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Vincent Chatellier

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"TYPOLOGY OF AGRICULTURAL HOLDINGS"**

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Grazing livestock holdings in the European Union

Developing a typology applicable to the European FADN data

Vincent CHATELLIER

- INRA LERECO, Nantes -

Introduction

The European Union has a wide variety of produce which originates from livestock breeding (milk, dairy products, beef/veal, mutton/lamb and goatmeat) as well as a great diversity of technical production systems. This diversity, which is not a new phenomenon, is a result of the progressive adjustment of agricultural production methods to different environmental conditions (agronomic potential, climate, altitude) and the preservation of local know-how. It is reflected in numerous categories of animals (dairy cows, suckler cows, beef heifers, bullocks, young cattle, grass-fed calves, milk-fed calves, crated calves, milk ewes, female goats, etc.), breeds, production methods and feed types. Conducting an analysis of the European grazing livestock sector is a complicated process due to the following factors, among others: the close relationship between milk and meat production; the joint development, in some holdings, of several types of production (beef, sheep and/or goats); the discrepancies between holdings in terms of their economic size, the intensity of the farming methods used and the degree of specialisation. The introduction of the Common Agricultural Policy (CAP) prompted increased specialisation among agricultural holdings almost everywhere in Europe; however, the introduction of milk quotas in 1984 and the MacSharry reform of the CAP in 1992 have tended to encourage the diversification of production in recent years. Complementary fattening enterprises have therefore developed within dairy holdings in order to make use of the available surface areas and labour force.

The diverse range of European agricultural holdings may be analysed with the help of statistical tools such as the Farm Structure Survey or the Farm Accountancy Data Network (FADN). The traditional method of dividing holdings into different typological categories is the type of farming (TF) typology, which combines the dominant lines of production determined by ratios of standard gross margin (SGM). This classification, which typically identifies 17 groups of holdings, is combined, where appropriate, with several economic size classes. Applied to the FADN data, this classification is a particularly appropriate instrument for monitoring annual farm income trends in the different Member States or administrative regions within the European Union. It is sometimes not sufficiently precise for analysing the diverse range of technical systems used in the breeding of grazing livestock and thus for accurately measuring the various effects of changes in agricultural policy.

At the request of the European Commission's Directorate-General for Agriculture (DGVI)¹, which will evaluate the potential economic impact of future reforms of the main market organisations (cereals, beef/veal and milk), a classification method which complements the TF typology has been developed for agricultural holdings with more than one Grazing Livestock Unit (GSU). Entitled Grazing Livestock System (GLS), this typology has been created as a result of successive iterations so that it can be applied to the FADN data of the 15 Member States. The GLS typology system divides grazing livestock holdings into several typological categories according to the composition of the breeding stock, the categories of animals present and the mix of production activities on the holding.

¹ The authors alone accept responsibility for the results of this study.

1 - A typology based on the European FADN data

The FADN is a survey of agricultural holdings which has been conducted annually for over 30 years in all the Member States of the European Union. This statistical tool, which is based on a Community regulation, is designed to make it possible to monitor the income and conduct a business analysis of agricultural holdings. The technique used for constructing the FADN, its homogeneity as regards the definition of the various indicators and the amount of data it contains make it a suitable instrument for comparing production systems between Member States and between administrative regions. The FADN is the only database of microeconomic data harmonised at European level which simultaneously provides detailed information on the structure (surface area, livestock numbers), economic results (output, intermediate consumption, subsidies, incomes) and financial situation of agricultural holdings.

In 1995 - the most recent year available at the time of this survey - the European FADN contained a sample of 57 360 agricultural holdings. Each holding in the sample was given a weighting coefficient which corresponded, in short, to an overall population of 3.57 million agricultural holdings. This weighting factor, which varies from one holding to another, is determined by cross-referencing with the Farm Structure Survey on the basis of a classification with three entries: the administrative region, the TF and the economic size class. The FADN does not cover all agricultural holdings in the European Union, but merely those which are operated as a "main activity", i.e. those whose economic size (measured in SGM) and availability of manpower (measured in Annual Work Units (AWU)) are higher than some of the thresholds defined for each Member State². The holdings represented in the FADN nevertheless cover more than 90% of the surface areas and livestock recorded in the Farm Structure Survey. On the other hand, there is a greater discrepancy in the analyses relating to employment, particularly in rural areas where double working is very common.

The GLS typology was developed so that it could be applied to the FADN of the 15 Member States, which implies that it is necessary to keep the lowest common denominator in terms of the variables available. Some of the information available from the national FADN is not necessarily available at European level. There has thus been a lack of invaluable information such as data on the sales of different animal categories (calves, young cattle, cows) or on the number of animals eligible for compensatory payments (premiums for maintaining a herd of suckler cows, special premiums for male cattle or compensatory premiums for sheep).

² The economic size threshold is very low in Portugal (1 ESU), low in Spain, Italy, Greece and Ireland (2 ESU) and in Denmark (4 ESU). It is average in Germany, France and the United Kingdom (8 ESU), high in Belgium (12 ESU) and very high in the Netherlands (16 ESU). These distinct threshold levels for inclusion in the FADN affect the average results obtained for groups of holdings.

