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The evolution of the sheep industry in a region with intensive agricultural characteristics. «Emilia Romagna»

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ABSTRACT - The region of Emilia Romagna has only 2 % of Italian sheep heads, and therefore does not have a great tradition in sheep rearing. The place of sheep production in regional economy is marginal, 65 % of the population reared for milk production, 11 % for meat and 24 % for dual purpose. Labs slaughtered are quite heavy. Milk is mainly used for cheese making mixed with cow's milk at different proportions. Wool production is marginal. The principal innovation in sheep rearing in the region is the settlement, mainly in the hills, of farmers coming from Sardinia who have a good technical level in sheep rearing. These farmers are specialized in sheep milk production. An improvement in quantity and quality, is therefore foreseeable in the regional sheep production.

Key words: *sheep, dairy production, meat, breeding systems.*

RESUME - «Evolution de l'élevage ovin dans une région à agriculture intensive. 'Emilia Romagna'». L'Emilia Romagna ne détient que moins de 2 % du cheptel ovin italien et n'a pas de ce fait une grande tradition en matière d'élevage ovin. La place de la production ovine dans l'économie régionale reste marginale, 65 % de la population étant élevée pour la production laitière, 11% pour la viande et 24 % est constituée de races à deux fins. Les agneaux abattus sont relativement lourds. Le lait est principalement destiné à la production de fromage fabriqué avec différents pourcentages de lait de vache. La production de laine reste marginale. La principale innovation en matière d'élevage ovin dans la région est constituée par l'installation principalement dans les collines d'éleveurs venant de Sardaigne qui ont un bon niveau de technicité en matière d'élevage des ovins. Ces éleveurs sont spécialisés dans la production de lait de brebis. Il s'en suit une amélioration de la production régionale ovine en quantité et qualité.

Mots-clés: Ovins, production laitière, viande, systèmes d'élevage.

Forward

The sheep industry in the E. E. C., despite ist almost constant development at present in all countries, produces barely 82 % of the demand for sheepmeat. Even though the Commission proposed modifications in the sector's present regulations with a guaranteed limit of 63,400 million ewes, while the 1987 E. E. C. sheep stock is almost 90 million, there is still room for expansion in the Mediterranean, and particularly in the Italian, sheep industry.

In carrying out the Mediterranean Integrated Plans (P. I. M.), the Emilia Romagna Region has allowed for the re-enforcement of the local sheep industry. In this region, then, there appear to be favorable conditions for socio-economic improvement in production facilities and it is highly possible that the sheep industry can adapt to the E. E. C. situation and to its United Market from 1992 on.

Structural characteristics

In 1986 the Italian sheep industry represented around 11.5 million heads. This figure was reached after a slow steady ten year increase (from 1975) of 3 million heads. This phenomenon was gradual and involved Northern Italy rather than Sourthern Italy in that the latter had its traditions rooted in sheep breeding.

Within the national context, Emilia Romagna claims at present an almost marginal position in terms of the sheep industry. The regional stock has always represented 1.5-1.7% of the national one. Thus it delineates a sort of «passing ground» between the more elevated concentration in the central, southern and island regions and the more reduced propagation in the northern regions of the peninsula.

When analyzed at the regional level, the situation is not uninteresting. Numerically speaking —Table 1— in the

Table 1

SHEEP POPULATION BY PROVINCE (1980/1986)

	1980	1981	1982	1983	1984	1985	1986
Piacenza	2,650	2,650	5,080	4.050	4.300	4,350	4,380
Parma	12,040	10,650	7,950	8,800	8,000	8,750	8,700
Reggio E.	28,670	28,025	24,395	21,000	19,260	8,152	17,186
Modena	7,250	8,000	7,575	8,400	8,416	7,518	7,085
Bologna	34,239	36,787	37,672	38,011	38,011	36,827	36,312
Ferrara	14,200	0	13,500	12,800	13,000	13,856	15,500
Ravenna	8,000	8,600	9,000	9,000	9,900	10,354	10,353
Forli	51,993	54,767	38,883	42,678	49,848	50,389	52,303
EMILIA ROMAGNA	159,042	149,479	144,055	144,739	150,735	150,196	151,819

Source: Emilia Romagna Regional Statistics.

period from 1980 to 1986 the regional sheep industry experienced a phenomenon of restructuring in which the breeding stock has stabilized around 150 thousand heads. Given this overall picture, we will proceed with a more detailed analysis of the structural elements, also at the provincial level.

