S. Afr. J. Anim. Sci. 5, 189–199 (1975)

PRESENT AND FUTURE SITUATION OF SHEEP PRODUCTION IN THE EUROPEAN ECONOMIC COMMUNITY

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Sheep production in Europe is very important and comparable to that of Asia and Oceania (Australia and New Zealand). It is very unevenly spread, being of particular importance to the countries of the Mediterranean, such as Turkey and Spain, while the E.E.C. itself has only two important sheep producers, the United Kingdom and France (Tables I, II and III).

The situation is similar as far as consumption of mutton and lamb is concerned, as it is very important in England and Ireland (Table XIII), fairly important in France, average in Italy, and low elsewhere, as in Germany and in Holland. This has a very clear influence on trade. For instance Germany and Holland produce little, but consume even less and export (Table XI) to France carcasses which are specially produced and prepared for the French market. The United Kingdom imports from countries abroad (Australia and New Zealand), and Italy imports mainly from Eastern Europe (Bulgaria and Yugoslavia) and also Australia and New Zealand. So on the whole one can say that the EEC in its original form (six member countries) had only one large importer, namely France, and one average importer, Italy; whereas in its present form it now has the world's largest importer which is the United Kingdom, and a good exporter, Ireland.

However, there is a certain uniformity in the type of animal in demand. Mediterranean Europe, whether a part of the E.E.C. or not, normally wants Merino type animals of 10–15 months, and small lambs from milk breed flocks, of 1–2 months. England and France consume mainly lambs of 3–5 or 6–8 months.

The types of breed used also tend towards uniformity, but their repartition is very different. Production in the North is mainly based on grazing, whereas in the South sheep farming is mainly under indoor conditions, and the seasonal movements of flocks plays an important role both for the meat and for the milk flocks.

For some time now, more and more lambs from milk flocks, weaned at one month, are not slaughtered at that age as used to be the custom but following a French method, they are fattened up to 3 or 4 months, which is an important meat resource for the Mediterranean basin.

The importance of sheep within the E.E.C. is illustrated in Tables 1–17.

Table 1

Comparative world production figures (1968)

Numbers in thousands (N); Meat production in thousands of tons (1 000' T)

Country	Cattle	Pigs	Sheep	Milk production (thousands of tons) (cattle, sheep, goats)	Population (thousands)
EUROPE				151 860	454 324
(N)	124 246	125 221	132 907		
(1000' T)	8 310	11 213	1 061		
AMERICA North & Central				67 051	309 281
(N)	174 582	84 467	30 917		
(1 000' T)	12 033	6 825	330		
AMERICA South				17 630	180 531
(N)	190 531	77 595	125 436		
(1 000' T)	5 510	1 171	422		
U.S.S.R.				82 300	237 808
(N)	97 167	50 867	138 461		
(1 000' T)	4 675	3 075	800		
ASIA				48 280	1 218 365
(N)	279 003	44 518	196 596		
(1 000' T)	1 673	1 887	1 344		
CHINA				2 950	814 578
(N)	62 950	213 000	70 000		
(1 000' T)	2 120	9 430	560		
AFRICA				11 925	338 050
(N)	143 084	6 554	141 886		
(1 000' T)	2 182	194	856		
SOUTH SEA ISLANDS				13 320	18 511
(N)	27 857	2 950	227 399		
(1 000' T)	1 288	200	1 244		

Table 8

Rate of self sufficiency in sheep meat of the EEC countries for the period 1964 to 1972
(in %)

Country	1964	1968	1971	1972
France	87	83	80	76
Fed. Republic of Germany	97	79	73	75
Netherlands	311	286	341	
Belgium Luxemburg	28	20	12	
Italy	93	82	63	62
Great Britain	44	42	41	42
Ireland	144	139	133	133
Denmark	86	100	78	
E.E.C. total	58	56	55	

Table 9

Intra-community exchanges of sheep meat in 1972
(1 000 tons of carcass weight)

Export countries \ Import countries	France	Germany	Nether-lands	Belgium Luxem-bourg	Italy	Great Britain	Ireland	Denmark	Total EEC
France		–	–	–	–	–	–	–	–
Germany	2,1		–	–	–	–	–	–	2,1
Netherlands	9,4	–		–	0,1	–	–	–	9,5
Belgium Luxembourg	0,1	0,1	0,1		–	–	–	–	0,3
Italy	0,4	–	–	–		–	–	–	0,4
Great Britain	17,0	0,5	–	2,5	–		–	–	20,0
Ireland	4,5	0,3	0,1	2,2	–	3,8		–	10,9
Denmark	–	–	–	–	–	–	–		–
TOTAL EEC	33,5	0,9	0,2	4,7	0,1	3,8	–	–	

