

ANIMAL HUSBANDRY

(Basic Knowledge)

Assist. Prof. Dr. Hilal ÇAPAR AKYÜZ

CONTENT

- Overview of animal husbandry
 1. The importance of animal husbandry
 2. Current statistics in the world
 3. Current statistics in Türkiye
- Domestication
 1. The history of domestication
 2. Domestication methods
 3. Effects of domestication (morphological, physiological and psychological)
- Animal Science
 1. The place of domestic animals in the zoological system
 2. Species, Breed, Hybridization
 3. Breed characteristics (morphological and physiological)
- Environment - animal interactions
 1. Adaptation
 2. Stress
 3. Resistance
 4. Adaptation to environment

SOURCE



Faculty of Veterinary Medicine Department of Animal Science

- ❖ Animal Welfare
- ❖ Animal Science I (poultry and pig husbandry)
- ❖ Animal Science II (cattle, sheep-goat and horse husbandry)
- ❖ Animal Breeding
- ❖ Elective courses:

Laboratory Animal, Goose-Duck, cat-dog and rabbit breeding. Bee husbandry.



WHAT IS ANIMAL HUSBANDRY?

- Animal husbandry is the branch of agriculture where animals are reared, bred and raised for meat, fiber, eggs, milk and other food products.





- Animal husbandry refers to **livestock raising** and **selective breeding**. It is the management and care of animals in which the **genetic qualities** and **behavior** of animals are further developed for profit.
- Animals provide us with a variety of **food products** which have high **nutritional values**. Therefore, they require a lot of care and attention.
- Animals are bred commercially in order to meet the high demand for food. **Dairy products** from animals like **cows**, **buffaloes**, **goats**, are rich sources of **protein**. These animals are called milch animals as they provide us with milk.
- Another set of animals that provide nutrient-rich food are **hen**, **ducks**, **goose**, etc. They provide us with **eggs**, which again are rich sources of protein. Animals like **chicken**, **duck**, **ox**, **goat**, **pigs**, etc. are bred for **meat**. Other than these domestic animals we have other sources of nutrients as well, they are **marine** animals. The seafood we eat has very high nutrient values. They are sources of a variety of nutrients like fat, proteins, vitamins and minerals.

FARM ANIMALS

www.VocabularyPoint.com



www.VocabularyPoint.com

DOMESTIC ANIMALS



www.pegasusforkids.com



FARM ANIMALS



stallion
(male horse)



colt
(baby horse)



mare
(female horse)



calf
(baby)



bull
(male)



cow
(female)



kid goat
(baby)



goat
(female)



Billy goat
(male)



sow
(female)



pig
(male)



piglet
(baby)



ram
(male)



sheep
(female)



lamb
(baby)



buck
(male rabbit)



bunny or kit
(baby)



doe
(female rabbit)

Animal Farm

- ❖ The care, breeding, management, etc of animals are particularly monitored under the department of **animal husbandry**.
- ❖ Animal husbandry is a large scale business. The animals are bred, cared, reared and sheltered in a farm or region, which are specially built for them.
- ❖ Animal husbandry involves poultry, milk-farms, apiculture (bee agriculture), aquaculture, etc.



THE IMPORTANCE OF ANIMAL HUSBANDRY

- Animal husbandry helps in the proper management of animals by providing proper food, shelter and protection against diseases to domestic animals.
- It provides employment to a large number of farmer and thereby increases their living standards.
- It helps in developing high yielding breeds of animals by **cross breeding**. This increases the production of various food products such as milk, eggs, meat, etc.
- It involves the proper disposal of animal waste and promotes a healthy environment.



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TYPES OF ANIMAL HUSBANDRY



DAIRY FARMING

- Dairy farming is the agricultural technique concerned with the long term production of **milk**, which is then processed to obtain **dairy products** such as **curd, cheese, yoghurt, butter, cream**, etc. It involves the management of dairy animals such as **cows, buffaloes, sheep, goat**, etc.
- The animals are taken care of against diseases and are inspected regularly by veterinary doctors. A healthy animal is physically, mentally and socially sound.
- These animals are milked by hand or by machines. The milk is preserved and converted into dairy products industrially, which are then used for commercial purposes.

Tablo 1. Dünya Sığır Varlığı (Bin Baş)

	2018	2019	2020	2021	2022/a
Başlangıç Stokları	975.056	979.039	983.421	996.495	1.011.709
→ Süt İneği Baş. Stok.	238.547	240.218	242.979	244.769	247.211
→ Besi Hayvanı Baş. Stok.	205.861	205.92	205.958	206.853	209.499
Hayvan Sayısı Varlığı	285.901	291.096	292.003	293.146	294.962
İthalat	3.114	3.331	3.229	2.936	3.126
Toplam Arz	1.264.071	1.273.466	1.278.653	1.292.577	1.309.797
İhracat	5.698	5.711	5.411	4.709	4.876
Kasaplık İnek	40.821	43.991	41.331	39.402	38.605
Kasaplık Dana	13.326	10.176	9.525	9.437	9.607
Toplam Kesim Hayvanı	236.06	239.696	231.679	231.864	234.87
Kayıplar	43.274	44.638	45.068	44.295	42.952

Kaynak: USDA, 2022 a/Tahmin



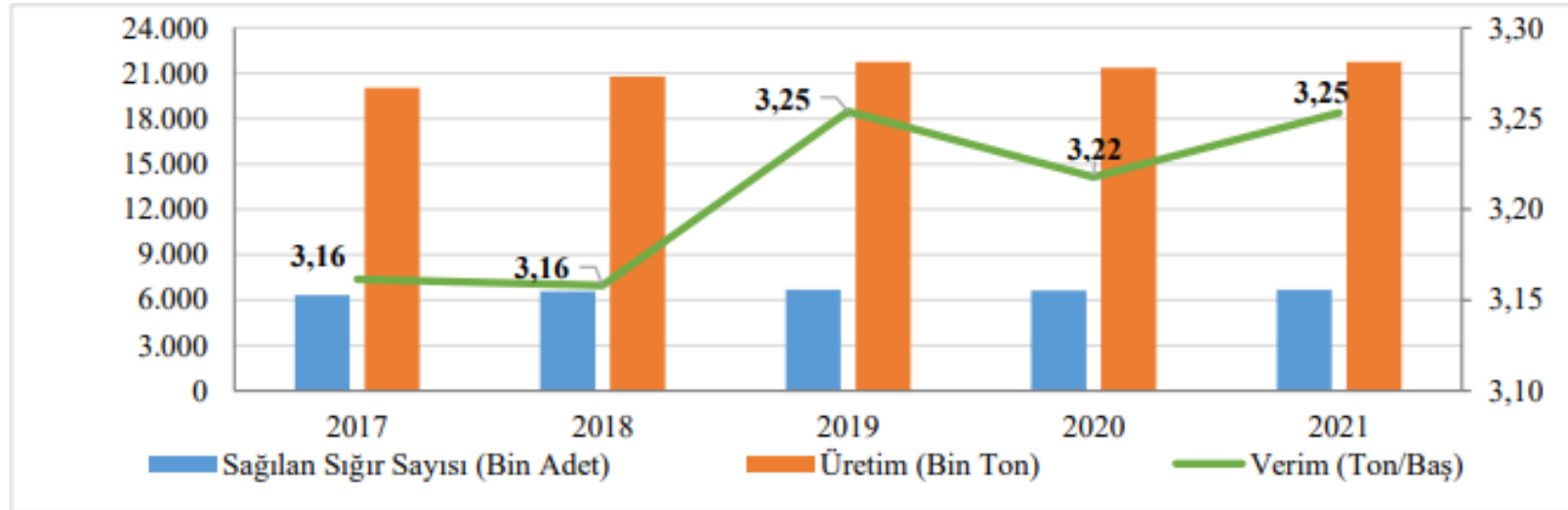
Tablo 12. Türkiye Süt Üretimi ve Sağılan Hayvan Sayısı

	2018	2019	2020	2021	2022/a
Sağılan Sığır Sayısı (Adet)	6.337.907	6.580.753	6.886.944	6.769.866	7.006.549
Üretim (Ton)	20.036.877	20.782.374	21.749.342	21.370.116	22.236.506
Verim (Ton/Baş)	3,16	3,16	3,16	3,16	3,17
Sağılan Koyun-Keçi Sayısı (Adet)	24.146.450	25.308.071	20.398.305	21.313.625	21.676.123
Üretim (Ton)	2.008.096	2.098.664	1.690.682	1.766.547	1.845.816
Verim (Ton/Baş)	0,08	0,08	0,08	0,08	0,09
Sağılan Manda Sayısı (Adet)	75.882	79.333	63.784	63.656	64.102
Üretim (Ton)	75.742	79.341	63.767	63.643	64.130
Verim (Ton/Baş)	1,00	1,00	1,00	1,00	1,00
Toplam Sağılan Hayvan Sayısı (Adet)	30.560.239	31.968.157	27.349.033	28.147.147	28.746.774
Toplam Süt Üretimi (Ton)	22.120.716	22.960.379	23.503.790	23.200.306	24.146.452

Kaynak: TÜİK, TEPGE Hesapları, 2022 a/Tahmin (TEPGE Hesaplamaları)

(2020 ve 2021 yılları sağılan hayvan sayısı bir önceki yılın artış oranına göre, verisi bulunmayan 2022 yılı sağılan hayvan sayısı ve üretim miktarı ise son beş yıldaki ortalama artış oranına göre hesaplanmıştır.)