The sheep industry by province

Sheep livestock distribution by province reveals a very well defined map. Referring to the average values from the three year period from 1984 to 1986, over half of the sheep population —exactly 58.2 %— is found in the provinces of Forli and Bologna. The provinces of Reggio and Ferrara follow in decreasing order of importance and the other provinces trail behind.

As is shown best graphically —Graph 1— from 1980 to 1986, the sheep population of Reggio tended to decrease

Table 2

DISTRIBUTION OF SHEEP POPULATION BY PROVINCE (Percentage average 1984-86)

Forli	33,7	Ravenna	6,7
Bologna	24,5	Parma	5,6
Reggio E.	12,1	Modena	5,1
Ferrara	9,3	Piacenza	2,1

Source: Our elaboration of Emilia Romagna Regional Statistics.

constantly while that of Ferrara and Ravenna showed a slow increase.

Distribution in terms of altitude of the breeding farms was observed on the basis of official statistics with reference to two key dates, 1975 and 1982 (1,2). This represents the comparison between the results of a survey using a sampling and of a census: these data are thus incomparable, in a certain sense, but the results can be considered indicative of general trends. Sheep breeding in the mountainous regions has given way to the hill areas and has increased in the plains.

Table 3

PERCENTAGE DISTRIBUTION OF SHEEP POPULATION BY ALTITUDINAL AREAS

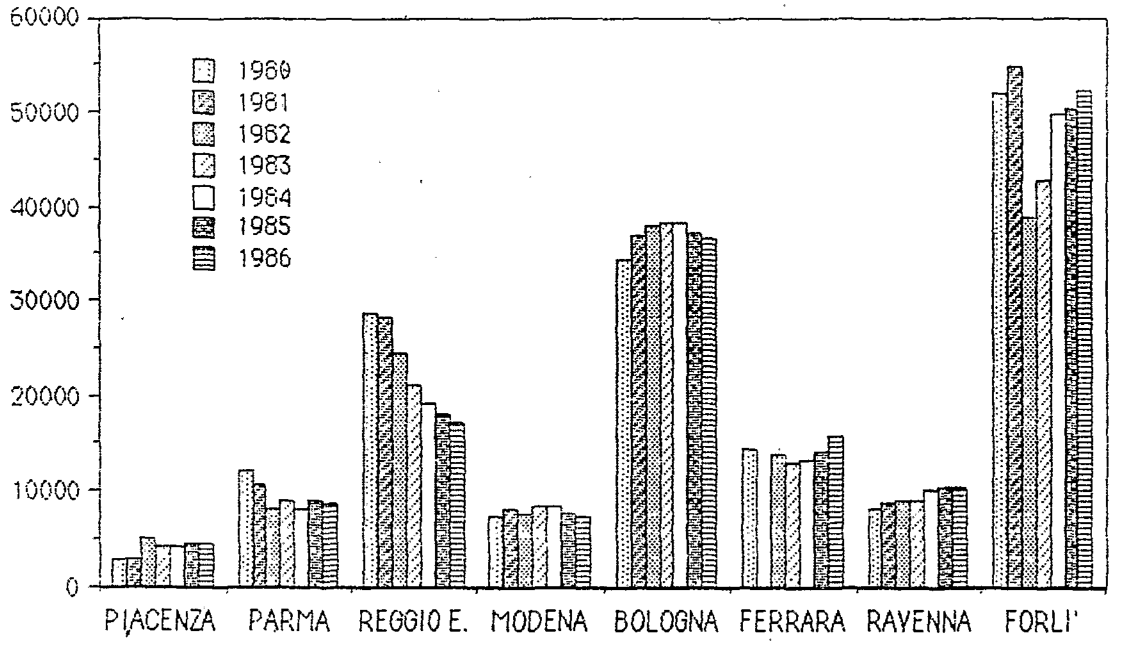
	1975	1982
Mountain	46,2	35,2
Hill	33,7	35,1
Plain	23,7	29,7

Source: Our elaboration of I. S. T. A. T. data (1,2).