Table 10

Imports of sheep meat in the various EEC countries by country of origin in 1972
(1 000 tons of carcass weight)

Export countries \ Import countries	France	Germany	Nether-lands	Belgium Luxem-bourg	Italy	Great Britain	Ireland	Denmark	Total EEC
Germany	2,2	–	–	–	–	–	–	–	–
Belgium Luxembourg	0,1	0,1	–	–	–	–	–	–	–
Netherlands	9,4	–	–	–	–	–	–	–	–
Italy	0,4	–	–	–	–	–	–	–	–
Great Britain	17,1	0,5		1,8	–	–	–	–	–
Ireland	4,7	0,3	0,1	2,9	–	3,5	–	–	–
Spain	0,2	–	–	–	0,3	–	–	–	–
Morocco	0,2	–	–	–	–	–	–	–	–
U.S.A.	–	–	–	–	–	2,1	–	–	–
Yugoslavia	–	–	–	–	2,9	–	–	–	–
East Germany	0,2	–	–	–	–	–	–	–	–
Czechoslovakia	–	–	–	–	0,1	–	–	–	–
Hungary	–	0,1	–	–	0,3	–	–	–	–
Bulgaria	–	–	–	–	2,7	–	–	–	–
Roumania	–	–	–	–	0,1	–	–	–	–
Australia	1,3	0,1	1,0	–	–	31,5	–	–	–
New Zealand	1,2	3,9	0,9	1,4	2,1	293,7	–	0 6	–
Argentina	2,0	1,4	–	–	0,7	–	–	–	–
Uruguay	–	–	–	–	0,6	–	–	–	–
Total all countries	39,2	6,5	2,1	7,3	10,4	331,2	–	0,8	397,5

Table 11

Movements of live sheep within the community in 1972
(in 1 000 head of sheep)

Export countries \ Import countries	France	Germany	Netherlands	Belgium Luxemburg	Italy	Great Britain	Ireland	Denmark	Total EEC
France		–	–	–	–	–	–	–	–
Germany	3		–	–	108				111
Netherlands	7	1		–	–	–	–	–	8
Belgium Luxembourg	–	61	–		–	–	–	–	77
Italy	54	–	–	–		–	–	–	54
Great Britain	–	–	–	122	–		126	–	249
Ireland	–	–	–	2	44	106		–	158
Denmark	–	–	–	–	–	–	–		–

Table 12

Import of live sheep in the various EEC countries by country of origin in 1972
(in 1 000 head of sheep)

Export countries \ Import countries	France	Germany	Netherlands	Belgium Luxemburg	Italy	Great Britain	Ireland	Denmark	Total EEC
Germany	3	–	1	–	113	–	–	–	–
Benelux	7	62	–	–	–	–	–	–	–
Italy	67	–	–	–	–	–	–	–	–
Ireland	–	–	–	2	44	106	–	–	–
Great Britain	66	–	–	72	–	–	178	–	–
East Germany	22	–	12	–	?	–	–	–	–
Poland	15	16	–	–	30	–	–	–	–
Hungary	16	–	–	–	909	–	–	–	–
Roumania	17	1	–	–	213	–	–	–	–
Bulgaria	13	–	–	–	588	–	–	–	–
Argentina	32	–	–	–	20	–	–	–	–
Australia	16	–	–	–	–	–	–	–	–
Total	273	80	12	107	1.941	106	178	–	2.697

Table 13

Evolution of the per capita consumption of sheep meat in the various EEC countries, from 1964 to 1972 (kg)

Country	1964	1968	1971	1972
France	2,4	2,8	3,2	3,3
Fed. Republic of Germany	0,3	0,2	0,3	0,3
Netherlands	0,2	0,2	0,2	0,2
Belgium Luxemburg	0,4	0,6	0,7	0,7
Italy	0,7	0,9	1,1	1,0
Great Britain	10,7	10,5	10,0	9,3
Ireland	11,1	10,8	11,2	10,8
Denmark	0,3	0,6	0,4	0,4

