

LIVESTOCK DECLINE AND ANIMAL OUTPUT GROWTH IN THE EUROPEAN UNION IN THE PERIOD 2012-2021

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Abstract

The paper analyzed the EU's livestock and animal production in the decade 2012-2021 using the Eurostat data which were statistically processed using dynamics and structural indices and regression equations. The results pointed out that the EU livestock declined by about 9%, so that in 2021, it numbered 77.54 million bovines, 142.73 million pigs, 63.23 million sheep and 12.45 million goats. EU had 5.7 million animal holdings in 2016, by -37.6% less than in 2005, representing 54.28% of the total number of the EU farms. The highest number of bovines are reared in France, Germany, Ireland, Spain, Poland, Italy, Netherlands, Belgium, Austria and Romania. While their number decreased in France, Germany, Netherlands, Belgium, Austria and Romania, in Ireland, Spain, Poland and Italy it increased. Pigs are mainly grown in Spain, Germany, Denmark, France, Netherlands, Poland, Italy, Belgium and Romania. While in Spain and Denmark it recorded an upward trend, in Germany, France, Netherlands, Poland, Italy, Belgium and Romania pig number declined. Sheep are especially reared in Spain, Greece, Romania, France, and Italy. The sheep number increased by 14% only in Romania, while in the other countries it decreased. Goats number increased in Italy, Romania and France, while in Greece and Spain it registered a downward tendency. Animal output volume and value registered an increasing trend. Milk production increased by +10.3% reaching 160.14 million tonnes in 2020, of which 70% is produced by Germany, France, Poland, Italy, Spain, Ireland, Romania and Austria. Meat production accounted for 43.92 million tonnes in 2021, being by 11.50% higher than in 2012. In its structure, 52.3% is pork, 31% is poultry meat, 15.5% is beef and veal and 1.2 % comes from sheep and goats. France and Germany are the largest meat producing countries. Beef is mainly produced in France, Germany and Spain, poultry in Poland and France, pork in Germany, Spain and France, sheep meat in Spain, France, Ireland and Greece and goat meat in Greece and Spain. In 2021, the animal output value accounted for Euro 162.81 million being by 7.1% higher than in 2012. France, Germany, Spain, Italy, Netherlands, Ireland and Denmark contributes by 70%. In the future it is expected to continue the decline in livestock, the increase of yield and its quality, farmers paying more attention to organic farming, animal health and welfare, food quality and security and also to environment protection and biodiversity conservation.

Key words: livestock, animal production, dynamics, trends, European Union

INTRODUCTION

Agriculture is the main source of food which sustains the globe population. It does not assure only food security, but also it has a more complex economic, social and environmental impact. It stimulates economic growth, contributing to GDP, it assures jobs and income, sustaining the living standard [32, 40].

It is no doubt that crop and animal farming systems play an essential role in assuring food security, providing raw materials for the processing industry, jobs and incomes for the rural population and in maintaining biodiversity, the ecological balance of agro-eco systems and the beauty of the landscapes [23, 49].

Animal sector is dealing with livestock growing for agricultural goals as defined by FAO (2017) [16].

Livestock brings its contribution to food diversity providing a large range of products rich in high value protein, fats, vitamins and minerals needed for a harmonious growth of the human body [22, 48].

And this is possible due to the existence of animal sector in agriculture where farmers, grace to the specificity of their job, utilize land, fixed assets and working capital, labour force and technologies for animal rearing to attain the goals of their business to get income from providing food to cover their needs and market requirements.

Cultivating forages and utilizing the secondary products from vegetal production, and valorizing pastures and meadows, animal farming provides milk and dairy products, meat, and other products which contribute to the economic and social development as well as to the maintenance of habitats and landscapes. For the disadvantaged regions, animals growing diminish the migration of the population, maintain the traditional way for achieving natural food products as an expression of the local culture and life style [1, 19].

The resulting manure from animal husbandry is a high value organic fertilizer helping crop production to grow and also an alternative source of renewable energy [18].

Food products of animal origin are successfully exported stimulating international trade, contributing to a better cover of the internal markets of many countries and also assuring currency flows in payment balance of the supplying states [24, 25, 28, 31, 34].

