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A COMPARISON BETWEEN TURKEY AND EU COUNTRIES ABOUT POTENTIAL ORGANIC RED MEAT PRODUCTION

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Abstract: The aim of this paper is to provide an overview on the potential for organic red meat production in some European Union (EU) countries along with Turkey. The study analyzes figures on bovine, sheep, and goat animal and annual production amounts in that context for the first time. The production of the top five countries in quantities are particularly presented with the highest proportional increase in a time span. The countries with the highest increase in animal numbers have been identified as well. The study reveals that animal numbers and organic red meat production have both grown significantly since 2012 to 2016. In many countries, bovine animal numbers have high organic shares within the organic red meat sector. The consumer prices analyzed on organic red meat in Turkey depict that the ratio of organic red meat prices to conventional red meat prices is virtually twice. We also determined that the consumer prices on organic red meat increased about 86% between 2012 and 2018 in Turkey. Statistics on the number of organic animals and relevant production are incomplete and do barely allow giving a complete picture of the sector. However, the available information on the organic animal sector is developing both in the European Union and Turkey. The study offers some recommendations on the issue for Turkey as a suitable location for organic livestock farming in terms of its natural resources, climate conditions, and pasture ground as well.

Keywords: organic red meat, livestock farming, Turkey, EU.

INTRODUCTION

This paper aims to offer an overview on the potential for organic red meat production in some European Union (EU) countries along with Turkey. For this aim, the study analyzes figures on bovine, sheep and goat animal and annual production amount in that context for the first time. In many countries, bovine animal numbers have high organic shares within the organic red meat sector.

Although the available statistics on the number of organic animals and relevant production are incomplete and do barely allow giving a complete picture of the sector, we have provided, however, the available on the organic animal sector which appears to be developing for both in the European Union and Turkey. As a conclusion, the study provides with some recommendations, especially for Turkey as well. Nonetheless, Turkey has always been a suitable location for organic livestock farming in terms of its natural resources, climate conditions and pasture ground as well.

Natural and organic foods have lately been a developing market owing to the cumulative interest in organic food in the world. Health focusing consumers have had concerns about the intensive agricultural practices along with health and environmental concerns (Wong & Aini, 2017).

Consumers recently have had concerns on environmental and health issues and they have related them to the consumed food products. Thus, the demand for organic products have raised even though higher costs and retailer margins (Gracia & Sanchez, 2001).

Nevertheless, beyond environmental concerns, ethical and moral reasons, which are among important motivators of consumer buying decision (Harper & Makatouni, 2002).

MATERIALS AND METHODS

The study offers a literature review of the relevant researches and data, most of which consists of the data from Ministry of Food, Agriculture and Livestock Republic of Turkey, and Eurostat along with regulations and notifications, and relevant internet resources for organic meat industries. Methodology evaluates these above given materials and discusses percentage changes in livestock, production numbers and consumer price changes in some selected organic meat products so as to provide the growth in this specific sector.

DISCUSSION

Concerns on antibiotics, pesticides, hormones, genetic modifications in plants and animals, and chemical additives have been reported on the basis of consumer preferences for organic and natural foods. Although the related consumers are willing to pay premiums 10-40% for organic and natural foods over conventional products, those premiums goes to 200% and much for meat and poultry (Sebranek & Bacus, 2007).

Other factors are food safety, quality, health, taste, nutritional values, and environment which also support the increasing demand of organic food and products (Song et al., 2016).

Organic meat production, on the other hand, has cultural and biological specifications on the use and provision of resources, ecological balance, and diversity. It uses natural grasslands and by-products especially in terms of not using artificial fertilizers and pesticides (Kumm, 2002). Nonetheless, most soils and areas reportedly contain between 2% and 5% organic matter (Ricke et al., 2013).

Meat production will serve as an advantage if the resistance against different climates and illnesses could be used favorably for organic foods of animal origin which are supposed to be fed on 100% organic material. Although the use of any antibiotics, synthetic growth promoters, genetically engineered vaccines are prohibited, the supplements on enzymes, probiotics, and vitamins are allowed with the substances of natural origin (Galvano et al., 2016).

Precautions for animal health and welfare are needed in this production in which all livestock are fed with organically produced lures. The protection against diseases are also among significant issues on the organic production (Bayram et al., 2013).

