

Dairy Cattle Breeding in Apulia: A Mediterranean Case Study.

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Introduction

In the last decades of the 20th century the Italian dairy sector in general and particularly the Apulian industry have been affected by the changes in the economic system and in the European policy for regulating milk production. In addition the sanitary rules adopted to face relevant emergency events often made cattle breeding conditions more difficult.

Based on these considerations and on the fact that Apulia is a semi-arid land, cattle breeding seems to be hardly sustainable from the economic standpoint when compared to environmentally more competitive areas. To investigate the issue this work analyzes the context in which Southern Italian dairy cattle husbandry has developed in the past 25 years; it takes into consideration the demographic trends both in general and in the different breeds and performs a cost analysis of dairy farms trends both in general and in different breeds and performs a cost analysis of dairy farms rearing different cattle breeds.

The aim of this study is a) to summarize in an “easy” way the status of Apulian milk production and b) to identify trends of the past. Both should lead to a better understanding of the future lying ahead of us.

Abstract

In the last decades of the 20th century the Italian dairy sector in general and particularly the Apulian industry, have been affected by the changes in the economic system and in the European policy for regulating milk production. In addition, the sanitary rules adopted to face relevant emergency events often made cattle breeding conditions more difficult. Based on these considerations and on the fact that Apulia is a semi-arid land, cattle breeding hardly seems to be sustainable from the economic standpoint when compared to environmentally more competitive areas. The aim of this work was to investigate this issue. First, it analyzes the context in which Southern Italian dairy cattle husbandry has developed in the past 25 years; then, it takes into consideration the demographic trends both in general and in the different breeds; finally, it performs a cost analysis of dairy farms which were homogeneous as to the structure and management but different as to the cattle breeds they reared.

Based on the results, the economic position of the Murgia dairy system appears to be critical. The discussion is focussed on possible approaches to deal with the situation.

Key words: Dairy sector, competitiveness, Apulia region

Résumé

Le secteur laitier italien en général et celui des Pouilles en particulier ont été affectés par les changements du système économique et de la politique européenne en matière de production de lait. De plus, les règles sanitaires adoptées pour faire face aux émergences ont rendu les conditions de l'élevage bovin plus difficiles. Sur la base de ces considérations et du fait que la région des Pouilles est semi-aride, l'élevage bovin n'est guère durable du point de vue économique si on le compare aux régions plus compétitives. L'objectif de cette étude est d'analyser ce problème. Cet article évalue le contexte dans lequel l'élevage bovin laitier s'est développé ces 25 dernières années; il examine les tendances démographiques générales et des races différentes; enfin, il offre une analyse des coûts des exploitations homogènes en termes de structure et de gestion mais différentes pour les races bovines élevées.

A la lumière des ces résultats, la position économique du système laitier de la Murgia semble être critique. La discussion finale se penche sur les approches possibles.

Mots clés: Filière du lait, compétitivité, région de Puglia.

1. Background

As a consequence of joining the European Economic Community, as it then was, Italy agreed to adopt the Common Agricultural Policy (CAP) as the principal guiding force behind Italian agricultural policy. In July 1958, participants at the Stresa Conference in Italy agreed on three objectives for CAP: i) “to increase farm incomes by a price support policy; ii) “to contribute to overall growth by allowing specialization within the Community and eliminating market distortions”; i-ii) “preserving family farming and ensuring that structural and price policies go hand in hand.”

The creation of the modern CAP can thus be traced back to the 1960's when common measures were agreed upon in several agricultural sectors, following intense negotia-

tions between the original Member States (Tracy, 1982). Perhaps unsurprisingly, the implementation of the initial CAP was largely influenced by the domestic agricultural policies of the original Member States of the Community. These national policies, which mainly evolved in the post second world war period, had generally sought to encourage an increase in agricultural production. Such encouragement for agricultural expansion had provided a means by which agricultural incomes could be increased, food shortages tackled and scarce foreign exchange reserves preserved (Fennell, 1997). From these beginnings, however, the CAP has undergone radical reforms in recent years. In-

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creased agricultural production within the CAP led the Community beyond high levels of self-sufficiency to a position in which many agricultural sectors were producing surpluses. The production of large quantities of surplus milk has been one of the main problems faced by the CAP and the Community budget. At that time, expenditure on support in the dairy sector had reached around 30% of the total agriculture budget.