2 - Breakdown of grazing livestock holdings into four production types

Of the 3.5 million agricultural holdings operated as a main activity which are covered by the European FADN, this study concerns grazing livestock holdings only, i.e. holdings with more than one Grazing Livestock Unit (GLU)³. The threshold is set at such a low level in order to ensure that the typology covers almost all livestock, forage areas and direct aid for livestock breeding. If this threshold had been higher, it would have excluded from the scope of the analysis some of the stock of small ruminants (sheep, goats) which have a very low LU coefficient and are to be found in quite considerable numbers in Member States where the economic size of holdings is often limited.

55% of grazing livestock holdings in Europe (1.6 million units) are concentrated in only four countries (France, Germany, Italy and Portugal). They represent 45% of the total number of agricultural holdings in Europe - a proportion which varies widely from one country to another (Table 1). They account for over three-quarters of holdings in the United Kingdom and Ireland and almost half of all holdings in Denmark, the Netherlands, Sweden and Portugal. In the countries in the south of the European Union (Spain, Greece and Italy), diversification into Mediterranean agricultural production (fruit and vegetables, olive oil, etc.) means that there are proportionally fewer grazing livestock holdings in these countries.

Table 1 *Number of agricultural holdings in the 1995 FADN (sample and universe)*

	FADN sample		FADN universe	
	Agricultural holdings	of which grazing livestock holdings	Agricultural holdings	of which grazing livestock holdings
Germany	5 500	3 800	308 300	225 900
Austria	2 200	1 530	88 900	60 800
Belgium	1 200	840	45 900	33 600
Denmark	2 300	1 040	58 100	29 800
Spain	6 270	2 230	501 600	126 600
Finland	1 030	650	46 000	31 200
France	7 530	4 370	429 600	268 300
Greece	5 260	1 370	499 800	109 700
Ireland	1 180	1 150	129 600	128 100
Italy	15 880	7 240	870 300	226 600
Luxembourg	280	270	1 780	1 500
Netherlands	1 540	660	87 800	50 600
Portugal	3 290	1 850	341 600	179 400
United Kingdom	3 340	2 660	130 000	105 500
Sweden	580	400	35 900	24 000
EU - 15	57 360	30 070	3 575 300	1 601 500

Source: FADN EU 1995, DGV1-A3 / INRA-LERECO Nantes

³ To allow comparisons to be made between animal categories an LU coefficient is applied as follows: dairy cow (1 LU); male cattle over two years old (1); other cows (0.8); heifers over two years old (0.8); male and female cattle between one and two years old (0.6); equidae (0.6); male and female cattle under one year old (0.4); store calves (0.4); ewes (0.13); goats (0.13); other ovine animals (0.08).

At European level, grazing livestock holdings are a significant source of employment (48% of agricultural labour units) and occupy a sizeable proportion of the land (65% of the utilised agricultural area). As holdings of this kind account not only for 48% of areas under cereal crops, oilseeds and pulses (COP) but also for total GLU stock, they receive a large share of direct aid to European agricultural holdings (62%). These holdings cover less than a third of the utilised agricultural area in Spain and Greece and over 85% of the UAA in the United Kingdom, Belgium, Luxembourg and Ireland (Table 2).

Table 2 Role played by grazing livestock holdings in the agricultural sector of each Member State

	Agricultural holdings	Agricultural labour unit	Utilised agricultural area	COP area	GLU	Direct aid
Germany	73%	73%	77%	66%	100%	76%
Austria	68%	70%	64%	40%	100%	61%
Belgium	73%	68%	87%	75%	100%	91%
Denmark	51%	51%	53%	42%	100%	49%
Spain	25%	29%	33%	20%	100%	29%
Finland	68%	76%	58%	36%	100%	65%
France	62%	57%	68%	47%	100%	62%
Greece	22%	23%	25%	32%	100%	33%
Ireland	99%	99%	99%	81%	100%	97%
Italy	26%	34%	47%	32%	100%	35%
Luxembourg	86%	83%	99%	99%	100%	99%
Netherlands	58%	41%	71%	32%	100%	71%
Portugal	53%	58%	70%	69%	100%	76%
United Kingdom	81%	72%	85%	60%	100%	77%
Sweden	68%	74%	62%	48%	100%	65%
EU - 15	45%	48%	65%	47%	100%	62%

Source: FADN EU 1995, DGVI-A3 / INRA-LERECO Nantes

Using three successive divisions, the GLS typology divides grazing livestock holdings into four types of production, then into nine livestock systems and, finally, into 18 technical systems. The typology uses a dichotomous format, with holdings being grouped according to indicators and thresholds. Unlike typologies constructed using poles of aggregation or principal components analysis, the GLS typology has the main advantage of grouping all the holdings in one typological category without creating a residual group. This has the inherent drawback of creating threshold effects which are reflected in the sometimes considerable diversity within a given group. The construction of the GLS typology has been an exercise in trying to strike a balance between ensuring that a sharp distinction is drawn between the various technical systems used in livestock rearing and the need to retain a sufficient number of individuals in the typological categories so that these remain representative and are statistically valid.