The structural variations wich can be deduced from de I. S. T. A. T. data are, however, limited in their presentation of the actual and real dimension of the phenomenon. This is due to various elements and fundamentally to the findings regarding the number of sheep rearing farms which amounted to 3,654 in 1975 and 3,521 in 1982. These high figures include all farms where sheep were found, even only

Graph 1

EVOLUTION OF SHEEP POPULATION BY PROVINCE (1980-1986)



one. Thus they are not to be considered sheep breeding farms neither in terms of production nor economically. According to the regional producers' associations, in fact, there are now less than one thousand sheep farms in the region and their numerical redimensioning began as early as in the 1960's.

Despite this, the two I. S. T. A. T. surveys point out, albeit not as markedly as in reality, two real characteristics of the evolution of the regional sheep industry: an increase in average flock size and an increase in the average surface area used for sheep farming.

With regard to breeding methods, in 1955 half of the sheep industry consisted of migrating flocks while the other half included non-migrating. From that year on, migratory shepherding decreased and paddocking increased (3).

Producting of keep milk

Sheep bred for milking represent about 65 % of the present population while 11 % of the stock is bred exclusively for meat and 24 % is bred for both milk and meat —Table 4 and Graph 2—.

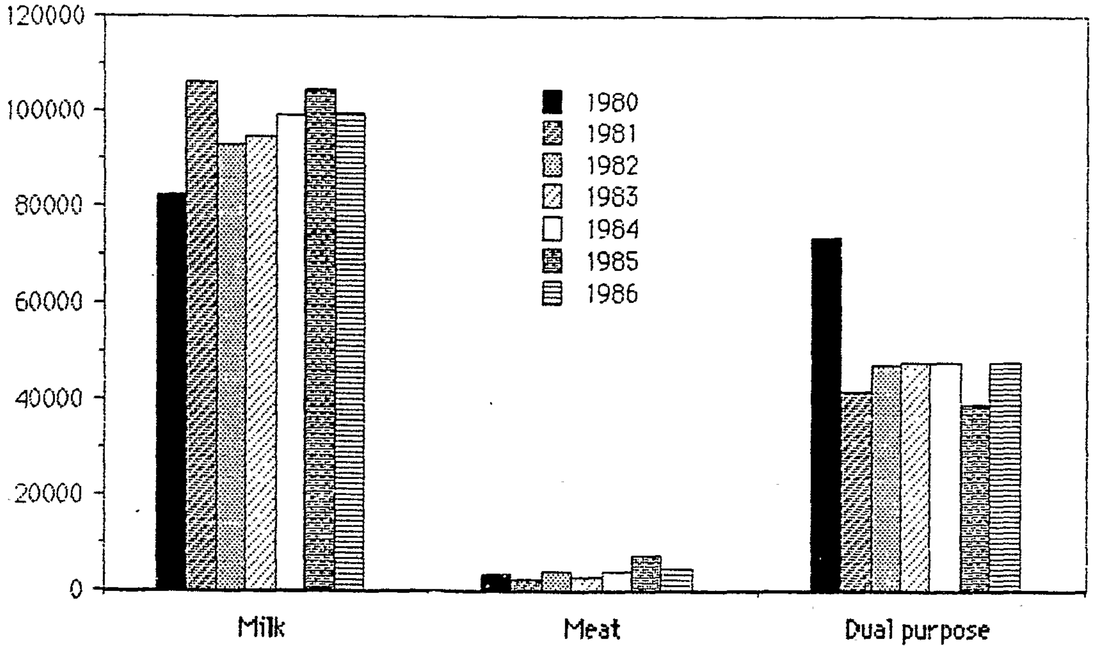
Table 4

SHEEP POPULATION BY PRODUCTIVE PURPOSE (1980-1986)

