



APPENDIX

# OVERVIEW ON SARDINIAN FARM WORLD AND PRODUCTIONS





**Overview of Sardinian farm world and productions**  
**Appendix of the Self Evaluation Report 2023**

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## THE AGRI-FOOD SECTOR IN SARDINIA

### FARMS AND LIVESTOCK

The regional livestock sector involves about 30,000 people in more than 24,700 holdings. In each holding (the epidemiological unit for the public animal health service) one or more herds are located, sometimes including different animal species. The structural data of livestock and farms number related to producing animals are summarized in Tables 1, 2, 3, and 4. The livestock farming features and development in Sardinia are affected by climate and geo-pedological context, also including the insularity. The land is mainly hilly (68%) with scarce water resources. The water shortage in agriculture results in a lack of animal feeding and farms' dependence on feeds import (e.g. concentrates, corn, soy, etc.). The particular environment has led to an adapted farming system. The traditional farming system is linked to extensive and free-range grazing, farm fragmentation and limitations on farming premises and infrastructures availability, low stocking rates. These features of the farming sector are also associated with specific animal diseases that are not usual in the rest of Europe (e.g., echinococcosis, pig swine fever).

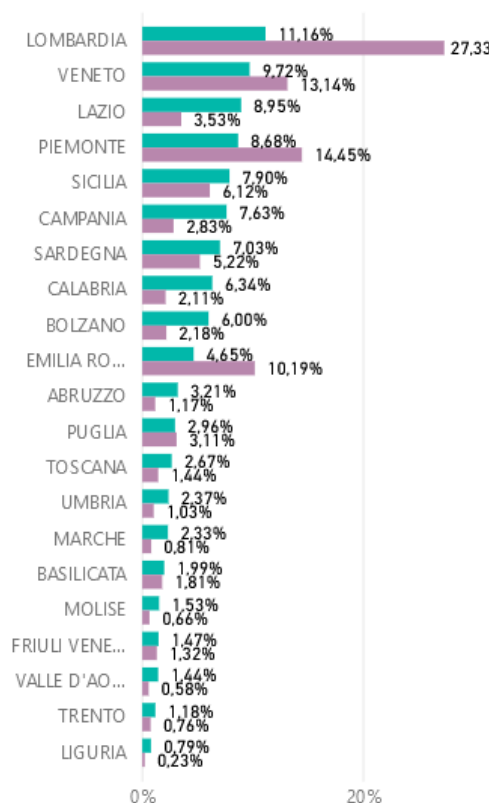
In most of Sardinia, the circulation of animals and animal products has been re-established after years of stopping due to African Swine Fever (ASF). This is a preliminary and historical result, which has been obtained thanks to the work of the Italian Ministry of Health and the Region Sardinia, as it was also stated by European Union Authorities. During the meeting held in Brussels on the 15th and 16th of December 2022, the EU Commission, recognizing that the majority of the territory of Sardinia is unharmed by ASF, has ended all restrictions except for those applied to the area of Nuoro. Accordingly, most Sardinian swine meat producers have been able to restore sales of meat coming from the unharmed areas at the conditions foreseen by the EU regulation 2021/605. These measures have been approved unanimously by all member States and have been published in the European Official Journal L323 of 19/12/2022 with the implementing regulation EU 2022/2486 of the 16th of December 2022.

Most of the farms belong to extensive or semi-intensive systems. Only a low number of intensive farms are operating in some areas (e.g. growing-finishing pigs, dairy cows, laying hens). As a remarkable consequence, a specific characteristic of the regional sector is the high number of sheep and goats heads (47.82% and 31.27% of the overall consistency in Italy) and farms (16.96% and 8.5%). The small ruminants management is aimed at seasonal milk and lamb (or kid) production.

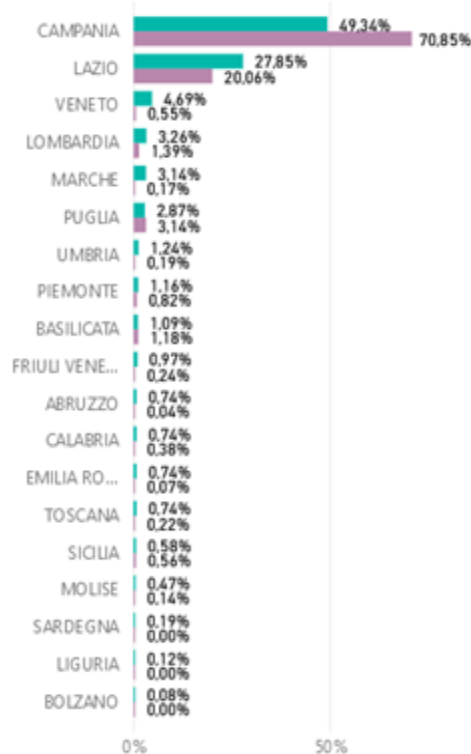
Table 1. Comparison between national and regional livestock structural data: number of farms and number of animals, out of the total (Bovine and Buffalo).

	Cows		Buffaloes	
	Holdings	Heads	Holdings	Heads
<i>Italy</i>	134,298	5,594,449	2,578	431,909
<i>Sardinia</i>	9,446	291,786	5	15

%FARMS AND CATTLE HEADS AT THE REFERENCE DATE BY REGION



%BUFFALO FARMS AND HEADS AT THE REFERENCE DATE BY REGION



% number of farms out of the total (green)

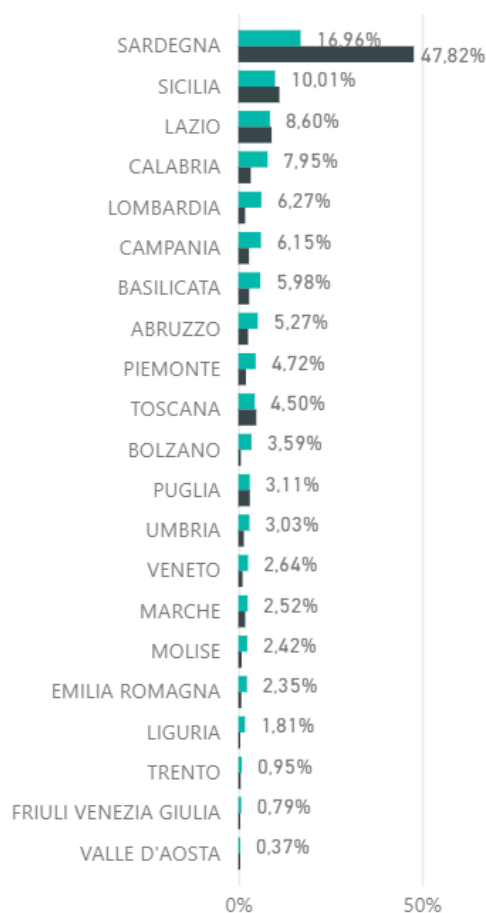
% number of animals out of the total (purple)

Source: <https://www.vetinfo.it>, National Zootechnical Registry – Statistics, data processed on 15/07/2022

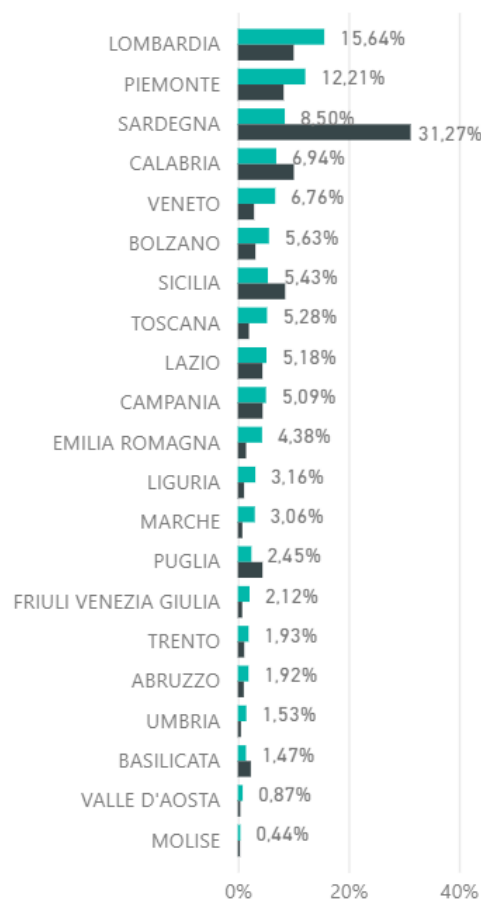
Table 2. Comparison between national and regional livestock structural data: number of farms and number of animals, out of the total (Sheep and Goats).

	Sheep		Goats	
	Holdings	Heads	Holdings	Heads
<i>Italy</i>	83,581	6,197,620	52,010	918,281
<i>Sardinia</i>	14,179	2,983,727	4,421	290,681

**%SHEEP FARMS AT THE REFERENCE DATE by REGION**



**%GOAT FARMS AT THE REFERENCE DATE by REGION**



% number of farms out of the total (light green)

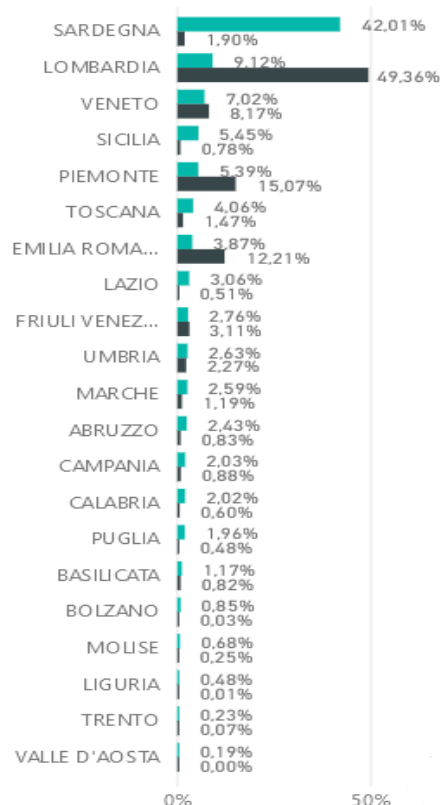
% number of animals out of the total (dark green)

Source: <https://www.vetinfo.it>, National Zootechnical Registry – Statistics, data processed on 30/06/2022

Table 3. Comparison between regional and national livestock structural data: number of farms out of the total and number of animals out of the total (Pigs and Boars)

	Pigs		Boars	
	Holdings	Heads	Holdings	Heads
<i>Italy</i>	29,889	8,588,195	554	7,229
<i>Sardinia</i>	12,497	163,597	59	895

# PIGS AND HOLDINGS AS A PERCENTAGE OF THE TOTAL



% number of farms out of the total

% number of animals out of the total

<https://www.vetinfo.it>, National Zootechnical Registry – Statistics, data processed on 30/06/2022

