EOS Series

EXPORT OPPORTUNITY SURVEYS

The Market for Organic Oranges in Germany and the United States

EOS Research Paper 1/2022
December 2021

University of Wisconsin Whitewater

Technology
Arts Sciences
TH Köln

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List of abbreviations

B2B	Business to Business
B2C	Business to Consumer
BMEL	Bundesministerium für Ernährung und Landwirtschaft
CIF	Cost, Insurance and Freight
EC	European Commission
EU	European Union
FAO	Food and Agricultural Organization
FDA	Food and Drug Administration
FOB	Free on Board
GDP	Gross Domestic Product
HS	Harmonized Commodity Description and Coding System
ISIC	International Standard Industrial Classification
kg	kilogram
LOHAS	Lifestyle of Health and Sustainability
NACE	Nomenclature Statistique des Activités Economiques
NAICS	North American Industry Classification System
No.	Number
NTR	Normal Trade Relations
SITC	Standard International Trade Classification
US	United States
US$	United States Dollar
USDA	United States Department of Agriculture
USITC	United States International Trade Commission
WTO	World Trade Organization

Executive summary

This survey assesses export opportunities in the German and US market for organic oranges and provides an outlook for future development.

Since Germany cannot produce oranges, the country only depends on imports and is the largest importing country for oranges worldwide. In contrast, the US is still one of the largest producers of oranges. However, production has declined significantly in the past by 67%, partly due to citrus greening. Thus, the US can likely meet its domestic demand by increasingly importing oranges. Therefore, both the German and American markets will continue to depend on importing oranges in the future.

The demand for general organic products will increase significantly in both countries, primarily due to health and environmental awareness and the associated increase in sales of organic products, especially among the younger generations.

Pricing for the product has been stable in Germany and the US. In both countries, the wholesalers dominate the value chain. Intense competition and high concentration of market power is expected to continue.

Both countries show similar tariff and non-tariff barriers in terms of market access. Tariffs and quotas are applied to protect the domestic production in the US on the one hand and European production of oranges on the other. Similarly, strict regulations on the import of oranges make it challenging to enter both markets. Labeling and packaging requirements for organic products are stringent in both countries and are likely to be made even stricter in the future. Commercial practices are similar and unlikely to change in the US and Germany. Sales promotion remains relevant in both the German and US market. However, due to digital transformation, trade magazines and fairs in digital form will gain importance.

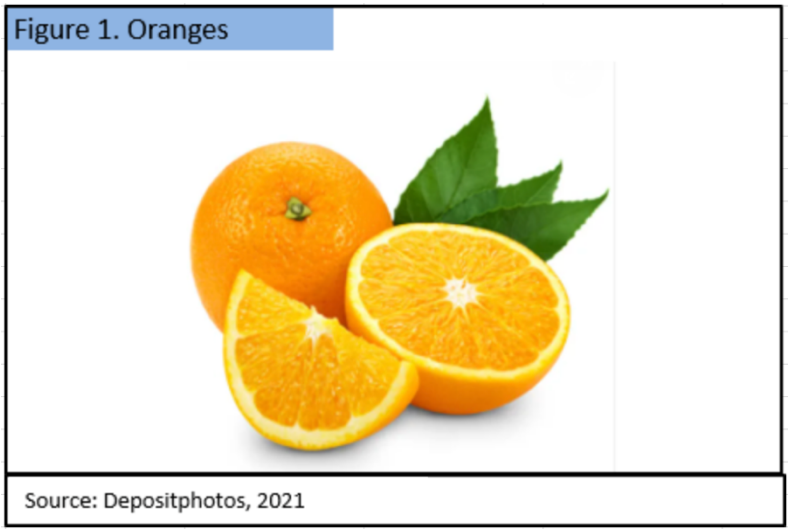
Overall, both the German and the US markets will become more attractive for the export of organic oranges in the future. Due to the expected increase in demand for oranges in the US, the prospects for the US market are slightly more promising.

1. Product description

This export opportunity survey covers the market for organic oranges in the US and Germany. Organic oranges classify under the following codes:

- HS: 0805.10 Fruit, edible; oranges, fresh or dried;
- SITC: 05711 Oranges, fresh or dried;
- ISIC: 0123 Growing of citrus fruits: grapefruit and pomelo, lemons and limes, oranges, tangerines, mandarins and clementine's, other citrus fruits;
- NACE: 01.23 Growing of citrus fruits: grapefruit and pomelo, lemons and limes, oranges, tangerines, mandarins and clementine's, other citrus fruits;
- NAICS: 11131 Orange Groves.

Figure 1. Oranges



Source: Depositphotos, 2021

Oranges belong to the citrus fruits category (Eine Welt Laden, 2021). As shown in *Figure 1*, oranges are round fruits, inclusive of leathery and oily rinds and edible, juicy inner flesh (Encyclopedia Britannica, 2020a). Some of the most commercially relevant oranges are the sweet orange, the mandarin orange, and the Sevilla orange (Encyclopedia Britannica, 2020a). Usually, the sweet orange is round, and the color of its pulp is orange (Encyclopedia Britannica, 2020b).

Citrus fruits like oranges thrive particularly well in the tropics, subtropics, and Mediterranean Sea areas. Oranges are grown on approximately 9 million hectares of cultivated land worldwide (Eine Welt Laden, 2021).

The origin of oranges is in Eastern Asia, where cultivation has occurred for thousands of years. From there, oranges then spread to India, the East Coast of Africa, and the

Eastern Mediterranean region. Nowadays, orange cultivation occurs in America, northern and eastern Mediterranean countries, South Africa, and Australia (Encyclopedia Britannica, 2020a).

The process of growing and maturing of oranges can be described as follows: First, they grow on small trees and shrubs for seven to ten months, depending on the species, before the fruits are harvested (Eine Welt Laden, 2021). Oranges picking occurs when they have fully ripened, as further ripening does not continue once picked (Encyclopedia Britannica, 2020b). It is possible to store ripe oranges on the tree for up to 14 months. The harvest period is from November to March. After picking, branches and leaves are removed from the oranges. Then the fruit is left for five days to allow the outer cells to lose water. This process shrinks the peel, making it firmer and more resistant (Planet-Wissen, 2020).

Oranges can be eaten raw. However, they are also suitable for baking or cooking. In the US, sour oranges are predominantly used for marmalade production, while orange juice is the most important product made from oranges (Encyclopedia Britannica, 2020a). The market for orange juice is large but is not discussed further in this research paper.

The health benefits of oranges include lowering blood pressure and reducing the risk of heart disease as they contain vitamins, antioxidants, and minerals (Healthline, 2019; MedicalNewsToday, 2019). Oranges contain the following minerals and vitamins per 100 grams, as illustrated in *Table 1* (USDA, 2019a).

Table 1 : Minerals and vitamins per 100 grams

Minerals		**Vitamins**	
Calcium	43 mg	Vitamin C	59.1 mg
Iron	0.33 mg	Thiamin	0.068 mg
Magnesium	10.7 mg	Riboflavin	0.051 mg
Phosphorus	23 mg	Niacin	0.425 mg
Potassium	166 mg	Pantothenic acid	0.261 mg
Sodium	9 mg	Vitamin B6	0.079 mg
Zinc	0.11 mg	Folate	25 µg
Copper	0.064 mg		
Manganese	0.029 mg		
Source: Own table based on USDA, 2019a			

The difference between oranges and organic oranges regards the cultivation and harvest. Organic oranges grow on controlled organic farms without synthetic chemicals, pesticides, and artificial fertilizers. Furthermore, organic fruit harvesting happens at a riper state than conventionally grown oranges (Mahler & Co., 2018).

2. Production, foreign trade & consumption

The following data refers to the entire orange market, including organic oranges, since sufficient data is not available for organic oranges.

Production

The production of oranges has increased in recent years. As of 2019, Brazil (22%), China (13%) and India (12%) are the largest producers of oranges (FAO, 2020, pp.3-6). The US ranks as the fourth-largest producer (6%) (*Table 2*). However, production decreased due to the bacterial disease citrus greening and subsequent devastation of plantations (USDA 2021a). In Germany, no oranges are produced (FAO, 2020). A detailed overview of orange production is provided in the Annex.

Table 2. Top ten producers of oranges from 2016 till 2019

Country	2016 Quantity (kg)	2017 Quantity (kg)	2018 Quantity (kg)	2019 Quantity (kg)	2019 Share (%)
1. Brazil	15,404,360	15,868,748	15,161,779	15,488,909	22%
2. China	7,513,939	7,769,492	8,182,444	9,467,108	13%
3. India	6,877,737	6,937,242	7,189,348	8,626,420	12%
4. US	5,010,381	4,175,653	3,229,578	4,384,061	6%
5. Mexico	4,176,044	4,200,084	4,200,084	4,297,062	6%
6. Spain	3,332,906	3,045,601	3,302,062	2,927,394	4%
7. Egypt	2,666,216	2,734,073	2,834,317	2,900,270	4%
8. Iran	1,416,115	1,592,653	1,585,124	2,094,417	3%
9. Turkey	1,678,292	1,769,010	1,723,651	1,542,214	2%
10. South Africa	1,239,214	1,318,412	1,314,601	1,529,967	2%
Total	**64,601,441**	**64,841,120**	**64,266,328**	**69,211,482**	

Source: Own table based on FAO, 2020

Foreign trade

World Imports

From 2016 the value of imported oranges fluctuated over the years and decreased by 4% between 2019 and 2020.

Table 3 shows the world's largest importing countries, the majority of which are European. Germany is the largest importing country of oranges in terms of value (9%) and the second-largest importing country in terms of quantity (8%). The leading position of Netherlands in terms of imported quantity is likely due to its position as re-exporter to other European countries. Similarly, the US is among the leading importers of oranges with 3% of the total quantity.

