

# Gilthead seabream (*Sparus aurata*) statistics summary



## Summary

Gilthead seabream is the 33<sup>rd</sup> most reared fish in worldwide aquaculture [1]. The main producer is Turkey accounting 38.54% of worldwide production followed by Greece with 21.43% of all production. While production was stable in Greece and Spain, Turkey and Egypt have heavily increased production. Turkey surpassed Greece and Egypt surpassed Spain since 2015. Still, main worldwide exporter is Greece followed by Turkey, although Turkey exportations value is much smaller than Greece’s. Difference between size prices per kg have been dwindling over time, and recently, partially caused by the COVID pandemic the difference between size prices is almost not existent. It seems that the wholesale has been decreasing, but surprisingly the price for the customer has increased. Gilthead seabream experience a mortality of 20% over the full grow-out stage. It has been reported that 16% of gilthead seabream experience Winter syndrome, a multifactorial pathology that weakens them and can lead to dead caused by low water temperature and incapacity to migrate to avoid it.

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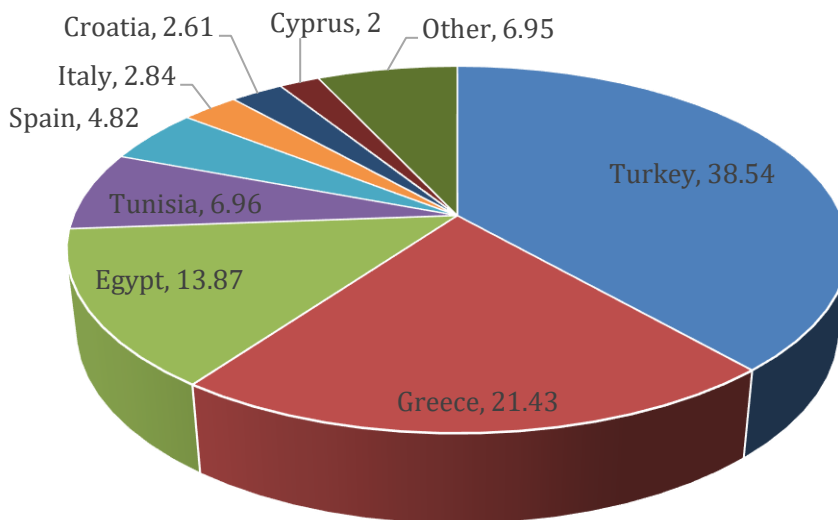
## Production

### World

- Total gilthead seabream world production in 2019 was estimated at 258,754 Tn [1].
- Turkey leads world production owning a 38.54% share of production, followed by Greece with 21.43% and Egypt with 13.87% (Table 1, Figure 1).

Table 1. Gilthead seabream production 2019. Top 10 global production countries [1].

Country	Production (Tonnes)	Share of global production (%)	Estimated <sup>1</sup> production by numbers (millions)
Turkey	99,730	38.54	50 - 399
Greece	55,452	21.43	28 - 222
Egypt	35,880	13.87	18 - 144
Tunisia	18,017	6.96	9 - 72
Spain	12,475	4.82	6 - 50
Italy	7,350	2.84	4 - 29
Croatia	6,750	2.61	3 - 27
Cyprus	5,168	2	3 - 21
Israel	2,950	1.14	1 - 12
Albania	2,450	0.95	1 - 10



■ Turkey ■ Greece ■ Egypt ■ Tunisia ■ Spain ■ Italy ■ Croatia ■ Cyprus ■ Other

Figure 1. Share of global Gilthead seabream production 2019 (%). Other includes countries among 10 top countries with less than 2% share.

<sup>1</sup> Fish numbers obtained using a range of estimated mean weight: 0.250–2 kg [15]

- Differently to seabass, gilthead seabream has increased constantly from approximately 87,303 Tn in 2000 to 258,754 Tn in 2019 [1].
- Turkey has led the increase of production while Greece, their main competitor, kept a more constant production (Figure 2).