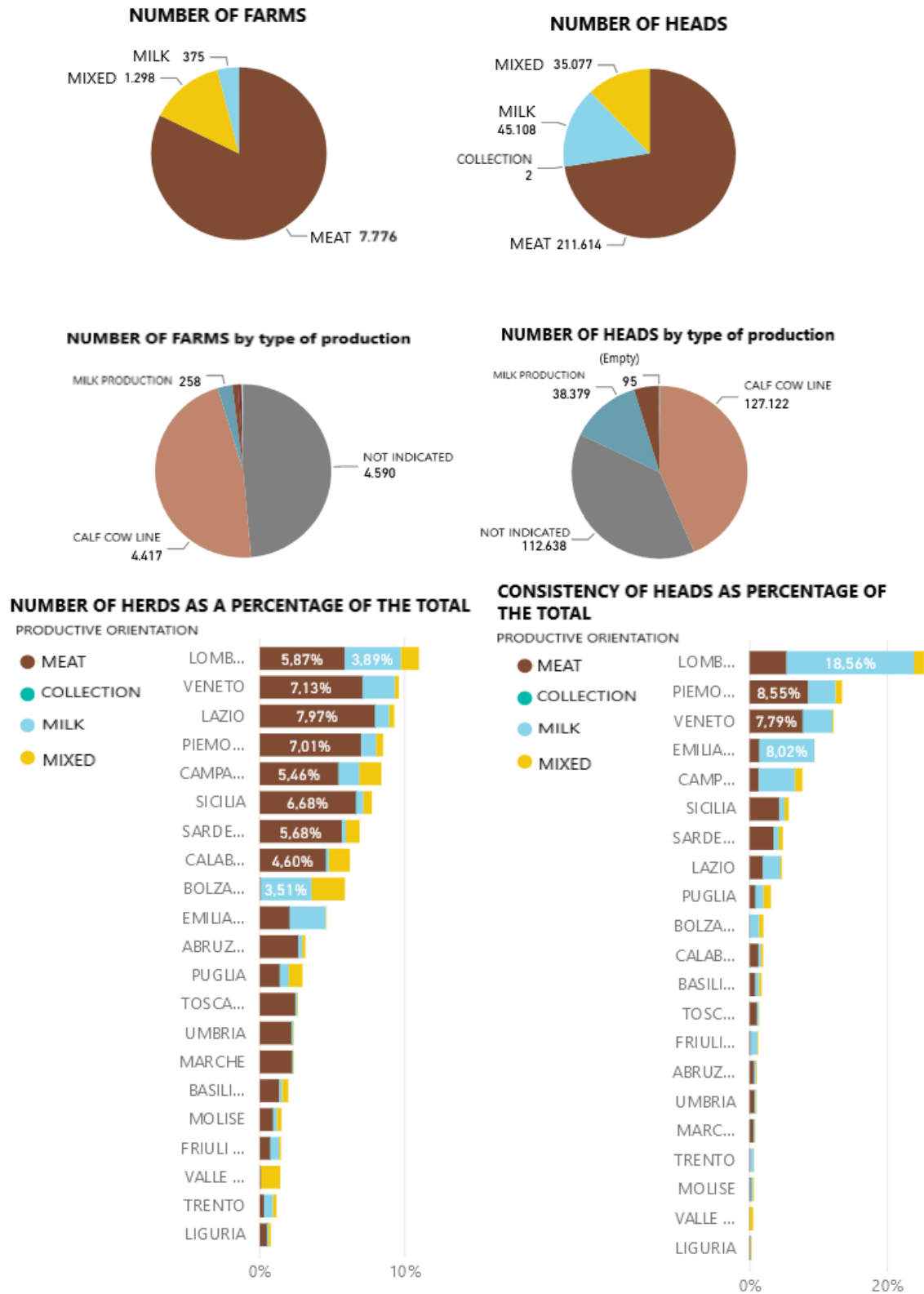
Table 4. Comparison between regional and national livestock structural data: number of farms out of the total and number of animals out of the total (Lagomorphs and Poultry)

	Lagomorphs		Poultry	
	Holdings	Heads	Holdings	Heads
<i>Italy</i>	3,754	8,808,246	10,152	148,462,994
<i>Sardinia</i>	61	27,750	169	802,956

Source: <https://www.vetinfo.it>, National Zootechnical Registry – Statistics, data processed on 15/10/2022

The prevailing cattle farming activities mainly focus on beef or calf production, from the calf-cow operation and dual-purpose production (Figure 1). A small but significant high-producing dairy cows core (mainly Friesian-Holstein cows) is established in a flat area of the island, supported by a cooperative arrangement and an integrated dairy plant.

Figure 1. Cattle farms, cattle heads, and productive specialization in Sardinia.



Farms and heads of cattle and buffaloes by production orientation in Sardinia, Source: <https://www.vetinfo.it>, National Zootechnical Registry – Statistics, data processed on 15/07/2022

The Pig breeding system in Sardinia has also singular features. 2022 counts 29,889 pig farms and 8,588,195 heads in Italy (BDN, 2022). Sardinia has 163,597 heads and 12,497 farms with a percentage of 42.01% of the total Regions and most of the farms are closed cycle (BDN, 2022).

Most of the holdings are small, rearing only a few heads per farm, for family consumption. Irregular pig holdings (not registered) could be still found, causing major concern for public animal disease (Classic and African Swine Fever) and food safety (human cases of Trichinellosis). Major deficiencies in legal requirements compliance are still advisable for detention and farming (e.g., free-ranging farms), transport, illegal slaughtering, and pig meat processing.

In Sardinia, the dairy sector is supported by the local production of raw milk from cows, sheep, and goats (Figure 2a). Cow milk (1.73% of the national production in 2020) is used for fluid milk production (70%) and cheese making (*pasta filata* or soft cheese). Sardinia plays an important role in Italian sheep and caprine breeding; on the national scene, the consistency of Sardinian animal husbandry represents 47.82% and 31.27% (BDN, 2022). In the collection of sheep and goat milk, Sardinia holds 68.92% and 57.30% of Italian production (Laore, 2020). The following figures showed the utilization of cow milk in Italy (Figure 2b), in Sardinia (Figure 2c), and sheep milk (Figures 2d, 2e, and 2f) produced in Sardinia.

Figure 2a. Milk per species and dairy products produced in Sardinia (Istat, 2020).

Territory	Sardegna			
Type of productive units for milk products	all items			
Select time	2017	2018	2019	2020
Data type	dairy products			
Type of dairy product				
cow's milk yielded - protein (percentage)	3,42	3,42	3,6	3,43
total milk yielded in quintals	5295115	5561321	5529577	5558903
cow's milk yielded in quintals	2231979	2118787	2093332	2210045
ewe's milk yielded in quintals	2860438	3193615	3178623	3096312
goat's milk yielded in quintals	202698	248919	257622	252546
cow buffalo's milk yielded in quintals	(n) ..	(n) ..	(n) ..	(n) ..
cow's milk yielded - milk fat (percentage)	3,78	3,79	3,96	3,88
raw milk in quintals	963554	973800	955569	1116208
whole milk in quintals	531346	514049	513735	593129
semiskimmed milk in quintals	401605	411248	387137	466681
skimmed milk in quintals	30603	48503	54697	56398
butter in quintals	869	8752	9936	9521
cheeses in quintals	512474	593321	572192	649840
hard cheeses in quintals	473438	517239	469971	495304
mediumhard cheeses in quintals	8523	12507	12160	9740
soft cheeses in quintals	21196	42458	39162	39286
fresh cheeses in quintals	9317	21117	50899	105510

Legend:

n: data statistically not significant (see explanatory texts)



Figure 2b. Cow milk produced in Italy

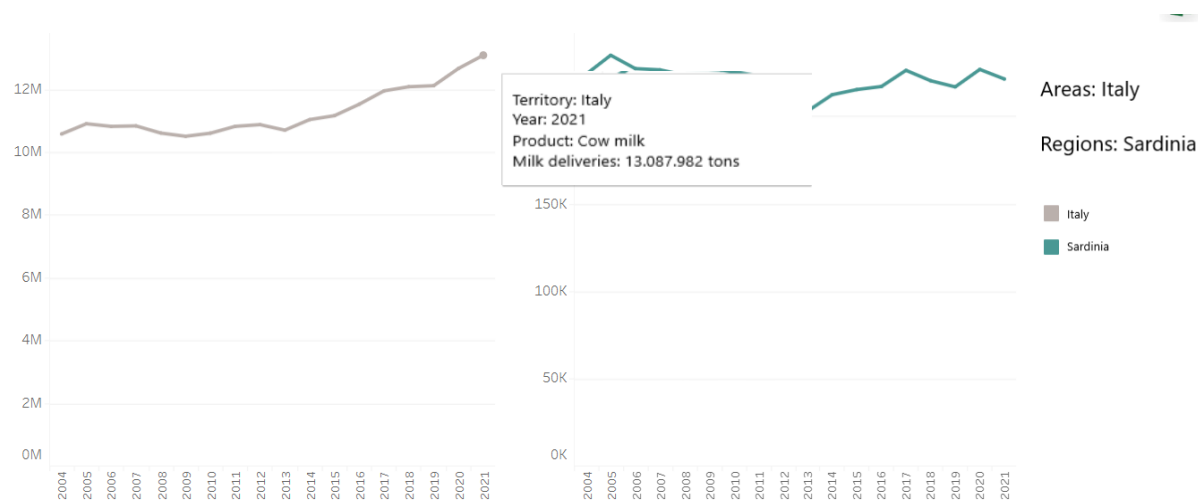
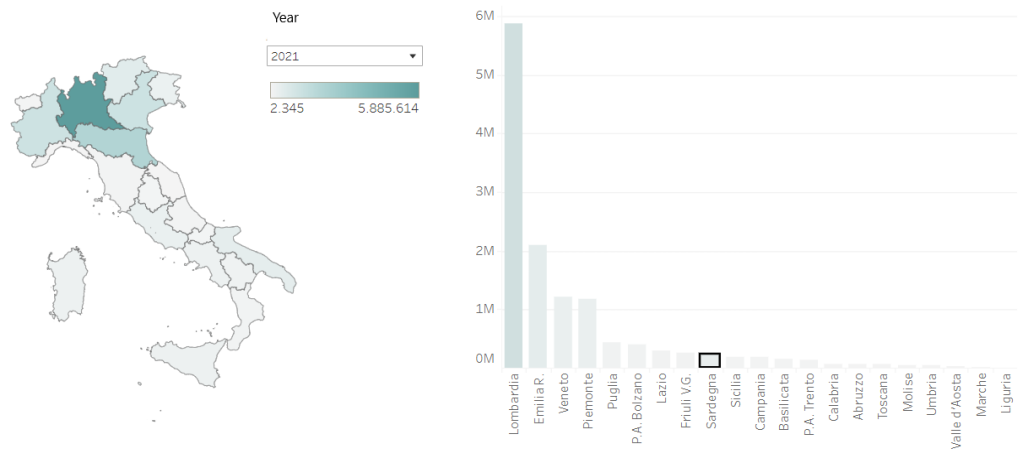
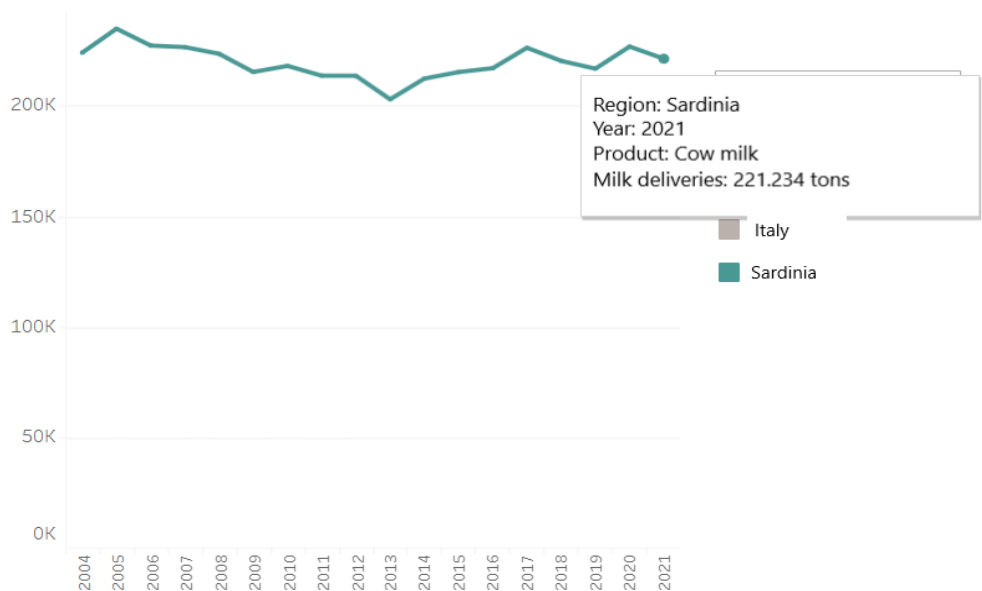
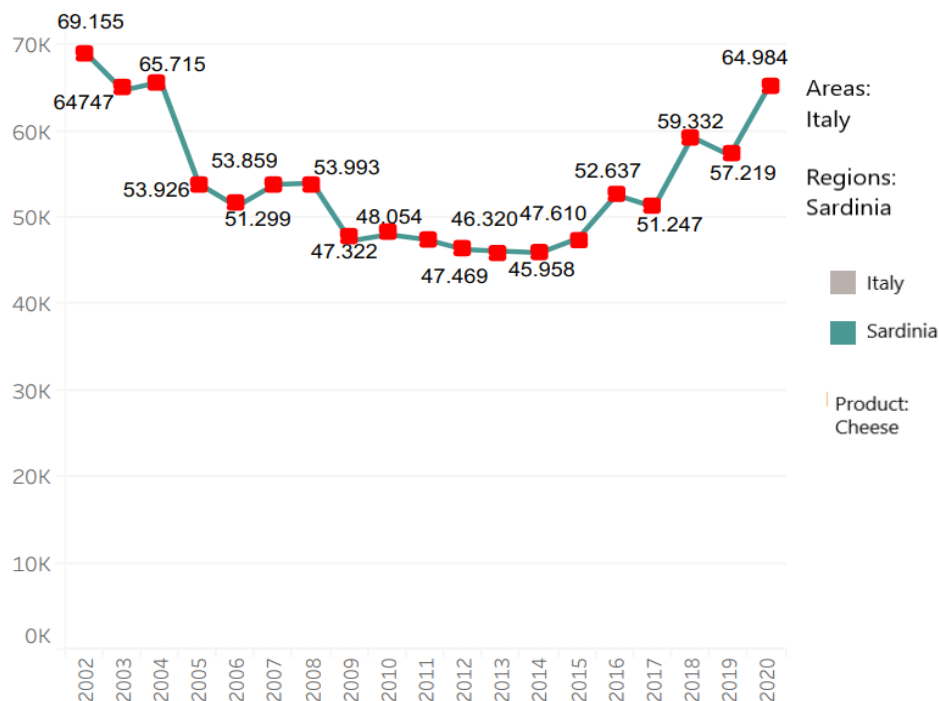