Despite the advantages and benefits of animal rearing, its development involves risks which have to be taken into account regarding the following aspects:

- the increased competition in using agricultural land between the forage and crop sector;
- the increased competitiveness between humans and animals regarding the consumption of vegetal resources, especially cereals;

-the high intensive systems utilized in animal husbandry require additional costs for assuring animal health and welfare;

-the high risk of zoonoses whose spread could diminish livestock number and production;

- the risk to increase human diseases caused by a high consumption of food of animal origin;

-the risk of an increased environment pollution as animal growing is responsible of about 65% of the global nitrous oxide emissions which could determine a global warming impact 296 time higher than carbon dioxide; the statistics proved that 15% of global greenhouse gas emissions is generated by livestock reared for human consumption [2, 21].

Analyzing the advantages and disadvantages of animal rearing, the EU issued a new orientation in its reformed PAC, paying more attention to the sustainability of the viability of the animal sector for a long run and increasing the quality of the products destined to consumption. This means a harmonized combination between assuring the animal health and welfare and achieving high quality food produced in organic livestock farming which is environmentally friendly [17].

Stimulating production by increasing yield, livestock number could be diminished. However, the performance in animal sector of the EU differs from a country to another depending on farm structure, technical endowment, genetic potential of the biological material, rearing systems and natural conditions where animal farming is practiced [42, 43].

As a response to climate change, the EU Green Deal emphasizes the need to increase food production and its quality by extending and practicing technologies friendly with the environment which are destined "to cut green gas emissions by 55% by 2030 and to transform the European area in a net-zero emitter of greenhouse gases by 2050" [3].

In this context, the paper aimed to analyze the dynamics of livestock, animal density per 100 ha utilized agricultural area, animal output volume and value in the EU during the last

decade, 2012-2021 by species pointing out the differences from a country to another.

The idea started from the supposition that the decline of livestock is required but this does not affect production level as long as yield performance and product quality is increasing.

MATERIALS AND METHODS

This study is based on the Eurostat data for the period 2012-2021 regarding livestock number: bovines, pigs, sheep and goats, animal density index per 100 ha utilized agricultural area (UAA), distribution by main animal rearing countries, animal output volume evolution (milk and meat) and also animal output value, the share of animal output in total agricultural output, pointing out the differences between various states.

Dynamics and structural indices, as well as regression equations were used to emphasize the general tendencies. The results are synthetically shown in tables and the graphics which offer an illustrative image for a better understanding of the dynamics of the selected indicators. The main ideas resulting from this statistical research are exposed at the end of the study in conclusions.

RESULTS AND DISCUSSIONS

Dynamics of the EU's livestock

During the last two decades, 2001-2020, the EU livestock decreased by about 8.9%. This was the result of the review of the Common Agricultural Policy which in 2003 established to pass to the decoupling subsidies [20].

The decrease of the livestock affected almost all the EU countries and almost all the farm species in different proportions from country to another [26, 27, 29, 30, 33, 35, 36, 41]. This process was more intensified during the decade 2012-2021. The data from Table 1 show that at the end of December 2021, the EU livestock consisted of: 77.54 million bovines, 142.73 million pigs, 63.23 million sheep and 12.45 million goats, meaning by -2%, -0.76%, -4.97% and, respectively, -8.36% less than in 2012. The dynamics by year in the analyzed period is reflected by Fig. 1.

Table 1. The EU's livestock in 2021 versus 2012 (Million heads)

	2012	2021	2021/2012 %
Bovines	77.54	76.0	98.00
Swine	142.73	141.65	99.24
Sheep	63.23	60.09	95.03
Goats	12.45	11.41	91.64

Source: Own calculations based on Eurostat, 2022 [9].

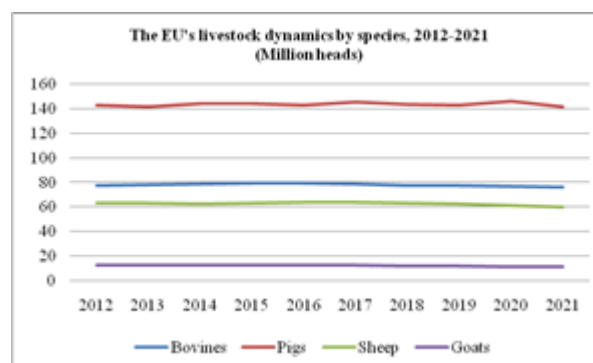


Fig. 1. Dynamics of the EU's livestock by species in the period 2012-2021

Source: Eurostat, 2022, [9].