In 1984 the Community introduced milk quotas as a means of limiting its financial exposure. At first, national quotas were imposed upon Member States based upon milk deliveries made in 1981 plus one per cent. This figure itself provided for increased surplus production and subsequent Community legislation reduced these quota levels. This legislation was consolidated within Council Regulation 3950/92/EEC and amended by Council Regulation 1256/99/EC which makes provisions for it to continue to apply until 1st April 2008.

Member States could allocate quotas to their producers on the basis of production in the 1981, 1982 or 1983 calendar year. The quota operates by dividing the national quota into individual reference quantities which are given to individual producers. If in any year the national quota is exceeded, Member States will then apply a levy upon producers who exceeded their individual reference quantity. In situations where farmers sell their milk to dairies, the levy is imposed on the dairy, which will recover it through the prices which they pay to those farmers for their milk. Alternatively, where farmers directly market their own milk for sale, the levy is imposed directly upon those farmers. In either case the levy is 115 per cent of the target price for milk. Italy did not apply reference quantities at the beginning of the quota policy in 1984/85 as required by the general rules Regulation (EEC) 857/84.

The Community's most difficult case in applying the quota policy was in Italy (Case 394/85, Commission versus the Republic of Italy) although there were also problems in Greece and Spain. Each of these countries experienced great difficulty in applying the quota policy, mainly because databases of milk yield records were not adequate; thus considerable political will and administrative effort were required for its implementation. At that time, Italy had no specific committee with a supervisory role for milk recording, thus the European Community allocated the Italian national quota (9914 thousand ton) based on the production estimates contained in the Annual Report of the Italy's National Statistical Institute (ISTAT, 1983). The European Union allowed Italy to level with the other countries within two years. The national association of producer groups representing the majority of milk producers (UNALAT) was appointed to collect national Milk Records; in the meantime Italian Government would pay the overproduction levy.

Eight years after the EU had instituted the policy, the Italian authorities had not yet distributed individual refer-

ence quantities to producers although the legal framework for doing so had been created by December 1992. This framework required UNALAT to collect the levies from producers and manage quotas, but no individual reference quantities had been fixed by the organization. In 1991, Italy appeared to be in excess of its national guaranteed quantity by 27 million tonnes (Williams, 1997). The state of Italian milk sector remained unsettled for the following three years because of the difficulties in the settlement of individual quotas for producers, principally because of the very large numbers of appeals against allocations. When payments were finally enforced at the individual level for the 1995/96 year, the Italian authorities experienced some civil disorder. Thus, the Milk Quota System in Italy was not applied until 1996. To sum up the argument so far, in Italy the delay in the application of the rules may be ascribed mainly to: i) the incapability of the Government to fix levies for overproduction due to ambiguity of the law, ii) errors in assignment of quotas to breeders and iii) problems of acceptance of the Quota System by the breeders (Borroni et al., 2001).

At the end of 90's, according to Commissioner Fischler, European agriculture stood at a crossroads between expansion and contraction. A failure to act would mean that Europe would become marginalized in the world market and a more restrictive bureaucratic policy would become necessary. This was when the reform of the mechanisms of the Common Market Organization (CMO) for dairy products began with the Agenda 2000 proposals originally made by Fischler in July 1997.

The objectives of the reform aimed at the introduction of some drastic measures which seemed to forebode the restructuring of milk quota system. The Fischler plan, that he called 'dynamic modulation', sought to reduce dairy prices to create a more competitive market and give the EU room for manoeuvre at the World Trade Organization (WTO) talks. Conversely, the Council had not fully abided by the proposals to extend and accelerate the reform of the milk sector proposed by the Commission in January 2003. In particular, the committee opposed the decoupling of aid, arguing instead that payments should remain linked to production. The Members of European Parliament (MEPs) also wanted to delete any reference to a gradual reduction in the target price for milk by up to 28% between 2004 and 2009, believing that the intervention price should be reduced only slightly and even then not until April 2005.