Figure 2c. Cow milk produced in Sardinia



<https://www.ismeamercati.it>, Elaborazione Ismea su dati Agea (tons, 2021)

Figure 2d. Production of Cheese from sheep milk in Sardinia (2002-2020)



<https://www.ismeamercati.it>, Elaborazione Ismea su Dati Agea (tons, 2020)

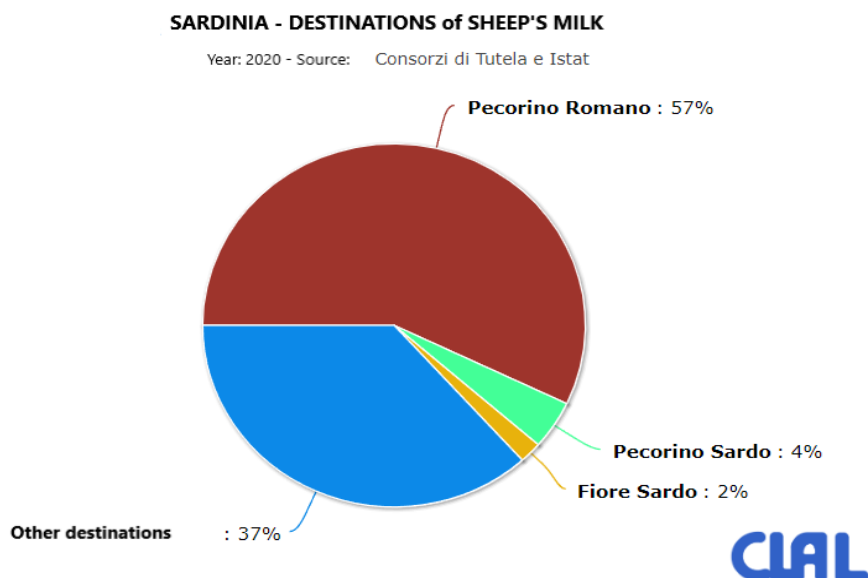
Figure 2e. Clal 2020 ([https://www.clal.it/in dex.php?section=quadro\\_sardegna](https://www.clal.it/in dex.php?section=quadro_sardegna))

Sardinia: Production of PDO cheeses (2020 data)			
PDO cheese	Productions (tons)	Milk used for cheese production (tons)	% of total Sardinia deliveries
Pecorino Romano <sup>1</sup>	29.358	176.776	57,09%
Pecorino Sardo	2.181	13.403	4,33%
Fiore Sardo <sup>2</sup>	1.104	5.896	1,90%
<b>TOTAL</b>	<b>32.643</b>	<b>196.075</b>	<b>63,33%</b>
<b>Deliveries of sheep's milk in Sardinia</b>		<b>309.631</b>	

<sup>1</sup> Dairy year October - July

<sup>2</sup> Dairy year November - May

Figure 2f. Destination of sheep milk in Sardinia



## Slaughter activity in Sardinia

The slaughter activity in Sardinia (2022) is shown in Table 5, where are reported for each species the heads number, live weight, average yield, and dead weight.

Table 5. Slaughter activity in Sardinia (Istat, 2021).

Territory		Sardegna							
Select time		2020				2021			
Category of slaughterhouse		all items							
Data type		number of heads slaughtere d	total live weight - quintals	total dead weight - quintals	average yield (percentage )	number of heads slaughtere d	total live weight - quintals	total dead weight - quintals	average yield (percentage )
Type of herd									
total cattle		23152	113943	68900	60,5	28018	143705	83599	58,17
calves		2976	7686	4677	60,9	2698	6554	3978	60,7
steers and young bovine animals		15383	80296	49817	62	19417	105686	63068	59,67
oxes and bulls		633	3643	2007	55,1	917	5071	2720	53,64
cows		4160	22318	12399	55,6	4986	26394	13832	52,41
total buffaloes		0	0	0	0	0	0	0	0
total cattle and buffaloes		23152	113943	68900	60,5	28018	143705	83599	58,17
total sheep		594370	74993	41849	55,8	575309	75345	42080	55,85
lambs		537724	55183	32344	58,6	519214	55082	32272	58,59
wethers and ovine animals weighting over 15 kilograms which are not for breeding		12482	1894	952	50,3	12676	1929	1063	55,11
ewes and rams		44164	17916	8553	47,7	43418	18334	8745	47,7
kids and goats		12054	1716	993	57,9	11986	1967	1181	60
female goats and male goats for breeding		3875	1048	496	47,3	3878	1083	523	48,3
sheeps and goats		610299	77757	43338	55,7	591173	78395	43784	55,85
total pigs		260545	101491	75230	74,1	315895	107013	85164	79,58
piglets and pigs having weight ranging from 30 to 100 kilograms		257880	97339	71924	73,9	314060	104064	82805	79,57
pigs weighting over 100 kilograms		2665	4152	3306	79,6	1835	2949	2359	79,99

## Honey bee production

In Sardinia, beekeeping, honey production, and other bee products (beeswax, propolis, and pollen), were historically a supplement to the shepherds' income. The foods and wild bees were kept within cork bark in the pastures where shepherds tended their sheep. In the last 30 years, more conventional methods of bee husbandry have been introduced by new generations of keepers, but the bees still collect their nectar from the native wildflowers and it is the unique natural flora and habitat of Sardinia that give honeys their distinctive flavours. Honey is a product closely related to its production area and whose composition and flavour depend on the types of flowers foraged by bees. The main features of final products are also influenced by soil and climatic conditions, as well as human activities. Most of the surface is characterized by the presence of natural vegetation and extensive agro-pastoral agriculture. There are limited areas with intensive agriculture based on the use of chemicals (pesticides or fertilizers), and also limited industrial districts. Therefore, most of the island is still natural, which represents the ideal status for high-quality organic honey production. The Sardinia melliferous plants include more than 200 species, which allow the production of different monofloral and polyfloral kinds of honey, including typical productions from Asphodel, Thistle, and Strawberry-tree (bitter honey) and other typical Mediterranean or worldwide spread trees such as Eucalyptus and Citrus.

The sector includes 2273 beekeepers, of which 1307 produce for home consumption and 906 for companies. The total number of apiaries is 4990, of which 2899 are registered, making a total of 52196 hives and 3242 swarms. 64.51% of the apiaries are nomadic, 32.08% are sedentary and the remaining 3.41% are unclassified. Production data collected from January to August 2022 show the negative impact of drought on spring and summer crops. In Sardinia, daily temperatures of 40 °C were exceeded more than once. Crops of spring wildflowers, especially Mediterranean scrub, declined sharply.

Depending on the type of honey, the yield after honey extraction is estimated at 0 to 3 kg/hive of citrus honey, sometimes with other nectars that could declassify the production of single-flowered citrus honey to multi-flowered honey. For sulla (*Hedysarum coronarium*) honey, harvests of 5-10 kg/hive are estimated in Medio Campidano and Marmilla. Asphodel harvests in coastal and lowland areas of Sardinia were severely affected by frost and drought. Where it was possible to obtain a harvest, yields do not exceed 3 kg/hive. In the harvest of thistle honey, about 10-12 kg/hive were recorded. The production of strawberry honey was stopped due to climatic development. In limited areas within the Gutturu Mannu Park in southern Sardinia and some other suitable areas of the island, yields of heather honey are 6-10 kg/hive. The yield of eucalyptus was below expectations in almost



the entire region, averaging between 15 and 18 kg/hive. The spring harvest of wildflowers was also generally poor, at 0-5 kg/hive.