Table 3. Top ten importing countries of oranges

Country	2016			2017			2018		
	Quantity (kg)	Value (US$)	Price (US$ / kg)	Quantity (kg)	Value (US$)	Price (US$ / kg)	Quantity (kg)	Value (US$)	Price (US$ / kg)
1. Netherlands	511,264	358,045	0.70	519,040	389,911	0.75	522,698	393,178	0.75
2. Germany	489,731	397,909	0.81	462,239	398,881	0.86	468,740	426,937	0.91
3. France	502,381	423,233	0.84	516,932	460,611	0.89	569,999	455,999	0.80
4. Russia	452,236	275,061	0.61	428,877	268,150	0.63	465,431	313,892	0.67
5. Saudi Arabia	417,597	197,566	0.47	N/A	194,674	N/A	402,797	212,934	0.53
6. China	221,797	242,347	1.09	357,992	382,210	1.07	390,109	436,798	1.12
7. UK	292,367	210,716	0.72	287,152	242,960	0.85	268,433	228,026	0.85
8. Hong Kong	276,738	271,738	0.98	318,416	333,635	1.05	340,707	368,434	1.08
9. Italy	137,378	98,327	0.72	232,238	172,875	0.74	176,733	137,498	0.78
10. US	161,228	165,980	1.03	186,877	194,783	1.04	222,942	244,074	1.09
Total	6,545,834	5,003,736	0.76	6,363,803	5,432,765	0.85	6,670,105	5,752,895	0.86

Country	2019			2020		
	Quantity (kg)	Value (US$)	Price (US$ / kg)	Quantity (kg)	Value (US$)	Price (US$ / kg)
1. Netherlands	523,883	381,573	0.73	529,368	463,758	0.88
2. Germany	463,829	386,368	0.83	499,209	506,549	1.01
3. France	496,618	404,873	0.82	477,193	493,567	1.03
4. Russia	447,805	298,397	0.67	427,347	307,894	0.72
5. Saudi Arabia	405,376	208,865	0.52	404,576	224,937	0.56
6. China	432,142	399,068	0.92	293,187	307,929	1.05
7. UK	265,320	205,776	0.78	267,052	250,370	0.94
8. Hong Kong	330,726	344,759	1.04	265,642	301,033	1.13
9. Italy	191,115	126,453	0.66	215,634	190,731	0.88
10. US	190,358	191,769	1.01	205,074	221,824	1.08
Total	6,572,617	5,126,111	0.78	6,312,017	5,800,762	0.92

Source: Own table based on Comtrade, 2021

World exports

According to *Table 4*, the export of oranges has fluctuated from 2016 to 2020. In 2018, exports reached their peak and fell by 14% in 2020. The leader in exporting oranges is Spain, both by quantity (25%) and dollar value (27%). Further key suppliers in value terms are South Africa (19% in 2020) and Egypt (10% in 2020).

Table 4. Top ten exporting countries of oranges

Country	2016			2017			2018		
	Quantity (kg)	Value (US$)	Price (US$ / kg)	Quantity (kg)	Value (US$)	Price (US$ / kg)	Quantity (kg)	Value (US$)	Price (US$ / kg)
1. Spain	1,559,749	1,220,378	0.78	1,617,963	1,306,132	0.81	1,527,639	1,323,452	0.87
2. South Africa	1,063,859	604,094	0.57	1,170,507	752,665	0.64	1,278,379	811,649	0.63
3. Egypt	1,338,801	503,848	0.38	1,363,019	548,120	0.40	1,604,271	666,699	0.42
4. US	677,595	646,625	0.95	588,118	646,428	1.10	504,338	625,002	1.24
5. Greece	461,044	192,380	0.42	268,854	126,935	0.47	313,672	161,715	0.52
6. Netherlands	223,333	201,890	0.90	287,268	266,917	0.93	315,321	295,693	0.94
7. Turkey	403,043	179,666	0.45	390,935	157,323	0.40	450,078	161,493	0.36
8. Australia	174,505	166,368	0.95	189,590	210,368	1.11	185,205	229,613	1.24
9. Portugal	97,700	73,158	0.75	118,410	98,041	0.83	143,225	118,026	0.82
10. India	30,162	10,438	0.35	22,776	8,215	0.36	13,521	4,417	0.33
Total	7,298,184	4,588,980	0.63	7,416,738	5,032,840	0.68	7,759,435	5,392,082	0.69

Country	2019			2020		
	Quantity (kg)	Value (US$)	Price (US$ / kg)	Quantity (kg)	Value (US$)	Price (US$ / kg)
1. Spain	1,756,862	1,246,243	0.71	1,638,922	1,447,739	0.88
2. South Africa	1,186,404	665,405	0.56	1,259,671	800,221	0.64
3. Egypt	1,817,406	656,593	0.36	691,282	648,629	0.94
4. US	484,567	526,514	1.09	503,195	573,954	1.14
5. Greece	264,306	125,994	0.48	321,862	186,740	0.58
6. Netherlands	288,208	253,863	0.88	310,022	351,008	1.13
7. Turkey	238,750	92,025	0.39	283,983	132,820	0.47
8. Australia	200,271	213,017	1.06	182,022	205,741	1.13
9. Portugal	113,836	82,423	0.72	161,258	146,947	0.91
10. India	54,577	20,385	0.37	141,300	117,907	0.83
Total	7,635,713	4,731,477	0.62	6,570,545	5,399,760	0.82

Source: Own table based on Comtrade, 2021

German and US trade

Germany

Since Germany does not produce oranges, it is entirely dependent on imports (FAO, 2020). As illustrated in *Table 5,* the value of German orange imports was rising until 2018. In 2019, imports decreased by 18%. In 2020, however, more oranges were imported than in the last years.

Oranges are mainly imported from European countries. The most important source is Spain (80%), South Africa (8%), and Italy (6%), as shown in *Figure 2*. Italy and Spain are the largest suppliers of organic citrus for the European market (FAO, 2003).

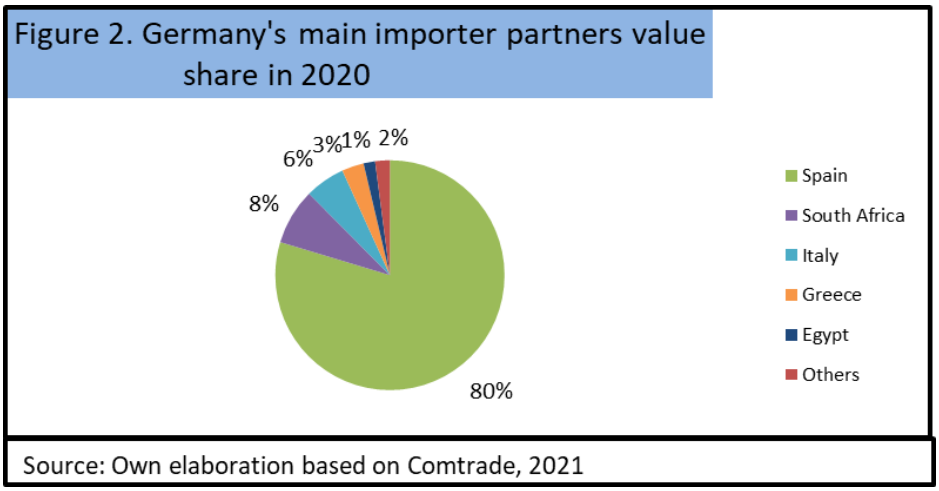
Table 5. Germany's top ten import sources of oranges

Country	2016			2017			2018		
	Quantity (kg)	Value (US$)	(US$ / kg)	Quantity (kg)	Value (US$)	(US$ / kg)	Quantity (kg)	Value (US$)	(US$ / kg)
1. Spain	369,163	303,368	0.82	366,754	310,314	0.85	367,023	332,980	0.91
2. South Africa	31,106	32,692	1.05	35,261	38,437	1.09	37,433	41,780	1.12
3. Italy	38,147	29,884	0.78	27,671	25,830	0.93	34,825	31,032	0.89
4. Greece	34,952	18,881	0.54	15,046	9,085	0.60	16,118	10,196	0.63
5. Egypt	5,893	3,753	0.64	4,461	2,973	0.67	4,259	2,496	0.59
6. Morocco	2,583	2,067	0.80	4,855	4,124	0.85	2,239	1,769	0.79
7. Turkey	2,565	1,487	0.58	1,724	1,170	0.68	1,621	1,118	0.69
8. Zimbabwe	1,441	1,338	0.93	2,973	3,248	1.09	2,392	2,430	1.02
9. Uruguay	1,737	1,898	1.09	1,345	1,119	0.83	1,205	1,026	0.85
10. Portugal	200	151	0.76	303	246	0.81	173	148	0.86
Total	489,731	397,909	0.81	462,239	398,881	0.86	468,740	426,937	0.91

Country	2019			2020		
	Quantity (kg)	Value (US$)	(US$ / kg)	Quantity (kg)	Value (US$)	(US$ / kg)
1. Spain	376,177	303,204	0.81	397,627	387,289	0.97
2. South Africa	34,186	38,523	1.13	39,350	52,436	1.33
3. Italy	26,706	26,066	0.98	28,230	32,751	1.16
4. Greece	13,788	7,772	0.56	15,506	11,915	0.77
5. Egypt	3,601	2,109	0.59	8,148	9,387	1.15
6. Morocco	3,145	2,684	0.85	2,829	3,467	1.23
7. Turkey	1,471	982	0.67	2,162	1,791	0.83
8. Zimbabwe	1,647	1,778	1.08	1,649	2,206	1.34
9. Uruguay	1,606	1,445	0.90	1,055	1,129	1.07
10. Portugal	205	193	0.94	1,016	1,199	1.18
Total	463,829	386,368	0.83	499,210	506,549	1.01

Source: Own table based on Comtrade, 2021

Figure 2. Germany's main importer partners value share in 2020



Source: Own elaboration based on Comtrade, 2021

Germany re-exports 4% of its imported oranges to other European countries, but the trend is decreasing in recent years. Compared to 2016, re-exports fell by 3% in 2020 (*Table 6*). In 2019, both imports and re-exports declined. Although imports increased in 2020, re-exports continued to decline.

Germany primarily exports oranges to Austria (17%), Finland (16%), and Poland (15%) (*Figure 3*).

