to preventative management and the use of alternative treatment. Research indicates that the health status of diary animals is similar to conventional herds.
The animal productivity of dairy cows is likely to be somewhat reduced, but there is no clear evidence that the productivity of grazing animals for meat production is reduced, apart from a reduction in stocking rate.

The conversion to organic production offers the possibility to use registered trademark or organic production and, once the EU livestock regulation is in place, this will be legally protected across the EU.

The markets for organic livestock products have only recently developed and currently there is not guarantee that all milk and stock that is produced organically can be marketed as such. There are several successful examples where through co-operation with other producers a market could be established.

Livestock farmers during conversion are likely to face certain costs of conversion in terms of reduced output and learning and adjustment costs. This are likely to be partly offset by savings in variable costs, especially fertiliser and once certification has been achieved through premium prices. In all countries of the EU farmers are currently offered conversion aid programmes, which can in some cases be combined with other environmental or conservation schemes.

Future research in the following areas would further assist the development of organic livestock management:

- Conversion of permanent pastures.
- Forage production under extensive conditions
- Weed control of deep rooting weeds, especially in permanent pastures.
- Animal health management, especially management techniques for the control of external parasites;
- Use of concentrate to maximise forage utilisation
- GMO free protein sources for concentrates;
- Setting up of farmer co-operatives for successful marketing of livestock products.

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Heritage and innovation in Mediterranean animal products: some research questions.

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INTRODUCTION

The scientific committee of the International Symposium "The basis of quality in typical Mediterranean animal products" described the market situation as follows:

"These products belong to a culture which gives the impression of decline in the face of pressure from the big food industries which, for decades, have influenced the dominant consumer values, such as product standardisation, taste constancy during the year and aversion to typical strong tastes. The economic importance of such industries allows them to use scientific progress to influence research policies and to apply efficient trade or marketing methods" (Morand-Fehr *et al.*, 1996).

The same authors go on to observe that "the only products that are found today are those that have managed to evolve" and, therefore, that in the future these products "will only persist and develop if they manage to adapt to the market while maintaining their specificity and their authenticity".

This short presentation, conceived as a preparation for discussion on methods and research needs in terms of valorisation of animal products, will introduce the new dimension of "heritage".

1-HERITAGE PRODUCTS

1-The Mediterranean pastoral civilisation

It is obvious that a dynamic and creative civilisation has managed to use to its full potential the natural conditions around the Mediterranean, and to develop an original agri-pastoral-forestry system, which has left a strong mark on the specificity of certain products (olives, chestnuts, Durum wheat, vines, animal breeds etc.).

Mediterranean animal husbandry is a part of this creativity and it is characterised by typical chains of production and marketing (*filières*):

- Small ruminants are essentially orientated towards milk and this is strongly specific to the area (70% of ewe milk world production and 33% of goat milk world production),
- Utilisation of these milks to make storable and transportable products -principally fast curdled cheese and "forme lourde" (e.g.: feta cheese in barrels)
- Lambs and kids are killed young (light carcass and typical organoleptic qualities of "milk-fed animals")
- Pigs are killed at a mature age (10-18 months), and they form the basis for the range of famous "dry charcuterie" products (Parma ham, San Daniele ham, "Ibériqué", "Patta Negra", Jabugo and Coppa, Lonzo, and many types of *saucissons*).

These common characteristics have generated a rich diversity of products, currently estimated at 1000 to 1500 cheeses, 500 saucissons, preserved meat and fish, 1000 honeys, oils, fruits and vegetables…and some 5000 local wines (Barberis *et al*., 1992).

This range of products represents a real heritage, an important contribution to the Mediterranean culture, to the diversification of tastes and ways of eating and the lifestyles of the European people. The cultural dimensions of these products, and the ways to consume them, are demonstrated in the use of Mediterranean images in advertisements to develop a market for fake products. For example, a false Feta will invariably be advertised by some typical representation of Greece, e.g. the name, monuments, environment, etc.

2 - Some bio-cultural products

Bio-cultural products refers to those that are in some way "traditional", "typical", or "specific". These terms are imprecise. At a European level, they provoke translation and perceptual problems, due to differences in cultural background (e.g.; the adjective "farmer" is seen positively by the French but when translated directly into Spanish, it has a pejorative connotation). It is the case, however, that the words "traditional" and "reputation" are used, without definition, in the EC regulations (2081/92 and 2082) .

The term “bio-cultural” articulates for a product, even an industrial one, a production system which includes:

- one (or several) agri-biological and technological processes (cheese is considered as a “bio-reactor” by technologists)
- some economic exchanges within a branch with specific characteristics in every step
- a regulation and co-ordination system for the actor’s and operator’s actions
- some technical, business (being able to sell) and organisation abilities

All these constitute, in the case of the typical products, a real local technical culture (related to a place) that is inherited (related to a particular history). It is passed down directly in the form of practical experience, savoir-faire, etc. The products of this local culture have developed in this way, with some losses, evolution and innovations.

It is obvious that the mobilisation of these typical products, called also “heritage” products because they influence the animal husbandry systems, especially in the less favoured areas, could not be done without a thoughtful adaptation of some of their components to the essential parameters of the modern world.

3 - Added value and the *filière*

It is often said in the literature that these heritage products generate added-value, even some economic revenue due to their exclusivity. However, it is too often believed that this added-value is automatic. Some level of market protection is necessary to create the difference.

Milk production from small ruminants is a good example. Vallerand (1996) showed that, if the price of ewe and goat milk was linked to its relative richness in elements for cheese making (fat content and protein), it would be worth in Europe 30% more than cow’s milk. It can therefore be said that an added value does exist for the producer of small ruminant milk. But it also means that progress in cheese-making technology and marketing will reduce this bonus when industries become able to make cheese with a taste like ewe cheese using cow’s milk with added extracts to fake the typical product (e.g. “Greek-style yoghurt”).

Another interesting example is the case of the Greek milk economy : cow milk, bought for 100 drachmas from the producer is sold at 300 to the consumer, as fresh pasteurised milk. The ewe milk is bought at 210 drachmas, is valorised as Feta and sold for 350 drachmas, although in that step the whole process of cheese making is involved. This type of sharing of the added value among the 3 sectors of a filière (production, transformation, commercialisation) is a classic one, but would have different consequences if nothing was done, in a country were small ruminant milk is the major product (59% of the milk produced in 1996).

The whole filière must be analysed as an organised system to understand the distribution between the 3 sectors of the value and how this distribution is regulated (e.g. conflicts, arbitration, role of the Government and of the market).

II- EXAMPLES OF RE-QUALIFICATION

For this short note, 4 situations in which the heritage product was studied as a possible diversification, are presented as examples. The research contribution to this process is illustrated.

1-The marketing circuit of farm products in Greece:

Although Greek legislation does not recognise farm products, these latter represent a level of commercialisation of roughly 500 millions litres of ewe and goat milk (half of the production) and of many

other products (oils, honey…etc.). Anthopoulou and Gossios (1994) calculated that for the island of Lesbos (that makes Ladotiti, AOP), a farmer receives 3.3 ECU/ kg if he delivers his milk, 5.8 ECU/kg if he makes cheese and sells it in the island's delicatessen shops and 6.5 ECU per kg if he is selling his cheese in Athens.

The programme FAIR PL 360 tries to characterise these farm products by their taste qualities and the way they are commercialised. The commercialisation of these farm products is done by some atypical ways, based on certain privileged relationships between producer and consumer. It is still very active because the rural exodus is quite recent:

- direct family relationship; rural parents give to their urbanised children
- friendship relationship; people who belong to the same village
- community relationship; people who belong to the same community (e.g.: the Valaques)

These networks are very often well organised and stable but non-institutional. It is therefore difficult for innovative farm products to be developed using both these channels and the classical commercial circuits (divergence of quality appraisal).

2-To master the technological progress and the typical aspect of the farm product
The Venaco cheese, one of the most famous Corsican cheeses (a mixture of ewe and goat cheese) is a farm product. The farmers perform all the 3 components of the filière (to produce, to transform and to sell). This is economically viable, but it makes the farmers very independent - everyone has to sustain his own network and has a tendency to consider their own cheese to be the best.
Research (INRA-LRDE) worked directly with some of these producers to find some technological and organisational innovations. The aim is to organise, step by step, a collective branch, without damaging the quality and typical aspect of the cheese.

The curdle was the double critical point (cf. later, III-2) and a type of lactic yeast which gave some of the taste qualities desired by the producers, was selectedm by some milk microbiology experts from INRA-Jouy. The production and distribution of these yeasts to the breeders requires control of the bacteriophage activity and change of strains. This needs a complete collaboration between breeders, technicians, field researchers and microbiologists.

The following step is the selection, from local milks and cheeses, of some specific yeasts that are selected by the traditional breeders. This technological innovation must allow the producers to be more interdependent and help them to organise their own sector. The construction of such a collective project is, according to the French practice of the Protections, a first step towards a formal demand of AOP (PDO) or IGP(PGI).

3-To create a gastronomic product from a heritage product
All the extensive pig breeding in Corsica is aimed towards the manufacture, by the pig producers themselves, of "dry charcuterie" - a highly esteemed product.

Some young producers gathered to produce a "Corsican saucisson" of superior quality to sell it at a superior price. Research helped them to have their practice converging towards a product with some characteristics close to each other, but as well, towards a "virtual product", a "gastronomic product". The aim was to create a commercial niche by selecting its clients: for example those who come to buy their wine from the wine maker, those from the gastronomic fairs and to work with the chefs of the French haute cuisine.

The product must be built (reference and process) because locally, no expertise in terms of long storage of farm saucisson exists. This storage allows and slower and longer maturation and also avoids seasonality of the production.

4- The re-qualification of a village in a famous animal breeding place; Metsovon
The successful development of this big village, isolated in the middle of the Greek continental mountains, is a good example, studied by Goussios, 1993, of a successful conversion of a big part of the products of the pastoral Valaque civilisation. Sustained by a very active Trust (and very little by research), this village of

breeders based its economy on the methodical construction and valorisation of its reputation as a place with high standards in animal production. A local cheese (which just obtained an AOP), blankets, pastoral instruments, woodwork, traditional clothes, etc. complete and sustain its transformation into a tourist place, which plays highly on the traditional heritage and the representation of what urban people imagine a traditional place to be.

What is remarkable is the way this conversion process took into account all the professional abilities of traditional skills and orientated them towards objects referring to the Valaque heritage. The objects (shepherds crooks, cheeses, blankets) were modified in surface and weight to satisfy the tourist demand. In that case, the Valaque diaspora was mobilised as well to constitute in the villages and towns some diffusion relays and production selling points.

III- CONTRADICTIONS TO MANAGE, RESEARCH TO DEVELOP

Under such a diversity of situations, a common strategy is recognisable: to look for and to organise a local and sustainable competitive advantage.

From what was said earlier, it can be noticed the a typical product is neither a gift from Nature nor from the government (protection). This potential source of superior added value or even of a revenue is a social building, an organisation which needs to be updated regularly so the advantage is maintained.

To structure the presentation of the questions the research should answer, it will be presented as contradictions that deciders and branch actors must face. It will notice that these contradictions correspond very often to fruitful controversy for research.

1-To what extent can the typicality of a product be made objective?

To find an analytical method which would allow it to be proved that a product has a unique characteristic (both because of its origin and of its process) is the dream of each responsible of the branch. Can a molecule which would attest that a cheese has been made with a typical milk or with a typical process be found?

Some numerous researches showed that some methods can be used to detect imitations which do not follow the integrity the process of production of transformation. It is possible, for example, to some mature cheeses if they have been done with raw milk or pasteurised milk, if it is from milk of animals grazing or fed with concentrates. The relationships between the edaphic and botanical characteristics of a local place and some sensorial profiles for cheese start to emerge (like Gruyère, Comté, cf. Graffin & Coulou, 1996).

So, the big file on "traceability", a word and method that the BSE crisis made popular, is reflecting a demand from the consumer. This traceability in fact a part of the more general categories of "proof managing" and "proofing".

The development of such analytical researches is a necessity but it could have long term consequences on the heritage products. The objective proofing comes from industrial products, but it is not sufficient for heritage products. For the latter, it is only a way of detecting fake products. Their qualification needs another logic.

2- What is the threshold limit to the variability of heritage products?

By nature, the variability of heritage products is high, not only between producers but by the same producer from year to year and often, between seasons. It is also true that uniformity and the constancy are not the main aims of heritage products, they are the aims of the industrial product. Consumers know how to appreciate a certain diversity between diverse products, and do not consider as a fault their variable, imperfect shapes. The marketing must know how to valorise and organise the differences (for example, wines which differentiate on the label the denomination, the producer, and the years of production).

However, a certain homogeneity is necessary, especially for the products which want to go beyond the clientele of family or connoisseurs.

Some methodologies similar in their essence to the HACCP method (detection of critical points) have been successfully demonstrated to reduce losses, limit obvious defaults and introduce innovations that respect the heritage characteristic. Research must be careful to distinguish the critical points which depend on (HACCP) and the critical heritage points which determine the typicality of the product. In particular, is the raw material bought somewhere else or not, and transformed according to a certain process?

As an example, assuming the technical system for the production of dry charcuterie starts when the pigs are killed, the quality and unique characteristic of the ham or saucisson depends on the breed of pigs, the interactions between its development (fat deposits) and its nutrition (forbidden foodstuffs, compulsory foodstuffs) at several stages, its age, and the season of killing, and the way the charcuterie is made (temperature, additives, percentage of different components, salting method, etc.).

To spell out that which was before tacit practice in a specification it is necessary to define within the producers and enterprises those who can benefit with legitimacy from the right to the label of heritage product. It is indispensable if the product will be exported outside its county of origin. It can lead to a demand of certification (e.g. AOP). However, if the constancy of the product increases, this may normalise the product by forcing it to conform to a standard.

3- What balance may be found between distribution pathways?
Initially these products were distributed by a network of family, neighbours and communities. In such transactions (money-orientated or not) the confidence is installed by direct relationship between the producer/seller and the consumer. It is a domestic form of co-ordination: it is the people who are qualifying themselves and the transaction of the product is secondary. This way is still the main way of transacting heritage products, especially in Mediterranean society.

The inclusion of heritage products in other distribution channels introduces a problem of reputation transfer. What is the proof of qualification, adapted to the characteristic of the product, that is needed by the industrial and commercial worlds? In the first, the co-ordination is done by a complete description of the process, while in the second, the co-ordination is assured by the articulation between offer and demand, via prices.

The total objectivisation of the typicity of a product is not possible (cf. above, section 1). On the other hand, the confrontation with the commercial world shows that the added value of the product is due to its rarity, its reputation and heritage values.

If for the famous heritage products (Feta, Roquefort, Pecorino romano, Parma Ham or Jabugo, etc.) the confrontation of the market with the filière is already established (and evaluated), for the small branches and for farm products, the market confrontation is very difficult. For most of the producers, their activity contributes partly or entirely to the underground economy. What can they expect from the entrance in the formal economy?

Within a same heritage product, there are situations where different forms of sub-filière exist. How may their cohabitation be organised to defend the heritage? Do these sub-filières need the same qualification proofs?

For some years, even the big firms (e.g. dairy companies) have developed research and new products to differentiate their range by imitating (even faking) typical products. In that case again the question is, how best to organise the qualification tests ?

4- What protection can be given to the heritage characteristic ?
The instalment or the reinforcement of a certification system (label, appellation d'origine etc.) allows a better commercialisation of a typical product. The European rules 92/2081 & 2082 (that started in June 1996) define, for the whole EC, such a tool (AOP, IGP, STG). The way different countries use these protection systems is being studied by the project FAIR 95/306 (DIVOR-DEF).

Only 3 things will be mentioned here:

- each quality assurance scheme is a discrimination system (it is therefore attacked by those who think that AOP, etc. create a market distortion, or prolong artificially some old fashioned production systems).
- the qualification of a product by these tools always proceeds by a double testing; the first is at the local level (compromise between local actors, between tradition and innovation); the second one is a confrontation of this local agreement with another world (the market, for example) whose aim is to have this agreement recognised and spread. The maintenance of this double testing is imperative to avoid the problem which would result from privileging the historical dimension over *savoir-faire*; "tradition could become a simple artefact authorising a product's reconstruction, even faking".
- this procedure supposes that:
- the concerned actors set a co-operation structure to define a common action
- some dispositions and procedure of control and certification are set up (some under individual control, others in commissions of professional collective control, or by a supervisory authority). Each country is able to organise specific institutions.

In this situation, the actors' co-ordination (the diverse professions covered by a protection) is of a civic nature; they need to build and manage a "common asset" which comprehends human beings with their capacities and some "non-human beings" (breed, bacteria, flora, etc.) whose presence is linked to human activities.

5- To create or indicate quality?

Research often has a lot of difficulties to overcome the culture of its political and philosophical environment to be able to approach the two big issues in the food industry that are fought within the EC.

- The English-speaking and liberal countries defend regulation by a single market, and thus there is a need to signal very precisely the parameters of the quality of one single product. This approach, in fact dominant, privileges the concepts of Health, Security and Quality Service. Its missions, the level of the organisation of the public services (between producers, industries and consumers) are certainly very different from one country to another.
- For the south of Europe and France (a special case, mixed country) the quality of a food product is appreciated by the satisfaction it gives. This mixed vision of the consumption ("Human Being feeds himself with food, but as well with symbolic values") leads to seeing quality as a social factor, even as a society factor. In that case, the public services must help in the co-ordination and the organisation of the actors. Saying that, in the Mediterranean countries, the differences within the mediation systems to sustain typical products are impressive.

A real confrontation of these differences of approaches and a better understanding of the diverse organisations of the filières for typical products and their services of qualification is still a very open field for research.

Such an approach would give some clearer results in terms of reciprocal interactions between local development and the protection of the typical products.

Generally, research moves from "quality of products" to the study of the "qualification process" of these products, which consists of "attaching attributes to some objects, some persons and the environment in which they are situated". "A common project may be designed for social sciences, technical sciences and juridical sciences around the characterisation of pertinent objects for action, properties of the legal entities (AOP) and re-introduction of the un-represented parties (consumers, collectives, etc.)".

Patrimoine et Innovation dans les produits de l'élevage méditerranéen : questions de recherches

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INTRODUCTION

The scientific committee of the International Symposium ***"Basis of the quality of typical mediterranean animal products"*** [15]describe the market situation of these products as follow:
"Ces produits font partie d'une **culture** qui donne l'impression d'être perdante en raison de la pression des grands groupes industriels agro-alimentaires qui, depuis des décennies, ont habitué les consommateurs à des **valeurs dominantes** comme la standardisation du produit, la constance de son goût au cours de l'année et l'aversion de goûts typiques marqués.

Le poids économique de ces groupes leur permet d'utiliser au mieux le **progrès** scientifique, d'influencer les politiques de recherche et d'appliquer des méthodes commerciales ou de marketing très efficaces" (Morand-Fehr & ali., 1996).

On sera aussi d'accord avec ces auteurs quand ils énoncent que "seuls sont arrivés jusqu'à nous les produits qui ont su évoluer" et donc que, dans l'avenir, ces produits "ne pourront se maintenir et se développer que s'ils savent **s'adapter aux exigences du marché** tout en maintenant leur **spécificité** et leur **authenticité**"

Notre courte contribution, conçue comme préparatoire à un échange de vues sur les méthodes et besoins de la recherche en matière de valorisation des produits de l'élevage ayant une **dimension patrimoniale**.

I - DES PRODUITS PATRIMONIAUX

1 La civilisation pastorale méditerranénne

Il est manifeste qu'une civilisation très dynamique et créative a su tirer partie des conditions naturelles du pourtour de la Méditerranée pour développer un système agro-sylvo-pastoral très original qui marque encore fortement aujourd'hui la typicité de certaines spéculations (Olivier, Châtaigne, Blé dur, Vigne, Elevage) et de leur produits.

L'Elevage méditerranéen n'est pas resté à l'écart de cette créativité et il se caractérise par des filières d'élevage (production et produits) rarement rencontrées ailleurs :

- l'orientation des petits ruminants vers la traite reste très fortement une spécificité de cette aire (70 % du lait de brebis mondial et 33 % du lait de chèvre),
- l'utilisation de ces laits pour élaborer des produits stockables et transportables - principalement des fromages à caillage rapide et forme lourde (prototype : la Feta en baril),
- les agneaux et cabris sont abattus jeunes (carcasses légères et aux qualités organoleptiques spécifiques des animaux "de lait")
- les porcs sont abattus à un âge avancé (10-18 mois) [16] et sont le support d'une gamme de produits de "charcuterie sèche" réputés (Jambons de Parme, de San Daniele, "ibériqué", "patta negra", Jabugo et Coppa, Lonzo, Saucissons de divers pays et terroirs).

Ces caractéristiques systémiques communes ont généré une gamme de produits très riche que Barberis & al., 1992 évaluent actuellement à "1.000 à 1.500 fromages, 500 saucissons, viandes et poissons conservés, un millier de miels, huiles, fruits et légumes ..... et quelques 5.000 petits vins de pays".

Cette palette de produits constitue un véritable patrimoine, une importante contribution de la culture méditerranéenne à la diversification des goûts et des manières de consommer et de vivre des Européens et bien au-delà.

[15] EAAP-CIHEAM-FAO), Badajoz, Spain, autumn 1996
[16] les systcmes de production sont trcs différents entre celui du "Suino pesante" (porc lourd italien) qui est un animal amélioré élevé hors-sol et "prolongé" et le Cerdo iberico (porc ibérique) de race spécifique et nourri de façon extensive.

Les dimensions culturelles de ces produits et de la manière de les consommer sont démontrées par le large appel aux images de la Méditerranée que la publicité utilise pour développer le marché des produits d'imitation. Trouve-t-on une "fausse Feta" (souvent sans aucun lait de petit ruminant) qui ne mobilise pas une représentation non ambiguë de la Grèce - consonance, monument, cadre naturel, etc.) ?

2 Des produits bio-culturels

Ces produits font partie (et il en a existé ou existe encore tout autant dans les autres grandes civilisations) de l'ensemble des produits qualifiés de "traditionnels", de "typiques", de "spécifiques".

Notre but n'est pas de prendre partie dans ce champ sémantique d'autant plus imprécis au niveau européen qu'il soulève non seulement des problèmes de traduction mais de perception liée à la culture (par exemple, si le caractère "fermier" est perçu positivement par la plupart des consommateurs français, sa traduction simple en espagnol véhicule une image plutôt négative ; la même positivité serait rendue par "artisanal"). On remarquera toutefois que les termes de "réputation" et de "traditionnels" sont utilisés, sans définition, dans les règlements communautaires (92/2081 et 2082) consacrés à leur protection.

Pour notre part, nous retenons d'aborder tout produit (y compris ceux de l'univers industriel) chacun comme des produits bio-culturels ; formulation raccourci pour désigner un système articulant
- un (ou plusieurs) processus agro-biologique et technologique (un fromage est défini comme un bio-réacteur pour les technologues),
- des échanges économiques au sein d'une filière aux caractéristiques spécifiques à plusieurs de ses maillons,
- un système de régulations et de coordination de l'action des divers acteurs et opérateurs,
- des compétences techniques, commerciales (savoir vendre) et organisationnelles.

Cet ensemble constitue, dans le cas des produits typés, une véritable **culture technique locale** (liée à un lieu) et héritée (liée à une histoire particulière) par transmission directe de pratiques, de savoir faire, de tours de main, etc. C'est par cette voie que le ou les produits de cette culture localisée sont parvenus jusqu'à nous, avec des pertes, des évolutions, des dérives, des innovations.

Il est évident que la mobilisation des produits typés que beaucoup qualifient de **patrimoniaux** pour participer au développement de l'élevage, notamment en zones défavorisées, ne saurait se concevoir sans une adaptation raisonnée de certaines des composantes de cette culture technique aux paramètres essentiels du monde actuel.

3 Valeur ajoutée et filière

On lit très souvent dans des articles que ces produits patrimoniaux sont générateurs de valeur ajoutée (d'un supplément de valeur ajoutée) voire d'une rente économique liée à leur exclusivité. Il est trop souvent laissé à croire que cette création de valeur ajoutée serait automatique. Il suffirait d'une protection pour créer automatiquement cette différence.

Le séminaire auquel ce texte est destiné permettra de clarifier cette "fausse bonne idée" et d'expliciter un peu mieux les relations de cause à effet et les conditions à réunir.
Un seul exemple concernant les laits de petits ruminants : J'ai rappelé (Vallerand, 1996) que, corrigés en fonction de leur richesse relative en éléments destinés à la fabrication fromagère (Matières grasses et protéïques) les laits de brebis et de chèvres sont payés, en Europe, environ 30 % plus cher que celui de vache. Il existe donc bien un bonus de valeur ajoutée pour l'éleveur de petit ruminant laitier.
Mais cela veut dire aussi que les progrès de la technologie fromagère et du marketing risquent de venir réduire ce bonus quand les industries laitières pourront faire du fromage proche du goût brebis avec du lait de vache retravaillé et ensemencé en extraits mimant la typicité (ex : yaourts "type grec").
Le cas de l'économie laitière grecque d'aujourd'hui nous fournit une autre piste pour notre réflexion : le lait de vache, acheté 100 drachmes au producteur est revendu en lait frais pasteurisé à près de 300 aux consommateurs. Alors que le lait de brebis, acheté 210, est valorisé sous forme de Feta (fromage dominant) l'équivalent de 350 drachmes alors que dans cette seconde filière il faut organiser tout le procès de transformation fromagère. Ce mode de partage de la valeur ajoutée entre les trois secteurs d'une filière (Production, Transformation et Commercialisation) est plutôt classique mais ses conséquences prendraient une toute autre ampleur, si rien n'était fait, dans le seul pays où les laits de petits ruminants sont majoritaires (59% des laits produits en 1996)

L'ensemble de la filière concernée par un produit (avec ses trois secteurs) doit être analysé comme un système organisé pour comprendre la répartition entre les 3 secteurs de la création de valeur ajoutée et

comment cette partition est régulée (conflits, organismes de médiation, rôle des instances étatiques et du marché).