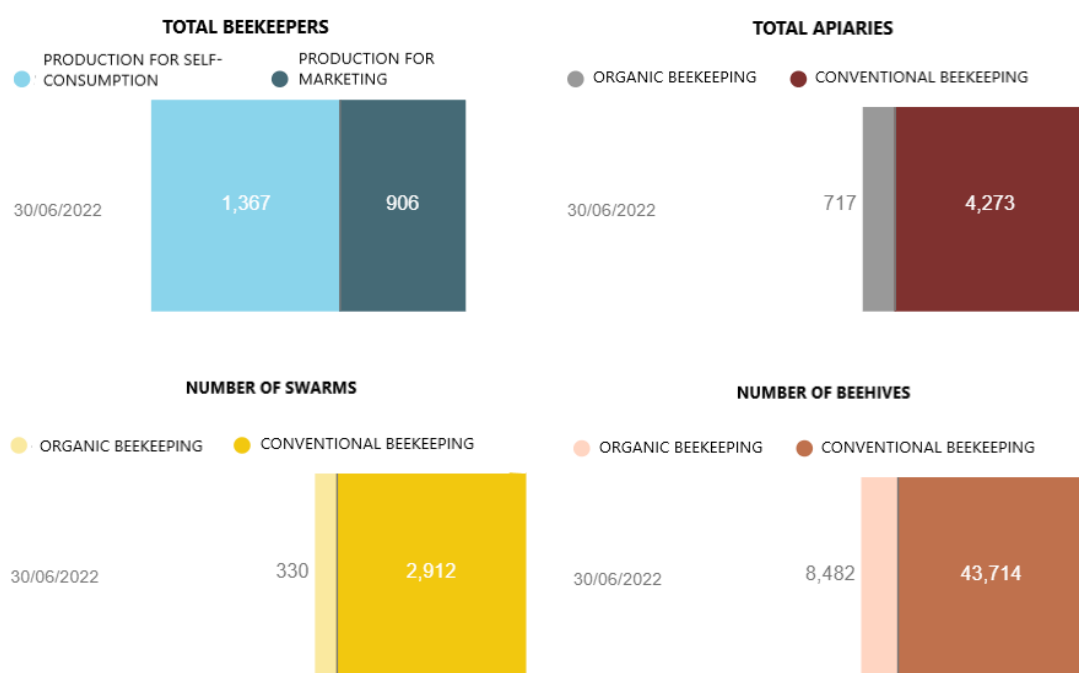
Report 2022 IL VALORE DELLA TERRA Prime valutazioni sull'andamento produttivo e di mercato per la stagione 2022

Report 2021 Il Valore della Terra

[https://www.vetinfo.it/j6\\_statistiche/#!/report-pbi/45](https://www.vetinfo.it/j6_statistiche/#!/report-pbi/45)

Table 6. Honey bee production in Sardinia

REGION	NUMBER OF BEEKEEPERS	NUMBER OF APIARIES	NUMBER OF APIARIES WITH CENSUS	NUMBER OF BEEHIVES	NUMBER OF SWARMS
ABRUZZO	2.281	4.039	2.820	42.784	6.361
BASILICATA	610	1.629	1.179	21.683	3.335
CALABRIA	1.862	8.105	6.472	137.287	13.070
CAMPANIA	1.986	4.844	3.709	82.867	11.594
EMILIA ROMAGNA	5.890	16.379	12.181	127.100	17.514
FRIULI VENEZIA GIULIA	1.969	4.532	3.940	34.962	6.422
LAZIO	4.267	6.915	4.047	56.315	10.452
LIGURIA	2.999	4.830	3.231	25.659	6.874
LOMBARDIA	8.635	19.970	15.361	153.061	12.904
MARCHE	3.317	6.380	5.431	70.760	7.847
MOLISE	838	1.703	1.045	14.612	2.418
PIEMONTE	7.211	26.814	23.493	192.261	47.831
PUGLIA	1.310	2.856	1.828	24.870	9.933
<b>SARDEGNA</b>	<b>2.273</b>	<b>4.990</b>	<b>2.899</b>	<b>52.196</b>	<b>3.242</b>
SICILIA	2.268	11.850	10.558	131.187	17.734
TOSCANA	7.265	16.170	12.122	117.089	20.518
TRENTINO - ALTO ADIGE (BZ)	4.164	5.061	3.904	37.657	2.348
TRENTINO - ALTO ADIGE (TN)	2.444	5.219	3.642	24.955	4.444
UMBRIA	3.061	4.727	3.295	36.595	2.027
VALLE D'AOSTA	634	1.572	1.473	6.220	905
VENETO	8.978	16.696	12.352	92.640	18.866
<b>Totale</b>	<b>71.104</b>	<b>175.281</b>	<b>134.982</b>	<b>1.482.760</b>	<b>226.639</b>



<https://www.vetinfo.it> National Zootechnical Registry – Statistics, data processed on 21/07/2022

## Eggs and Egg products

The poultry industry in Sardinia is vertically integrated, which means that the industry has great control of its products. In this way, egg producers own and manage nearly every aspect of their business (e.g., rearing of birds, feeding, housing, husbandry, and marketing of their products) and are capable of meticulously monitoring the entire process. Poultry producers usually do not own the primary breeding stock (i.e., the parent lines supplying their operation), these birds are purchased from primary breeders. About 171 poultry farms operate in Sardinia, for a total of 779.149 heads. Laying hens are raised in 99 farms all over the regional territory, mostly concentrated in the south, for a total of 466.879 heads.

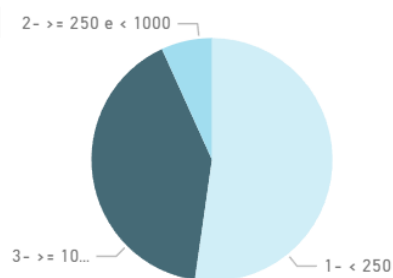
The number of free-range laying hens is 34,503, organic 21,534, reared on the ground 178,720, and reared in cages 220,322. In poultry farming, there are 2% organic farms, 20% reared on farms, and 62% battery cages. The total number of laying farms in Sardinia is 88, of which 39 with outdoor groups, 5 with organic groups, 24 with caged groups, and 35 ground reared groups.

[https://www.vetinfo.it/j6\\_statistiche/#/report-pbi/41](https://www.vetinfo.it/j6_statistiche/#/report-pbi/41)

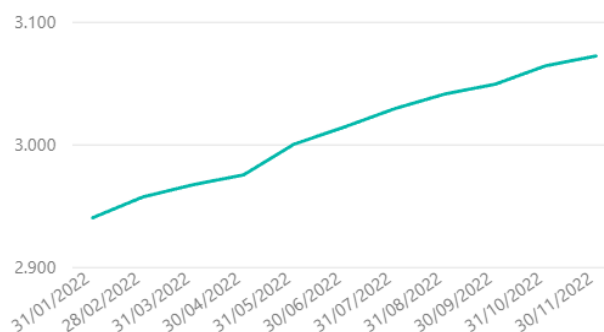
Table 7. Poultry industry in Sardinia

REFERENCE_DATE REGION	30/11/2022 NUMBER OF FARMS	NUMBER OF GOUPS OF LAYING HENS	NUMBER OF GROUPS OF PULLETS	NUMBER OF LAYING HENS	NUMBER OF PULLETS
ABRUZZO	120	80	0	130.957	0
BASILICATA	25	11	1	19.713	1.645
CALABRIA	65	50	14	273.827	127.154
CAMPANIA	144	147	7	1.066.862	210.530
EMILIA ROMAGNA	228	343	96	7.671.444	3.055.560
FRIULI VENEZIA GIULIA	106	87	2	1.213.828	6.000
LAZIO	316	334	21	1.843.415	18.614
LIGURIA	79	82	0	45.828	0
LOMBARDIA	264	435	67	10.223.315	2.287.135
MARCHE	92	97	3	814.128	175.000
MOLISE	19	17	0	172.499	0
PIEMONTE	266	276	29	2.124.813	545.373
PUGLIA	170	204	1	881.903	324
<b>SARDEGNA</b>	<b>88</b>	<b>104</b>	<b>3</b>	<b>455.079</b>	<b>11.800</b>
SICILIA	202	251	32	2.910.188	910.881
TOSCANA	228	248	13	490.958	52.096
TRENTINO - ALTO ADIGE (BZ)	117	165	0	148.563	0
TRENTINO - ALTO ADIGE (TN)	72	56	0	144.286	0
UMBRIA	85	93	9	843.124	212.096
VALLE D'AOSTA	2	2	5	2.000	4.202
VENETO	384	420	99	10.080.376	3.065.238
<b>Total</b>	<b>3.072</b>	<b>3.502</b>	<b>402</b>	<b>41.557.106</b>	<b>10.683.648</b>

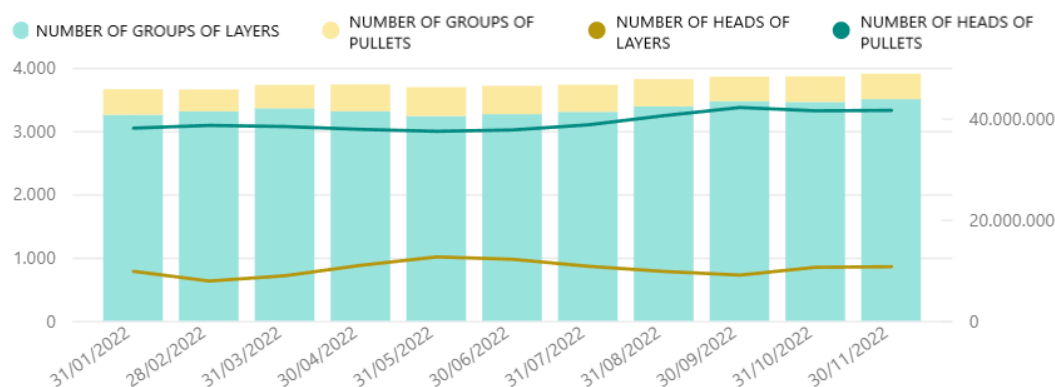
NUMBER of FARMS by CAPACITY



NUMBER of FARMS by REFERENCE DATE



NUMBER of GROUPS and NUMBER of HEADS by REFERENCE DATI (LAYERS and PULLETS)



<https://www.vetinfo.it>, Anagrafe Nazionale Zootecnica – Statistiche, data processed on 15/12/2022

## Aquaculture

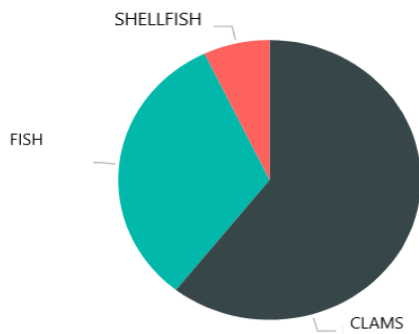
The annual aquaculture production in Sardinia (Table 8) amounts to 13,000 tonnes: 17% is represented by fish (sea bream, sea bass, porgy, croaker, eel, mullet, and trout) while the remaining 83% is represented by bivalve molluscs including mussels and oysters, with a turnover of about € 20.000.000,00. In Sardinia, as well as in the rest of Italy, shellfish is the main product of aquaculture: the activities related to shellfish aquaculture are present since the first postwar period and nowadays are well established. In particular, mussel aquaculture occupies a prominent position at a National level and the annual production is about 11,000 tonnes, placing third nationally. Mussel farms are mainly located in the provinces of Oristano, Cagliari, Olbia-Tempio, and Ogliastra. Most of the farms are located in the Olbia bay and are raised by several mussel farmers companies, who have promoted interesting initiatives aimed at safeguarding the quality and health of mussels and the protection of the marine environment.