Thus the Agenda 2000 provisions were maintained, opting in favour of: i) a reduction in the intervention price; ii) the introduction of compensatory payments based on farmer-owned quotas; iii) autonomous criteria for assigning the national amount of milk quotas.

At the opposite end, MEPs decided the increase in quotas from 2006 (gradual increase in quotas of 1.5%) and extended the system of milk quotas to the 2014/2015 marketing year (Web site of European Parliament Fact Sheets, 2006).

The CAP reform have favoured farms which were already large; impacts may be considerable in countries where agriculture is dominated by small farms. Anyway, evaluating impacts of policy changes on agriculture and rural communities requires methods which take into account the knowledge and dissemination of new technologies, as well as incentives to invest. Technological change in agriculture is a multi-dimensional process including technological, institutional and social aspects and interactions; knowledge is a dominant factor of production.

2. The Apulian dairy industry

According to the INEA data, in 2001, 4 percent of the total market value of agricultural products sold in Apulia was originated by milk husbandry (INEA-Italian Agriculture-2001). The 40 percent of the total market value of animal husbandry products sold in Apulia was originated by milk and the 85 percent of Apulian milk products comes from Taranto's and Bari's province, namely the Murgia area where 84 % of milk production is collected by local buyers for local transformation (P.O.M. QUOLATTE 2001). The main end product of the milk produced in Apulia is the *Fior di latte* which is the second top stretched cheese after *Mozzarella* made from the milk of water buffalos. Legend has it that the mozzarella was first made when long ago, cheese curds accidentally fell into a pail of hot water in a cheese factory near Naples. Even the tradition of the *Fior di latte* may be traced back to very ancient days and, overall, to ancient cows such as the Podolic whose milk is particularly suitable for cheese-making thanks to its high fat and protein content (Pieragostini et al. 2002). Nowadays the cows belong to specialized dairy breeds, but the cultural link between milk and cheese-making is deeply felt by the Murgia hill inhabitants.

2.1. The breeds.

Traditionally dairy cattle breeding in Apulia is mostly concentrated in the "Murgia Barese-Tarantina". Until the 1950's, in this area only Podolic cattle were reared. Podolic cows are a native multi-purpose breed, generally characterized by tolerance to diseases, tolerance to fluctuation in the availability of feed resources and water supply, and adaptation to low management conditions (Pieragostini 1998). After World War II, with the improvement of the socio-economic conditions of the area, agriculture underwent radical changes and the replacement of animal draught and transport by machinery undermined the importance of this cattle breed for farmers. Since its productive performance was much lower than that of specialized breeds, it began to be neglected. Hence, as of the 1950's Apulian dairy husbandry developed by importing high-performance breeds, Braunvieh from the Alpine areas and Friesian from Holland and Padana Plain, where this breed had arrived in 1870 (Balasini, 2002).

In Apulia, the Braunvieh and the Friesian breeds had two distinct evolutions. Friesians were maintained in pure breeding schemes, while Braunviehs were introgressed into Podolic and gave rise to a new genetic pool, the Apulian

Brown. In some instances, to accelerate genetic improvement, the Apulian Brown population was crossbred with the American Brown Swiss. This process started in 1955 as an experiment to improve the milk production trait and lasted until 1963 when it stopped. There was a 7 year pause for review and reconsideration of the procedure, which was resumed when the experimental project was revived by introducing the semen of some American sires in Italy. The success obtained by this crossbreeding was crucial for the evolution of the breed in Italy. On 12 May 1981 the Italian Brown Cattle Breeders' Association modified the breed name from Braunvieh to Italian Brown (Gazzetta Ufficiale, 1992).