However, organic animal production has been very limited 0,5 to 4% depending on the animal species with respect to the total animal production in EU. Moreover, according to soil conservation, for example, organic beef and lamb production have superior advantages with respect to conventional pig production. But, the production costs, nitrogen and greenhouse gases per kilo of meat are reported as larger (Kumm, 2002). Smaller premiums appear in the sheep and bovine sectors though their higher prices in the conventional market (Fibl & IFOAM, 2015).

In Turkey, a study reports that organic animal production has been developing as much as crop production. However, organic plant production studies have been in the spot by the 1980s, however, by 2003 in animal production (Aksakal et al., 2015).

The organic meat industry have been developing however is also a relatively young sector compared with the conventional red meat industry in the EU as a whole. The organic industry is experiencing.

Table 1. Live bovine animal, bovine animal for slaughter and other bovine animal numbers

Selected EU Countries and Turkey	2012	2013	2014	2015	2016
European Union (28 countries)	N/A	3 552 014	3 630 385	978 559	6 163 354
Belgium	72 487	140 149	140 285	77 533	161 023
Bulgaria	2 018	2 087	1 899	2 469	16 530
Czech Republic	386 742	419 559	442 344	232 026	486 455
Denmark	292 726	300 229	301 001	362 249	270 665
Germany (until 1990 former territory of the FRG)	1 034 591	1 101 900	1 138 700	694 574	1 225 129
Estonia	51 570	57 712	61 809	33 235	71 195
Ireland	68 449	73 001	75 946	45 226	102 572
Greece	129 902	138 576	137 532	68 657	146 274
Spain	325 162	299 839	332 383	196 409	392 388
France	795 061	978 799	942 161	647 516	1 027 134
Croatia	4 058	10 895	13 155	6 399	27 060
Italy	365 847	418 638	392 667	259 279	587 108
Latvia	116 932	131 289	132 324	65 267	165 672
Lithuania	45 025	58 356	60 997	25 755	66 112
Luxembourg	5 698	6 155	6 384	3 976	7 182
Hungary	37 617	36 258	35 585	20 198	38 291
Netherlands	79 830	82 946	82 505	99 981	91 932
Austria	376 572	376 973	656 465	249 121	702 561
Poland	71 193	64 534	64 324	27 099	46 348
Portugal	68 004	69 095	74 343	833	160 103
Romania	4 401	30 138	43 658	7 732	25 015
Slovenia	45 954	50 336	54 718	33 937	66 794
Slovakia	81 063	80 988	83 755	53 054	125 096
Finland	90 179	91 912	97 436	57 393	115 376
Sweden	422 532	523 147	515 738	264 861	543 458
United Kingdom	455 634	445 114	482 057	191 551	511 776
Norway	29 511	31 454	27 385	1 543	50 308
Switzerland	156 648	162 036	167 024	26 882	174 695
Former Yugoslav Republic of Macedonia	N/A	2 752	2 133	N/A	3 368
Serbia	N/A	3 706	2 557	511	2 956
Turkey	N/A	63 670	13 962	4 729	11 341

Source: Eurostat

Table 1 presents the exponential growth with the numbers of live bovine animal, bovine animal for slaughter and other bovine animal reported in the EU for the time span 2012 - 2016. Bovine animal numbers are increasing in many countries. France, Austria, Italy, Czech Republic and Spain are apparently the countries with the highest number of animals.

Live sheep, ewe, ewe-lamb, breeding female and other sheep numbers have shown at Table 2. United Kingdom, Spain, France, Italy and Greece are the most important countries in terms of organic sheep numbers.