II - EXEMPLES DE RE-QUALIFICATIONS

Pour cette brève note, nous avons retenu la technique du témoignage en expliquant quatre situations d'élevage bien connues du rédacteur et dans lesquelles un produit patrimonial a fait l'objet d'un travail d'adaptation au monde actuel. Nous chercherons surtout à illustrer la contribution de la recherche au sein du processus.

1 Les circuits de commercialisation des produits fermiers en Grèce

Bien que la réglementation grecque ne connaisse pas les produits fermiers, ceux-ci représentent la forme de commercialisation (avec l'autoconsommation) d'environ 500 millions de litres de lait de brebis et de chèvre, la moitié de la production, et de bien d'autres produits (huiles, miels, etc.). Anthopoulou et Goussios (1994) évaluent ainsi pour l'île de Lesbos qui fabrique du Ladotiti (AOP) ce que reçoit un éleveur de brebis, en Ecus par Kilo de fromage : 3.3 s'il livre son lait, 5.8 Kg s'il fait son fromage et le vend dans les épiceries de l'île et 6.5 s'il vend son fromage à Athènes.

Le programme FAIR PL 360 (en cours) cherche à caractériser à la fois ces produits fermiers sur le plan organoleptique et les pratiques de commercialisation.
La commercialisation des produits fermiers se fait par l'intermédiaire de réseaux a-typiques de distribution, basés sur des **relations privilégiées entre producteur et consommateur**, et toujours très actifs en Grèce car l'exode rural y est récent :
- relation familiale directe ; les parents ruraux fournissent les enfants urbanisés,
- relation amicale ; appartenance au même village d'origine,
- relation communautaire ; appartenance à une même communauté (les Valaques, les insulaires telle île).

Ces réseaux sont souvent très organisés, stables (débouchés réguliers) mais non institutionnalisés.
On perçoit la difficulté que rencontrent ceux des produits fermiers qui veulent se développer en étant distribué simultanément par ces réseaux et dans les circuits commerciaux classiques (divergence des signes d'appréciation de la qualité).

2 Maîtriser le procès technologique et la typicité d'un fromage fermier

Le fromage de Venaco, l'un des plus réputés de Corse (au lait de brebis ou de chèvre) est un produit fermier. Les éleveurs accumulent donc les 3 fonctions d'une filière : produire, transformer, vendre. Ce qui les rend économiquement assez performants mais, sur le plan sociologique, très indépendants les uns des autres ; chacun a besoin de maintenir son réseau de vente directe et a tendance à considérer que son fromage est le meilleur et/ou le plus proche de la tradition.

La recherche (INRA-LRDE) a travaillé directement avec quelques uns d'entre eux pour dégager des innovations technologiques et organisationnelles. Le but est d'organiser, par paliers progressifs (ce que nous appelons un itinéraire de développement) une petite filière collective, sans adultérer la qualité et la typicité du fromage.
Le caillage s'est révélé le principal point doublement critique (cf ci-dessous III-2) et nous avons sélectionné, avec les spécialistes de microbiologie laitière de l'INRA-Jouy une gamme de levains lactiques donnant des caractéristiques gustatives proches de celles recherchées par les éleveurs (orientation de la recherche technologique par les critères de l'éleveur). La culture et la distribution régulière de ces levains aux éleveurs nécessite une procédure de contrôle de l'activité des bactériophages et de changement de souches. La maîtrise technique suppose une chaîne complète de collaboration entre éleveurs, techniciens, chercheurs de terrain et chercheurs microbiologistes.

L'étape suivante est la sélection, à partir des laits et des fromages de la région, de levains "spécifiques", ceux sélectionnés par les pratiques traditionnelles des éleveurs. Cette innovation technologique doit surtout permettre de rendre les éleveurs plus solidaires et les aider à organiser leur petite filière. Construction d'un projet collectif qui, selon la pratique française des Protections, est un préalable à une demande formelle de AOP (PDO) ou IGP (PGI).

3 Créer un produit gastronomique à partir d'un produit patrimonial

Tous les porcs élevés en Corse de façon extensive sont destinés à la fabrication, par les éleveurs eux-mêmes, de "charcuterie sèche" fermière très appréciée et recherchée.

Quelques jeunes producteurs fermiers se sont regroupés pour produire un "saucisson corse" de qualité supérieure pour le vendre à un prix supérieur (supplément de valeur ajoutée). La recherche les a aidé à faire converger leurs pratiques pour qu'ils élaborent un produit aux caractéristiques assez proches mais leur a aussi proposé le challenge de créer un produit "virtuel", inexistant dans le patrimoine technique existant mais issu de lui, un "saucisson gastronomique". Il s'est agit de créer une niche commerciale en sélectionnant les clients : comme ceux qui viennent acheter à la propriété leur vin, ceux des foires gastronomiques et de travailler avec les "chefs" de la grande cuisine française.
Le produit doit être construit (mettre au point les références et le procès) car il n'existe pas localement d'expérience en matière de report long (plus d e6 mois) des saucissons fermiers. Ce report permet un affinage plus lent et subtil en arômes mais aussi de désaissonner la production.

4 La re-qualification d'un village en haut lieu de l'élevage ; Metsovon

Le développement réussi de ce gros village, isolé, en pleine montagne de la Grèce continentale est un bel exemple, étudié par Goussios, 1993 , d'une conversion réussie de tout un ensemble de produits de la civilisation pastorale valaque. Soutenu par une Fondation très active (et très peu par la recherche), ce village d'éleveurs a basé son économie sur la construction et la valorisation méthodiques de sa réputation de haut lieu de l'élevage. Fromage particulier (qui vient d'obtenir une AOP), couvertures, instruments de pasteurs, objets en bois, vêtements pour les groupes folkloriques, etc. complètent et soutiennent sa transformation en lieu de tourisme qui joue fortement sur les valeurs patrimoniales et les représentations qu'ont les citadins d'une civilisation en voie de disparition.

Ce qui apparaît remarquable c'est la manière dont le processus de conversion a tenu compte des compétences professionnelles des divers métiers et les a orientés vers des objets re-conçus en partant du patrimoine des Valaques. Les objets (bâtons de pasteurs, fromages, couvertures, etc.) ont été modifiées en surface et poids pour tenir compte des contraintes des touristes et des acheteurs. Dans ce cas aussi, la diaspora Valaque a été mobilisée pour constituer dans les bourgs et villes des relais de diffusion et vente des productions du village;

III - CONTRADICTIONS A GERER, RECHERCHES A DEVELOPPER

Sous une forte diversité des situations, on reconnaît une stratégie commune à tous les cas : rechercher et organiser un avantage concurrentiel localisé et durable.
On retiendra de ce qui précède que la typicité d'un produit n'est ni un don de la nature ni un cadeau des pouvoirs publics (reconnaissance, protection). Cette source potentielle de valeur ajoutée supérieure ou même d'une rente est un construit social, une organisation (au sens générique et systémique du mot), qu'il faut actualiser régulièrement pour que l'avantage se maintienne dans un monde qui change.

Pour structurer la présentation des questions dont la recherche devrait se saisir, probablement de façon plus soutenue et engagée, nous les présenterons sous forme de contradictions que les décideurs et acteurs de ces filières (souvent de taille modeste) doivent affronter. On s'apercevra ainsi que ces contradictions de la décision correspondent souvent à des controverses fécondes pour la recherche. [17]

1 Jusqu'où objectiver la typicité d'un produit ?

Disposer d'une méthode analytique qui permettrait de prouver sans aucun doute le caractère unique (à la fois ses liens au lieu d'origine et son procès d'élaboration) d'un produit fini (au stade du commerce) est le rêve des responsables d'une telle filière. Peut-on trouver une molécule ou un ensemble réduit d'analyses permettant d'attester que ce fromage a été fait avec du lait de telle région et selon la technologie héritée ?

De nombreuses recherches récentes montrent qu'on peut fournir des méthodes pour détecter des imitations qui n'utilisent pas l'intégralité du procédé de production et de transformation. On sait, par exemple, discriminer sur des fromages affinés des produits au lait cru de ceux au lait pasteurisé, ceux faits avec des laits d'animaux à forte alimentation herbacée par rapport à des élevages intensifs, des variétés de présure et les souches de levains naturels. On commence à pouvoir établir des relations entre les caractéristiques édaphiques et botaniques d'un terroir et les profils sensoriels de certains fromages (type Gruyère, Comté, cf Grappin & Coulon, 1996).

[17] Les citations non référencées sont issues de divers auteurs du volume collectif édité par Casabianca & Valceschini, 1996

Est ainsi ouvert le grand dossier de la **"traçabilité",** mot et démarche que la crise de la filière viande liée à la "vache folle" ont rendu populair car est ainsi rejointe une exigence moderne et croissante des consommateurs. Traçabilité qui relève en fait des catégories plus générales de l'**administration de la preuve** et de la **mise à l'épreuve.**

Il va sans dire que le développement de telles recherches analytiques est une nécessité mais il me semble nécessaire de s'interroger aussi sur les conséquences à long terme pour les produits patrimoniaux de la généralisation de ce recours aux analyses.
La mise à l'épreuve dite objective est celle qui correspond aux produits industriels, et c'est même pour eux la seule, mais elle n'est pas suffisante pour les produits patrimoniaux. Pour ces derniers cette épreuve objective n'est que défensive (détecter les imitations), leur qualification procède d'une autre logique (cf ci-dessous 4)

2 Jusqu'à quel seuil réduire la variabilité des produits patrimoniaux ?

Par nature, la variabilité des produits patrimoniaux est très forte, non seulement entre producteurs mais, chez un même producteur entre années et souvent aussi entre saisons. Il faut d'abord reconnaître que l'uniformité et la constance ne sauraient être des objectifs ; ce sont ceux des produits industriels. Les consommateurs savent, dans beaucoup de pays, apprécier une certaine diversité entre divers produits présentés et ne considèrent pas comme des défauts leurs formes variables, rugueuses, imparfaites. Les techniques de mise en marché doivent pouvoir valoriser et organiser ces écarts (exemple du vin qui va jusqu'à différencier sur les étiquettes des dénominations, des crus, des producteurs, des années).

Cependant une certaine homogénéité est nécessaire surtout pour ceux des produits typés qui veulent dépasser la clientèle des parents ou des connaisseurs.

Des méthodologies proches dans leur esprit de la méthode HACCP (détection des points critiques) ont été mises au point avec succès pour réduire les pertes, limiter les principaux défauts et introduire des innovations respectant le caractère patrimonial. La recherche doit cependant veiller à bien **distinguer** les points critiques qui relèvent d'une **maîtrise sanitaire et technique** (HACCP classique) et les **"points critiques patrimoniaux"** qui déterminent la typicité du produit. En particulier, la matière première utilisée est-elle substituable (achetée ailleurs) ou non (produite localement) et transformée selon un cahier des charges précis ?

A titre d'exemple, si la maîtrise technique et sanitaire d'un produit de charcuterie sèche commence à l'abattage des porcs, la qualité et le caractère unique du jambon ou saucisson final dépend de la race élevée, des interactions entre son développement (dépôt de tissus) et son alimentation (aliments interdits, aliments obligatoires, aliments neutres) à plusieurs stades, de son âge et de la saison d'abattage, puis de manière de faire la charcuterie proprement dite (adjuvant, température, % des divers tissus, techniques de salage, de sèche, d'affinage, etc.)

Cette démarche d'**explicitation** de ce qui était auparavant des **pratiques tacites** d'un "cahier des charges" est nécessaire pour définir parmi les producteurs et les entreprises celles qui peuvent bénéficier légitimement du droit au patrimoine (dénomination), et est indispensable si le produit patrimonial veut sortir de sa région d'origine. Elle peut déboucher sur une demande de certification (ex AOP, IGP).
Il ne faut pas occulter que, si elle accroît la constance du produit, elle **risque de le normaliser** en favorisant sa conformité à un standard.

3 Quel équilibre trouver entre formes de distribution ?

Initialement ces produits étaient distribués par les réseaux de parents, de concitoyens, de communauté. Dans de telles transactions (monétarisées ou non) la confiance s'établit par connaissance directe entre le producteur-vendeur et le consommateur. Nous sommes en présence d'une **forme domestique de coordination :** ce sont les personnes qui se qualifient mutuellement et la transaction sur le produit est secondaire. Cette forme recouvre encore l'essentiel des transactions de beaucoup de produits patrimoniaux, notamment dans le monde méditerranéen.

L'insertion de produits patrimoniaux dans d'autres formes de distribution pose le problème du **transfert de la réputation.** Quelles épreuves de qualification sont adaptées aux caractéristiques de ces produits dans les univers industriels et marchands ? Au sien du premier la coordination des actions est assurée par l'explication complète des procédures alors que dans le second univers, la coordination se fait par l'articulation entre offre et demande par l'intermédiaire des prix.

L'objectivation totale de la typicité d'un produit n'est pas possible (cf ci-dessus 1). D'autre part la confrontation à l'univers marchand nous conduit à garder à l'esprit que la valeur ajoutée supérieure est d'abord créée par l**a rareté** du produit, assise sur sa réputation et ses qualités patrimoniales.

Si pour les produits patrimoniaux méditerranéens de grande notoriété (Feta, Roquefort, Pecurino romano, Jambon de Parme ou Jabugo, etc...) la confrontation de la filière spécifique au marché est déjà organisée (et évolue), pour les très petites filières et pour les produits fermiers la question stratégique de la confrontation au marché est délicate. En clair, pour beaucoup de producteurs fermiers, leur activité participe pour tout ou partie de l'économie souterraine. Quels avantages peuvent-ils espérer tirer d'une entrée (plus ou moins partielle ? pour certains produits et pas pour d'autres ?) dans l'économie formelle.

Au sein d'un même produit patrimonial, il existe de nombreuses situations où co-existent en fait des formes différentes de sous-filières (producteurs fermiers, petites entreprises locales, entreprises d'envergure nationale). Comment organiser leur co-habitation pour défendre le patrimoine ? Ces sous-filières ont-elles besoin des mêmes épreuves de qualification du produit commun ?

Depuis quelques années, on observe même que les grandes firmes (laitières par ex) développent recherche, infrastructures et produits "nouveaux" pour différencier leur gamme en imitant (voire en plagiant) les produits typés. Comment là aussi organiser la confrontation des épreuves de qualification ?

4 Quelle protection du caractère patrimonial adopter ?

La mise en place, ou la consolidation, d'un système de certification (label, appellation, indication de provenance, ..) est une démarche qui permet une meilleure mise en marché d'un produit typé.
Les règlements européens 92/2081 & 2082 (qui ont commencé à entrer réellement en application en juin 1996) définissent, pour l'ensemble de l'espace de l'Union, de tels outils (AOP, IGP, STG).
La manière dont les divers pays s'approprient concrètement ces systèmes de protection, fait l'objet d'un programme de recherches en cours (FAIR 95/306).

Nous rappellerons seulement ici trois choses

- tout système de qualité est en fait un système de discrimination (il est donc attaqué par ceux qui pensent que les AOP, etc organisent une distorsion de concurrence, voire prolongent en survie artificielle des systèmes de production dépassés),
- la **qualification** d'un produit par ces outils procède toujours par une **double épreuve** ; la première reste au niveau local (compromis entre les acteurs locaux, entre tradition stricte et innovation) ; la seconde est une confrontation de cet accord local avec un autre univers d'exigence (le marché, par exemple) dans le but de faire reconnaître et d'étendre la portée de l'accord (transport hors de la région). Le maintien de cette double épreuve, et donc de la première, apparaît impératif pour éviter la dérive qui consiste à privilégier la dimension historique (de plus en plus objectivable, cf 1) au détriment des savoir-faire ; "la tradition peut même devenir un simple artefact autorisant la reconstruction voire la falsification".
- cette procédure suppose que
  - les divers acteurs concernés mettent en place une **structure de coopération** pour définir et orienter l'action commune,
  - des dispositifs et des procédures de **contrôle** et de **certification** sont mis en place (certains en auto-contrôle individuel, d'autres en commissions d'auto-contrôle professionnel collectif, enfin des organismes des autorités de tutelle). Chaque pays garde la possibilité d'organiser des formes institutionnelles particulières.

Tout cela revient à considérer que dans cette situation la coordination des acteurs (divers métiers concernés par une protection) est de nature **civique** ; ils ont à construire et à gérer **"un bien commun"** qui comprend des êtres humains, avec leurs compétences et des "vivants non humains" (races, souches bactériennes, flore, etc.) dont on peut penser que leur présence en cet état sur le territoire est partiellement liée à l'activité des hommes.

5 Construire ou Signaler la qualité ?

La recherche a bien souvent des difficultés à dépasser la culture de son environnement politique et philosophique pour aborder de façon dialectique les deux grandes conceptions de la qualité en Agro-alimentaire qui s'affrontent au sein de l'Union européenne et au delà.

- Les pays Anlo-saxons et libéraux défendent la régulation par le seul marché et donc une exigence de signaler le plus précisément possible les paramètres de la qualité d'un produit. Cette démarche, dominante actuellement, privilégie les dimensions Santé, Sécurité et Service de la qualité. Les missions; le poids et l'organisation du système des services publics de médiation (entre producteurs, entreprises et consommateurs) sont certainement très différents d'un pays à l'autre pour administrer les signes de qualité.
- Pour les pays du Sud de l'Europe et la France (cas particulier de pays mixte très administré) la qualité d'un produit agro-alimentaire s'apprécie aussi fortement par la Satisfaction procurée (valeur hédonique). Cette vision mixte de la consommation ("l'homme se nourrit certes d'aliments mais aussi de valeurs symboliques") conduit à appréhender la qualité comme une construction sociale voire sociétale. Dans ce cas les services publics doivent intégrer l'aide à l'organisation et à la coordination des acteurs. Cela étant dit, entre les pays méditerranéens, les différences de système de médiation pour soutenir les produits typés, sont impressionnantes

Une véritable confrontation de ces différences d'approche et une meilleure compréhension des diverses organisations concrètes des filières de produits typés et des services de qualification restent un champ largement ouvert à la recherche.

Une telle approche permettrait aussi de fournir des résultats plus probants concernant les interactions réciproques entre développement local et protection des produits typés.

De façon générale on constate que la recherche se déplace de la "qualité des produits" vers l'étude des "processus de qualification" de ces produits qui consiste "à attacher des attributs à des objets, à des personnes et à l'environnement dans lequel ils sont situés". "Se dessine ainsi un objet commun aux sciences sociales, sciences techniques et aux juristes autour de la caractérisation des objets pertinents pour l'action, des propriétés des objets juridiques émergents (AOP, etc.) et de la réintroduction des êtres présents mais non représentés (consommateurs, collectifs, etc.) "

Environmental management

The nature conservation value of low-intensity farming systems

Mike Pienkowski
European Forum on Nature Conservation and Pastoralism

The European Forum on Nature Conservation and Pastoralism

Europe's natural and cultural heritage is enriched by the wide variety of regional farming systems which work in harmony with local environmental conditions. However, many of these farming systems are currently under threat. The aims of the European Forum on Nature Conservation and Pastoralism are therefore:

- To increase understanding that certain European farming systems are of high nature conservation and cultural value.
- To ensure the availability, dissemination and exchange of supporting information, combining research and practical expertise.
- To bring together ecologists, nature conservation managers, farmers and policy makers to consider problems faced by these systems and potential solutions.
- To develop and promote policy options which ensure the ecological maintenance and development of these farming systems and cultural landscapes.

The Forum is a pan-European non-profit organisation. It is a network to exchange information, identify conclusions, and inform policy development. To achieve its aims, the Forum holds conferences every two years, organises workshops and seminars, and produces two issues of the newsletter *La Cañada* per year. It also conducts research into the ecological relationships on high-nature-conservation-value farmland and into the development of appropriate policies for such areas.

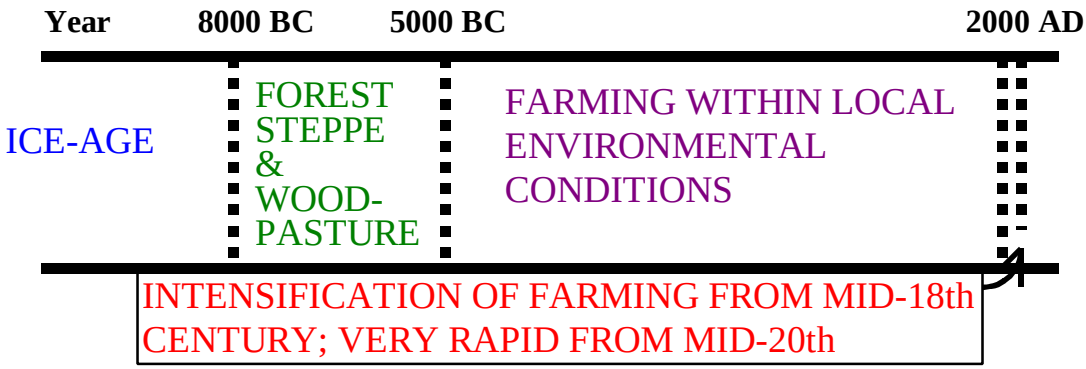
One of the Forum's means of making its work available to policy-makers is the series of seminars held in Brussels. These involve both NGO and governmental/Commission personnel, and are particularly noted for bringing together people working at European policy levels and those farming and managing land for conservation on the ground.

The research work that the Forum has undertaken to underpin this work has included:

- the initial identification and classification of low-intensity farming systems in nine European countries (Beaufoy *et al.* 1994; Bignal 1998), and the production of popular posters (Bignal *et al.* 1994)
- detailed ecological studies on the ways in which certain species depend on farming operations (*e.g.* Bignal & Curtis 1989; Bignal & McCracken 1993, 1996; Bignal *et al.* 1997)
- analyses of the interactions between natural systems, farming practice and agricultural policy (*e.g.* Beaufoy 1997, 1998; Bignal *et al.* 1996; Galbraith & Pienkowski 1990; Goss *et al.* 1997; Mitchell 1996; Mitchell *et al.* 1997; Pain & Pienkowski 1996; Pienkowski & Bignal 1993, Pienkowski *et al.* 1995; Tubbs 1997).

The ecological context of European agriculture

If we think of them at all, we tend to consider sustainable land-use and the conservation of biodiversity as relating to tropical rainforests or the plains of Africa, rather than to most of Europe. However - until relatively recently - Europe was a region in which people were a closely integrated part of the sustainable system. Developments had taken place gradually over long periods so that human use and wildlife had developed alongside each other.



The long association of European wildlife and pastoral or mixed agriculture is often overlooked. Ten thousand years ago, forest began replacing the Ice Age landscape.

After only three thousand years (around 5000 BC) the forests were already being cleared by Neolithic people. It is interesting to note that this agricultural landscape evolved over a period twice as long as that occupied by the post-glacial forests. Much of Europe is essentially a managed landscape - and its grasslands, heaths, moorlands and bogs together with the present day associated wildlife are partly the result of farming systems. From the Dark Ages - and probably much earlier - through to the mid 18th century, a highly developed and integrated regional livestock farming system evolved, with distinct local breeds of sheep, pigs, cattle and horses (see also Tubbs 1997).

How do we know that these systems were environmentally sustainable? There are many definitions of environmental sustainability. However, some of these systems have kept going, with developments, for 7000 years, supporting over 300 generations of people without significant external inputs. Such systems also supported, at least until the last few years, rich populations of wildlife. If anything I plan lasts a fraction of that time, I would dare to claim - if I were still around - that it was sustainable.

Human communities modified the landscape into a wide variety of farming systems, some of which survive (Beaufoy *et al.* 1994; Bignal 1998; Bignal *et al.* 1994). The interaction of grazing and climate considerably modified the plant communities of heathland, grassland, mountain and steppe which sustained the pastoralism, contributing to the survival and prosperity of local communities. Farm systems varied in response to local and regional conditions, but their common characteristics were that they were low-input, low-output, usually labour-intensive, and economically and ecologically sustainable. These farm systems have enriched Europe's open-ground flora and fauna by enhancing diversity of habitat, such as around settlements, whilst maintaining the large-scale open habitats. The pastoral exploitation of mountain regions could be accomplished only by transhumance, leading to the development of long-distance drovers' roads which came to possess peculiar floras arising from seasonally extremely intensive grazing. Another kind of drovers' road, that led from regions of production to large city markets, such as those from Wales and northern Britain to London, were presumably equally rich, but these are almost completely lost to us now. Those areas of environmentally sustainable farming that survive tend to have high nature value.

The essential characteristics of high-biodiversity rural land-uses are that external energy inputs are low. Inevitably, as a result, outputs per unit area are also low. This does not mean that efficiency is low; generally, it is rather high.

In the second half of the 20th century, there has been a new kind of disruption in the European ecosystem which has involved a massive decline in biodiversity. Wildlife had been able to adjust and exploit the earlier agricultural situations because modifications to the environment had been gradual. However, in the last century and particularly in recent decades, this has changed. Modern machinery and agro-chemicals allow rapid changes to the farmed environment over huge areas, to impose a high-input, standard, factory landscape over the previous characteristic regional features.

There are many costs to society of these changes, but the range of these impacts is often overlooked. One of the major costs is to wildlife. This is important in itself, but also provides some measure of the degree of sustainability of our actions.

Some of the best monitoring data are for birds (Pain & Pienkowski 1996; Tucker & Heath 1994). For example, skylark *Alauda arvensis* populations are declining throughout the western half of Europe. The eastern populations are expected to follow if we continue to "aid" eastern European farming in the ways we seem to be doing. Other species have already gone. The corncrake *Crex crex* was a common feature of farmland throughout Europe until earlier this century, as is well attested in popular stories and poetry. It is declining throughout Europe. In the British Isles, its progressive restriction to a few Hebridean islands and parts of Ireland match well the introduction of mechanisation and tidy fields.