Three EU countries rear the largest number of farm animals

The largest number of farm animals is reared in three EU member states: Spain, France and Germany, whose share in the total number of animal by species is presented in Table 2.

Table 2. Share of the top EU countries rearing farm animals in the EU's livestock in 2021(%)

	Spain	France	Germany
Bovines	9	23	15
Swine	24	9	17
Sheep	25	12	3
Goats	23	12	1

Source: Own calculations based on Eurostat, 2022 [9].

Therefore, Spain comes on the 1st position for the highest share for sheep, pigs and goats and on the 3rd position for the number of bovines. France is ranked the 2nd for the number of pigs, also the 2nd for the number of sheep and goats and the 3rd for the number of pigs. Germany is on the 2nd position for the number of pigs, also on the 2nd position for the number of bovines and on the 3rd place for the number of sheep and goats.

Specialization in animal farming

More than this, in the EU, we can distinguish a specialization in animal farming among the member states as follows:

- Denmark is specialized in pig farming, rearing 9% of the EU's swine population;
- Netherlands is also profiled on pig growing, keeping 8% of the EU's swine;
- Ireland is specialized in bovine husbandry as it keeps 9% of the EU's cattle livestock;
- Romania is profiled on sheep growing, keeping 17% of the EU's sheep population;
- Greece is specialized in goat farming as it rears 25% of the EU's goats livestock.

The EU's livestock in livestock units (LSU)

In terms of livestock units (LSU), in 2016, the EU-28 had 131 million LSU, of which 49% bovines, 25.2% pigs, 15.8% poultry. That time, the EU countries with the highest LSU, in the decreasing order, were: France 22.1 million heads, Germany 18.2 million, Spain 14.4 million and United Kingdom 13.3 million, while the lowest LSU belonged to Malta (32,470 heads) [15].

Livestock density in the EU

Table 3. Livestock density index (LDI) by EU country in 2016 (LU/100 ha UAA)

EU-28 average density index = 0.8 LU/100 ha UAA		
LDI over 3	LDI	Dif. from LDI aver.
Netherlands	3.8	+3
LDI between 2 and 3		
Malta	2.9	+2.1
Belgium	2.8	+2.0
LDI between 1 and 2		
Denmark	1.6	+0.8
Cyprus	1.5	+0.7
Luxembourg	1.3	+0.5
Ireland	1.3	+0.5
Germany	1.1	+0.3
Slovenia	1.0	+0.2
LDI below 1		
Austria	0.9	+0.1
United Kingdom	0.8	0.0
France	0.8	0.0
Italy	0.8	0.0
Poland	0.7	- 0.1
Spain	0.6	- 0.2
Portugal	0.6	- 0.2
Sweden	0.6	- 0.2
Hungary	0.5	- 0.3
Czechia	0.5	- 0.3
Croatia	0.5	- 0.3
Finland	0.5	- 0.3
Greece	0.5	- 0.3
Romania	0.4	- 0.4
Slovakia	0.3	- 0.5
Lithuania	0.3	- 0.5
Estonia	0.3	- 0.5
Latvia	0.3	- 0.5
Bulgaria	0.2	- 0.6

Source: Eurostat, 2019 [15].

In terms of livestock density, measured in livestock units per 100 utilized agricultural area (UAA), in 2016, the average density in the EU-28 accounted for 0.8 LU/100 ha UAA, varying between the top level 3.8 registered by Netherlands and the lowest level of 0.2 LU belonging to Bulgaria.

Table 3 shows the livestock density by each member state in the year 2016.

Therefore, 10 EU member states had a LDI higher than the EU average, 3 countries had a LDI equal to the EU average and 15 countries had a LDI lower than the EU mean.

The situation of the animal holdings in the total number of agricultural holdings in the EU

In 2005, the EU had 14.72 million agricultural holdings, but along the years their number decreased while farm size increased for assuring a higher productivity and profitability. In 2016, the EU-28 had 10.5 million farms by -28.6% less than in 2005.

In 2005, the EU had 9.13 million animal holdings, accounting for 62.5% of the total agricultural holdings. But in 2016, there were only 5.7 million holdings with animals, that is by -37.6% less than in 2005 and representing 54.28% of the total number of the EU farms (Table 4).

