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Mediterranean animal production: Development or decline?

M. de Rancourt* and A. Mottet**

*Ecole Supérieure d'Agriculture de Purpan – ESAP, 75 Voie du TOEC,
31076 Toulouse Cedex 3, France

**Institut de l'Elevage GEB Filières, 149 rue de Bercy, 75595 Paris Cedex 12, France

SUMMARY – The Mediterranean region has a very rich and long history of trade across the Mediterranean Sea in many industries and particularly in animal productions. The Mediterranean animal industries, and ruminants in particular, have some common traits such as the importance of pastoral systems, light and young carcass productions, numerous labelled and regional products and the predominance of small versus large ruminants. However EU and non-EU countries differ significantly in terms of standard of living, market protection, public subsidies or types of production systems. To try to analyse the potential development of these Mediterranean countries, we will overview some main issues of animal production. The development of Mediterranean countries livestock production will be conditioned by the animal farmers' ability to group together for production and/or commercialisation and to communicate more between Southern and Northern countries.

Keywords: Animal, production, Mediterranean countries, issues.

RESUME – "Production animale méditerranéenne : Développement ou décline?" La région méditerranéenne a une très riche et longue histoire d'échanges à travers la mer Méditerranée dans de nombreux secteurs et en particulier dans les productions animales. Les secteurs animaux et ruminants en particulier de la Méditerranée ont des caractéristiques communes comme l'importance des systèmes pastoraux, les productions de carcasses légères et jeunes, de nombreux produits labellisés et régionaux et l'importance des petits ruminants comparés aux grands ruminants. Cependant, les pays de l'UE et hors UE diffèrent significativement en terme de niveau de vie, protection des marchés, subventions publiques ou types de systèmes de production. Pour tenter d'analyser le développement potentiel de ces pays méditerranéens nous étudierons quelques enjeux majeurs de la production animale. Le développement de l'élevage des pays méditerranéens dépendra de la capacité des éleveurs à se regrouper pour produire et/ou commercialiser et de plus communiquer entre les pays du Sud et du Nord.

Mots-clés : Animal, production, pays méditerranéens, enjeux.

Introduction

The Mediterranean region, with about 700 million inhabitants, is a fabulous cultural melting pot built from very important and developed civilizations like, for the main ones, the Mesopotamian, Egyptian, Roman, Greek and Arabian ones. Thanks to the easily shipped Mediterranean Sea, a very long history of crossed cultures and market trade still make those countries feel close to one another, participating in a "Mediterranean culture". We will see that these countries have lots in common due to those traditional exchanges and similar climate. However, the European Union rise has created an economic "gap" between the EU and non EU countries over the last 50 years.

Even though the Mediterranean region reveals strong differences in terms of consumer behaviour or socio-cultural profiles, natural conditions or economic situations, we will try to highlight the main common issues relative to animal production.

A strong trade tradition across the Mediterranean Sea

We consider a country as "Mediterranean" if it has a Mediterranean coast. But this criterion does not mean that the countries are mainly under a Mediterranean climate influence. For example, we can notice that France and Slovenia have only a slight part of their territory under a Mediterranean climate, whereas Algeria or Libya have very wide arid areas.

Agriculture

Even though fish, poultry or pork (in the EU countries) are significant animal productions, we will focus more on the ruminant industry which is deeply linked to land use.

The common warm and dry climate allows hardly any types of agriculture productions, similar in every Mediterranean country. But at the same time, the low water availability in most of the non European countries (except Turkey and North Syria) is an important limit for yields/hectare and economic efficiency in those Southern countries.

There are strong differences between the Mediterranean countries in terms of ruminant production: northern countries, which benefit from a more favourable climate, have greater cattle herds than southern countries where dry climate and poor grasslands are more adapted to sheep and goat production, which we will call small ruminants (Fig. 1).