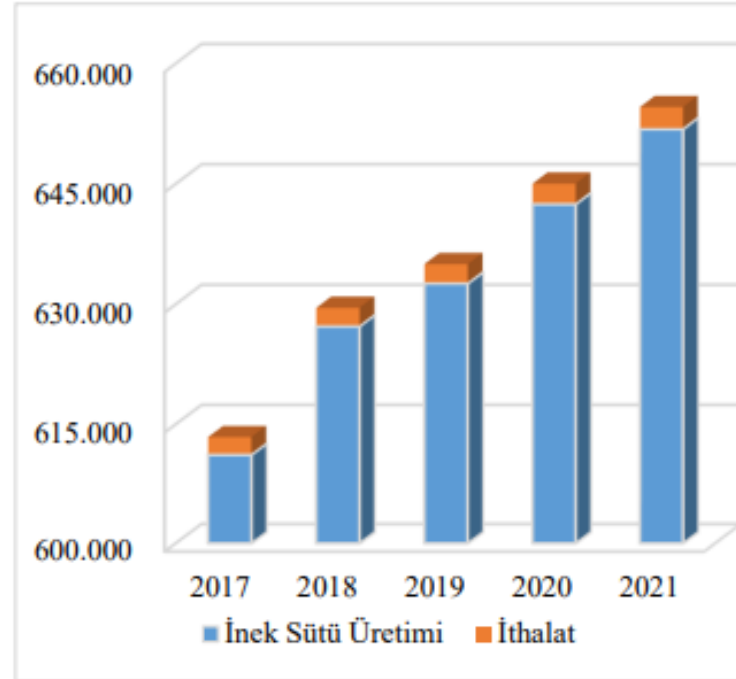
Grafik 14. Türkiye Sağılan Hayvan Sayısı, Verim ve Üretim Miktarı, TÜİK, 2022



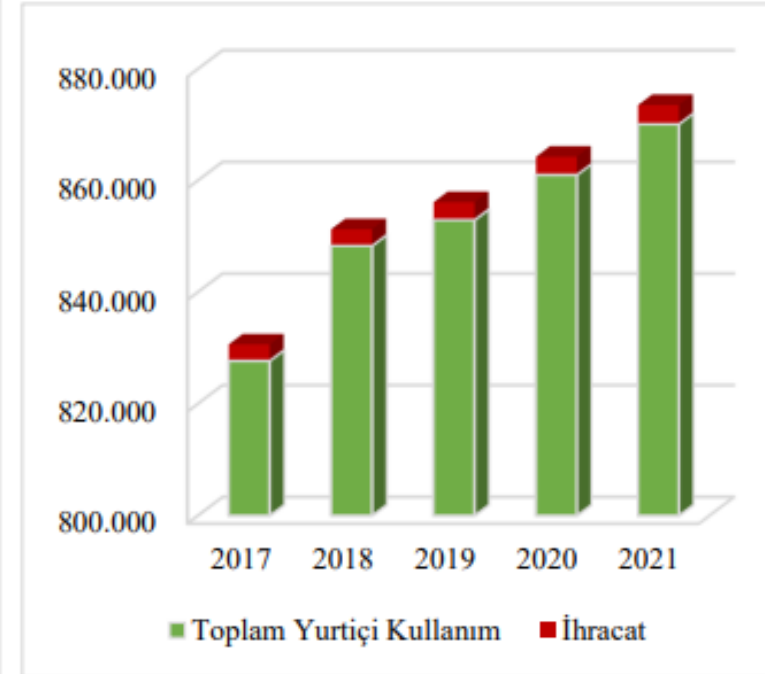
Tablo 2. Dünya Toplam Süt Arz Kullanım ve Ticareti (Bin Ton)

	2018	2019	2020	2021	2022/a
ARZ					
Toplam Süt	841.878	849.857	861.402	872.229	888.144
İnek Sütü Üretimi	522.591	527.738	539.601	544.072	549.356
İthalat	2.307	2.424	2.565	2.757	2.856
Toplam Arz	844.185	852.281	863.967	874.986	891.000
KULLANIM					
Toplam Yurtiçi Kullanım	848.290	852.924	860.996	870.095	893.713
İhracat	2.956	3.174	3.251	3.415	3.430
Toplam Kullanım	851.246	856.098	864.247	873.510	897.143

Kaynak: OECD, 2022 a/Tahmin



Grafik 1. Dünya Toplam Süt Arzı (Bin Ton)



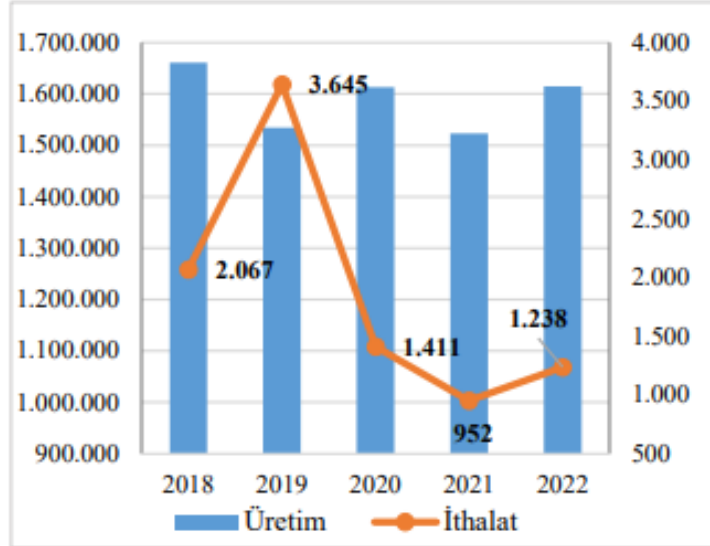
Grafik 2. Dünya Toplam Süt Kullanımı (Bin Ton)



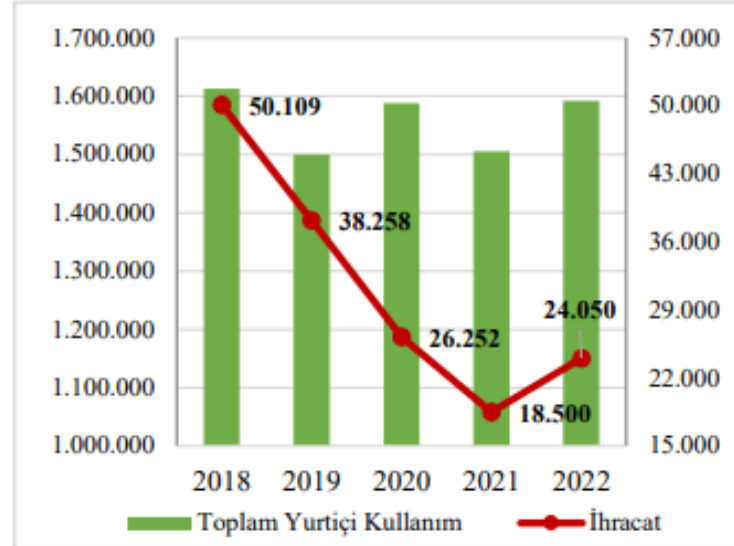
Tablo 14. Türkiye İçme Sütü Arz ve Kullanımı (Ton)

	2018	2019	2020	2021	2022/a
ARZ					
Üretim	1.660.664	1.534.665	1.613.198	1.523.175	1.614.566
İthalat	2.067	3.645	1.411	952	1.238
Toplam Arz	1.662.731	1.538.310	1.614.609	1.524.127	1.615.804
KULLANIM					
Toplam Yurtiçi Kullanım	1.612.622	1.500.052	1.588.357	1.505.627	1.591.753
İhracat	50.109	38.258	26.252	18.500	24.050
Toplam kullanım	1.662.731	1.538.310	1.614.609	1.524.127	1.615.803

Kaynak: TÜİK, TEPGE Hesapları, 2022 a/Tahmin (TEPGE Hesaplamaları)



Grafik 15. Türkiye Toplam İçme Sütü Arzı (Ton)



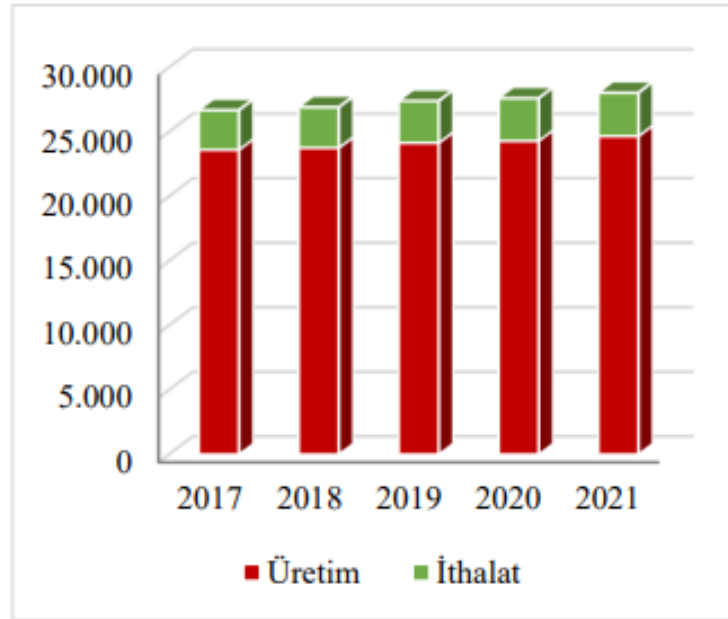
Grafik 16. Türkiye Toplam İçme Sütü Kullanımı (Ton)



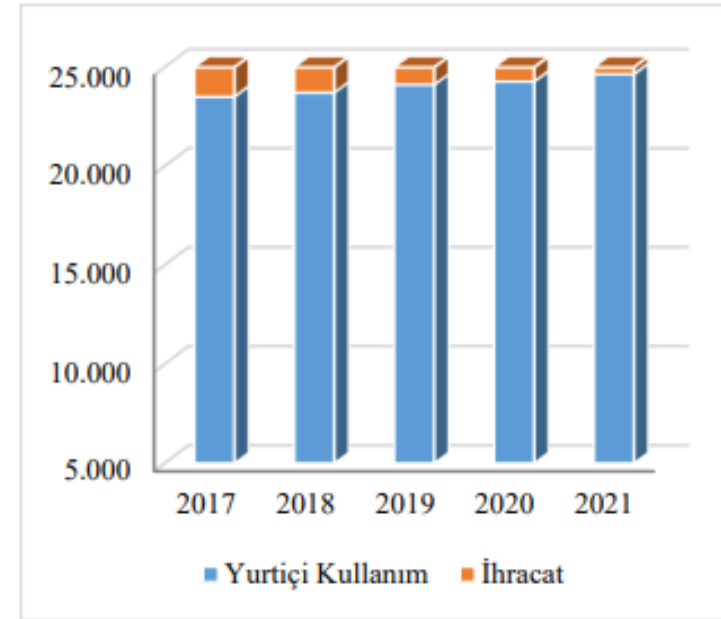
Tablo 4. Dünya Toplam Peynir Arz Kullanım ve Ticareti (Bin Ton)