Table 4. Dynamics of the animal holdings in the EU in the years 2005, 2010, 2016 (million)

	2005	2010	2016	2016/2005 %
Total number of agricultural holdings	14.72	12.24	10.5	71.33
Number of animal holdings	9.13	6.92	5.7	62.43
Share of animal holdings in the total agricultural number of holdings (%)	62	56.5	54.28	-

Source: Own calculations based on Eurostat, 2019 [15].

Therefore, both the number of holdings rearing animals and its share in the total

number of agricultural holdings declined year by year in the period 2005-2016 for which Eurostat offers data from Farm Structure Survey [42, 43].

This process has continued in the period 2016 till present and will continue in the future as the EU policy aims to grow production performance per animal by increasing farms size, improving animal rearing technologies and diminishing the number of holdings growing animals as long as it is possible to assure a higher profitability in animal sector and to cover the market requirements.

Dynamics of bovine livestock in the EU

In the year 2012, the EU had 77,548 thousand bovines, but in 2021 it registered by -1.31% less, that is 76,534 thousand. In the analyzed interval, the maximum number of bovines was recorded in the year 2016, but starting from this year the decline continued year by year (Fig. 1).

The countries rearing the highest number of bovines in the year 2021 were: France, Germany, Ireland, Spain, Poland, Italy, Netherlands, Belgium, Austria and Romania

(Fig. 2).

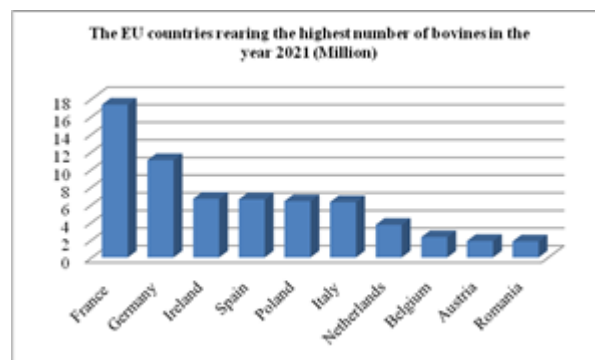


Fig. 2. The EU member states rearing the highest number of bovines in the year 2021 (Million heads)
 Source: Own design based on Eurostat, 2022 [5].

Compared to the bovine livestock in the year 2012, in 2021, France registered a decline by -9.04%, Germany -11.73%, Netherlands -7.03%, Belgium -5.26%, Austria -4.4% and Romania -9.46%. In the same interval, the bovine livestock increased in Ireland by +6.33, Spain +13.14%, Poland +15.56% and weak growth of +0.44 in Italy (Table 5).

Table 5. Bovine livestock in the year 2021 versus 2012 in the top 10 EU countries rearing these species (Thousand heads)

Country	2021	2012	2021/2012 %	Increase/Decrease %
France	17,300	19,052	90.96	-9.04
Germany	11,040	12,507	88.27	-11.73
Ireland	6,649	6,253	105.33	+6.33
Spain	6,579	5,812	113.14	+13.14
Poland	6,379	5,520	115.56	+15.56
Italy	6,280	6,252	100.44	+0.44
Netherlands	3,705	3,985	92.97	-7.03
Belgium	2,310	2,438	94.74	-5.26
Austria	1,870	1,956	95.60	-4.40
Romania	1,819	2,009	90.54	-9.46

Source: Own calculation based on Eurostat, 2022 [5].

A declining trend was noticed in Denmark and Sweden of -7% and, respectively, -3.7%, while in Portugal the number of bovines increased by +9.6%.

Dynamics of pig livestock in the EU

In the year 2012, the EU had 142,737 thousand pigs, but in 2021 it registered by -0.8% less, that is 141,655 thousand. In the analyzed interval, the maximum number of pigs was 145,843 recorded in the year 2020, but then, in 2021, it declined by 2.88% (Fig.

1). The countries rearing the highest number of pigs in the year 2021 were: Spain, Germany, Denmark, France, Netherlands, Poland, Italy, Belgium and Romania (Fig. 3). Compared to the pigs livestock in the year 2012, in 2021, Germany registered a decline by -12.13%, France -6.08%, Netherlands -10.2%, Poland -8%, Italy -2.94%, Belgium -6.3% and Romania -30.86%, the highest loss. In the same interval, the pig livestock

increased in Spain by +36.4%, and Denmark by +7.09% (Table 6).

