



LIFEMiCliFEEDGIS - This multi-scale Geographical Information System platform is a deliverable of the European project LIFE MiCliFeed (LIFE20 CCM/GR/001703) "Mitigating climate impact of small ruminants through innovative feeding approaches" (<https://www.lifemiclifeed.eu/>).

The LIFEMiCliFEEDGIS platform originates from the preparatory Action A1 – Mapping the potential of agro-industrial waste and byproducts, ruminant livestock farming systems and linkage with climate change. The LIFEMiCliFEEDGIS platform has been developed for France, Italy and Greece and uses as data layers: (i) the cultivated land surface; (ii) the yield, (iii) the amount of the waste derived from the industrial processing of grapes, citrus, tomatoes, carobs, pomegranates, hazelnuts, and olives and (iv) the small ruminant (sheep and goats) heads in each country.

The platform will be implemented continuously throughout the LIFE project (2020-2026) and the data will be used to assess the impact of extreme weather and climate events on the distribution of agricultural products and by-products.

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DATA SOURCE: DRAAF 2018-2021 (<https://agriculture.gouv.fr/mots-cles/draaf>), ELSTAT 2017-2019 (<https://www.statistics.gr/en/home/>), ISTAT 2018-2021 (<https://www.istat.it/en/>), EUROSTAT (https://ec.europa.eu/eurostat/databrowser/view/AGR_R_ANIMAL__custom_4570244/default/table), FAOSTAT (<https://www.fao.org/faostat/en/#data/QCL>) Web Map di [martina.nocerino_DICEA](https://www.fao.org/faostat/en/#data/QCL)

Grapes				
Country	Region	Cultivated area (hectares)	Yield (tonnes)	Estimated by-products (tonnes)
Greece	North Aegean	2,277.60	14,372.27	3,161.90
	South Aegean	3,097.20	13,437.09	2,956.16
	Attica	5,804.83	51,658.91	11,364.96
	Crete	6,123.13	92,083.02	20,258.26
	Epirus	737.10	4,958.78	1,090.93
	West Macedonia	1,649.40	14,659.68	3,225.13
	Central Macedonia	4,122.3	50,900.4	11,198.1
	East Macedonia and Thrace	2,257.4	27,460.1	6,041.2
	Ionian Islands	1,755.8	10,133.8	2,229.4
	Peloponnese	7,777.2	87,051.0	19,151.2
	West Greece	5,461.7	57,796.9	12,715.3
Central Greece	5,465.9	55,618.3	12,236.0	
Thessaly	3,942.8	49,313.5	10,849.0	
Italy	Abruzzo	29,930.1	446,749.6	98,284.9
	Puglia	85,398.6	1,348,916.0	296,761.5
	Basilicata	1,936.9	13,998.4	3,079.7
	Calabria	8,940.4	49,032.5	10,787.1
	Campania	24,678.4	205,059.3	45,113.1
	Emilia-Romagna	49,900.0	881,406.5	193,909.4
	Friuli-Venezia Giulia	24,313.0	264,876.6	58,272.9
	Lazio	20,309.4	200,340.6	44,074.9
	Liguria	1,696.4	11,536.5	2,538.0
	Lombardia	21,641.6	204,447.9	44,978.5
	Marche	15,465.0	138,705.1	30,515.1
	Molise	5,490.4	63,318.1	13,930.0
	Piemonte	41,888.3	351,313.8	77,289.0
	Sardegna	26,600.9	98,987.9	21,777.3
	Sicilia	109,229.7	695,634.7	153,039.6
	Toscana	54,228.1	376,247.2	82,774.4
	Trentino-Alto Adige	14,903.1	165,610.2	36,434.2
	Umbria	12,402.6	92,713.7	20,397.0
Valle d'Aosta	377.3	2,331.9	513.0	
Veneto	85,142.4	1,324,815.1	291,459.3	
France	Hauts-De-France	2,425.0		18,885.5
	Normandie	0.0		0.0
	Grand Est	48,087.7		358,003.3
	Bourgogne-Franche-Comté	34,280.0		140,097.2
	Nouvelle-Aquitaine	109,532.0		1,034,700.0
	Auvergne-Rhone-Alpes	47,115.5		221,742.5
	Provence-Alpes-Cote	85,441.5		390,500.0
	Occitanie	255,829.3		1,490,750.0
	Ile de France	0.0		0.0
	Centre Val de Loire	116,750.0		102,750.0
	Pays de la Loire	31,716.0		173,600.0
Bretagne	0.0		0.0	
Corse	5,978.3		35,914.1	

DISCLAIMER: For France, yield data (tonnes) are not available. Therefore, the processed quantities of grapes (hectolitres) have been mapped in place of the estimated by-products.