Table 2. Live sheep, ewe, ewe-lamb, breeding female and other sheep numbers

Selected EU Countries and Turkey	2012	2013	2014	2015	2016
European Union (28 countries)	4 443 421	4 323 799	4 365 962	4 485 075	4 496 061
Belgium	12 841	14 102	31 846	18 103	21 161
Bulgaria	18 350	15 788	14 500	37 584	53 618
Czech Republic	186 750	203 056	200 770	205 046	202 044
Denmark	20 404	10 257	19 640	18 664	19 502
Germany (until 1990 former territory of the FRG)	237 912	226 300	230 700	227 674	451 060
Estonia	35 437	33 515	36 121	37 465	36 093
Ireland	77 904	85 000	42 201	103 290	127 300
Greece	593 609	610 489	604 364	609 617	593 999
Spain	1 012 456	843 606	934 958	1 192 418	1 165 034
France	786 394	852 824	855 746	915 276	1 026 552
Croatia	17 601	38 866	43 380	47 548	100 270
Italy	1 415 246	1 326 775	1 515 332	1 570 340	776 454
Cyprus	957	1 060	2 612	2 450	1 230
Latvia	47 638	53 938	54 570	64 726	72 732
Lithuania	30 926	38 102	40 514	39 956	42 564
Luxembourg	1 474	1 298	1 340	1 206	1 042
Hungary	6 972	7 839	7 916	7 913	8 138
Netherlands	39 520	37 640	28 956	12 477	24 704
Austria	99 752	161 584	198 572	205 202	224 364
Poland	79 674	65 096	59 760	51 508	38 948
Portugal	90 665	88 528	91 299	108 375	85 551
Romania	51 722	80 309	229 686	85 419	66 401
Slovenia	70 766	68 468	35 790	35 193	35 841
Slovakia	214 654	213 426	193 952	194 478	187 192
Finland	34 402	38 458	23 897	27 562	31 516
Sweden	251 154	237 520	243 334	243 754	261 438
United Kingdom	2 304 194	1 998 400	1 917 880	1 737 108	1 682 220
Norway	47 332	49 059	46 390	48 559	50 902
Switzerland	176 482	183 978	186 124	159 992	159 504
Former Yugoslav Republic of Macedonia	N/A	N/A	52 288	70 170	81 621
Serbia	N/A	2 793	1 285	6 464	4 504
Turkey	N/A	146 828	32 758	45 132	34 668

Source: Eurostat

EU statistics provides 2012 to 2016 numbers for live goat, goat, breeding female and other goat for some selected EU countries and Turkey (Table 3). Greece appears to have the most amount and Italy has lost the second rank to France and Spain closing to the end of the time span.

Table 3. Live goat, goat, breeding female and other goat numbers

Selected EU Countries and Turkey	2012	2013	2014	2015	2016
Belgium	5 177	5 713	11 556	5 997	7 021
Bulgaria	5 662	6 470	6 402	10 762	16 484
Czech Republic	15 240	15 402	18 224	19 312	18 458
Denmark	6 124	2 079	4 078	3 462	4 030
Estonia	732	1 122	1 009	1 602	1 393
Ireland	1 268	918	329	242	123
Greece	349 789	356 002	353 964	344 479	326 255
Spain	111 990	100 364	112 932	138 896	146 800
France	121 638	142 884	135 822	145 084	164 292
Croatia	1 477	3 532	3 104	4 326	6 160
Italy	159 366	163 673	185 430	201 704	113 983
Cyprus	3 971	3 844	9 004	7 782	8 718
Latvia	4 350	4 728	4 418	4 646	5 336
Lithuania	748	757	1 768	1 978	2 348
Luxembourg	408	352	342	398	424
Hungary	996	917	503	538	1 105
Netherlands	52 560	61 474	59 474	62 074	69 096
Austria	38 091	62 536	78 586	81 372	91 758
Poland	10 504	7 182	8 380	6 536	7 038
Portugal	8 765	6 519	6 560	6 468	5 426
Romania	N/A	3 032	12 880	5 816	2 618
Slovenia	11 396	11 734	6 448	6 461	6 857
Slovakia	4 104	3 958	2 010	3 054	2 858
Finland	1 286	438	664	523	507
United Kingdom	346	410	401	396	535
Norway	2 590	2 602	2 798	2 898	1 506
Switzerland	42 408	44 462	45 104	38 594	38 486
Former Yugoslav Republic of Macedonia	N/A	2 762	2 585	4 012	4 422
Serbia	N/A	81	182	2 234	2 230
Turkey	N/A	37 278	12 512	28 594	14 044

Source: Eurostat

Table 4 supplies the percentage change in time (2012 to 2016) on animal numbers for bovine, sheep, and goat along with the five leading countries versus Turkey are given in Figure 1a, b, c.