2.2. Climate, soil and pastures.

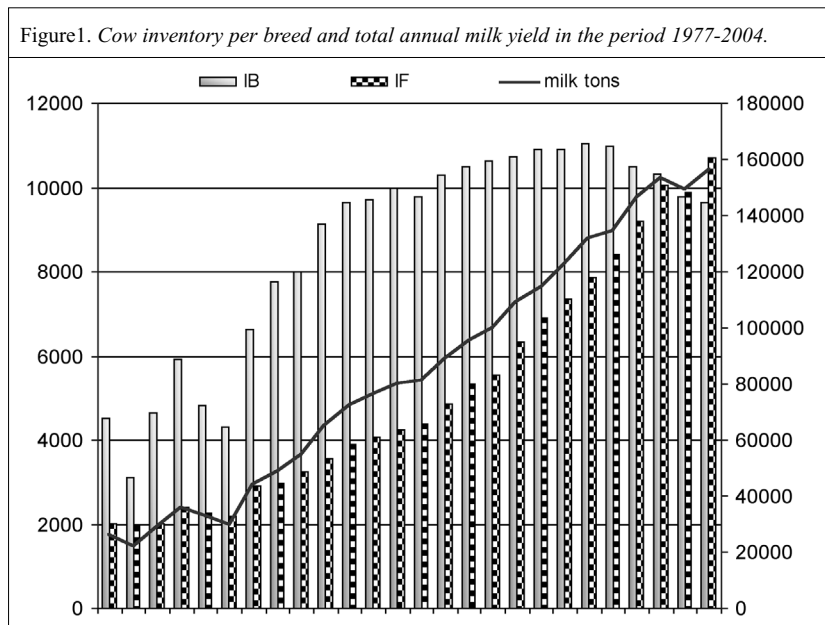
The Murgia area, located in the geometrical center of Apulia, represents a wide calcareous high plain, oriented SE-NW. The Murge high plain is a geologically and morphologically homogeneous unit where calcareous Mesozoic rocks are widely distributed and deeply weathered by epigeous and hypogeal karst phenomena. *Terra Rossa* soils, deriving from limestone dissolution and complex pedogenetic processes, are very common and characterized by great thickness variability, reddish-brown color, fine texture, scarce to moderate skeleton content, subalkaline reaction, limited total CaCO₃, variable organic matter (OM) content and high cation exchange capacity (CEC) values. The economy of rural families in this area relies heavily upon milk production and processing, though the conditions of the soil and the climate do not make the Murgia hills a privileged area for Italian dairy cattle breeding. As is generally the case, environmental factors such as climate, soil properties and phytocoenosis, are linked to welfare problems, quality forage nutrition and feed management (including water). The pastures are poor, the most of available feed resources are non irrigated fodder crops regularly grazed from November to March/April, and cut in May (Corleto 1980; Cazzato et al., 1999). Oats, vetch and clover are the most common annual cereals grown for forage (Corleto 1987), and rye-grass is the only polyannual crop. Oats are grown either in mixtures or monocultures, while, vetch, clover and rye are grown only mixed with oats. In the Murgia Hills the usual forage preserving method is haymaking while silage making is not economically viable considering the average yield of forage crops per hectare. The nutritional value of fodder crops largely depends on the climatic conditions of the hay season. The winter fodder yields are nearly 3-7 t/ha; crude protein levels and NDF (neutral detergent fiber) content are 11.5 and 44.9 % of the dry matter (Cazzato et al., 1999).

3. Data collection and analysis

3.1. Population statistics

Data concerning the numbers of heads and milk yield of dairy cattle present in Apulia collected for each province

(Figure 1) and published from 1977 to 2004 by the Italian Breeders' Association were used to analyze the demographic trend and the quali-quantitative milk production of dairy cattle, particularly in respect of breed types, namely: Italian Friesian (IF) and Italian Brown (IB).



3.2. Cost analyses of dairy farms

The farms investigated belong to a representative sample, located in one area of Apulia (Murgia Barese Tarantina) highly specialized in milk production given the concentration of dairy farms and cows (P.O.M. Quolatte, 2001). The four selected farms were very similar as to land characteristics, buildings, machinery and management, differing only for the dairy breed type; in particular two farms reared IB and the others reared IF (Table 1).

Tab. 1. Farms were selected according to breed type and the concentration of dairy farms and cows (POM. Quolatte, 2001).

Breed Type		
Italian Brown	Italian Friesian	Total
2	2	4

Milk production costs were determined according to the traditional method (De Benedictis and Cosentino, 1979) recently used by the Italian Osservatorio Latte-ISMEA. The following cost categories were considered: labour, feed, overhead, allowances, rates, land benefit and market price which were allocated to the dairy herd including the cost of rearing replacement heifers or fattening dairy offspring.

- Labour needs were assumed to be those of a typical dairy farm and calculated considering the mean daily cost per worker in agriculture.