The intensification of agriculture has had other major impacts on both the human population and wildlife. The quantities of fertilisers used have increased markedly in recent decades. Much of this finds its way into the water supply. In 26 countries of Europe, the European Environment Agency has reported that groundwater pollution by nitrates, largely from agriculture, is a risk to human health problem. There have been similar increases in pesticide usage. The problem is even more widespread than for nitrates (Stanners & Bourdeau 1995).

I will not give examples of all the hidden costs to Society of the intensification of agriculture, especially as many were given in the Forum's seminars (Mitchell 1996; Goss *et al*. 1998; Hindmarch *et al*. 1998). However, major costs have been identified in a range of aspects including:

- wildlife and habitats
- regionally adapted livestock breeds and mixtures
- employment & rural communities
- knowledge
- cultural identity and quality of life
- water supplies
- animal welfare and human health
- financial cost

Much of this intensification is driven by the structure of agricultural policies (see Goss *et al.* 1997; Goss *et al*. 1998; Beaufoy 1998). There are two global processes, which will impact this – and these changes could be very positive or negative for the environment. The World Trade Organisation negotiations will mean that payments for farming will soon be possible only for aspects, which do not distort the market. One of the few elements for which this is likely to be possible is for payments for the public good of nature conservation, soundly based on ecological work. Farming and nature conservation interests will need to develop even further their co-operation.

This links to the second global process. People throughout the world are increasingly concerned with a sustainable life-style and the conservation of biodiversity. For some, this relates to the quality of life. For others - whose home islands are likely to be drowned as a consequence of pollution and climate change - it is a matter of life itself. Politicians have taken these points on board, at least to the extent of reaching various treaties, such as those at Rio in 1992. The fulfilment of these commitments has been variable, but there are some signs that there is an increasing seriousness being attached to them.

The essence of the Convention on Biological Diversity is that wildlife cannot be conserved just tucked away in enclaves but its conservation depends on this being integrated in other land-uses (or sectors of human activity), whether these be agriculture, fisheries, transport, industry or whatever. This is intimately related to undertaking work in an environmentally sustainable way.

Article 6 of the Convention is particularly important in stressing the need to incorporate conservation into other policies and practices: each Contracting Party has committed itself [amongst other things] to:

Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

Turning to that formerly highly environmentally sustainable activity, farming, we can ask:

- Do more sustainable farming systems still exist?
- What policies do we need to maintain and restore environmentally sustainable farming systems?
- What practices on the ground do we need to maintain and restore these high-nature-value systems?

These three questions represent the focus of the Forum's work.

The European Forum on Nature Conservation and Pastoralism identified some years ago the need for information on where such farming systems of high nature value still exist (Beaufoy *et al.* 1994; Bignal 1998; Bignal *et al.* 1994). A collaborative study in 9 countries identified, classified and mapped the areas in which high-nature-value farming still occurs fairly commonly. Not surprisingly, there is a good general match between the areas in which high-nature-value farming remains and those where the water supply is least contaminated (see above).

Unfortunately, these high-nature-value areas are still being lost. And the many in central and eastern Europe are coming under increasing pressure to match the policies of western Europe.
Both conservationists and farming policy have tended to adopt the policy of single use. This is the very opposite of the concepts of sustainable use, adopted now by the EU and most countries around the world in the Convention on Biological Diversity.

Research priorities

The purpose of this Workshop is to discuss future research needs. This again is a main function of the Forum. My final section outlines some of the areas in which the Forum plans to develop its collaborative research work.

European low-intensity farming systems: a phased programme of research to produce a pan-European typology to inform policy and practice

The work which led to the Forum's series of publications on *The Nature of Farming* (Beaufoy *et al.* 1994; Bignal 1998; Bignal *et al.* 1994), and which achieved the first description and preliminary classification of Europe's low-intensity farming systems, was conducted 5 years ago. This has proved invaluable in increasing the recognition of the value of these systems and achieving a high degree of agreement in principle that actions are needed to maintain them. However, further development of this work is needed, for several reasons:

1. Little positive action on the ground has yet been achieved, partly because more information is needed to link policy, farming systems and nature value. Classification is needed to inform relevant policy initiatives and to be sure that the necessary information is to hand.
2. The Commission's document *Agenda 2000* explicitly states that agri-environmental instruments will be given greater importance in future. It even suggests that the LFA support systems could be transformed into an instrument to maintain and promote low-input farming.
3. However, without some basic typology of farming systems (which links what the system does with what biodiversity is associated with it) there is a real danger that new proposals could, at the best, be of little value – and, at the worst, be counter-productive.
4. There is a great urgency to start work so that systems can be defined, understood, and targeted as rural development policies are gradually developed, and as agricultural policy changes. Agri-environmental aspects will be linked with forestry, early retirement, Less Favoured Areas, etc. (It is proposed to combine all 7 existing Regulations into one piece of legislation.) Therefore, the agricultural–ecological context must be understood if measures are to be well informed and effective.
5. An initial assessment of the environmental implications for European rural areas of the potential shift from agricultural to regional support, as proposed in Agenda 2000

Historically, payments to rural communities have been made dominantly through agricultural subsidies and, more recently, also though regional policies. A consequence of this is that environmental policies

have tended to seek impact through these other policies rather than directly. There is some sense in this, in that many traditional agricultural practices have been supportive of nature conservation value. However, recent Forum studies (Goss *et al.* 1997; Beaufoy 1997, 1998) have demonstrated that this is not necessarily a cost-effective use of public money intended for environmental benefit. As a general principle (and as shown by experience), effective delivery is normally highest when linked as directly as possible to clear objectives. The need for clear environmental objectives is emphasised also by the requirements of the Convention on Biological Diversity and those of the World Trade Organisation (see Bignal *et al.* 1996; Goss *et al.* 1998).

The issue is essentially that there is not an environmental policy, as such (although the biodiversity strategy may develop this). Environment is an issue in agricultural policy and, in the future, Agenda 2000 proposes that it will be combined with policies on forestry, early retirement, Less Favoured Areas, etc. Also, there is clearly a shift from agriculture *per se* to regional aid. There seems to be an assumption that an "integrated rural development policy" will answer all the prayers. Experience in the Western Isles of Scotland (which have lost high-nature-value/ high-productivity crofting agriculture during the period of such a policy) and in Greece is that this is not necessarily the case.

The work of the Forum has also demonstrated the need for policies to be tailored to the environmental potential of different regions (see Goss *et al*. 1998; Poole *et al.* 1998; Tubbs 1997; Hindmarch *et al.* 1998). A strength of the Forum is in keeping up-to-date with policies and issues – this can be done only through research into these issues. This study will seek to compare, in the context of the main ecological regions of the EU, the aspects of current environmental, agricultural and rural policies which are relevant to nature conservation.

Exploring European livestock farmers' reactions to the Agenda 2000 proposals and implications for the environment

In its work on examining options for better integration of environmental concerns into the EU livestock sectors, the Forum has recruited panels of farmers in sample areas of the 6 major ecological regions of the EU. These farmers were used in the DG XI commissioned study to obtain reactions to potential policy changes in agriculture (see Goss *et al.*1997; Goss *et al*. 1998; Poole *et al.* 1998). DG VI found this very useful. The groups provide the opportunity of establishing a permanent consulting network of working livestock farmers to the proposals in Agenda 2000 and alternative ideas. Policies have an impact on the ground only if they are attractive enough for farmers (or other target groups) to adopt. Such pilot examinations are, therefore, of great value in avoiding the establishment of expensive administrative machinery which might be little used or even have negative effects.

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Conservation de la nature integree dans les systemes d'exploitation agricole : L'experience et l'approche de la LPO

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Organisation non gouvernementale, de dimension nationale, dont l'objet est la conservation des sites naturels et des populations d'oiseaux dans leur environnement (naturel, culturel et social), la LPO intervient localement dans l'espace rural et les systèmes d'exploitation agricole en vue du maintien ou de la restauration du statut de conservation d'espèces ou d'habitats naturels remarquables ou menacés.

Il s'agit pour elle **d'expérimenter des solutions** pour élaborer des techniques transposables en termes de références à d'autres partenaires de la gestion de l'espace rural. Ces actions, dont l'objectif premier est toujours la conservation de la nature, contribuent dans des domaines variés à la valorisation durable de la nature, des ressources et des territoires difficiles, marginaux ou délaissés.

Tous les outils disponibles sont alors utilisés dans le domaine de la maîtrise foncière et d'usages, des lois, règlements et pratiques. Les méthodes et les choix des outils sont adaptés en fonction des stratégies de conservation, du contexte local, des partenaires jugés indispensables à la réussite de ces actions.

L'action de la LPO dans ce domaine a longtemps été essentiellement d'inciter l'Etat à créer progressivement des outils assurant les conditions de la survie de l'avifaune sauvage :

- réglementation cynégétique adaptée aux menaces pesant sur les espèces en déclin (premier arrêté de protection en 1962) ;
- création des premières réserves de chasse maritime et fluviale en 1972 ;
- création du Conservatoire du Littoral en 1975 et vote de la loi sur la protection de la nature par le Parlement en 1976 (nouvel élan à la création des réserves naturelles).

A partir des années 1980, la LPO a éprouvé le besoin de jouer le rôle de conservatoire d'espaces naturels après avoir fait le constat que nombre d'oiseaux et d'habitats menacés n'étaient effectivement pas protégés par des mesures réglementaires, de maîtrise foncière ou d'usage.

C'est ainsi qu'elle a entrepris des actions, certes ponctuelles, mais démonstratives et correspondant à des enjeux nationaux et européens de conservation de la nature (espèces mondialement menacées, liste rouge, Annexe Directive Oiseaux, ZPS, RAMSAR...) (18 000 ha en 1998).

Mais là où la LPO est novatrice, c'est moins dans l'action foncière que dans la politique de gestion de ces espaces à vocation agricole. Elle a fortement engagé les agriculteurs à devenir des acteurs de la gestion de son patrimoine naturel et à revaloriser leur travail dans ces zones difficiles.

Des concepts nouveaux à la fin des années 80 -réduction des loyers (baux agricoles), des charges fiscales sur le foncier, primes compensatrices au regard des pratiques favorables au maintien des biotopes et des espèces (fauche retardée, maintien d'inondation, chargement animal,...) - sont devenus réalités par l'action conjuguée des naturalistes et des agriculteurs. Ces quelques mesures ont considérablement changé l'économie des exploitations agricoles (essentiellement d'élevage) en zones d'intérêt écologique.

Nombre d'espèces sont liées aux espaces agricoles en dehors des espaces protégés. La LPO s'engage alors, en étroite relation avec les acteurs ruraux, dans des programmes européens et nationaux pour développer une agriculture respectueuse de l'environnement ou restaurer des milieux dégradés.

L'utilisation des systèmes d'exploitation agricole existants dans la conservation des biotopes et des espèces d'oiseaux est illustrée par quatre expériences :

1 les Basses Vallées Angevines (département du Maine et Loire), vastes étendues inondables de 4 500 ha, situées au nord et au sud immédiat d'Angers constituées de prairies inondables exploitées par la fauche

et le pâturage tardif ; le Râle des genêts espèce mondialement menacée y présente des effectifs importants (40 % de la population française) ;
2. les marais de l'Ouest, y compris le Marais Poitevin (département de la Vendée), avec la revalorisation de l'élevage dans les prairies naturelles humides dans le contexte des systèmes d'aide aux cultures, à l'intensification et au drainage (PAC et lois d'orientation agricole) ;
3. les jachères et pelouses calcaires de Montreuil-Bellay ; camp militaire abandonné (département du Maine et Loire) avec la réintroduction d'un parcours ovin pour la restauration d'un biotope rare et sensible pour l'Outarde canepetière ;
4. les marais périurbains de la ville de Rochefort (département de la Charente-Maritime) avec la réinstallation d'agriculteurs en vue de la restauration de prairies naturelles en déprise agricole et abandonnées par mutation d'activités (fermeture d'une base aéronavale et urbanisation).

A partir de 1991, elle contribue à l'application expérimentale (dans 5 régions) en France du programme agri-environnemental, issu du règlement 2078/92 de l'Union Européenne qu'accompagne la réforme et la Politique Agricole Commune. Il comprend 7 mesures dont les Opérations Locales Agriculture-Environnement.

Ce programme étendu, créé en 1993, remporte un franc succès. Les mesures agri-environnementales concernent en France 15 000 à 20 000 agriculteurs. Il repose sur le volontariat des agriculteurs, un partenariat, solide et négocié entre le monde de l'environnement et le monde agricole qui n'avait jamais eu lieu jusqu'alors et sur la notion de territoire ou de région naturelle à forte problématique environnementale.

Avec 120 millions de F/an, les mesures agri-environnmentales (MAE) pèsent un coût plutôt faible au regard des bénéfices qu'elles apportent pour la pérennité de l'agriculture en zone difficile, le maintien des communautés rurales et la préservation de l'environnement.

La LPO est membre du Comité National Agriculture Environnement et de plusieurs comités régionaux (CRAE). Elle édite une lettre d'information Agri-Environnement Infos (tirage 2 000 exemplaires).
L'application des mesures agri-environnementales a permis de montrer qu'il est possible de concilier les impératifs économiques de l'agriculture et les exigences sociales de protection de l'environnement (contrat libre et négocié, incitation et engagement répondant à un objectif environnemental).

C'est également la première fois que des exploitants agricoles qui poursuivent des activités compatibles avec la sauvegarde de l'environnement sont récompensés par des aides publiques. Les OLAE (ESA scheme) ont contribué à atteindre deux objectifs :

1 des objectifs socio-économiques :

- lutte contre la déprise
- maintien de l'agriculture qui entretient des paysages ruraux ;
- contribution significative du revenu agricole des exploitants et des territoires les plus défavorisés

2 des objectifs écologiques :

- préservation des sites et paysages naturels de nombreuses régions françaises ,
- sauvegarde d'espèces animales et végétales menacées ;
- protection des ressources naturelles (sol, eau...)

Les mesures agri-environnementales constituent pour la France une expérience et une réponse à la future PAC qui devra concilier production agricole, avenir social du monde rural et protection de l'environnement.

Toutefois, les nouvelles mesures, pas plus que le simple renouvellement des opérations telles qu'elles sont prévues au budget de l'agriculture (1998) ne peuvent se mettre en place faute de moyens financiers (augmentation nécessaire du budget des OLAE de l'ordre de 120 MF à 200 MF).

Une des conséquences sur le monde agricole de cette situation est de redonner vigueur aux politiques d'irrigation et de transformation des milieux naturels pour produire des céréales plus rémunératrices. Ces réflexes, légitimes du plan économique mais catastrophiques au plan écologique (perte d'habitats naturels, disparition d'espèces menacées, aggravation de la pollution de l'eau, ...) sont essentiellement liés aux systèmes de primes et des mesures budgétaires extrêmement défavorables aux éleveurs.

En définitive, ce sont eux qui influencent durablement les orientations des exploitations et la perte d'identité des territoires dans leur ensemble.

De nouvelles orientations de la Politique Agricole Commune vers une " Politique rurale commune " avec des bases communes de prise en compte des critères environnementaux (biotopes, paysages, eau, biodiversité, qualité, ...) plus équilibré en faveur des systèmes d'élevage sont plus que jamais nécessaires.

fréquentation et d'usages des marais communaux du marais Poitevin (85) :

6

nes	Surface du communal (ha)	Surface fauchée (ha)	Chargement instantané	Bovins Têtes	Chevaux Têtes	Utilisat
ît s/Mer	87	40	1.21	31	16	3
	294.22	0	1.35	473	5	19
	245.07	0	1.58	444	48	21
is	73	0	1.07	108	2	8
Reigniers	232.52	0	1.33	356	27	27
	106	0	1.40	173	14	12
é s/Velluire	249	0	1.55	422	20	26
uil	67	0	1.60	137	1	12
ha fauchés		40				
tes				**2 154**	**133**	
imaux				**2 285**		
ilisateurs						**128**
rface	**1 354**					

Parc Interregional du Marais Poitevin, D. NAUDON, 1998)

tiques de la fréquentation et des usages pour les équidés :

90 - 1991 - 1992

		90		**91**		**92**
e	**Surface**	**Nbre de têtes**	**Utilisateurs**	**Nbre de têtes**	**Utilisateurs**	**Nbre d**
	299 ha	12	3	8	3	4
	245 ha	32	9	45	11	32
	73 ha	2	1	3	1	2
ils Reigniers	232 ha	12	7	37	9	43
	106 ha	19	7	22	8	14
sur Velluire	249 ha	19	18	20	20	43
l	67 ha	5	2	2	1	7
tes		**101**		**146**		**145**
ilisateurs			**47**		**53**	
animaux/utilisateurs		**2.1**		**2.7**		**3.1**
face	**1 354**					

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ı des races équines

	Poitevin et apparentés	**Cob**	**Anglo-arabe Trotteur français et croisements ½ sang**	**Poney si et double**
	4	-	-	-
	-	-	6	26
	-	2	-	-
ils Reigniers	1	-	14	28
	4	3	6	1
ur Velluire	2	3	38	-
	2	2	3	-
	13	**10**	**67**	**55**

Parc Interregional du Marais Poitevin, D. NAUDON, 1998)

Cultural landscapes - regional identities and sustainable husbandry in highland ecosystems

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Some researchers are of the opinion that the traditional ways of life and animal husbandry in the mountainous regions in Austria are at end. As a consequence, furthermore, our traditional cultural landscapes are endangered due to the new, lower product prices. In Austria, compensatory income has reached a level of 70 % of total income. To verify the situation, seven typical regions were chosen for a field study. Two of these seven regions were studied over the last two years to show the operational importance of grassland and pastures (St. Veit and Rauris, Schneeberg).

The farms in question were chosen by local authorities, i.e. the agricultural chambers, the farmers union and local informants.

Results of a study in the region of St. Veit and Rauris in the federal county of Salzburg

Their sizes are between 5 and 130 ha, including forests and the high mountain pastures. The grasslands - to be cut one time or two times or to be pastured - are between 5 and 31 ha with an average of 14 ha. Most of the farmers are members of a high mountain pasture co-operative.

Stocking rates are between 0.86 and 1.9 livestock units/ha are kept, not taking into account high mountain pastures.

The typical farm is a grassland farm with "Pinzgau" dairy cattle bred on the farm. In the past they were occasionally crossed with Friesians. The second important breed beside the Pinzgauer Rind is the Red Spotted Highland. Dairy cattle is no longer turned out to high altitude pastures during summer, as today extremely few high maintain pastures are managed permanently. Only young cattle are still grazed, though without regular care, even if losses have to be accepted. The bull-calves are sold when their weight is about 50 to 100 kilograms. The current subsidy-system gives incentives to dairy cattle grazing, and high-pasture milk is excluded from quotas. Nevertheless, this way of life has a high personal cost. Many farmers even cannot afford regular maintenance. A strikingly large number still have heirs.

In areas where the transport of the milk has been difficult over a longer period, which has resulted in low delivery quotas, pedigree cattle are common. Before Austria's entry into the EU, freight rates were fully taken in charge by the dairies, whereas today distant farms are discriminated.

In the areas studied there are mainly part-time farmers with additional income through a second profession or farm holidays. Although there is tourism, the distance to the population centres is too great for direct marketing, but the dairy products like butter and cheese are sold to the farm holiday guests. Meat is sold to the local restaurants though new regulations impede slaughtering on the farm. Direct selling brings higher benefits if working time is not taken into account.

There are two reasons why most of the farms are cultivated organically. First of all the conversion from conventional to organic farming meant no great difference because few working materials like fertilisers used to be bought in addition. On the other hand government subsidies for organic farming are attractive in Austria. (So Austria has the highest rate of organic farmers in the EU and - next to France - even the highest number of organic farmers in the EU!). Please note that in Austria every organic farm is regularly checked by officially certified associations. These associations have different aims and standards.

Although about thirty years ago, many farms in the region of the "Hohen Tauern" were specialised in goat breeding (spotted goats, the "Tauernschecken"), today a very restricted number are left. As this old goat breed has a small genetic base, it is seriously in danger of extinction. Abrasion of the

animal's hooves is vital for their well-being. This is why they depend on rocky pastures which are usually found in the highest parts of the mountains. These high altitude meadows have been abandoned to hunters for about twenty years which has resulted in an invasion of scrub. This has adversely affected conditions for the ibex and made hunting difficult as well. The ibex are now utilising the lower pastures. Hunters now want the meadows in the highest regions to be well cared for again. This example shows a balance of interests which may be found between different groups of land users. Some farmers still are authorised to graze their cattle in neighbouring forests. This has contrasting effects: on the one hand, trees may be damaged, on the other hand the grazing has resulted in a specific plant community developing. It is of great importance to keep grass on the steepest and highest meadows short to prevent soil erosion, because if snow freezes to long grass it risks to carry the soil along when sliding downwards.

Austrian farmers are said to be over-mechanised. This assertion could not be confirmed for the farms investigated. The machinery comprised a large share of old but well maintained vehicles and tools. There is specialised machinery with great cross-country mobility and low soil pressure which is essential for sustainable farming. As these machines are expensive because of their low number, they are often used in common although they are not common property.

In St. Veit and Rauris used to be rotation of arable and grassland up to the early sixties. Since the mid-sixties grassland largely prevailed as - due to obsolete machinery and costly production methods - working the fields became more expensive than buying feed. Naturally, this phenomenon first started in the very exposed areas, but gradually grain was abandoned altogether in high altitudes. The grasslands are mown two times a year; they are fertilised almost exclusively with solid and liquid organic manure. In some cases liquid manure may engender increased growth of sorrel (*Rumex obtusifolia*) which can prove especially problematic under organic farming conditions as herbicides are not allowed. For economic reasons farmers often use sawdust for bedding, which stimulates the growth of graminaceous plants.

Results of a study in the region of Schneeberg in the federal county of Lower Austria

In the past a native race, the so-called "Murboden-Rasse", was common. Due to epidemics (tuberculosis, brucellosis) a slow change towards the Red Spotted Highland took place. Whereas some ten years ago the Murboden-Rasse could still be found in the region, today it has vanished.

Some 15 years ago 80 dairy farms were counted in the municipality of Puchberg. Today there are 45. Before selling their dairy cattle, farmers often keep suckler cows for some time.

The number of the traditionally held oxen - 40 years ago they were more important than dairy cattle - has dramatically dropped as a consequence of meat price cuts. A new programme introduced by the farmers themselves is to guarantee that their oxen have grazed at least two summers on high mountain pastures and thus get a higher price for higher meat quality.

The stabling of cattle during bad weather is becoming less common, as the change from the warm and wet atmosphere in the stables to the cooler atmosphere outside increases the frequency of pneumonia. The animals do not suffer when they stay outside in cold weather.

Steep and out-of-the-way meadows are forested. Others are mown to serve as ski-runs; levellings are noticeable and the effects of artificial snow is contested.

Thirty years ago, arable crops were common in 700 m altitude. Today they are restricted to the valleys. Until 20 years ago artificial fertiliser was regularly applied to fields and meadows.

Due to a less favourable economic situation compared to Rauris and St. Veit few farmers have heirs.

Hay market

The ÖKL initiated and promoted a hay exchange in the Wienerwald-area near to Vienna. These small meadows excel through their high biodiversity, which is endangered by social fallowing. Orchids and other valuable plants depend on regular mowing. This professionally organised hay exchange co-ordinates supply and demand. The customers - mainly the numerous riding stables in the outskirts of Vienna - can choose their preferred hay (mown early or late or rich with herbs f. ex.). A new trademark, the "Wienerwald Heu" has been established. A linked feed analysis laboratory is responsible for quality controls. A welcome side-effect is to impede long-distance hay importation from the bordering Slovakia.

School-milk

Dairies so far neglected the field of school-milk. This is why throughout Austria dairy farmers commonly invest in the machinery they need to pasteurise their milk according to regulations. Some co-operatives produce yoghurt and other products. They stress their valuable part in maintaining the traditional landscape and sort of offer it together with their products.

Conclusion

As a final conclusion I would like to quote Lord Sewell, Minister of Agriculture of Scotland, who recently put it this way: "But I do want a countryside where people earn a living." This statement is equally valid for Austria.

The environmental role of traditional farming systems in the Basque Country

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1.- INTRODUCTION

The Basque Country is a small region of 7,300 Km^2 and a population of 2.2 million people located in the North of Spain, and thus a high population density (300 people/km^2). Moreover, and due to the abrupt orography (from 0 to 1,500 m altitude), the inhabitants are mainly concentrated at the valleys. In fact, 36% of the total surface is classified as an Objective 5b area (2,657.7 km^2) and protected areas are nowadays 11.6% (in a medium term it is planned that these will increase to 14.6%). The climate can be described as Atlantic: warm (monthly average temperatures from 3 to 22ºC) and wet (from 800 to 1,500 mm of rain/year).

The unit of exploitation is the *baserri* or *caserio* (farm), which has subsisted by a process of *mayorazgo* (primogeniture). The farm are small, most of them from 5 to 30 ha, subdivided into separate small parcels, giving the landscape a typical impression of a chessboard. Pluriactivity is also another main feature of this entity, being usually a mixture of livestock (normally of several species and aptitudes), agriculture, and even work in industry or services.

As for livestock, the species that are kept are sheep (311,000 ewes in 4,800 flocks), dairy cattle (82,500 cows older than 2 years), beef cattle (57,000 cows older than 2 years), goats (16,500) and horses (15,000), which, except dairy cattle that are managed in specialized enterprises, are usually reared on mixed farms. From the data collected by means of a survey to a sample of shepherds, it was observed the presence of beef cattle in 62% of the farms; dairy cattle in 17%; meat horses in 25% and goats in 19%.

If we take into account that the management of dairy cattle is quite standard and does not use much natural resources, goats and meat horses do not represent a significant number, this work will be focused on the most important mixed system from the point of view of the use of natural resources: dairy sheep-beef cattle.

2.- DAIRY SHEEP-BEEF CATTLE SYSTEM

The main characteristic of this traditional mixed system, determined by the existing conditions, is that during great part of the year (summer and part of spring and autumn) it involves almost completely extensive conditions.