Table 14

Balance of production/consumption in the EEC countries since 1964
(1 000' tons of carcass weight)

Country	1964	1968	1971	1972
France	15	23	33	42
Fed. Republic of Germany	0,4	2,7	4,5	3,8
Netherlands	+ 3,8	+ 5,4	+ 7,7	–
Belgium Luxemburg	2,8	4,4	5,7	–
Italy	3	9	21	21
Great Britain	335	346	336	307
Ireland	+ 14	+ 12	+ 11	+ 11
Denmark	+ 0,2	0	0,4	–
E.E.C. total	339	368	382	

Table 15

Evolution of the wholesale prices of sheep meat in the community (in UC/100 kg carcass weight)*

Country	1968	1969	1970	1971	1972	1972/1968 (in %)	1973	1973/1972 (in %)
Germany	142,0	145,5	145,1	149,5	162,6	+ 14	164,2	+ 1
France	202,5	193,7	177,7	192,0	208,2	+ 3	227,4	+ 9,2
Italy	143,6	136,8	142,4	142,6	180,2	+ 26	179,4	–
Netherlands	172,9	174,7	168,0	171,3	196,3	+ 13	225,9	+ 15
BLEU	130,3	142,7	149,8	141,3	176,8	+ 36	–	–
United Kingdom (local meat)	78,2	84,7	88,0	90,7	111,0	+ 42	140,7	+ 18
United Kingdom (imported meat)	63,9	69,7	69,2	71,0	95,2	+ 49	113,6	+ 22

* UC = Unité de Compte (E.E.C. monetary unit, at present equal to FFrs. 5,63.

Table 16

Relative importance of meat, wool and milk in the gross returns of sheep production in the various EEC countries (%)

Country		Meat	Wool	Milk	Total
Great Britain	1968–69	86	14	–	100
	1969–70	86	14	–	100
	1970–71	88	12	–	100
Ireland	1969	86	14	–	100
	1970	88	12	–	100
	1971	91	9	–	100
Denmark	1969	89	11	–	100
Netherlands	1971–72	92	8	–	100
Fed. Rep. of Germany	1969–70	87	13	–	100
	1970–71	90	10	–	100
	1971–72	89	11	–	100
Belgium	1971	95	5	–	100
	1972	93	7	–	100
Italy	1969	39	6	55	100
	1970	37	6	57	100
	1971	33	6	61	100
France	1971	91	4	5	100

Table 17

Types of sheep in three of the EEC countries (%)

Country	Breed	%
Germany	Merinos	5,80
	Merinos Landschaf	41,04
	Blackhead	26,55
	Whitehead	7,85
	Friesian (milk)	8,42
	Other breeds	10,00
France	Longwool	3,52
	Meat breeds	42,72
	Merinos	8,90
	Local breeds: milk prod.	22,00
	other	22,80
Italy	Merinised breeds	15,1
	Alpine Lop-eared	1,8
	Longwooled breeds of Southern Italy and Isles:	
	Sardinian	27,7
	Others	17,0
	Crossbreds	37,4

France as an example of European sheep production

As in the case of all branches of animal production in countries which are widely spread and very varied, French sheep production has the characteristics of being both very uniform in its type of production, and very varied in its means of production.

1. *Production*

Contrary to what one finds in a number of countries of the north of Western Europe, France offers all the traditional products of the sheep industry: meat, milk and wool.

(a) *Meat:* It represents more than 90% of the income from sheep breeding. The total local production (calculated as per the adjusted controlled abattoir records) was 111 400 tons in 1969, without taking into account farm consumption. The average yearly increase in production, which has been around 4% since 1963, has diminished since 1968/1969. We even note a small drop in production, of up to 1,2% in some years. During this time, consumption which regularly increased faster than production, reached 144 200 tons in 1969 (total local consumption). Thus production cannot meet the demands of consumption which is constantly increasing.

The main characteristics of French mutton production are the increasing uniformity in the types in demand by the national market, and the fact that the demand is for top quality meat. The carcasses mainly in demand are those of lambs slaughtered at weaning i.e. between 3 and 5 months. The mother's milk helps to maintain a degree of fat in the carcass, whereas the roughage and concentrates give the young ruminants their taste and colour.