	2018	2019	2020	2021	2022/a
ARZ					
Başlangıç Stokları*	876	929	923	976	1.014
Üretim	23.762	24.025	24.324	24.653	24.653
İthalat	3.154	3.261	3.313	3.376	3.433
Toplam Arz	27.792	28.215	28.560	29.005	29.100
KULLANIM					
Yurtiçi Kullanım	23.728	24.124	24.281	24.658	25.022
İhracat	3.164	3.291	3.331	3.376	3.433
Toplam Kullanım	28.104	28.615	28.810	29.241	29.687
Bitiş Stokları*	1.212	1.200	1.198	1.207	1.232

Kaynak: OECD, *USDA, 2022 a/Tahmin



Grafik 4. Dünya Toplam Peynir Arzı (Bin Ton)



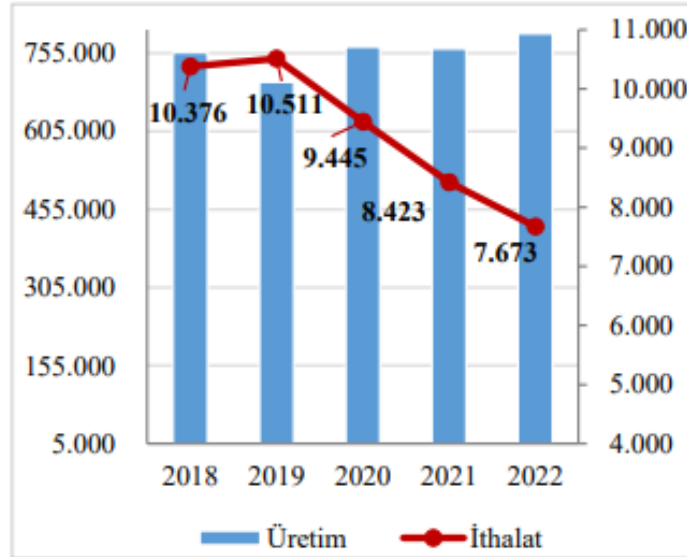
Grafik 5. Dünya Toplam Peynir Kullanımı (Bin Ton)



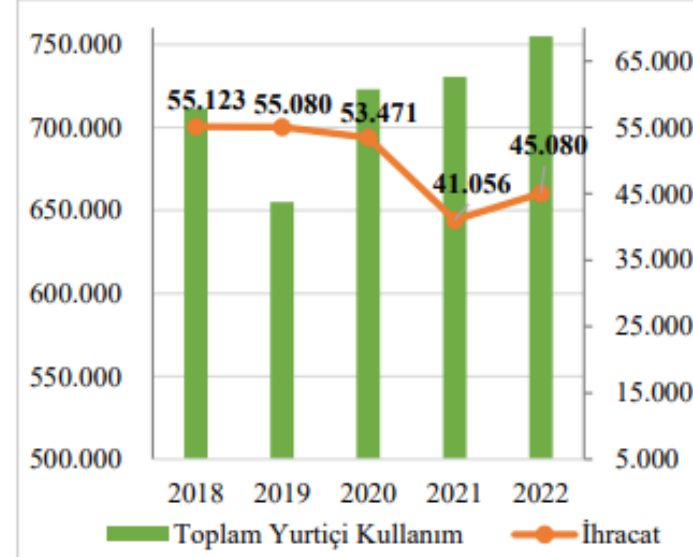
Tablo 15. Türkiye Peynir Arz ve Kullanımı (Ton)

	2018	2019	2020	2021	2022/a
ARZ					
Üretim	756.108	699.603	766.947	763.266	792.270
İthalat	10.376	10.511	9.445	8.423	7.673
Toplam Arz	766.484	710.114	776.392	771.689	799.943
KULLANIM					
Toplam Yurtiçi Kullanım	711.361	655.034	722.921	730.633	754.863
İhracat	55.123	55.080	53.471	41.056	45.080
Toplam kullanım	766.484	710.114	776.392	771.689	799.943

Kaynak: TÜİK, TEPGE Hesapları, 2022 a/Tahmin (TEPGE Hesaplamaları)

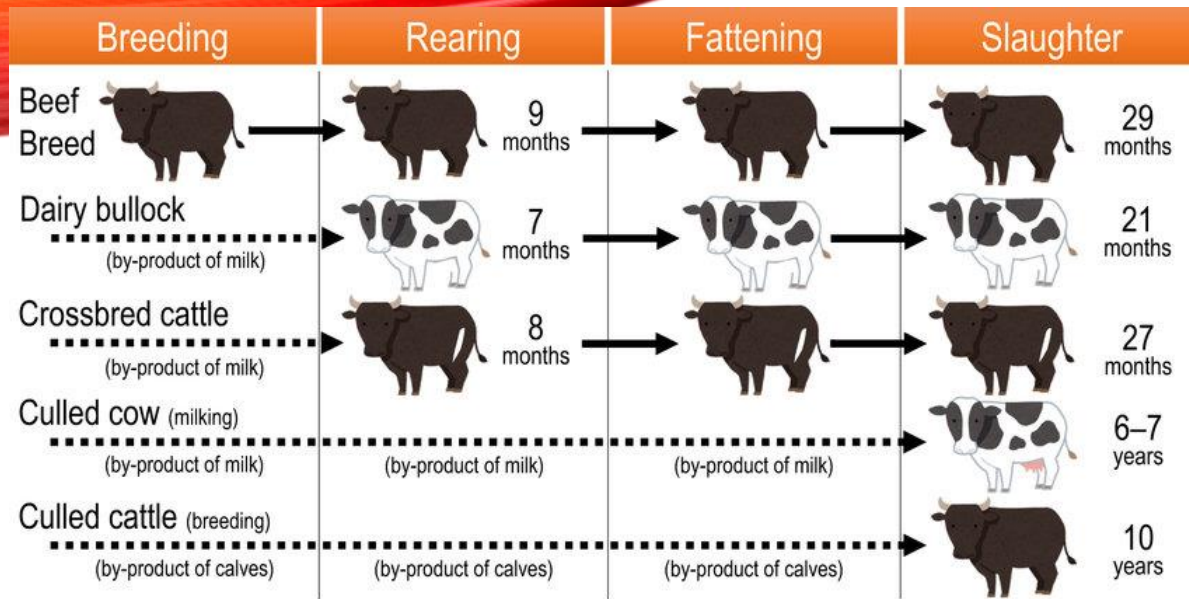


Grafik 17. Türkiye Toplam Peynir Arzı (Ton)



Grafik 18. Türkiye Toplam Peynir Kullanımı (Ton)





FATTENING FARM

- The basic principle in **livestock fattening** is to ensure that the animals with strong genetic structure and the fastest gain in live weight benefit from the unit feed amount at the highest level.
- Ensuring high fattening performance economically is also provided by feeding the animals with the right amount of feed and in the appropriate time period. Ration preparation and feeding animals play an important role in meat production.

Tablo 2. Dünya Kırmızı Et Üretimi (Ton)

	Sığır	Koyun	Keçi	Manda	Toplam
2000	55.835.848	7.717.572	3.902.627	3.014.412	70.470.459
2005	59.109.274	8.124.287	4.703.734	3.311.512	75.248.807
2010	62.654.388	8.484.009	5.206.939	3.899.147	80.244.483
2011	62.374.058	8.575.130	5.178.467	3.918.117	80.045.772
2012	62.938.922	8.680.443	5.272.170	3.949.320	80.840.855
2013	63.968.833	8.923.286	5.396.561	3.983.724	82.272.404
2014	64.471.317	9.173.477	5.543.929	4.002.020	83.190.743
2015	63.923.615	9.437.101	5.669.013	4.055.510	83.085.239
2016	64.568.004	9.567.978	5.794.581	4.078.593	84.009.156
2017	65.415.554	9.532.953	5.882.486	4.137.317	84.968.310
2018	67.353.900	9.788.315	5.977.020	4.247.413	87.366.648

Kaynak: FAO,2020b



Tablo 9. Türkiye Kesilen Hayvan Sayısı (Bin Baş)

	2000	2005	2012	2013	2014	2015	2016	2017	2018	2019
Sığır	2.102	1.630	2.791	3.431	3.712	3.765	3.900	3.602	3.426	3.634
Koyun	6.111	4.145	4.541	4.958	5.197	5.008	4.084	5.134	4.652	5.057
Keçi	1.166	689	927	1.341	1570	1.999	1.756	2.069	693	837
Manda	24	9	7	2	2	1	2	6	2	0,3
Toplam	9.402	6.473	8.266	9.732	10.482	10.774	9.742	10.811	8.773	9.528

Kaynak: TÜİK.2020



Tablo 10. Türkiye Kırmızı Et Üretimi (Ton)

Yıl	Koyun	Keçi	Sığır	Manda	Toplam
2000	111.139	21.395	354.636	4.047	491.217
2005	73.743	12.390	321.681	1.577	409.391
2010	135.687	23.060	618.584	3.387	780.718
2011	107.076	23.318	644.906	1.615	776.915
2012	97.334	17.430	799.344	1.736	915.844
2013	102.943	23.554	869.292	336	996.125
2014	98.978	26.770	881.999	526	1.008.272
2015	100.021	33.990	1.014.926	326	1.149.262
2016	82.485	31.011	1.059.195	351	1.173.042
2017	100.058	37.525	987.482	1.339	1.126.404
2018	100.831	13.603	1.003.859	402	1.118.745
2019	109.382	16.536	1.075.479	73	1.201.397