2.1.- Animal basis

It consists in the breeding of a local dairy race, the *Latxa* ewe. The milk it provides is the base for the elaboration of the *Idiazabal* cheese, a high-quality and well-known product nowadays controlled by the corresponding "Denomination of Origin" (*Appellation d'Origine Controllé*). From the total population of 311,000 ewes, 21% are implicated in the existing Breeders' Associations. Although they only belong to 5% of the flocks, these are the most "professional" and biggest ones (335 ewes/flock), providing most of the information available. The rest constitute very small flocks (65 ewes/flock). From a representative sample of those associated ones, 62% also have beef cattle, meaning 39% of the total GBU of the farm. They are usually local breeds, somehow rustic, with different percentages of absorption with more specialised ones such as Limousine or improved Pirenaica.

2.2.- Productive schedule

As for both species two periods can clearly be noticed: the stay at the valley and the movement to the mountain pastures (transhumance).

Sheep remain at the farm from November-December to June-July, taking place during this period lambings in autumn-winter and lactation, or milking period, from winter-spring to early summer. Later, animals will graze at the communal pastures until the arrival of the following winter (from July to November), staying milked ewes for about 122+-24 days, and dry ewes 184+-53 days. During this period ewes are dry and matings and pregnancy happen.

As for cattle, calvings are concentrated mainly from February to May, during the stay at the valley, but some of them extend until autumn, while the stay in the communal pastures. In the attempt to avoid the accumulation of work, farmers try not to concentrate the winter-spring calving period when that of lambings. First calving takes place at the age of 2.5-3 years old. Cows are taken up from May to November-December (180-210 days). Every kind of animal can be found there (pregnant that will calve up during this stay, non-pregnant, cows with the calve born during the previous winter-spring...).

2.3.- Land availability

According to the data of the previous sample, land availability varies from 15 to 50 ha, rented ones included, according to the different geographical location (Atlantic vs. Mediterranean side), with high average productions of around 8-10,000 kg DM/ha. This means a theoretic average stocking intensity (ASI) of 1.6 GBU/ha. But 65-70% of these farms use also mountain resources for quite a long time (sheep for 4-6 months per year, and cattle for 6-7 months). If we consider this fact, real ASI decreases to 0.8, allowing all these farms to maintain and even to increase the number of animals. This could not be supported just upon the valley resources.

2.4.-Feeding management

As far as possible, animals use grass production by grazing. It can be said that ewes have priority over cattle, which make good use of feed rejected by the sheep (hay or silage) and the worse or the far away pastures. So it constitutes a good complement in the utilisation of farm resources. During the period of mountain grazing, grass production from the pastures is harvested and stored as hay or silage for the following winter. In the case of the farms that do not take cattle up to the mountain pastures, these will graze the surpluses of the pastures that sheep will graze from the following autumn-winter (Figure 1).

The use of concentrates is mainly for dairy sheep during the last part of the pregnancy and during almost the whole milking period. In contrast, the expense of concentrates for cattle is usually limited to the calving period and for animals for replacement, and many cases no concentrates are used at all.

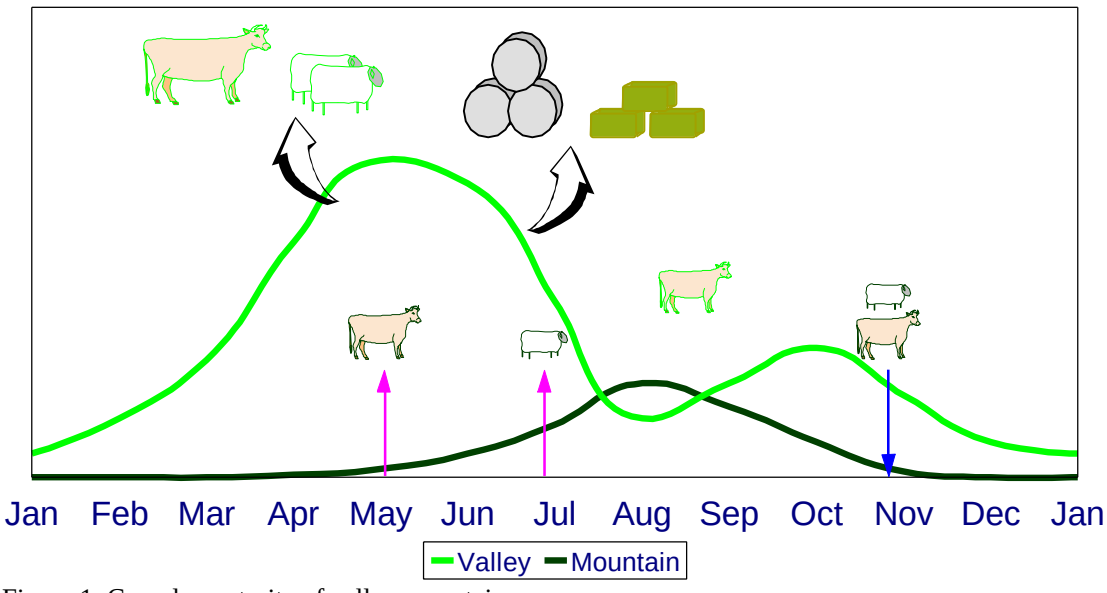

Figure 1. Complementarity of valley-mountain resources.

3.- LIVESTOCK SYSTEM-ENVIRONMENT INTERACTION

3.1.- In the valley

The vegetation of the valley consists of permanent natural pastures composed of a great diversity of herbaceous species.

Although productions can be considered as being quite high, the expenses and utilisation of chemical fertilisers no longer involves an environmental risk. The recommendations about nitrogenous fertilisation, apart from manure, have been 180-200 units per ha as a maximum in improved pastures for zero-grazing. Moreover, as the characteristics of the land (slopes, small fields) interfere with the use of agricultural machinery, the utilisation of chemical N on all kind of pastures, averages about 30 units/ha.

Recently, farmers have begun to pay more attention to their management, and practices of reseeding are more common.

3.2- At the mountain

The mountain pastures contain a mixture of herbaceous species (*Agrostis, Festuca*) with different degrees of shrub cover (*Erica, Calluna*).

Animals stay mixed and nowadays are kept in completely free grazing: there are neither practices of guiding animals nor fencing. The following observations have been made:

- There is an inadequate use of the available resources, so some areas are overgrazed while some others are being undergrazed or are even ungrazed.
- According to different degrees of shrubby cover and orographical limitations, there is a great variability in the ASI. For example, the highest values of stocking rates are observed (0.7 GBU/ha) in the case of areas with less than 50% of shrubby cover
- Although animal species are not separated one from another, there is some kind of separation in the use of the resources, according to the different preferences of each species: while cattle graze the plain lands and the lowest sloping ones, sheep, and also horses, use more pronounced ones and summits.
- A general increase in the shrubby cover has been observed. This fact is more noticeable in intermediate sloping lands, those used mainly by sheep. It must be that ewes are not able to maintain it at a certain degree.

Presumably, the explanations for these facts are:

- The amount of flocks that are taken to the mountain pastures has decreased about 15 points in the last 12 years (from 85% to 70%).
- Nowadays shepherds do not stay at these pastures with the flocks during the whole grazing season, searching for better living conditions, and also due to the lack of labour force in the farms, practices to guide grazing are not being carried out.
  In this sense it must be said that the use of fences would suppose a change in the traditional regulations as the areas are public or communal. Moreover, the interests arising from the actual demand of landscape for leisure activities made by the urban society sometimes run into the ones of livestock activities.
- The duration of stay of the sheep has decreased notably, maybe as a consequence of:
    - The breeding program: increase in milk production and duration of lactation
    - The system improvement: better feeding management, investments in stables and equipment (milking machines, small cheese-factories) looking for better living conditions or due to sanitary limitations (EU regulation 92/46).
    - Return of the wolf (*Canis lupus*) to some areas after an absence of about 30 years.

4.- CONCLUSIONS

- Since mountain pasture is a complicated ecosystem originated from grazing livestock activity, its sustainable maintenance requires this activity.

- Maintenance of this production system (valley-mountain) is affected by several factors, some of them inherent to the system itself (production schedules), and some derived from the socio-economical environment.
- The disturbance, or even disappearance, of this part of the system involves on the one hand a serious modification of the landscape (landscape for leisure?), and on the other hand, a higher dependence of livestock on the valley by means of more intensified systems and the subsequent environmental problematic.
- Within the framework of this global context, research in order to develop techniques that allow improving the utilisation of such mountain resources is essential.

Elevage et environnement en Bretagne : Quelle pertinence pour les mesures agri-environnementales ? L'exemple du Parc Naturel Régional d'Armorique

Louis-Marie Guillon,
Parc Naturel Régional d'Armorique, France.

La Bretagne, région caractérisée par l'élevage "intensif", a aujourd'hui peu recouru à l'outil "mesures agri-environnementales" pour chercher à réduire les problèmes environnementaux reconnus : dégradation de l'eau, banalisation des paysages, régression d'habitats semi-naturels. C'est essentiellement sur ce dernier point que des opérations locales sont en cours, dont l'OGAF "Landes et prairies humides des Monts d'Arrée" impliquant, depuis 1993, 178 agriculteurs et 2200 ha. Si le suivi biologique met en évidence une évolution favorable des milieux visés, il est trop tôt pour mesurer des effets tangibles sur les systèmes de production animale. En effet, la gestion préconisée est : - d'une part, la fauche pluri-annuelle des landes (utilisée en paillage de stabulation) ; - d'autre part, le pâturage extensif de prairies humides acides et bas-marais. De ce fait, les modifications probables des systèmes d'élevage consistent en : - premièrement, une extensification globale de la production bovine ; - deuxièmement, une meilleur valorisation des matières organiques animales par compostage. Ces modifications restent mineures à l'heure actuelle, où l'acquis principal demeure la restauration et la gestion de biotopes.

The relevance of agri-environmental measures for animal production and the environment in Brittany: the example of the Parc Naturel Régional d'Armorique

Louis-Marie Guillon, Regional Natural reserve of Armorique

Brittany, an area characterised by " intensive " animal production, has so far made little use of agri-environmental measures as a tool to reduce the recognised environmental problems such as water pollution, landscape degradation, and reversion of semi-natural habitats. It is primarily on this last point that local research is currently in progress. The OGAF project " Moorland and wet meadows of the Monts d'Arrée" , has involved since 1993, 178 farmers and 2200 ha. It is still too early to measure tangible effects on the systems of animal production, even if the biological monitoring indicates that favourable progress is being achieved in the habitats being monitored. Generally, the recommended management is on the one hand, the regular mowing of the moors (used in livestock bedding); and on the other, the extensive grazing of acid wet meadows and lowland marsh. The probable modifications of the animal production systems consist of:

1. increasing extensification of cattle production;
2. improved utilisation of the animal organic matter by composting.

These modifications remain minor at the present time, where the principal objective remains the restoration and the management of biotopes.

Parc Naturel Régional des Vosges du Nord: La gestion écologique des friches, solution innovante pour mantenir ouverts les espaces ne pouvant plus etre entretenus par l'agriculture

Arthur Letzelter
SYCOPARC, Vosges du Nord

Summary

Environmental management of abandoned land and the marketing of its products

Within the context of the abandonment of farming in the valleys of the Vosges du Nord, a project aimed at environmental management has led to the production of marketable beef from a system which may be viable within the framework of a policy of local development. As the agricultural depression has led to a general abandonment of these valleys, the local collectives have tried out an original solution to restore the landscape using Highland Cattle.

Their extensive systems of management (approximately 0.7 LU/ha), taking account of the production potential and the local tradition, has led to the introduction on the market of meat (High tec) produced only with grass of the valleys, supplemented with a little hay during winter, in an entirely outdoor system. It was thus relatively easy for SYCOPARC to demonstrate to the fifteen communes concerned with this enterprise, the profit which they could realise from the valorization of such products, guaranteed as fully organic.

The trial undertaken by ten professional staff outside the tourist season, from the 14 - 30 November 1997, showed that consumers have a good receptivity to these products, provided of course that the filière (production, slaughter, hanging, cutting, packaging - culinary preparation) is organized in a professional way.

The marketing of 1300 kg meat during this pilot operation, strongly demonstrated the good prospects for the future marketing of other " branded " products, produced by private partners having at heart the appropriate and profitable management of difficult natural environments.

SITUATION

Parc créé en 1975 en réponse aux mutations du territoire ; charte révisée en 1994 102 communes, 122 000 ha, 76 000 habitants - A cheval sur le Bas-Rhin et la Moselle. Trois grands secteurs paysagers

- Piémont alsacien
- Plateau
- Massif forestier (70 % de la surface totale dont 80 % de forêt domaniale)

CONTEXTE

Depuis 20 à 30 ans, mutation de l'occupation du sol dans les fonds de vallées du massif forestier et du plateau: à la fois, intensification de l'activité agricole (en plateau) et disparition de la pluriactivité agricole (en massif forestier). Ces évolutions ont conduit à l'abandon des fonds de vallées difficiles à exploiter, traditionnellement entretenus par la fauche ou le pâturage.

Cette mutation s'est traduite par d'importants désordres paysagers et écologiques: boisements parcellaires, désordres hydrauliques, remblaiements, implantation anarchique d'infrastructures de loisirs (étangs, chalets ...).

Une pression politique et sociale croissante en faveur du maintien des espaces ouverts et d'une reconquête de ces espaces.

Une volonté forte et partagée (par les é1us locaux, le monde agricole, et les autres acteurs de l'espace) d'inscrire les initiatives (juridiques, techniques et financières) dans une cohérence globale.

La nécessité de trouver, en complement des dispositifs incitatifs existants (OGAF, mesures agri-environnementales, fonds de gestion de l'espace rural), un dispositif durable, sur le plan économique et écologique, de reconquête des fonds de vallées.

LA GESTION ECOLOGIQUE DES FRICHES

Obectifs

Dans les communes où il n'y a plus d'agriculteurs, mettre en oeuvre un dispositif reconquête de fonds de vallée en friches permettant la réouverture paysagère.
Préserver, voire favoriser les potentialités écologiques de ces milieux.

Méthode

Dans le cadre d'un schéma communal (cf. infra) de gestion des espaces ouverts et des priorités écologiques et paysagères qu'il aura définies, des zones de gestion respecteuse de l'environnement sont déterminées.

La municipalité se charge de la mobilisation des parcelles concernées et de l'obtention de l'accord de leurs propriétaires pour la mise en pâturage.

Sous maîtrise d'ouvrage communale, des travaux de remise en état peuvent être entrepris, pour preparer la zone de paturage, en mobilisant les moyens de reconquête paysagère existants (Fonds de gestion de l'espace rural...).

La commune prend en charge la preparation du parc à animaux (clôtures, contention).

Dans le cadre d'une convention, le Syndicat de cooperation pour le Parc met à disposition un cheptel de bovins rustiques, de race Highland. Le Parc est propriétaire de ces bovins.
La commune désigne une ou deux personnes, souvent d'anciens agriculteurs, spécifiquement chargées de la surveillance quotidienne du cheptel.

- Démarrage de l'opération en 1991
- Cheptel : 108 bovins de race Highland
- Superficie entretenue par ce type de pâturage : 140 ha répartis sur 15 communes.

CONTEXTE GLOBAL DE LA MISE EN PLACE DE LA GESTION ECOLOGIQUE DES FRICHES

La gestion écologique des friches fait partie d'une démarche d'ensemble pour la maîtrise de 1'évolution du territoire. Cette démarche comprend des outils d'aide à la décision qui permettent la mise en oeuvre cohérente et réfléchie d'outils pour l'action.

DES OUTILS D'AIDES A LA DECISION DES ECHELLES COMPLEMENTAIRES

Le niveau du Parc correspond au niveau de definition des objectifs: la charte et le plan du Parc, é1aborés sous la maîtrise d'ouvrage du Syndicat de Coopération pour le Parc, fixent les grands principes d'aménagement et de gestion des paysages (échelle 1/50000).

Le niveau de l'intercommunalité est adapté aux réflexions sur l'espace et le paysage (approche par vallée...): les plans paysagers (1/25000) et les programmes d'actions intercommunales qui en

découlent sont approuvés par les Etablissements publics de coopération intercommunale ou par les communes d'une vallée, d'un secteur paysager.

Le niveau communal correspond à 1'échelle opérationnelle : des schémas de gestion des espaces naturels é1aborés sous la maîtrise d'ouvrage des communes permettent une réflexion participative des acteurs concernés sur la gestion des espaces naturels de la commune: partager les diagnostics, définir ensemble les objectifs et les priorités d'intervention, hiérarchiser les mesures à pre.ndre, mobiliser les différents moyens d'intervention.

DES OUTILS POUR L'ACTION

- Outils réglementaires Plans d'Occupation des Sols, Réglementations des boisements, Plans d'exposition aux risques...

- Dispositifs incitatifs existants : Mesures agri-environnementales, Fonds de gestion de l'espace rural...

- Dispositifs créés au nivel local: Gestion écologique des friches.

OPERATION EXPERIMENTALE DE VALORISATION DE VIANDE BOVINE (HLC) ISSUE D'UNE PRATIQUE DE GESTION EXTENSIVE ET ECOLOGIQUE DES FRICHES

Après cinq années de pratique active de gestion des milieux enfrichés avec des bovins rustiques (HLC), un certain nombre d'animaux devenus surnuméraires ont été abattus et valorisés auprès d'un groupe de restaurateurs locaux.

Cette opération voulue expérimentale et reproductible a été intitulée « Le Paysage ,a du goût ».

Elle a permis de tester les qualités intrinsèques de cette viande de boeuf issue de la pratique extensive en matière de gestion de l'espace, ceci auprès de tous les acteurs de la filière (abattoir, boucher, restaurateur, consommateur).

En parallèle, il paraissait utile d'expérimenter la portée d'un concept associant un produit consommable (de la viande) à la notion de paysage, surtout dans une période où le consommateur émet de grosses réserves sur l'origine -et la qualité des produits qu'il achète et consomme.

QUEL PRODUIT ?

Depuis la mise en place de la Gestion écologique des friches en 1991, tous les mâles issus de la multiplication du cheptel (actuellement 120) ont été castrés.

Nous avons donc pu mettre sur le marché des boeufs âgés entre 4 et 5 ans et dont le poids de carcasse variait entre 280 et 325 kg.

Les animaux (uniquement nourris à l'herbe) étaient dans un très bon état de finition, de sorte que leurs carcasses étaient recouvertes d'un «gras de couverture ».

Le rendement en viande nette (poids de carcasse - les os, la graisse et les déchets) était de 61%

La proportion de morceaux à cuisson rapide 29 % et celle des morceaux à cuisson lente de 71%.

QUELLE DEMARCHE ?

Les animaux étant dehors toute l'année, il arrive que leur contention puisse s'avérer difficile. Ceci explique la démarche allemande qui consiste à abattre le bovin sur le lieu du pâturage avant de le ramener à l'abattoir local.

A propos de l'abattage en prairie
L'abattage en prairie de bovins ne peut être mené que pour des cas sanitaires et doivent être accompagnés d'une attestation du vétérinaire. L'éviscération doit être opérée rapidement (45 minutes maximum) et l'animal inspecté par les services vétérinaires de l'abattoir. Il ne sera pas tamponné avec l'estampille communautaire (circuit local).

Dans notre cas de figure, les animaux ont été attrapés et acheminés un à un à l'abattoir le plus proche (30 km) puis abattus dans le service urgence, afin de leur éviter un stress inutile, lié notamment par le passage dans un couloir trop étroit pour leur cornage a grande envergure (1,30 à 1,50 m).

Ressuées et maturées correctement, les carcasses ont été acheminées vers un boucher qui les a préparées de manière à être directement utilisées en restauration (désossées, découpées, mises sous vide et pour certains morceaux, transformation en saucisse).

Le **ressuage** correspond à la phase de descente de temperature de la carcasse pouvant hypothéquer la tendreté d'une viande, si elle se produit trop rapidement. La **maturation** permet à la viande de subir une série d'évolutions physicochimiques contribuant à la rendre tendre et juteuse. Une viande peut maturer jusqu'à 20 jours. Pour les bovins, un sejour de 11 jours en frigo, en maintenant une temperature à coeur de 7ºC, permet d'atteindre l'optimum de tendreté (qui n'évolue plus par après).

AVEC QUI ?

Le choix délibéré des restaurateurs s'inscrit dans une logique de test de l'ensemble de la filière et notamment au niveau de la transformation finale du produit.

Dix restaurateurs volontaires ont donc participé à cette opération, sachant que:

- la durée de l'opération se limitait à une vingtaine de jours (du 13 novembre au l er décembre),
- la période choisie (deuxième quinzaine de novembre) est une saison creuse pour les restaurateurs,
- les frais de communication vers la clientèle étant pris en compte (par eux) à raison de 50%,
- une redevance de 4 F / menu était reversée au SYCOPARC au bénéfice d'opérations destinées à la valorisation des paysages,
- leur partenaire direct était le boucher ayant conditionné les divers morceaux et préparé la saucisse.

LE BILAN

A chaque niveau de la filière se déclinent des logiques économiques, sanitaires, techniques et commerciales. Il est important de les comprendre et de les intégrer dans un projet d'ensemble.

Les principaux constats

- **au niveau du product**

L'origine et l'histoire de nos quatre boeufs pouvaient être connues de tout le monde, au point que dans l'assiette on pouvait associer au morceau dégusté le nom de la béte...

Le respect de la traçabilité

En emmenant l'un des animaux à l'abattoir, une boucle de travail a été perdue dans la bétailière. Si cette bouche n'avait pas été retrouvée, l'animal ne pouvait quitter l'abattoir. En effet, **l'identification** des animaux nécessite la présence et la correspondence des boucles EDE (Etablissement Département de l'Elevage) et de travail avec le DAB (Document d'Accompagnement du Bovin). Si ce n'est pas le cas, les services vétérinaires bloquent l'animal, peuvent (5000 F d'amende) et faire abattre en

sanitaire. Le plus souvent, ils mettent l'animal en consigne jusqu'à ce qu'on éclaircisse le problème, sinon la carcasse finit à 1'équarrissage.

La qualité gustative de la viande de HLC (ici du boeuf) est équivalente à d'autres races, si ce n'est qu'elle est plus forte en goût.

Le rendement viande nette par rapport au poids de carcasse (61%) est inférieur au rendement d'un boeuf de race à viande sélectionnée (69 %).

La proportion des morceaux à cuisson rapide est d'environ 30 % (par rapport à la masse de viande nette) alors qu'elle avoisine 55% pour des boeufs de race lourde.

La valorisation de telles carcasses du point de vue économique est donc plus difficile, à moins d'imaginer des transformations originales des morceaux à cuisson lente.

• **au niveau du boucher**

Très satisfait de la qualité de la viande, de l'image véhiculée par cette opération, de l'impact sur son entreprise, mais réaliste quant aux possibilités de valorisation des carcasses.

Ce produit, différent des carcasses traditionnelles, nécessite pour le boucher une autre approche de la valorisation (nécessite donc une nouvelle dose de créativité).

• **au niveau des restaurateurs**

Très satisfaits quant aux effets de la communication et du succés de l'opération.

Rarement une opération de promotion de ce type n'aura eu pareille audience auprès du public.

Près de 600 kg de viande nette ont été valorisés ce qui représente environ 3000 repas.

Augmenter la durée de l'opération est un souhait manifesté par les restaurateurs plusieurs reprises.

D'autres restaurateurs ont également manifesté leur intérêt pour promouvoir des opérations de ce type.

• **au niveau des consommateurs**

Deux niveaux de réponse ont été fournis par les consommateurs.

Tout d'abord leur **adhésion** à l'opération en venant déguster le produit.

Ensuite leur **appréciation** écrite, dans le cadre d'un questionnaire qui leur était remis aprés le repas.

Dans les deux cas, l'association des deux notions - produit de qualité et paysage a été très bien ressentie et permet de prétendre qu'à l'avenir, une grande partie des consommateurs ne sera pas indifférente à l'idée de contribuer à l'aménagement d'un cadre de vie de qualité tout en se faisant plaisir et en ayant de surcroît la garantie d'un produit authentique.

Valorisation économique des herbivores utilisés pour la gestion des milieux naturels en France

France Drugmant,
Réseau Espace, France

Introduction

La disparition des pratiques séculaires de pâturage met en péril la biodiversité de nombreux milieux ouverts jugés intéressants : prairies humides, marais, tourbières, landes et pelouses sèches... Afin de réhabiliter et de conserver ces milieux anthropisés, il faudrait assurer la survie de ces pratiques anciennes. On peut aussi les remplacer par des pratiques alternatives. Dans cette optique , divers organismes gestionnaires d'espaces protégés ont mis en place des expériences de gestion par la pâturage extensif. Les espaces protégés ont acquis ces dernières années un réel savoir-fair dans ce domaine. L'enquête que je vais vous présenter s'intéresse plus particulièrement à un aspect jusqu'à présent moins développé : la dimension économique.

Mais avant de présenter l'étude, je souhaiterais exposer brièvement le contexte dans lequel elle a été réalisée. Cette étude a été réalisée dans le cadre d'un réseau de recherche et de démonstration (programme life) sur la gestion des espaces protégés par l'élevage extensif. Ce réseau est dénommé E.S.P.A.C.E., pour en Français « Entretien des Sites à Préserver par des Animaux Conduits en Extensif ». Ce programme, coordonné par la Fédération des Parcs naturels régionaux, rassemble 31 sites pilotes dans une démarche expérimentale commune de suivi de la gestion par pâturage.

Pourquoi avoir réalisé une étude sur la valorisation économique?

On s'était jusquà présent très peu intéressé à la valorisation économique des animaux utilisés pour la gestion des milieux naturels. Or, depuis quelques temps, les acteurs de l'éco-pastoralisme rencontrent des difficultés grandissantes pour écouler leurs jeunes animaux. Il nous semblait essentiel de répondre à leurs interrogations. Le réseau E.S.P.A.C.E. a donc réalisé un travail d'enquête en vue d'analyser les pratiques de valorisation existantes et proposer des solutions pour améliorer les débouchés économiques.