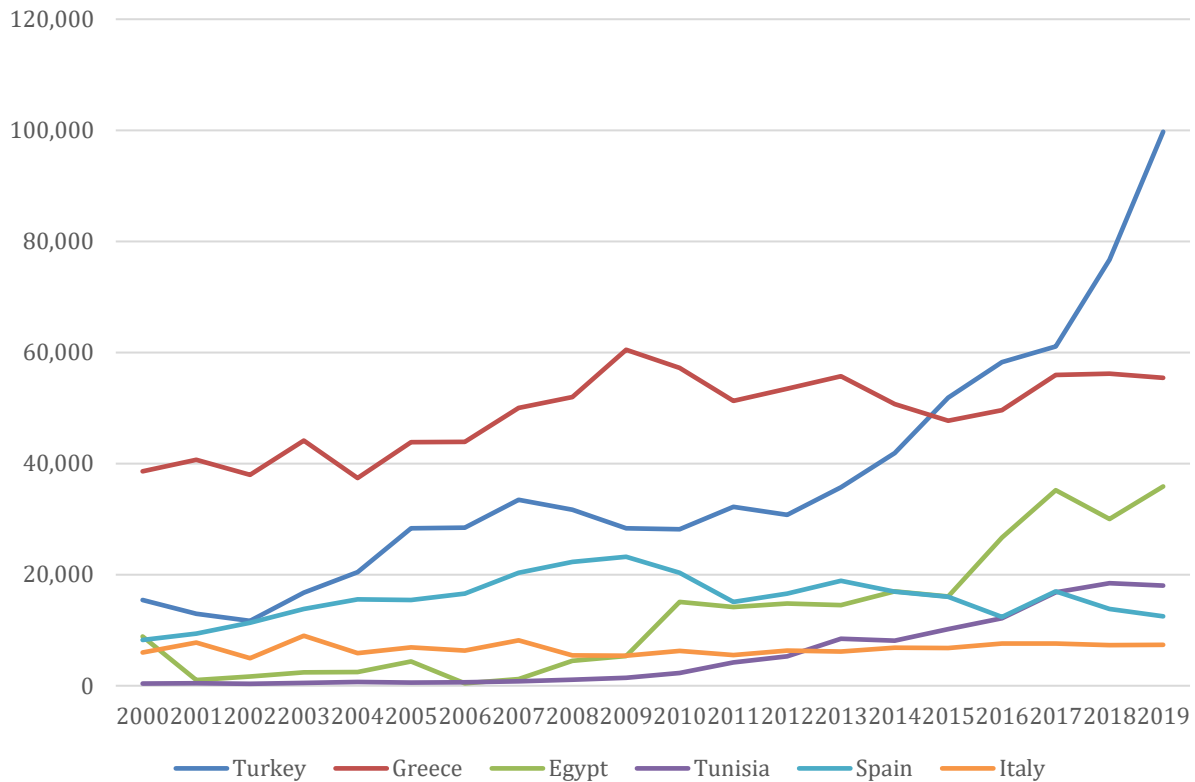


Figure 2. Production of Gilthead seabream (tonnes) 2000-2019 of the six top producer countries in 2019.

- Egypt is the 3<sup>rd</sup> producer with a share of 13.87% (Table 1). It overcame Italy in 2009 and Spain in 2015 when they started a high growing period until 2017 (Figure 2).
- Tunisia is now the 4<sup>th</sup> producer with a share of 6.96% (Figure 1, Table 1). It has been increasing production continuously since 2010, sometimes even doubling production from year to year. Tunisia surpassed Italy in 2012, and Spain in 2017 (Figure 2).

Table 2. EU27 gilthead seabream 2019 production (Tn) by country, including share of EU production and estimated number of fish

Country	Production (Tonnes)	Share of EU production (%)	Estimated <sup>2</sup> production by numbers (millions)
Greece	55,452	59.22	28 - 222
Spain	12,475	13.32	6 - 50
Italy	7,350	7.85	4 - 29
Croatia	6,750	7.21	3 - 27
Cyprus	5,168	5.52	3 - 21
France	2,344	2.5	1 - 9
Portugal	2,316	2.47	1 - 9
Malta	1,783	1.9	1 - 7

EU

- In 2019, EU27 produced 93,639 Tn which is between 46 and 368 million of fish<sup>2</sup>. It is a 36.19% of the worldwide production [1].
- EU27 2019 production is led by Greece and Spain, with 59.2% and 13.3% of EU gilthead seabream production (Table 2) [1].

Table 3. Change of production from 2000 to 2018 in the most 5 most productive EU countries [1].

Country	% of change
Greece	45.65
Spain	67.56
Italy	21.94
Croatia	598.87
Cyprus	252.96

- From 2000 production has increased over all the EU by 50% due to increase of productions in all main producer countries. The countries that increased the production the most were Croatia that multiply its production almost by 6 and Cyprus that double it between 2000 and 2018 (Table 3).

## Trade

### World

- Largest exporter by volume worldwide is Greece with 52,879 Tn followed very closely by Turkey with 52,516 Tn (Table 4) [1].
- Greece and Turkey do not differentiate each other a lot by volume, but by value the difference is bigger. Greece owns a 45% of exports while Turkey owns 32% (Table 4) [1].
- Italy is the largest importer in the world by volume with 34,912 Tn followed by Portugal with 13,351 Tn (Table 4) [1].

### EU

- EU 27 gilthead seabream exports accounts for 59% of world exports by volume.
- Exports are led by Greece (Table 4) and followed by Italy when accounted by volume, but when accounted by value Croatia is second in exports among EU 27 on 2018 (Table 4) [1].
- Italy is the third exporter by volume, but Croatia and Spain export less volume at a higher value (Table 4).
- A 90% of worldwide imports are done by EU 27 countries, which accounts for 70% of world exports [2].
- Italy leads imports of EU 27 followed by Portugal (Table 4) both by volume and value.