Olives						
Country	Region	Cultivated area (hectares)	Yield (tonnes)	Estimated by-products from traditional olive oil mills (m ²)	Estimated by-products from 3-phase olive oil mills (m ²)	Estimated by-products from 2-phase olive oil mills (m ²)
Greece	North Aegean	52,778.34	37,295.67	3,020.95	14,918.27	593.00
	South Aegean	8,311.91	20,835.57	1,687.68	8,334.23	331.29
	Attica	16,151.40	29,262.00	2,370.22	11,704.80	465.27
	Crete	188,514.94	519,655.04	42,092.06	207,862.02	8,262.52
	Epirus	14,788.97	81,789.86	6,624.98	32,715.94	1,300.46
	West Macedonia	226.19	1,256.53	101.78	502.61	19.98
	Central Macedonia	19,547.5	86,212.1	6,983.2	34,484.8	1,370.8
	East Macedonia and Thrace	9,610.8	43,703.9	3,540.0	17,481.6	694.9
	Ionian Islands	33,042.9	126,593.3	10,254.1	50,637.3	2,012.8
	Peloponnese	206,126.3	834,513.6	67,595.6	333,805.4	13,268.8
	West Greece	72,828.8	394,986.8	31,993.9	157,994.7	6,280.3
	Central Greece	45,901.4	145,405.7	11,777.9	58,162.3	2,312.0
	Thessaly	18,543.5	86,783.6	7,029.5	34,713.4	1,379.9
Italy	Abruzzo	41,199.0	121,569.1	9,847.1	48,627.6	1,932.9
	Puglia	372,150.0	739,802.1	59,924.0	295,920.8	11,762.9
	Basilicata	26,563.5	31,216.4	2,528.5	12,486.5	496.3
	Calabria	181,082.5	509,419.8	41,263.0	203,767.9	8,099.8
	Campania	73,766.5	155,098.9	12,563.0	62,039.6	2,466.1
	Emilia-Romagna	3,748.5	6,379.8	516.8	2,551.9	101.4
	Friuli-Venezia Giulia	240.0	1,056.1	85.5	422.4	16.8
	Lazio	77,996.0	128,637.0	10,419.6	51,454.8	2,045.3
	Liguria	12,370.0	18,760.6	1,519.6	7,504.2	298.3
	Lombardia	2,329.0	4,177.8	338.4	1,671.1	66.4
	Marche	9,112.0	22,890.2	1,854.1	9,156.1	364.0
	Molise	14,285.0	61,406.4	4,973.9	24,562.6	976.4
	Piemonte	104.5	148.2	12.0	59.3	2.4
	Sardegna	34,849.0	29,560.5	2,394.4	11,824.2	470.0
	Sicilia	146,872.0	285,885.9	23,156.8	114,354.4	4,545.6
	Toscana	79,850.0	93,587.5	7,580.6	37,435.0	1,488.0
	Trentino-Alto Adige	389.5	2,125.1	172.1	850.1	33.8
	Umbria	25,450.0	51,335.7	4,158.2	20,534.3	816.2
	Valle d'Aosta	1.0	4.0	0.3	1.6	0.1
	Veneto	5,159.0	15,929.0	1,290.3	6,371.6	253.3
France	Hauts-De-France	0.0	0.0	0.0	0.0	0.0
	Normandie	0.0	0.0	0.0	0.0	0.0
	Grand Est	0.0	0.0	0.0	0.0	0.0
	Bourgogne-Franche-Comté	0.0	0.0	0.0	0.0	0.0
	Nouvelle-Aquitaine	0.0	0.0	0.0	0.0	0.0
	Auvergne-Rhone-Alpes	0.0	0.0	0.0	0.0	0.0
	Provence-Alpes-Cote	55,061.0	1,407.2	114.0	562.9	22.4
	Occitanie	3,993.0	7,612.0	616.6	3,044.8	121.0
	Ile de France	0.0	0.0	0.0	0.0	0.0
	Centre Val de Loire	0.0	0.0	0.0	0.0	0.0
	Pays de la Loire	0.0	0.0	0.0	0.0	0.0
	Bretagne	0.0	0.0	0.0	0.0	0.0
Corse	2,116.7	176.3	14.3	70.5	2.8	