Méthodes et statistiques

Un questionnaire a été adressé aux organismes de protection de la nature et aux organismes agricoles français afin d'identifier un échantillon d'expériences et d'établir une typologie des stratégies de valorisation. Cette enquête a été complétée par des contacts téléphoniques.

Nombre de questionnaires distribués :	1200
Nombre de réponses :	144
Nombre de cas de gestion répertoriés :	106
Nombre de projets :	35

Résultats

Je vais vous présenter les principales conclusions de l'enquête quant à la valorisation économique des troupeaux bovins, équins et ovins élevés dans des espaces à préserver.

Valorisation des produits des élevages bovins

Cas des organismes gestionnaires propriétaires d'un troupeau

Dans ces troupeaux, la fonction première des bovins est le débroussaillage. La valorisation économique n'est pas une obligation, mais plutôt un moyen de limiter le coût de l'opération et de se débarrasser des animaux surnuméraires.

Augmenter la taille du cheptel.

C'est la première affectation des jeunes nés sur les sites.

Vendre des reproducteurs.

Lorsque le troupeau a atteint sa taille optimale, les gestionnaires essaient de vendre les jeunes : ces derniers poursuivront leur carrière de débroussailleur dans d'autres sites, chez des agriculteurs et plus rarement chez des particuliers. La vente aux agriculteurs est peu développée excepté pour le Highland cattle utilisé dans une optique de diversification et de meilleure utilisation des terrains pauvres.

Se lancer dans la filière viande

Lorsque les gestionnaires éprouvent des difficultés à vendre les animaux comme débroussailleurs, la valorisation sous forme de viande est envisagée. Le principal problème réside dans l'incapacité à alimenter un tel marché, même local, en continu. Les races rustiques, généralement mal conformées trouveront difficilement leur place dans ce créneau si on ne met pas en avant la qualité particulière de leur viande et de leur mode d'élevage.

Mettre un terme à la reproduction.

Enfin, pour éliminer ce problème de valorisation des jeunes surnuméraires, quelques sites ont opté pour une non-reproduction du cheptel, ou du moins une limitation de la reproduction au strict renouvellement du troupeau.

Cas des éleveurs ayant passé une convention de gestion avec un organisme de protection de l'espace :

Dans le cas de races améliorées, l'accès à des espaces protégés n'influence pas le mode de valorisation de l'éleveur. Il s'agit plutôt d'un moyen de réduire son chargement, d'augmenter à moindre frais ses stocks fourragers ou la taille de son troupeau.

De façon plus générale, les animaux détenus par les agriculteurs étaient, dans l'enquête, des cas de valorisation originale où la composante environnementale était très marquée. On va présenter deux exemples pour montrer comment il est possible, sous certaines conditions, d'allier rentabilité économique et protection de l'environnement.

Les points communs de ces systèmes sont :

- leur faible coût de production et le faible investissement initial
- la mise à disposition de terrains par un gestionnaire qui se décharge ainsi de frais d'entretien et de gestion,
- le faible coût du foncier pour l'agriculteur,
- la bonne insertion des exploitants dans leur région, ceux-ci ayant réussi à créer un réseau leur permettant d'écouler leur production.

Highland Cattle et visite à la ferme.

A la Ferme de l'Aurochs, l'agriculteur s'est lancé dans la diversification de sa production. L'agriculteur ne s'arrête pas à la vente de reproducteurs. Une activité d'accueil des touristes, de transformation et de vente de viande en direct a également été mise en place. La valorisation bouchère se fait sous la forme de viande fraîche en saison d'affluence touristique, et de produits de longue conservation tout au long de l'année (terrines, saucissons, plats cuisinés).

Des Bretonnes-Pie-Noires en complément de revenu (Haute-Loire).

La mise en place progressive de cette activité agricole avait pour vocation de compléter le revenu familial. Avec un cheptel de Bretonnes-Pie-Noires, l'exploitation, située en Haute-Loire, repose sur un système de plein air intégral et s'est constituée à moindre frais, sans subvention. La valorisation du cheptel consiste à vendre des reproducteurs femelles (10 à 15 reproducteurs par an) et des veaux sous la mère. L'accent est mis sur la qualité de la viande, ainsi que sur celle des reproducteurs choisis pour leur aptitude à la marche en milieu difficile (estive située à 1300 m d'altitude, à laquelle les animaux accèdent après une transhumance à pied de 25 km. L'exploitation compte également des chevaux Mérens, vendus à des particuliers et des moutons valorisés par la consommation familiale et la vente.

Le marché du reproducteur : quel avenir ?

On peut se demander quel est l'avenir du marché du reproducteur, qui aujourd'hui est encore le principal mode de valorisation des jeunes bovins nés dans les sites.

Le Highland cattle bénéficie d'une conjoncture particulière par rapport aux autres races rustiques. Son look et sa réputation de débroussailleur en ont fait un animal rare et cher. Un changement de tendance semble cependant s'amorcer puisqu'aujourd'hui, le type d'animaux mis sur le marché, mais également les prix, ont évolué.

Le marché de la viande et les races rustiques : quelles perspectives de valorisation au regard des difficultés actuelles du marché de la viande bovine ?

Etant donné la situation précaire du marché du reproducteur, quelques gestionnaires se sont orientés vers la valorisation bouchère de leurs troupeaux.

La crise de l'ESB (Encéphalopathie Spongiforme Bovine) ne doit pas faire oublier que le marché de la viande bovine souffre depuis des années d'un coût de production élevé et de la désaffection du consommateur vis-à-vis de ce produit. Alors que l'on s'accorde à dire qu'il est nécessaire de regagner la confiance du consommateur, les gestionnaires peuvent s'interroger sur la carte qualité " 100% naturel " qu'ils ont entre les mains. Le problème réside surtout dans la nécessité d'un approvisionnement régulier afin de fidéliser la clientèle. Selon les bouchers, il faudrait pouvoir fournir une carcasse par semaine.

Une alternative à cette nécessité d'approvisionner le marché en continu consiste à présenter cette viande au consommateur comme un produit de saison, correspondant à une production « naturelle ». Des qualités en matière de communication auprès du consommateur, ainsi qu'une organisation rigoureuse des opérations de publicité sont alors nécessaires. C'est d'ailleurs dans ce sens qu'a travaillé le Parc des Vosges du Nord dont Arthur Letzelter ici présent nous présentera la stratégie.

Valorisation des produits des élevages équins :

Cas des organismes gestionnaires d'espaces naturels possédant un troupeau :

La valorisation des équins suit les mêmes voies que celle des bovins : elle commence par une augmentation de la taille du cheptel, suivie par la vente de reproducteurs ou d'animaux castrés. A la différence toutefois que les gestionnaires ne possédant que des races de petite taille ne se posent pas la question du débouché " viande ", qui reste d'ailleurs marginal en France.

A la quasi majorité, les animaux sont vendus avant l'âge d'un an, à des organismes gestionnaires, des particuliers ou très rarement des clubs. Le marché des particuliers et gestionnaires est assez restreint. Les sites enquêtés admettaient avoir de plus en plus de difficultés à écouler leurs jeunes. La solution ultime, rencontrée dans quelques cas, consiste alors à arrêter la production, temporairement au moins.

Vendre de reproducteurs : quelle alternative ?

La vente d'animaux aux clubs pourrait être envisagée dans le cas de centres d'équitation de plein air. Les problèmes soulevés par ce type de valorisation sont les suivants : la petite taille des animaux proposés et la mauvaise adéquation entre l'offre des gestionnaires (animaux non débourrés) et la demande.

Stratégies de commercialisation chez les éleveurs ayant passé une convention de gestion avec un organisme de protection de l'espace :

Parmi ces éleveurs, on a recensé des agriculteurs qui élèvent des races lourdes dans un souci de conservation de la race. La valorisation passe par la viande et la vente de quelques reproducteurs. Ont également été recensés quelques éleveurs de chevaux de loisir.

Enfin, quelques cas de contrats passés avec des relais équestres sont été mis en évidence. Les relais mettent les chevaux à disposition sur le site, l'hiver principalement afin de minimiser les charges. Un des ennuis d'un tel système réside dans le contrôle et la gestion de la pousse de l'herbe.

Valorisation des produits des élevages ovins

Cas des organismes gestionnaires d'espaces naturels possédant un troupeau :

Le système de valorisation est assez proche de celui rencontré pour les bovins, les différences étant principalement dues à la petite taille de l'animal.

Le particulier : le mouton dans un cadre de consommation familiale.

Les particuliers sont cette fois-ci un débouché intéressant : ils achètent l'animal en tant que " tondeuse écologique " et s'en débarrassent, à l'automne par exemple, à l'occasion d'un méchoui entre amis.

Mettre un terme à la reproduction ?

Par rapport aux bovins, la valorisation par la viande possède cette différence que l'animal, au vu de sa taille, passe facilement dans un réseau de consommation familiale. Si les agnelles trouvent généralement acquéreur en tant que reproductrice, il n'en est pas de même pour les mâles qui sont en large excès. On assiste parfois à une limitation de la reproduction.

Stratégies de commercialisation chez les éleveurs ayant passé une convention de gestion avec un organisme de protection de l'espace :

Le valorisation des jeunes consiste en la vente d'agnelles de renouvellement ou d'agneaux de boucherie. Pour ces derniers, l'agriculteur s'adresse à une coopérative ou maîtrise lui-même sa filière de commercialisation en travaillant directement avec des bouchers.

Des circuits de valorisation particuliers ont également été mis en évidence, aux alentours de l'agglomération lilloise notamment, où les cités ouvrières abritent des populations musulmanes importantes.

La Marque « Parc naturel régional », un exemple concret de démarche alliant économie et aménagement du territoire

Dans certains cas, la qualité d'un territoire est identifiée par une marque. C'est le cas des Parcs naturels régionaux dont la marque est attribuée par l'état qui en délègue la gestion à chaque Parc. Pour l'attribution de cette marque à des produits, les Parcs se sont dotés de règles communes . Ses produits devront intégrer les valeurs fondamentales des Parcs à savoir les caractères « régional », « naturel », « authentique » et « artisanal ». S'étant dotés d'un règlement général d'utilisation commun, les Parcs vont pouvoir lier fortement des produits à l'origine et la qualité du territoire . En ce qui concerne l'élevage, les produits marqués intégreront la notion de gestion de l'espace. Des exemples existent déjà dans les Vosges du Nord, les Ballons des Vosges et le Vercors.

Conclusion

La gestion éco-pastorale des sites naturels était caractérisée par une quasi absence de références en matière de valorisation économique des produits d'élevage. L'enquête aura ainsi permis de mettre en évidence différentes stratégies que l'on peut classer en deux catégories : le recours aux associations " éleveur / structure de protection de l'environnement " d'une part, l'acquisition de troupeaux par les organismes de gestion des espaces sensibles d'autre part.

Le premier cas est caractérisé par une complémentarité entre les objectifs des deux parties, l'organisme réduisant ses frais d'entretien du site et l'éleveur augmentant sa surface et son disponible fourrager moyennant une très faible contribution financière. Dans le second cas, la destination première des herbivores n'est plus la commercialisation et les logiques en terme de valorisation s'en trouvent bouleversées.

Aujourd'hui, le marché de la vente du reproducteur-débroussailleur évolue vers la saturation. Or, des initiatives individuelles de quelques sites montrent que des perspectives de valorisation existent en dehors de la vente de " débroussailleurs ".
Pour les ovins et les bovins notamment, il s'agit de réseaux locaux d'approvisionnement en viande auprès de particuliers ou de restaurateurs et bouchers (cas des Vosges du Nord). Pour confirmer et consolider ce débouché, il sera à l'avenir primordial de résoudre des problèmes tels que : la capacité à amener des animaux élevés sur les sites à un niveau d'engraissement compatible avec une valorisation bouchère, la capacité à alimenter en continu un petit marché ou à créer un marché saisonnier, la définition que l'on donne à un produit, en terme d'image mais aussi en terme de qualité organoleptique. C'est dans ce sens que doit s'orienter la recherche. L'enjeu dépasse largement le cadre des espaces protégés . L'agriculteur en tant que premier gestionnaire de l'espace est prioritairement concerné. L'utilisation de l'élevage extensif et sa valorisation par la mise en place de labels et de mesures incitatives spécifiques devraient permettre de concilier pratiques agricoles, économiquement rentables, et environnement. Les espaces protégés constituent en cela des laboratoires privilégiés de ces expériences. Cependant, pour asseoir leur crédibilité, l'intégration des facteurs économiques est indispensable.

Enhancement of the value of herbivores used in the management of natural environments in France

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INTRODUCTION

The disappearance of extensive livestock grazing systems is endangering biodiversity within numerous interesting environments, such as damp meadows, marshes, dry short grass, prairies etc. In order to restore and conserve these semi-natural environments, it is necessary to ensure the survival of the ancient practices that maintain them. They may also be replaced by alternative practices. In this regard, various bodies responsible for the management of conservation areas have set up experiments to study biotope management techniques using extensive grazing. Through these trials, the conservation bodies have accumulated considerable experience in this field. The study which I am going to present to you examines an aspect which, up until now, has received less attention: the economic dimension.

The present study was carried out in connection with a combined programme of research and demonstration concerned with the management of conservation areas by extensive livestock farming (LIFE programme). The network is known as ESPACE (Entretien des Sites à Préserver par des Animaux Conduits en Extensive) - Maintenance of Conservation Sites by Extensively Managed Animals. The ESPACE network, co-ordinated by the Federation of Regional Nature Parks covers 31 pilot sites in a joint experimental survey monitoring vegetation management through grazing.

Why carry out a study into the economic development?

Until recently, the economic returns from animals used in the management of natural environments has not been of primary concern. However, for some time, those engaged in ecological farming have been encountering increasing difficulties in selling their young animals. The ESPACE network therefore carried out a study with a view to analysing the existing value-adding practices and to suggest some possibilities for improving the commercial outlets.

Methods and statistics

A questionnaire was sent to the nature conservation bodies and the French agricultural bodies in order to identify a sample of experiments and to draw up a typology of the value enhancement strategies. This study was supplemented by telephone contacts.

Number of questionnaires distributed :	1 200
Number of replies :	144
Number of cases of management listed :	106
Number of projects :	35

RESULTS

The study investigated the economic development of herds of cattle, horses and sheep reared within the conservation areas. The main conclusions are presented below.

Value enhancement of bovine products

The case of management bodies which own a herd

In these herds, the principal function of the cattle is land clearance. Any enhancement of the value of the cattle is not a requirement but rather a means of offsetting the cost of the operation and disposing of surplus animals. There are several alternative uses for calves:

To be retained to increase the size of the herd

This is the main use of the calves born on the conservation sites.

To be sold as breeding animals
Where the herd has reached its optimal size, the managers try to sell the calves. These then continue their careers as land clearers on other sites, for farmers or, less often, for private individuals. The sale to farmers is not highly developed except for Highland cattle, used with a view to diversification and the better utilisation of poor land.

To be sold into the meat chain
Where the managers experience difficulties in selling the animals as land clearers, they consider getting a return through meat sales. The main problem rests in the inability to supply such a market, even locally, on a continuous basis. The hardy breeds, usually with poor conformation, will have difficulty in finding a place in this market unless one emphasises the particular quality of their meat and the way they have been raised.

Non-reproductive herds
Finally, in order to eliminate the difficulties of marketing excess calves, some sites have opted to prevent reproduction of the livestock, or at least to limit reproduction strictly to herd replacements.

The case of private farmers who have entered into a management agreement with a conservation area body.
In the case of improved breeds, access to protected areas does not affect the producer's management methods. For a private farmer, grazing protected areas is a way to reduce stocking rates, or to increase at less cost his forage resources or the size of his herd.

More generally, the animals owned by farmers in the study achieved a value enhanced markedly by the environmental component of the production system. Two examples are presented to demonstrate how it is possible, under certain conditions, to combine economic profitability and the protection of the environment.

The common aspects of these extensive grazing systems are :

- low cost of production and the low initial investment
- land made available by managers who thus relieve themselves of the maintenance and management costs
- the low land cost for the farmer
- the producers are well integrated in their region, they have succeeded in creating a client network which enables them to market their produce.

Highland cattle and farm visits
At the "Aurochs Farm" in the study, the farmer has set about diversifying his products. The farmer does not only sell breeding stock, he has established a tourist visit business and introduced meat processing and direct sales. The butchery income comes from fresh meat in the high-season for tourists and from preserved meat products (pâtés, sausages, cooked dishes) throughout the year.

Bretonnes-Pie-Noires as income supplements (Haute Loire)
The progressive introduction of this agricultural activity was designed to supplement the family income. The herd of *Bretonnes-Pie-Noires*, located in the Haute Loire region, is managed in an integrated non-housed system and was set up at low cost, without subsidies. The income from the herd comes from selling breeding females (10 to 15 breeding animals each year) and suckled calves. The accent is placed on the quality of the meat as well as on that of the breeding livestock selected for their suitability for the market in a difficult environment (summer pasture situated at an altitude of 1,300 metres which the cattle reach after a 25 km walk. The holding also has some Mérens horses, sold to private individuals, and some sheep, the value of which lies in consumption by the family and lamb sales.

The market for breeding stock : what is its future?
The future of the market for breeding stock, which is currently the main means of deriving income from young cattle born on the sites, is in some doubt.

Highland cattle enjoy a special position in comparison with other hardy breeds. Its appearance and reputation as a site clearer have made this a rare and expensive animal. However , the trend appears to be beginning to change as, nowadays, the type of animals put on the market, as well as the price, have developed.

The meat market and the hardy breeds : what are the prospects of obtaining a return having regard to the current difficulties in the beef market?
Given the precarious situation of the breeding cattle market, some managers have turned towards the butchery value of their herds.

The BSE (Bovine Spongiform Encephalopathy) crisis should not hide the fact that the beef market has suffered for a number of years from a high cost of production and the consumers' tendency to move away from this product. While there is agreement that it is necessary to regain consumer confidence, managers might wonder about the "100% natural" quality card which they hold in their hands. The problem lies essentially in the need for a regular supply in order to gain customer loyalty. According to the butchers, it would be necessary to be able to supply a carcass every week.

An alternative to providing continuity of supply is to offer this meat to the consumer as a seasonal product, consistent with its "natural" production. This approach requires considerable attention to communication with the consumer, including advertising strategy. Such an approach is well illustrated in the Parc des Vosges du Nord, which will be reported in greater detail in the next presentation by M. Arthur Letzelter.

Value enhancement of equine breeding products

The case of bodies managing nature areas which own a herd.
The enhancement of the value of horses follows the same route as that of cattle. It begins with an increase in the size of the herd, followed by a sale of breeding stock or castrated animals. Managers who only have small breeds are a slightly different case as they need not consider the "meat" market, which in any event remains marginal in France.

Virtually all the animals are sold before the age of a year to conservation management bodies, individuals or, more rarely, to clubs. The individuals and managers market is quite restricted. The sites studied admitted to experiencing increasing difficulties in marketing their foals. The ultimate solution, encountered in some cases, was to cease production, at least temporarily.

Sale of breeding stock : what is the alternative?
The sale of animals to clubs might be envisaged in the case of open air riding centres. The problems which this type of value enhancement raises are as follows: the small size of the animals offered and the poor relationship between the supply offered by the managers (unbroken animals) and the demand.

Marketing strategies of breeders who have entered into a management agreement with a conservation area body.
Among these breeders were found farmers who raised heavy breeds with a view to preserving the breed. Income arises from the meat and the sale of breeding stock. We also came across some breeders of riding horses.

Finally, a few cases of contracts entered into with riding centres were reported. The centres make the animals available to the site, mainly in the winter in order to reduce their costs. One of the problems of such a system is that there is less opportunity for the control and management of grass in the main growing season.

Value enhancement of sheep production

The case of bodies managing nature areas which own a flock
The system of value enhancement is very similar to that met in the case of cattle, the differences being mainly due to the small size of the animal.

The individual : sheep in a family consumption situation
In this case, individuals form an interesting market. A family may buy an animal as an "ecological lawn mower" and dispose of it in the autumn for example, by way of a barbecue among friends.

Cease reproduction?
Compared with cattle, the enhancement of value through the meat offers this difference: the animal, because of its small size, can easily be introduced into a family consumption system. Whereas the ewes are usually bought for breeding purposes, the same does not apply to rams, which are greatly surplus to requirements. One therefore sometimes sees a restriction on reproduction.

Marketing strategies of breeders who have entered into a management agreement with a conservation area body.
The return from lambs comes from sales of replacement ewes or lambs for slaughter. In the latter case, the farmer approaches a co-operative or himself controls his marketing chain by working directly with the butchers.
Particular value enhancement possibilities were also highlighted, especially around the Lille conurbation for example, which has a significant Muslim population.

The "Regional Nature Park" - a concrete example of arrangements combining the economy with rural development.

In certain cases, the quality of an area is identified by a mark. This applies in the case of regional nature parks whose mark is awarded by the State which delegates management of it to each park. For the allocation of this mark to products, the Parks are governed by common rules. Its products must incorporate the fundamental values of the Parks, i.e. the "regional", "natural", "authentic" and "non-industrial" characteristics. Being governed by general commercial regulations, the parks can link products strongly to their origin and the quality of the area. So far as animal husbandry is concerned, the marked products incorporate the concept of open space management. Some examples already exist in the Vosges du Nord, the Bailons des Vosges and the Vercors.

Conclusion
The study found that eco-pastoral management of the natural sites was characterised by the virtual absence of literature on the economic enhancement of stock-farming products. The study has made it possible to highlight different management strategies which may be divided into two categories:

- the "stock-farmer / environmental protection structure"
- the acquisition of herds by bodies for the management of sensitive areas.

The first strategy is characterised by the complementary nature of the aims of both parties, the body saves the cost of maintaining the site and the stock farmer increases his land holding and the availability of fodder at a low cost. In the second case, the prime purpose of the herbivores is not to sell them, and the logic, in terms of economic development, is turned on its head.

Nowadays, the market for the sale of breeding/land clearing animals is nearing saturation point. However, individual initiatives on some sites show that prospects of value enhancement still exist outside the sale of "land clearers".

In the case of cattle and sheep in particular, it is a question of local networks supplying meat to individuals or restaurants and butchers (as in the Vosges du Nord). In order to confirm and consolidate this outlet, it will in future be a prime necessity to resolve problems such as:

- the ability to fatten stock from the conservation areas sufficiently to ensure an income from butchery;
- the ability to supply continuously a small market or to create a seasonal market;
- the definition which one is able to apply to a product in terms of image as well as in terms of organoleptic quality.

These needs go well beyond the scope of protected areas. The use of extensive production systems and the enhancement of product values through the establishment of labels and specific measures should make it possible to conciliate economically profitable agricultural practices with sound environmental management. In this respect, the conservation areas represent ideal laboratories for these experiments.

However, as a basis for the credibility of nature management systems, the integration of economic factors is essential.

Rural development

The role of livestock in rural development

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Rural areas are the home of more than a quarter of the EU's population and account for over 80% of the territory of the European Union (EU Cork Conference on Rural Development, 1996). In 1992, agriculture accounted for 2.1% of the European Union's GDP. However there are substantial differences between Member States. In Ireland for example it accounts for 6.7%, in Greece 10.4%, while in Germany and the United Kingdom it is approximately 1% (EUROSTAT 1995). In the EU as a whole just over 5.5% work directly in agriculture. Employment in agriculture ranges from just over 2% in the UK to over 20% in Greece. The economies of peripheral regions are still characterised by a strong dependence on agriculture. Approximately half of the European Union's 123 million hectares is used for livestock farming. In addition, over half of the cereal output is eaten by livestock, which in 1992 totalled over 80 million head. In only three out of the 15 Member States of the EU does crop production exceed animal production. For example in Ireland animal production accounts for 90% of the total agricultural production (EUROSTAT 1995).

Livestock Production and Rural Development

Livestock production is characterised for the most part by small scale producers, with almost half of the cattle farms in the EU having less than 20 animals per farm. Nevertheless, in terms of its contribution to the rural economy, animal production is one of the most significant sectors. This is particularly the situation in the more peripheral and more vulnerable rural areas of the EU.

The significance of animal production in a peripheral rural area is highlighted from a study of dairy producers in Co. Clare Ireland. (Clare Milk Study, 1993). The study showed that in many rural areas of the county income from milk sales accounted for 80% of all income in such areas.

Small scale milk production is a core enterprise in many rural areas in Ireland with over 50% of farmers having milk quotas of less than 90,000 litres. It has been shown that under current policy trends, the emphasis on competitiveness and enlargement of both production and processing units as many as 7 farmers per day are ceasing milk production. Over the last 20 years, the numbers of farms involved in milk production in Ireland has declined by almost 60%; and the overwhelming proportion of these were small scale producers. Given that dairying is 3 to 4 times more profitable than other grassland-based livestock production systems, the economic social and rural community impact of this exodus has alarming consequences for rural regions. The results are increased dependency on state welfare payments, increased unemployment and the accelerated migration of young people from such rural areas.

Recent studies (Moss et. al. 1991; Kearney et al. 1996; Phelan et al.. 1994) show that the situation for cattle and sheep farmers is even more serious. The majority of the very low farm incomes on such farms arises almost totally from EU/Member State Direct Payments.

The challenges for rural development policy and in particular the place of livestock farming in contributing to the balanced development of such areas is a critical issue. It poses particular questions for the shape of a further reformed CAP with a territorial or regional emphasis and for focused livestock farming systems research and extension.

Interdisciplinary Research - A Requirement

Over many centuries farming and the production of food has been the core resource which rural areas have relied on, for their survival and development. In today's and tomorrow's world rural communities and rural areas cannot survive on farming alone. The problem of rural areas that are in decline is directly linked to their capacity to develop new functions (non-farming businesses and services) and to link them to real demands and markets.

Those rural areas that are in decline have little internal capacity to develop new functions, few recognised marketable assets (other than farming) and lack the supports necessary to develop competitive and marketable alternatives. In general such areas are remote from large population centres and their economies are predominantly based on small-scale farming activities. Recent research shows that such areas are least likely to have developed new enterprises or to have household members with outside employment. Clearly such areas represent a major challenge for rural development and a comprehensive and coherent set of interventions are required to reverse the decline. An essential requirement for research is to identify and quantify the intervention actions (technical and policy) that are within the capacity of these small scale producers.