Kaynak: TÜİK,2020



Tablo 3. Ülkelere Göre Sığır Eti Üretimi (Bin Ton)

	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
ABD	12.017	11.181	11.819	11.970	11.916	11.789	11.698	10.777	11.470	11.907	12.219
Brezilya	6.579	8.592	9.115	9.030	9.307	9.675	9.723	9.425	9.284	9.550	9.900
Çin	4.642	5.134	5.677	5.512	5.547	5.533	5.557	5.566	5.566	5.726	5.811
Arjantin	2.718	3.131	2.630	2.499	2.596	2.822	2.674	2.727	2.644	2.049	3.066
Avustralya	1.988	2.090	2.129	2.129	2.152	2.359	2.595	2.662	2.361	2.049	2.219
Meksika	1.409	1.558	1.745	1.804	1.821	1.807	1.827	1.845	1.879	1.927	1.981
Rusya	1.898	1.809	1.727	1.625	1.642	1.633	1.654	1.649	1.619	1.614	1.608
Fransa	1.528	1.547	1.530	1.567	1.494	1.400	1.411	1.448	1.458	1.423	1.436
Kanada	1.263	1.470	1.276	1.141	1.060	1.056	1.100	1.092	1.133	880	1.231
Almanya	1.304	1.167	1.205	1.170	1.146	1.117	1.143	1.132	1.155	1.137	1.123
Türkiye	355	322	619	645	799	869	882	1.015	1.059	987	1.004
G.Afrika	582	746	897	878	875	953	1.001	1.072	1.109	1.014	1.003
Pakistan	420	464	733	761	789	822	850	882	922	948	985
İngiltere	705	762	908	936	885	847	877	885	912	902	922
Diğer	18.397	19.014	20.392	20.487	20.681	21.053	21.155	21.541	21.842	22.000	22.732
Toplam	55.813	59.296	63.130	62.956	63.585	64.738	65.283	64.958	65.974	66.250	67.354

Kaynak: FAO,2020b



Tablo 4. Ülkelere Göre Koyun ve Keçi Eti Üretimi (Bin Ton)

	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
Çin	2.653	3.453	3.992	3.934	4.012	4.083	4.284	4.410	4.617	4.712	4753
Hindistan	690	748	774	764	755	747	740	732	740	734	734
Avustralya	691	614	582	545	584	692	754	755	715	703	763
Pakistan	467	532	434	443	452	467	473	479	466	505	516
Yeni Zelanda	540	534	475	453	457	482	488	488	482	453	473
Nijerya	337	394	458	382	340	375	384	394	395	393	391
Sudan	0	0	0	0	360	364	366	369	378	381	383
İran	436	432	372	370	373	354	366	429	380	383	414
İngiltere	383	331	287	301	275	289	298	302	291	299	289
Cezayir	176	191	221	270	279	298	322	330	341	344	344
Bangladeş	132	158	195	203	204	209	213	213	213	226	228
Rusya	140	154	185	189	190	190	204	204	213	219	224
Moğolistan	120	95	126	124	124	157	152	221	193	207	236
Fas	147	137	162	167	172	144	147	185	191	191	211
Güney Afrika	111	145	167	156	167	188	195	179	180	167	162
Türkiye	133	86	159	130	115	126	126	134	113	137	114
Diğer	4.443	4.742	4.937	5.167	4.946	4.987	5.040	5.045	5.070	5.422	5530
Toplam	11.599	12.746	13.526	13.598	13.805	14.152	14.531	14.788	14.932	15.352	15.765

Kaynak FAO, 2020b



Tablo 5. Ülkelere Göre Manda Eti Üretimi (Bin Ton)

	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
Hindistan	1256	1360	1546	1559	1573	1610	1615	1609	1638	1650	1662
Pakistan	466	540	752	775	798	825	844	868	895	922	949
Mısır	288	354	398	396	385	390	380	407	375	369	382
Çin	361	569	630	611	615	614	616	617	617	635	645
Nepal	122	139	162	168	172	175	174	174	175	180	185
Filipinler	72	77	105	104	100	99	100	99	101	101	102
Vietnam	93	103	105	99	89	86	86	86	87	88	92
Myanmar	20	24	34	44	45	46	47	48	49	51	51
Endonez-ya	46	38	36	35	37	38	35	35	32	32	67
Tayland	71	44	46	39	33	30	28	30	26	28	28
İtalya	2	6	6	11	24	12	15	17	18	17	22
Türkiye	4	2	3	2	2	0,3	0,5	0,3	0,3	1,3	0,4
Diğer	62	57	75	75	77	60	60	60	58	58	62
Toplam	2.861	3.312	3.899	3.918	3.949	3.984	4.002	4.056	4.079	4.137	4.247

Kaynak: FAO, 2020b

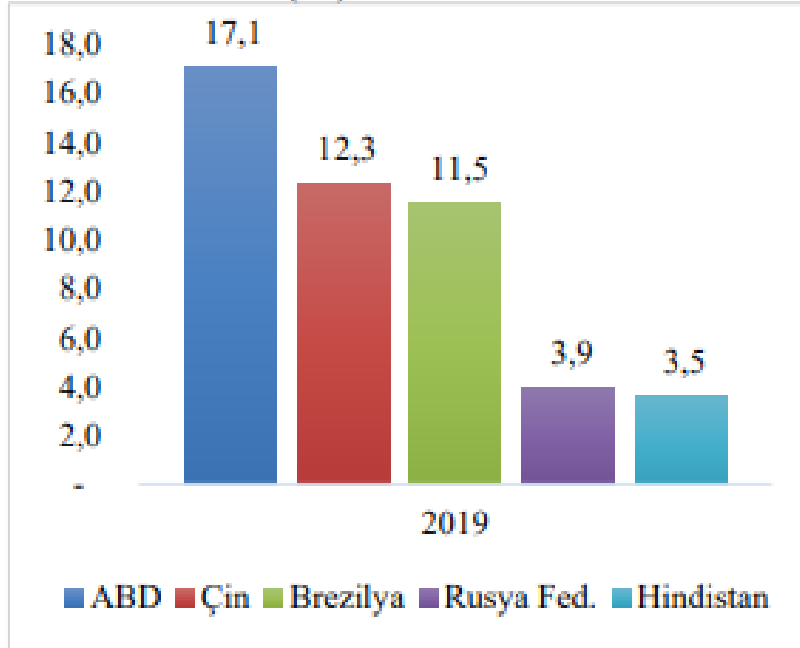




POULTRY FARMING

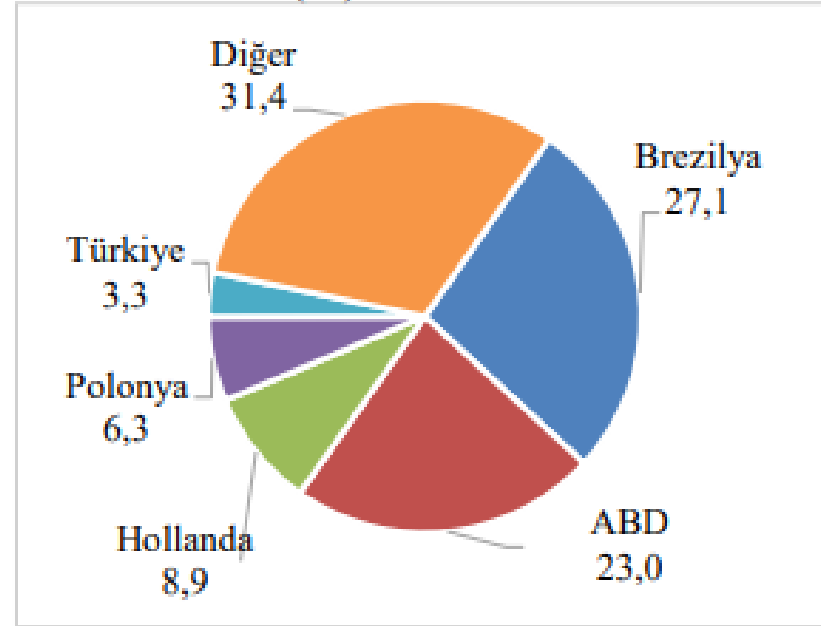
- Poultry farming is concerned with raising and breeding of birds for commercial purposes. Birds like **ducks, chickens, geese, pigeons, turkeys**, etc. are domesticated for **eggs** and **meat**. It is very important to take care of the animals and maintain them in a disease-free environment to obtain healthy food from them. The eggs and meat are a rich source of protein.
- Sanitation and hygienic conditions need to be maintained. The faeces of birds are used as manure to improve soil fertility. Poultry farming provides employment to a large number of people and helps in improving the economy of the farmers.