- Feed costs were calculated on the basis of the mean market prices of the usual components of the balanced feed rations.

- The litter in the farms investigated consisted of a typical straw bedding. Two kg per head was the average amount and it was used only for cows in milk and female calves from birth until three month-old; cows in drying-off, calves and heifers usually were kept at pasture in the neighbouring woods.

- Cost factors per pregnancy were based on average costs for each artificial insemination.

- Herd replacement rates were estimated analyzing the longevity data in the two breeds in Italy (source: A.I.A. data set). Since the Italian Brown herd life is 0.64 lactation longer than the Italian Friesian, the herd replacement of the latter was considered to be 20% greater.

- The cost for hoof trimming based on an average once a year was also included.

- The interest were computed on the mean market price of cattle and machinery and on the mean cost for repairing or rebuilding shelters, the interest rates being 6%, 5%, and 4%, respectively.

- The land benefit considered was the mean rent for land occupied by buildings and shelters.

- All allowances were computed using the following formula: $q = V * (r \setminus q n - 1)$

Where:

V= value of the estate or machinery

r= rate of interest = 0.05

n= number of years of economic life (n = 30 for the case of shelters; n = 20 for the case of machineries)

Only one third of the cost of tractor allowance was considered because the tractors were usually employed for cattle for an average of 33% of the amount of working hours.

The price of milk in Italy is fixed on the basis of local agreements, mainly at the regional level, thus to our purpose the farm-gate milk price (0.387 €) was taken from the weighted mean of the Apulian regional prices for 2004\2005 (Osservatorio latte ISMEA, 2005).

4. Results and discussion

4.1 Demographic changes

Two basic sets of data are provided in Figure 1: total annual milk yield and cow inventory per breed from 1977 to 2004. The plot line shows the general upward trend of productive data, the same phenomenon may be observed looking at the histograms which demonstrate the rise in the cow numbers in both breeds. Particularly, in the investigated area the following points may be noticed: i) milk production doubled between 1977 and 2004; ii) IF cattle nearly quadrupled while IB cattle (traditionally the dominant

breed in the studies area) tripled, in the same period. However, when the two decades are analyzed separately, 1992-1993 emerges as the crucial period for the demographic changes in the populations under study. Since 1992-1993, both IB and IF show the same upward trend, doubling their number, but after 1992 the trend for IB cattle progressively decreased. The decrease recorded for both breeds in 2003 is to be ascribed to the negative role played by the Agenda 2000 reform of the milk quotas and by the sanitary measures imposed to face the blue tongue emergency. The differences recorded in the upward trends of the two breeds may be accounted for by the fact that the burden of farming costs may be reduced by increasing milk yield per cow. Hence the farmers' choices may be explained by the need to achieve economies of scale, which they could attain by resorting to IF cattle.

Broadly speaking, Figure 1 indicates that during the last twenty years, despite the fact that milk quotas were introduced in 1984, dairy farms have been increasing both herd size and milk yields.

Table 2 reports mean values of butterfat, protein and the 305-day milk yield per breed-type. A dramatic impact of genetic improvement on quantitative performance can be no-

Table 2. Genetic trends of butterfat, protein and 305-day milk yield per breed-type in the period 1977-2004 (mean values for half-decades).

	Italian Brown			Italian Frisian		
	milk	Fat	Protein	milk	Fat	Protein
	Litres	Grams %	Grams %	Litres	Grams %	Grams %
1977 -1982	4015	3,671	3,348	4446	3,628	3,274
1983 -1988	4506	3,624	3,344	4856	3,588	3,163
1989 -19 93	5318	3,618	3,340	5722	3,518	3,165
1994 - 1998	5808	3,644	3,349	6544	3,418	3,151
1999 - 2004	6828	3,660	3,381	7995	3,404	3,146

ticed in both breeds. As a result of the increase in milk yield, the butterfat increased and protein levels decreased in the IF while they did not change in the IB. The percentage variations in Table 3 highlight that the values recorded from 1996 to 2001 partly reflect the economic impact of the BSE crisis, which represented a significant production constraint.

Table 3. Benchmark of percentage variations of butterfat, protein and 305-day milkyield per breed-type in the period 1977-2003 (comparisons between half-decades).