To suggest that such rural areas can rapidly diversify their economic activities in response to price and income reductions for core farm related commodities would be extreme folly. A rural development policy that is based solely on such a strategy would catapult many rural areas onto an accelerated spiral of decline. The policy interventions must include measures that not only enable internal diversification of the rural economy but also those that support the development and retention of competitive farm businesses.

The challenge for rural policy and research is to create the support environment which enables the emergence of a diversified rural economy built on the unique assets of particular rural areas. This includes measures which allow for the continued development of farming coupled with the progressive emergence of a strong rural industry and service sector. Such a rural development policy is based on three principles:

- no rural development without agriculture;
- no agriculture and no farmers without other activities;
- no other activities without the development of villages, small and medium-sized towns.

It requires a multi-sectoral and multi-dimensional research approach, the very core of which is striking the proper balance in securing the long-term viability of our rural areas. This is implicit in the Cork Declaration (EU Cork Conference on Rural Development, 1996).

Conclusion

Any careful reflection on the principles which should underpin future rural development policy options, as set out in the Cork Declaration, indicates the huge challenge posed for multi-disciplinary research to respond with a set of well developed actions and policy options. Interdisciplinary research should focus on actions and measures which will stimulate enterprise and business expansion in farming, industry and services. Such research should attempt to identify the essential elements of a *Farm Development Package* suitable for the majority of farmers in vulnerable areas. In addition research is required to examine mechanisms for positive discrimination in favour of the location and dispersal of industry, commercial and other services and housing, in or within the hinterland of less favoured rural areas.

The overall aim of the set of rural development policy research actions should be to achieve the goal of balanced development of all rural areas. And this means the balanced development of all sectors based on the current situation in particular rural areas of Member States. Ultimately it is about halting and indeed reversing the current trend of decline in the rural population.

Socio-economic instruments for agricultural and livestock systems research to guide rural development in disadvantaged areas.

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One of the most concerning aspects of modern rural development planning is the lack of attention given to agriculture, and as a natural consequence, to the analysis of the economic potential (in the widest sense of the word) of farming systems, which would determine its capacity to form a strategic part in a rural development plan.

This tendency is even more apparent in disadvantaged areas, where the farming systems in general, and livestock farms in particular, are often operating close to the margins of viability. This was originally a consequence of the difficulties arising out of the constraints on the adoption of modern farming systems and, later, as a result of the demographic drain of the rural exodus from these areas. A relatively unproductive vegetation cover is common in these disadvantaged rural areas, as a result of adverse climatic and wind conditions. Livestock systems in such areas are notable for their limited yields and variable grazing densities. In these circumstances, the consideration of agriculture as a strategic activity in a development process first requires an in-depth analysis, to a large extent of an experimental nature, and then reconversion and adaptation strategies for the farming systems in the medium- to long-term which are often difficult, and have a high social cost.

It is evident, and yet in some ways necessary and desirable, that the relative importance of farm production is diminishing not only as a proportion of the economic system as a whole, but when considering only rural areas. This decrease in the importance of the primary productive function of agriculture in the socio-economic system of rural populations is primarily an indication of the economic growth of these areas and often provides an excuse to avoid, or at least give a low priority to, farming activities in the practices followed by rural development policies. Thus it seems that agriculture, which not long ago was identified as the core rural activity, today is often presented in a negative context. The phenomenon is even becoming known, ironically, as the "rural-farming divorce". The real reason for this "anti-farming" attitude in rural development policies lies, in my opinion, in the greater difficulties arising out of any actions attempting to transform and reconvert farming systems in comparison to those required in other, more dynamic industries, such as tourist accommodation and infrastructure, or the setting up of recreational activities. In these example, the investment made, or the subsidy or grant obtained, has a more visible effect in the short term. The local level administrators of development policies normally act on their own, without any multidisciplinary expert team to provide them with the necessary support. With little chance of carrying out detailed analyses that can be used as the basis for their management, it is unlikely that an interest in farming potential will be taken in local development. If, in addition to the above, one adds the fact that good management in many cases is judged by the speed with which they execute investment plans which rapidly exhaust the budget assigned to them, it is apparent that agricultural actions are prejudiced by the disadvantage that they often require previous research and experimentation and campaigns to encourage the adoption of new methods and change attitudes towards farming within the rural population.

The above-mentioned disinterest in farming systems, and their potential in local development practices in Spain, which is more real than may appear, would not be so worrying in disadvantaged areas if only its primary productive function is considered.
However agriculture, particularly in these areas, is an activity which brings with it a multitude of other, often positive, consequences. Some of these are related to the preservation of space and landscape, and to the ecological balance, and they can never be ignored, let alone eliminated, without incurring a high social and environmental cost.

Farming systems may become generators of integrated activities in the development process. The situation and prospects of agriculture in the Alpujarra Alta (Southern Spain) is taken here as a case study, describing the historical evolution of the farming system in this area and following up with

some brief remarks, based on previous research on its current critical situation and the consequences of this in the economic, ecological and cultural system.

AGRICULTURE IN THE DEVELOPMENT PROCESS OF RURAL AREAS

The role of agriculture in the classic global development process (involving a trend to urban/ industrial concentration) may be considered as functionally generic in the dynamics of the process in the sense that it may initially be seen as an industry generating surplus capital and, secondly, one which supplies labour and creates demand for industrial products and services. However, when the spatial dimension of development is reduced to a local level, the resulting productive basis of the socio-economic system will vary enormously according to the particular area and endogenous resources which could potentially be mobilised there. This makes it impossible to offer generic "recipes" on productive strategies in local development.

One of the greatest differences between the design of development strategies from a global and local point of view lies precisely in the "*a priori*" lack in the second case of a generic productive strategy. This naturally means that in the case of rural areas, it is not known what role agriculture should play in the resulting economic system.

Except in particular areas with very specific natural characteristics, agriculture must always to some degree form part of local development strategy in rural areas, because of its capacity to generate certain types of external consequences which contribute to the sustainability of the process.

As regards the role of agriculture in rural development, two types of farming systems must in principle be distinguished:

(i) "modern" or industrial farming systems, resulting from the dualist process of development which began in Spain at the end of the 1950s.
(ii) traditional systems, which have been modified to some extent and adapted to the reality caused by the rural exodus, and which could not be totally mechanised or modernised due to both physical handicaps (steep slopes, aridity, erosion, etc.) and those linked to the structure of the existing farms.

Although the first group is more numerous, the second is of greater territorial importance in Spain, particularly in the most disadvantaged areas. These modified traditional farming systems, among which are those of the Alpujarra Alta, are those which usually present greater difficulties in adapting and reconverting within the process of rural development. The key question which must be posed in respect of these systems is: Given their situation of crisis and productive marginality, how can they participate in rural development processes?

In an attempt to provide some ideas in answering the above question, three circumstances must be borne in mind that have arisen since the time when the marginality of the farming systems began, namely:

(i) The actions of agricultural research
(ii) The evolution of the pattern followed by farming production
(iii) The consideration and valuation of the external consequences of farming.

Within the context of farming policies in general, agricultural research has been operating almost exclusively for "modern" farming systems over the last few decades, on the basis of often unsystematic specialised research. Little public or private research has been dedicated to the re-conversion and adaptation of traditional farming systems. This process has resulted from a productivist philosophy which has represented agriculture solely as an economic activity. The recent consideration of objectives other than merely economic ones is changing this panorama. The author proposes the following features of farming systems, which are mutually interdependent, as those that should be taken into account in any analysis:

- productivity
- profitability

- productive stability
- sustainability
- total economic value
- recoverability
- productive efficiency
- adaptability
- equilibrium in development process
- diversity
- technological receptivity
- intensity
- dependency
- capacity to service local markets
- equity
- levels of productive quality
- level of environmental interaction
- level of socio-cultural interaction

To these characteristics, or criteria for analysis, must be added productive quality which would value the natural countryside and the degree of product quality obtained. The indicator "total factor productivity" (TFP), will replace the conventional criteria in the above list of the productivity of each individual factor, or the more recent criteria, “total social factor productivity” (TSFP), which includes the valuation of costs and profits of the external consequences of the system. The dynamic consideration of the TSFP is precisely one of the possible measurements for comparison in the sustainability tests of farming systems.

Characteristics such as productivity and financial profitability have always predominated as objectives in modern or industrial agriculture. From now on, characteristics such as sustainability, product quality, equilibrium, efficiency, total economic value, level of environmental interaction, etc., must necessarily be taken into account. This is because modern farming policies are beginning to consider among their objectives, a series of functions deriving from the possible positive externalities (primarily of an environmental nature) in addition to the primary productive function of agriculture. In addition to the productive or sectoral component of farming, which until now was the only one considered in the design of policy strategies, must be added its territorial component, when valuing a farming system. Thus it should be assessed not only in relation to its production but to the land itself. Recent literature on the new functions of agriculture in rural spaces is abundant and the reasons that are mainly given for the social appreciation of these functions are the current importance of environmental matters, the growing demand for recreational and leisure activities in a rural environment and the changes occurring in agri-food demand. In general, these new functions are linked to the appearance of new products, new services, new rights and public property, in which agri-ecosystems have a direct or indirect influence. As a result, and still considering the endogenous, integral and sustainable rural development model for rural areas, in each specific case, an attempt must always be made for agriculture to be incorporated in the development process, on the basis of the aspects and potentials set out below, which should be studied in current farming systems or in other systems susceptible to being introduced into the areas under consideration.

- Its economic potential as regards primary production (both of conventional products and high quality products, publicising their origin, quality and ecological nature
- Its potential to contribute towards the equilibrium of the development process and the diversification of use and enjoyment of the natural environment.
- Its capacity to offer inputs to secondary activities (agri-alimentary industry, crafts, etc.
- Its repercussions in the quality and peculiarity of other activities (such as recreation, agri-tourism, etc.)
- Its possibilities of compatibility, within a pluriactive framework, of the use of local labour.
- Its capacity to maintain or improve traditional local or regional markets, without rejecting the possibility of supplying to national and international markets.

- Its repercussions, particularly in the case of traditional mountain farming systems, in the control and distribution of water in the upper parts of catchments and in the maintenance of adequate levels of run-off, erosion, etc.
- Its capacity to create and manage natural scenery. The agri-ecosystems form part of what is known as the "objective attributes of the countryside". How to combine arable land with grazing and mountains constitutes one of the characteristics defined as the "quality" of landscape in rural areas. The "value of farming systems as components in the natural scenery" is currently the subject of enormous discussion and research.
- Its capacity to promote alimentary security in the local community.

In order to launch a study into the potential of agri-ecosystems that will deal with the aspects mentioned here, it is obvious that specific analytical instruments and scientific methods will be required. Among them are techniques of economic valuation of natural resources and environmental impact, and those of systematic research. Each modification introduced into the structure of the farming system should be judged by, and aim to improve, economic efficiency, social welfare, environmental sustainability and cultural identity.

Rural development initiatives

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Rural development in the recent period

The OECD defines rural areas as those with less than 150 inhabitants per km², that have a predominance of vegetation cover in the landscape, either cultivated or not. Rural areas are very diverse depending on their proximity to urban centres, their endowment in natural resources, their social fabric and their cultural heritage. Rural development can be defined as the process which brings about changes in population and employment in rural areas.

Changes in population

The most dramatic change that rural areas have witnessed over the last twenty years or so has been a turn-around in internal migration patterns, with the long-standing rural exodus being replaced by what has been sometimes called an "urban exodus". Of course, in every country this process has unfolded in an uneven way, with some areas undergoing an impressive growth of population, while in others out-migration flows have continued to outnumber in-migration. The increasing migration of people from urban centres to rural areas results from at least three distinct phenomena: peri-urbanisation, i.e. a marked increase in the number of commuters accompanied by an enlargement of commuting catchments; an increase in the number of retired people settling down in the countryside; a significant flow of returning working-class migrants, especially in many Mediterranean areas, generated by the sharp reduction in unskilled blue-collar employment in the old industrial centres of North Western European countries (Germany and France).

Peri-urbanisation is usually said to be due to:

- an increase in the housing cost gap between urban agglomerations and less-populated locations;
- a worsening of urban pollution;
- a shift in values, enhancing the preferences for positive rural amenities with respect to urban ones;
- a fall in people transportation costs. People transportation costs cover two aspects: spending of money and spending of time in travelling.

The latter has been reduced sharply by road infrastructure improvements, by the spread of individual car ownership, enabled by a widespread increase in household incomes and a reduction in income inequalities (at least until the late eighties), and also by a tendency the number of working days to diminish and therefore the number of home to workplace journeys.

Immigration of retirees in the countryside was fuelled first by a rise in their number in society at large. This was accompanied by an increase in pensions, allowing more to have a car, without which retirement in the countryside would entail loneliness and cutting links with family and friend networks. The welfare state has been a key factor of the development of the migration of those categories towards rural areas.

That increase in urban to rural migrations was accompanied by a parallel decline in the opposite flow, mainly due to demographic factors. Traditionally, the rural exodus was fed by small farmers and their families, but this pool is gradually drying up. Nowadays, out-migration from the countryside results primarily from the difficulties faced by young people to enter the local labour market especially by those with a higher education who are unlikely to find nearby a job matching up to their expectations.

Changes in employment

The main changes can be summarised in six points.

1. The changes in the composition of the rural population (and its growth in some places), with often an increasing proportion of middle-class people and of retirees, have generated new needs and new jobs especially in the personal and household services sector (in particular in the health sector) in rural areas.

2. Rural areas are perfectly suited, because of the low land rent, to space-consuming activities. Agriculture and forestry, of course, but also tourism. The rise in the average income linked with the high income elasticity of recreational goods and services, the congestion of more traditional destinations (coastal areas, for example), the increasing tendency to spread holiday time between different periods of the year, have been key factors accounting for the growing demand for green tourism and the development of the related activities.

3. The number of employees, and therefore the added value produced per unit area is higher in the service sector than in manufacturing industries, the rise of employment in the former has made land competition fiercer in urban centres, and this has contributed to drive the manufacturing industries away from them. The extent of this manufacturing dispersal throughout the countryside seems to vary between countries. For example, in Ireland, the highest rate of new company formation in manufacturing sectors was found in the most rural and least industrialised areas. In France, this dispersal seems to have mainly affected periurban rural areas. In Italy, it is rather a shift in regional localisation.

4. As large companies have been seeking to obtain a greater flexibility, they have tended to reduce their own staff and to develop sub-contracting, usually with small firms. With lowering transportation costs and the rapid development of new information and communication technologies, subcontractors do not necessarily need to be located within the immediate neighbourhood of their principal. However, the impact of advanced information and communication technologies on rural economies remains to be assessed.

5. With globalisation, European rural areas have lost the comparative advantage they had over urban centres in the low cost of unskilled labour, and have suffered from the delocalization of some labour-intensive manufacturing activities towards developing countries.

Finally, farm employment keeps on shrinking as labour productivity grows faster than the demand addressed to the agricultural sector.

Rural initiatives and the implications of the "Cork declaration".

Rural initiatives can be understood as actions undertaken with the view of bringing about changes in rural areas. They can come from local or external actors. With that definition, individual and non-coordinated decisions or policy measures aiming not explicitly at modifying the situation of rural areas cannot be considered as rural initiatives. The factors that have played a decisive role in the transformation of rural areas during the recent periods do not result from rural initiatives, but from macro-economic changes (globalization, work-time organisation, worsening of urban pollution), from macro-policy measures (the setting up of the welfare state, public spending on road infrastructures), from demographic trends (lengthening of life expectancy), and from individual decisions to adapt to these changes.

Does that mean that rural initiatives does not matter? Of course not. But their impact depends crucially on the evolution of the key factors above. What makes the difference between rural areas in similar localities is, first of all, their ability to attract new people. The Cork Declaration expresses a willingness to shift from a pure agricultural policy to a rural policy in which the two main characteristics would be firstly to help maintain a pleasant and attractive environment through adequate aids to farmers, and secondly to adopt a bottom-up approach that supports local (or, more precisely, regional) initiatives. One can only agree with such general orientations. However, it must be

stressed that if in some areas the main function of farming is to maintain the environment, then this can be achieved with few people engaged in agriculture: extensive farming is probably the more efficient and less costly way to realise this objective. Secondly, if most the Community funds are to be directed to actions resulting from local initiatives, what will be then the future of the truly less-favoured areas: i.e. those where local initiatives are scarce?

Sheep in the Uplands. A New Direction ?

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How can LFA livestock systems best contribute to rural development; and what research is required to support the necessary changes in livestock systems ?

1. Sheep are vital in the maintenance of the cultural and visual landscape of upland Britain. In particular the essential character of the landscape, infrastructure and traditions that we see today were created following the major political and social changes that took place in the 16 th. and 17 th. Centuries. Once established, the production of the natural products of these areas evolved so that milk, wool, cheese, breeding stock and some mutton, lamb and beef became the primary outputs from the land. These supported the population living there and along with the local processing dictated by poor communications, supplemented incomes from more fickle enterprises in mineral extraction. Once the latter declined (and in most cases it was never truly profitable) agricultural products became the staple economic activity. Proximity of many of the upland areas to the early sources of power - water and coal - spawned early industrialisation of some of these products, notably wool.
2. Today the farming industry in these areas is some of the most poorly structured in the UK, local processing of most agricultural products has gone and the industry is dependent on high levels of direct support from the exchequer. As we move into a new policy environment after the year 2000 this fragility is likely to increase.
3. Agri-environment schemes may go some way towards mitigating the effects of diminishing direct production support. But longer term viability and sustainability for these areas is, in my view, dependent upon reconnecting the products from the land to developing and growing markets.
4. Tourism is very important in helping to achieve this as it brings elements of the market to the door. But the very landscape that the tourist and the general population admires is determined by the livestock industry that has created it. There are signs of new products that could make an important contribution to the well-being of significant numbers of producers. To effect this development more information is needed on the markets, production and processing systems before these opportunities can be sensibly promoted.

Some background data

1. In the UK the ewe flock has over the last five years remained virtually stable. In 1997 we had 37,000 holdings with an average flock size of just over 40 ewes, and a further 35,000 with an average flock size of just over 230. These 72,000 holdings having a total flock of 9.6 million ewes or 47.5% of the total, the other 52% are in the 11,500 holdings that have flocks of over 500 ewes **(Table 1)**. The total flock realised sales of 48.8 mkg of wool worth £50m on the 1996 clip of which 60% is sold into the carpet sector [18], reflecting the nature of the wool we produce and its inherent qualities. Said quickly these figures may sound quite impressive but that amounts to an average of about £600 per holding. In addition the total wool clip over the ten years to 1997 has shown a 16% decline in the value of output and an 18% decline in the average realised return to producers **(Table 2)**. Despite this the UK is the world's fifth largest producer of wool [19].

[18] British Wool Marketing Board Report and Accounts 1997. p2.
[19] Ambler, Liz: 1998: Wool Update, *Sheep Farmer* May/June

Table 1 UK Sheep Breeding Flock 1992 and 1997 [20]

Sheep breeding flock	1992 Number of Holdings (000)	1992 Number of Head (000)	1997 Number of Holdings (000)	1997 Number of Head (000)
1-99 ewes	42.1	1,728	36.9	1,573
100-499	37.2	8,552	34.6	8,084
500 +	11.0	9,952	11.4	10,693
Total	90.4	20,233	82.9	20,350

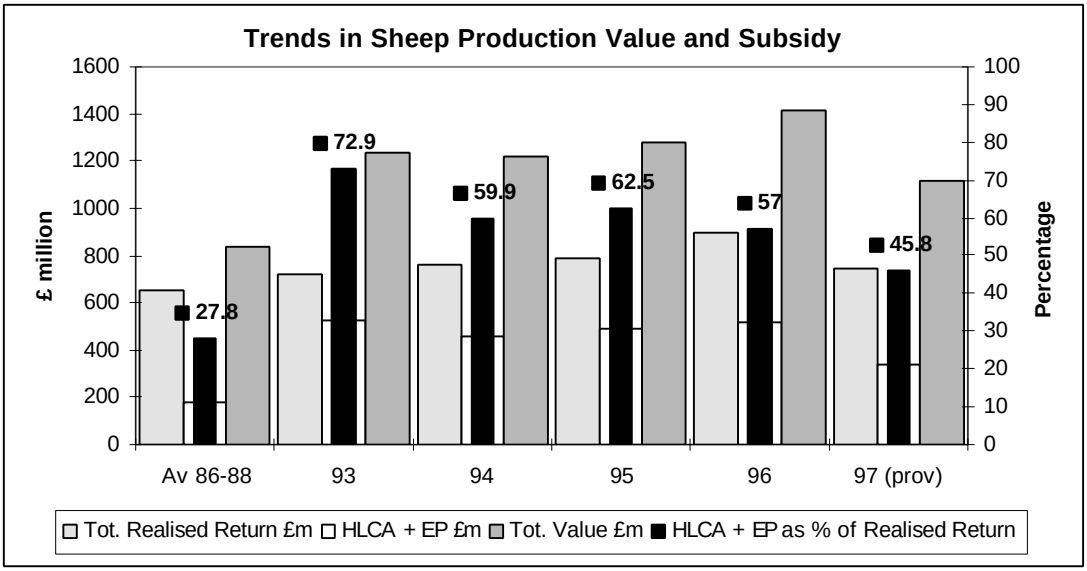
Table 2 UK Wool Clip Production and Value [21]

Clip wool	Average 1986-1988	1997 provisional
Production '000 tonnes	45	46
Average realised return p per kg	98.3	80.6
Value of output £m	44	37

2. Over the same ten year period, the average realised return [22] for sheep and lambs rose 18%: this included an 87% rise in direct support through Hill Livestock Compensatory Allowances (HLCAs) and Ewe Premium **(Figure 1)**. In the sheep sector, so important to our upland landscapes, we are dealing with a business that is dependent at present on direct support.

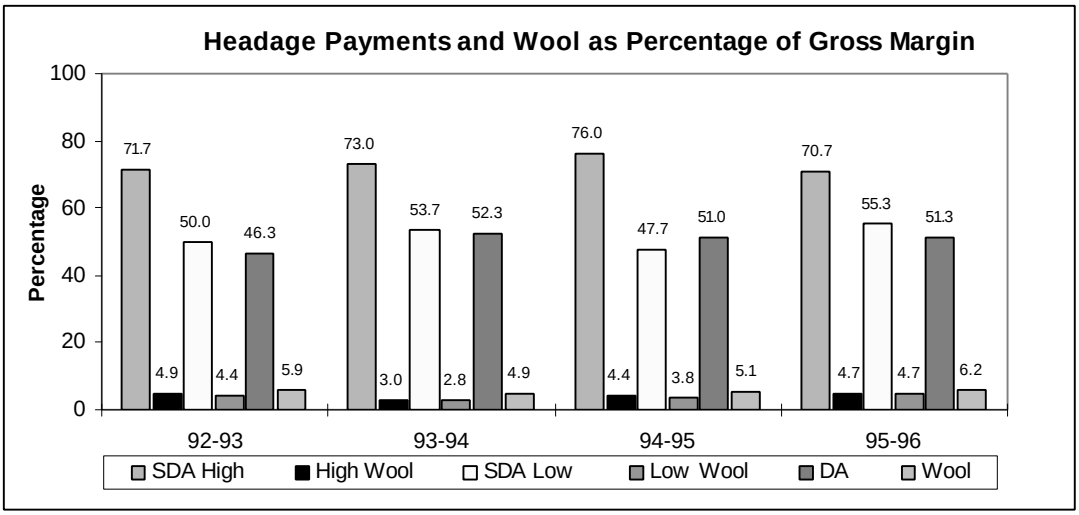
3. Looking in more detail at farm level in England and Wales, we find that in the LFAs over the four years to April 1996 such direct support formed between 46% and 76% of the gross margin per ewe **(Figure 2)**,the variation being driven by the level of HLCA and degree of disadvantage.

Figure 1[23]



[20] HMSO 1998: Agriculture in the United Kingdom 1997, p 12 ISBN 011243 036 8
[21] HMSO 1998: Agriculture in the United Kingdom 1997, p 75 ISBN 011243 036 8
[22] i.e. the value of production less marketing expenses but including variable premium when it existed.
[23] HMSO 1998: Agriculture in the United Kingdom 1997. p67. ISBN 011243 036 8

Figure 2[24]



4. In an analysis of Mid Wales farming in 1991 the comment was made that "The identifiable support actually exceeds the sum available to provide incomes for those working in the industry." [25].

5. It is noticeable that the sheep regime has been kept out of the Agenda 2000 proposals, no doubt in part because the EU is as yet not self-sufficient in sheep meat, but also perhaps because any current direct threat to support for this sector would most likely lead to severe socio-economic and landscape consequences. The UK is also not self-sufficient in wool and world market conditions mean that higher quality wool can be imported as cheaply as home produced coarser types [26].

6. We also have the move towards the greening of the HLCAs, and the existence of other forms of environmental support in the form of Countryside Stewardship and Environmentally Sensitive Area payments. These two schemes alone are projected to put a further £66.9m in 1997/98 [27] into UK farms, many of them lying within the LFAs.

7. Continued greening of support and the suggestion of a move towards area payments in these areas, make the subsidy more visible and must raise questions of sustainability at current levels. The public is willing to pay for environmental goods but at what level?. With direct support on the most disadvantaged farms now funding close to three quarters of the gross margin of production, and no doubt a considerable proportion of that going to support the profits of national and international feed and drug manufacturers, pressure on this intervention may come faster than some suspect.