	1980	1981	1982	1983	1984	1985	1986
Milk	82,489	105,856	92,702	94,641	99,037	104,276	99,618
Meat	3,411	2,185	4,040	2,524	3,875	7,154	4,206
Dual purpose	73,142	41,438	47,313	47,574	47,823	38,766	47,995
TOTAL	159,042	149,479	144,055	144,739	150,735	150,196	151,819

Source: Emilia Romagna Regional Statistics

Graph 2
EVOLUTION OF THE SHEP POPULATION BY PRODUCTIVE PURPOSE (1980-1986)



The various sources of data disagree regarding this distribution. For example, one might claim that sheep raised for milk are, instead, raised for both milk and meat. The data, supplied by the Emilia Romagna Region, presented in Table 4, were elaborated considering the main performance character of the various sheep breeds and not the fact that certain crossing, mostly ewes for milk with rams for meat, is carried out to obtain heavier lambs.

The evolution of the population in terms of specific productive purpose began in the 1950's, has witnessed a constant dwindling of sheep for non specific purposes, or for mixed purposes, in favor of milk sheep.

Two milk breeds are now predominant: the Massese, originally migrated from nearby Tuscany and now widespread in the provinces of Bologna and Reggio Emilia, and the Sardinian, which has been increasingly present in Emilia Romagna since the beginning of the 1960's and is concentrated in the province of Forli.

Breeds and performance attitude tend to remain fairly constant in terms of location (4).

From what is has been presented schematically, it is possible to draw some conclusions referring to the quantitative aspects of the dynamics of the evolution of the sheep industry and the present situation. In fact, it is clear that the image of marginality, both physical and economic, that has in the past been associated with this breeding sector in this Region has not excluded the presence of interesting dynamic forces within the sector itself which are manifested in the evolution of several fundamental structural aspects. We will deal with this later.

Production within the sector

It is not possible to evaluate the sheep industry's global contribution to the Regional economy. The estimations elaborated by I. N. E. A. (5) show that the regional gross marketable output (G. M. O.) reached by the sheep-goat industry represents a minimal percentage, when compared with the G. M. O. of the animal husbandry sector in its entirety, rising from 0.33 % in 1975 to 0.46 % in 1984 and that, in monetary terms, in current lira, means it has quintupled.

Unfortunately these estimates are not precise in that they are calculated considering the saleable quantity of the products (meat, milk and wool) in terms of the relative average price. For the meat sector, for example, the data regarding saleable mutton considers all slaughtering in the region. Thus the regional sheep-goat meat industry is awarded more importance than it has in reality due to the local slaughtering of livestock reared elsewhere.

Meat

The Regional, as well as the national sheep industry, is prevalently oriented for milk production. Sheep farmers tend to sell young (average 1 month) light-weight lambs to begin milking as soon as possible. Given that ewes have a seasonal reproductive cycle (from June to December), lambs are, for the most part, born around the holidays (Christmas and Easter) when they can be sold at higher prices.

The production aims of the industry have thus influenced national consumption patterns of sheepmeat; low quantities, low weights at slaughtering and predominant seasonal consumption.

In fact, though maintaining 18 % of sheep bred in the EEC (excluding Spain and Portugal), sheep-goat meat consumption in Italy remains at very low levels. It is responsible for 2 % of meat consumption in general; national annual per capita consumption is only 1.4 kg. while for the entire E. E. C. it is 4 kg. Only Holland and Denmark claim lower consumption than Italy.

The data on regional monthly slaughtering, illustrated graphically on Graph 3, clearly show the phenomenon of seasonal consumption. In the months including Easter, 26-32 % of annual slaughtering occurs. For these slaughters average carcass weight is lower than in December, when Christmas slaughtering takes place.

It may seem that in Emilia Romagna heavier sheep are slaughtered and consumed than in other regions. This is only partially true. This region is one of receiving terminals for imported sheep which usually weigh more than domestically bred sheep. After slaughtering these carcasses are sent to other terminal markets in other regions or they are designated for the market in the Eastern E. R. Region. This partially justifies what was previously stated regarding the inflated I. N. E. A. estimations of the regional sheep meat industry. In parts of the region, however, consumer demand is not limited to lamb: older, tastier meats, are also consumed.