	Italian Brown			Italian Frisian		
	Milk	Fat	Protein	Milk	Fat	Protein
	Δ%	Δ%	Δ%	Δ%	Δ%	Δ%
1977 -1982 \ 1983 -1988	12,2	-1,3	-0,1	9,2	-1,1	-3,4
1983 - 1988 \ 1989 -19 93	18,0	-0,2	-0,1	17,8	-2,0	0,1
1989 - 1993 \ 1994 - 1998	9,2	0,7	0,3	14,4	-2,8	-0,4
1994 - 1998 \ 1999 - 2003	14,3	0,4	1,0	12,3	0,5	-0,2

a. Cost analyses of the dairy farm

The results obtained analyzing the amount and percentage incidence of the cost factors involved with dairy farm business are reported in Table 4. For both breeds the prime

Table 4. Comparison between the economic results obtained analysing the farms breeding Italian Brown (IB) and those breeding Italian Frisian (IF). The values are expressed both in euros and as percentage amount of total cost per itemized costs.

	IB	IF	IB	IF
	€	€	%	%
labour	0,0244	0,0236	7,9428	8,1436
feed	0,2054	0,1922	66,8076	66,1887
overhead	0,0344	0,0316	11,2009	10,8931
allowances	0,0075	0,0073	2,4364	2,4980
rates	0,0323	0,0323	10,5117	11,1239
straw	0,0030	0,0029	0,9647	1,0132
land benefit	0,0004	0,0004	0,1360	0,1394
production cost	0,3074	0,2903		
market price	0.387	0.387		

cost obtained is lower than 0.387 € (Osservatorio latte IS-MEA, 2005) but there is almost no profit for IB milk. The cost difference between the two breeds was 0.017 €. The reason for such differences in the financial profits of the two farm types may be found in the characteristics of the two breeds, which are mainly due to health attitude, feeding needs and milk production. The IB is more rustic than the IF and its milk is undoubtedly of high quality with an elevated protein and fat content. However, (Mariani et al., 1997; Mariani et al., 2002); anyway these positive characteristics the IB are not sufficient for the breed to compete with the better quantitative performances of the IF. This key fact emerges from the results of the cost analysis and explains the upward trend in the IF numbers in the last few years. At this point in time it might be correct to anticipate that farmers will progressively leave the IB for the IF, but the situation is still rather complex.

The diversity of dairy farms requires business tools that are tailored to the different needs. In looking at the future for IB business, the strong link between the production and the processing sectors should not be neglected given that IB milk has a high cheese yield.

Moreover, there are a series of factors that should concur to slow down the substituting IB by IF. First of all, farmers are often resistant to changes, especially small holder farmers who are closely linked to their traditional way of breeding IB cattle both for cultural and sentimental reasons. Secondly, living a curtailment system, the milk production level of the IF breed negatively affects profitability. With the cash target being achieved with a small margin of income per litre, the farmers should tend to expand production and thus exceed the limit fixed by possessed quota. Over-pro-

duction results in a fine which could definitively cut the profit of the IF dairy farm business. In quota regimes, all the above points need to be considered, thus the last decade's increase in IF population provides evidence that some mechanism has been gearing up for evading the quotas rules, favouring the black market for raw milk (Sorrentino, Branca, 2001). Paradoxically, the operators of this market are the same ones acting in the lawful system (Pieragostini et al., 2003). Besides, milk is not paid on the basis of compositional quality because nowadays cheese-makers collect milks from all breeds to match the high demand for Apulian traditional dairy products.

b. Farm-gate milk

Though Italy is one of the milk producers of the 25 EU countries, its total yield is not able to satisfy the domestic demand for milk. This entails importing the milk from Germany and France, the two top European countries in terms of milk production. Based on such interdependence it seems appropriate, at this point, to compare the farm-gate milk prices in Apulia to those of three representative regions of EU, such as Lombardy (Italy), Bavaria (Germany)

which is predicated on the fact that the raw material (the milk) is also the result of selective breeding and specific feeding of the dairy cows. These cheeses occupy a dominant market position and, thanks to their reputation, they are often considered to be unique by consumers.