As a first step, grazing livestock holdings are divided into four production types (*Dairy cattle, Beef cattle, Sheep and goats, Small grazing livestock holdings*) according to the size and composition of their grazing livestock (Box 1). The indicators relating to the stock in the different animal categories are shown throughout the GLS typology as LU and not as average numbers. The chronological order of the division is relevant to the way in which the range of livestock systems are presented. By first identifying holdings of the *Dairy cattle* type, the method adopted makes it possible to group all European dairy production in one typological category. This is not the case for sheep production, which is split between the different types. As holdings of the *Sheep and goats* type are determined as a last step, this type only covers specialised livestock breeding, as mixed systems are identified in the two preceding types.

Box 1 Definition of the four types of production

Types of production	Typological indicators
Dairy cattle	GLU \geq 5 <u>and</u> Dairy cows LU \geq 3
Beef cattle	GLU \geq 5 <u>and</u> Dairy cows LU $<$ 3 <u>and</u> Cattle LU \geq 3
Sheep and goats	GLU \geq 5 <u>and</u> Cattle LU $<$ 3 <u>and</u> Sheep and goats LU \geq 3
Small grazing livestock holdings	1 $<$ GLU $<$ 5

At European level, 46% of grazing livestock holdings are classified as *Dairy cattle* holdings, 26% as *Beef cattle* holdings, 12% as *Sheep and goats* holdings and 16% as *Small livestock holdings* (Table 3). *Dairy cattle* holdings predominate in the countries of northern Europe. They account for over three quarters of grazing livestock holdings in Germany, Austria, Finland, Luxembourg, the Netherlands and Sweden. On the other hand, they are proportionately less common in southern Europe (Spain, Italy, Portugal and Greece), where sheep and goat breeding is particularly common, as these countries still have large numbers of small grazing livestock holdings. The *Beef cattle* holdings account for one in two grazing livestock holdings in the United Kingdom and Ireland and approximately one in three holdings in France, Belgium and Denmark. In the other countries, particularly of Scandinavia, this type of holding plays an insignificant role in the national supply of red meat. Holdings of the *Sheep and goats* type are the main type of agricultural holding in Greece (51%) and are very common in Spain (36%). There are fewer specialised holdings in the United Kingdom and Ireland because sheep are often reared on holdings combining cattle farming with sheep farming. Less specialised holdings of the type *Small grazing livestock holdings* are mainly found in Portugal (*Institut de l'Élevage* (Livestock Institute), 1997), Italy and Greece, where the economic size thresholds for entry to the FADN are fixed at a very low level (between 1 and 4 ESU).

Table 3 Breakdown of grazing livestock holdings into four production types

	Dairy cattle	Beef cattle	Sheep and goats	Small grazing livestock holdings	Total
Germany	76.2%	20.1%	0.5%	3.2%	100.0%
Austria	83.5%	10.0%	1.3%	5.3%	100.0%
Belgium	63.0%	34.0%	0.3%	2.7%	100.0%
Denmark	54.7%	30.7%	0.9%	13.8	100.0%
Spain	43.4%	19.5%	35.6%	1.5%	100.0%
Finland	87.0%	8.7%	1.1%	3.2%	100.0%
France	53.0%	37.2%	6.5%	3.3%	100.0%
Greece	12.4%	5.7%	51.6%	30.3%	100.0%
Ireland	34.4%	58.1%	6.7%	0.9%	100.0%
Italy	37.4%	21.9%	12.0%	28.7%	100.0%
Luxembourg	85.0%	14.9%	0.0%	0.1%	100.0%
Netherlands	73.3%	18.4%	4.0%	4.3%	100.0%
Portugal	9.2%	11.7%	8.0%	71.1%	100.0%
United Kingdom	34.0%	55.9%	8.7%	1.4%	100.0%
Sweden	79.9%	10.8%	0.0%	9.3%	100.0%
EU - 15 (%)	46.0%	26.3%	11.4%	16.2%	100.0%
EU - 15 (number)	736 800	421 600	182 900	260 200	1 601 500

Source: FADN EU 1995, DGVI-A3 / INRA-LERECO Nantes

As a result of seeking to take account of all European holdings involved in the breeding of grazing livestock, the holdings selected are often not very specialised. Thus the gross output of livestock rearing (milk, dairy products, beef/veal, mutton/lamb and goatmeat) accounts for less than a third of total gross output in almost 20% of grazing livestock holdings (4% of *Dairy cattle* holdings, 28% of *Beef cattle* holdings, 14% of *Sheep and goats* holdings and 64% of *Small grazing livestock holdings*). The four types of production identified in the GLS typology cover the entire livestock population (cattle, dairy cows, suckler cows, sheep and goats) and forage areas whereas the four TF specialising in grazing livestock (TF 41 *Specialised dairy cattle*, TF 42 *Cattle, breeding and beef*, TF 43 *Dairy cattle, breeding and beef*, TF 44 *Sheep, goats and other grazing livestock*) only cover 80% of milk production, 75% of the livestock population of sheep and goats, 70% of beef and veal production and 70% of forage areas.