Şekil 1. 2019 yılı tavuk eti üretiminde önemli ülkeler (%)



Kaynak: Ek Tablo 8

Şekil 2. 2019 yılı tavuk eti ihracatında önemli ülkeler (%)



Kaynak: Ek Tablo 11



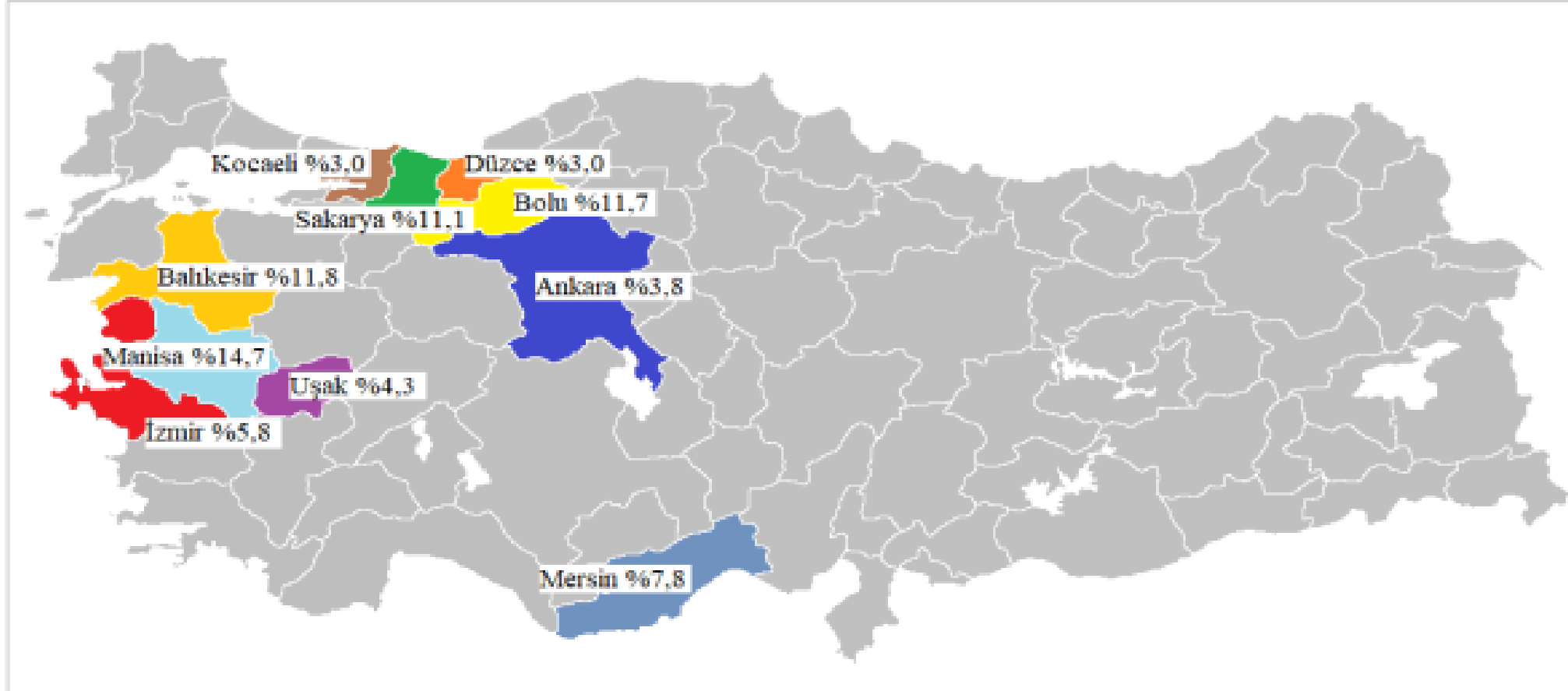
Tablo 1. Dünya tavuk eti arzı ve kullanımı (bin ton)

	2015	2016	2017	2018	2019	2020 ¹	2021 ¹
ARZ							
Üretim	103.777	106.737	110.857	115.013	118.017	119.315	120.986
İthalat	11.216	11.829	12.161	12.607	12.869	12.946	13.205
Top. Arz	114.993	118.566	123.018	127.620	130.886	132.261	134.191
KULLANIM							
İhracat	12.816	13.326	13.874	14.326	14.562	14.810	14.766
Tüketim ¹	102.177	105.240	109.144	113.294	116.324	117.452	119.425
Top. Kul.	114.993	118.566	123.018	127.620	130.886	132.261	134.191

Kaynak: FAOSTAT, 2021.¹/TEPGE Hesaplamaları



Şekil 11. 2020 yılı Türkiye et tavuğu sayısı bakımından başlıca iller (%)



Kaynak: Ek Tablo 28

Tablo 2. Türkiye’de 2020 yılı kümes hayvanı sayıları (bin adet)

Hayvan Türleri	Miktar (bin adet)	Pay (%)
Kümes hayvanları	386.081	100,0
Tavuk	379.349	98,3
Et tavuğu	258.046	66,9
Yumurta tavuğu	121.303	31,4
Hindi	4.798	1,2
Kaz	1.374	0,4
Ördek ve Beç tavuğu	560	0,1

Kaynak: Ek Tablo 22



Tablo 3. Türkiye tavuk eti arzı ve kullanımı (bin ton)

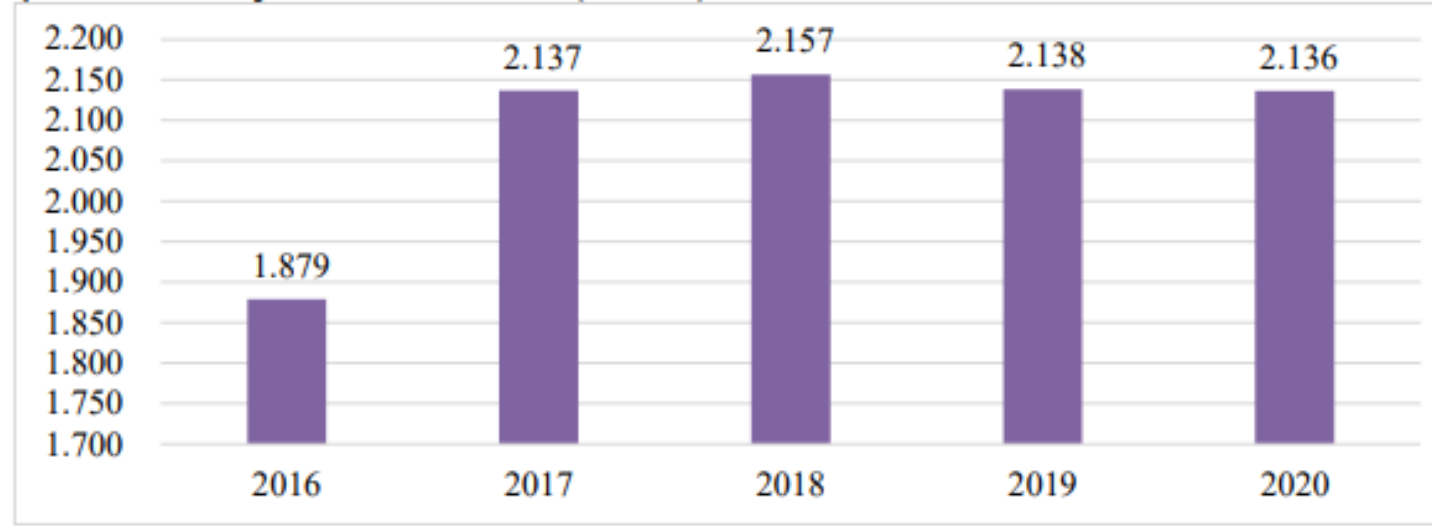
	2015	2016	2017	2018	2019	2020	2021 ¹
ARZ							
Üretim	1.909	1.879	2.137	2.157	2.138	2.136	2.185
İthalat ²	1	0	3	6	1	1	0
Top. Arz	1.910	1.879	2.140	2.163	2.139	2.137	2.185
KULLANIM							
İhracat	334	314	404	453	440	476	491
Tüketim ³	1.576	1.565	1.736	1.709	1.699	1.661	1.694
Top. Kull.	1.910	1.879	2.140	2.163	2.139	2.137	2.185

Kaynak: TÜİK ve TEPGE Hesaplamaları ¹/Tahmin, ²/Karşı ülke tarafından reddedilen veya ticari anlaşmazlıklar vb. sebeplerle ihracattan geri dönen tavuk eti sevkiyatlarının TÜİK verilerinde "ithalat" olarak değerlendirilmektedir.

³/TEPGE Hesaplamaları

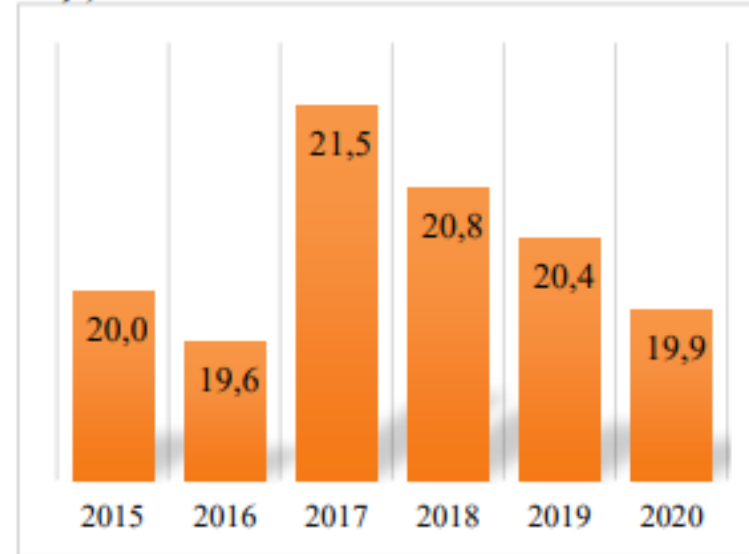


Şekil 12. Türkiye tavuk eti üretimi (bin ton)



Kaynak: Ek Tablo 23

Şekil 14. Türkiye tavuk eti tüketimi (kg/kışı başı)