Table 4. Ratio of percentage change on animal numbers

Selected EU Countries and Turkey	Ratio of percentage change (2012 to 2016)		
	Bovine	Sheep	Goat
European Union ^a	73,52	1,18	-
Belgium	122,14	64,79	35,62
Bulgaria	719,13	192,20	191,13
Czech Republic	25,78	8,19	21,12
Denmark	-7,54	-4,42	-34,19
Germany ^b	18,42	89,59	35,62
Estonia	38,06	1,85	191,13
Ireland	49,85	63,41	21,12
Greece	12,60	0,07	-34,19

Selected EU Countries and Turkey	Ratio of percentage change (2012 to 2016)		
	Bovine	Sheep	Goat
Spain	20,67	15,07	35,62
France	29,19	30,54	191,13
Croatia	566,83	469,68	21,12
Italy	60,48	-45,14	-34,19
Cyprus	-	28,53	35,62
Latvia	41,68	52,68	191,13
Lithuania	46,83	37,63	21,12
Luxembourg	26,04	-29,31	-34,19
Hungary	1,79	16,72	35,62
Netherlands	15,16	-37,49	31,46
Austria	86,57	124,92	140,89
Poland	-34,90	-51,12	-33,00
Portugal	135,43	-5,64	-38,09
Romania	468,39	28,38	-13,65
Slovenia	45,35	-49,35	-39,83
Slovakia	54,32	-12,79	-30,36
Finland	27,94	-8,39	-60,58
Sweden	28,62	4,09	-
United Kingdom	12,32	-26,99	54,62
Norway	70,47	7,54	-41,85
Switzerland	11,52	-9,62	-9,25
Former Yugoslav Republic of Macedonia	22,38	56,10	60,10
Serbia	-20,24	61,26	2653,09
Turkey	-82,19	-76,39	-62,33

Source: Eurostat

^a 28 countries

^b Until 1990 former territory of the FRG

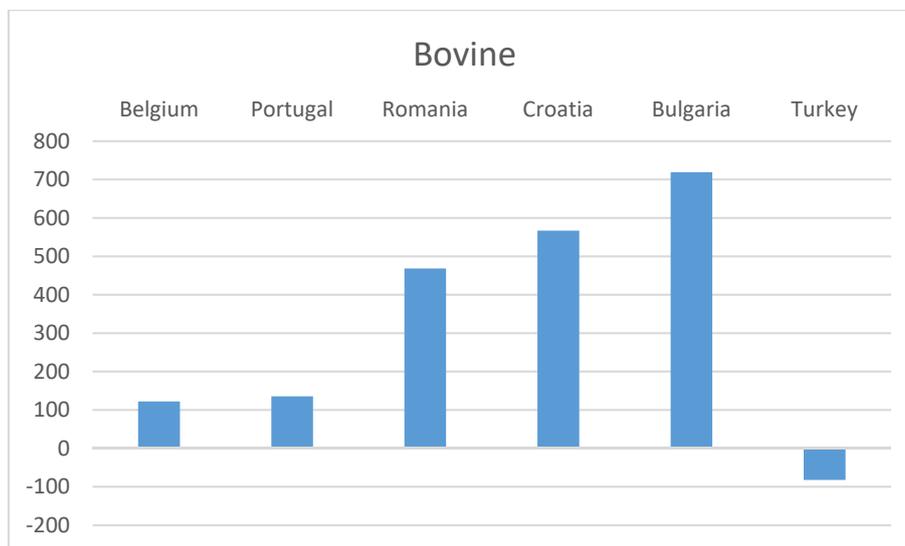


Figure 1a. Five leading EU countries versus Turkey for bovine numbers in percentage changes 2012 – 2016

Source: Calculations of the authors on Eurostat data.

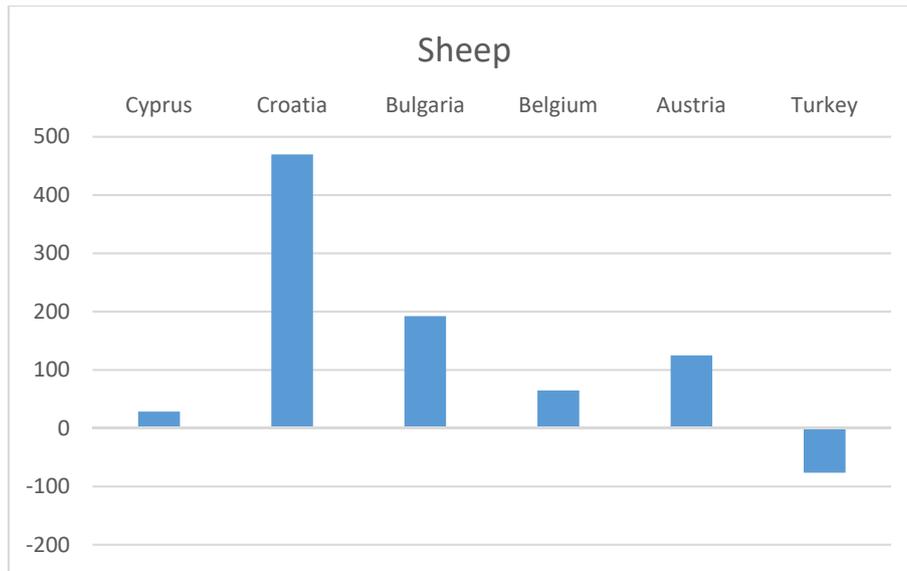


Figure 1b. Five leading EU countries versus Turkey for sheep numbers in percentage changes 2012 – 2016

Source: Calculations of the authors on Eurostat data.