Table 4 Breakdown of holdings for each type of production (GLS) into TF groups (%)

Type of farm (TF)		Types de production (GLS)				Total
		Dairy	Beef	Sheep	Small-holdings	
Title	No	cattle	cattle	goats		
TF Grazing livestock	41+42+43+44	76%	54%	61%	3%	57%
- of which "Dairy cattle"	41	66%	0%	0%	1%	30%
- of which "Beef cattle"	42	0%	38%	0%	0%	10%
- of which "Dairy cattle, breeding and fattening"	43	9%	0%	0%	0%	5%
- of which "Sheep, goats and other grazing livest."	44	1%	16%	61%	2%	12%
TF "Crops and livestock breeding"	71+72+81+82	20%	23%	25%	32%	23%
TF "Field crops"	11+12	2%	15%	6%	22%	9%
TF other	---	2%	8%	8%	43%	11%
<i>Total</i>	---	100%	100%	100%	100%	100%

Source: FADN EU 1995, DGV1-A3 / INRA-LERECO Nantes

The combination of the GLS and the TF typologies shows that more than four in ten holdings engaging in a grazing livestock activity are spread among non-grazing livestock TF. Hence, an analysis on the basis of specialist TF only relates, at European level, to 76% of milk producers, 54% of farmers of the *Beef cattle* type and 61% of farmers of the *Sheep and goats* type (Table 4).

3 - Division into nine livestock systems and 18 technical systems

Holdings of the first three production types are divided into nine livestock systems determined according to the different types of animal present on the holding (Box 2). Four livestock systems are identified for the *Dairy cattle* type, three for the *Beef cattle* type and two for the *Sheep and goats* type. For holdings of the latter type, the livestock systems are defined in terms of the relative share of dairy and beef production in the total production of the holding (Ashworth S., 1998).

Box 2 *Definition of the nine livestock systems*

Types of production	Livestock systems	Typological indicators
Dairy cattle (DC)	DC - Specialised	Sheep and goats LU / GLU < 0.2 <u>and</u> Suckler cows LU / Cows LU (dairy + suckler) < 0.1 <u>and</u> Male cattle over one year old LU/ Dairy cows LU < 0.25 <u>and</u> (Cattle under one year old LU + Store calves LU) / Dairy cows LU < 0.35
	DC - Beef cattle	Sheep and goats LU / GLU < 0.2 <u>and</u> Suckler cows LU / Cows LU (dairy + suckler) < 0.1
	DC - Suckler cows	Sheep and goats LU / GLU < 0.2 <u>and</u> Suckler cows LU/ Cows LU (dairy + suckler) >= 0.1
	DC - Sheep, goats	Sheep and goats LU / GLU ≥ 0.2
Beef cattle (BC)	BC - Fattener	Sheep and goats LU / GLU < 0.2 <u>and</u> Suckler cows LU < 3
	BC - Suckler	Sheep and goats LU / GLU < 0.2 <u>and</u> Suckler cows LU ≥ 3
	BC - Sheep, goats	Sheep and goats LU / GLU ≥ 0.2
Sheep and goats (SG)	SG - Mainly milk	Gross milk output and other dairy products (ewe, female goat) ≥ Gross meat output
	SG - Mainly meat	Gross milk output and other dairy products (ewe, female goat) < Gross meat output
Small grazing livestock holdings		

The holdings listed in the nine livestock systems can be further subdivided into 18 technical systems (Box 3): three in the *Dairy cattle - Beef cattle* livestock system, two in the *Dairy cattle - Suckler cows* system, two in the *Dairy cattle - Sheep, goats* system, four in the *Beef cattle - Fattener* system, three in the *Beef cattle - Suckler* system, two in the *Beef cattle - Sheep, goats* system and two in the *Sheep and goats - Mainly milk* system.