Kaynak: TEPGE Hesaplamaları



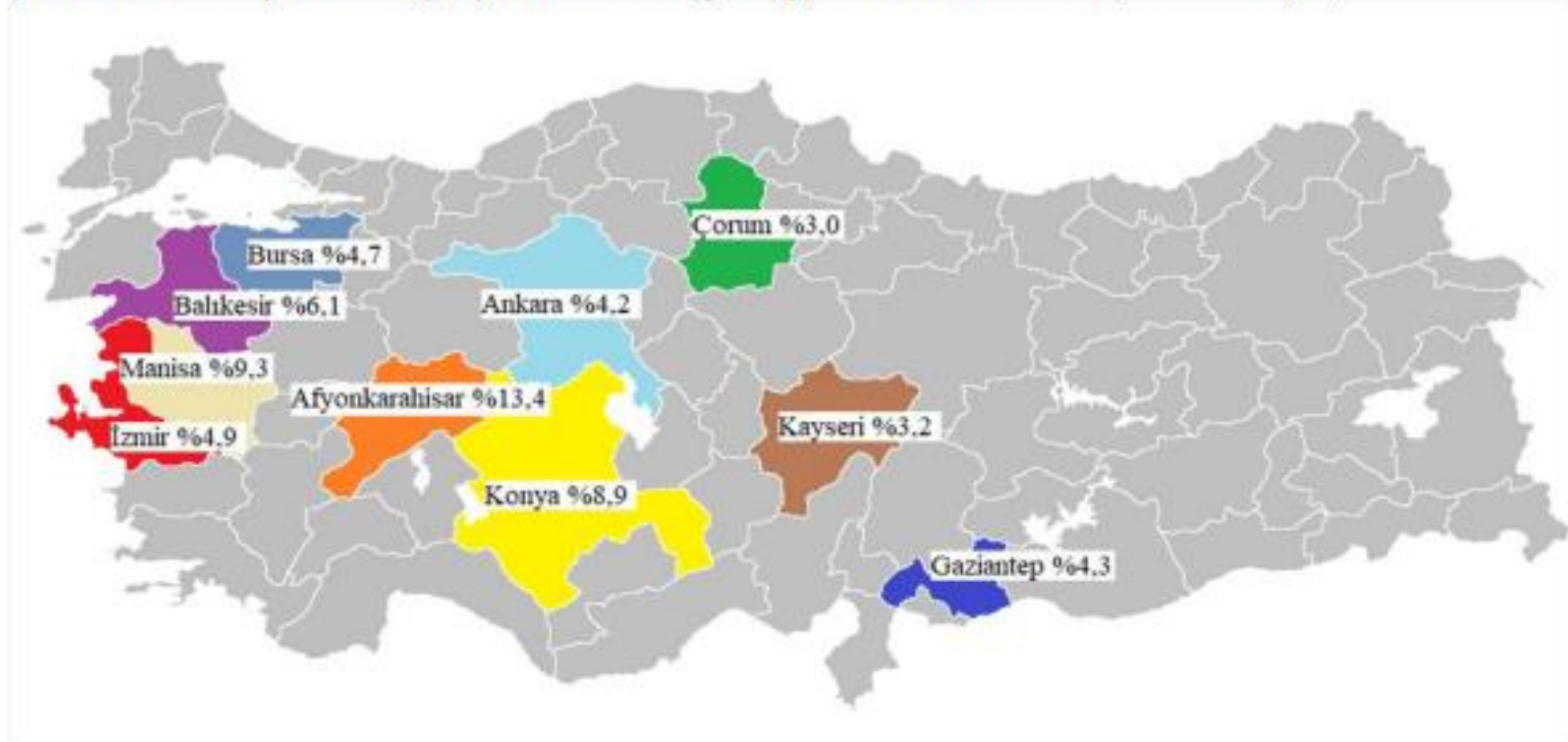
Tablo 4. Türkiye tavuk yumurtası arzı ve kullanımı (bin ton)

	2015	2016	2017	2018	2019	2020	2021 ¹
ARZ							
Üretim	1.045	1.131	1.205	1.228	1.244	1.237	1.257
İthalat	-	-	-	-	-	-	-
Top. Arz	1.045	1.131	1.205	1.228	1.244	1.237	1.257
KULLANIM							
İhracat	205	276	335	340	251	187	188
Tüketim ²	840	855	870	887	993	1.050	1.069
Top. Kull.	1.045	1.131	1.205	1.228	1.244	1.237	1.257

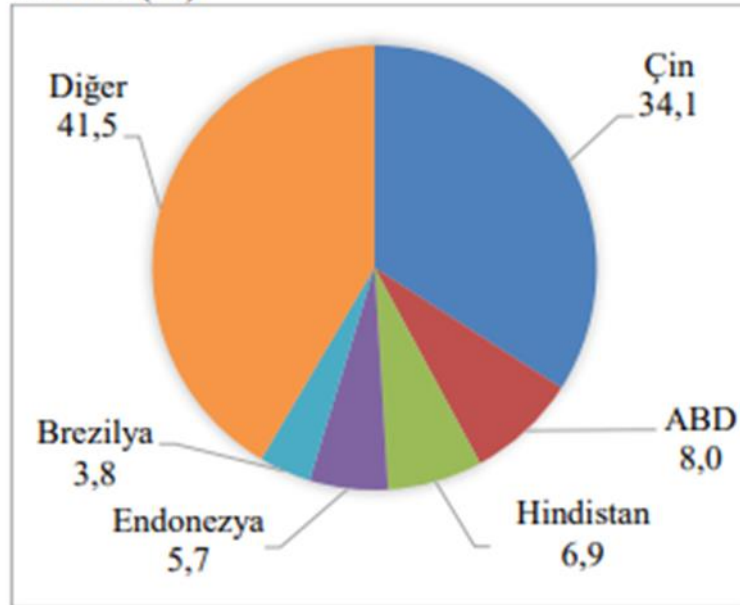
Kaynak: TÜİK, 2021 (İthalat/ihracat GTİP: 040721; Tavuk Yumurtaları (taze)) 1/Tahmin 2/TEPGE Hesaplamaları



Şekil 15. 2020 yılı Türkiye yumurta tavuğu sayısı bakımından başlıca iller (%)

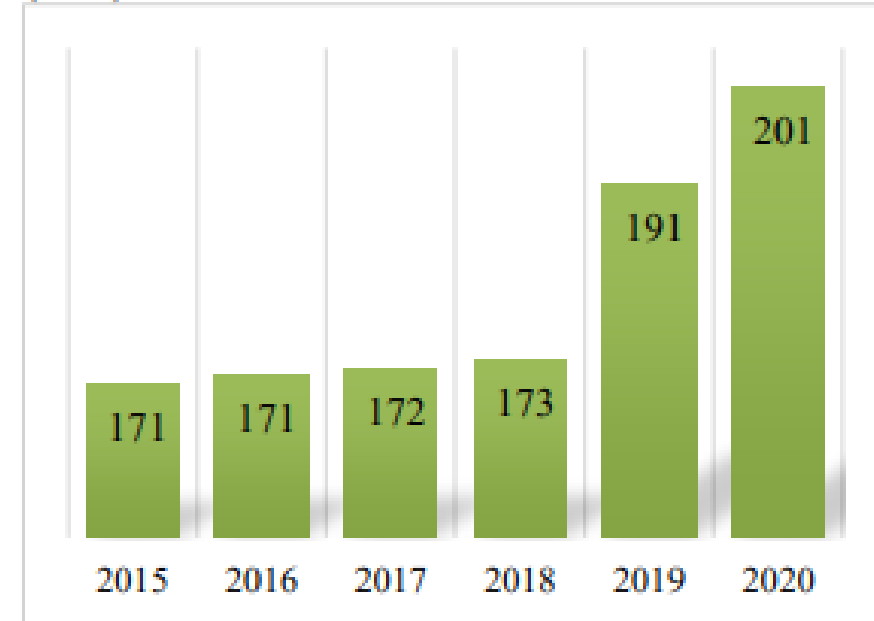


Şekil 5. 2019 yılı yumurta üretiminde önemli ülkeler (%)



Kaynak: Ek Tablo 9

Şekil 18. Türkiye kişi başı yumurta tüketimi (adet)



Kaynak: TEPGE Hesaplamaları





FISH FARMING

- Fish farming is the process of raising fish in closed tanks or ponds for commercial purposes. There is an increasing demand for fish and fish protein. Fish species such as **salmon**, **catfish**, **cod**, and **tilapia** are raised in fish farms.
- Fish farming or pisciculture is of two types: Extensive aquaculture, based on the local photosynthetic production. Intensive aquaculture, based on the external food supply given to fishes.

Dünya Su Ürünleri Üretimi (bin ton)¹

	2014	2015	2016	2017	2018	Değişim (%) ²
AVCILIK						
Deniz	79.338	80.462	78.263	81.203	84.408	3,95
İçsu	11.045	11.149	11.365	11.908	12.021	0,95
Toplam	90.383	91.611	89.628	93.111	96.429	3,56
YETİŞTİRİCİLİK						
Deniz	26.225	27.039	28.578	30.055	30.782	2,42
İçsu	44.329	45.772	47.978	49.554	51.339	3,60
Toplam	70.554	72.811	76.556	79.609	82.121	3,16
TOPLAM ÜRETİM	160.937	164.422	166.184	172.720	178.550	3,38

Kaynak: FAO (Erişim Tarihi 09.01.2021) ¹/ Üretim rakamlarına su bitkileri ve deniz memelileri dâhil değildir. ²Son iki yılın değişimini göstermektedir.