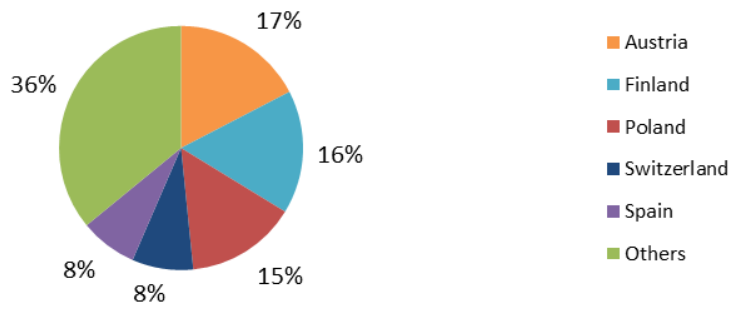
Table 6. Germany's top ten export partners of oranges

Country	2016			2017			2018		
	Quantity (kg)	Value (US$)	(US$ / kg)	Quantity (kg)	Value (US$)	(US$ / kg)	Quantity (kg)	Value (US$)	(US$ / kg)
1. Austria	3,883	4,137	1.07	5,192	5,522	1.06	7,019	8,458	1.21
2. Finland	3,684	3,602	0.98	2,187	2,160	0.99	3,019	3,139	1.04
3. Poland	4,698	3,890	0.83	5,033	4,123	0.82	5,374	4,469	0.83
4. Switzerland	1,874	2,084	1.11	1,731	2,144	1.24	2,892	3,648	1.26
5. Spain	552	469	0.85	245	309	1.26	760	784	1.03
6. Czechia	2,580	1,620	0.63	1,464	1,514	1.03	2,514	2,148	0.85
7. France	3,212	3,129	0.97	2,922	2,753	0.94	2,696	2,671	0.99
8. Denmark	775	762	0.98	1,359	1,351	0.99	667	757	1.13
9. Netherlands	678	592	0.87	1,198	842	0.70	1,019	917	0.90
10. Sweden	1,457	1,095	0.75	2,654	1,678	0.63	733	750	1.02
Total	31,632	28,808	0.91	27,807	25,583	0.92	29,205	30,258	1.04

Country	2019			2020		
	Quantity (kg)	Value (US$)	(US$ / kg)	Quantity (kg)	Value (US$)	(US$ / kg)
1. Austria	4,585	5,519	1.20	3,759	5,030	1.34
2. Finland	2,909	2,972	1.02	3,533	4,086	1.16
3. Poland	3,961	2,481	0.63	3,169	2,926	0.92
4. Switzerland	1,004	1,424	1.42	1,753	2,706	1.54
5. Spain	128	224	1.75	1,637	1,300	0.79
6. Czechia	1,470	1,271	0.86	1,182	1,319	1.12
7. France	1,498	1,991	1.33	1,168	1,412	1.21
8. Denmark	1,079	1,012	0.94	1,126	1,344	1.19
9. Netherlands	346	369	1.07	996	1,062	1.07
10. Sweden	460	618	1.34	649	951	1.47
Total	22,528	22,979	1.02	21,614	25,610	1.18

Source: Own table based on Comtrade, 2021

Figure 3. Germany's main export partners value share in 2020



Source: Own elaboaration based on Comtrade, 2021

The United States

US orange imports increased by quantity and value until 2019, when imports fell by 15%. In 2020 imports increased again (*Table 7*). The US primarily imports oranges from Chile (40%) and Mexico (29%) (*Figure 4*).

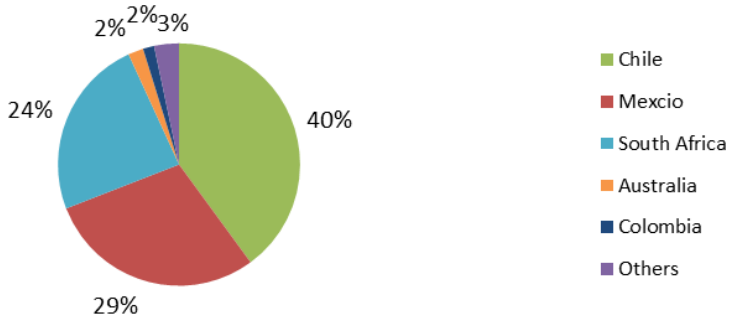
Table 7. US top ten import sources of oranges

Country	2016			2017			2018		
	Quantity (kg)	Value (US$)	(US$ / kg)	Quantity (kg)	Value (US$)	(US$ / kg)	Quantity (kg)	Value (US$)	(US$ / kg)
1. Chile	66,142	85,049	1.29	66,957	87,607	1.31	92,553	118,252	1.28
2. Mexcio	47,073	22,806	0.48	71,097	43,664	0.61	65,999	43,810	0.66
3. South Africa	37,926	42,213	1.11	36,400	45,969	1.26	41,639	48,646	1.17
4. Australia	5,663	9,937	1.75	4,609	9,082	1.97	5,371	11,592	2.16
5. Colombia	23	16	0.70	22	16	0.73	25	22	0.88
6. Morocco	N/A	1,079		4,133	3,284	0.79	11,264	15,197	1.35
7. Dominican Rep.	1,842	1,714	0.93	1,339	1,401	1.05	2,112	2,073	0.98
8. Uruguay	2,267	2,752	1.21	2,824	2,339	0.83	3,359	3,252	0.97
9. Peru	22	41	1.86	152	154	1.01	179	283	1.58
10. Israel	16	10	0.63	60	75	1.25	77	192	2.49
Total	161,228	165,980	1.03	186,877	194,783	1.04	222,942	244,074	1.09

Country	2019			2020		
	Quantity (kg)	Value (US$)	(US$ / kg)	Quantity (kg)	Value (US$)	(US$ / kg)
1. Chile	92,102	115,931	1.26	81,892	112,941	1.38
2. Mexcio	54,844	25,801	0.47	59,807	32,814	0.55
3. South Africa	29,389	30,594	1.04	49,342	55,504	1.12
4. Australia	2,583	5,943	2.30	4,169	8,949	2.15
5. Colombia	639	563	0.88	3,065	3,061	1.00
6. Morocco	7,416	6,138	0.83	2,406	3,471	1.44
7. Dominican Rep.	2,273	2,169	0.95	2,274	2,398	1.05
8. Uruguay	1,306	1,431	1.10	1,603	1,806	1.13
9. Peru	238	289	1.21	312	430	1.38
10. Israel	102	175	1.72	152	244	1.61
Total	190,358	191,769	1.01	205,074	221,824	1.08

Source: Own table based on Comtrade, 2021

Figure 4: US's main import partners value share in 2020



Source: Own elaboration based on Comtrade, 2021

Still, the US is also a significant exporter of oranges (Workman, 2020). US exports have decreased since 2016 by 26% (*Table 8*). The main export partners of the US are the Republic of Korea (25%) and Canada (22%) (*Figure 5*).

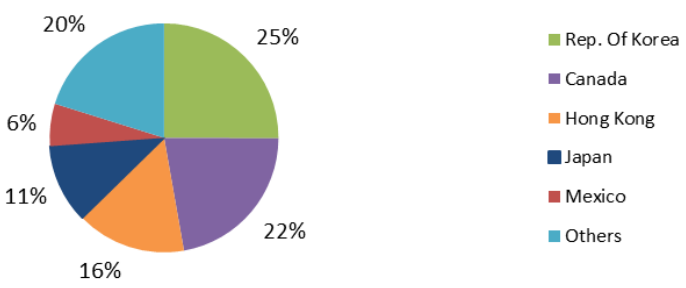
Table 8. US top ten export partners of oranges

Country	2016			2017			2018		
	Quantity (kg)	Value (US$)	(US$ / kg)	Quantity (kg)	Value (US$)	(US$ / kg)	Quantity (kg)	Value (US$)	(US$ / kg)
1. Rep. Of Korea	162,070	180,522	1.11	185,730	226,265	1.22	133,127	205,141	1.54
2. Canada	156,834	141,104	0.90	117,324	131,341	1.12	107,711	130,655	1.21
3. Hong Kong	107,793	85,738	0.80	87,826	74,142	0.84	89,755	82,412	0.92
4. Japan	70,405	84,314	1.20	56,503	70,848	1.25	48,073	67,756	1.41
5. Mexico	26,301	10,458	0.40	16,755	8,030	0.48	21,086	12,064	0.57
6. China	49,494	45,392	0.92	45,509	48,190	1.06	40,717	51,234	1.26
7. Australia	14,686	18,898	1.29	12,902	21,560	1.67	11,059	15,882	1.44
8. Singapore	15,440	12,309	0.80	10,786	10,306	0.96	9,795	9,665	0.99
9. Malaysia	17,713	17,042	0.96	10,030	10,393	1.04	9,180	9,276	1.01
10. New Zealand	7,587	6,848	0.90	7,500	8,502	1.13	7,053	8,553	1.21
Total	677,595	646,625	0.95	588,118	646,428	1.10	504,338	625,002	1.24

Country	2019			2020		
	Quantity (kg)	Value (US$)	(US$ / kg)	Quantity (kg)	Value (US$)	(US$ / kg)
1. Rep. Of Korea	118,824	162,916	1.37	126,171	168,265	1.33
2. Canada	100,097	101,304	1.01	111,407	121,102	1.09
3. Hong Kong	77,883	67,211	0.86	77,812	73,473	0.94
4. Japan	57,080	80,425	1.41	56,135	79,230	1.41
5. Mexico	30,779	14,160	0.46	30,136	15,229	0.51
6. China	23,960	22,771	0.95	24,051	24,522	1.02
7. Australia	14,662	15,308	1.04	17,081	26,012	1.52
8. Singapore	9,509	9,256	0.97	11,166	11,270	1.01
9. Malaysia	9,458	8,738	0.92	9,002	9,139	1.02
10. New Zealand	5,884	6,984	1.19	3,741	5,042	1.35
Total	484,567	526,514	1.09	503,195	573,954	1.14

Source: Own table based on Comtrade, 2021

Figure 5: US's main export partners value share in 2020



Source: Own elaboration based on Comtrade, 2021

Apparent consumption

As mentioned, German consumption of oranges is entirely dependent on imports. Germany experienced a slight decline in consumption between 2016 and 2017, followed by a rebound in 2018 and 2019. Consumption increased substantially in 2020 by 9 %, possibly due to the COVID-19 pandemic (*Table 9*).

US consumption steadily decreased during the period 2016-2018, increased in 2019, and dropped again significantly in 2020, apparently due to disruptions in production, which were not sufficiently replaced by imports (*Table 9*).

Table 9. Estimated consumption of oranges in Germany and the US in kg

Estimated Consumption in Germany					
	2016	2017	2018	2019	2020
Production	0	0	0	0	0
Import	489,731	462,239	468,740	463,829	499,210
Export	31,632	27,807	29,205	22,528	21,614
Estimated Consumption	458,099	434,432	439,535	441,301	477,596
*Estimated Consumption is calculated as follows: Apparent consumption = (production + import) – export					

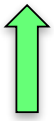
Estimated Consumption in the US					
	2016	2017	2018	2019	2020
Production	5,010,381	4,187,655	3,229,578	4,384,061	2,326,929
Import	161,228	186,877	222,942	190,358	205,074
Export	677,595	588,118	504,338	484,567	503,195
Estimated Consumption	4,494,014	3,786,414	2,948,182	4,089,852	2,028,808
*Estimated Consumption is calculated as follows: Apparent consumption = (production + import) – export					

Source: Own calculation based on FAO, 2021; Comtrade, 2021

Comparison & Outlook

Unlike the US, domestic production of oranges is not possible in Germany. The dependence on imports of oranges from abroad, together with the considerable demand in the domestic market makes Germany the world's top importer. Consumption and imports have been on an increasing trend, with a significant increase in 2020 during the COVID-19 pandemic. Due to restrictions and increased health consciousness, consumers may have purchased more healthy products, such as oranges. Further increases are not expected, but trade is expected to remain stable moving forward.