Hazelnuts				
Country	Region	Cultivated area (hectares)	Yield (tonnes)	Estimated by-products (tonnes)
Greece	North Aegean	0.00	0.00	0.00
	South Aegean	0.00	0.00	0.00
	Attica	0.00	0.00	0.00
	Crete	0.00	0.00	0.00
	Epirus	0.00	0.00	0.00
	West Macedonia	0.00	0.00	0.00
	Central Macedonia	0.0	0.0	0.0
	East Macedonia and Thrace	0.0	0.0	0.0
	Ionian Islands	0.0	0.0	0.0
	Peloponnese	0.0	0.0	0.0
	West Greece	0.0	0.0	0.0
	Central Greece	0.0	0.0	0.0
Thessaly	0.0	0.0	0.0	
Italy	Abruzzo	132.9	104.0	52.0
	Puglia	10.0	19.0	9.5
	Basilicata	43.9	94.1	47.0
	Calabria	314.1	710.6	355.3
	Campania	20,493.0	36,915.9	18,457.9
	Emilia-Romagna	56.8	89.8	44.9
	Friuli-Venezia Giulia	16.4	10.8	5.4
	Lazio	21,410.9	37,989.7	18,994.9
	Liguria	110.6	65.0	32.5
	Lombardia	58.3	52.2	26.1
	Marche	19.4	26.4	13.2
	Molise	119.3	338.2	169.1
	Piemonte	20,762.7	32,972.2	16,486.1
	Sardegna	149.9	371.9	185.9
	Sicilia	11,668.9	8,456.4	4,228.2
	Toscana	243.3	338.6	169.3
	Trentino-Alto Adige	3.0	0.8	0.4
	Umbria	110.0	234.0	117.0
Valle d'Aosta	1.7	2.8	1.4	
Veneto	355.3	577.8	288.9	
France	Hauts-De-France	0.0	0.0	0.0
	Normandie	0.0	0.0	0.0
	Grand Est	0.0	0.0	0.0
	Bourgogne-Franche-Comté	0.0	0.0	0.0
	Nouvelle-Aquitaine	3,772.5	9,352.0	4,676.0
	Auvergne-Rhone-Alpes	0.0	0.0	0.0
	Provence-Alpes-Cote	0.0	0.0	0.0
	Occitanie	1,308.8	2,364.7	1,182.3
	Ile de France	0.0	0.0	0.0
	Centre Val de Loire	0.0	0.0	0.0
	Pays de la Loire	0.0	0.0	0.0
	Bretagne	0.0	0.0	0.0
Corse	150.0	141.7	70.8	