Box 3 Definition of 18 technical systems

Livestock system	Technical systems	Typological indicators
DC - Specialised		
DC - Beef cattle	Calves	Male cattle over one year old LU / Dairy cows LU < 0.25 <u>and</u> (Cattle under one year old LU + Store calves LU) / Dairy cows LU ≥ 0.35
	Young cattle	Male cattle over one year old LU / Dairy cows LU ≥ 0.25 <u>and</u> Male cattle between 1 and 2 years old LU ≥ Male cattle over two years old LU
	Bullocks	Male cattle over one year old LU / Dairy cattle LU ≥ 0.25 <u>and</u> Male cattle between one and two years old LU < Male cattle over two years old LU
DC - Suckler cows	Breeder	Male cattle over one year old LU / Cows LU (suckler + dairy) < 0.1
	Breeder-Fattener	Male cattle over one year old LU / Cows LU (suckler + dairy) ≥ 0.1
DC - Sheep, goats	Mainly milk	Gross milk output and other dairy products (ewe, female goat) ≥ Gross meat output
	Mainly meat	Gross milk output and other dairy products (ewe, female goat) < Gross meat output
DC - Fattener	Calves	Cattle LU / (Suckler cows LU + 1) ≥ 8 <u>and</u> Store calves LU / Cattle LU ≥ 0.2 <u>and</u> Male cattle between one and two years old LU / Cattle LU < 0.4
	Young cattle	Cattle LU / (Suckler cows LU + 1) ≥ 8 <u>and</u> Store calves LU < 5 <u>and</u> Male cattle between one and two years old LU / Cattle LU ≥ 0.4
	Bullocks	Cattle LU / (Suckler cows LU + 1) ≥ 8 <u>and</u> Store calves LU < 5 <u>and</u> Male cattle between one and two years old LU / Cattle LU < 0.4 <u>and</u> Male cattle over two years old LU / Cattle LU ≥ 0.4
	Diversified	Other livestock holdings "BC - Fattener"
BC - Suckler	Breeder	Male cattle over one year old LU / Suckler cows LU < 0.25
	Breeder-fattener of young cattle	Male cattle over one year old LU / Suckler cows LU ≥ 0.25 <u>and</u> Male cattle between one and two years old LU ≥ Male cattle over two years old LU
	Breeder-fattener of bullocks	Male cattle over one year old LU / Suckler cows LU ≥ 0.25 <u>and</u> Male cattle between one and two years old LU < Male cattle over two years old LU
BC - Sheep, goats	Mainly milk	Gross milk output and other dairy products (ewe, female goat) ≥ Gross meat output
	Mainly meat	Gross milk output and other dairy products (ewe, female goat) < Gross meat output
SG - Mainly milk	Mainly sheep	Gross output of ewes' milk products ≥ Gross output of goat milk products
	Mainly goats	Gross output of ewes' milk products < Gross output of goat milk products
SG - Mainly meat		

The technical systems are defined according to the types of animal present on the holding (store calves, cattle under one year old, male cattle between one and two years old, male cattle over two years old, etc.) and the composition of gross output. The titles of the technical systems should be regarded with caution because the indicators used are not always very precise from a technical point of view. In addition to threshold effects, the main problem is that data is provided on the number of animals in a given category present on the holding for the calendar year whereas it is sometimes necessary for practical reasons to think in terms of marketed animals and a different time scale (e.g. as data are not provided on sales of grass-fed calves, the distinction made with regard to the *Beef cattle - Suckler* livestock system between breeders and breeder-fatteners means that certain assumptions are made).

In order to show the overall structure of the GLS typology, European grazing livestock holdings have been broken down into the various typological categories for each Member State (Annex 1). This analysis shows that some farming systems are clearly more common than others and thus allow for a comparative analysis to be conducted between the Member States. In order to discuss the relevance of the indicators and thresholds used in the typology, the average number of livestock (per head) for each holding in each of the typological categories is shown for several categories of animal (Table 5).

Table 5 Average number of animals per holding: analysis according to the GLS typology

	Dairy cows	Suckler cows	Male cattle 1-2 yrs	Male cattle +2 yrs	Store calves	Ewes	Female goats
Dairy cattle	30	2	4	1	1	6	0
Dairy cattle - Specialised	32	0	1	0	1	2	0
Dairy cattle - Beef cattle	27	0	11	2	1	2	0
- Calves	25	0	4	0	2	2	0
- Young cattle	29	0	19	2	0	3	0
- Bullocks	32	0	11	12	0	4	0
Dairy cattle - Suckler cows	22	13	5	2	1	3	0
- Breeder	21	12	1	1	1	2	0
- Breeder-Fattener	23	14	12	3	0	4	0
Dairy cattle - Sheep, goats	26	3	4	1	0	169	10
- Mainly dairy	12	2	1	0	1	90	28
- Mainly meat	31	3	4	1	0	196	4
Beef cattle	0	19	8	2	2	48	1
Beef cattle - Fattener	0	0	17	4	4	2	0
- Calves	0	0	3	0	60	0	0
- Young cattle	0	0	42	2	0	3	0
- Bullocks	0	0	12	38	0	10	0
- Diversified	0	0	6	1	0	1	0
Beef cattle - Suckler	0	26	5	2	1	5	0
- Breeder	0	28	1	1	1	4	0
- BF of young cattle	0	23	15	2	1	8	0
- BF of bullocks	0	18	8	9	0	9	0
Beef cattle - Sheep, goats	0	21	7	2	1	218	6
- Mainly milk	0	14	1	1	1	155	29
- Mainly meat	0	22	8	3	1	229	2
Sheep, goats	0	0	0	0	0	170	26
Sheep, goats - milk	0	0	0	0	0	132	36
- Sheep	0	0	0	0	0	158	7
- Goats	0	0	0	0	0	16	161
Sheep, goats - meat	0	0	0	0	0	211	16
Small grazing livestock holdings	1	1	1	0	0	4	1
Holdings with grazing livestock	14	6	4	1	1	35	4

Source: FADN EU 1995, DGVI-A3 / INRA-LERECO Nantes

The GLS typology, which covers all grazing livestock and forage areas, involves three successive divisions. Depending on the problems investigated, anyone using this classification may choose to limit the scope of his analysis to one or more typological categories. He may also combine this typology with technical indicators (e.g. intensification of forage areas, the forage system), economic indicators (e.g. very specialised units, units which are highly reliant on direct aid) or political indicators (e.g. grazing livestock holdings eligible for an extensive complement, holdings which receive direct aid for fodder maize areas).