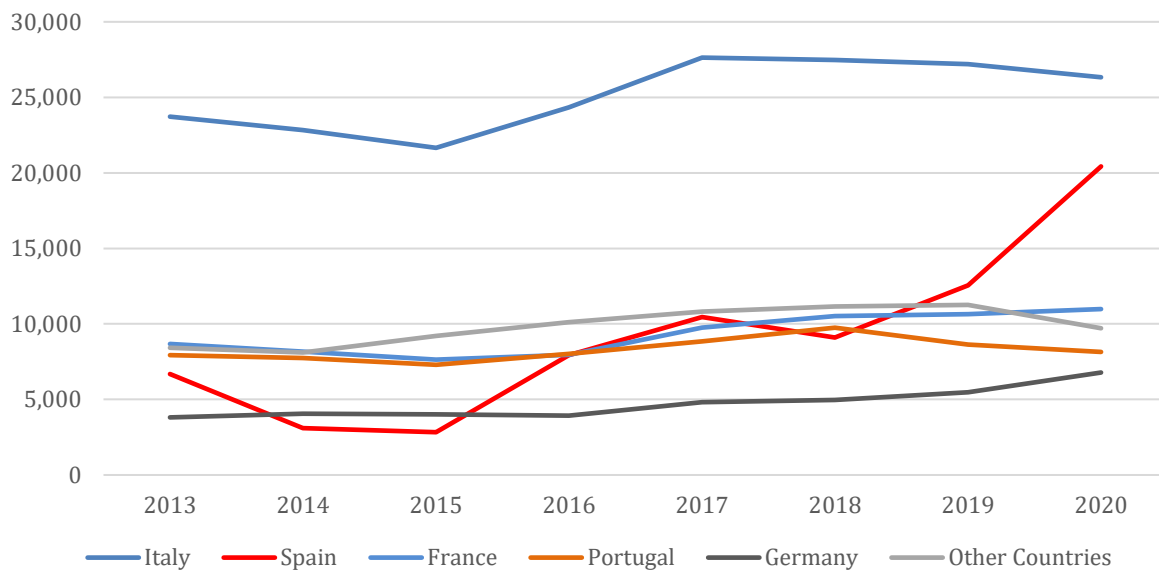


Figure 3. Intra EU-27 imports by volume (Tn). 5 main destination countries and Other countries 2013-2020 [3].

- Main destination for EU27 Gilthead seabream is Italy, with a 32% share of all intra-EU27 imports [3], which represents 26,300 Tn (Figure 3).
- Spanish imports have increased since 2015 almost continuously with a steep increase between 2019 and 2020, from 12,000 to 20,000 Tn of imports, which corresponds to an increase from 16% to 25% of EU27 Gilthead seabream imports [3] (Figure 3).

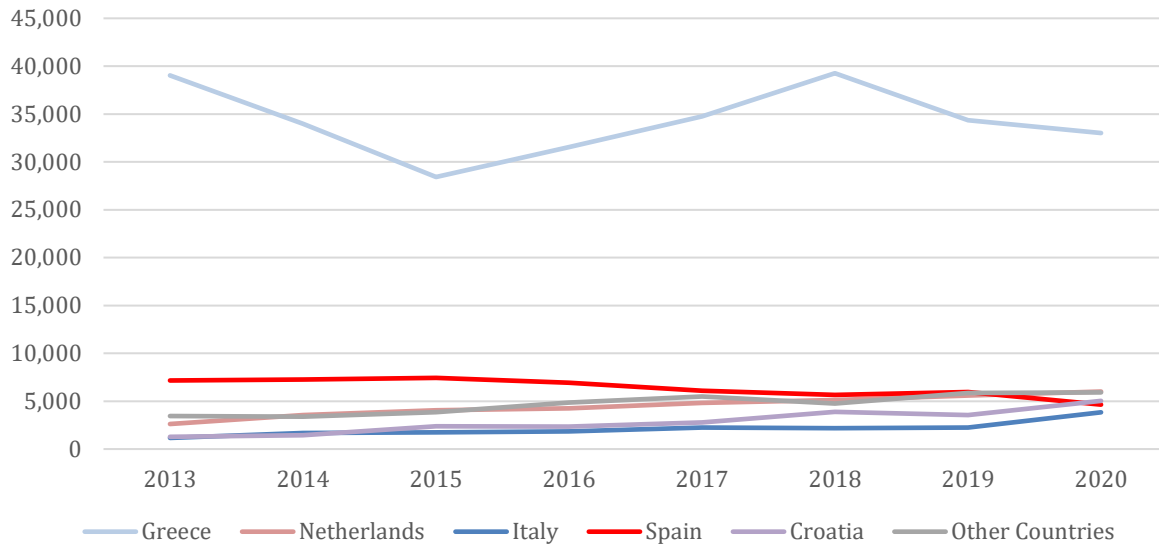


Figure 4. Main 5 countries and Other countries for origin of European seabass intra EU-27 imports by volume (Tn) 2013-2020 [3].