Some decades ago the market offered older animals (two-year old females, castrated and culled animals); so called "grey" lambs (weaned at about 2–3 months and fattened to about 8 or 12 months); very young or "white" lambs (slaughtered at weaning). An excess of ewe lambs was offered; the lamb of Nimes or the South East, very similar to the type sought after by the Spaniards and the Italians ("Ternasco" and "Abacchio"), which is slaughtered at 18–20 kg, at about 2–21/2 months and for which the mother's milk still constitutes an essential part of its diet, was common, as well as the young lambs slaughtered in the milk-producing areas at about 4–5 weeks.

At present, the trend is towards a lamb with a refined taste, and with hardly any taste of fat. The relative production per type of animals is as follows:

Table 18

Type of mutton produced

	Percentage of all animals	Percentage of tons of net meat production
Lambs	76,7	66,9
Sheep	2,4	3
Culled animals	20,9	30,1

The distribution per type of lamb is as follows:

Table 19

Type of lamb produced

	Percentage of lambs	Percentage of tons of net meat production
"Young" lamb	12	5
"Light white" lamb	12,4	10,4
"Average white" lamb	34,5	37,2
"Heavy white" lamb	5,7	7,7
"Grey" lamb	35,4	39,7

Previously slaughter weight used to vary greatly. The lambs of the South-East and the Alps were close in size to the "young" lamb, those from the North were very close in size to the "grey" lamb, and those from the Paris region weighed around 33–35 kg:

Table 20

Net weight of lambs from different regions

Regions	Average net weight of the lambs (kg)
North	26
Paris Region – Champagne	19
Poitou – Charente	16,5
Limousin	12,5
Rhone – Alps	13,5
Midi – Pyrenees	12,5
Aquitaine	10,3

These last figures give an idea of the variety in weight; the low weight at which lambs are slaughtered in the milk-production areas (Aquitaine); and the increase in average lamb carcass weight from the South to the North which still persists.

And yet now there is a generalised tendency towards obtaining carcasses of 18–21 kg which seems to satisfy everyone. The consumption of very young lambs is gradually diminishing as these animals are now weaned early and fattened to $3^1/2$ months, which contributes to the French consumption of young, well conformed animals. The only lamb production remaining important is that of Nîmes because of the taste of the customers, and the local husbandry methods. Thus the production of sheep meat has tended to become mainly a production of "white" lambs, slaughtered between $2^1/2$ and $4^1/2$ months. This type of carcass is now very much sought after. The evolution of consumption, and more particularly the standardisation of poultry meat, has led to a clear preference for "leg of mutton" as the dish for festivities and special occasions, with a considerable demand from Christmas to Easter. On the other hand offal (stew meat) from these young animals can now be used for skewers when this meat is otherwise difficult to sell. Sheep meat is now considered meat of the best quality and fetches the highest prices.

(b) *Milk:* Milk production which represents $5^1/2$% of the revenue of French sheep farming, had decreased in two years by 1,5% since 1968, and as in the case of meat since 1968 there is stagnation in the total sheep milk cheese production. In fact, from 10 885 tons of cheese in 1963, production rose to 13 504 tons in 1967, and came down again to 12 730 tons in 1968, and 12 548 tons in 1969.

It should also be noted that the total number of ewes milked (specialised milk breeds) is decreasing:

Table 21

Breed and number of ewes milked

Regions	Number of ewes milked		
	1963	1967	1970
Midi - Pyrenees	463 000	429 000	355 900
Aquitaine	210 850	194 100	215 800
Languedoc	70 100	67 900	70 800
Provence, Côte d'Azur, Corsica	111 500	102 000	101 600
Rhone - Alps	50		
Total	855 500	793 000	744 100

Milk production tendencies present more or less the same characteristics as meat production. Thanks to ancient legislation, national, but mainly international protection is given to Roquefort cheese which is produced from ewe milk in a restricted geographical area and matures in the natural caves of the town of Roquefort. The commercialisation of this cheese has expanded considerably with relatively high sales prices.

Thus the producers of Roquefort have become the main users of the ewe milk obtained in the South, the South West and Corsica. So here also, as for lamb, the French sheep producer sells his products as luxury articles. We should however stress that a relative slowdown of sales channels a certain quantity of milk towards other types of cheeses which are, however, as expensive as Roquefort.

(c) *Wool:* Some 14 000 tons of wool are marketed, of which 35% through group organisations (wool co-operatives). Wool does not represent more than 4% of the income of sheep production. Interest in wooled sheep has decreased considerably, particularly since the fluctuation in wool prices in the last few years. The result of this is a regrettable lack of interest by producers while the French wool market is very well organised, thanks to a powerful co-operative structure.