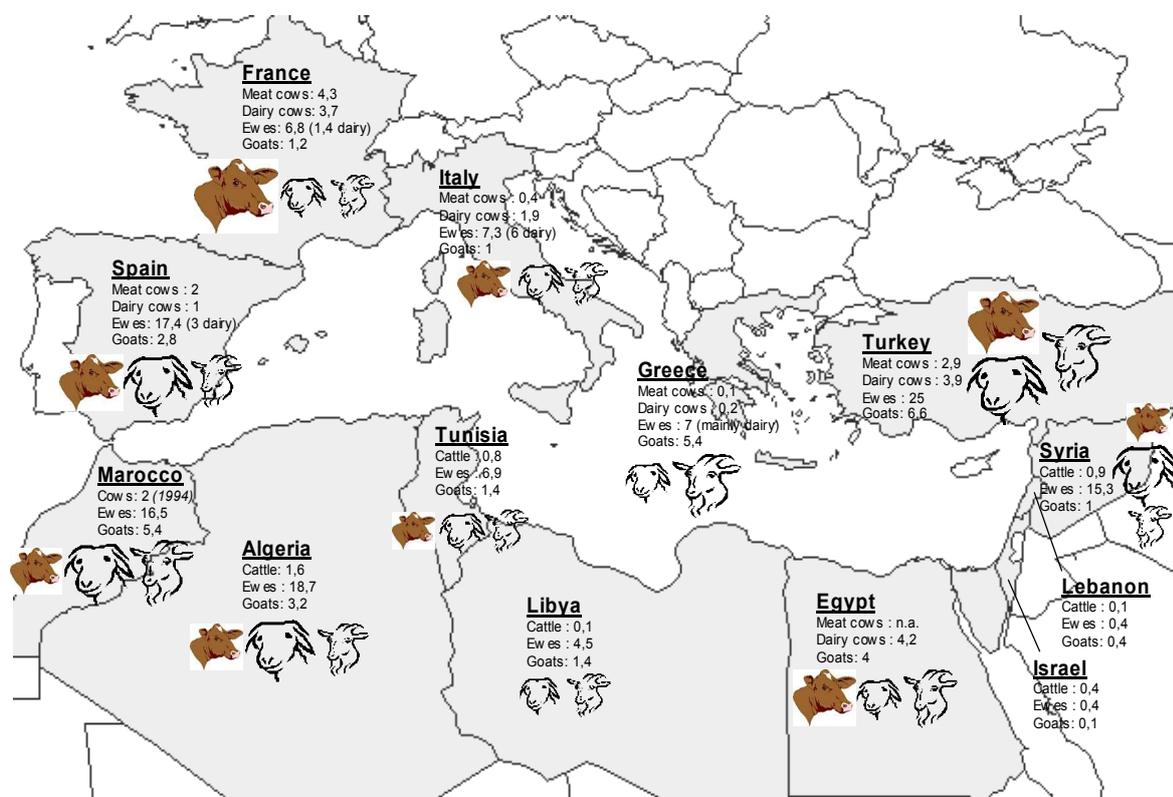


Fig. 1. Cattle herds, sheep and goat breeding flocks (millions of heads) in Mediterranean countries (GIRA Meat Club, USDA and FAO).

Bovine sector

Beef and veal production is concentrated in France, Italy and Spain. Turkey and Egypt also have a significant production (Fig. 2).

In the Mediterranean area, beef and veal production has increased by 7% in the last 10 years. It was around 4.7 millions tones in 2005. This is mainly due to the increase in the Spanish production (+40%). In this country, the number of suckler cows doubled during the last two decades, mainly because of the conversion of dairy farms after the implementation of the milk quotas and the joining of Spain in the European Union in 1986. Today, the suckler herd is developing beyond the limits of the suckler cow CAP premium and only 72% of the cows are granted. The production is organised between cattle breeders in extensive livestock farming systems in the West and specialised cattle fatteners concentrated in the Mediterranean area (Cataluña, Aragón, Valencia and Murcia). The

consumption of beef meat in Spain is 17 kg/person/year, which is quite low compared to other European countries, whereas pig meat consumption is the highest in the EU. Spain exports a lot of beef, mainly light coloured young bull and heifers beef, to Portugal, France, Italy and Russia (source: Eurostat).