- Greece has been the main exporter of Gilthead seabream to other EU27 countries, exporting a total of 33,000 Tn within EU27. Share of exports has decreased from 70% in 2013 and stabilized over 56% in 2020 [3] (Figure 4).
- Share decrease has been due to increase mostly of Croatia and Netherland exports to EU27, reaching 8.61% the first and 10,28% share in 2020. Netherland's 6,000 Tn of Gilthead seabream exports to other EU-27 countries is of external EU origin and not from own production [1][3] (Figure 4).

#### UK

- United Kingdom does not export Gilthead seabream, but imports 2,365 Tn in 2018 placing UK as the 9<sup>th</sup> importer worldwide.

Table 4. Worldwide gilthead seabream exports and imports in 2018, by volume and by value.

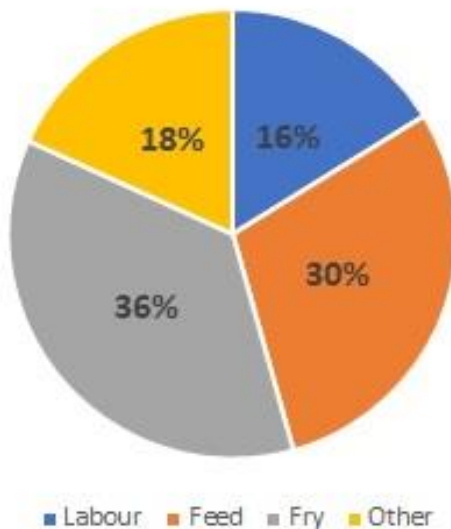
Exports					
Country	Quantity(Tonnes)	Share(%)	Country	Value (USD x 1000)	Share (%)
<b>World</b>	<b>130,042</b>		<b>World</b>	<b>653,011</b>	
Greece	52,879	40.66	Greece	281,057	43.04
Turkey	52,516	40.38	Turkey	214,330	32.82
Italy	4,649	3.57	Croatia	28,142	4.31
Netherlands	3,975	3.06	Spain	26,297	4.03
Croatia	3,819	2.94	Italy	25,966	3.98
Cyprus	3,382	2.60	Netherlands	23,037	3.53
Spain	3,285	2.53	Cyprus	19,810	3.03
Malta	1,983	1.52	Malta	10,205	1.56
Germany	1,457	1.12	Germany	8,812	1.35
France	869	0.67	France	6,963	1.07
Imports					
Country	Quantity(Tonnes)	Share(%)	Country	Value (USD x 1000)	Share(%)
<b>World</b>	<b>100,584</b>		<b>World</b>	<b>531,834</b>	
Italy	34,912	34.71	Italy	179,286	33.71
Portugal	13,351	13.27	Portugal	77,526	14.58
France	10,870	10.81	France	58,497	11.00
Spain	7,774	7.73	Spain	39,642	7.45
Greece	6,463	6.43	Germany	34,987	6.58
Netherlands	6,344	6.31	Netherlands	32,628	6.13
Germany	6,343	6.31	Greece	26,701	5.02
Israel	3,060	3.04	Israel	20,741	3.90
UK	2,635	2.62	UK	13,063	2.46
Romania	1,268	1.26	Romania	6,583	1.24

## Price vs Cost

### Cost

- It is difficult to find an updated production cost and cost structure for Gilthead seabream, and we must rely in published papers and reports that are not always update or accurate on their data, due to reporting different kind of costs and at different distribution stages. Also, cost production of seabream comes mixed with the cost of seabass in most publication making difficult to work with differentiated costs.
- Production cost varies between publications:
  - In study in Spanish seabream in 2002, the production cost was an average of 8.12 €/kg in Canary Islands farms and 8.74 €/kg for Mediterranean farms [4].
  - The University of Wageningen reports a production cost for France, Italy and Spain in 2016 of 6.41 €/kg for conventional production and 8.61 €/kg for organic production [5] (seabass and seabream). Contrary to this, a case study from EUMOFA in 2014 puts the ex-farm price for fresh Gilthead seabream bought by Italy at 4.20 €/kg which indicates a smaller production cost, that they are selling at smaller price than production cost or they are considering different element in the cost calculation [6], it is likely that this seabream is from Greek origin due to the volume imported from Greece by Italy.