Conclusion

This method for classifying European agricultural holdings (GLS typology) has been created using the data available in the Community FADN in response to the need for a tool which makes it possible to more effectively assess the diverse range of agricultural production systems and analyse the different effects of specific reforms of agricultural policy. In the GLS typology, grazing livestock holdings are broken down homogeneously at European level into four separate main types of production (*Diary cattle, Beef cattle, Sheep and goats, Small grazing livestock holdings*), nine livestock systems and 18 technical systems. This typology, which complements the types of farming typology (TF), makes it possible to conduct a comparative study at European level of the structures and economic results of holdings. Despite the limitations of the GLS typology, which are linked to the current imprecision of some FADN variables, it is particularly useful for analysing the different forms of milk production, beef/veal production (calves, young cattle, bullocks), and the production of sheep and goat meat. Depending on the research problems investigated, this method of division can be supplemented by combining some typological categories with other (technical, economic or financial) indicators.

The analysis of the main characteristics of European agricultural holdings broken down according to the GLS typology has highlighted the key role played by grazing livestock holdings in the occupation of the land, the significant role played by dairy holdings in cattle farming and the major share of direct aid in the income of holdings of the type *Beef cattle* and *Sheep and goats*. The approach which involves dealing with each Member State separately reflects the existence within the European Union of a wide diversity of holdings in terms of economic size, the level of specialisation and the degree of intensification. In view of the extremely varied nature of agricultural holdings, the instruments used for regulating the CAP (historical references to rights to subsidies fixed for each Member State, quotas for milk production) make it possible, in the grazing livestock sector, to ensure a territorial distribution of supply and hence to limit the concentration of the means of production in the most competitive holdings and regions with regard to production costs.

At a time of rapid adjustment of the European agricultural sector to the requirements of the market and European public (changes in types of support accentuated by the reform of Agenda 2000; the need to adjust the relationship between supply and demand; the increasing relevance of new issues relating to the environment, food safety and animal welfare), experts and decision-makers must have instruments which can help them to choose which agricultural policies to adopt. Very simply, the GLS typology seeks, alongside other numerous tools and models, to move in this direction.

Further reading

Colson F., Chatellier V., Fuentes M., 1999. Typologie des systèmes d'élevage herbivore dans l'Union européenne. Contrat INRA-LERECO / Commission européenne (DGVI-A3), May, Final report (73 p.) + Annex 1 (95 p.) et 2 (141 p.), Summary (14 p.).

Annex 1 Breakdown of agricultural holdings in the 15 EU Member States by grazing livestock systems typology (FADN universe 1995)