Even though the US is one of the largest exporters, production and exports are decreasing due to citrus greening. From 2020 onward, the US expects to have a decrease in production and an increase in imports to meet its demand for oranges.

Germany	US	Chapter message
		**2: Production, Trade, Consumption:** **Germany:** no domestic production, increasing imports and consumption before and during Covid-19. The situation is expected to remain stable with a slight increase in the future. **US:** continuous decrease in production, decreasing exports, and increasing imports. The situation is expected to become more attractive for potential exporters, even slightly more attractive than the German market.

3. Market characteristics

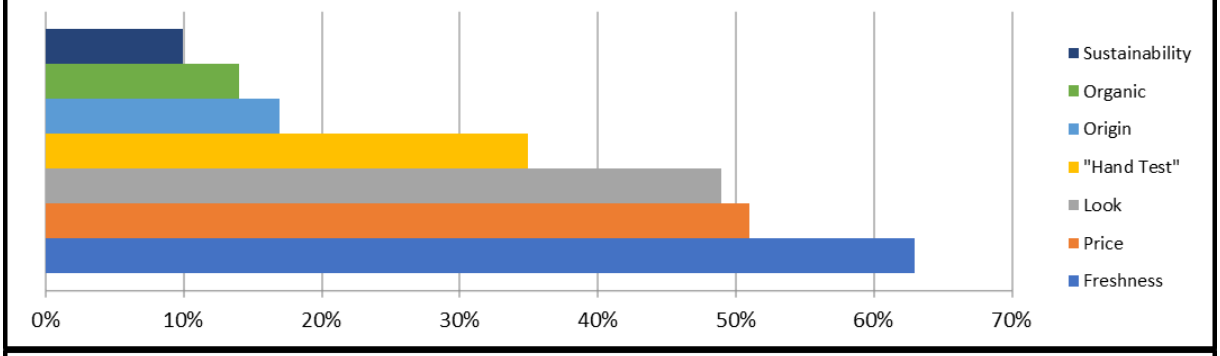
This chapter focuses on the analysis of the main characteristics of the target market in the US and Germany.

Germany

Consumer Preferences

Germany is one of the largest markets for organic food. After apples and bananas, oranges are the most consumed organic fruit in Germany (FAO, 2001). Due to seasonal production, oranges are mostly unavailable during summer and are preferably consumed at Christmas (FAO, 2001; Nordwestdeutscher Rundfunk, 2020). Among the determining factors, he criteria by which Germans select their fruit include origin, organic, and sustainability, which indicates growing affinity towards conscious consumption, including organic (*Figure 6*).

Figure 6. Consumer preferences of German consumers



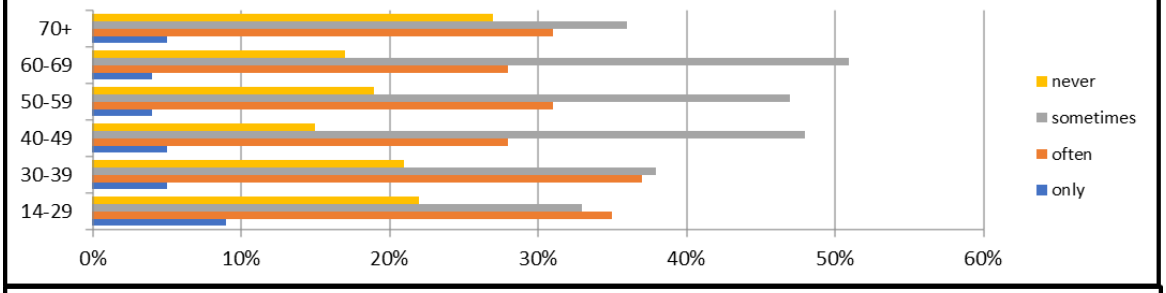
Source: Ahrens, 2020

Relatedly, infrequent processing materials use, avoidance of pesticides, and fair conditions during production are important factors for German consumers (BMEL 2020a). Since organic oranges must not be sprayed with chemical pesticides and are produced under better working conditions, they are preferred by a growing number of sustainability-oriented consumers (Schulz, 2019).

Market Segments

Regarding the B2C segment, consumers in the southern federal states of Baden-Württemberg and Bavaria and Berlin consume the most organic foods (Growth from Knowledge, 2020). With a 44% market share, women tend to buy more organic fruits than men. Furthermore, resent survey results by the Federal Ministry of Food and Agriculture have shown a positive correlation between income and the consumption of organic products (BMEL, 2020a). As shown in *Figure 7*, younger individuals are slightly more likely to purchase organic oranges, as younger generations are increasingly health- and sustainability-conscious (The Local, 2013).

Figure 7. Demand for organic food by age in Germany
How often do you buy organic products?



Source: BMEL, 2020a

In the B2B environment, organic oranges sales occur between food retail companies and specialist organic food stores (USDA, 2016). Furthermore, more internet retailers are buying and reselling organic products. Unitednature X in the US and Etepetete-Bio in Germany, for example, buys organic products and resells them to retailers or private consumers (Flatley, 2019; FAO, 2001).

Conditions of Acceptance

Since Germany is one of the most influential global market players in the segment of organic food, the conditions of acceptance by German consumers play an important international role. As much as 50% of the German consumers pay close attention to the organic “Bio” label and ratings from foundations such as Öko-Test (BMEL 2020b; USDA, 2016).

Beyond official standards, German consumers are particularly interested in the color of fruits. Tropical oranges are green but are still considered ripe. However, consumers in Germany do not accept green oranges, so tropical oranges must be "degreened" to be sold in the German market (FAO 2001; Nordwestdeutscher Rundfunk 2020).

Competition

Organic food stores have a highly competitive position in the German market. One of the largest competitors in the organic segment is the biggest organic food chain *denn’s,* and the organic supermarket chain *Alnatura* (*Table 10*). Organic orange are sometimes substituted in consumption by other very much related fruits, such as tangerines or clementine’s (Mazmanyan, 2020). Conventionally-grown oranges are also substitutes, especially due to their lower prices (FAO, 2003).

Table 10. Biggest competitors in the organic food market in Germany		
	Number of Retail branches in 2014	Number of Retail branches 2015
1. denn's bio (Dennree)	166	193
2. Alnatura	94	99
3. BioCompany	42	45
4. Basic	30	32
5. Ebl	23	25
6. SuperBioMarkt	22	23
7. Voll Corner Biomarkt	15	15
8. Naturgut	10	12
9. Tagwerk	8	10
10. Erdkorn	9	9
Source: USDA 2016; Hielscher, 2017		

Demand Trends

As discussed, in Chapter 2, the overall consumption of oranges is increasing. Especially imports from Spain and Greece, belonging to the largest exporters of organic oranges to Germany, have increased (FAO, 2003).

The demand for organic products reached its peak in 2019 due to increasing public environmental awareness. The COVID-19 pandemic increased the demand for organic fruits by 15% due to more consumption (BMEL, 2020a). The consumption of organic oranges is likely to remain on an increasing trend in the future.

Income Elasticity of Demand

Based on data from *Chapter 2*, the income elasticity of demand is calculated in *Table 11*. Over the past decades, the average income elasticity stayed at about 0.5 (Collins & Dean, 1967). This is confirmed by the more recent data (*Table 11*). Thus, given the under-proportional reaction of demand to changes in income (elasticity below 1), oranges are considered a necessity good in Germany.

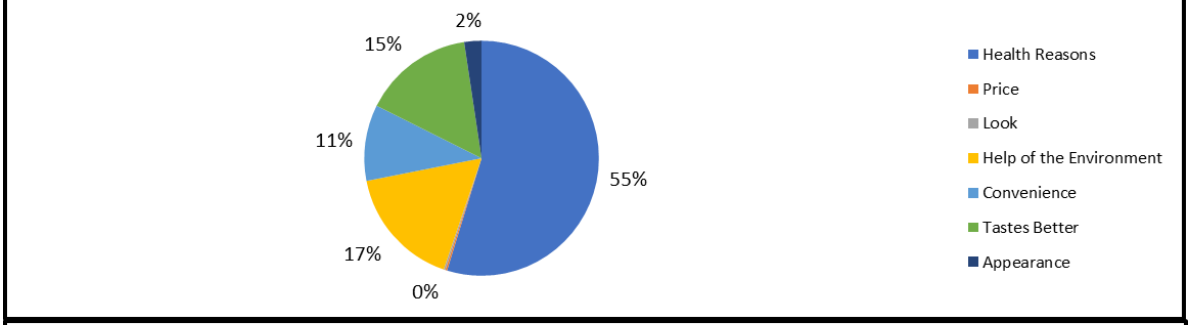
Table 11. Income elasticity of demand in Germany						
	2016	2017	2018	2019	2020	Average
Estimated Consumption (kg)	458,099	434,432	439,535	441,301	477,596	450,193
Change in consumption		-5.17%	1.17%	0.40%	8.22%	1.16%
GDP per capita (US$)	42,108	44,542	47,950	46,794	46,208	45,520
Change in income		5.78%	7.65%	-2.41%	-1.25%	2.44%
Income Elasticity of Demand		-0.89	0.15	-0.17	-6.57	0.47
Source: Own calculation; Comtrade, 2021; World Bank, 2021						

The United States

Consumer Preferences

More than half (55%) of the US population believes that organic fruits are better for health than conventionally grown produce (PEW Research Center, 2016). Convenience, health reasons, environment, and taste determine the organic food preferences of consumers. Consumers prefer organic food mostly due to its healthfulness and less environmental impact and its better taste (*Figure 8*).

Figure 8. Consumper preferences in the US regarding organic products



Source: Sucio et Al., 2019, p. 50

Market Segments

Organic oranges are usually more expensive than conventionally-grown oranges. Thus, wealthier consumers with higher incomes purchase more organic foods. Additionally, consumers of Generation Z (Generation Z is the generation born between 1997-2012) are often more aware of the health and environmental consequences of organic foods, causing them to buy organic fruits more often. Moreover, families with children prefer organic oranges (OrganicGrower, 2020). Consumers with two children in the household were among the groups most likely to buy organic oranges (The Packer, 2020). Organic products including organic oranges are particularly attractive to the LOHAS group, characterized by a high awareness of health and sustainability and are among the largest group of buyers of green products (Lin-Hi, 2018).