Table 8. Annual aquaculture production in Sardinia

REFERENCE_DATA REGION	31/12/2021 SHELLFISH	CLAMS	FISH
ABRUZZO	3	9	49
BASILICATA			13
CALABRIA		2	8
CAMPANIA		77	51
EMILIA ROMAGNA	5	183	306
FRIULI VENEZIA GIULIA	2	87	119
LAZIO	2	12	96
LIGURIA		10	17
LOMBARDIA	4		308
MARCHE	1	25	45
MOLISE	2	7	11
PIEMONTE			372
PUGLIA	4	141	28
<b>SARDEGNA</b>	<b>7</b>	<b>60</b>	<b>32</b>
SICILIA		3	18
TOSCANA	1	2	174
TRENTINO - ALTO ADIGE (BZ)	5		91
TRENTINO - ALTO ADIGE (TN)			85
UMBRIA			57
VALLE D'AOSTA			11
VENETO	5	558	356
<b>Total farms</b>	<b>41</b>	<b>1.176</b>	<b>2.247</b>

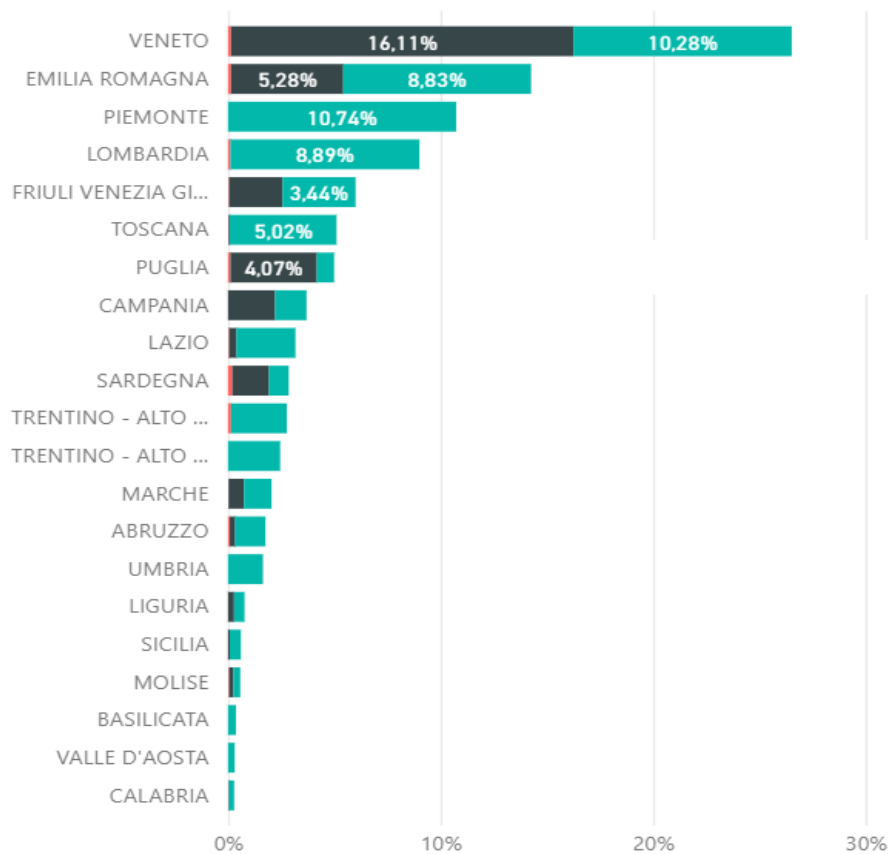


### NUMBER of FARMS per SPECIES



### % FARMS by REGION and SPECIES

● SHELLFISH ● CLAMS ● FISH



<https://www.vetinfo.it>, National Zootechnical Registry – Statistics, data processed on 21/07/2022

## Data Source

Laore (Regional Agency on Agriculture for Rural Development), 2020.

Istat, the Italian National Institute of Statistics (2021).

<https://www.vetinfo.it>, National Zootechnical Registry – Statistiche

[https://www.vetinfo.it/j6\\_statistiche/#/report-pbi/41](https://www.vetinfo.it/j6_statistiche/#/report-pbi/41)

<https://www.ismeamercati.it>, Elaborazione Ismea su dati Agea, 2021

[https://www.clal.it/index.php?section=quadro\\_sardegna](https://www.clal.it/index.php?section=quadro_sardegna)

Report 2022. IL VALORE DELLA TERRA. Prime valutazioni sull'andamento produttivo e di mercato per la stagione 2022.

Report 2021 Il Valore della Terra

## PROCESSING ESTABLISHMENT MASTER LIST

Table 9. Establishments Approved under Regulation (EC) 853/2004 to produce food of animal origin.

	total	Province of Sassari	Province of Cagliari	Province of Nuoro	Province of Oristano
Section 0 - General activity establishments	138	57	47	19	15
Section I - Meat of domestic ungulates	102	42	30	21	9
Section II - Meat from poultry and lagomorphs	25	6	9	2	8
Section III - Meat of farmed game	11	2	6	2	1
Section IV - Wild game meat	-	-	-	-	-
Section V - Minced meat, meat preparations, and mechanically separated meat	56	12	24	16	4
Section VI - Meat products	58	22	12	20	4
Section VII - Live bivalve molluscs	42	25	8	-	9
Section VIII - Fishery products	146	22	88	11	25
Section IX - Raw milk and dairy products	306	96	47	107	56
Section X - Eggs and egg products	27	5	7	10	5
Section XI - Frog legs and snails	-	-	-	-	-
Section XII- Rendered animal fats and greaves	4	1	1	2	-
Section XIII - Treated stomachs, bladders, and intestines	8	3	4	1	-
Section XIV – Gelatine	-	-	-	-	-
Section XV - Collagen	-	-	-	-	-

Table 10. List of plants handling animal by-products approved under Regulation (EC) no 1069/2009.

	tot.	Province of Sassari	Province of Cagliari	Province of Nuoro	Province of Oristano
Section I - Plants carrying out intermediate activities and plants storing animal by-products	36	12	13	6	5

## RESEARCH & TECHNICAL ASSISTANCE IN AGRICULTURE

On August 8, 2006, the Regional Law n. 13 of the Sardinia Region (RAS) laid down the reorganization of regional agricultural agencies and their functions. Three different agencies were founded: AGRIS, LAORE, and ARGEA.

*AGRIS: Agenzia per la ricerca in agricoltura della Regione Sardegna* (Sardinia Regional Agency for Research in Agriculture). The objective of the agency is to promote and implement scientific research and innovation in several agricultural supply chains. It is also aimed to aid sustainable rural development, support the food and agricultural industries, increase its competitiveness in the research field, and valorize animal and plant biodiversity. Research is mainly focused on the fields of animal production, cheese-making industries, and plant production.

*LAORE: Agenzia regionale per l'attuazione dei programmi in campo agricolo e per lo sviluppo rurale* (Regional Agency for the Achievement of Agricultural Programmes and Rural Development). The agency spans a wide range of activities aimed to promote innovation and development in agriculture, especially in marginal and rural areas. Among the operative actions carried out by the agency, there are technical assistance to primary production and other food business operators; promotion and diffusion of educational initiatives in the agricultural sector, including animal farming; valorization of typical productions and biodiversity; transfer of scientific innovations; promotion of co-operation among enterprises.

*ARGEA: Agenzia regionale per l'erogazione degli aiuti in agricoltura* (Regional Agency for Agricultural Granting). It manages European, National, and Regional support in agriculture. The agency is responsible for establishing the criteria for aid distribution and contribution to the agriculture sector.



## PUBLIC HEALTH AND NATIONAL AND REGIONAL VETERINARY SERVICES

In Italy, the *Servizio Sanitario Nazionale* (National Health Service) is organized by the *Ministero della Salute* (Ministry of Health or MS). The Ministry of health besides its central offices is divided into offices distributed throughout Italy that, in relation to their specific competencies, carry out activities of control and offer services to the users.

- Central offices:
  - Department of Public Health and Innovation;
  - Department of Planning and Organization of the National Health service;
  - Department of Public Health, Nutrition and Food Safety
- Branch offices:
  - Veterinary Offices for Compliance with European Union Obligations (UVAC);
  - Border Inspection Posts (PIF);
  - Maritime, aviation, and border health offices (USMAF)

At the national level, most of the competencies for animal health, food, and feed safety, and animal welfare are assigned to the *Dipartimento per la Sanità Pubblica Veterinaria, la Nutrizione e la Sicurezza degli Alimenti* (Department for Veterinary Public Health, Nutrition and Food Safety or DVPHNFS) of the Ministry of Health. The *Ministero delle Politiche Agricole Alimentari e Forestali* (Ministry of Agriculture, Foodstuff and Forestry Policies or MIPAAF) is responsible for food and feed quality and traceability controls.

Following an amendment to the Italian Constitution in 2001, health in general and, as a consequence, animal health, food and feed safety, and animal welfare, became issues of shared responsibility between the national and regional levels. Competence over import controls, international prophylaxis, and exports remains reserved to the central government.

The organization of the veterinary and food safety services can be summarized in Figure 3.

## MINISTRY OF HEALTH AND CENTRAL OFFICES

The Ministry of Health operates with its Department For Veterinary Public Health, Nutrition, and Food Safety. The DVPHNFS is divided into 3 general directorates:

- Directorate-General for Animal Health & Veterinary Drugs: performs functions related to the following fields: epidemiological surveillance of communicable diseases animals transmitted;

animal health and animal registry; zoonoses control; protection of animal welfare, animal reproduction, livestock hygiene, veterinary urban hygiene; veterinary drug surveillance and monitoring; control of animal importation and exchanges of products of animal origin, feed, and veterinary drugs, raw materials for feed and veterinary drugs; functional coordination of branch and regional offices such as Border Inspection Posts and Veterinary Offices for Compliance with European Union Obligations:

- *Posti di Ispezione Frontaliera* or Border Inspection Posts or (PIF): In Italy, there are currently 35 BIPs. According to the Community legislation they are in charge of checking animals, food of animal origin, and feeding stuff intended for introduction into Italy or into the 26 other EU Countries. They operate under the Italian Ministry of Health and under the EU supervision (F.V.O.).
- *Ufficio Veterinario per gli Adempimenti Comunitari* or Veterinary Offices for Compliance with European Union Obligations (UVAC): The 17 UVACs are in charge of the surveillance of intra-Community trade in animals, food of animal origin, and feeding stuff. Their most important tasks are surveillance on intra-Community trade in animals, food of animal origin, and feeding stuff, in cooperation with the Regions and the AUSLs. Putting in force intra-Community trade restrictions, in cooperation with the Regions and the AUSLs. Assistance to the Regions and the AUSLs in the fields of intra-Community trade legislation and claims.
- Directorate-General for Food Hygiene, Food Safety, and Nutrition: performs functions related to the following fields: hygiene and safety regarding the production and marketing of food, including raw materials; food chain control plans; alert management system and emergency management in food and feed safety; by-products of animal origin; functional foods; nutrition labeling, food and nutrition education; health issues related to food technology and new foods; hygiene and safety of food intended for export.
- Directorate-General of National Boards for Health Protection: identified as the competent Italian authority for the European Food Safety Authority (EFSA), performs functions related to the following fields: physical, chemical, and biological risk assessment in food safety; secretarial and other support activities for the functioning of the National Committee for Food Safety; ensures a link with the regions also as regards the risk evaluation activities planning of the food chain and the operations of the consumer Assembly and the producers associations on food safety.