Based on the results of the cost analysis, Apulian dairy farming hardly appears to be sustainable from the economic point of view.

5. Conclusions

Viewed this way, the situation of the Murgia husbandry tends to be critical. The results of our investigation outline the financial weakness of the dairy cattle breeding whatever breed is reared. Then the following controversial points arise and deserve serious consideration:

The results in tables 2 and 4 point to the consistently quality of IB milk which is particularly suitable for cheese making (table 2), but they also highlight high production costs (table 4).

Rearing IF seems to be more remunerative than IB (table 4), but owing to the low protein and fat content (table 2) IF milk seem to find the proper use for fresh consumption;

The milk production in the OECD area is expected to remain substantially unchanged given the milk quota restrictions (OECD-FAO, 2005), thus, higher average yields is not yet to be considered as a key factor in the farm profit.

84 % of the Murgia milk production is for cheese-making.

The main end product of the milk produced in Apulia is the *Fior di latte*

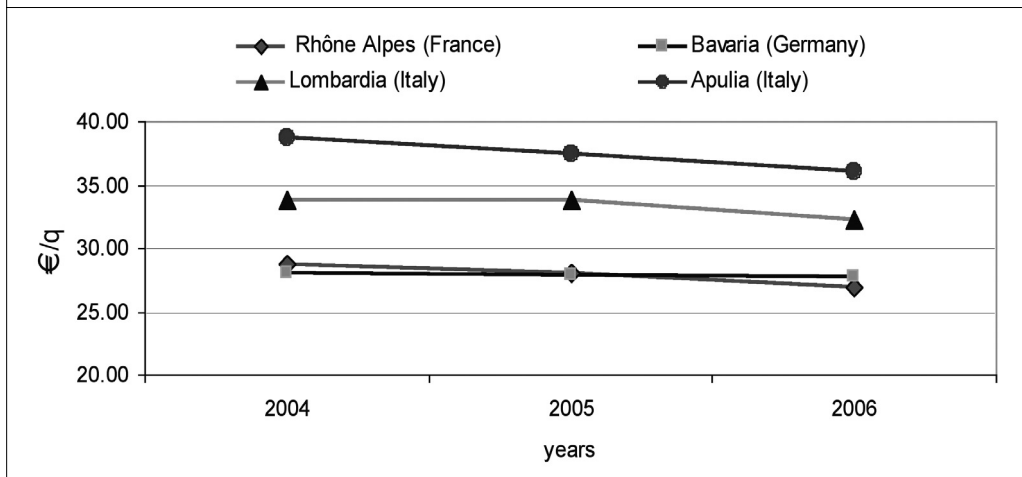
The cultural link between milk and cheese-making is deeply felt by the Murgia hill inhabitants.

The environmental conditions of the Murgia hills do not allow alternative farming systems to animal husbandry.

To cease milk production may have a massive socio-economic impact resulting in the abandon of the land.

It is now generally acknowledged that animals and production systems must be adapted to local environmental, socio-economic and cultural conditions. In the case of the Murgia husbandry, we believe that the only way to increase the chances of survival is to search strategies for product innovation. Possible approaches to respond to the situation, require: i) a framework for reasoning using an integrated approach: from the blade to milk or cheese on the table (quality, brand, market researches, etc); ii) collective reasoning to try to produce scale economies; iii) farming innovation, i.e. a model based on multifunctions in agriculture (private actions, public actions).

Figure 2. Comparison of Milk prices in four European regions over the last three-year data period. Average farm-gate milk prices in Apulia (Southern Italy), Lombardia (Northern Italy), Bavaria (Germany) and Rhône Alpes (France).



and Rhône Alpes (France) (Figure 2). Among the available data, the choice of Lombardy was made because the prices established in that region may be considered to be representative since they are often used as reference for price negotiations in other locations (Web site of CLAL). The graph in Figure 2 highlights that Apulia has the top price, followed by Lombardy, while the two Northern European regions produce at lower costs. The high farm-gate milk prices in Italy may be due to fact that in Italy, unlike in other EU Countries, a great deal of milk (45%) goes into cheese-making, mainly for typical cheeses (PDO). These typical products such as *Grana Padano* or *Parmigiano Reggiano* are characterized by a high standard quality

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