8. Farmers have some control over variable costs and work to drive them downward, likewise with overheads. Much attention is also paid to improving ewe performance in terms of lambing percentage, weight of lamb and conformation. However, there is one area that traditionally has seen little direct effort in the UK, and that is wool. Wool, which makes up 3% - 6% of the gross margin per ewe [28] **(Figure 2),** is often treated as a by-product of the main

[24] W Hall Head of Business Management, ADAS Consulting Ltd., personal communication based on detailed survey information.
[25] Bateman, D., Chapman, C., Haines, M., Hughes, G., Jenkins, T., Lampkin, N., and Midmore, P.; 1991: Future Agricultural Prospects in Mid Wales - An Executive Summary of the Report to the Development Board for Rural Wales. p 4 Dept, Ag. Econ. University of Wales Aberystwyth.
[26] Ambler, Liz: op cit.
[27] HMSO 1998: Agriculture in the United Kingdom 1997. p107. ISBN 011243 036 8
[28] W Hall, Head of Business Management, ADAS Consulting Ltd, personal communication based on detailed survey information.

process of producing breeding stock or fat lamb. There was a time, not so long ago, when the wool check was seen as covering the rent, or the cost of hiring the shepherd !.

9. Whole industries and towns in the UK were built on the back of wool production - Bradford, Halifax, Huddersfield and Holmfirth, to name a few. And in times past it is what provided much of the ecclesiastical heritage of east Anglia and elsewhere. Whilst the current wool market is dominated by world prices, exchange rates, production and politics world wide the structure of the supply chain has altered too. As in the food sector there are now a few large buyers, creating entry difficulties for small speciality producers.
10. I do not argue for a return to the past but suggest we should look into the past for the opportunities of the future.
11. The traditions in wool manufacturing in Shetland and in the Isle of Harris in Scotland have been maintained and continue to adapt to new technology. In this way they strive to maintain their pre-eminence in the market for niche products based on a cultural identity and location. They are right to guard that jealously guard that. In the 70s and 80s we also saw the emergence of products based on the distinctive Jacob wool. Elsewhere others too have begun to identify markets for wool products of distinct identity and we have in the north of England examples such as the Swaledale Woollens and Wensleydale Longwool Sheepshop both basing their identity on the breed and tradition of their local dale. There are also craft producers such as Island Heritage producing yarn and garments from a range of rare breeds.
12. Whilst such examples exist and make a contribution to employment, they are operating in a small way. Perhaps more could be achieved to help improve producer incomes, diversify the local economy and retain the essential landscape and bio-diversity of these areas?

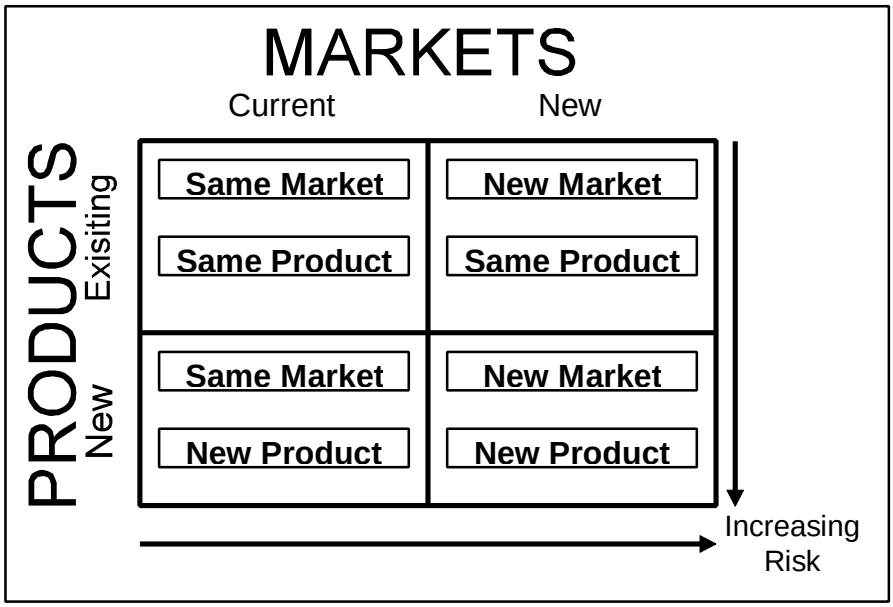
The development process

1. This is not the time nor the place for a treatise on agricultural development or extension. However if we are to see appropriate research funded and, more importantly, implemented on farm and leading to real effects on peoples lives, it is worthwhile reflecting on the essence of the process.
2. In agricultural development we have two options:

    - to do things better
    - to do things differently.

    By differently I mean some significant change to a system such as a new crop, or major husbandry change, such as the introduction of silage to replace hay. Most research, I think I am right in saying, has over the years been directed towards doing things better improved livestock and plant nutrition, soil management, new varieties of crop, improvements in conformation and breeding performance of livestock, intensification of systems, etc. For the future, in many areas and for many farmers, it seems likely such improvements will not suffice alone to maintain income. New activities will be required.
3. There is a down side to this as the following diagram shows **(Figure 3)**. Developing new products into new markets is the riskiest form of business development. And I suspect it was for this reason why a number of farms who diversified in the '80s are no longer trading in their new enterprise. How much better if we can take a system that is well known and adapt it to current market conditions.

Figure 3. Ansoff matrix of Markets and Products



4. Research, some done by organisations represented here, into the potential for fibre crops from goats or alpaca has been carried out but very few have been brave enough to try and exploit the potential. In part the economics of the market will have mitigated the industries' response but introducing new species into a system is not to be undertaken lightly, and with uncertain markets is even more of a risk. Perhaps the adaptation of current systems of sheep production through the introduction of different breeds or improved wool characteristics into current breeds poses some possibilities.

5. Taking the examples from Yorkshire above, Swaledale Woollens, who have been operating as a cottage industry for 20 years, have clearly found a demand for specific high value apparel products from wool normally destined for carpets! The Wensleydale Longwool Sheepshop is selling quality fine woollens. A market of some sort, then, has been shown to exist. Perhaps the market for Swaledale wool could be expanded through planned and controlled investment or even further enhanced by retaining its niche image but with improved qualities. Or how about the fields of a substantial proportion of Wensleydale again populated with Wensleydale sheep?

6. To effect such developments will demand a concerted effort from producers, processors and retailers to ensure the niche markets already indicated can, over time, be grown. This is in fact at the heart of extension, as can be seen from this quote - "The basis for extension is appraisal of the rural situation, and potential to exploit market opportunities through new technology" [29]. Where the niche market wool producers have been operating for some time it seems they have begun to address the issue of new technology. I was reading recently in the national press [30] of how the Harris Tweed weavers were adopting new looms of differing width to enable them to produce the finer cloth that the market now demanded. But in areas where the industry is at cottage level more research and development work is required.

7. In his paper on extension approaches, Rolls indicates a starting point - the farmers themselves. His contention is that they now take a more critical view to the adoption of innovations, how they may fit into their systems and what may be involved in developing them and sustaining

[29] Rolls, M.J.; 1995: International Perspectives for Agricultural Extension. *Agricultural Progress* Vol. **70** pp107-117.
[30] Heather Kirby. Times newspapers Ltd. 'The Times' Saturday April 11 1998.

them [31]. Whilst this is clearly a sound framework, it is our experience that before they can engage in the development process singly or collectively sound information is required upon which to base decisions.

8. Even when such information exists over a long period of time assistance is likely to be needed to ensure its full uptake. Recent research we have carried out for MAFF [32] on the perceived nutritional and financial value of organic manures, their value and management according to the codes of good agricultural practice. The research has shown a willingness to reduce pollution risks but a lack of awareness of what some of those risks were and how they can be reduced. There was support from farmers for development farms to show how manures could be used more effectively. Whilst such issues may seem a long way from wool, (and from what I hear about environmental issues in wool processing not so far as all that) it illustrates that we cannot take it for granted that farmers will adopt new practices just because they seem a good idea, even if there are financial benefits and regulatory reasons for doing so.

9. To build on the existing small markets for breed or 'traditional' wool products will require collaboration along the whole supply and production chain. In this context it is vital to recognise the dynamics involved in establishing meaningful collaboration. This is usefully summarised in **(Figure 4)**.

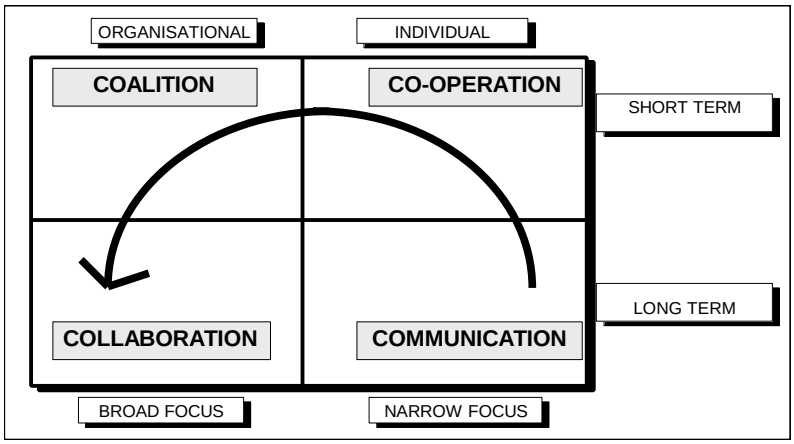
10. The thesis behind this model is the increasing depth of communication, trust and commitment that is built between the partners. Long-term relationships can be based purely on communication, at its simplest neighbours sharing ideas and information. True long-term collaboration, however, requires formal relationships, commitment to address complex issues of wide focus - for example the need to generate more local employment - and the need to see that the objectives of the whole have greater sway than the needs of the individuals. This wider perspective is one businesses identify with.

11. In a study ADAS carried out for MAFF concerning marketing local rural produce high among the key reasons for starting a food business was the desire to contribute to the local economy [33]. 71% of business surveyed cited this reason. The two most significant reasons were the desire to be independent and have control over their careers (85%) and an inherent enjoyment of manufacturing food products (83%).

12. To help those in the supply, process and marketing chain reach a high degree of collaboration will require effort and information. The process will also, no doubt, move faster if oiled by appropriate financial support, to minimise risk, fund market and technical research, and assistance to make it happen.

[31] Rolls op cit.
[32] J Francis, personal communication
[33] MAFF 1998: Contract REO 107. Marketing Local Rural Produce - Survey and Project Report

Figure 4 The 4-C's model of established linkages [34]



Information and technology needs

1. Further work by ADAS, carried out for MAFF [35], has identified a number of information needs and characteristics of farmers making significant changes to their business. Here are some of them:

   Characteristics:

   - farmers see themselves as a special case isolating them from the wider business community,
   - farmers are not well equipped to make complex decisions,
   - they have different psychological characteristics from the rest of the working population,
   - they prefer to learn from experience,
   - they prefer interpreted information delivered face to face,
   - they feel technical information is available but do not always know how to get at it.

   Needs

   - clearly presented and structured written material,
   - strategic policy information,
   - market information,
   - marketing information and skills,
   - economic issues are important for short term decisions,
   - legislation, human and managerial aspects of the business influence long term decisions more,
   - interpretation of technical information in specific business contexts.

2. The work on Marketing Local Rural Produce [36] also identified a need for more market information and improved marketing skills.

[34] Astroth Kirk, A.; 1991: Getting Serious About Strategic Alliances - conceptualizing the collaboration process. *Journal of Extension* **Fall** pp 8-10.
[35] MAFF 1998: Contract RE102. Information and Advice Needs of Farmers Facing Structural Change.
[36] op cit.

3. Whilst the farmers in these studies did not identify specific technical needs this was because they felt sufficient technical information exists. I believe this is a challenge to the research community if we are to develop new products from the hill livestock sector in the direction I have suggested earlier.

4. In preparing for this presentation I have identified work published in 1997 [37] which looks at various characteristics of traditional rare breeds of sheep. The authors state, " Niche markets and roles for primitive and other rare breeds of sheep exist, which include the sale of coloured wool for spinning, lamb skin production, and quality meat schemes." [38]. Work has already gone into assessing the improvement of Shetland wool through the introduction of Merino characteristics[39], and the initial studies indicate that such a cross could significantly increase the financial returns from wool on UK hill and upland farms [40]. It is, however, suggested that financial support equivalent to that given to traditional forms of production will be needed if such changes are to be competitive [41].

5. Assessment of the technical capabilities has, then, already begun, and further consideration of other breed improvements should be put in place. In many respects this needs to be done to underpin market development. At the same time, however, it is essential to explore more fully the processes of effecting such a change and the market conditions to make it happen.

6. Perhaps the commodity approach so far pursued is not so relevant to the development of niche products where the value of the final product is so closely linked to its characteristics of origin? Work on the red meat sector, carried out under the Objective 5b Programme in the north of England by ADAS, MLC, University of Newcastle Upon Tyne and the Northern Development Company, has provided some clues. They indicate the need to ensure that traditional links and networks of the past are restored and updated to exploit the potential advantages of the association with the "Northern Hills" cultures, societies and landscapes [42]. For the production of meat they advocate among other innovations, the potential for pre-selection of gender of offspring, to separate flocks into breeding stock and feeding for stores or fatstock, and also better breeding control to enable particular conformations and performance to meet specific market needs, both of which could combine with activity to improve fibre production.

7. To retain some focus, I have purposefully directed this paper at niche market wool products. But there is also much that needs to be done to extend the uses of wool in new arenas. I am aware of its use as building insulation and in the manufacture of speciality mattresses. With resources and direction other possibilities are waiting to be pursued.

A research agenda for a new direction?

1. I have raised a range of aspects from technical research to considerations of the market and the development process. May I be so bold to suggest the following could be an agenda for research in this sector?:

2. **Market:** detailed study of the speciality wool market is required. Contacts made for this paper with various trade bodies revealed some information on the quantities of types of wool. In addition, the detailed information available on specific breed wools seems limited. Extracting information on the trends in apparel produced from breed or other speciality wool does not appear to exist.

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[37] Mercer, J. T., Lewis, R.M. and Alderson, G.L H.; 1997: The Adaptation of rare breeds of British Livestock to Different Environments: A Review . MAFF Contract OC9603.

[38] op cit p 5

[39] Saul, G.R., Russel, A.J.F., and Sibbald, A.R.; 1992: Potential Systems for Increasing Income from Wool in Hill and Upland Sheep Flocks in the UK; *Agricultural systems* **39**, pp 273-287.

[40] Saul, G.R., Russel, A.J.F., and Sibbald, A.R.; 1993: Potential of Different Sheep Breeds to Improve Wool Production on UK Hill and Upland Sheep Farms. *Small Ruminant Research* **11**, pp1-9.

[41] Russel, A.J.F.; 1994: Diversification of Animal Species in the Hills and Uplands. Livestock Production and Land Use in the Hills and Uplands, *Occasional Publication No. 18. British Society of Animal Production*. Ed. T.L.J. Lawrence, D.S. Parker and P. Rowlinson. pp 67-73.

[42] The Northern Uplands Red Meat Initiative - Summary of Situation and Outlook Report - Consultation document 1998

3. **Process Technology:** current technology for small scale production will need assessing and consideration given to improvements, efficiency, and the capability to handle the wool from potential breed types.

4. **Husbandry Technology:** further development of the work on adapting some rare and other breeds is required to establish their wool and production performance under more commercial conditions. Work is also needed on integrating such breeds into current systems to allow for farmers to adapt gradually as markets develop. Consideration is also needed of the potential for improving the quality of current breeds to meet the market for breed wool products but without loosing the characteristics associated with their origination, as well as the characteristics needed for the meat market. Carcass composition in Hill Breeds can be adapted to meet market requirements. ADAS research at Redesdale and Pwllpeiran is addressing this in the Scots Blackface and Welsh Mountain breeds, but others such as the Swaledale or Herdwick could also benefit. Also the implications for wool production and carcass production of implementing organic systems needs further definition.

5. **Market Structure Development:** detailed study of the needs and aspirations of farms in the LFAs is required to test out their perceptions of the need to change, their view of the sustainability of current systems and their willingness to work together to drive the agenda for creating sustainable systems less dependent on direct support. Such analysis will help to identify which groups or types of farm may benefit from development of breed wools/traditional products, or other potential directions.

Concluding remarks

I have skated over many subjects and may have raised many unanswered questions. However, my purpose has been to stimulate the debate further. I believe we must make progress towards the re-establishment of 'real' markets with the natural products of the areas if long-term progress is to be made. Farmers want to farm, the public wishes to see these areas farmed, and much of the technology is in place. What is required is new ways of bringing it together. I trust that in some small way this paper will have assisted that process.

The role of livestock products in the economic development of a remote island community

Andrew Harmsworth,
Shetland Islands Development Board, UK

What and where is Shetland?

Shetland is an island group within the UK consisting of 15 inhabited islands and 90+ others, approx 120 km in length and with a total land area of 1,500km^2 . It has a population of 23,000 (one town Lerwick 8,000) and is equidistant (approx 338 kms) from its main UK port, Aberdeen, Bergen in Norway and the Faroe Islands. The total length of the Shetland coastline is approx 1,450 km.

Lying between latitudes 60º and 61º North and directly in the path of the Atlantic weather systems, Shetland's climate is second to none in the British Isles for severity. Because of the shape of the land mass no place is more than 5.5 km from the sea and this gives rise to a hyper-oceanic climate. This combined with a small percentage of arable land 8%, only 13% permanent pasture and 79% rough hill grazing dictates that Shetland agricultural industry is based on livestock rearing and ancillary cropping.

An agricultural community in such an isolated situation needs to work together in harmony and to make every reasonable effort to develop marketing advantages bearing in mind that the very remoteness and small size means that only quality and uniqueness of product will attract add-on value. The remoteness also has an advantage (sometimes overlooked) in that fresh produce imported to Shetland has lost its initial attraction by the time it reaches our shops whereas the home produced equivalent is not only fresher but has been produced in known and natural way.

The Agricultural Industry

(a) General

There are approximately 1,600 separate agricultural businesses in Shetland and 100 Common Grazings where each Crofter has the right either to apportion land for their own use or to graze a given number of sheep. Essentially crofting is a part-time occupation although there are over 100 units in Shetland which employ one person full-time. Sheep husbandry is the predominant enterprise with a breeding flock of approximately 190,000 ewes producing 120,000 lambs exported to the Scottish Mainland for finishing and approximately 15,000 lambs ready for slaughter either in Shetland or exported to the Scottish Mainland. This is in keeping with the structure of the British sheep industry where upland farmers produce store lambs for finishing by lowland farmers and ewe lambs and gimmers for breeding. The beef industry consists of 2,500 breeding suckler cows with approximately 2,000 calves exported for finishing and the islands are self-sufficient in milk with 2.8 m litres produced purely for the liquid market. Other enterprises include vegetable production, egg production, horticultural production, Shetland ponies, wool and Shetland Knitwear.

Livestock Products contribution to the Shetland Economy

Shetlands' GDP for 1996 was as follows:-

	£m
Agriculture (livestock)	14.3
Oil Production	50.4
Fisheries (Salmon Farming Catching, Processing)	97.8
Knitwear	5.0
Tourism	11.3
Services	167.6

TOTAL	**346.4**

Expressed as a percentage of G.D.P. Agricultural Livestock products contribute 5% and of G.D.P. (excluding oil production and services) 11%. Although the Shetland GDP appears low it should be noted that the total working population at 11,116 gives a GDP per worker of £31,162.

With almost 12% of the total population having a direct link with agriculture there is a strong sense of co-operation not only between individual producers but between supporting agencies such as the Shetland Islands Council (SIC) Scottish Agricultural College (the advisory body), SOAEFD (Government Department) and Shetland Enterprise (local development agency). The producers are represented by 2 unions and an agricultural association and these organisations together with other sections of the industry maintain contact through regular meetings of the Agricultural Advisory Panel administered by SIC and designed to consider present and future policies and opportunities.

Livestock Health

One of the most obvious of Shetland's features is its isolation and although this brings with it the disadvantages of distance from main markets and freight costs on imports and exports it does also confer a "cordon sanitaire" so that livestock and crops are relatively disease free. This is an area which has been researched and is currently being developed by the Agricultural industry and although the majority of the impetus so far has been led by the SIC's Development Department and other agencies the industry, through the Unions and Association, have taken up the initiative and are in the process of setting up a Livestock Health Trust to oversee and develop the initiative further.

The ingredients of the Livestock Health campaign are as follows:-

a An isolated agricultural community which has historically been clear of many of the sheep and cattle diseases affecting the E.U.

b One port of entry for livestock allowing monitoring of all imported livestock (this mainly consists of tups (rams) and replacement dairy and beef heifers).

c A highly motivated agricultural community who are prepared to co-operate and to contribute financially to disease control programmes.

d A local authority and other development agencies who are active in promoting and supporting health initiatives.

e Local (private) veterinary firms who work alongside SAC veterinary services to provide an efficient, minimum cost testing and surveillance service, including checking all imported sheep, goats and cattle.

f Regular dialogue between all participating agencies and producers. (This takes place at the Agricultural Advisory Panel and a meeting of officials and advisers known as the Technical Team meeting).

g Effective marketing and publicity so that potential purchasers of Shetland Livestock are made aware of the high-health status associated with the islands. In the near future Health Certificates are likely to be produced by the Livestock Health Trust.

h Accurate and comprehensive record keeping to maintain veterinary records. This has already proven invaluable in deciding future strategy.

i Great care exercised in importing livestock and home-rearing of replacement breeding stock encouraged.

Specific Health Initiatives

The following livestock health initiatives are described in brief to illustrate the type of work carried out or in the process of being carried out in Shetland.

a **Enzootic Abortion in Ewes (EAE)**

It had been held that Shetland was clear of this disease and in 1989/90 a two year testing programme was carried out whereby 17,000 ewes were tested with no reactors showing up. Consequently Shetland was declared free of EAE and this has since had a beneficial effect on market prices for breeding sheep, especially the Cheviot x Shetland which is a Shetland speciality and is recognised as being a 1st rate breeding ewe. In order to demonstrate continuing freedom from EAE an on-going monitoring programme is in place whereby a fifth of the flock are tested annually (imported sheep are also tested).

b **Sheep Scab**

This is unknown in Shetland although a major problem in other areas of the E.U. Imported sheep are injected on arrival at Lerwick and again 7 days later after being isolated on their croft or farm. An outbreak occurred in 1993 through imported rams and this was fortunately contained and eradicated through the concerted efforts of the SIC, producers and the veterinary service. The potential damage of such an outbreak spreading to the Common Grazings would have been very serious.

c **Scrapie**

This disease has been present within the E.U. for many years but in Shetland with the advantage of a virtually closed flock the opportunity arose to launch an eradication programme. Accordingly 12 years ago a voluntary monitoring programme was initiated which recorded closed flocks and culled any ewe diagnosed as having Scrapie together with her female offspring. At present this programme involves 75 flocks and 8,570 breeding ewes.

In 1994 a breakthrough occurred when a test was developed which enabled sheep to be tested for Scrapie susceptibility and although this was initially expensive it meant that tups(which obviously influence more lambs genetically than the ewe) could be tested and culled if proven susceptible. This test combined extremely well with the detailed records kept under the scrapie programme involving the ewes and the hard work of the last 12 years is now bearing fruit in a dramatically increased measure.

A full effort has been directed towards the testing and electronic tagging of tups and over the last 3 years over 3,000 tups have been tested with the majority of funding coming from producers and a smaller contribution from SIC and other agencies. By this winter it is expected that all of Shetland's 5,200 (estimated) tups will have been tested and already results are indicating a dramatic fall in Scrapie susceptibility and incidence so that real hope exists for eradication by the year 2000.

d **Maedi-Visna**

This sheep disease is unknown in Shetland but could be brought in unwittingly unless present monitoring continues on imported sheep. Blood samples taken from EAE tested sheep are currently held in frozen storage and it is hoped to test these at a later date with the aim of proving that Shetland is clear of Maedi-Visna

e **Bovine Viral Diarrhoea (BVD)**

In 1993 cases of BVD occurred in Shetland brought in via imported cattle and a potentially damaging situation developed because with no BVD history Shetland bred cattle had no immunity. A 3 year programme of testing began in 1994 and BVD has now been eliminated in Shetland and testing of imported cattle continues at present to maintain this situation.

f **Examples of Added-Value attributable to Health Initiatives**

1 A valuable contribution to income has been the sale of Shetland x Cheviot female breeding sheep which are good mothers, hardy and disease-free. These are sold to breeders on the British mainland and are guaranteed to be E.A.E. accredited. At a time when breeding sheep prices have not increased by any significant amount these accredited gimmers have sold at premium rates:-

Average price ***At 1991 values Actual Price***

1991	£59.00	£59.00
1995	£64.88	£72.90
1996	£70.49	£81.02

2 A sheep breeder on the Scottish mainland lost his flock's EAE accredited status due, not to an outbreak of disease but to a single doubtful test result. At Sale time he found that each breeding gimmer sold at £16 less than those belonging to his neighbour whose flock carried accreditation (£49 compared to £65). Later in the season when he sold his cast ewes he received £12 less for each ewe compared to those sold by his accredited neighbour (£33 compared to £45)

NB Comparison has to be made to the Scottish mainland because all sheep in Shetland are monitored as EAE free and should therefore all benefit from enhanced returns.

Other Livestock Added-Value Initiatives

In the time available it is not possible to do more that highlight other livestock-related initiatives some of which are shown below:-

A **Wool**

53% of the breeding flock in Shetland (approx 190,000 ewes) is of the pure Shetland breed and this represents over 100,000 ewes. Total wool production is in the order of 350,000 kilos p.a.

Wool from the pure Shetland breed is among the finest in the world with fibre diameter ranging from 10-20 microns at the neck to 20-25 microns at the middle. Eleven main natural colours are recognised and in addition 30 different markings are found each with their own names in the Shetland dialect. In 1982 a spinning mill was established at Sandness and this uses only wool of grade 1 and 2 (the finest) to produce wool which is pure Shetland grown in Shetland. The remainder of the clip is sold outwith Shetland through the 2 local woolbrokers with the price commensurate with that sold through the British Wool Marketing Board.