Spain Seabream 2002



Europe Seabream & Seabass 2020

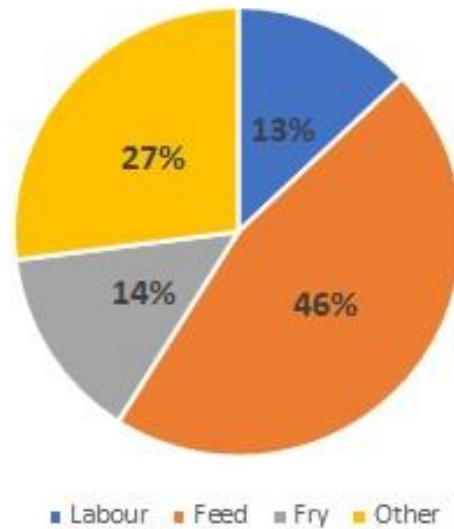


Figure 5: Average cost structure for Spanish seabream in 2002 [4] and reported in a case study for seabream and seabream in 2020 [7].



- Feed is the main cost of production (Figure 5) although seems that in 2002 in Spain obtaining juveniles was a bigger portion of the cost than it is reported in 2020 at an European level. This might be due to not having a source of juveniles within potentially new companies or in the same country.
  - The report at a Europe level explains as a common “industrial aquaculture” structure.
- University of Wageningen reports a cost structure that seems to fall between 2002 and 2020 (Table 5).

Table 5. Production cost structure (% of the total cost) for Gilthead seabream from different locations, systems, and years. Only data for Spain 2002 is data only for Gilthead seabream. The other data is seabass and seabream combined.

	Spain 2002 [4]	France, Italy & Spain 2016 [5]		Europe 2020 [7]	Average
		No organic	Organic		
Feed	29.45	32.4	36.15	46	36.00
Juveniles	36.16	18.79	22.64	14	22.90
Labour	16.19	16.42	13.96	13	14.89
Other	18.20	32.4	27.25	27	26.21

Price

- The price for European seabass changes depending on the size of the fish. There are three sizes:
  - Small: 300 – 400 g.
  - Medium: 400 – 600 g.
  - Big: more than 600 g
- Small size and medium size have never been very well differentiated by price and always overlap. The big size was differentiated until the middle of 2018 that the price fell and started to overlap with the medium and the small sizes (Figure 6) [8].

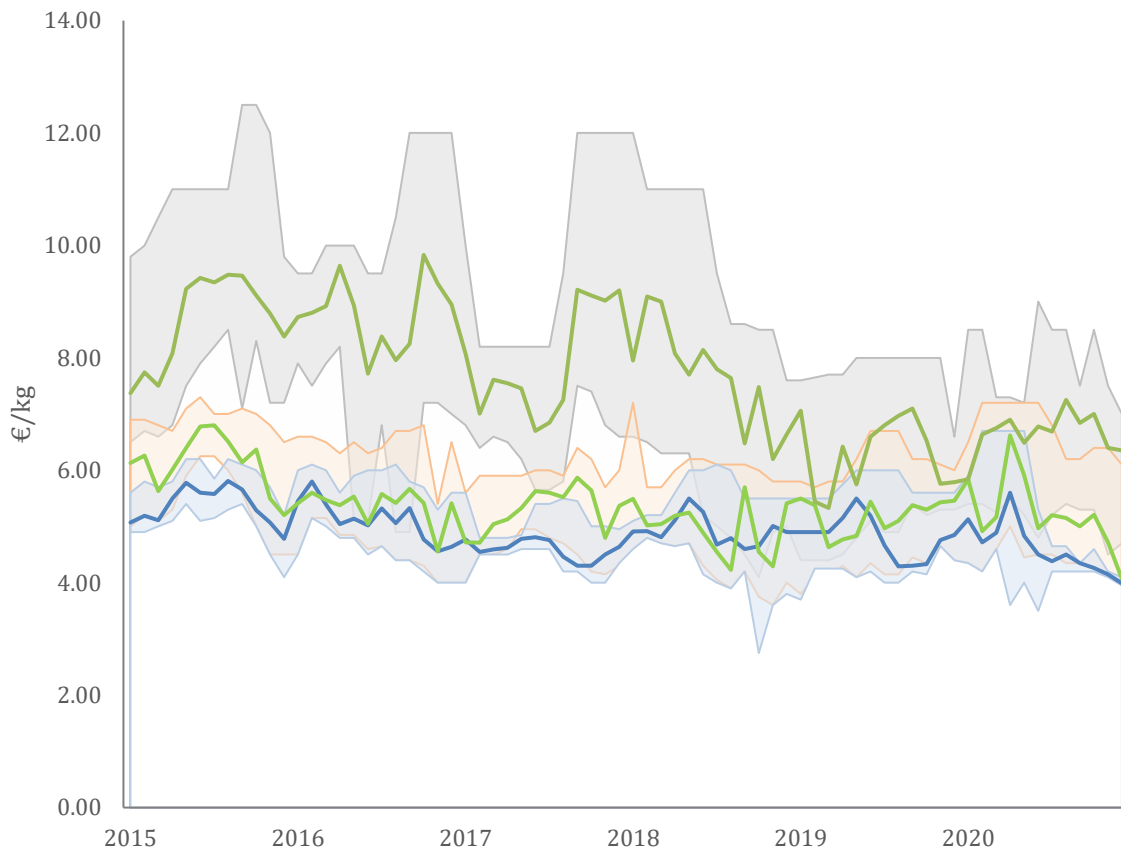


Figure 6. Wholesale price (€/kg) of Gilthead seabream from 2015 to 2020 in Mercamadrid by size: blue small, green medium, grey big. Shadowed area indicates the min and max price. The line indicates the most frequent price. [8]