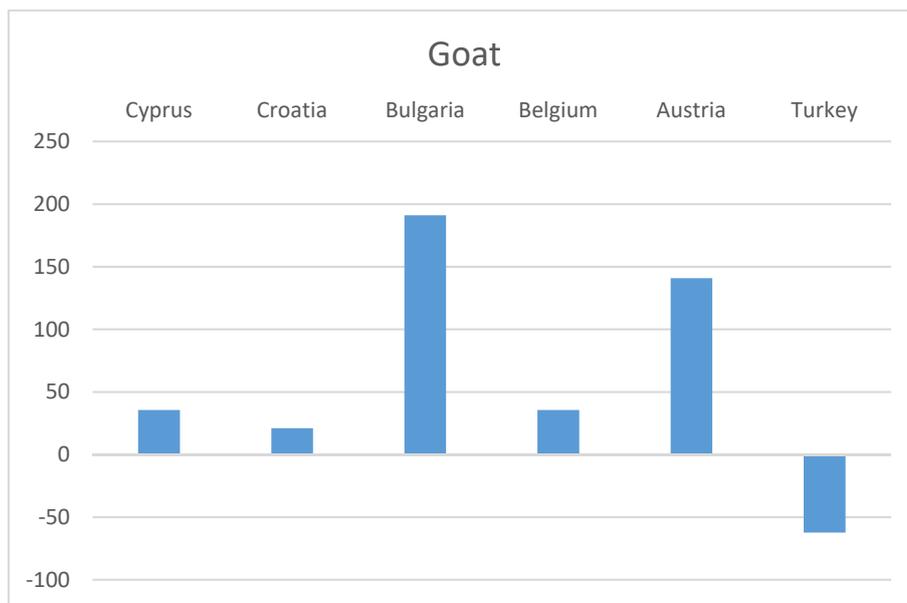


Figure 1c. Five leading EU countries versus Turkey for goat numbers in percentage changes 2012 – 2016

Source: Calculations of the authors on Eurostat data.

Bulgaria noted the highest percentage change in bovine and goat, ranks as the second for sheep numbers in this context. The leader country is Croatia in sheep numbers. Austria, on the other hand, is the second and third in goat and sheep numbers respectively. Romania offers the third highest percentage change in bovine numbers (Figure 1a, b, and c).

Table 5 reflects percentage changes production outlook for bovine, sheep, and goat along with livestock numbers in some selected countries of EU from 2012 to 2016. Note that France and Estonia appear with the leading percentages in this context.

Table 5. Ratio of percentage change on organic production of animal products (tons)

Selected EU Countries and Turkey	Ratio of percentage change (2012 to 2016)			
	Bovine	Sheep	Goat	Livestock
Czech Republic	17,24	11,15	12,50	16,03
Denmark	-16,15	-	-	12,48
Estonia	71,10	9,76	-	57,71
Ireland	-	-	-	64,90
Greece	-	-	-	-17,08
Spain	-3,32	-1,43	-24,59	-0,65
France	76,63	58,12	-	53,15
Italy	-	-	-	34,69
Cyprus	-	-	-	120,00
Latvia	-	-	-	-51,08
Lithuania	-81,40	-	-	-82,84
Luxembourg	-	-	-	7,41
Hungary	-	-	-	56,18
Netherlands	-27,13	-	-	-23,11
Poland	-	-	-	-94,52
Slovenia	-	-	-	9,83
Slovakia	-	-	-	446,88
Finland	-	-	-	47,96
Sweden	3,75	6,26	-	12,25
United Kingdom	-3,60	-42,97	-	54,25
Norway	34,51	18,25	-	22,50
Turkey	-97,63	-63,28	-97,96	-67,63

Source: Eurostat

In the time span of 2012 – 2016, Figure 2a, 2b, and 2c offer five leading EU countries along with Turkey for bovine, sheep, and goat production in percentage changes. France is apparently has the highest figures (Figure 2a, 2b, and 2c).