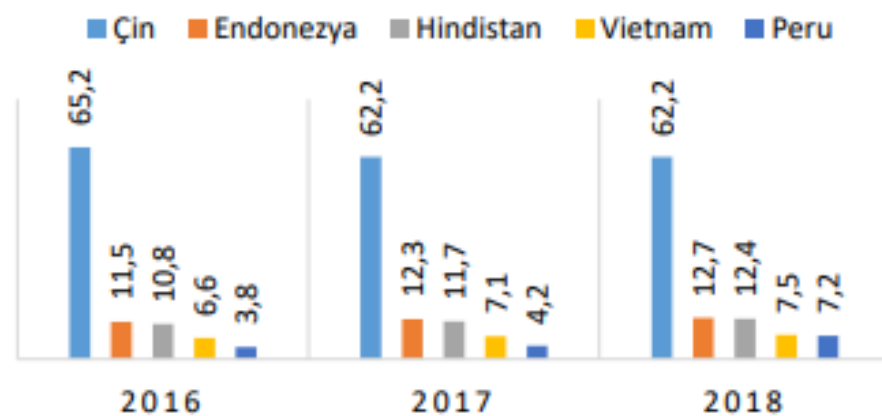


Türkiye Su Ürünleri Arz ve Kullanımı (ton)

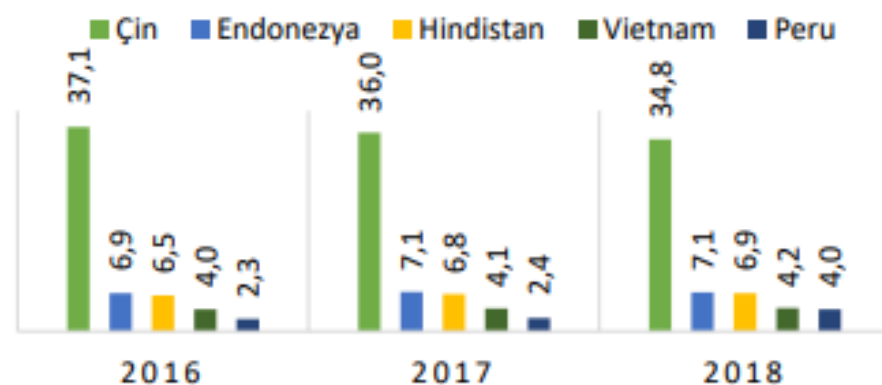
	2015	2016	2017	2018	2019	Değişim (%) ²
Üretim	672.241	588.715	630.820	628.631	836.524	33,1
İthalat ¹	110.761	82.074	100.444	98.315	90.684	-7,8
TOPLAM ARZ	783.002	670.789	731.264	726.946	927.208	27,5
Tüketim	661.949	519.181	572.490	546.737	514.640	-5,9
İhracat ¹	121.053	145.469	156.681	177.500	200.226	12,8
TOPLAM KULLANIM	783.002	664.650	729.171	724.237	714.866	-1,3
Değerlendirilmeyen	6.070	6.139	2.093	3.115	3.233	3,8
Kişi Başına Tüketim (kg)	6,2	5,5	5,5	6,1	6,3	3,3

Kaynak: TÜİK Dış Ticaret İstatistikleri (Erişim Tarihi 08.01.2021) Su Ürünleri İstatistikleri (2021) ¹/2019 yılından itibaren İthalat İhracat rakamlarına 010690009011 ve 020890700000 GTİP kodları dahil edilmiştir. ²Son iki yılın değişimini göstermektedir.

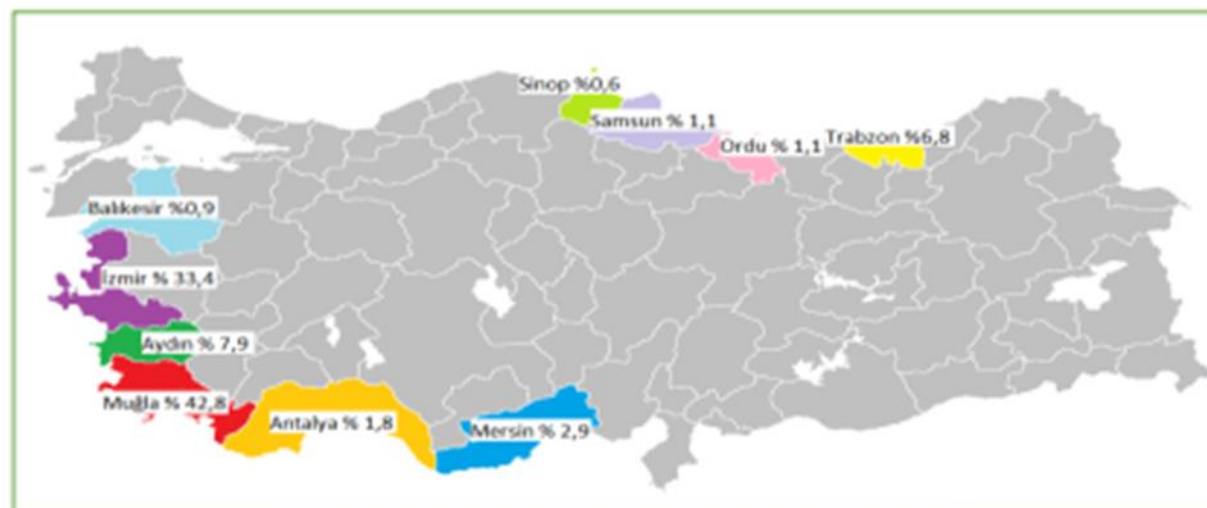
Su ürünleri üretiminde önemli ülkeler (milyon ton)



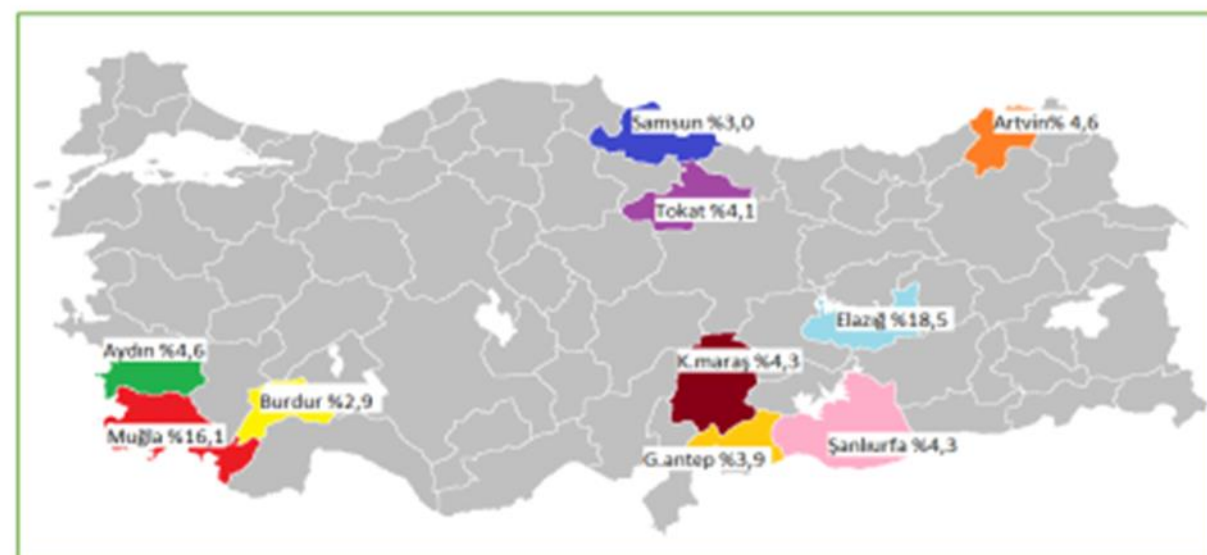
Su ürünleri üretiminde önemli ülkeler (%)



Denizde yetiştiricilik yapılan iller



İç sularda yetiştiricilik yapılan iller





BEE FARMING

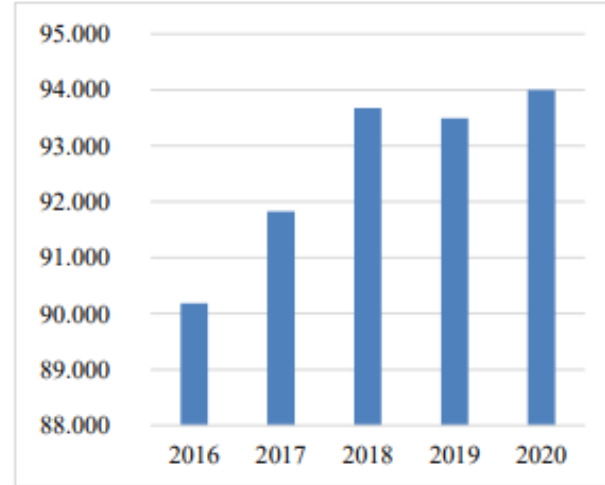
- Bee farming or apiculture is the practice of maintaining bee colonies by humans in man-made hives. Honey bees are reared on a large scale. The bees are domesticated for **honey**, **wax**, and to **pollinate** flowers. They are also used by other beekeepers for the same purposes. The place where bees are kept is known as an apiary or a bee yard.

Tablo 1. Dünya kovan varlığı (bin adet)

Ülkeler	2016	2017	2018	2019	2020
Hindistan	12.055	12.337	12.107	12.166	12.203
Çin	9.048	9.144	9.140	9.179	9.216
Türkiye*	7.900	7.991	8.108	8.128	8.179
İran	7.011	7.134	7.180	7.108	7.141
Etiyopya	6.189	6.524	7.075	6.958	6.986
Rusya Fed.	2.952	2.991	2.999	3.020	3.003
Arjantin	2.937	2.983	2.974	2.979	2.983
Tanzanya	3.425	3.317	3.182	3.094	2.982
ABD	2.775	2.684	2.828	2.812	2.706
Meksika	2.155	2.261	2.139	2.145	2.162
Diğer	33.206	34.061	34.787	32.649	32.883
Dünya	90.183	91.828	93.677	93.495	94.000

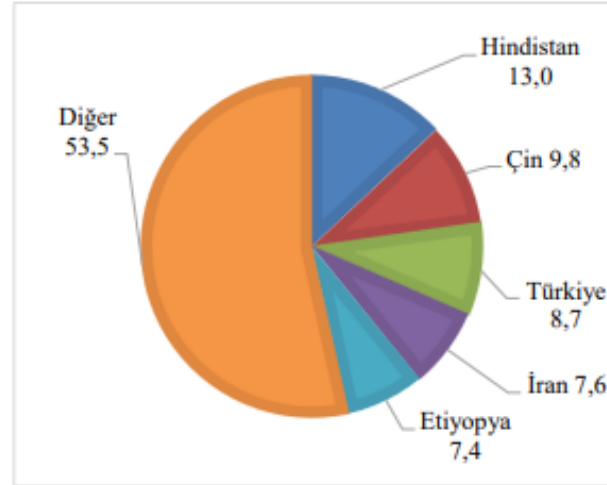
Kaynak: Ek Tablo 1, *TÜİK, 2022

Şekil 2. Dünya kovan varlığı (bin adet)



Kaynak: Ek Tablo 1

Şekil 3. Ülkelere göre kovan varlığı (2020, %)