- Information from the Spanish Ministry of Agriculture seems to correspond to the medium size (400-600 g) which is commonly call as “ration seabream”.
- Both the wholesale and origin price decrease slightly from 2016 until 2019 when it seems to stabilize. Contrary to this, the price for the public increases since 2015 with an average difference of 2 € with the wholesale price.

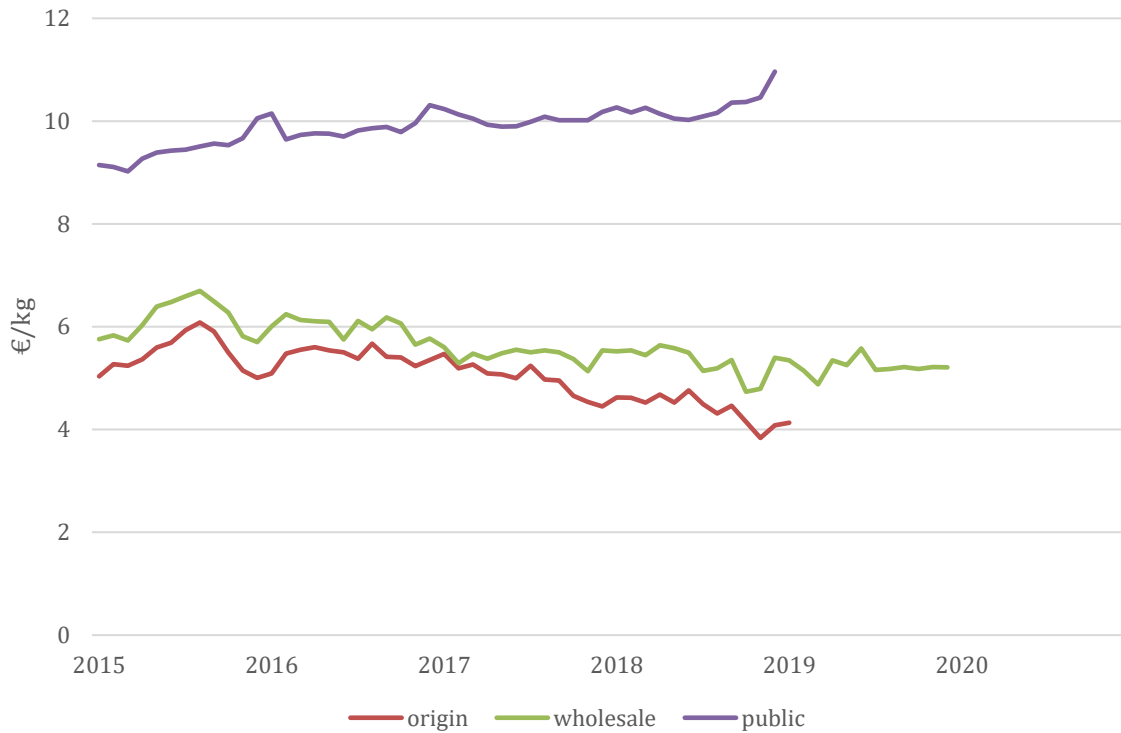


Figure 7. Price (€/kg) of Gilthead seabream from 2015 to 2020 in origin, wholesale and to the public [9].

### Consumption

Due to the lack of direct data apparent consumption was calculated similar to Llorente et al. 2020 [10], where consumption is calculated in the following manner:

$$\text{Aquaculture production} + \text{Fishing production} + \text{Imports} - \text{Exports} = \text{Apparent consumption}$$

Original data were extracted from FAO statistics dataset [1]. This form of estimating apparent consumption resulted in a group of countries with negative values of consumption due to exporting more than what they produced or imported. This is obviously not correct and highlights that FAO data are dependent upon countries reporting.

#### World

- Gilthead seabream is most consumed in Europe with an estimated apparent consumption of 115,002 Tn followed from a big distance by Africa with 55,146 Tn.
- Italy is the first consumer worldwide of Gilthead seabream with 38,626 Tn of consumption.
- Egypt is the 2<sup>nd</sup> with 31,799 Tn and Tunisia is the 4<sup>th</sup> with 20,039 Tn. The sum of both corresponds to most of Africa consumption [1].
- Turkey is the 3<sup>rd</sup> country with highest consumption of Gilthead seabream with 24,815 Tn, which accounts for most of Asia consumption.