Citrus				
Country	Region	Cultivated area (hectares)	Yield (tonnes)	Estimated by-products (tonnes)
Greece	North Aegean	0.25	2.35	1.29
	South Aegean	0.00	0.00	0.00
	Attica	0.25	2.54	1.39
	Crete	581.13	12,696.09	6,982.85
	Epirus	388.20	8,143.72	4,479.04
	West Macedonia	0.00	0.00	0.00
	Central Macedonia	0.0	0.0	0.0
	East Macedonia and Thrace	0.0	0.0	0.0
	Ionian Islands	0.5	6.9	3.8
	Peloponnese	1,864.0	52,185.6	28,702.1
	West Greece	366.5	7,092.6	3,900.9
	Central Greece	8.7	104.3	57.4
Thessaly	0.1	1.3	0.5	
Italy	Abruzzo	6.1	67.0	36.9
	Puglia	9,291.0	246,519.6	94,015.6
	Basilicata	5,997.4	111,581.3	53,400.5
	Calabria	36,174.7	811,715.3	321,100.0
	Campania	2,925.3	52,276.0	25,192.9
	Emilia-Romagna	0.0	0.0	0.0
	Friuli-Venezia Giulia	0.0	0.0	0.0
	Lazio	582.0	3,210.3	1,576.1
	Liguria	47.4	446.6	233.5
	Lombardia	1.0	8.0	4.4
	Marche	0.0	0.0	0.0
	Molise	8.3	152.1	77.1
	Piemonte	0.0	0.0	0.0
	Sardegna	4,020.7	69,978.9	33,306.5
	Sicilia	81,188.1	1,493,628.6	792,475.9
	Toscana	13.9	165.0	77.1
	Trentino-Alto Adige	0.0	0.0	0.0
	Umbria	0.0	0.0	0.0
Vale d'Aosta	0.0	0.0	0.0	
Veneto	0.0	0.0	0.0	
France	Hauts-De-France	0.0	0.0	0.0
	Normandie	0.0	0.0	0.0
	Grand Est	0.0	0.0	0.0
	Bourgogne-Franche-Comté	0.0	0.0	0.0
	Nouvelle-Aquitaine	0.0	0.0	0.0
	Auvergne-Rhone-Alpes	0.0	0.0	0.0
	Provence-Alpes-Cote	0.0	0.0	0.0
	Occitanie	0.0	0.0	0.0
	Ile de France	0.0	0.0	0.0
	Centre Val de Loire	0.0	0.0	0.0
	Pays de la Loire	0.0	0.0	0.0
	Bretagne	0.0	0.0	0.0
Corse	1,599.0	38,959.0	11,434.0	

Tomatoes				
Country	Region	Cultivated area (hectares)	Yield (tonnes)	Estimated by-products (tonnes)
Greece	North Aegean	0.23	6.23	0.31
	South Aegean	110.33	1,309.51	65.48
	Attica	8.40	381.64	19.08
	Crete	3.47	101.89	5.09
	Epirus	2.67	60.81	3.04
	West Macedonia	30.77	1,336.94	66.85
	Central Macedonia	336.2	18,323.7	916.2
	East Macedonia and Thrace	122.4	6,406.1	320.3
	Ionian Islands	4.6	110.5	5.5
	Peloponnese	1.5	51.7	2.6
	West Greece	1,382.6	101,609.0	5,080.4
	Central Greece	837.3	57,379.7	2,869.0
Thessaly	2,658.8	192,098.5	9,604.9	
Italy	Abruzzo	1,162.9	55,318.3	2,765.9
	Puglia	18,752.9	1,612,383.1	80,619.2
	Basilicata	2,159.1	119,977.0	5,998.9
	Calabria	2,767.0	114,551.8	5,727.6
	Campania	3,949.9	240,318.3	12,015.9
	Emilia-Romagna	25,931.1	1,862,342.9	93,117.1
	Friuli-Venezia Giulia	8.2	260.2	13.0
	Lazio	2,060.4	109,288.6	5,464.4
	Liguria	0.0	0.0	0.0
	Lombardia	7,680.3	539,571.7	26,978.6
	Marche	25.0	999.9	50.0
	Molise	842.9	55,725.7	2,786.3
	Piemonte	1,588.4	107,150.1	5,357.5
	Sardegna	406.3	30,870.3	1,543.5
	Sicilia	4,605.7	70,617.9	3,530.9
	Toscana	2,141.7	123,141.3	6,157.1
	Trentino-Alto Adige	6.0	151.2	7.6
	Umbria	268.6	11,674.0	583.7
	Valle d'Aosta	0.0	0.0	0.0
Veneto	1,975.1	119,654.0	5,982.7	
France	Hauts-De-France	0.0	0.0	0.0
	Normandie	0.0	0.0	0.0
	Grand Est	0.0	0.0	0.0
	Bourgogne-Franche-Comté	0.0	0.0	0.0
	Nouvelle-Aquitaine	1,018.5	120,005.0	6,000.3
	Auvergne-Rhone-Alpes	439.0	46,345.7	2,317.3
	Provence-Alpes-Cote	1,482.0	163,467.5	8,173.4
	Occitanie	682.0	59,143.8	2,957.2
	Ile de France	0.0	0.0	0.0
	Centre Val de Loire	0.0	0.0	0.0
	Pays de la Loire	235.3	93,240.0	4,662.0
	Bretagne	536.0	169,547.0	8,477.0
	Corse	51.0	52,603.3	2,630.2