Kaynak: Ek Tablo 1

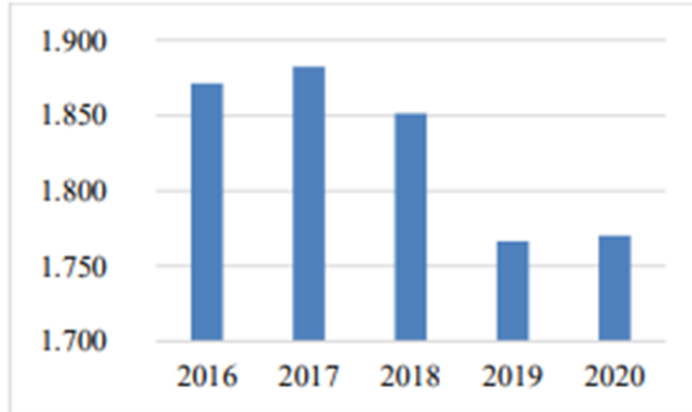


Tablo 2. Dünya bal üretimi (ton)

Ülkeler	2016	2017	2018	2019	2020
Çin	555.000	542.544	446.879	444.054	458.100
Türkiye*	105.727	114.471	107.920	109.330	104.077
İran	67.783	67.302	77.388	77.973	79.955
Arjantin	68.123	76.379	79.468	78.844	74.403
Ukrayna	59.294	66.231	71.279	69.937	68.028
ABD	73.429	67.596	69.857	71.179	66.948
Rusya	69.764	65.167	65.006	63.526	66.368
Hindistan	61.853	62.138	62.197	62.063	62.132
Meksika	55.358	51.066	64.253	61.986	54.165
Brezilya	39.677	41.696	42.268	45.801	51.508
Diğer	715.390	727.889	764.777	681.727	684.435
Dünya	1.871.398	1.882.479	1.851.292	1.766.420	1.770.119

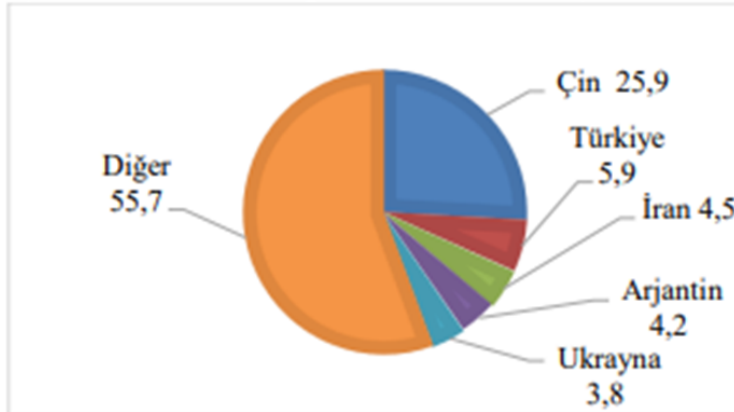
Kaynak: Ek Tablo 2, *TÜİK, 2022

Şekil 4. Dünya bal üretimi (bin ton)



Kaynak: Ek Tablo 2

Şekil 5. Ülkelere göre bal üretimi (2020, %)



Kaynak: Ek Tablo 2

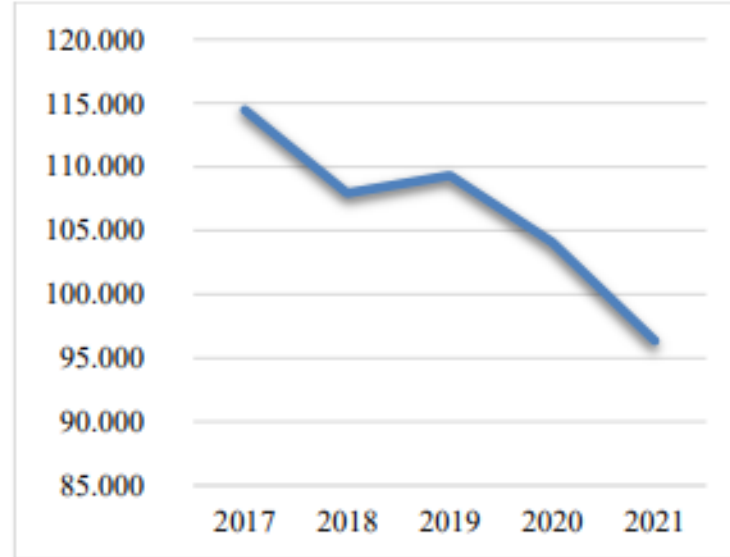


Tablo 8. Türkiye’de genel durum

Yıl	İşletme Sayısı (adet)	Toplam Kovan Sayısı (adet)	Bal Üretimi (ton)	Balmumu Üretimi (ton)
2015	83.467	7.748.287	108.128	4.756
2016	84.047	7.900.364	105.727	4.440
2017	83.210	7.991.072	114.471	4.488
2018	81.830	8.108.424	107.920	3.987
2019	80.675	8.128.360	109.330	3.971
2020	82.862	8.179.085	104.077	3.765
2021	89.361	8.733.394	96.344	3.766

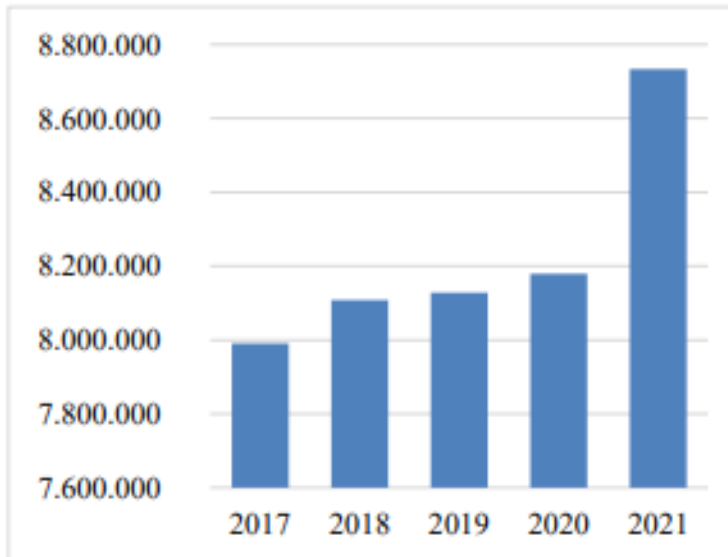
Kaynak: Ek Tablo 8

Şekil 11. Türkiye bal üretimi (ton)



Kaynak: Ek Tablo 8

Şekil 12. Türkiye kovan sayısı (adet)



Kaynak: Ek Tablo 8



Tablo 9. Türkiye kovan varlığı (adet)

İller	2017	2018	2019	2020	2021
Muğla	958.328	935.463	918.116	900.583	949.267
Ordu	562.299	568.547	573.358	573.375	604.213
Adana	454.768	461.987	469.938	481.557	481.878
Antalya	226.592	230.323	217.705	216.423	335.686
Mersin	273.384	267.251	282.749	290.795	303.120
İzmir	215.743	232.009	244.519	273.949	276.918
Sivas	215.878	239.575	243.673	256.374	269.709
Bitlis	131.484	155.899	168.888	158.976	253.625
Aydın	280.386	281.060	274.826	257.738	253.606
Trabzon	166.191	180.182	172.785	167.246	178.696
Diğer	4.506.019	4.556.128	4.561.803	4.602.069	4.826.676
Türkiye	7.991.072	8.108.424	8.128.360	8.179.085	8.733.394

Kaynak: Ek Tablo 9

Tablo 10. Türkiye illere göre bal üretimi (ton)

İller	2017	2018	2019	2020	2021
Adana	10.729	10.941	11.077	12.172	12.336
Ordu	16.799	16.994	17.057	17.213	11.377
Sivas	3.715	5.048	5.029	5.471	5.744
Muğla	15.867	14.777	14.688	6.104	3.820
Aydın	4.357	4.227	3.693	3.643	3.254
Mersin	3.864	2.416	2.352	2.150	3.192
İzmir	2.836	2.777	3.007	1.493	3.056
Balıkesir	3.261	2.618	2.480	2.657	2.656
Siirt	1.786	711	663	2.401	2.323
Van	1.928	1.652	1.869	1.942	2.216
Diğer	49.329	45.759	47.413	48.833	46.370
Türkiye	114.471	107.920	109.330	104.077	96.344

Kaynak: Ek Tablo 9





In summary, the following benefits are achieved through animal husbandry;

1. **Dairy Products:** Animals such as cows, goats, sheep, etc. are the major source of milk and milk products such as yoghurt, cheese, butter, etc.
2. **Meat:** Animals such as cows, buffaloes, pigs, and goats are reared for their meat. Their meat is a rich source of dietary protein.
3. **Land Management:** The livestock is sometimes grazed to control the growth of weeds on agricultural land. The dry shrubs in the areas that are prone to wildfire are eaten by goat and sheep, which reduces the risk of fire.
4. **Fibre:** Animals also produce fibres or textiles such as wool and leather. For eg, sheep are reared for wool whereas leather can be obtained from camel.
5. **Manure:** The excreta, blood and bones of animals are used as manure. The manure is spread on the fields to increase the crop yields and crop production. It is also used as fuel for fires and as plaster for walls and floor.
6. **Labour:** Animals are a source of non-human labour. They are used for ploughing fields, transporting goods and military functions. For ag., horses, yaks and donkeys are used for such purposes.



All livestock farmers have an existential interest in ensuring that their animals are healthy.

Better animal health can greatly improve the safety and quality of products of animal origin (especially milk, meat and eggs), increase productivity and reduce animal mortality.

Basis for good animal health in agropastoral and pastoral systems is the use of local livestock breeds which are adapted to a particular location and which have developed a certain resistance to endemic diseases. This can considerably reduce the use of medication as well as the danger posed by antimicrobial resistance. However, for bacterial diseases such as tuberculosis and brucellosis, modern diagnostics and treatment approaches are required to combat them.

Therefore, veterinarians have great responsibilities in protecting the health of animals, producing food suitable for human health and preventing zoonotic diseases.