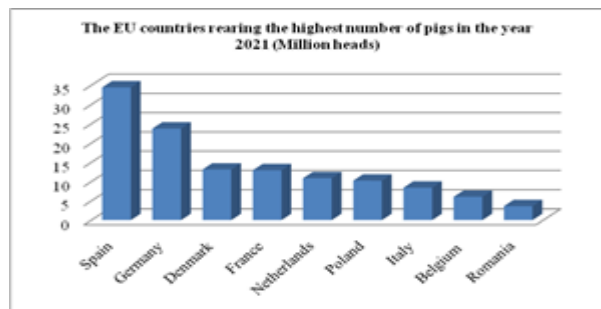


Fig. 3. The EU member states rearing the highest number of pigs in the year 2021 (Million heads)
 Source: Own design based on Eurostat, 2022 [6].

Table 6. Pigs livestock in the year 2021 versus 2012 in the top 9 EU countries rearing swine (Thousand heads)

Country	2021	2012	2021/2012 %	Increase /Decline %
Spain	34,454	25,250	136.45	+36.45
Germany	23,762	28,331	83.87	-12.13
Denmark	13,152	12,281	107.09	+7.09
France	12,941	13,778	93.92	-6.08
Netherlands	10,870	12,104	89.80	-10.20
Poland	10,242	11,132	92.00	-8.00
Italy	8,407	8,661	97.06	-2.04
Belgium	6,042	6,447	93.7	-6.3
Romania	3,619	5,234	69.14	-30.86

Source: Own calculation based on Eurostat, 2022 [6].

A declining tendency was noticed in Austria and Hungary where the pigs number decreased by 6.6%, and, respectively, by 8.8%, while in Portugal the number of pigs increased by +9.7%.

Dynamics of sheep livestock in the EU

In the year 2012, the EU had 63,237 thousand sheep, but in 2021 it registered by -4.98% less, that is 60,094 thousand (Fig. 1).

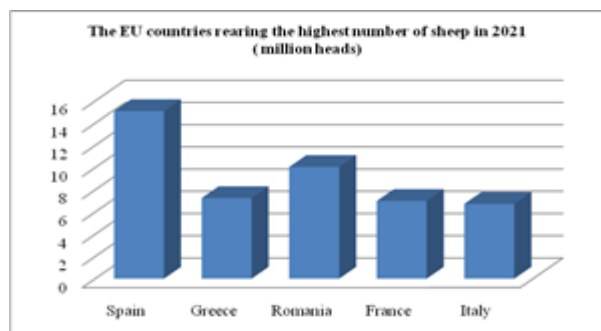


Fig. 4. The EU member states rearing the highest number of sheep in the year 2021 (Million heads)
 Source: Own design based on Eurostat, 2022 [7].

The countries rearing the highest number of sheep in the year 2021 were: Spain, Greece, Romania, France, and Italy (Fig. 4).

Compared to the sheep livestock in the year 2012, in 2021, Spain registered a decline of -7.7%, Greece -21.28%, France -6.2%, and Italy -4.1%. In the same period, Romania increased its sheep livestock by 13.77% (Table 7).

Table 7. Sheep livestock in the year 2021 versus 2012 in the top 5 EU countries rearing this species (Thousand heads)

Country	2021	2012	2021/2012 %	Increase /Decline %
Spain	15,081	16,339	92.30	-7.7
Greece	7,253	9,213	78.72	-21.28
Romania	10,050	8,833	113.77	+13.77
France	6,994	7,453	93.84	-6.16
Italy	6,728	7,015	95.90	-4.1

Source: Own calculation based on Eurostat, 2022 [7].

In 2021 versus 2012, Ireland and Portugal also registered an important growth of the sheep number by +16.3% and, respectively by +6.9%, but their livestock was much smaller compared to the other top EU countries rearing this species (3,991 thousand heads and, respectively 2,238 thousand heads).

Dynamics of goats livestock in the EU

In the year 2012, the EU had 12,455 thousand goats, but in 2021 it registered by -8.39% less, that is 11,411 thousand (Fig. 1).

The countries rearing the highest number of goats in the year 2021 were: Greece, Spain, Romania, France, and Italy (Fig. 5).