	DEU	OST	BEL	DAN	ESP	SUO	FRA	ELL	IRE	ITA	LUX	NED	POR	UKI	SVE	UE-15
Dairy cattle	172 200	50 800	21 100	16 300	54 900	27 100	142 100	13 600	44 000	84 800	1 300	37 100	16 500	35 900	19 200	736 700
Dairy cattle - Specialised	100 200	26 700	12 000	8 400	42 400	20 000	86 500	8 100	15 500	65 000	400	30 000	12 900	22 600	14 300	465 200
Dairy cattle - Beef cattle	66 000	17 800	1 300	7 500	1 800	6 700	22 000	3 400	15 500	10 000	300	2 500	1 700	5 900	4 800	167 400
- Calves	35 500	9 700	700	7 300	1 700	3 400	3 700	2 300	5 500	6 700	100	1 200	1 000	1 700	4 800	85 300
- Young cattle	28 900	7 300	600	<u>100</u>	<u>100</u>	3 300	9 500	1 100	7 600	2 900	200	1 300	400	3 000	<u>0</u>	66 500
- Bullocks	1 600	800	<u>0</u>	<u>100</u>	<u>0</u>	<u>0</u>	8 800	<u>0</u>	2 400	<u>400</u>	<u>0</u>	<u>0</u>	<u>300</u>	1 200	<u>0</u>	15 500
Dairy cattle - Suckler cows	5 600	5 600	7 700	<u>400</u>	10 000	<u>300</u>	31 400	<u>500</u>	10 600	6 700	600	3 700	1 300	2 500	<u>0</u>	86 800
- Breeder	2 300	3 000	4 200	<u>300</u>	9 600	<u>0</u>	17 700	<u>200</u>	2 600	5 200	300	3 700	1 100	600	<u>0</u>	50 800
- Breeder-Fattener	3 300	2 600	3 500	<u>100</u>	<u>400</u>	<u>300</u>	13 700	<u>300</u>	8 000	1 500	300	<u>0</u>	200	1 900	<u>0</u>	36 000
Dairy cattle - Sheep, goats	<u>300</u>	700	<u>100</u>	<u>0</u>	700	<u>0</u>	2 100	1 600	2 400	3 100	<u>0</u>	<u>900</u>	600	4 800	<u>0</u>	17 400
- Mainly dairy	<u>0</u>	<u>0</u>	<u>100</u>	<u>0</u>	<u>0</u>	<u>0</u>	1 000	1 100	<u>100</u>	1 900	<u>0</u>	<u>0</u>	<u>200</u>	<u>0</u>	<u>0</u>	4 400
- Mainly meat	<u>300</u>	700	<u>0</u>	<u>0</u>	700	<u>0</u>	1 200	<u>500</u>	2 300	1 200	<u>0</u>	<u>900</u>	<u>300</u>	4 800	<u>0</u>	13 100
Beef cattle	45 400	6 100	11 400	9 100	24 700	2 700	99 900	6 300	74 400	49 600	200	9 300	20 900	59 000	2 600	421 600
Beef cattle - Fattener	29 600	3 700	1 300	1 700	1 700	1 800	7 300	<u>600</u>	14 100	12 500	<u>0</u>	3 900	10 500	8 900	2 300	99 900
- Calves	<u>700</u>	500	<u>0</u>	600	1 000	<u>0</u>	<u>600</u>	<u>0</u>	<u>0</u>	1 300	<u>0</u>	1 100	<u>400</u>	<u>100</u>	<u>500</u>	6 800
- Young cattle	12 600	1 200	<u>600</u>	<u>0</u>	<u>0</u>	1 200	2 300	<u>100</u>	2 500	2 900	<u>0</u>	2 100	1 300	3 600	<u>0</u>	30 300
- Bullocks	<u>300</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	700	<u>0</u>	4 700	<u>300</u>	<u>0</u>	<u>0</u>	<u>200</u>	1 000	<u>0</u>	7 300
- Diversified	15 900	2 000	700	1 000	<u>800</u>	600	3 800	<u>500</u>	7 000	8 000	<u>0</u>	<u>800</u>	8 600	4 200	1 700	55 500
Beef cattle - Suckler	15 000	2 200	10 100	7 200	21 100	800	81 800	2 500	37 000	28 800	200	3 500	7 800	17 800	<u>300</u>	236 200
- Breeder	7 300	1 500	6 300	5 900	20 400	<u>300</u>	61 500	2 400	17 000	20 900	100	3 500	5 700	8 700	<u>300</u>	161 800
- BF of young cattle	7 100	<u>700</u>	3 500	<u>900</u>	<u>400</u>	500	15 300	<u>100</u>	15 100	7 200	<u>0</u>	<u>0</u>	<u>600</u>	7 500	<u>0</u>	58 800
- BF of bullocks	<u>600</u>	<u>0</u>	<u>400</u>	<u>500</u>	<u>200</u>	<u>0</u>	5 100	<u>0</u>	4 900	<u>700</u>	<u>0</u>	<u>100</u>	1 500	1 600	<u>0</u>	15 600
Beef cattle - Sheep goats	<u>800</u>	<u>100</u>	<u>100</u>	<u>200</u>	1 900	<u>200</u>	10 800	3 200	23 200	8 300	<u>0</u>	1 800	2 600	32 400	<u>0</u>	85 600
- Mainly milk	<u>100</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>100</u>	<u>0</u>	4 400	2 900	<u>100</u>	4 900	<u>0</u>	<u>0</u>	700	<u>200</u>	<u>0</u>	13 400
- Mainly beef	<u>700</u>	<u>100</u>	<u>100</u>	<u>200</u>	1 800	<u>200</u>	6 400	<u>300</u>	23 100	3 300	<u>0</u>	1 800	2 000	32 200	<u>0</u>	72 200
Sheep, goats	1 100	800	100	300	45 100	300	17 300	56 600	8 600	27 100	0	2 000	14 400	9 200	0	183 000
Sheep, goats - Milk	<u>200</u>	<u>0</u>	<u>0</u>	<u>0</u>	15 000	<u>0</u>	6 600	47 100	<u>400</u>	21 500	<u>0</u>	<u>0</u>	4 700	<u>100</u>	<u>0</u>	95 500
- Sheep	<u>200</u>	<u>0</u>	<u>0</u>	<u>0</u>	11 600	<u>0</u>	2 400	38 500	<u>400</u>	20 500	<u>0</u>	<u>0</u>	4 100	<u>100</u>	<u>0</u>	77 700
- Goats	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	3 500	<u>0</u>	4 200	8 600	<u>0</u>	1 000	<u>0</u>	<u>0</u>	<u>600</u>	<u>0</u>	<u>0</u>	17 900
Sheep, goats - Meat	900	<u>800</u>	<u>100</u>	<u>300</u>	30 000	<u>300</u>	10 800	9 500	8 200	5 600	<u>0</u>	2 000	9 700	9 000	<u>0</u>	87 400
Small grazing livestock holdings	7 200	3 200	900	4 100	1 900	1 000	9 000	33 300	1 100	65 100	0	2 200	127 600	1 400	2 200	260 200
Holdings with grazing livestock	225 900	60 900	33 600	29 800	126 600	31 200	268 300	109 700	128 100	226 600	1 500	50 600	179 400	105 500	24 000	1 601 600
Holdings without grazing livestock	82 400	28 000	12 300	28 300	375 100	14 900	161 300	390 100	1 600	643 700	200	37 200	162 200	24 500	11 900	1 973 700
Agricultural holdings	308 300	88 900	45 900	58 100	501 600	46 000	429 600	499 800	129 700	870 300	1 800	87 800	341 600	130 000	35 900	3 575 300