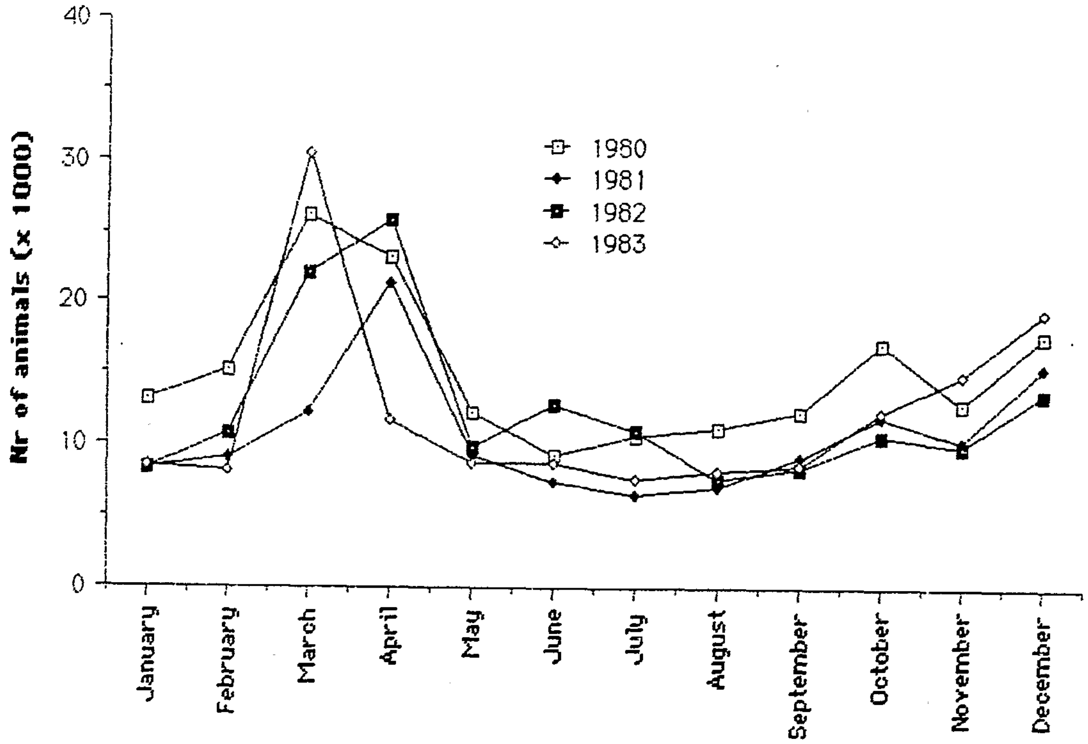
Regional sheepmeat production is, neither quantitatively nor qualitatively, sufficient to satisfy local consumption. Even though there are exportation trends of sheepmeat and live foreign animals to other regions, the importation of live animals and/or sheepmeat from other regions or from other countries to augment the store weighs on the Region's economy.

Italy supplies itself with 62 % of the national demand for sheep and goat meat. In 1986 12.5 thousand tons of fresh and refrigerated, and almost 7 thousand tons of frozen meats were imported into Italy at a cost of nearly 100 billion lira. Added to this is the expense of the importation of live animals.

Because Emilia Romagna imports from other regions, especially Easter lambs, a great part of its annual demand is satisfied by imports. Fresh, refrigerated meat is imported from Yugoslavia and France. Frozen meat is imported from New Zealand and the Eastern European countries —Hungary, Bulgaria and Poland— while live animals are imported from France.

Graph 3

MONTLY SHEEP AND GOAT SLAUGHTERING IN EMILIA ROMAGNA



Notably 87 % of Italian frozen meat imports is from New Zealand which supplies specific cuts for the Italian market. This production planning, which has so obviously caused an increase in New Zealand sheepmeat sales in Italy, has not been imitated by Italian producers, because of high production costs which do not allow the Italian producers to compete with the foreign ones.

Milk

In Emilia Romagna sheep cheeses are highly in demand, both 100 % sheepmilk cheeses and with a mixture of various percentages of cow milk. Production is aimed toward table cheeses wich are primarily mild and do not require long periods of aging and which are distinctly different from the typical Pecorino Romano, in which the region has no production interest.