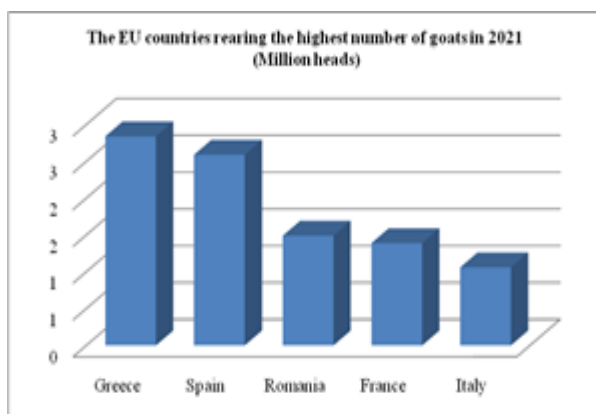


Fig. 5. The EU member states rearing the highest number of goats in the year 2021 (Million heads)
 Source: Own design based on Eurostat, 2022 [8].

Compared to the goats livestock in the year 2012, in 2021, Greece recorded a decline of -33.8% and Spain -1.8%, while Romania registered an increase by 17.37%, France by +6.27% and Italy by +18.94% (Table 8).

Table 8. Goats livestock in the year 2021 versus 2012 in the top 5 EU countries rearing this species (Thousand heads)

Country	2021	2012	2021/2012 %	Increase/Decline %
Greece	2,844	4,293	66.2	-33.8
Spain	2,590	2,637	98.2	-1.8
Romania	1,486	1,266	117.37	+17.37
France	1,388	1,306	106.27	+6.27
Italy	1,061	892	118.94	+18.94

Source: Own calculation based on Eurostat, 2022 [8].

Animal production volume in the EU

Animal production was deeply influenced by the changes in livestock and also in yield for each farm species [25, 26, 27, 29].

Animal output increased both regarding milk and meat in the period 2012 -2020, for which Eurostat provided data.

Milk production and its utilization on the farm increased by +10.3% from 145.08 million tonnes in 2012 to 160.14 million tonnes in 2020 (Table 9).

The contribution of different species to milk production in 2020 was: cows' milk 154.5 million tonnes (96.4% of the total milk), ewes' milk 3 million tonnes (1.8%), goats' milk (1.6%) and buffalos milk (0.2%) [10].

Table 9. Animal production volume in the EU in 2020 versus 2012 (Million tonnes)

	Milk production Million tonnes	Meat production Million tonnes	Of which:			
			Pork	Poultry	Bovine	Sheep and goat
2012	145.08	39.39	21.4	11.0	6.69	0.3
2020	160.14	43.92	23.0	13.6	6.82	0.5
2020/2012 %	110.3	111.50	107.5	123.6	101.9	166.6

Source: Own calculation based on Eurostat, 2022 [10, 11].

The dynamics of milk production in the period 2012-2020 is shown in Fig. 6.

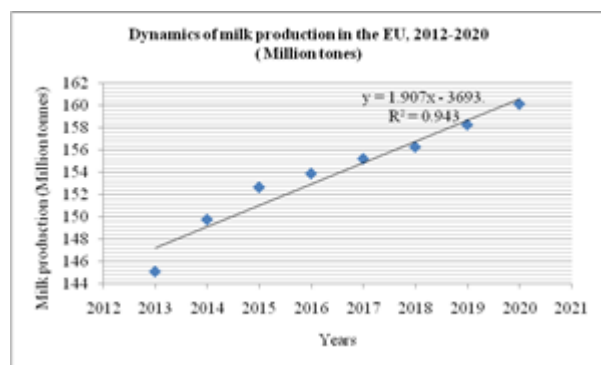


Fig. 6. Dynamics of milk production in the EU in the period 2012-2020 (Million tonnes)

Source: Own design based on Eurostat, 2022 [10].

In 2020, the main milk producing countries in the EU and their share in milk production were: Germany (20.7%), France (16.3), Poland (9.3%), Italy (8.4%), Spain (5.4%), Ireland (5.3%), Romania (2.7%) and Austria (2.4%).

Despite that cattle livestock declined, milk yield increased, so that milk production registered an upward, the main source being

cows [39, 44], but also buffalos [44], sheep [36, 45] and goats [30, 36, 45, 46].

Meat production increased by 11.50% from 39.39 million tonnes in 2012 to 43.92 million tonnes in the year 2021.