The typological categories underlined are not considered to be representative as they cover fewer than 15 individuals in the sample

Source: FADN EU 1995, DGVI-A3 / INRA-LERECO Nantes

Annex 2 Average characteristics of European agricultural holdings (EU-15) according to the GLS typology

	Gross standard margin (GSM)	Agricultural work unit (AWU)	Utilised agricultural area (ha)	COP area (ha)	Forage area (ha)	Fodder maize (ha)	Grazing livestock LU	Grazing livestock LU / forage area (ha)	Milk production (kg)	Direct aid (EUR)	Farm income (EUR)
Dairy cattle	41	1.86	42.4	12.3	29.0	4.1	50	1.74	166 100	10 700	25 600
Dairy cattle - Specialised	41	1.86	38.4	11.3	25.9	3.9	47	1.80	183 200	9 400	26 500
Dairy cattle - Beef cattle	43	1.92	49.1	16.3	31.6	5.1	57	1.80	150 100	14 500	24 300
- Calves	39	1.82	41.9	15.1	25.8	3.4	47	1.82	144 200	13 100	21 300
- Young cattle	48	2.11	56.4	18.7	36.1	7.2	65	1.81	153 900	17 300	27 000
- Bullocks	44	1.67	57.1	12.3	43.8	5.8	74	1.68	165 800	10 600	29 500
Dairy cattle - Suckler cows	36	1.69	46.0	10.1	35.0	4.2	54	1.56	112 300	10 300	23 200
- Breeder	33	1.63	39.5	8.3	30.4	3.1	45	1.47	109 800	8 400	21 300
- Breeder-fattener	41	1.77	55.1	12.6	41.4	5.6	68	1.64	115 700	12 900	25 800
Dairy cattle - Sheep, goats	40	2.05	66.3	9.3	56.2	1.6	71	1.26	134 300	12 100	24 900
- Mainly milk	21	1.96	37.4	8.9	27.4	2.3	32	1.17	49 700	6 900	20 500
- Mainly meat	46	2.08	75.9	9.4	65.9	1.3	84	1.27	162 600	13 800	26 400
Beef cattle	28	1.49	57.1	15.6	39.6	1.6	43	1.07	ns	14 900	17 100
Beef cattle - Fattener	28	1.44	38.5	19.1	16.8	3.3	26	1.56	ns	13 100	15 600
- Calves	42	1.46	28.1	16.4	8.1	1.6	31	ns	ns	11 100	21 300
- Young cattle	37	1.51	44.5	23.7	17.5	6.5	39	2.22	ns	18 500	22 100
- Bullocks	26	1.41	53.7	17.9	33.2	0.1	50	1.49	ns	12 900	15 300
- Diversified	22	1.41	34.5	17.0	15.3	2.1	18	1.21	ns	10 400	11 400
Beef cattle - Suckler	27	1.45	49.9	15.3	32.8	1.3	40	1.21	ns	14 200	17 000
- Breeder	26	1.43	49.3	14.8	32.9	0.9	36	1.11	ns	13 800	16 800
- BF of young cattle	30	1.52	51.8	16.7	33.1	2.4	48	1.44	ns	15 800	18 000
- BF of bullocks	26	1.40	48.0	14.9	30.9	1.2	42	1.36	ns	12 400	15 700
Beef cattle - Sheep, goats	30	1.66	98.8	12.4	85.1	0.4	70	0.82	ns	19 100	19 200
- Mainly milk	23	1.84	60.8	11.5	48.6	1.3	41	0.85	ns	11 100	19 300
- Mainly meat	31	1.63	105.9	12.6	91.9	0.2	75	0.82	ns	20 600	19 200
Sheep, goats	18	1.59	43.3	11.9	29.3	0.2	26	0.90	ns	8 800	15 300
Sheep, goats - Milk	13	1.71	24.8	5.8	17.5	0.2	22	1.23	ns	5 300	15 000
- Sheep	13	1.69	23.5	5.7	16.5	0.2	21	1.28	ns	5 100	15 100
- Goats	15	1.82	30.6	6.1	21.6	0.3	23	1.07	ns	6 200	14 800
Sheep, goats - Meat	22	1.45	63.5	18.7	42.2	0.2	32	0.75	ns	12 600	15 700
Small grazing livestock holdings	9	1.51	11.2	6.1	3.4	0.3	3	0.77	ns	3 200	5 800
Holdings with grazing livestock	30	1.68	41.3	12.1	27.7	2.5	38	1.37	ns	10 400	18 900
Holdings without grazing livestock	22	1.47	17.7	11.1	1.4	0.1	0	ns	ns	5 200	14 000
Agricultural holdings	26	1.56	28.3	11.5	13.2	1.2	17	1.29	ns	7 500	16 200

Source: FADN EU 1995, DGVI-A3 / INRA-LERECO Nantes