2. *Various aspects of sheep husbandry*

Sheep husbandry takes various forms which reflect the natural and socio-economic surroundings where it is to be found. Feeding methods, structures and types of animal population are among the important factors influencing husbandry and production:

(a) *Main nutritional sources of the flocks:* As production is mainly based on lambs which remain with their mothers for 3–4 months, the needs of the flocks are high during the months preceding birth and during the suckling phase, and can easily be three to four times higher than the normal requirements. On the other hand, during breeding and the major part of the gestation period, the nutritional level remains rather low. Management and feeding are thus largely influenced by this variability in needs.

At times sheep are mainly used to consume excess fodder, in which case it plays a complementary role on the farm. This is the case in the natural grassland zones where sheep graze with dairy cattle. While the grass is growing the ewes lambing in the spring consume surplus pasture. The lambs consume little during the dry summer season and graze small supplements during the autumn period. During the winter, depending on the climatic variations, the flock lives on the available foodstuff reserves indoors, or grazes on specially reserved parks. Using this form of management, an important number of lambs is available for slaughtering form May to October.

On the other hand, in certain parts of Western France, the soil which is of average quality is not favourable for intensive cultivation other than maize. Under such conditions there are flocks which are mainly kept on intensively grown pastures, as in England. Around two million ewes are kept in this way. Indoor sheep breeding is favoured by the demand for lambs from December to April. In winter, mainly in the zone of intensive culture North of the Loire river, the flocks sometimes use the excess (by-products) available on the farms. Even though the husbandry methods used at present no longer allow the flocks to roam on the land eating the leaves and roots of beetroot, and the lucerne in autumn

(these are part of the rotation of crops for cultural reasons); the cereals, the by-products of maize and maize stored in silos, and the lucerne hay, ensure abundant nutrition during autumn and winter.

However, it does not pay to assign large surface areas for sheep grazing in the summer periods, when they can be used much more profitably by mechanized farming. Thus with important nutritional requirements in winter, and less so in summer, the sheep flock fits perfectly well as a complement in a mixed farming enterprise, particularly if lambing takes place in autumn, so as to provide quality lambs at high prices from Christmas to Easter. This is also the case in Germany.

In some instances the flock of sheep plays the main role in an animal production, or mixed production farm unit. Here we can quote two extreme cases: there are those sheep which move according to the seasons, spending the summer in the Alpine regions or in the Massif Central, and the winter in the lower regions specially reserved for this purpose and with a nutritional complement of fodder. Lambs are sold in winter as births take place when the flocks come down from the mountains in autumn. There is also the example of the type of husbandry practised in south west F ance. During the day the ewes graze on irrigated land and return to the fold at night to feed the lambs. In one case out of two there is a second lambing in autumn to produce winter lambs on hay and barley and, if the weather is mild, the same grazing is used as that for the mothers. This, in general, is the Mediterranean type of sheep husbandry. There are of course a whole range of situations in between:

Table 22

Percentage of national flock in different husbandry systems

	Numbers of flocks in %	Totals in %
In the fold (indoors)	36,6	41,6
Half in the open (grazing and indoors)	45,3	33,4
In the open (grazing)	12	10,9
Seasonal movement (transhumance)	5,5	11,2
Other	0,6	2,9

Thus the main production areas are determined by the available nutrition, according to the soil and partly according to the climate and adapted to the production cycle of the sheep.

(b) *Breeding structure:* The structure of the sheep flocks in 1963/65 was approximately as shown in Table 23.

A study of this last table shows that the flocks are widely spread and their structure extremely variable. Almost 80% of those farms having sheep, have less than 50 mother ewes, and 5% have more than 150 ewes. And yet this last group of farms represents 30% of the total national flock. Moreover in most cases the small flocks form a whole with the cattle herds in the grassland zones.

This structure has changed during the last few years, larger flocks becoming more and more common. This is often linked to the necessity of having a competent person available on the farms, and therefore a sufficient number of sheep to justify this. This is why the disappearance of small flocks has taken place, and the remaining flocks have number of ewes varying from 250 to 3 000.