Regarding the B2B segment, wholesalers, supermarket chains, and localized organic markets also purchase organic oranges. Walmart is the largest business purchaser of organic oranges. Costco, Kroger, and Target are also among the top commercial buyers of organic oranges (Chait, 2019).

Conditions of Acceptance

For US consumers, to trust the integrity of organic oranges, these fruits must:

- be produced using agricultural production practices that foster resource cycling.
- promote ecological balance.
- maintain and improve soil and water quality.
- minimize the use of synthetic materials.
- conserve biodiversity.

Additionally, the USDA organic label is trusted and valued by environmentally conscious consumers (USDA Agricultural Marketing Service, 2021a).

Competition

The US grows many of its oranges in Florida and California and imports oranges from other countries, mainly from are Chile, Mexico, and South Africa (FAO, 2004).

Conventionally-grown oranges pose the most significant competitive threat to the organic orange market. Consumption of conventionally-grown fruit with inedible pees is generally safe because pesticides are not usually transferred to the inside of the fruit (Quinn, 2016).

Sales of organic oranges are most common by online retailers or health-conscious retail chains with sustainable reputations, such as WholeFoods, TraderJoe's, or local farmer's markets. These grocery chains often compete over brand awareness and health-conscious grocer rankings for organic consumers. Typically, WholeFoods leads this competition as the nationwide favorite supplier of organic foods. However, local markets with homegrown organic products still compete with conglomerates like Walmart and WholeFoods (Owles, 2017). Entry barriers to the US market may also be created by large organic orange suppliers such as Sunkist (Nelson, 2021; Sunkist, 2021).

Demand Trends

The demand for organic fruit in the US has been rising due to growing health consciousness (Business Wire, 2019). At the same time, production of oranges in the US has decreased significantly, requiring imports to meet the domestic demand. This trend suggests organic orange purchasing will continue to rise in the US.

Income Elasticity of Demand

Using the estimated consumption from *Chapter 2*, *Table 12* shows the income elasticity in the US. The calculated average income elasticity of demand is -5.29, which is a rather unfeasible result and due to data volatility in the recent years. Past studies have shown that income elasticity for oranges in recent decades stayed at around 0.5 in the US (Collins & Dean, 1967). Since it is unlikely that consumption attitudes change drastically more recently, one can assume that oranges continue to be considered a necessary good, similarly as in Germany.

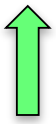
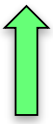
Table 12. Income elasticity of demand in US

	2016	2017	2018	2019	2020	Average
Estimated Consumption (kg)	4,494,014	3,786,414	2,948,182	4,089,852	2,028,808	3,469,454
Change in consumption		-15.75%	-22.14%	38.72%	-50.39%	-12.39%
GDP per capita (US$)	58,021	60,110	63,064	65,280	63,544	62,004
Change in income		3.60%	4.91%	3.51%	-2.66%	2.34%
Income Elasticity of Demand		-4.37	-4.50	11.02	18.95	-5.29

Source: Own calculation; Comtrade, 2021; FRED Economic Data, 2021

Comparison & Outlook

The overall demand for organic fruit continuously rises in the US and Germany, as consumers become more health-conscious. In both countries, especially younger consumers are increasingly interested in buying organic products. Thus, consumption of organic fruits, including organic oranges, is expected to increase in the future.

Germany	US	Chapter message
		**3: Market characteristics:** **Germany:** increasing demand for organic products from consumers and companies. Due to more health-consciousness and environmental awareness, especially younger generations are interested in sustainable products. This leads to promising market prospects in Germany. **US:** increasing demand for organic products from consumers and companies. Due to more health-consciousness and environmental awareness, especially younger generations are interested in sustainable products. This leads to promising market prospects in the US.

4. Market access

Tariffs

Germany

Based on free trade arrangements within the EU, Germany does not levy tariffs on other EU members. The EU imposes a seasonally varying ad valorem duty rate on third countries for oranges, with the highest rate of 16% between October 16 and April 30, which is the EU orange harvest period (WTO, 2021a). The tariffs applied are seasonal to protect EU orange producers (Economic Policy Centre, 2021). The EU Generalised Scheme of Preferences is common, removing import tariffs from products coming into the EU market from developing countries (EC, 2021a). The EU also protects domestic producers of 15 kinds of fresh fruits and vegetables, including oranges, against international competition by the entry price system, which restricts imports below the entry price level (EC, 2008).

The United States

The US imposes a specific rate of 1.9 cents/kg for countries with Normal Trade Relations (NTR). Non-NTR countries must pay 2.2 cents/kg (USITC 2021). The Annex contains an overview of the tariffs of both countries.

Standards and regulations

Germany

The legislation of the European Commission regulates trade in organic products in Germany. Imported fruits must comply with domestic standards in quality and packaging (Official Journal of the European Union, 2018a). Regulation (EC) No. 834 / 2007 included regulations regarding the production and labeling of organic products within the EU in the past (Official Journal of the European Union, 2007). Due to the dynamic development in the organic sector in recent years, the EC has repealed Regulation (EC) No. 834/2007 with the new Regulation (EU) 2018/848. The latter aims to meet European consumers' increased expectations and provide more clarity (Official Journal of the European Union, 2018b). *Table 13* provides an overview of the new Regulation.

Table 13. Overview of Regulation (EU) 2018/ 848	
Chapter	Content
Chapter 1. Subject, Matter, Scope and Definitions	For a full perception of future information, the subject and basic definitions are presenteds.
Chapter 2. Objectives and Principles of organic production	Organic production shall pursue the contribution to a high level of biodiversity and long-term fertility of soils. The resources should be used responsibly, with respecting natural system and cycle.
Chapter 3. Production rules	Preventive and precautionary measures shall be taken at every stage of production, preparation and distribution. GMOs, products produced from and by GMOs should not be used.
Chapter 4. Labeling	At least 95% of the product by weight should be organic to be labeled as organic and to have organic production logo of the European Union on the package and advertising.
Chapter 5. Certification	Control authorities shall provide a certificate to any operator that has notified its activity. Certificate must state that the activity complies with this Regulation.
Chapter 6. Official Controls and other official activities	Operators shall take relevant practical measures to ensure compliance with this Regulation and provide the full description of organic production. Also, operators shall inform about the suspicion of non-compliance.
Chapter 7. Trade with third countries	A product may be exported as an organic product with organic production logo on the packaging. It can be imported only if the products comply with the Regulation and comes from the recognised producer.
Chapter 8. General provisions	Competent authorities, control authorities and control bodies shall not prohibit or restrict the marketing of organic or in-conversion products subject to control by another competent authority.
Chapter 9. Procedural, transitional an final provisions	In this chapter the list of Article reference concerning the exercise of the delegation is provided.
Source: Official Journal of the European Union, 2018b	

The United States

Organic products must comply with the USDA's organic government regulations and standards. Therefore, a USDA agent must inspect all imported products before they can be certified organic (USDA Agricultural Marketing Service, 2021a). Additionally, the US has specific regulations for imports of organic and commercial oranges in terms of grade and size requirements (USDA Agricultural Marketing Service, 2021b).

Non-tariff barriers

Germany

Since 2016 there has been an import quota for fresh oranges of 20,000 tons (WTO, 2021b). Apart from that, no currently evident quantitative barriers exist. Antidumping measures and common European rules on state-controlled direct investment aim to protect European companies and industrial centres more effectively from unfair competition (Bundesministerium für Wirtschaft, 2022).

The United States

The US has a quota on oranges of 40,000,000 kg (US Customs and Border Protection, 2019). Despite declining production, there is still an entry barrier due to competition among domestic production. Specifically, most of fresh oranges produced in the US are from California and Florida (Citricos Siscaret, 2019).

Comparison & Outlook

Germany has high tariff and non-tariff barriers to protect European producers. The US also imposes high specific tariffs and quotas. Besides, both countries have strict standards and regulations to import organic products, making market access difficult. The last change in regulations in 2018 shows that the EU will continue to adapt standards in the future to promote sustainability. In the US, however, lower production and the resulting increased demand for oranges from other countries may reduce regulations in the future. For Germany, market access is likely to become more difficult in the future.

Germany	US	Chapter message
		**4: Market Access:** **Germany:** high tariff and non-tariff barriers, strict regulations, and standards in the EU. Regulations will be adapted in the future to promote sustainability. This will make it more difficult to enter the market in the future. **US:** high tariff and non-tariff barriers, strict regulations, and standards in the US. To meet the demand for organic oranges in the US, tariff or quota regulation could be relaxed in the future. This will facilitate market entry in the long run.

5. Prices

World market prices

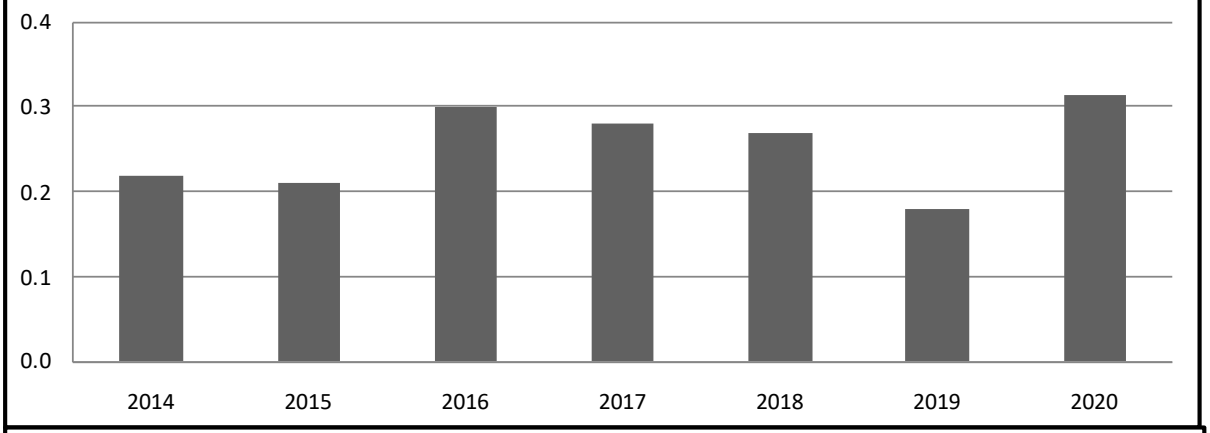
Prices for oranges at a global level have remained relatively flat when looking over 2016 to 2020 (see *Chapter 2*). In 2020, the average export price for oranges was US$ 0.82/kg. The US had the highest export price of 1.14 US$/kg and Turkey the lowest at 0.47 US$/kg. For imports the average was US$ 0.92/kg, with the highest import price in Hong Kong with 1.13 US$/kg and the lowest in Saudi Arabia with 0.56 US$/kg. In relation to the import and export prices for Germany and the US, the average world market prices are lower than the average prices for both countries.