Other important branch offices of the Ministry of Health are the *Uffici di Sanità Marittima, Aerea e di Frontiera* or Maritime, Aviation, and Border Health Offices (USMAF). These offices are located

in the major national ports and airports to provide an on-site protective filter against the risk of importing diseases. Their staff is the first to be called to carry out hygiene and health inspections on means of transport, goods, and people entering Italian or EU territories. They depend directly on the Directorate General of Prevention of the Department of Public health. There are 12 Airport and Seaport Health Offices (USMAF), divided into 34 local units located at the main seaports and airports. They are in charge of controls on imported food of non-animal origin.

## NATIONAL LEVEL BODIES

National Institute Of Health or *Istituto Superiore Di Sanita'* (ISS): at the national level, the National Institute of Health is the leading technical and scientific public organization of the Italian National Health Service. The ISS supervises the laboratories of the Italian National Health Service engaged in food control and performs the confirmatory analysis. Its activities include research, control, training, and consultation in the interest of public health protection. An important activity of the Institute, which is carried out on behalf of the Ministry of Health or the Regions, is the inspection and quality control of food products and packaging. ISS includes the Community Reference Laboratories for *Escherichia coli*, (including verotoxigenic *E. coli*); for parasites (in particular *Trichinella*, *Echinococcus*, and *Anisakis*), and the residues listed in Annex I, group B 3(c) to Directive 96/23/EC.

Zooprophilactic Institutes or *Istituti Zooprofilattici Sperimentali* (IZSs): The IZSs are veterinary public health institutes that provide a network of public laboratories at national and regional levels. There are 10 IZSs, with approximately 85 field diagnostic units at the provincial level. The geographical remit of each IZS covers one or more Regions. The IZSs' most important tasks are the Diagnosis of animal diseases and diseases transmissible to humans; Epidemiological surveillance of animal health, livestock farming, and food hygiene of animal origin; Research on animal health and welfare, infections, animal diseases, zoonoses, food, and feed safety; Training of specialized personnel on zooprophyllaxis and of veterinarians and other health operators; Support and assistance to breeders in controlling and eradicating infectious diseases and developing and improving livestock farming. Each IZS can be a National Reference Laboratory (NRL) for one or more animal diseases or food safety issues. At the international level some IZS has been appointed as FAO, O.I.E., or WHO Reference Laboratories.

Health Police or *Nucleo Anti Sofisticazioni* (NAS): The NAS are a special branch of the corps of carabinieri (Italian police). Although hierarchically linked to the carabinieri, they operate under the supervision and direction of the Ministry of Health. NAS are organized into a central Command, with 3 field offices and 35 territorial inspection units. NAS are responsible for investigations and controls

on illegal adulteration of foodstuffs, fraud, and illegal trafficking of medicines. They may perform controls and investigations on their own initiative or at the request of the offices of the Ministry of Health. Approximately 1,000 staff are employed by the NAS. Most of these are warrant officers with specific technical training. On average 50% of their time is dedicated to food safety inspections.

## REGIONAL LEVEL BODIES

**Regional Health Service:** is provided by 19 Regions and 2 Autonomous Provinces. Within their geographical remit, the regions and the autonomous provinces are responsible for planning, coordinating, giving guidance, authorizing, and verifying controls. The institutional cooperation between the central government and the Regions takes place within the permanent forum of the State-Region Conference. In each Region, there is a Regional Veterinary Service (RVS) which is normally part of the Regional Public Health Services (*Servizi di Sanità Pubblica delle Regioni*) (RPHS). The internal organization of the RPHS differs between regions. The RVS has a coordination function while the implementation of controls is done at the local level by inspectors employed in the Local Health Units (AUSLs).

**Local Health Units:** at the local level the veterinary services are organized in 146 *Aziende Unità Sanitarie Locali* (or AUSLs). The Local Health Units are public organizations responsible for the organization and management of all public health services at the local level. The AUSLs have a high degree of managerial, administrative, financial, and technical autonomy. They are organized in health districts, departments of prevention, and hospital services. Veterinary and food safety responsibilities are shared between two separate services within the Department of Prevention: the Local Veterinary Services (*Servizi Veterinari Locali*) (LVS) and the Food Hygiene and Nutrition Service (*Servizi Igiene degli Alimenti e della Nutrizione*) (SIAN):

- **Local Veterinary Services (LVS):** The LVS are responsible for animal health, animal welfare, food of animal origin, and feeding stuff and are organized into 3 different areas:
  - *area A* - animal health;
  - *area B* – food of animal origin;
  - *area C* – animal breeding and livestock farming productions.

The distinction between areas of activity is not always present in all the AUSLs and the distribution of resources may vary according to the AUSL. Most of the inspectors in the LVS are veterinarians. Approximately, a total of 5,787 veterinarians are employed in the 146 AUSLs. In Sardinia, the LVS operates with 8 AUSLs which have specific territorial competencies. Their distribution and areas of activities are shown in Figure 4.

- Food Hygiene and Nutrition Service (SIAN): The SIAN is responsible for food of non-animal origin. Within the SIAN some staff is medical doctors, but the majority are technical clerks, with a second-level diploma. The staff in charge of control activities are specifically designated to that purpose, whereas another staff is involved also in other public health activities.

Figure 3. The organization of the Health Sanitary System in Italy

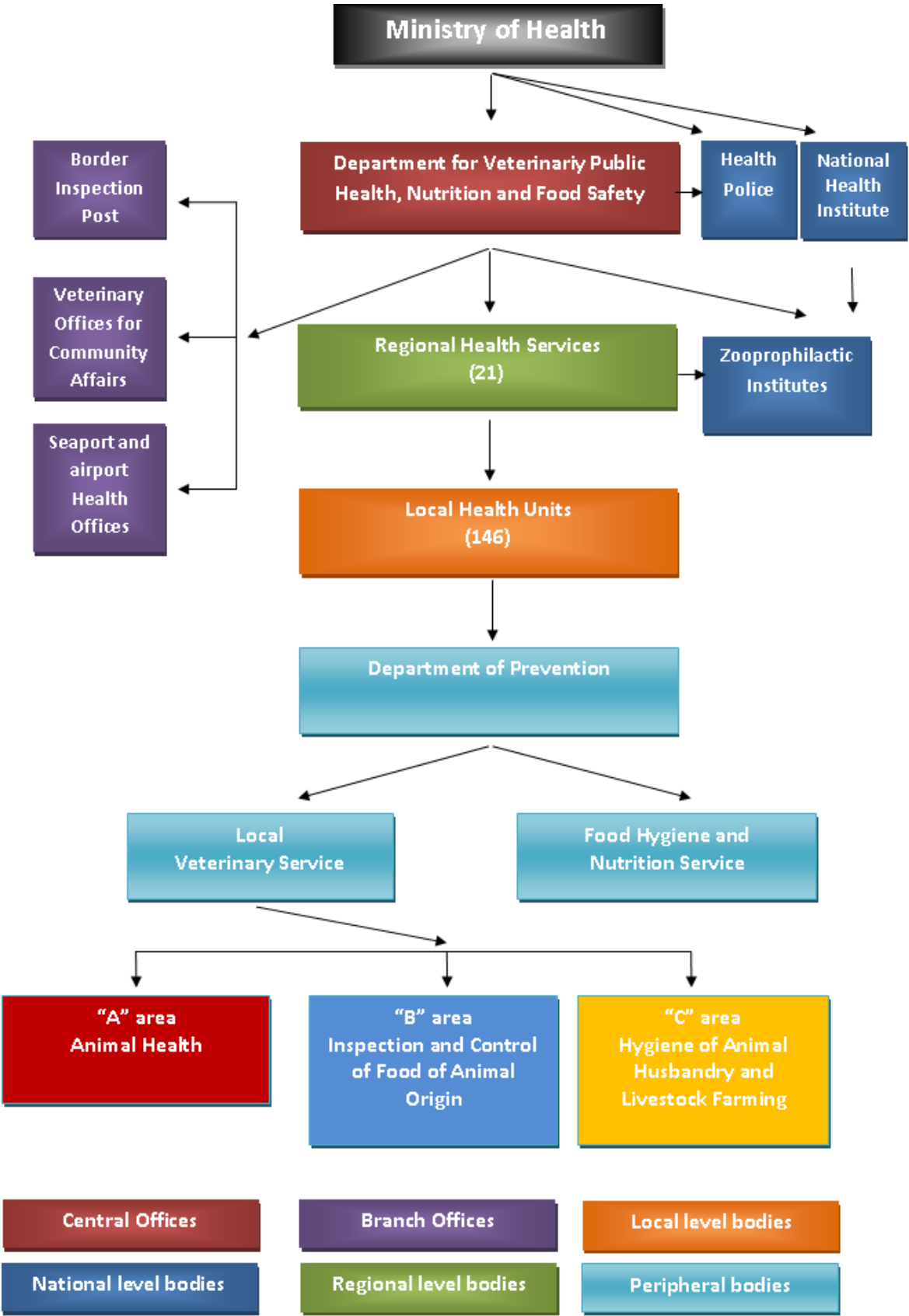
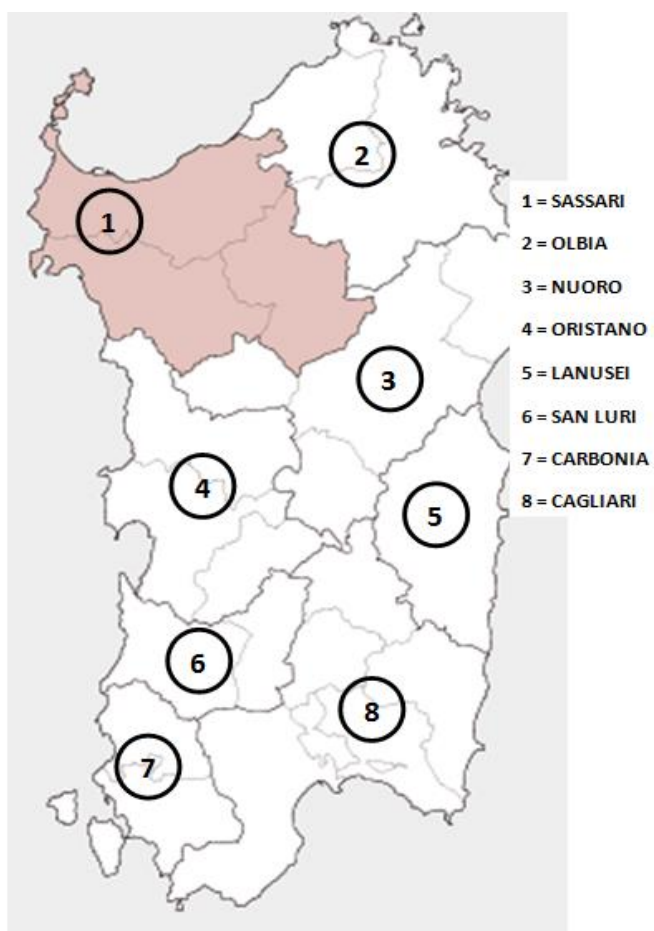




Figure 4. Localization of the 8 Sardinian Local Veterinary Services (ASL)



## SARDINIA FOOD PRODUCTS OF ANIMAL ORIGIN (PDO, PGI, AND TRADITIONAL FOODS)

Sardinian foods of animal origin include 3 Protected Designation of Origin (PDO) cheeses, and 1 Protected Geographical Indication (PGI) meat (Sardinian lamb). Three others plant products are registered as Sardinia PDO: extra virgin olive oil (Olio extra-vergine d'oliva), saffron (Zafferano), and artichoke (Carciofo Spinoso). Many other products are included in a traditional foods national list, as established by the Decree 8 September 1999 n. 350, of the Italian Ministry of Agriculture and Food Policy.