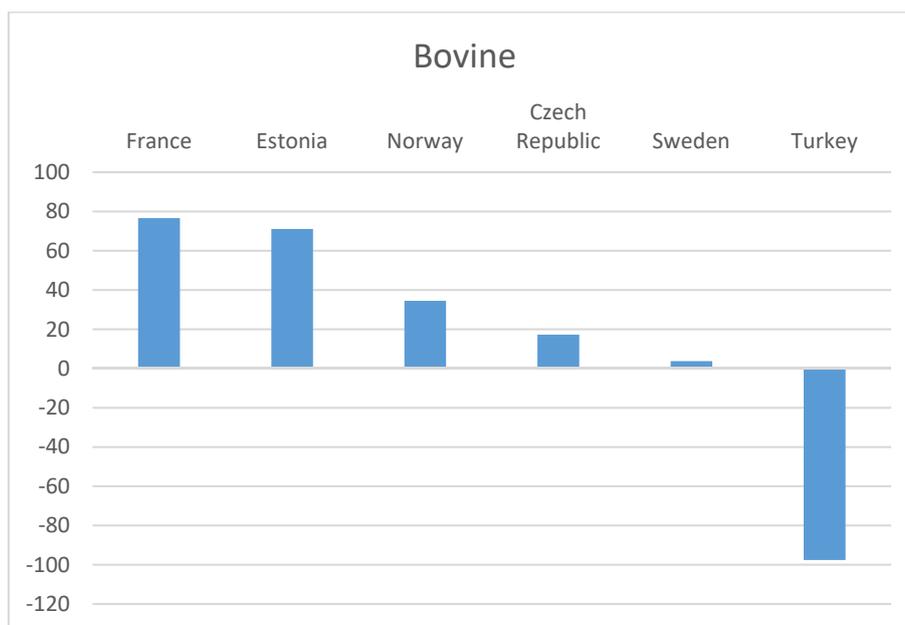


Figure 2a. Five leading EU countries versus Turkey for bovine production in percentage changes 2012 – 2016

Source: Calculations of the authors on Eurostat data.

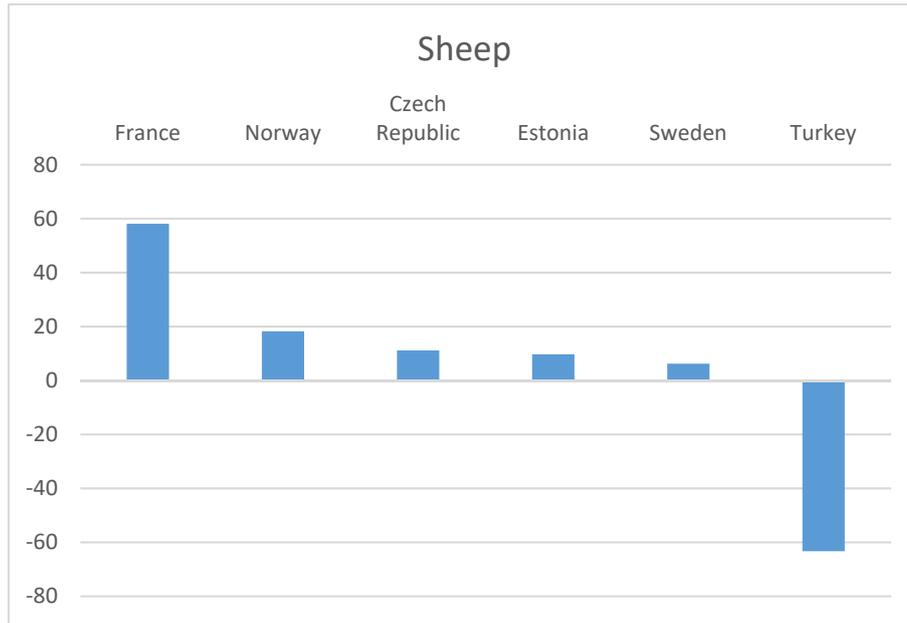


Figure 2b. Five leading EU countries versus Turkey for sheep production in percentage changes 2012 – 2016

Source: Calculations of the authors on Eurostat data.