Pomegranates				
Country	Region	Cultivated area (hectares)	Yield (tonnes)	Estimated by-products (tonnes)
Greece	North Aegean	3.10	18.53	9.26
	South Aegean	29.80	480.09	240.04
	Attica	17.72	285.88	142.94
	Crete	71.25	1,094.37	547.18
	Epirus	83.24	950.49	475.24
	West Macedonia	11.73	172.17	86.08
	Central Macedonia	904.7	8,535.6	4,267.8
	East Macedonia and Thrace	587.0	7,725.9	3,863.0
	Ionian Islands	5.8	93.3	46.6
	Peloponnese	304.6	5,216.0	2,608.0
	West Greece	220.8	3,610.7	1,805.4
	Central Greece	402.7	5,655.7	2,827.8
	Thessaly	357.5	5,179.8	2,589.9
	Italy	Abruzzo	0.0	0.0
Puglia		212.0	3,245.1	1,622.5
Basilicata		0.0	0.0	0.0
Calabria		35.4	417.5	208.8
Campania		10.2	196.8	98.4
Emilia-Romagna		31.0	147.1	73.6
Friuli-Venezia Giulia		9.0	82.5	41.3
Lazio		40.1	562.8	281.4
Liguria		0.0	0.0	0.0
Lombardia		8.3	78.5	39.2
Marche		1.0	22.6	11.3
Molise		0.0	0.0	0.0
Piemonte		0.0	0.0	0.0
Sardegna		3.7	51.7	25.8
Sicilia		306.3	3,311.8	1,655.9
Toscana		13.0	181.7	90.9
Trentino-Alto Adige		0.0	0.0	0.0
Umbria		0.0	0.0	0.0
Valle d'Aosta	0.0	0.0	0.0	
Veneto	152.3	2,851.7	1,425.8	
France	Hauts-De-France	0.0	0.0	0.0
	Normandie	0.0	0.0	0.0
	Grand Est	0.0	0.0	0.0
	Bourgogne-Franche-Comté	0.0	0.0	0.0
	Nouvelle-Aquitaine	0.0	0.0	0.0
	Auvergne-Rhone-Alpes	0.0	0.0	0.0
	Provence-Alpes-Cote	0.0	0.0	0.0
	Occitanie	0.0	0.0	0.0
	Ile de France	0.0	0.0	0.0
	Centre Val de Loire	0.0	0.0	0.0
	Pays de la Loire	0.0	0.0	0.0
	Bretagne	0.0	0.0	0.0
	Corse	0.0	0.0	0.0