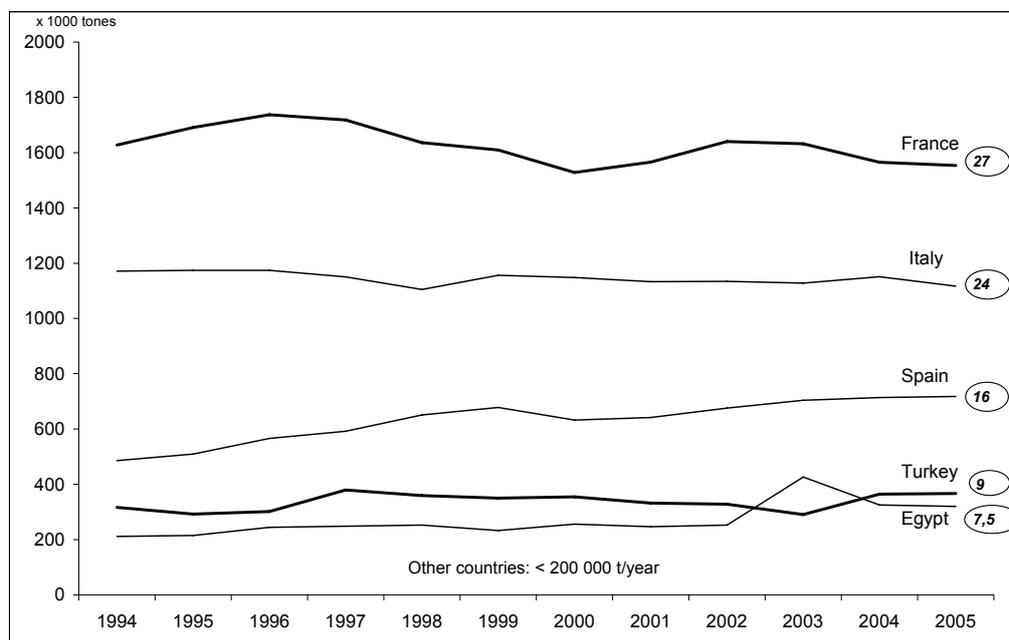


Fig. 2. Beef and veal production and consumption in Mediterranean countries (source: GIRA Meat Club and USDA). The circled number is the per capita consumption (kg/year).

On the contrary, in France and Italy, the first two beef producers in the area, production has been decreasing for the last 10 years, a consequence of the environmental measures of the 1992 CAP reform. Since November 2005, the suckler herd in France has been increasing again, encouraged by the very good market conditions.

France, which has the record for beef consumption in the EU, has had a negative balance of production/consumption since 1999 and imports around 370,000 tonnes of meat, 22% of its consumption. The Netherlands are its first suppliers, followed by Germany, Spain, Ireland and Italy. France exports around 17% of its production, mainly to Italy Greece and Germany.

Italy is self-sufficient for beef and veal with 65% of its consumption. Its main suppliers are Germany, France and the Netherlands. Brazil comes in fourth position and its sales have almost doubled in the last five years, reaching more than 50,000 tonnes.

A great part of the beef and veal trade is organised within the Mediterranean area: live animals are exported from France to Italy and Spain to be fattened. France also exports meat to Greece and Italy. European countries export beef and veal meat to Middle-East and North-African countries but Brazil is now the main supplier of these countries, representing 400,000 tonnes/year, four times the European exports.

Ovine sector

Turkey is the first producer of sheep meat among Mediterranean countries, despite a recent decrease that can be explained by the outbreak of Foot and Mouth Disease in 2001 (Fig. 3). The production in this country could even be higher due to the fact that the data are based on records from registered slaughters, which means that domestic slaughtering is not taken into account. This is quite common in southern Mediterranean countries and for sheep meat production, generally speaking.