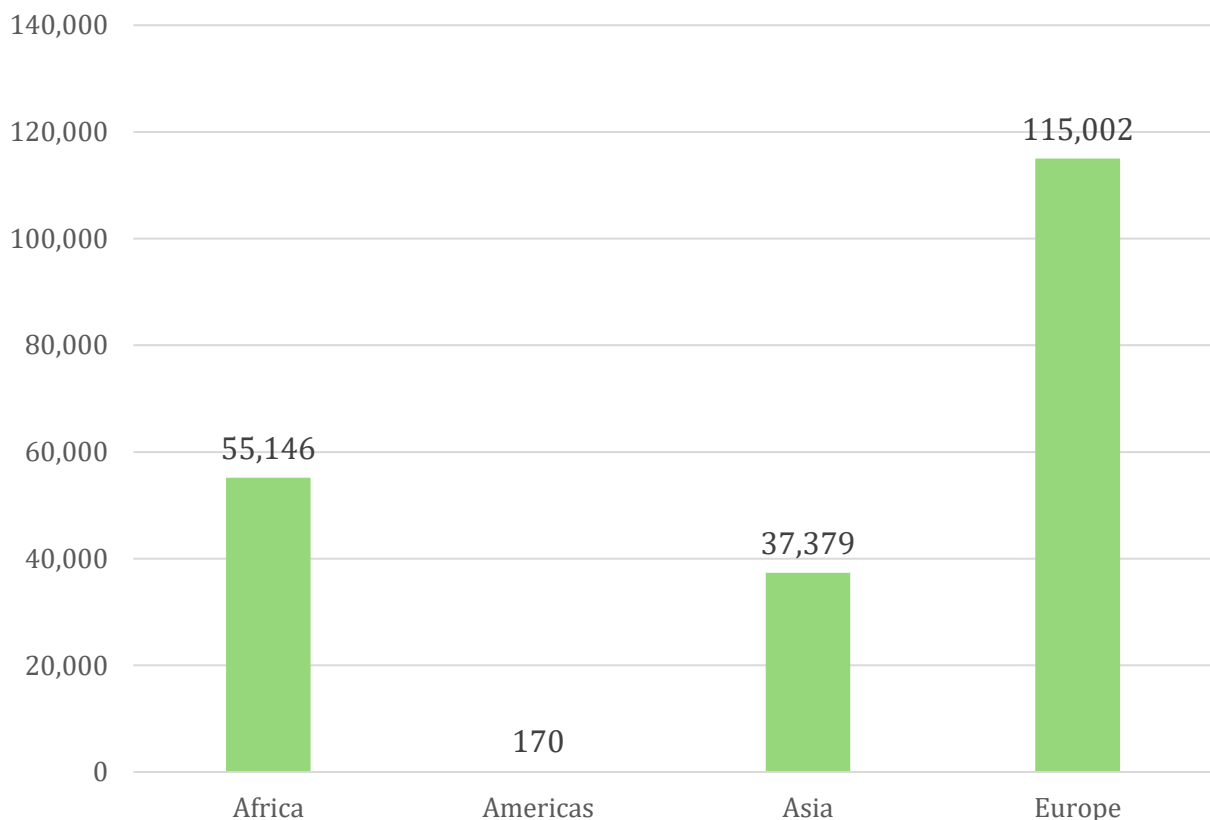


Figure 8. Estimated apparent consumption of European seabass per continent in 2018 [1], [10].

EU

- EU27 had a consumption of Gilthead seabream of 110,498 Tn in 2018.
- Consumption in EU27 is led by Italy with 38,626 Tn (Table 6).

Table 6. Estimated apparent consumption of Gilthead seabream in the five main consumers of EU in 2018

Country	Tonnes	Per capita (kg)
Italy	38,626	0.64
Spain	19,135	0.41
Portugal	14,195	1.38
France	12,834	0.19
Greece	10,341	0.98

UK

- UK had an estimated apparent consumption of 2,567 Tn of Gilthead seabream in 2018.
- Estimated consumption per capita in 2018 was 0.27 kg per person.