Carobs				
Country	Region	Cultivated area (hectares)	Yield (tonnes)	Estimated by-products (tonnes)
Greece	North Aegean	0.00	0.00	0.00
	South Aegean	0.00	0.00	0.00
	Attica	0.00	0.00	0.00
	Crete	0.00	0.00	0.00
	Epirus	0.00	0.00	0.00
	West Macedonia	0.00	0.00	0.00
	Central Macedonia	0.0	0.0	0.0
	East Macedonia and Thrace	0.0	0.0	0.0
	Ionian Islands	0.0	0.0	0.0
	Peloponnese	0.0	0.0	0.0
	West Greece	0.0	0.0	0.0
	Central Greece	0.0	0.0	0.0
	Thessaly	0.0	0.0	0.0
Italy	Abruzzo	0.0	0.0	0.0
	Puglia	109.0	558.6	391.0
	Basilicata	0.0	0.0	0.0
	Calabria	0.0	0.0	0.0
	Campania	0.0	0.0	0.0
	Emilia-Romagna	0.0	0.0	0.0
	Friuli-Venezia Giulia	0.0	0.0	0.0
	Lazio	2.0	32.9	23.0
	Liguria	0.0	0.0	0.0
	Lombardia	0.0	0.0	0.0
	Marche	0.0	0.0	0.0
	Molise	0.0	0.0	0.0
	Piemonte	0.0	0.0	0.0
	Sardegna	195.0	586.7	410.7
	Sicilia	5,430.0	32,870.8	23,009.5
	Toscana	0.0	0.0	0.0
	Trentino-Alto Adige	0.0	0.0	0.0
	Umbria	0.0	0.0	0.0
Valle d'Aosta	0.0	0.0	0.0	
Veneto	0.0	0.0	0.0	
France	Hauts-De-France	0.0	0.0	0.0
	Normandie	0.0	0.0	0.0
	Grand Est	0.0	0.0	0.0
	Bourgogne-Franche-Comté	0.0	0.0	0.0
	Nouvelle-Aquitaine	0.0	0.0	0.0
	Auvergne-Rhone-Alpes	0.0	0.0	0.0
	Provence-Alpes-Cote	0.0	0.0	0.0
	Occitanie	0.0	0.0	0.0
	Ile de France	0.0	0.0	0.0
	Centre Val de Loire	0.0	0.0	0.0
	Pays de la Loire	0.0	0.0	0.0
	Bretagne	0.0	0.0	0.0
	Corse	0.0	0.0	0.0

Sheep and goats						
Country	Region	N. of sheep (thousand heads)	N. of goats (thousand heads)	Surface (km ²)	Density of sheep (heads/km ²)	Density of sheep (heads/km ²)
Greece	North Aegean	446	90	3,836	116	23
	South Aegean	160	179	5,286	30	34
	Attica	56	21	3,808	15	6
	Crete	1,828	519	8,336	219	62
	Epirus	552	135	9,203	60	15
	West Macedonia	370	138	9,451	39	15
	Central Macedonia	700	390	18,811	37	21
	East Macedonia and Thrace	452	313	14,157	32	22
	Ionian Islands	109	105	2,307	47	46
	Peloponnese	391	370	15,490	25	24
	West Greece	1,301	386	11,350	115	34
	Central Greece	460	312	15,549	30	20
Thessaly	1,029	319	14,037	73	23	
Italy	Abruzzo	202	22	10,830	19	2
	Puglia	208	48	19,540	11	2
	Basilicata	246	57	10,070	24	6
	Calabria	245	117	15,220	16	8
	Campania	209	46	13,670	15	3
	Emilia-Romagna	62	25	22,440	3	1
	Friuli-Venezia Giulia	16	6	7,930	2	1
	Lazio	722	36	17,230	42	2
	Liguria	17	8	5,460	3	1
	Lombardia	142	108	23,860	6	5
	Marche	151	16	9,400	16	2
	Molise	88	12	4,460	20	3
	Piemonte	120	76	25,390	5	3
	Sardegna	3,190	266	24,090	132	11
	Sicilia	695	100	25,830	27	4
	Toscana	381	25	22,980	17	1
	Trentino-Alto Adige	78	39	13,600	6	3
	Umbria	156	6	8,460	18	1
Valle d'Aosta	2	5	3,260	1	2	
Veneto	54	23	18,340	3	1	
France	Hauts-De-France	145	6	31,813	5	0
	Normandie	142	10	29,906	5	0
	Grand Est	369	14	57,433	6	0
	Bourgogne-Franche-Comté	267	43	47,784	6	1
	Nouvelle-Aquitaine	1,682	445	84,061	20	5
	Auvergne-Rhone-Alpes	856	182	69,711	12	3
	Provence-Alpes-Cote	826	38	31,400	26	1
	Occitanie	2,342	180	72,724	32	2
	Ile de France	15	2	12,011	1	0
	Centre Val de Loire	171	132	39,151	4	3
	Pays de la Loire	126	171	32,082	4	5
	Bretagne	77	35	27,208	3	1
Corse	107	43	8,680	12	5	