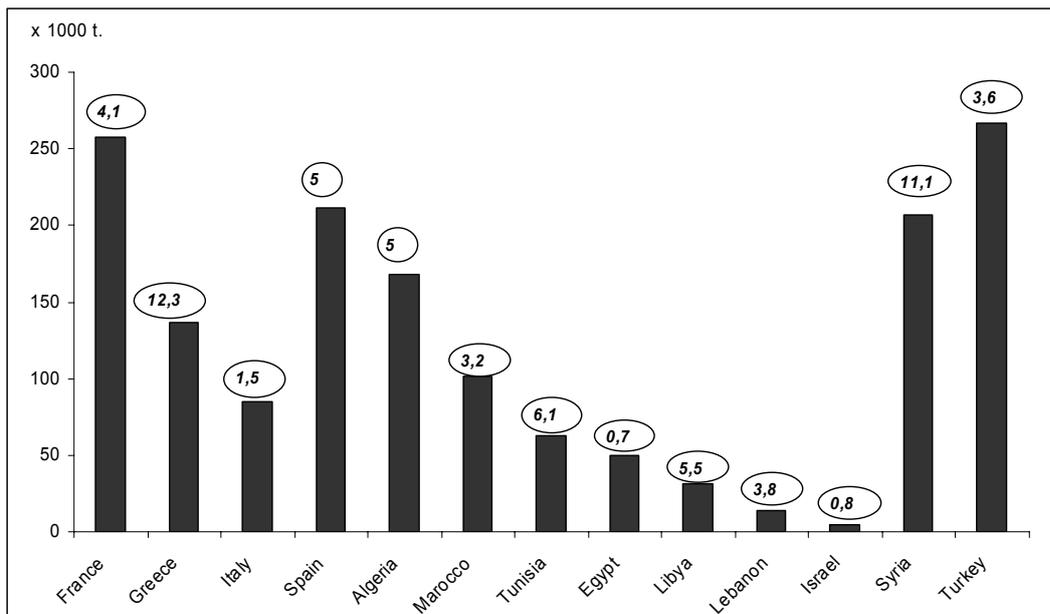


Fig. 3. Sheep meat production and consumption in Mediterranean countries (GIRA Meat Club). The circled number is the per capita consumption (kg/year).

In Syria, production has been affected by two episodes of drought conditions (early 90' and 1999-2001). It is now recovering its former level. The consumption per capita is high in this country (11.1kg).

In 2005, Spain had to face a serious problem of Blue Tongue Disease, which strongly affected its production (-4%) and its consumption (-9%). Spain remains nevertheless the second producer in the area and has shown a particular dynamism during the last decade compared to other European countries.

In France, the production is decreasing and the breeding flock is falling by around 1.5% per year. This trend mainly affects northern France, whereas the Mediterranean area of France has maintained its productions, supported by specific grants of the CAP second pillar. This is also due to the dynamism of the dairy sheep sector compared to the meat one in this country. France imports a large amount of sheep meat from the UK and Ireland (90,000 tonnes in total), but also from New-Zealand (40,000 tonnes), which has a leadership situation on the world market.

Greece has the highest consumption of the area and consequently imports a great part of it from Spain and New Zealand.

Other animal sectors

Goat meat is less important as its production represents between 5 and 30 thousand tonnes per Southern country, consequently about ten times less than sheep meat.

Camels are widespread in the Southern countries, but there are very few economic data about this production which is specific to the pastoral and arid regions. However, like in Australia where some people are thinking of developing the production of endemic kangaroos because of their perfect adaptation to arid environments, it may not be unrealistic to imagine that camels could have a development in semi arid Mediterranean regions.

Fish is an important animal sector in Mediterranean countries, like in Morocco which is considered to have one of the best fishing potential in the world. On the other side the hot water of the Mediterranean Sea allows fast growth for cage production of fish, like in Cyprus where tuna of more than 500 kg can be fattened in industrial offshore cage units.

A lot of common traits in Mediterranean animal productions

Importance of the pastoral systems

The Northern Mediterranean countries, including Turkey, have an average rainfall above 500 mm per year. Southern Mediterranean countries, such as Lebanon and Syria, are below this average of 500 mm. Finally, countries like Egypt, Libya and Algeria have an average below 300 mm of rainfall, mainly because of their wide arid areas (FAO, 2004). This lack of rainfall is also associated with very high temperatures. Because of the dry climate and consequently the lack of grass, the pastoral system is widespread in the Mediterranean regions as the animals are forced to move to feed.