Prices at Producer Level

Germany

Since there is no organic orange production in Germany and most oranges come from Spain, the relevant producer prices refer to the underlying prices of Spanish producers of oranges (*Figure 9*).

Figure 9. Average producer prices Spain: Oranges (US$/kg)

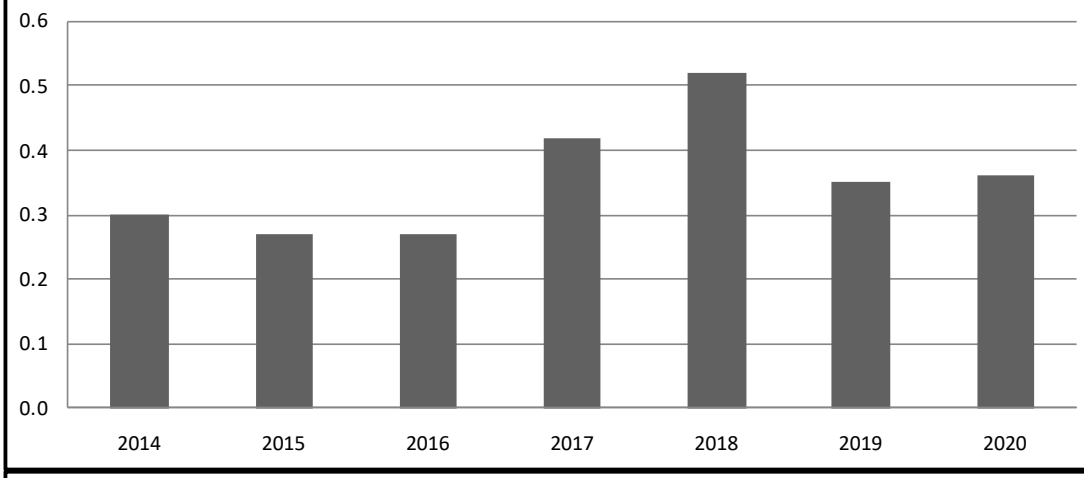


Source: FAOSTAT, 2021

The United States

Many costs affect the overall price of producing organic oranges. The Annex contains a table from Caballero P. & Co (1992) showing the costs of producing regular oranges compared to organic oranges in the US. *Figure 10* shows the average producer prices for domestically produced (mainly in Florida and California) organic oranges from 2014 to 2019.

Figure 10. Average Producer Prices US: Oranges (US$/kg)



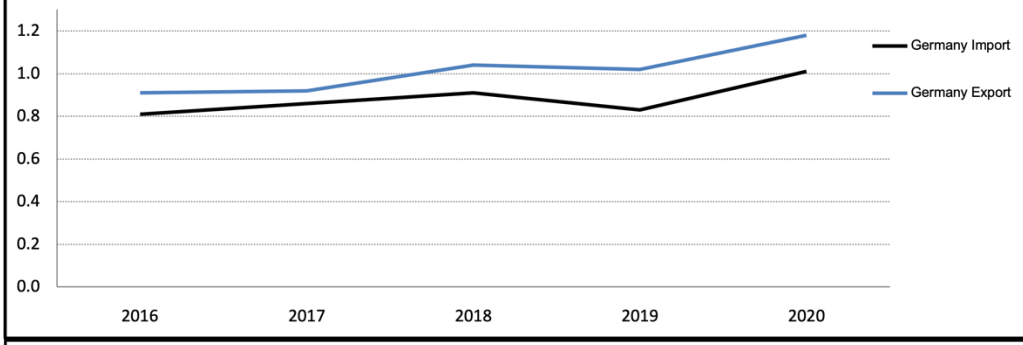
Source: FAOSTAT, 2021

Prices at Import/Export Level

Germany

Import prices have increased slightly over the last five years and the average unit price of imports for Germany was US$1.01/kg in 2020. The lowest import price was US$0.81/kg in 2016. Export prices have also increased and were at US$1.18/kg in 2020 (*Figure 11*).

Figure 11. Prices at import/export level in Germany (US$)

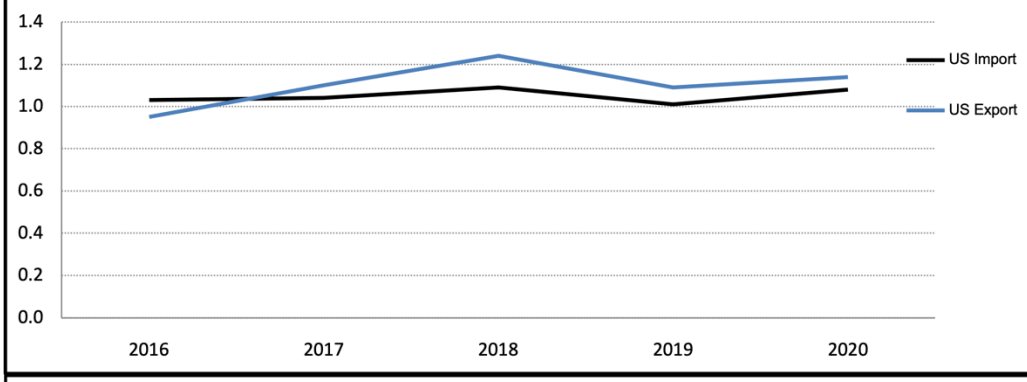


Source: Comtrade, 2021

The United States

The average price of an imported organic orange in the US in 2020 was about US$1.08/kg. Import prices have been stable from 2016 to 2020 and tend to be lower than retail prices further down the supply chain, as the increased travel of oranges only adds to their final cost (*Figure 12*). Since orange production across the US dropped 11% from 2020 to 2021 (McNeil, 2021), For consumers, this means grocers will have to import more, resulting in higher prices at import and in grocery stores. Export prices have been stable in recent years.

Figure 12. Prices at import/export level in the US (US$)



Source: Comtrade, 2021

Prices at Wholesale Level

Based on online observations from the largest wholesalers of organic oranges in Germany and the US, Metro, Tridge and Sam's Club, the wholesale price of organic oranges varies depending on the type, packaging, branding, and country of origin.

With the average wholesale price of organic oranges at US$2.76/kg and regular oranges at US$1.20/kg (1 € = 1.13 US$, Währungsrechner-Euro, 2021), the organic notation alone nearly doubles the listing price of oranges in Germany (Metro, 2021).

In the US, wholesale prices range from US$1.41 to over US$2.35/kg (USDA, 2021b). But it depends on the country of origin. The fresh Valencia orange from Morocco for example is 0.65 US$/kg (Tridge, 2021).

Prices at Retail Level

Germany

In Germany, consumers buy their oranges in retail shops, supermarkets, discounters, or markets. Prices for organic oranges vary and are usually the cheapest in a discounter. However, prices are strongly dependent on the harvests in the producing countries. *Table 14* shows the retail prices for organic oranges in Germany.

Table 14. Retail prices for organic oranges in Germany

(Prices valid until 07.12.21)

Retail shop / discounter	Price US$/kg
Rewe	3,16
Denns BioMarkt	2,25
Aldi	2,14

Source: Own table based on Supermarktcheck, 2021; Denns BioMarkt, 2021

The United States

In the US, the purchase of oranges occurs at supermarkets, farmers' markets, and retailers at prices based on weight and range from US$1.91 - US$3.36kg (*Table 15*). Pricing is heavily dependent on sale location.

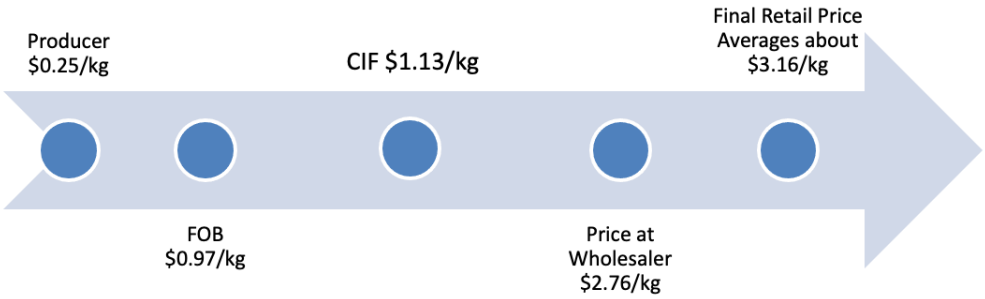
Table 15. Retail prices for organic oranges in the US	
(Prices valid until 07.12.21)	
Retail shop / discounter	Price US$/kg
Wal-Mart	3,36
Target	3,3
Whole Foods	3,28
Aldi	1,91
Source: Own table based on Whole Foods Market, 2021; Wal-Mart, 2021; Aldi, 2021; Target, 2021	

Value chain

Germany

Figure 13 shows the value chain of organic oranges from producer Spain to destination market Germany in 2020. The producer, Free on board (FOB), Cost, insurance, and freight (CIF) prices are calculated on average based on information from *Chapter 2*. The most significant value added is from the export to wholesaler level (+144%). This indicates that wholesalers have substantial market power and are likely to gain higher profits than others involved.

Figure 13. Value chain for organic oranges (Germany) in 2020



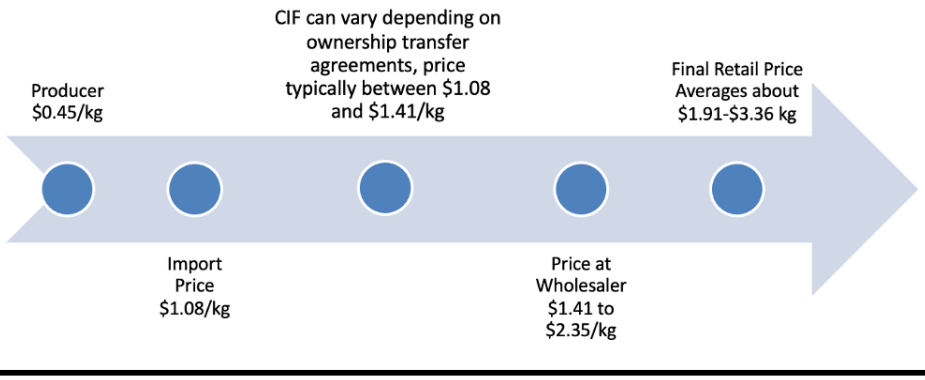
Source: Calculation based on chapter 2; Comtrade, 2021; online observation

The United States

Several major players are involved in fulfilling the consumer's needs in the supply chain of oranges, such as farmers, local traders, transporters, processors, or retailers. Oranges are perishable, which means high fluctuations in their demand and prices are dictated by climatic conditions. The ease and speed at which oranges perish affect the overall value of the oranges throughout their market lifetime. Perishable fruits, like oranges, reach the end consumer through a chain of intermediaries (Mordor

Intelligence, 2021). *Figure 14* outlines the value chain for organic oranges in the US.