Apart from a limited niche market for home-spinners, pure Shetland coloured wool attracts a much lower price than white and the result is a steady reduction in coloured sheep numbers. This is not desirable and it is to be hoped that the Hyland Report of March 1996 would be implemented by the European Commission to safeguard the future of wool from traditional breeds in less favoured areas. It would be advantageous to mount a marketing initiative for pure Shetland wool but because the E.U. does not recognise wool as an agricultural product it would be very difficult to develop a market. It can only be said that to the crofter it is certainly an agricultural product but one which is grossly undervalued and which receives no support at present.

B **Knitwear**

In 1996/97 the turnover of Shetland Knitwear has increased to £5m p.a. from £3m in 1993-95. Individual firms in conjunction with the Shetland Knitwear Trades Association (SKTA) have had considerable success in developing the Japanese market and to a lesser extent the E.U. market (particularly Spain France and Italy). A new market is currently being sought in the USA with the most difficult obstacle to overcome being the large quantity of knitwear marketed as Shetland which has no connection with Shetland and is not subject to quality control. In order to market the "true"

product, the SKTA has patented the "Shetland Lady" label which can only be attached to garments which have been knitted in the Shetland Isles.

Of the total knitwear production only 10% is sold in Great Britain and of this only approximately 3% is sold in Shetland. Of the knitwear exported 60% goes to S.E. Asia and Japan, 25% to the EU and 5% to the USA.

The main challenges facing the knitwear industry is the protection of the name "Shetland" and the training of skilled workers for the industry - at present there are approximately 800 workers knitting at home and 120 in knitwear factories.

A recent development has been encouragement by the SIC of sheep producers to use "Green Dip" (synthetic pyrethoid) for parasite control instead of organo-phosphates and this has clear implications for the quality of the resulting wool.

C Rare Breeds

Shetland has been described as an environmental "ark" and included in that category are several breeds of livestock, ponies, cattle (a small dual-purpose milk/beef breed), ducks, geese and hens. The SIC has supported a local croft/genetic bank over the last 5 years where these breeds are maintained together with potato varieties, Shetland oats, bere (ancient barley) and other species. Attempts are being made to locate other locally grown varieties of crops in order to maintain a genetic pool.

D Environmental Management

Shetland is one of the outstanding environmental areas in Europe with large areas of uncultivated hill land combining with the benefits of extensive livestock production which is a feature of crofting. In recognition of this Shetland has been designated an Environmentally Sensitive Area (ESA). This voluntary scheme under which the crofter is paid an annual grant for carrying out positive environmental development has already attracted over 250 applicants and will certainly continue to grow. This quality of the environment is closely linked to the promotion of the tourist industry.

E Horticulture

A number of small horticultural developments have been established in Shetland over the last 10 years including tomatoes, strawberries, bedding plants, vegetables, cucumbers, culinary herbs, peppers and pot plants. These concentrate on the home market and have been successful in establishing a market for home-grown, healthy and top quality produce.

Conclusion

It is difficult to give a full coverage of the many integrated initiatives which have given rise to a healthy rural economy in Shetland. The main components can be summarised as follows:-

a Co-operation within the agricultural industry including development agencies and exemplified by frequent informal meetings and exchange of ideas.

b Exploitation of "natural advantages" e.g. inherently good livestock health, high value environment.

c Diversification. Crofters are usually part-time, investing earnings into agricultural development where tourism and environmental measures are allied with extensive livestock production.

d The recognition and development of the home market where a premium exists for fresh, conservation- grade produce.

e The on-going research and development of marketing opportunities and value-added enterprise within the constraints of national and E.U. policies.

f In my view the most valuable resource available are the Crofters and farmers themselves without whom there would be little in the way of a rural economy or society. Their enthusiasm and willingness to cop-operate with other components of the rural economy is of paramount importance and it is vitally important that they are given every encouragement to maintain their holdings as well as providing assistance for young entrants to the industry.

Typical livestock products and rural development: The case of fine wool in Portugal

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Introduction

One of the new CAP priorities is the extensification and diversification of agro-food production. This policy applies particularly to the Less Favoured Areas (LFAs) where large areas of Portugal are included; The same policy recomends the production of non food commodities which at present are in surplus in the EU. It also seeks to encourage the production of commodities for which there are strong market demands and which will provide employment in rural areas (Russel, 1993).

The specificity of agro-food products linked with protected geographical indication (PGI) and protected designation of origin (PDO) has a fundamental role in the establishment of the strategies of agricultural enterprises and in rural development.

Fine fibre production is according the EU´s policy, specially if the emphasis is given to high quality wool fibre (i.e. fine). Most of the substantial wool produced in the EU´s countries is of moderate to poor quality which cannot properly be classed as "fine fibre". The production of high quality fine wool (with a high value) is a good example of diversification into a new product (Russel, 1994). On the other side the programs of genetic improvement of fine wool are dependents on the availability of precise and safe methodology to control the fine wool parameters of quality, to be used in the future in the animals genetic evaluation.

1- EU Regulations for Agricultural Products

We can state that protection of agricultural commodities answers to three needs:

- Consumers protection to whom it is guaranted the product´s specificity;
- Farmers protection against illicit competitiveness of other actors that try to put in the market at competitive price products that do not have the required conditions but can confound consumers;
- Development of rural areas by setting alternative productions, diversifying farmer´s income and promoting a market equilibrium.

The aim of protecting agricultural products easily identified in what concerns its geographical origin, led that some EU countries created National Labels which provided to farmers an higher income, rewarding an higher qualitative effort and to the consumers it provided high quality products with guaranted origin and processing. Although the lack of standardisation within national certification systems associated with an increasing competitiveness due to the Marrakesh agreements led to the implementation of an European certification system (Sylvander, 1997).

The EEC regulations nº 2081/92 e 2082/92, are the legal basis concerning PDOs and PGIs. They are the result of deep changes in agricultural policy in which quantitative criteria are replaced by qualitative criteria. The EEC regulation nº 2081/92 defines:

- **Protected Designation of Origin** (**PDO),** the name of a region, place or exceptionally a country, which is used to designate an agricultural product originary from that region, local or country which quality and characteristics arise essencially or exclusively from geographical provenience, including natural and human factors and which production and processing occur in a geographical restricted area.
- **Protected Geographical Indication (PGI),** the name of a region, place or exceptionally a country used to designate an agricultural product originary from that region, local or country which

reputation, quality or other characteristic may be reported to the geographical origin and which production or processing happen in a restricted geographical area.

The difference between these two statements lays in the last paragraph. For PGI it is required that only one phase of the product chain must be directed linked with geographical environment. Nevertheless it must be a product originary from that region and have certain characteristics which arise from that same region. PDO highlights the links between product and its origin. It results from a specific process inherited by our culture which preserves the specificity and typicity of the product. The EEC regulation nº 2081/92 does not apply to designations that have become general, (like Brie, Camembert, Cheddar e Gouda). To benefit from the protection granted by the EEC regulations, products must be inscribed in a register book with two kinds of registration, normal or simplified. In the normal process, a Farmer´s Association asks the registration of a product to the national authorities, that send it to the EU commission. After analysis, this demand is published in the EU Official Journal jointly with the specifications book. After six months without complains the EU commission inscribes the product in the DPO and PGI book. Portugal has already inscribed fifteen products. The simplified process only can be used to products which already had national protection, like some Portuguese wines.

The register gives to the producers exclusive rights to use the PDO and PGI, which means, industrial ownership.

According the EEC regulation nº 2082/92, PDO and PGI are protected against:
a) Any kind of direct or indirect commercial utilization from products not included in the register book;
b) Any encroachment, even if real origin is indicated or is used a word like "type" or "method";
c) Any false or fraudulent indication as to the provenience, origin, nature or quality;
d) Any other practice which may confound the consumer.

For the efficacy of the regulations, it is neccessary to implement through the EU an effective control system to check if the product is according to the specifications settled in the register book. Every State Member should indicate an independent organisation that guarantees the objectivity and imparciality required (Sainte Marie and Valcheschini, 1996).

2. PDO and PGI in Portuguese Agriculture

Portugal has been using correctly these regulations in order to protect agricultural products. In what concerns livestock products we have:
Meat (11 PDO e 7 PGI), Smoked Ham (2 PGI), Cheese (10 PDO), Honey (9 PDO).

The existance of a legal basis to protect agricultural production is crucial to portuguese agriculture, due to its specificities within the European context. Natural environment, old production technologies and the weakness of agricultural entrepreneurship led to the fact that average productivity is lower than in Europe. CAP and the late reform of the CMOs relative to the mediterranean products had negative impact in Portuguese Agriculture, that can not compete through quantity or costs with other competitors. So, differenciation seems to be the only alternative to stimulate rural activities in LFAs and create a regional value added able to promote sustainable development.

The success of this strategy depends upon:

- Building quality management systems;
- Financial incentives;
- Setting up an agressive marketing strategy able to give an image of "products with history";
- Setting up global distribution channels in order to reach international markets.

3- Wool Chain

Sheep are bred in Europe essentially for the production of meat and/or milk. Today, wool produced

represents a liability for the breeder, as the selling price does not cover the expenses of shearing, which is a phisiological necessity for the animal (Gallico, 1994). We think that an effort must be done in protecting fine wool in EU by a labelling system. It will have impact at the production level (increasing income from sheep production, setling rural population in LFAs) at the industry level (availability of fine wool produced in the EU suitable for the market demands) at the consumers level (providing a certified product) and at the research level (which must provide answers to the needs of the whole chain).

The low scientific interest on the wool research and the low value of this production makes this activity slighted, however unavoidable. Since fine wool of high quality, have been "rediscovered" by the fashion industry in recent years in many European countries it has a great demand on the international markets, so it is very important to do a specific survey of wool quality produced in Portugal and the identification of the best genetic basis.

Portugal has established a system for collecting (livestock cooperatives that also work as wool storage centers) and classifying wool (technicians from the Ministery of Agriculture) so that batches can be grouped for deals with industrial concerns. Nevertheless, most breeders are on their own when negotiating with traders since they do not want to deliver their wool production to the wool storage centers (authorised to certify the product´s origin and quality to buyers) and wait four to five months for the wool auctions with higher prices. These farmers receive an identical price irrespective of the quality of wool.

Scientific studies on wool quality and improvement were carried out only until the 70´s; Wool prices have been decreasing due to world crisis within the sector. Furthermore and unlike all other textile fibres and animal products, wool is not recognised as an agricultural product under the treaty of Rome. It cannot benefit therefore from any of the agricultural subsidies granted within the European Union. It is relevant to re-evaluate the present situation in what concerns the wool valorization and try to improve or at least keep the wool quality of some flocks, although, it is necessary that selection bodies (herd book) redefine and reintroduce "wool criteria" in genetic selection criteria so that wool improving breeding stock may be identified. Premiuns would provide an incentive to produce and disseminate approved breeding stock. This purpose fits into the national policy of conservation of genetic resources and autoctonous breeds. Therefore it is urgent to carry out an objective and directed survey of the wool quality and to identify the best genetic basis in order to set up an initial fine wool flock ($\leq 20\mu m$).

4- Collected Wool

In Portugal the concentration of the wool is done by farmers associations in three differents places in South and Center border (Beja, Évora and Castelo Branco). It is predicted that only 15 to 20% of the total production is delivered in the concentrations places. On table 1 we can observe the percentual distribution of classified wool between 90 and 97. It is shown that in the southern regions of the country (Évora e Beja) the percentage of AA wool (19- 22μ) shifted between 35 to 45%, 1992 excepted. In Castelo Branco region the percentual evolution of AA wool has been decreasing since 1990 (46.4%) reaching its minimum in 1995 (12.9%). This situation results from the crossbreeding between autoctonous and exotic breeds (Frísian, Manchego, Awassi and Assaf) which have been introduced to increase milk production.

Table 1- Evolution of finesses (%) in the 90´s in the three places of concentration

ÉVORA				BEJA				CASTELO BRANCO			
YEARS	AA	A	B		AA	A	B		AA	A	B
90	35.4	34.9	15.4		51.4	27.0	12.2		46.4	22.7	17.3
91	44.9	20.3	20.8		42.8	24.9	15.1		34.2	29.6	14.4
92	37.0	26.7	14.6		50.1	23.3	15.8		39.5	27.9	19.8
93	40.5	29.1	15.5		54.8	17.6	8.40		29.0	28.6	25.0

94	41.5	19.0	25.6	45.3	29.1	15.2	24.7	27.5	30.7
95	47.7	25.1	19.0	49.0	26.5	9.20	12.9	32.5	31.1
96	29.0	30.3	17.4	39.4	31.4	18.8	18.6	25.9	29.3
97	34.3	35.9	18.9	41.6	31.6	15.3	28.3	24.5	24.4

AA- (19- 22μ); A - (> 22 - 25μ) and B - (> 25 - 36μ)
Source: Chabert, personal communication (1997).

In table 2 it is shown the consolidated data and the tendency for a percentual decrease in AA wool produced (44.4% in 1990 vs. 29.0% in 1996) which correspond to an increase in the production of A wool (> 22 - 25μ); B and D classes suffer slight changes. This tendency ought to be changed.

Table 2- Evolution of finesses (%) in the 90´s in Portugal

Anos	**AA (19- 22m)**	**A (> 22 - 25m)**	**B (> 25 - 36m)**	**D Defective**
90	44.4	28.2	14.9	12.4
91	40.6	24.9	16.7	17.4
92	42.2	25.9	16.7	15.1
93	41.4	25.1	16.3	17.1
94	37.1	25.2	23.8	13.8
95	36.5	28.0	19.7	15.6
96	29.0	29.2	21.8	19.7
97	34.7	30.6	19.5	15.1

Source: Chabert, personal communication (1997).

5- Development Project

We are proposing a project "Evaluation of fine wool production in Portugal" that has been submited to appreciation within the framework INTERREG II and will be implemented in the South and Center Border of Portugal.

The goals are:

- Evaluate the possibility to increase wool quality produced, associated to the preservation of biodiversity and autoctonous breeds;
- Identify the quality and quantity of fine wool produced in Portugal on the basis of data obtained on the three places of wool storage (Beja, Évora e Castelo Branco) and according to the official system of classification.

To achieve these goals it is necessary to:

- Identify the local areas with higher percentage of fine wools and the producers that have, in their flocks, the highest percentage of these, according to the official system of classification;
- Characterize fine wool produced on the basis of diameter and lenght, from samples of wool obtained in the three places of wool storage and the identification of the animals producing fine wool in the flocks that have a high percentage of AA wool;
- Increase the economic yield of sheep producers and decrease the subsidy dependence through the production of high quality fine wool.

Projects to be implemented:

- Quantify the fine wool production in the concentration places;
- Evaluate the wool quality by laboratory techniques according the IWTO;
- Correlation of AA class wools classified according the official system of classification and according the laboratory evaluated parameters.
- Identification of the flocks and animals producing extra AA wool;
- Setting up a Portuguese White Merino purebreed flock.

- Participant institutions

The partner institutions in this project are: Ministery of Agriculture (**DRABI**) and School of Agriculture of Castelo Branco (**ESACB**). The following farmers Associationsalso participate in the project::
Associação de Criadores de Ovinos do Sul (**ACOS**); - Associação de Produtores de Ovinos do Sul da Beira (**OVIBEIRA**); Cooperativa Ovina de Évora (**COE/UNICADE**)

Broadly this institutions are responsible for:

- Evaluating the quality of the wool according the methodology defined by the IWTO;
- Classifying wool according the official system;
- Setting up regional databases on the national Merino breeds and herds;
- Setting up a Portuguese White Merino purebreed flock;
- Weighting, identifying and storing the fleeces;
- Keeping computer data (classification/grading and weight) of the fleeces;
- Selling the wool;
- Setting up regional courses in sheep-shearing.

6- Economic, social and regional interest of the Project

The strategic interest in breeding animals for fine fibre production was tacitly recognised in a report presented to the European Parliament (Hyland, 1996). In this report, several structures measures were recommended, in order to stimulate wool production, emphasizing the measures which may lead to improve the quality of the fibre and to create "labell-marks" with the purpose of promoting market niches for the animals textile fibres produced in Europe.
The social aspect is significant as the sheep production sector involves thousands of people across Portugal. The standard of living of these people could be improved if wool was more efficiently used.
Crossbreeding to improve certain aspects of the animal´s meat and milk is resulting in genetic deterioration. Purebreed races, the fruit of hundreds years of painstaking selection have disapeared or are at risk. Every country in Europe has its own breeds of sheep. This genetic heritage, from which the wool stock of the major Southern hemisphere producers originates, must be preserved in the interest of biodiversity. Available data show us an existance of 1.000.000 Portuguese White Merino female sheep, 100.000 Portuguese Beira Baixa Merinos and 25.000 Portuguese Black Merinos. These breeds are the genetic basis of fine wool producers and they represent roughly 50% of the total number of sheep.

Although there are 350 million consumers in the EU, the textile industry of the European Union, is in severe decline. It is forecast that by 2001, only 30 % of the clothes bought in the European Union will be made here and that 1.5 million jobs will be lost as a result (Lanner, 1995).

This project is relevant to different areas:
At the producers level, the quality improvement will increase the competitiveness of Portuguese fine wools promoting higher incomes for sheep breeders. As most of the fine wool production is carried out in an extensive production system, in poor soils, this project may lead to:

- Settling the rural populations and maintaining the farming activities;
- It will promote the enhancement of less favoured areas;
- Improvement of the endogenous resources, namely the autoctonous Merino breeds;
- Create wool labels and promote products on the basis of product originality with emphasis on its role to support traditional skills and act as a driving force for rural development. The conservation of a genetic heritage and job creation in rural areas could also appeal to consumers (Corcoran, 1994).

The revalorization of wools of high quality, means an income diversification of the chain production (Production and Industry) and will doubtlessly influence the local and rural development and thus, it

may be another tool to reduce human desertification of the interior region of Portugal; therefore, it will help settle down the active population of the border areas.

At the Industry level, and in the short term, the textile industry will benefit with an increase in the quality of the wool fibre; in the medium and long term, the increase of high quality wool will make possible to be less dependent on the import of high quality raw materials and from price variations in the international markets, assuring that the added value lost in the import process will be retained in the area.

At the Portuguese-Spanish cooperation level, as it is possible to cooperate with the School of Agriculture of Badajoz (University of Extremadura - Spain) the project will cover an geographical area with 3 million Merino females. The cooperation will make possible to know all the produtive potential of that region.

At the research level, it will be possible to get the knowledge of the precise parameters of wool quality (diameter and lenght) and establish effective criteria to select and improve wool quality in herds.

7- Conclusions:

The problem of rural areas as suggested by Mannion and Phelan (1997).is directly linked to their capacity to develop new functions (non-farming business and services, like agro-turism) and link them to real demands and markets. The implementation of any policy must include measures that not only enable internal diversification (like fine wool labels) of the rural economy but also those that support the development and retention of competitive farm business (

The typical livestock products with quality designations (PDO and PGI) are designed to preserve the specificity (production is remote and scattered throughout rural areas) and the typicity of products for consumers, to create “rarity” with specific prices that reflect consumers preferences.

As for the fine wools, some of the measures that should be taken are:

- Aid for maintaining and establishing autoctonous Merino purebreed flocks in desertified areas, using extensive breeding systems environmental friendly;
- Set up regional databases on the national Merino breeds and herds;
- Quality grading for European wools and standardisation of classification methods in order to establish quality related price scales;
- Reinforce knowledge about fibre production through educational and training systems;
- Develop knowledge of the world fibre markets and fibre trading;
- Look at the development of vertically integrated fibre related enterprises from fibre to finished product.

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Integrated rural development in the Rhön Biosphere Reserve

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1 Protection and concept of landuse

The most important tasks for biosphere reserves are:

- protection of the natural household and genetic resources
- development of sustainable landuse
- research and ecological observation of the environment,
- environmental education and public relations work.

2 Zoning

Because different aims can not be reached at the same time in the same area, a spatial structure with different focus according to the local conditions is required. Each zone has its different tasks to fulfill which are defined as follows:

Core zone	areas that serve the protection of the natural landscape. Nature should develop as a natural ecosystem in undisturbed dynamics.
Maintenance zone	areas with extensive usage of land and for the testing of model forms of exploitation.
Development zone	areas with resource-wary exploitation of land and further housing and trade development.

The first working step, and hence the starting point for the establishing of zones, was a suggestion from the nature-protection viewpoint, constructed from the basis of one of the most significant aims of the MAB programme, the preservation of genetic potential. Accordingly, a lot of importance is placed on the species and biotope protection in development planning in the biosphere reserve Rhön. After three years planning process and discussion with all the communities, authorities and associations, a nationwide plan for dividing the area was presented in 1994.

3 Problems

Perception and Evaluation throughout the Population

- The establishing of zones was regarded by the population with great scepticism.
- Many people didn´t know exactly what it means and fear restrictions on their private free time as well as on their economic activities.
- It is the farmers in particular who, in zoning, see undue interference in their economic trade.
- Similar expressions have been made by those involved in the tourist sector; for example, hoteliers and their work force as well as suppliers of holiday homes.

4 Significance for Regional and Agricultural Development

The Rhön as a rural area corresponds very well to the picture of European problem regions:

- with its low economic power and
- weaknesses in its employment structure.

The extensive location of the Rhön makes it an area with limited economic chances of development. Trade and industry are restricted to small and medium sized companies.

From this, a combination of tourism, agriculture, forestry and nature protection arises for the usage of the land.

For the future of the Rhön it will be very important how the special types of use can be developed in a common sense. With regard to regional as well as agricultural development, zoning above all means bundling potential support for nature-friendly developments. Even in locations of weak yield, supportive programmes can contribute significantly to the maintenance of cultivation. The supporting means that are put at the disposal of the Rhön within the framework as a biosphere reserve, serve the purpose of supplying help to ensure that the Rhön helps itself.

Funded project served the registration as well as the realization of the innovative potential of the region. So innovative forms of usage were discussed with the farmers. In the touristic and agricultural cooperation, adequate potential for regional development was evident.

5 Discussion points

- To involve the population as early as in the preperation stage of such projects.
- Furthermore, technical reports should be broadened in order to contain an interdisciplinary element.
- The population should be given the opportunity to identify positively with the project.

Training and co-operative research in the Mediterranean area - the role of CIHEAM

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Introduction

The international centre for advanced Mediterranean agronomic studies (ciheam) is an intergovernmental organisation representing the following countries: Albania, Algeria, Egypt, France, Greece, Italy, Lebanon, Malta, Morocco, Portugal, Spain, Tunisia, Turkey and former Yugoslavia.

The objective of the ciheam is to promote co-operation in the mediterranean region through training and research in the area of agriculture and natural resources. To accomplish its objectives, the centre organises specialised post-graduate training and short courses targeted towards professionals. Furthermore, it promotes and co-ordinates research networks on issues relevant to the mediterranean region. The centre has at present four Mediterranean agronomic institutes; at Montpellier (france), Bari (italy), Chania (Greece), and Zaragoza (Spain).

CIHEAM does not have training or research activities specifically orientated towards the improvement of livestock production in the european disadvantaged areas. However, since the ciheam activities are generally oriented towards the improvement of typical Mediterranean agriculture and considering that many of the areas which are catalogued as disadvantaged (declining/marginal rural areas) are to be found in Mediterranean Europe, most of the CIHEAM activities can be applied to the development of this type of area in the south of europe.

Training

Within the field of training in animal production, the mediterranean agronomic institute of zaragoza develops the advanced course on animal production, with a duration of nine months, which is composed of three cycles: nutrition, breeding and reproduction. In these three cycles, training is particularly oriented towards mediterranean production systems, paying special attention to species such as sheep and goats, which are typical of Mediterranean less favoured areas.

Besides this long-duration course, the iamz develops short courses with a more specific focus on typical productions and products of these mediterranean lfas. Goat production, dairy sheep production, mediterranean forages and by-products, dairy sheep and goat products and animal production and environment (the last week of the latter being specially dedicated to extensive mediterranean systems), are some of the courses of the IAMZ.

In the other areas of training of the IAMZ (plant breeding, marketing of agricultural products and rural planning), aspects that could lead to the development of new orientations of livestock production in lfas are also addressed.

An important characteristic of the training programme of the iamz-ciheam is the fact that the training is based on guest lecturers, which confers particular flexibility for the adaptation to the demand of specialised post-graduate training.

Research

Research networks

CIHEAM encourages and promotes research networks with typically mediterranean topics. The activity of these networks may be most varied, from exchanges of information to the development of research projects financed by donor bodies, such as the european commission.

Within the context of animal production, the two most consolidated networks jointly developed with fao, are the FAO/CIHEAM inter-regional cooperative research and development network on sheep and goat and the FAO/CIHEAM inter-regional co-operative research and development network on pastures and fodder crops.

The objective of the sheep and goat network is the sustainable development of the production systems of Mediterranean and European sheep and goats, and is structured around three subnetworks: nutrition, animal resources and production systems. Some of the topics that the network deals with are: sheep and goat nutrition during gestation and lactation; lamb and kid nutrition; plant/animal interactions; lignified feed evaluation; the use of body condition score in sheep and goat production systems; genetic resources and breeding strategies in local sheep and goats; labour on sheep and goat farms; the role of collective land in production systems; sheep and goat production systems and the environment; and the observatory of sheep and goat production.

The network on pastures and fodder crops is also structured around the three subnetworks (mountain pastures, plain forages, mediterranean forage resources), addressing topics such as biodiversity, feeding value, white clover, alfalfa and mediterranean forages in arid and semi-arid areas.

The participation in these networks is large with experts from Albania, Algeria, Cyprus, Egypt, France, Greece, Italy, Ireland, Israel, Lebanon, Malta, Morocco, Portugal, Spain, Sweden, Tunisia, Turkey and United Kingdom. Some of the actvities are developed jointly with ICARDA.

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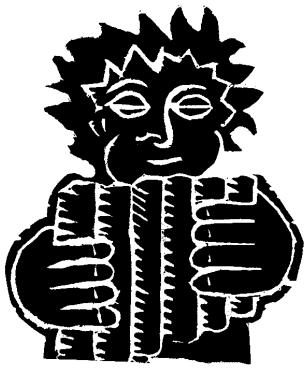

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