Those hard climatic conditions often limit the systems to low levels of productivity. For instance, the important 2003 drought in France has led to a decrease of 10% in the annual goat AI fertility and more than 15% during the highest temperature of the first fortnight of August (de Crémoux *et al.*, 2005). Moreover, in semi-arid regions, like eastern Algeria, the grass availability period lasts around three months. This low availability limits the milk yield of dairy cows which ranges from 2100 to 3400 litres, depending on the calving season (Mouffok and Madani, 2005). For other sources, the average milk yields can even go down to 1000 litres per cow and year (Gherssi, 2002).

But let's mention that pastoral systems can be compatible with fairly good productivity. For example, on the dry pastoral plateau named Causses du Larzac in the French Roquefort area, some meat sheep systems with integral outdoor grazing have reached a high performance level of 170% of lambs/ewe with more than 250 g of average daily growth. These results have been obtained with a very precise stocking rate management, adapting the high need periods to the usual grass growth (Molénat *et al.*, 2005).

Importance of the young and light carcasses

The low forage availability leads the animal farmers to fatten rapidly their animal and consequently to slaughter them at light weights. Consequently, Mediterranean consumers are used to consuming 90% of their bovine meat as young and clear one, which is a Mediterranean specificity (Guesdon, 2004).

On the other hand, the frequent milking of small ruminants also leads to light young carcasses, as we can see on the Table 1 with the clear EU comparison of Northern heavy and Southern light lamb carcasses. For instance, the "lechal" in Spain or the "agnelli" in Italy have an average carcass weight of 10 and 7 kg respectively. In Middle-East countries, such as Turkey and, to a lower extent, Syria, a great part of lambs come from a specific breed, the Awassi, which is aimed at both meat and milk productions, with a specific fat tail. Carcass weights are therefore also high in these countries (average of 15.8 kg in Turkey).

Table 1. Comparison of lamb carcass weights in different European countries (European Commission, 1999)

Country	NL	GE	UK	FR	EU	SP	GR	IT
Kg carcass	25	20	19	18	15	11	11	9

Importance of labelled and quality products

The Mediterranean animal productions have a common trait which is an important tradition of Mediterranean food quality and consumption. In other words, there is a supposed "Mediterranean way of eating" with a good healthy international image. Moreover, there is a huge diversity of regional products linked to territories and culture, with frequent quality labels in the Northern Mediterranean countries.

Consequently, the Northern consumer could be fond of the Mediterranean diet, as it was shown in

a study comparing the consumer demands for Northern and Southern European lambs. In this study, the young and light Greek and French lambs fed with concentrates have been surprisingly the best appreciated by the Northern consumers (Sañudo and Alfonso, 1999).

Importance of small vs large ruminants

As shown on Fig. 1, we find a higher proportion of small ruminants in Southern Mediterranean countries. This trend of concentration around the Mediterranean sea is currently noticeable in France where the sheep flock resists better in Southern regions than in the Northern or Western ones. The better ability of sheep, compared to beef, to graze dry pastures and its lower need of water (half of average beef need per metabolic weight) is making sheep more competitive in dry areas.

A strong contrast between EU and non-EU countries

Even though we have highlighted some convergences for the Mediterranean countries, some elements seem to separate Mediterranean EU from non-EU countries:

(i) Religion: the dominant Christian religion for EU and Islam (except Israel, Lebanon and some ex-Yugoslavian countries) for non EU countries has an obvious effect on pork consumption and production for instance.

(ii) Climate: arid or semi-arid regions mainly in non EU countries with consequent contrasted productivities.

(iii) Economic differences are important, mainly due to the EU Common Agricultural Policy.

Standard of living and poverty

The Conference of Barcelona (gathering the Ministry of foreign affairs of the EU and the 12 Mediterranean non EU countries) launched in 1995, had as a target to create an area of shared prosperity among Mediterranean countries. This initiative has not had a great success as, for instance, between 1996 and 2000, the European funds respectively for Central European countries and non EU Mediterranean countries moved from 20%/80% to 80%/20%. However, some agreements for agricultural liberalisation have been signed between EU and Israel, Tunisia, partially with Lebanon and are about to be signed with Morocco.