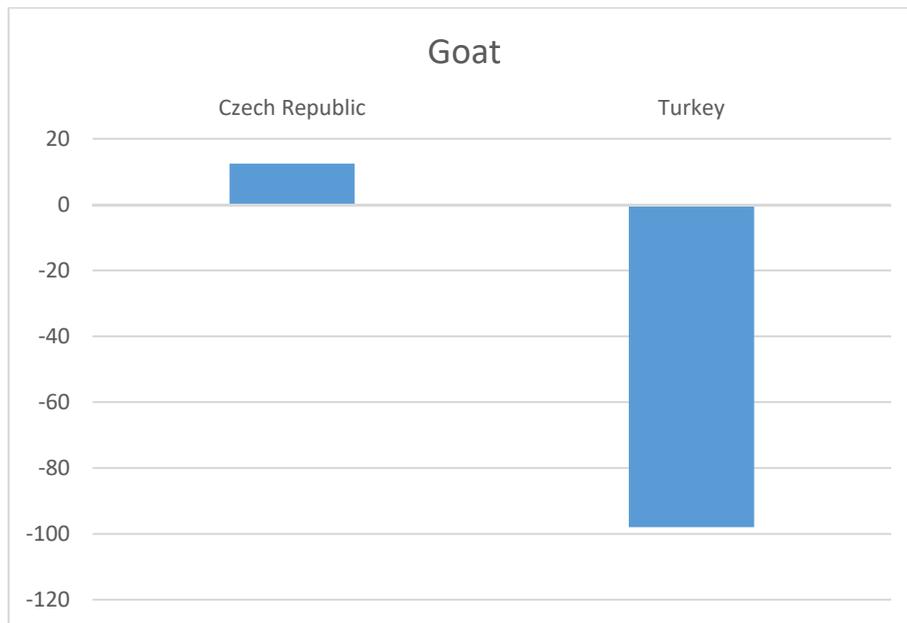


Figure 2c. Five leading EU countries versus Turkey for goat production in percentage changes 2012 – 2016

Source: Calculations of the authors on Eurostat data.

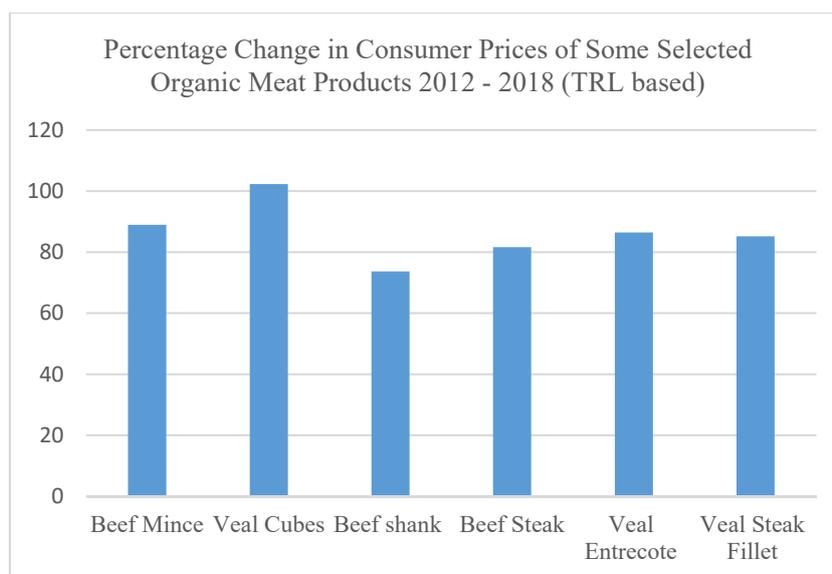


Figure 3. Percentage change in consumer prices of some selected organic meat products 2012 - 2018 (TRL based)

Source: ETO 2012 data and Ekoorganik 2018 data.

We have hereby offered the percentage change in consumer prices of some selected organic meat products from 2012 to 2018 on the data reached in Turkish Liras. Figure 3 supplies aligning percentages for selected beef and veal products. The consumer prices analyzed on organic red meat in Turkey also depict that the ratio of organic red meat prices to conventional red meat prices is virtually twice. We also determined that the consumer prices on organic red meat increased about 86% between 2012 and 2018 in Turkey. according to consumer prices, organic meat consumers paid about three times much more cost than those of conventional meat cost. However, a recent study reveals that numbers for organic red meat production in Turkey have a very low ratio as 1,52% in total meat production. On the other hand, Turkey has a very long way to catch up with numbers in the EU, since that ratio reported as 17,7% for cattle, and 47,3% for sheep. Therefore, new strategies are needed to sustain the production in the EU and subsidize in Turkey by the use of organic and non-organic retailer meat prices and the gap in between what the farmers really have (Koyubenbe & Konca, 2012).