Figure 14. Value chain for organic oranges (US) in 2020



Source: Calculation based on chapter 2; Comtrade, 2021; online observation

Comparison & Outlook

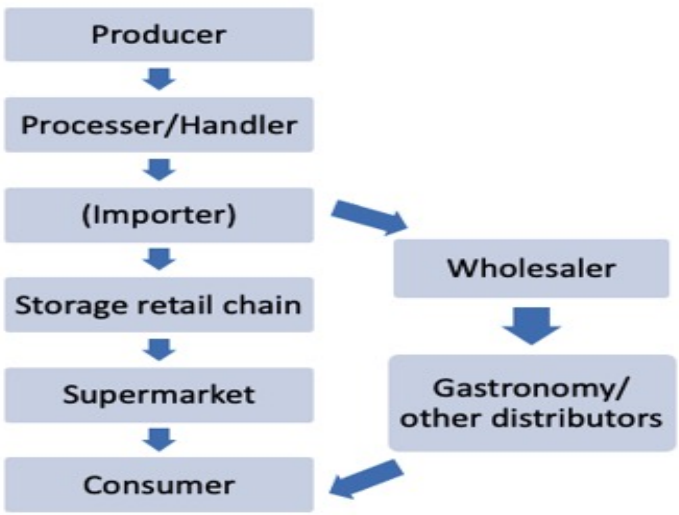
Producer prices have not increased significantly in the last five years in either country. Additionally, average import prices have also been stable in Germany and the US. Wholesale prices are high compared to other market players in the value chain, indicating that they have more market power and reach high profits. Such trends outline a likelihood that prices will remain stable across both countries in the future due to the steady demand for oranges, especially considering the growing interest in organic products. Thus, no significant changes in prices are expected in the next few years.

Germany	US	Chapter message
→	→	**5: Prices:** **Germany:** In recent years, there have been only a few price changes along the value chain. No significant price changes are expected in the long term. **US:** In recent years, there have been only a few price changes along the value chain. No significant price changes are expected in the long term.

6. Distribution channels

The supply chain typically starts with the producer and ends with the consumer of organic oranges (*Figure 15*). The supply chains in the US and Germany are similar, except for their respective origins. Oranges for Germany are transported for the most part within Europe, while the US either produces oranges or imports the fruit from abroad.

Figure 15. Typical supply chain of organic oranges in the US and Germany



Source: Product market guide, 2018; Transport-Informations-Service, 2020; Industry professional 1, personal communication, November 19, 2021

A third-party handler combines oranges from many farmers for transport during the importation process. Almost 90% of the imports to Germany arrive by truck from Southern Europe. Orange import commonly occurs by ship, aircraft, truck, and even rail. Oranges must arrive safely and quickly to ensure freshness while mitigating the costs of shipping and handling (Kettering Global, 2018). The fruits need to be stored at 4-25°C and at 85% humidity to prevent quality damage. Temperatures between 5-10°C are recommended to make oranges remain fresh even longer (Transport-Informations-Service, 2020).

Upon crossing the border, oranges are often shipped directly to the next step in the supply chain, the wholesaler or distributor. Wal-Mart, Sunkist, and Agritrade are some of the larger companies in the US that handle these import brokerages. In the US, the final sale of most organic oranges occurs in supermarkets and grocery stores, instead of to farmer's markets or other vendors.

Eurogroup and Fruchtkontor, subsidiary companies of the biggest retail chains, handle import brokerage in Germany (based on information provided through in-person communication by Industry Professional 1, November 19, 2021). Similar to their

conventionally-grown counterparts, some organic oranges are distributed through wholesalers and most commonly subsequently sold to restaurants, in addition to other distributors. Most organic oranges are sold in typical grocery stores, followed by farmers' markets and organic supermarkets. Only 1.2% of German consumers buy fruits online (Statista, 2021).

The value chain graph helps illustrate the changing relationship between the supplier chain of organic oranges and their price. The most significant increase of value occurs during the importation process. A kilogram of oranges increases in price most dramatically during the transfer from producer to the importer. Then, there is relative value growth between import and initial sales prices amongst wholesalers and other distributors. Lastly, there is another significant increase in value between the initial sales cost and the final retail price of organic oranges. Although the gap between producer price and import price is widest, it is hard to determine who ultimately has the most significant supply chain power. Such determination difficulties are especially in the context of rising transport costs.

Comparison & Outlook

Both the German and US markets have similar supply chains within each country. Big corporations with highly efficient processes and large purchasing volumes dominate distribution channels to the consumer in both the US and German markets. Such market ownership and operational efficiency lead to the provision of organic oranges to customers at attractive prices and significant difficulties for new market competitors to be successful. Changes are unlikely in the long term. What offers potential in both markets are organic supermarkets and online retail. Fresh food sales online in the US and Germany are still comparatively weak (PricewaterhouseCoopers, 2018). However, imminent growth is likely.

Germany	US	Chapter message
		**6: Distribution:** **Germany:** Consistent dominance of big corporations in the distribution channel; but increasing attractiveness due to increasing opportunity of selling organic fruits online. **US:** Overall neutral, because there is decreasing attractiveness due to increasing dominance of big corporations in the distribution channel; but increasing attractiveness due to increasing opportunity of selling organic fruits online.

7. Commercial practices

Germany

Ordering procedures occur in two ways - online portals requiring data entry such as order quantity, time, and quality, or direct orders between importer and exporter in situations where a prior successful business relationship exists. (Deutsche Verkehrs-Zeitung, 2016). Order transmission is digital, and German procurement companies often serve as a link. Such integration simplifies contact with the producer while providing an on-site monitoring function (Industry professional 1, personal communication, November 19, 2021).

Payments are processed electronically. Depending on importer and producer trade history, final payment periods vary from “pre-season” to “after-sales” (Centre for the Promotion of Imports from developing countries, 2021).

The most common transportation method for fruit in Southern Europe is truck transport. Several logistic service providers oversee such transport, subsequent storage, and the ultimate packaging of fruit for delivery throughout Germany. Goods originating from non-EU countries arrive by ship in containers at the Port of Hamburg (Deutsche Verkehrs-Zeitung, 2016).

EU Implementing Regulation No. 543/2011 (Official Journal of the European Union, 2011) outlines detailed marketing standards, minimum requirements, and classifications for oranges:

- Degree of maturity, determined by sugar/acid ratio and juice content
- Diameter (min. 53mm)
- Classification into classes Extra, I, and II
- Consistency of quality within a package

Imports are subsequently electronically transmitted to customs. The EU Commission determines corresponding import prices on a consignment basis, depending on seasonal price fluctuations and the quality of the trade class (Zoll, 2021). Additionally, goods from non-EU countries are checked for compliance with EU marketing standards by BMEL inspections when arriving in Germany. A corresponding registration via the online portal Quakon is preferred (BMEL, 2021a; BMEL, 2021b).

The United States

Electronic commercial invoices and wholesale system data input are common orange order forms. They include season, weight, origin port, product use, and other varying information tracked within the Fruits and Vegetables Import Requirement Database (Industry professional 2, personal communication, November 23, 2021).

Payment method and timing vary. However, prior experience and successful/unsuccessful trade history determine terms. A letter of credit guarantees payment to an exporter if the importer meets commercial invoice terms. For longer-term accounts, lines of credit are provided for up to thirty days and ultimately paid by electronic bank transfer (Industry professional 2, personal communication, November 23, 2021).

US importation of organic oranges, and other temperature-controlled produce is completed via boats after which, trucks, trains, and infrequently airplanes take over (USA Truckload Shipping, 2020).

Table 16 shows the USDA size and grade requirements for importation between September 1 and June 30. These regulations solely apply only if imports exceed 180 kg. Exemptions are available for donated oranges and those for humanitarian assistance (USDA, 2019b).

Table 16. Requirements for oranges in the US

Type	Requirement
Size	at least U.S. No. 2 (except during July and August)
Grade	at least 2 3/16 inches in diameter

Source: USDA Agricultural Marketing Service, 2021b

Comparison & Outlook

General commercial practices, including import regulations, are similar in both countries. However, transportation modes include airplanes within the US due to expanded geographical remit. Payment terms and marketing standards are similar in both countries and will not change in the future. The standardized processes and commercial practices expect to remain the same in Germany and the US. However, both countries' advances in technology order and payment processes provide a more digitized outlook, especially as additional information becomes required at the date of order.

Germany	US	Chapter message
		**7: Commercial Practices:** **Germany:** Stable commercial practices are regulated by European law. No foreseeable changes across noted commercial practice areas. **US:** Stable commercial practices are regulated by national law. Thus, no significant changes are expected in the future.

8. Packaging and Labeling

Packaging

Germany

Orange packaging is generally in cardboard, wood-fruit, wire boxes, and corrugated cardboard. Sometimes mesh bags are used. Transporters provide extreme care to oranges due to their sensitivity to shock and pressure. The required cooling temperature must always be maintained, even during handling. (Transport-Informations-Service, 2020). Orange packaging must comply with European standards, and thus producers must follow the criteria listed in *Table 17*.

Table 17. Main regulations for organic oranges packaging

Standard No.	Description
EN 13427:2004	Requirements for the use of European Standards in the field of packaging and packaging waste
EN 13428:2004	Requirements specific to manufacturing and composition – Prevention by source reduction
EN 13429:2004	Reuse
EN 13430:2004	Requirements for packaging recoverable by material recycling
EN 13431:2004	Requirements for packaging recoverable in the form of energy recovery, including specification of minimum inferior calorific value
EN 13432:2000	Requirements for packaging recoverable through composting and biodegradation – Test scheme and evaluation criteria for the final acceptance of packaging

Source: EC, 2021c

Since January 2019, after Verpackungsgesetz (VerpackG) packaging act replaced the packaging ordinance, the registration of the packaging used for imported goods is required. In the absence of packaging registration, the realization is forbidden (VerpackG, 2019).