The undernourished population percentage is below 5% in most of the countries except for Algeria, Morocco and some ex-Yugoslavian countries (FAO, 2004). Moreover, analphabetic level can be high in Southern countries, for example in Morocco where it reaches 75% in rural areas.

The dietary energy consumption is quite good for the Mediterranean countries (all above 2800 calories per capita and per day), especially if we consider the contrast with the majority of the more Southern African countries (FAO, 2004). Even though the child nutritional status is considered to be at a good level in every Mediterranean country, the situation in the Southern countries is considered to worsen from Turkey to Morocco (except in Tunisia and Libya) (FAO, 2004).

Though the economic situation is better in the North, the growth of agricultural production per capita is higher in Southern countries. For example, this growth was above 20% between 1993 and 2003 in every Southern country, except Tunisia. On the other hand, this growth was negative in most of Northern countries, except in Spain (FAO, 2004).

However, the World Development Indicators showed that, in 2000, the economic added value of an EU agricultural worker was still 13 times higher than the average one in Morocco, Algeria, Tunisia, Syria and Turkey. This shows that the economic gap between North and South is still very deep, having significant consequences on the market.

Market balance

According to CIHEAM (1999) and FAO, very few Southern countries are self sufficient in the main food products, contrary to EU countries. As confirmed in Table 2, North African and Near East countries are net importers for the main animal products.

Table 2. Net trade deficit in livestock products for North African and Near East countries, compared to average developed countries (FAOSTAT 2005). 1000 metric tonnes, average 2001-2003[†]

	North Africa and Near East	Developed countries
Milk equivalent	-6400	25894
Bovine meat	-351	346
Ovine meat	-108	277
Pig meat	-10	138
Poultry meat	-750	1072

[†] Negative value = net importer.

Egypt and Algeria are dramatically depending on food importations as they had a negative balance of respectively 2.7 and 2.2 billion euros in 2001. On the other hand, Turkey and Morocco are the only Southern countries with a positive balance of 2 and 0,2 billion euros in 2001. Morocco has a positive advantage in fish products and is considered to have one of the best fishing potentials in the world. But the prospective for 2010 in Southern countries (African coast and Turkey) reveals a need to import about 300,000 tons of meat and 3,700,000 tons of milk products (FAO, 2003).

Consequently, apart from France and, to a lower extent, Turkey, all the other Mediterranean countries are highly net importers in food with a percentage of (exports – imports)/consumed calories below minus 25% (FAO, 2004), and this situation may not change significantly in the short term.

Public subsidies

The important farm subsidies and market protections due to the CAP are of a great help for the EU farmers. Indeed, in the Southern Mediterranean countries, the economic situation usually does not allow the governments to support agriculture and give subsidies to farmers. This difference is very often debated both at Mediterranean and world levels because it is considered to close the European market to other countries and mainly the developing ones. However, there is some public support, like in Turkey, where the government provides premiums to encourage quality milk production, artificial insemination or the purchase of high genetic value breeding cattle.

Main issues for Mediterranean animal sectors

Water and erosion problems

Water availability and erosion are major problems in Mediterranean countries, as revealed by the recent draught in France, Spain and Italy, and more dramatically in Southern countries. Lipchitz (2005) estimates that there are three categories of water affected countries:

- (i) Water has no real problem of availability: Turkey and Lebanon.
- (ii) Water could have availability problems but it is possible to prevent this problem with important structures: Morocco and Algeria.
- (iii) Very low water availability: Egypt, Syria, Israel and Tunisia.

The wind erosion is also a key issue for Southern countries as, with the combination of the climate warming (supposed to be of 3°C in 50 years in Maghreb) and the decrease of the forests, the sandy desert has absorbed a huge surface towards the North of Maghreb, like in Algeria for example. This situation is dramatically reducing the arable surface for farmers.

Land access for farmers

The conditions in which the small farmers could get out of poverty are principally the access to land, water, loans, insurances, information and education (Griffon, 2005).

In 1960, one out of three Mediterranean inhabitants was living in the South. In 2020, this ratio will be two out of three. Consequently, Maghreb countries have 3.8 inhabitants per used hectare and France has only 2 (Gherzi, 2002). This population increase can have negative effects like in the semi-arid regions of Sétif in Algeria, where the average farm size is decreasing due to the non division of the private land and the uncertainty of public land availability (Abbas and Madani, 2005).