Here are listed some brief notes about some of the most popular Sardinian food of animal origin.



Sardinian  
lamb IGP

Sardinian lamb IGP is small in size and its meat can be distinguished from other ones for its lean and white meat, for its strong smell, and high nutritive values. The meat is very tender and easy to digest, with a very strong taste.



Salsiccia  
Sarda  
*Sardinian  
sausage*

Sardinian sausage is made from fresh pork meat, obtained from pigs slaughtered at the age of 10/12 months and with a weight of 140/180 kg. The main ingredients of Sardinian sausage are minced lean pork and pork back fat. The product is shaped like a "horseshoe" with an average weight of 400/550 gr.



Pecorino  
Sardo DOP

Pecorino Sardo is a semi-cooked (41–42°C) cheese made in Sardinia from thermized or raw sheep milk. The milk is coagulated by means of liquid calf rennet. The kind of cheese, which has a protected designation of origin (PDO), is normally ripened for about 2 months (variety “sweet”) or somewhat longer (“mature”). This products is mainly produced with thermized milk in cheese dairy farms but it is still produced in some areas of the island from raw milk at the farmhouse level.



Fiore Sardo  
DOP

Fiore Sardo Protected Denomination of Origin is a hard cheese produced exclusively from whole, raw sheep milk coagulated with lamb or kid rennet paste. It is the typical product of farmhouse artisanal cheesemakers, ripened in not less than three months (variety “table”) or more than six (“grated”).



Pecorino  
Romano DOP

Pecorino Romano is a protected designation of origin (PDO) cheese that must be made exclusively from whole sheep milk and lamb paste rennet. By law, it can only be produced in Sardinia, Latium, and the province of Grosseto. The ripening time is not less than five months (variety “table”) or more than eight (“grated”).



Ricotta Salata

Ricotta Salata is a whey cheese traditionally made in Sardinia (Italy) from sheep milk. The milk whey is coagulated at 85°C. The coagulum is extracted and it is moulded in different shapes, typical of each variety. Usually after moulding a mechanical pressure is applied to drain the serum in excess. The wheel is dry-salted for some days. A great part of this product is intended for export to several European countries and North America.



Casu marzu  
*Rotten cheese*

Casu marzu (also called casu modde, casu cundídu, casu fràzigu in the Sardinian language, or Formaggio Marcio in the Italian language, "rotten cheese") is a traditional Sardinian sheep milk cheese, notable for containing live insect larvae. It is found mainly in Sardinia. Derived from Pecorino, casu marzu goes beyond typical fermentation into a stage most would consider decomposition, brought about by the digestive action of the larvae of the cheese fly *Piophilidae casei*.



Caglio di  
capretto

It is the abomasum kid, with inside a semi-solid acidic, very spicy paste, obtained from milk which undergoes the action of yeasts and bacteria. The weight is about 250-700 grams.



Gioddu

Gioddu is a fermented milk traditionally produced using either sheep or goat milk. The technology of production is not well defined as different methods and types of milk are used depending on local tradition. Gioddu in Sardinia has a long tradition of being regarded as a healthy product, as are other fermented milks in various parts of the world.



Casu axedu

A goat or sheep milk cheese made in different parts of the island. The curd, formed chiefly by the natural culture of lactic ferments, is cut up into large pieces, left to acidify for a whole day, and is ready for immediate consumption. Otherwise, it may be drained, dry-salted, and preserved in salt inside terracotta containers for several months. The cheese is soft, and compact, with a pleasantly sharp lactic odour.

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Miele di Cardo

The thistle is a Sardinian typical herbaceous plant, which grows in vacant lots and blooms in late spring. The thistle honey produced by bees (from April to May) is clear in transparency, tending to amber with greenish hues, sweet but slightly spicy and intense due to the presence of iron, pleasant flavour, fragrant and persistent.



Miele di  
Corbezzolo

The strawberry tree honey is light amber in color, with typical gray-green shades, easily recognizable by the distinctive biting flavour, fresh scent, and very bitter, intense, and persistent taste. It is rare because the strawberry tree blooms from November to February and this makes it difficult, bringing the cold and, the bees' work.



Bottarga di  
muggine

The word bottarga comes from the Arab *buttarikh*, meaning salted fish roe. The egg masses, which after processing are called *baffe*, are removed intact from the female fish (*Mugil cephalus*), carefully washed salted, and pressed. Dosing of the salt is a delicate step in the production process: too much would impair flavour but too little would compromise the product conservation.

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## PECORINO ROMANO, Protected Designation of Origin (PDO) cheese.

The end of the 19th century witnessed the arrival on the island of the cheese which was to become the mainstay of the Sardinian dairy industry. One of the first Italian cheeses to win international and national awards and recognition. Indeed, it is listed in the Convention of Stresa of 1951 addressing the denominations of various cheeses and has held the title Denominazione d'Origine 1955, and the title PDO (Protected Designation of Origin) throughout Europe since 1996; finally, in June 1997, the United States Patents & Trademark authority issued it the trademark "Roman cheese made from sheep's milk". Whole sheep milk, derived from herds in their grazing zones: Sardinia, Latium, and Province of Grosseto, a combination repeated daily following an old tradition. Sheep rennet in the form of paste, skill, knowledge of local operators, and painstaking respect for the various production phases are the characteristic and unique ingredients of this cheese. The cheese, cylindrical in form, with flat sides, weighs between 20-kilos. The rind is thin, ivory, or straw-colored, often domed, the cheese itself being similarly colored, hard, compacted, or slightly holed. When ripened for a minimum of eight months, the slightly sharp taste of the variety, which requires at least five months of maturing, becomes intensely sharp, and pleasantly characteristic in the grating variety, which is seasoned for a minimum of eight months. All types of cheese are validated at their point of origin, and must bear on their rind elements which the Consorzio per la Tutela del Formaggio Pecorino Romano (Consortium for the Protection of Pecorino Romano Cheese), set up in 1979, have laid down: the name Pecorino Romano in writing, the logo in the form of a rhombus with rounded edges framing the stylised head of a sheep, with Pecorino Romano written below, the province of origin, cheese maker's code, year and month of production, and finally the details of PDO recognition.



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## Sardinia and Pecorino Romano P.D.O.

The year 2021 has been a significantly important year for sheep breeding in Sardinia. The increase in prices of raw materials and energy has caused significant problems for the breeding sector and the entrepreneurial realities of the region.

Pecorino Romano P.D.O. has changed its characteristics throughout the past years, getting closer to the tastes of its primary consumers and becoming an extremely versatile product, which is used not only for grating but also as the primary ingredient in many food preparations and ready-to-eat sauces, becoming a widely used product in Italian cuisine both on Italian territory and all around the world. Thanks to internal diversification and the policies promoted by the Protection Consortium, Pecorino Romano P.D.O. at low salt content and Pecorino Romano P.D.O. “di montagna” were born, significantly increasing the presence of this cheese on the tables of Italian families.

Furthermore, thanks to nationwide promotions and advertising such as various contests in hotel management schools, and participation in various exhibitions and in cooking shows, the worldwide knowledge about Pecorino Romano P.D.O. has increased, leading to an augmented appreciation of the product on a global level. All these factors have contributed to helping out the sheep breeding farms in Sardinia, which have therefore been able to continue the production of sheep milk and gain good revenues despite the increase in prices of raw materials.

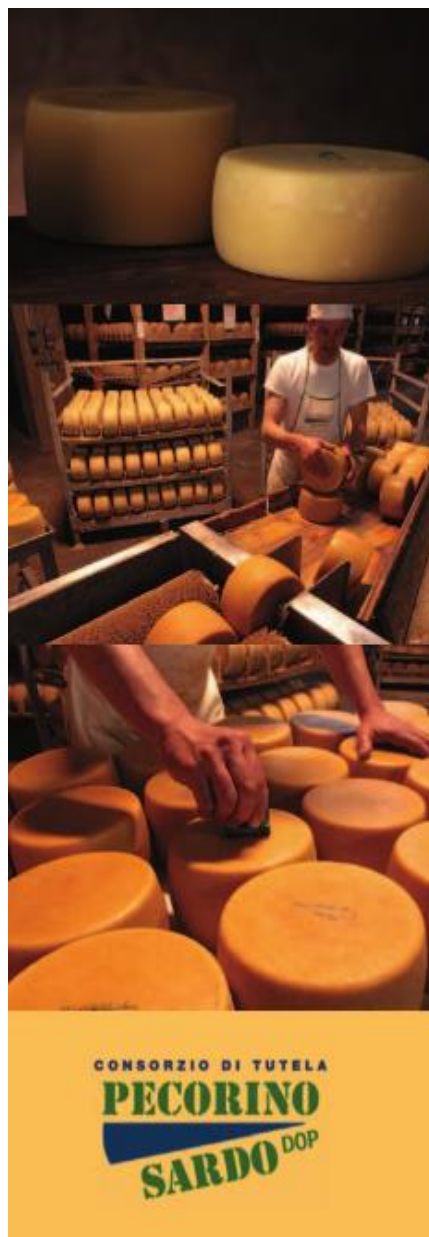
After the conflicts which occurred between sheep breeders and dairy transformers on the implementation of a productive program and the crisis of 2019 which culminated in the protests of the sheep breeders, the worldwide knowledge about Pecorino Romano P.D.O., together with its economical value, has furtherly increased, leading to a slight increase of the tons of product requested by consumers which totaled to about 342,027 tons in 2020/2021 and 326,022 tons in 2021/2022. The price trend of Pecorino Romano P.D.O. has been positive: after a drop to an average of 6,70 euro/kg in 2019, there has been a steady increase, reaching 8,80 euro/kg in 2020/2021 and 11,48 euro/kg in 2021/2022. Most recent data given by CLAL indicates the price range of Pecorino Romano P.D.O. in Milan being between 13,55 and 13,85 euro/kg on the 29th of December 2022.