CONCLUSION

We have reached results thereby attaining the aim of this paper which is to provide an overview on the potential for organic red meat production in some European Union (EU) countries along with Turkey. Results offer that most figures on bovine, sheep and goat animal and annual production amounts for the first time in the relevant literature, at least Eu versus Turkey comparison so as to give policy implications. We may confirm that the production of the top five countries with the highest proportional increase in a time span of 2012 to 2016. The study reveals that organic red meat production have both grown in quantity significantly from 2012 to 2016. In many countries, bovine animal numbers have high organic shares within the organic red meat sector. Statistics on the number of organic animals and relevant production are incomplete and do barely allow giving a complete picture of the sector. However, the available information on the organic animal sector is developing both in the European Union and Turkey. The study offers some recommendations on the issue for Turkey as a suitable location for organic livestock farming in terms of its natural resources, climate conditions and pasture ground as well.

REFERENCES

1. Aksakal, V., Karaalp, M., Bayram, B., Pehlivan, E., Öztürk, A, K., Dellal, G., Haşimoğlu, S. (2015). Organic Livestock Development Strategies: Problems and Solution Suggestions, *Doğu Karadeniz II. Organik Tarım Kongresi*, 6-9 November, p.10-19, Pazar / Rize.
2. Bayram, B., Aksakal, V., Karaalp, M., Daş, H. (2013). Organik Et ve Süt Sığırı Yetiştiriciliği, *Doğu Karadeniz I. Organik Tarım Kongresi*, 24-36, 26-28 Haziran, Kelkit.
3. Ekoorganik. (2018). Organic meat prices, Available at <http://www.ekoorganik.com/kategori/gida/organik-yumurta-tavuk-et/.aspx>.
4. Eto. (2012). Organic meat prices, Available at <http://www.eto.org.tr/2012/09/ekopazar-organik-urun-fiyatlari-07-09-2012/>
5. Eurostat. (2018). Data tables organic agriculture. The Eurostat website [eurostat.ec.europa.eu Eurostat](http://ec.europa.eu/eurostat/web/organic-farming). Available at <http://ec.europa.eu/eurostat/web/organic-farming>.
6. Fibl & Ifoam. (2015). The World of Organic Agriculture, Statistics & Emerging Trends, Frick and Bonn, p. 194.
7. Galgano, F., Tolvel, R., Colangelo, A, M., Scarpa, T., Caruso, M, C. (2016). Conventional and organic foods: A comparison focused on animal products, *Cogent Food & Agriculture*, 2: 1142818.
8. Gracia, A, G, J, M., & Sanchez, M. (2001). Market segmentation and willingness to pay for organic products in Spain, *International Food and Agribusiness Management Review*, 3, 207-226.
9. Harper, G, C., & Makatouni, A. (2002). Consumer perception of organic food production and farm animal welfare, *British Food Journal*, Vol. 104 Issue: 3/4/5, pp.287-299.
10. Ricke, C, S., Loo, V, J, E., Johnson, G, M., O'Bryan, A, C. (2012). Organic Meat Production and Processing, *Wiley-Blackwell*, January 23, 55-59.
11. Koyubenbe, N., & Konca, Y. (2012). Organic Meat Production and Prices in the EU and Turkey, *10. Ulusal Tarım Ekonomisi Kongresi*, 5-7 September, p. 985-994, Konya.
12. Kumm, K, I. (2002). Sustainability of organic meat production under Swedish conditions, *Agriculture, Ecosystems and Environment* 88, 95–101.
13. Sebranek, J, G., & Bacus, J, N. (2007). Cured meat products without direct addition of nitrate or nitrite: what are the issues, *Meat Science*, 77, 136–147.
14. Song, L, B., Safari, M., Mansori, S. (2016). The Effects of Marketing Stimuli Factors on Consumers' Perceived Value and Purchase of Organic Food in Malaysia, *Jurnal Pengurusan* 47, 119 – 130.
15. Wong, S, S., & Aini, M, S. (2017). Factors influencing purchase intention of organic meat among consumers in Klang Valley, Malaysia, *International Food Research Journal*, April 24 (2): 767-778.