Turkey and Syria, having a better land availability than the other Southern Mediterranean countries, are consequently the only ones with quite good food self-sufficiency.

Evolution of market barriers

The import taxes and export restitutions are progressively reduced by the WTO policy. Consequently, trade should be easier especially for Southern countries, which have generally low production costs, towards European countries. This could be an opportunity for Southern Mediterranean countries which will manage to have a surplus in some animal products.

However, a study published by the French Ministry of Agriculture and Fisheries shows that the liberalisation between EU and Mediterranean non EU countries would help the European countries to export their milk and meat products and help the Southern countries to export their fish products. Therefore, the effects of this liberalisation could have negative effects on the animal farmers of the South (Lipchitz, 2005).

On the other hand, we must notice that, after the hormones conflict between the USA and EU and the BSE crisis, diseases have become a fundamental market "weapon" and strongly affects consumption. For example, the Avian Influenza crisis on poultry consumption has consequently increased the beef meat consumption in Spain and Italy and the Foot and Mouth Disease in Brazil has reduced the Brazilian exportation towards European Union in 2005.

Therefore, the animal health situation of a country has become its main strength for market opportunities. The diseases concerned can be, for instance, Brucellosis, Tuberculosis, BSE, Scrapie, Avian Influenza, Blue Tongue, Nile fever virus, etc. One important issue for European animal markets in the following years will be its ability to apply its strong internal constraints of quality-traceability-sanitary guarantees-welfare or environment to its external suppliers (GEB, 2005).

Multiactivity

Even if multiactivity can reduce the technical productivity (Fiorelli *et al.*, 2005), it is often considered to be an important factor of sustainability in difficult areas. Gherzi (2002) considers that, in Southern Mediterranean countries, rural development should be based on multiactivity, rural tourism and craft industries. In those countries, small family-owned agro-food companies are supplying from 60 to 80% of the population.

In the French Eastern Pyrenean Mountains, with depopulated rural and Mediterranean areas, the setting-up of sheep farms is strongly linked to the subsidies of the Second EU Pillar, the diversification and the family multi-activities. This reinforces the need of global approach with human sciences and management methods (Pagès *et al.*, 2005).

Technology transfer from South to North

The technology uses to go from North to South around the Mediterranean Sea. However, the new wave of sustainable production systems promoted in Europe could have a better look at some extensive systems developed in the hard conditions of Southern Mediterranean countries. The global warming and the recent droughts in Europe could also be a signal for European animal farmers to look towards Southern adapted systems.

For instance, Algerian experiments have shown the positive effect of clay ingestion for lamb growth in Algeria (143 g, 169 g and 188 g of average daily growth for respectively 0%, 2.5% and 5% of added clay, Ouachem *et al.*, 2005). Pierre Bahri, developing a hyper sustainable agricultural system in the dry area of Ardèche in France, has brought some of his skills from his native Algeria. Therefore, technology easily migrates from North to South, but it also can move from South to North!

Conclusions

There is still an economic gap between Northern and Southern Mediterranean countries. But it is in a decreasing trend, particularly with some countries like Turkey or Morocco. One of Southern countries' main strengths is their populations with a growth usually over 2% per year. With such a rate, urbanisation is growing and, at the same time, so is the demand for meat in urban areas, where people can't slaughter and consume their own animal. This will certainly strengthen the meat industry and livestock farming in these countries, but also the trade between Northern and Southern countries.

In a study comparing some European sheep farmers' profiles, the sociological type of sheep farmers with regard to their "dynamism" has been found to have significant higher technical and economic efficiencies increasing, for example, the number of lamb per ewe, the stocking rate and even the gross margin per hectare (Dutertre, 2000).

Of course, very numerous technologies are available, easily crossing the borders. But, the dynamism of people, the presence of leaders and active farmers groups and the possibility for them to have the support of field technicians, will always be the best ways for efficient and sustainable development in both Northern and Southern Mediterranean countries.

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