## Housing systems

- Gilthead seabream production is divided between (on parenthesis it is indicated the main water type used in that system) [11], [12]:
  - Extensive lagoons (brackish/fresh)
  - Semi-intensive lagoons (brackish/fresh)
  - Floating cages (marine)
  - Tanks/Ponds (brackish/fresh, although it is possible to use marine in tanks)
- Extensive and semi-intensive lagoon systems are de traditional rearing method. Floating cages and tanks were developed in the decade of 1980's [12].
- Exact production per system is unknown. Still, it is known that the main production system is floating cages.
- Data about type of water used is available. It can be equalled to marine as floating cages and brackish and fresh water as the rest of systems (Figure 9) [1]:
  - Marine production is 77.87% worldwide, and 98.92% in the EU.
  - Brackish and freshwater production is 22.13% worldwide, and 1.08% in the EU.
  - Differences between world and EU production come from Egypt, Tunisia and Algeria, which all their production is done in brackish/freshwater systems.
  - Spain is the main producer in EU in brackish/freshwater systems

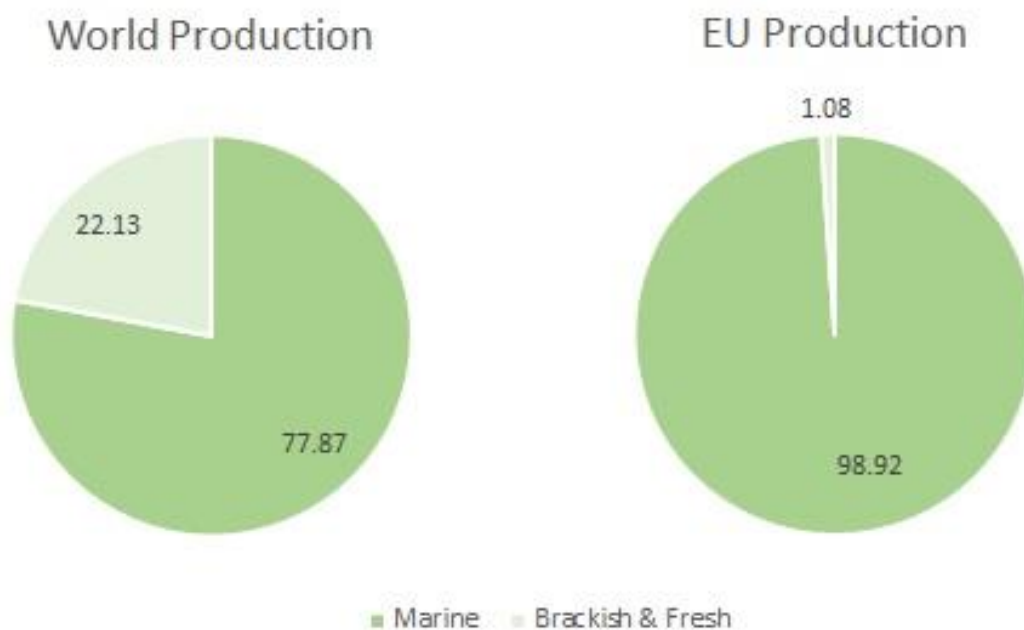


Figure 9. Distribution of Gilthead seabream production (%) between type of water used for production at a world level and EU level [1]

## Diseases and mortality

Access to mortality and disease data is difficult for Gilthead seabream industry. It does not exist a systematic reporting for this sector and companies are reluctant to share these data due to reputation awareness and confidentiality reasons. Also, many companies just do not keep adequate health records and there is no differentiation between mortality due to diseases or to other causes [13].

### Diseases

- Parasitic diseases are predominant (75% of disease reports) for Gilthead seabream during the on-growing stage (Table 7).
- Main disease is the parasite *Sparicotyle chrysofhrui* or gill fluke followed by the Winter syndrome (Table 7).

Table 7. Percentage of disease records for the on-growing stage of Gilthead seabream reported per type [13]

<b>Bacteria</b>	<b>2%</b>
Photobacteriosis	2%
<b>Virus</b>	<b>3%</b>
Lymphocystis	3%
<b>Parasite</b>	<b>75%</b>
Sparicotyle	71%
Dactylogyrus	3%
Enteromyxum	1%
<b>Other</b>	<b>20%</b>
Winter syndrome	16%
Red Rash	4%

### Winter syndrome

- It is a multifactorial pathology that leads to metabolic disruption, organ dysfunction and immunosuppression, opening the door to other diseases taking advantage of the fish condition [14]. Leads to increased mortality although it is difficult to identify a mortality % specific to the Winter syndrome.
  - Frequently affects Gilthead seabream between January and May [13].
  - Related with incapacity to migrate between coastline and deep sea searching for stable water parameters, generally affected by winter weather [14].
  - Seabream eats intensively during summer in preparation for this time when they almost do not eat.

### Mortality

- Survival at the end of the period is a median of 80% with a minimum of 58.4% and maximum of 99%. The mode of the data used was 80% [13].
- Mortality (20%) was divided between 10% identified to be related to pathogens and 10% due to other causes.
- There is a correlation that needs to be further tested: higher stocking density higher mortality related to pathologies.
- Other relations that need further research:
  - Temperatures in the rise in spring and high summer temperatures seem to be related with more reported diseases.
  - Not grading appear to be related with higher mortality.
  - Batches brought to the farm from external trade had higher mortality.



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