The mild regional cheeses are successful on the market regardless of the competition with other sheep cheeses. This is especially true if one considers that the Romano cheese market has been stagnant for years and that cheese is offered on the regional market at relatively low prices.

Sheep milk processing takes place at dairies, but for the most part it is transformed into cheese and ricotta on the farm.

Wool

According to some estimations, national wool production represents only 3 % of the sheep industry G. M. O. This small percentage is due to the fact that the sheep bred produce wool which is not suitable for fine yarns so that domestically produced wool satisfies only 13 % of the demand and is used for stuffing mattresses.

In 1986 regional production was about 230 tons, considering average production is about 1.5 kg. of wool per head, when shearing is done by hired labor, at 2,500-3,000 liras a head, it often costs more than income from sales. In fact, the dark Massese wool, which is difficult to spin, represents more difficulty than the higher quality, white Sardinian and Langhe wools (8).

Innovative elements of the Emilia Romagna sheep industry

Shepherding has never been a tradition in Emilia Romagna and the term sheepbreeding does not describe the distribution of sheep wich were kept on many farms for home utilization of cheese, meat and wool.

With the dwindling of the number of farms, the regional sheep stock had, in fact, decreased to a minimum in the 60's.

The following growth of the sector was evident in an increase in flock size in larger farms, in the almost definitive abbandonment of archaic and precarious methods such as the migratory one, in the adoption of more suitable forms like paddocking together with the differentiation of livestock breeding for milk.

The evolution that took place was due to different elements, which in part are exogenous with respect to the Region, but which constituted innovative factors which contributed to the modification of some important aspects of the sector.

The main innovative element in the sheep industry in recent years is the immigration of Sardinian shepherds to the regional appennine territories, mostly in the foothill and hill areas (8, 9, 10).

Shortly after other neighboring regions, e. g., Tuscany, the phenomenon was evident in Emilia Romagna in the beginning of the sixties and reached its peak in the end of that decade.

This immigration began primarily in the Forli hills and then extended progressively to near-by provinces. In the Forli area, in fact, there were drastic modifications in the character of agriculture with a push toward intensification and an orientation toward vegetable and fruit cultivation in the lowlands, while in the hills there was a crisis with sharecropping. Following the marginalization of hill lands which were not suitable for intensive cultivation nor could guarantee satisfactory incomes when compared with those possible in the lowlands, sharecropping, which was predominant, began to decline and many farms were abbandoned by the local farmers. These were occupied by the Sardinian immigrants with the consequential development of sheep farming. The low cost of the abbandoned farms allowed for the development of sheepfarms which were either rented, bought or anyhow available, even if not officially, in the course of time in that they were not longer being used by the local farmers. Thus, the sheep industry enjoyed the benefits of a secure farm base.

The availability of an adequate surface ara is indispensable for sheepbreeding, considering that fodder constitutes the main part of this animal's feed. Therefore, fodder should be produced on the farm instead of buying it on the market.

On the sheep farms, even if they were on land that was considered marginal by the local farmers, the Sardinian shepherds found pastures that were often better than the ones in their own region. They vere able to increase fodder production with hay for the cold season and, according to local tradition, they continued crop rotation on arable land with cereals which were used to integrate rations.

The Sardinian sheep farmers raise almost exclusively Sardinian sheep and the introduction of this breed brought about a decisive orientation toward breeding for milk production.

The presence of the Sardinia breed, then, also marked the pace with which these farmers expanded in the Region.

The presence of the Sardinian farmers had a definite effect on the entire sector, imposing a certain dynamism and marked style in sheep farming management.

Having constituted farms which were prevalently, if not entirely, pastoral, average flock size was 100-300 sheep and in some cases now supersedes 1,000, in order to guarantee a satisfactory income.

Specialization in production was a novelty in the region, where sheep had previously been bred in smaller, more numerous flocks and mainly for home consumption, and was the cause of the decline of small farms with low profits.