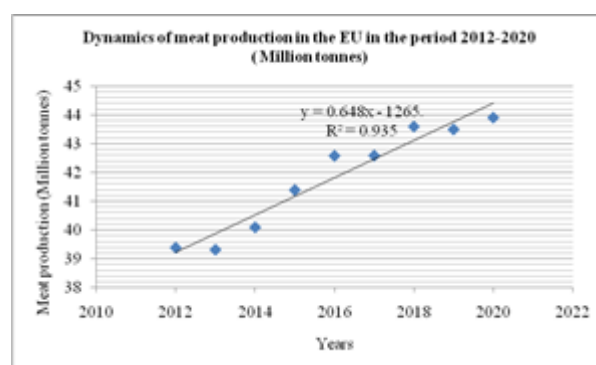


Fig. 7. Dynamics of meat production in the EU in the period 2012-2021 (Million tonnes)

Source: Own design based on Eurostat, 2022 [11].

The contribution of various species to meat production in 2021 was: 52.3% from pigs, 31% from poultry, 15.5% from bovines and 1.2 % from sheep and goats (Table 9). The dynamics of total meat production in the EU in the period 2012-2021 is presented in Fig. 7.

The largest producing countries of meat in the EU are France and Germany. By meat type, France, Germany and Spain produce the big amount of beef. More than 50% of poultry meat is produced by Poland and France. The largest producers of pig meat are Germany, Spain and France. Sheep meat is mainly produced by Spain, France, Ireland and Greece. Goat meat is produced by Greece and Spain [11].

The largest exporters of meat in the EU are Netherlands, Spain, Germany, Poland and Denmark [47].

Pork production was influenced by the variation in the number of slaughter animals by species and their live weight at slaughter [25, 33, 35, 36, 37, 38, 46].

Animal output value in the EU

The value of animal output reached Euro 162.81 million in the year 2021 being by 7.1% higher than in 2012.

In 2021, the highest contribution to the EU animal production value was given by the following EU countries as reflected by their shares: France (16.5%), Germany (16%),

Spain (12.8%), Italy (10%), Netherlands (6.6%), Ireland (4.6%), Denmark (4%), Belgium (3%), Austria (2.3%) and Hungary (1.9%) (Table 10).

The changes in animal output value and also in output of agricultural industry in the EU in the analyzed decade have led to variations in the share of animal production value in the total value of agricultural output, from 39.2% in the year 2012 to 36.7% in the year 2021, reflecting a decrease by -2.5 percentage points.

In the major of the EU countries, the share of animal output value decreased in 2021 compared to its level in the year 2012. Only two countries, Germany and Ireland registered a growth by +2.1%, and, respectively, +5.2%. The EU member states having the highest share of animal output value in the value of agricultural output in 2021 were: Ireland (74.4%), Denmark (56.3%), Belgium (50.1%), Finland (49.3%), Germany (48.9%), Austria (44.2%), Spain (37.1%), Netherlands (35.6%), Czechia (33.9%), France (32.8%), and Hungary (32.2%) (Table 10).

Table 10. Animal output value and its share in agricultural output value, at basic and producers' prices in the EU in 2021 versus 2012

	Agricultural Output value Euro Million			Animal Output value Euro Million			Share of animal output value in agricultural output value (%)		
	2012	2021	2021/2012 %	2012	2021	2021/2012 %	2012	2021	Difference 2021-2012
EU-27	387.45	443.36	114.4	151.91	162.81	107.1	39.2	36.7	-2.5
France	76.57	81.59	106.5	25.98	26.82	103.2	33.9	32.8	-1.1
Germany	57.02	59.35	104.1	26.71	26.04	97.5	46.8	48.9	+2.1
Spain	41.95	56.43	134.5	16.24	20.91	128.7	49.8	37.1	-12.7
Italy	54.38	60.02	110.3	16.84	16.30	96.7	30.9	27.2	-3.7
Netherlands	26.97	30.31	112.4	10.64	10.80	101.5	39.4	35.6	-3.8
Ireland	6.83	10.04	146.9	4.73	7.48	158.1	69.2	74.4	+5.2
Denmark	11.81	11.53	97.6	7.06	6.49	91.9	59.8	56.3	-3.5
Belgium	8.80	9.78	111.1	4.77	4.90	102.7	54.2	50.1	-4.1
Austria	7.24	8.45	116.7	3.33	3.74	112.3	46.0	44.2	-1.8
Hungary	7.50	9.42	125.6	2.64	3.04	115.1	35.2	32.2	-3.0
Greece	10.83	11.86	109.5	2.49	2.47	99.1	23.0	20.8	-2.2
Finland	4.85	4.46	91.9	2.64	2.20	83.3	54.5	49.3	-5.2
Czechia	4.86	6.05	124.4	1.79	2.05	114.5	36.8	33.9	-2.9

Source: Own calculation based on the data from Eurostat, 2022 [12, 13].