Table 23

Structure of the national flock

Importance / Farms	Number of	Percentages
from 0 to 20 ewes	91 890	50,5
from 20 to 50 ewes	53 172	29,5
from 50 to 150 ewes	28 616	15,7
from 150 to 300 ewes	6 082	3,3
more than 300 ewes	1 902	1
Total	181 662	

On the other hand, it has been noted that a number of small flocks remained, forming a complement to grazing cattle herds. This is the result of the relatively little time which has to be spent by the farmer to keep a small flock, when this is run as a complement to the cattle herd. This was made possible by the considerable progress made in veterinary medicine and parasitology which allowed the sheep to make the most of moist and rich grasslands. This is the case in the French Flanders, Holland, Belgium and the maritime zone of Northern Germany (mostly small dairy cattle farms).

(c) *Animal populations:* Animal populations are quite capable of adapting to various forms of production systems, and in the variety of environmental conditions in which they live. Naturally, the populations themselves also vary greatly.

The characteristics mainly sought after nowadays are those of meat production. Good growth and conformation, but also those characteristics necessary for good breeding (e.g. prolificacy). The breeding, growing and fattening phases are here less distinct than for cattle. The production of lambs in extensive zones, to be intensively fattened in specialised farms, is not common practise, and cannot yet be considered seriously. So the mother which produces a lamb with high growth potential and sufficient conformation must also prove to be prolific and fertile, and this even at such times when farming conditions have an effect on breeding, i.e. even in the off-season, in autumn. These conditions have led to the development of certain breeds, which can be grouped in four groups (longwool-type grazing sheep, meat and well-conformed breeds, merinos, local and milk breeds).

Genetic improvement in France is based on growth control on the farm during the first three months by regular weighings (every three weeks) from which one can

indirectly tell the milk production value of the mother (growth up to one month), and the actual growth capacity of the lamb (growth from 30–70 days). At the same time, prolificacy (number of lambs born per lambing ewes) and fertility (number of ewes lambing as compared to the number of ewes mated) are controlled as well as productivity of the flocks (weaned lambs as opposed to the number of ewes mated). Almost 200 000 weighings are done yearly. The results of these are used by the flock books to choose the best males with an additional control for satisfactory conformation and type of wool. There are already in operation a number of progeny testing stations (e.g. Ile de France, Texel, etc.), which test slaughter value and breeding value of the rams. Other stations are in the process of being set up.

The origin of the French sheep population is varied, and is the result of three successive trends: Under Napoleon (1800/1810) merino crossing spread to improve the quality of wool. – After 1850, English breeds, and in particular Leicester (called Dishley in France) were introduced to improve the meat by creating new breeds (e.g. Ile de France) or improving local types (Lacaune, Bleu du Maine). – Finally, after 1900 a major effort was made to improve the productivity of the local hardy breeds which were well adapted to local conditions.

The *First Group* includes the breeds adapted to grazing in optimal use of the grasslands. They are large-sized and prolific animals, lambing in the spring. The ewes' milk production is so good as to allow the production of heavy lambs at 4 months of age with only grass as a nutritional complement. The fleece is of the longwool open type to resist rain. They are characterised by their adaptability to variations in husbandry conditions and by their typical colour. The Bleu du Maine belongs to this group. It is very prolific (200%) and has good growth rates. The Cotentin is somewhat less prolific, well adapted to the mild climate of lower Normandy and produces lambs which can be weaned early. The Texel was imported from Holland mainly after 1945 and the emphasis in selection placed on better meat quality. It has now a better conformation than the Dutch Texel. Its hardiness is these climates, especially in winter, explains its spreading in Northern France. Finally, the Avranchin is smaller than the Cotentin, has a grey-blue face and is limited to a small geographical area.

The Second Group is mainly made up of breeds which having started from a Merino, or local and Merino, population and has been improved by cross-breeding to the Leicester in the 1850s and selected for growth and conformation. Among the breeds belonging to the second group are the Ile de France, extremely well conformed with a very good growth rate and reasonably fine wool. It is quite prolific particularly when autumn lambings take place. It provides the typical Christmas lambs for the Paris market. The rams are widely used in France for industrial cross-breeding and are very popular abroad (Mediterranean basin, Eastern Europe, etc.) for improving the meat characteristics of the Merino and milk or local breeds. The Berrichon du Cher, which is very closely related to the Ile de France, has a lighter skeleton, less wool, and lambs somewhat later. It has an exceptional conformation and good growth. It is also very popular in France and abroad. The Charmoise originally created by numerous cross-breeding from large sized breeds, has now been selected for a smaller size. It has a good conformation and is very hardy. This has allowed the Charmoise to produce excellent carcasses particularly in poor areas such as the heather countryside of Poitou in France and the Leon mountains in Spain. The French Southdown is slightly bigger and more prolific than its English counterpart. Since a few years ago, because of its relatively small size, and as it did not produce satisfactory growth rates in industrial cross-breeding with local breeds, two black-faced large breeds were imported from England (also of the Down type) to allow better industrial cross-breeding and growth rates. They are the Suffolk and the Hampshire.