Table 5

SARDINIAN SHEEP IN EMILIA ROMAGNA BY PROVINCE

	1961	1965	1970	1975	1980	1986
Forli	718	3.087	16.487	18.641	32.439	35.603
Bologna	—	—	660	8.099	9.118	11.601
Reggio Emilia	—	—	—	1.003	3.155	—
Piacenza	—	—	—	1.125	1.035	1.330
Ravenna	—	—	—	270	224	340
Emilia R.	718	3.087	17.147	29.138	45.971	48.874

Source (9 e 4)

The results of some recent surveys conducted in the provinces of Bologna and Ferrara (11) point out a positive correlation between farm profits and the Sardinian origins of the farmers: they are the leaders of the group surveyed in terms of economic results.

The survey also revealed some significant structural elements of the farm studied.

Firstly, a critical farm size was observed. Productivity in terms of milk produced per sheep was as follows: 1.2 ql/year average in hill areas, 0.7 in mountain areas and 0.8 in plain areas. The lowest productivity was observed in farms with 80-200 heads. Productivity was higher in both smaller and larger flocks.

The highest morbidity fell into the same category of flocks both in terms of size and location. This confirms the need for a structural dynamics which would lead the least productive farms and those with the highest morbidity to leave the sector or to improve their quality so as to become technically and economically fit and less precarious.

Secondly, the farms located in mountainous areas, and some in the plains, reveal lower profits. This is due to different elements some of which are: distance from the marketplace and the possibility, or lack, to develop the right economic size.

The Sardinian farmers, specialized in milk production and its processing into cheese and ricotta on the farms, in fact chose to re-locate in the hill areas, closest to the centers of consumption, rather than in the mountains where it may have been possible to have larger farms but farther from the marketplace. The ideal locations would have been the plain, but it would not have been possible here, at least up to the present, to reach the adequate technical and economic size so that the sheep farms could compete with other types of farms.

In fact, according to the findings of the agricultural census in 1982, in Emilia Romagna there were 106 sheep farms with an arable area higher than 100 hectares. Sixtyseven of these were in the Forli province. These were distributed in terms of altitudinal zone: 28 in the mountainous areas, 35 in the hills and only 4 in the plains. The profitability of a sheep farm is, then, strictly tied to the availability of a secure farm base. If, in the hill areas of the region the Sardinian sheep farmers were able to develop farms with stable territorial bases, because the land had been abandoned in that it did not allow for economically convenient cultivation practices, it was also true that in the plain areas, characterized by intensive agricultural exploitation, the sheep farm mantained interstitial characteristics.

Here, in fact, the lack of available space brought about the occasional use of residual land, usually tied to anomalous types of contracts with no prospect of continuity. Thus, a further confirmation of the lower productivity of the sheep farms in the plain areas.

Conclusions

The preceding has shown that the sheep industry in Emilia-Romagna, while not being of primary importance, neither in terms of size nor products marketed, is by no means marginal or negligible.

The immigration of Sardinian shepherds and sheep has triggered profound innovation in the type of farming done by introducing such characteristics as production specialization and larger flocks bred on middle-size or large farms.

Most developpment has occurred in the Bologna and Forli provinces. In the latter, 68.3 % of the sheep are bred on hill farms. In Bologna, where there are more sheep farmers of local origin, the sheep population is more evenly distributed between the hills and the plains.

Possible development in regional sheep industry involves an increase in both quality and quantity. A quantitative increase is feasible in that present cheese and meat production quotas are able to satisfy neither present nor potential local market demand.

However, if the average income of the sheepfarmers in the entire sector appears to be on the rise, steps must be taken to augment productivity on the farms which have not yet reached the level of productivity which characterizes the other animal husbandry sectors in Emilia Romagna. According to a recently conducted poll in the provinces of Bologna and Ferrara (11) average milk production was about one quintal per ewe and per lactation, much less than the yield obtained by more rationally organized farms.

The areas where improvement can take place have been noted, projects have been initiated and technical assistance is available through the regional farmers Associations. However, steps must be taken in all aspects of production and productivity from the curing of flocks to the employment of better farm management techniques, to the use of the latest technology in processing and marketing strategies, in order to bring the regional sheep industry up to the standard of the other animal husbandry sectors in Emilia Romagna.

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