The output prices in animal sector

In the last half of the analyzed period, more exactly in 2015-2020, the output prices in animal sector of the EU remained relatively constant for most of animal species, except

pigs whose price declined in 2018, then they recovered in 2019 and fell again in 2020 discouraging the farmers.

A slight downward was registered in the output price of cattle in the year 2019 and

2020, after a period of relatively unchanged level.

The prices for output coming from sheep and goats were smaller than in the year 2015 in the interval 2016-2019, but in 2020, they had an upward encouraging the breeders [4, 14].

The last PAC reform aims to green the agricultural systems in livestock farming as well, so that the farmers are required to adapt the animal rearing technologies so that to preserve their income and at the same time to practice environmentally friendly animal farming in order to supply high quality products and cover better market needs [20].

CONCLUSIONS

Animal sector plays an important role in agriculture enlarging agro-food offer, satisfying market needs and consumer's demand, assuring food security, economic growth, deliveries to export, jobs and income, a better living standard, preserve biodiversity and the beauty of the landscapes.

In the last two decade, and especially in the analyzed period 2012-2021, the EU livestock declined by about 9%, so that in the year 2021, there were 77.54 million bovines, 142.73 million pigs, 63.23 million sheep and 12.45 million goats. The largest number of farm animals is reared in three EU member states: Spain, France and Germany.

In terms of livestock units (LSU), in 2016, the EU-28 had 131 million LSU, of which 49% bovines, 25.2% pigs, and 15.8% poultry. The highest LSU is in France and Germany, the lowest one in Malta.

In average, the EU animal density is 0.8 LU/100 ha UAA, ranging between 3.8 in Netherlands and 0.2 LU in Bulgaria.

In 2016, in the EU, there were 5.7 million holdings rearing animals, by -37.6% less than in 2005 and representing 54.28% of the total number of the EU farms. The reduction of the number of farms will continue to favour farm size, production performance per animal, modern rearing technologies, profitability and food quality.

In 2021, the highest number of bovines was in: France, Germany, Ireland, Spain, Poland,

Italy, Netherlands, Belgium, Austria and Romania. In the last decade, the number of bovines decreased in France, Germany, Netherlands, Belgium, Austria and Romania, while it increased in Ireland, Spain, Poland and Italy.

The highest number of pigs is in Spain, Germany, Denmark, France, Netherlands, Poland, Italy, Belgium and Romania. While in Germany, France, Netherlands, Poland, Italy, Belgium and Romania pig number decreased, in Spain and Denmark it recorded an upward.

Sheep are especially reared in Spain, Greece, Romania, France, and Italy. While in Romania the sheep number increased by about 14%, in the other countries it declined.

Goats are grown in Greece, Spain, Romania, France, and Italy. Goats number increased in Italy, Romania and France, while in Greece and Spain it registered a downward.

Despite that the livestock declined, animal output volume and value registered an increasing trend.

Milk production increased by +10.3% reaching 160.14 million tonnes in 2020, the major contributor being cows (96.4%), but also buffalos, sheep and goats.

About 70% of the EU milk is produced by Germany, France, Poland, Italy, Spain, Ireland, Romania and Austria.

In the year 2021, meat production was by 11.50% higher than in 2012, accounting for 43.92 million tonnes, of which 52.3% pork, 31% poultry meat, 15.5% beef and veal and 1.2 % from sheep and goats.

France and Germany are the largest producing countries. However, France, Germany and Spain are specialized in beef, Poland and France in poultry, Germany, Spain and France in pork. Also, Spain, France, Ireland and Greece produce sheep meat, and goat meat is produced by Greece and Spain.

In 2021, the animal output value accounted for Euro 162.81 million being by 7.1% higher than in 2012. About 70% of animal output value is achieved by France, Germany, Spain, Italy, Netherlands, Ireland and Denmark.

The value of animal output was influenced in a smaller proportion by price level than the volume of animal output, except pork.

The general trend remains a declining one regarding livestock, and an upward trend is expected to continue for animal yield especially produced in organic farming as long as the EU PAC reform points out that the sustainability and the viability of the animal sector requires more attention to animal health and welfare, food quality and security using environmentally friendly technologies.

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