The amount of exported cheese has increased in all countries (including Europe, Canada, and the United States) except Japan. Very important data comes from China, which has registered an increase in exports of 51,2%. (Written in collaboration with Dr. Giovanni Galistu and Dr. Gianfranco Gaias, heads of “Ufficio Tutela, Vigilanza e Ricerca”)

## PECORINO SARDO, Protected Designation of Origin (PDO) cheese

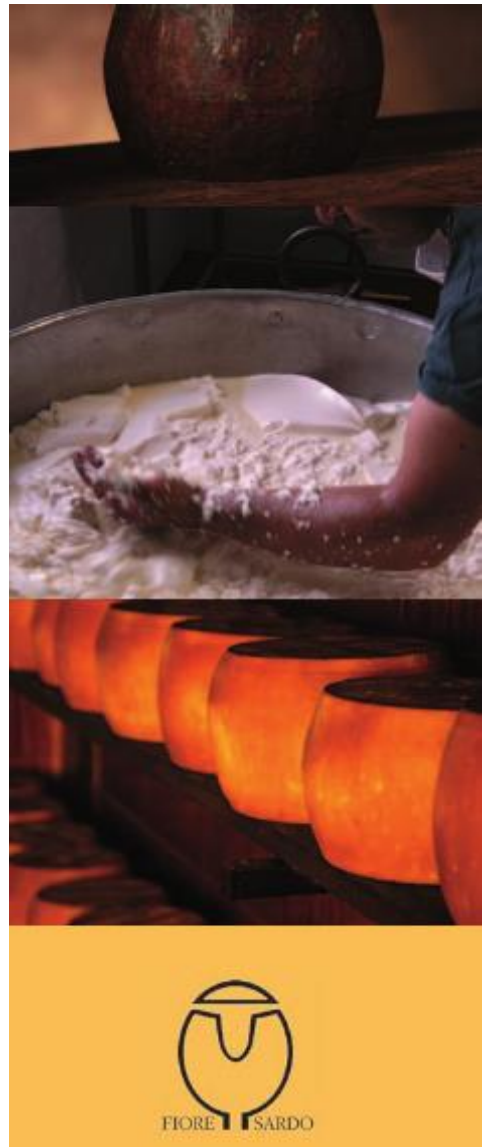
A sheep milk cheese, among the most highly-regarded in Sardinia, esteemed in the annals of Sardinian cheese making, which go back to the end of the eighteenth century. It has held the Denominazione d'Origine title since 1991, the first great award for a typical cheese representative of Sardinia, and PDO at the European level since 1996. The two categories of this cheese, Dolce and Maturo, are exclusively produced in Sardinia. Whole sheep milk, with the addition of lactic ferments from the zone of origin, coagulated with calf rennet, produces a cheese which, after semi-cottura (half-cooking) is placed in cylindrical molds. Next, the serum is carefully drained, and the cheese is salted and seasoned for a brief period (20-60 days), to obtain the Pecorino Sardo Dolce variety, while the Pecorino Sardo Maturo requires more than 2 months of seasoning. The cheese, cylindrical, with flat sides, with a straight or slightly curved rind, has variations depending on its method of manufacture. Pecorino Sardo Dolce, weighing between 1-2.3 kilos, has a smooth, soft rind, straw-white in color, becoming darker with ageing. The cheese itself is compact soft and elastic, sometimes with tiny holes. Mature examples are also denser, and more grainy. The taste is pleasantly sharp, in the table cheese. Pecorino Sardo Maturo, weighing from 1.7 to 4 kilos, has a smooth, consistent rind. The color is light straw, becoming darker with seasoning.

The cheese itself is compact, sometimes sparsely holed, white, tending towards straw-colored in matured examples, which are also denser and grainier. The taste is pleasantly sharp, making it an excellent product both for the table and for grating. The Product specifications of this PDO require PS DOP labeling together with the identity mark of the producer at the time of sale. The identification consists of a logo with the words Pecorino Sardo DOP, separated by a narrow blue cone, and a green or blue stamp, meaning either Pecorino Sardo Dolce or Pecorino Sardo Maturo.



## FIORE SARDO, Protected Designation of Origin (PDO) cheese

Mentioned in the 1951 Convention of Stresa addressing the use of cheese nomenclature of origin and denomination, it was recognized as a Denominazione Tipica cheese in 1955 and was awarded the Denominazione d'Origine in 1974; in 1996 it obtained the PDO rating. It is a Sardinian sheep milk cheese that is still made using the ancient techniques mentioned in the 4th century A.D., by the erudite Latin scholar, Palladio Rutilio Tauro Emiliano. Its name derives from the use, up to recent times, of chestnut wood molds bearing sculpted flower impressions, as well as the initials of the producer, which naturally transferred to the rind of the cheese. It is a hard cheese, made exclusively from whole sheep milk, fresh and raw, coagulated with goat or sheep rennet in form of paste. The shape of this cheese recalls the characteristic 'mule-back' form and derives from the special presses used. Cheeses are marked at the point of production, and after a short period under salt water are briefly smoked, then ripened in cool storage areas in central Sardinia. The average weight is 3.5 kilos, variations are due to production methods. The rind is somewhere between yellow and dark brown in color, the cheese itself is straw-colored, and the characteristic taste becomes more pronounced with maturation. Fiore Sardo DOP is an excellent table cheese when consumed young, as well as being a good grating cheese after maturation. The label bears the words Fiore Sardo DOP on the external crown, and inside the PDO logo, there is the stylized figure of a sheep and the PDO recognition label.



## SARDINIAN LAMB, Protected Geographical Indication (PGI)

Sardinian lamb PGI is small in size and its meat can be distinguished from other ones for its lean and white meat, for its strong smell, and high nutritive values. The meat is very tender and easy to digest, with a very strong taste.

Lamb-breeding is part of an ancient Sardinian tradition; its culture has been passed on through generations since the 17th century B.C. Sheep-farming dates back to the pre-Nuragic period, and written evidence has also been found in the Roman period. References to the marketing of lambs fill some documents of the 18th century, too. Rearing takes place in very natural environments, characterized by wide spaces highly exposed to sunshine and to the wind, typical of Sardinia island, whose climate meets perfectly the typical needs of this species.

The Sardinian lambs are divided into three types:

- Milk lambs: cold weight, without hide 5-7 kg, fed exclusively on their mother's milk
- Light: cold weight, without hide 7-10 kg, fed on mother's milk integrated with fodder and fresh and/or dried cereals
- Cutting: weight cold and without hide 10-13 kg, fed with mother's milk integrated with fodder and fresh and/or dried cereals

This type of lamb can only be Sardinian or first generation cross breeds with Ile De France and Berrichon Du Cher or other meat breeds which are highly specialized.

In 2012, 329,044 certified animals were slaughtered. This is an important goal for the entire chain, which groups 3,100 farmers, 28 slaughterers, and 4 scoops in the Consortium. In the last years, there have been steady increases, more than 50% in certified productions: from 69,000 animals in 2010, to 138,000 in 2011. In 2012 there have been 300,000 subjects.



## MARKET SITUATION OF PGI SARDINIAN LAMB MEAT AND FUTURE PERSPECTIVES

The dramatic increase of raw material prices and energy in the last years has significantly put at risk the profitability of sheep breeding, the fair of P.G.I. Sardinian lamb meat in the past year has shown the resilience of Sardinian farms. As a matter of fact, in 2021 and the first months of 2022, production and market quotations of P.G.I. products have increased.

Last year about 757 thousand P.G.I. lambs were slaughtered, representing 77% of the entire regional production and 64% of the Italian national production. Data on regional production show that the market quotations of the price of lambs are exclusively tied to the price of the P.G.I. product, allowing itself to find a proper place on the local and national market despite the market being in sharp contraction. The P.G.I. denomination has been achieved by 5100 farms, 28 slaughtering plants, and 14 portioning plants. The area with the highest number of sheep breeding farms is the Nuoro region (32%), followed by Sassari (28%), Cagliari (21%), and Oristano (19%). About 17% (845) employees of the consortium are women.

In 2021, a total of 4,972 tons of P.G.I. Sardinian Lamb meat has been sold, giving a revenue of over 62 million euros. Sardinian P.G.I. lamb meat has, on average, a 2 euro/kg price increase with respect to normal lamb meat. Export represents about 25% of the entire production, with a revenue of more than 15 million euros. This sales trend has contributed to increasing the market value of the product, especially during Christmas and Easter vacations, with the price reaching 5,54 euro/kg and 6,80 euro/kg respectively: this is the best result which has been achieved in the last 30 years. This data is the consequence of a higher request for P.G.I. products by consumers, trade agreements between our associates and great distribution enterprises, and the increase of controls by our inspectors over the lamb meat production line. In addition, the lack of the product in foreign markets caused by high transportation costs and logistic problems tied to the COVID-19 pandemic have furtherly contributed to a price increase of the final product. Nevertheless, the market value of lamb meat continues to face a downfall in the months of January and February due to the reduced consumption of the product: this shows how it is significantly important to diversify and seasonally adjust productions to increase national and international consumption of the product. Furthermore, an important price difference has been assessed between lamb meat from different regions of Italy, which is caused by different product types but also by the fact that there is a lack of stock market for market quotations of sheep meat: for this reason, important talks have been made with the Italian Ministry of Agriculture to create the first National Committee of sheep meat which will allow producers to have an official set of regulations regarding market prices.

Despite the COVID-19 pandemic, a variety of activities focused on the promotion and enhancement of the product took place in 2021 on Italian television, social media and various newspapers.

Investments have been made to promote the product in supermarkets and through road advertising. Furthermore, over 3 million stickers have been produced to increase the visibility of our P.G.I. product in grocery shop shelves. This commitment allowed to reach important goals, especially in the second half of the year 2021, obtaining market quotations that were significantly higher than in the past years. (Written in collaboration with Dr. A. Mazzette, Head of the Consortium for the guardianship of P.G.I. Sardinian Lamb)



## COLD CUTS AND SALAMI

The origin of Sardinian salt-cured meats and salami, dates back to the Punic-Phoenician period. These traditional products are found almost everywhere on the island. The Sardinian cured meats and dry sausages have unique and inimitable characteristics, as they are still produced with artisan methods, improved over thousands of years. Favorable environmental factors, together with the skill of the shepherds and farmers in processing meats, especially pork but also, to a lesser degree, mutton and goat meat, make these products unique and recognisable. From the well-known, flavorsome prosciutto, produced especially in the area of the Gennargentu massif, to the delicious sausages, dried for varying periods, and flavoured with local spices and herbs. Each producer has his own secret recipe, which has often been handed down from generation to generation and which makes the individual cold cut or sausage unique, so much so that experts can tell the place of origin of any one product simply from its taste and flavour. Among the other specialties, there are pancetta (bacon), in various types (straight, rolled, smoked, or unsmoked), salami, and pork cheek. Capocollo (neck cut) and the flavor of some lardo (cured fatback), complete the range of Sardinian salami and cold cuts, whose distinctive qualities derive from the genuine ingredients used and the traditional pastoral and farming culture which is still very much alive today.