Table 24

Numbers of the principal French breeds

Breed	Total number
1st Group – Grassland breeds similar to longwool:	
Texel	62 000
Bleu du Maine	76 000
Contentin	58 000
Avranchin	17 000
2nd Group – Breeds originally (1850) improved by cross-breeding with old English breeds and flocks of present English breeds:	
Ile de France	575 000
Berrichon du Cher	540 000
Charmoise	705 000
Southdown	718 000
Têtes Noires (Suffolk)	10 000
3rd Group – Breeds obtained in the 19th Century by upgrading to Merinos:	
Merinos Précoces	21 000
Merinos d'Arles	355 000
Est à Laine Merinos	255 000
Ramboillet	small numbers
4th Group – Local and Milk breeds (M):	
Limousine	255 000
Caussenardes	330 000
Préalpes	325 000
Tarasconnaise	55 000
Blanc du Massif Central	185 000
Bizet	50 000
Rava	13 000
Pyrenées	100 000
Lacaune (M)	910 000
Manech (M)	195 000
Basquaise (M)	19 000
Béarnaise (M)	125 000
Corse (M)	110 000

The Third Group includes what remains of the important Merino population which was spread over part of France in the 19th and early 20th Century. Amongst others are the Merino Précoce which have been selected for growth and conformation and bred on the rich soils of the Paris Basin. It gave way to the Ile

de France, which is more prolific and has a better conformation. However, it is still greatly appreciated by foreigners who import it and use it to improve the meat characteristics of their wool flocks. The Merinos d'Arles which is known for its hardiness on mountain grazing left over by the cattle herds, is also adapted to the dry climate and soil of the Camargue and Crau flat lands. The Merino de l'Est is similar to the German Landschaf and is used mainly in eastern France. Its conformation which is not really adequate when compared to the specialized meat breeds, is made up for by industrial cross-breeding with breeds of the second group, a method currently applied.

The Fourth Group comprises the local hardy populations including a number of very similar breed with average body size, white faces, much improved over the last few years. Selection efforts are being made for better prolificacy and meat characteristics. They are the Limousine in the Central South Plateau of France; the Caussenarde and Blanche in the Central mountain area, and the Lozère; Prèalpes du Sud in the low Alps; and Tarasconnaises in the Pyrenees, etc. There is also the milk-producing population made up partly of Lacaunes in the South of the Central mountains of France. These are a hardy large French type from whose milk Roquefort cheese is mainly made. There is also the milk population of the Western Pyrenees and Corsica. In order to improve these, a rational milk control system is applied, and genetic research is very active in this field of animal production.

One can also mention the excellent results obtained for prolificacy by the introduction of the Romanov, and to a lesser extent Finnish breeds.

Conclusion

At the end of the 19th century sheep farming in Europe had decreased considerably because of the general lowering of customs duties on imported wool aimed at improving the supply to the expanding textile industry. Nevertheless, since the end of the second world war, a tendency to expand the sheep industry with special reference to meat, is apparent:

(a) sheep are used more and more in nutritional research (digestibility), on the physiology of reproduction and genetics which brings a renewed interest to this species. The result is an active development of sheep breeding techniques and new husbandry methods;

(b) sheep farmers form a group which is convinced of the importance and necessity of a high scientific technical support for better production, and are well organised on a European basis;

(c) the relatively short reproduction cycle – 5 months of gestation and 3 months of suckling, or only 6 intensive months and 5 months of gestation, 40 days of lactation anoestrus in the case of two lambings a year – makes it possible for the sheep to make the most of favourable seasons and to cost less in unfavourable periods;

(d) sheep are probably the farm animals whose production methods can still be most profitably and greatly intensified (from breeding of the ewe to slaughter of the lamb), but it is also the species which can make good use of difficult and hardy environments.

These factors explain the gradual increase in numbers and the rapid increase in the size of individual production units.