United States

Orange transport in the US also occurs in wire boxes, cartons, or wooden/corrugated fiberboard containers. Infrequently, transportation is in mesh bags. However, this often leads to quality issues. Due to spoilage potential, all packaging materials must provide significant airflow to impact oranges by temperature control measures in route. Additional packaging requirements include protection from moisture, excess movement, and infestation (USA Truckload Shipping, 2020). The USDA, a national organization, dictates packaging requirements. No state regulations exist. FDA regulations include the product being from the current crop year, new, clean, labeled containers, and pallets (when used) of quality wood (USDA, 2019b).

Labeling

Germany

European food information regulation controls labeling, general marketing standards, and organic production regulation. Thus, organic oranges must meet the specific European requirements for labeling as shown in *Table 18*.

Table 18. Main regulations for organic oranges labeling

Name	Description	Clarification
Food information Reg (EU) №1169/2011	Font size	Article 13 (2)
	Language requirements	Article 15
Organic production Reg (EU) №834/2007	General standards	
Marketing standards Reg (EU) №543/2011	Specific marketing standard	Article 3 (2)
	General marketing standard	Article 3 (1)
	Exemptions	Article 4 (6)
	Place of marking	Article 5
Reg (EC) №1333/2008	Contrast enhancer on the fruit	

Source: BMEL, 2021c

According to the EU labeling regulations the label must contain:

- The name of the product (unless the package is open),
- Country of origin,
- Product class,
- Net weight,
- Address and name of the dispatcher or packer and available certification,
- Bar code.

Additionally, the label should include brand name, size, and expiration date for the adequate perception of produce (BMEL, 2021c).

The European regulations state that products can only be certified organic if they contain at least 95% organic ingredients. When the product falls within the scope of EC rules and regulations for organic production, EU organic logo provision or provision of the national Bio-Siegel in Germany occurs. These items are shown in *Figure 16* (Official Journal of the European Union, 2009; Bundesanstalt für Landwirtschaft und Ernährung, 2021).

Figure 16. Organic label of Germany and the EU

Source: BMEL, 2021; EC 2021

Figure 17 illustrates that the German retailer Rewe complies with all regulations when labeling its brand of organic oranges.

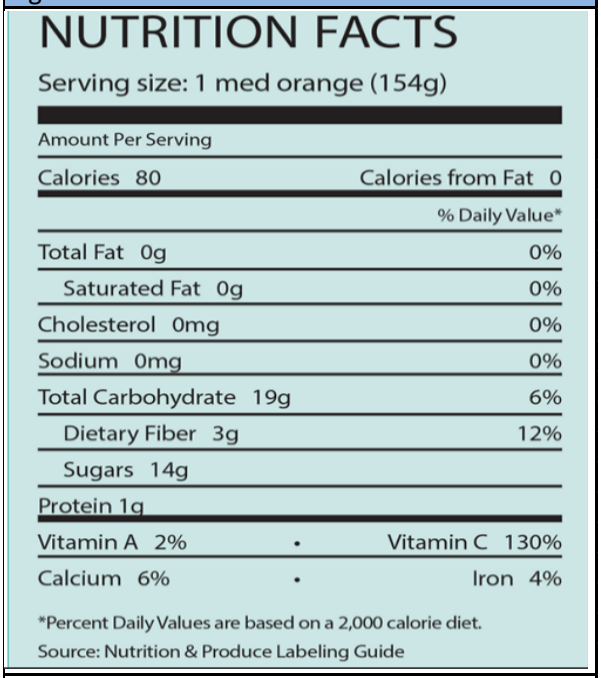
Figure 17. Labeling of organic oranges by Rewe in Germany

Source: Own elaboration

United States

The FDA dictates requirements for all imported food products within the US and its territories, including those related to organic oranges. As presented in *Figure 18*, labeling and ingredient outlines must be honest and in English, or the primary import territory language (FDA, 2021). General FDA regulations dictate the name of the food, and the net quantity must be listed on the side most likely viewed by the consumer. It also requires the information panel to include nutrition, allergy, and ingredient labeling and the name/address of the product manufacturer, packer, or distributor (FDA 2013).

Figure 18. FDA Nutrition Label



Source: FDA, 2013

Labeling products as organic within the US notates the use of at least 95% organic ingredients, approved farming methods, and limited USDA-approved pesticides throughout production. When an item qualifies as organic based on USDA's strict process, the USDA provides an organic seal (*Figure 19*). A verbal declaration of "organic" products and practices must also comply with the USDA standards and regulations, even when packaging is open and lacks a seal (McEvoy et al., 2017). As the FDA, a national organization dictates labeling requirements, no state regulations exist regarding organic orange labeling.

Figure 19. USDA Organic Seal

Source: USDA, 2015b

Comparison & Outlook

The EU regulates packaging and labeling in Germany, while national laws do the same in the US. The requirements for packaging are similar in both countries. Exporters must follow strict standards and regulations related to the labeling of organic products in both markets. Future changes are unlikely, as current requirements are already exhaustive. It provides potential exporters with an asset of relying on a stable set of rules.

Germany	US	Chapter message
		**8: Packaging and Labeling:** **Germany:** Strict European regulations regarding packaging and labeling of organic products. No changes are expected. **US:** Strict regulations regarding packaging and labeling of organic products. No changes are expected.

9. Sales promotion

Trade fairs and exhibitions

Germany
Trade Fairs and exhibitions are common meeting places and contract creation venues for importers and exporters. The following list provides relevant trade fairs regarding Organic or Fruit Trade (Auma, 2021a).

Fruitlogistica

Messe Berlin GmbH
Messedamm 22
D-14055 Berlin

Tel.: +49(0) 30 30 380
E-Mail: fruitlogistica@messe-berlin.de
http://www.fruitlogistica.de/

72,704 visitors and 3,334 exhibitors (in 2020)

Biofach – Leading trade fair for organic food

Nürnberg Messe GmbH
Messezentrum
90471 Nuremburg

Tel.: +49(0) 91 18 60 68 998
https://www.biofach.de/

51,500 visitors and 3,273 exhibitors (in 2019)

International Green Week

Messe Berlin GmbH
Messedamm 22
14055 Berlin

Tel.: +49(0) 30 30 380
E-Mail: central@messe-berlin.de
https://www.gruenewoche.de/en/

400,000 visitors and 1,880 exhibitors (in 2020)

United States

Produce trade exhibitions are somewhat common within the US. The following list provides relevant trade fairs regarding Organic or Fruit Trade.

Sustainable Ag Expo

Alex Madonna Expo Center
100 Madonna Road
San Luis Obispo, CA
United States of America

Tel.: +1 805 466 2288
E-Mail: heather@vineyardteam.org
https://sustainableagexpo.org/

~10,000 - 20,000 visitors and, ~200 - 500 exhibitors (pre-COVID estimates)

Produce Marketing Association Foodservice Conference

The Monterrey Conference Center
One Portola Plaza
Monterrey, CA
United States of America

Tel.: +1 302 738 7100
E-Mail: rflorio@pma.com
https://www.pma.com/events/foodservice

~18,000 visitors and ~450 exhibitors (pre-COVID estimates)

NEPC Produce, Floral & Food Service Expo

Hynes Convention Center
900 Boylston Street
Monterrey, CA
United States of America

Tel.: +1 781 273 4444
E-Mail: nepc2@rcn.com
https://newenglandproducecouncil.com/expo.html

~700 visitors and ~200 exhibitors (pre-COVID estimates)

Global Organic Produce Expo

Seminole Hard Rock Hotel & Casino
1 Seminole Way
Davie, FL
United States of America

Tel.: +1 913 438 0727
E-Mail: fjexpos@farmjournal.com
https://events.farmjournal.com/global-organic-produce-expo-2022

Inaugural exposition scheduled for January 31st to February 2nd, 2021.

Trade magazines

Germany

Fruchthandel Magazin: Journal specializing in fruit trade
https://www.fruchthandel.de/index.php?id=2

Agrar heute: Journal for agricultural production, market, and finances
https://www.agrarheute.com

United States

Progressive Farmer: Agricultural periodical outlining agricultural market analysis and finances
https://www.dtn.com/agriculture/progressive-farmer/

Successful Farming: Magazine specialized in farming, fruits, vegetables, trade, and market trends
https://www.agriculture.com/

Global Trade: Magazine for organizations registered in the US completing international trade
https://www.globaltrademag.com

Other promotional methods

Germany

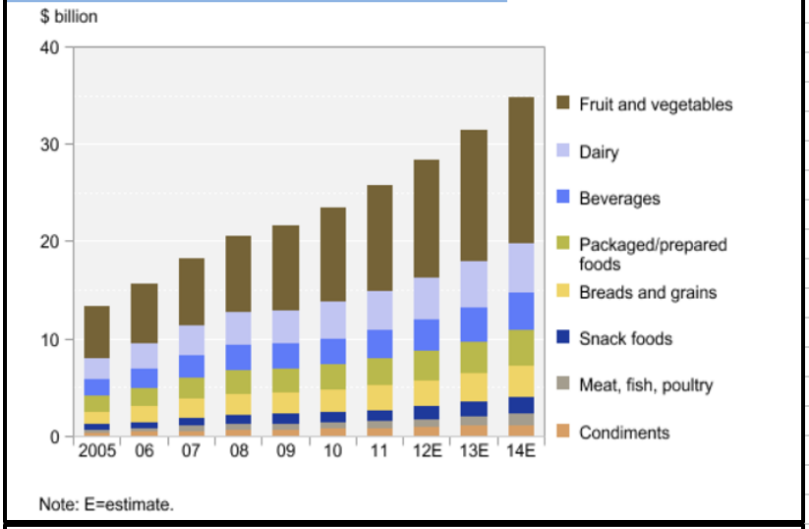
Table 19 shows an overview of the German wholesale B2B markets in 2017.

Table 19. German wholesale B2B markets in 2017	
number	17
place	in German cities and conurbations
vendors	Producers, wholesalers and importers
clients	Restaurants, retailers
time	Daily, in the morning
volume of sales	6.7600.000.000 kg (fruits and vegetables)
staff	17 000
Source: Frischemaerkte, 2021	

United States

More interest in organic agriculture has coincided with increased federal spending and associated retail sales (USDA ERS, 2021). With the increase in US organic fruit sales, as shown in *Figure 20*, farmers' markets provide promotional outlets for organic produce vendors (McEvoy et al., 2017).

Figure 20. US organic food sales by category



Source: USDA ERS, 2021

Comparison & Outlook

German trade fairs are important nationally, while they are less relevant in the US. Since the pandemic has shown vulnerability of on-site trade fairs, organizers are preparing trade fair formats, with the possibility to participate digitally (Auma, 2021b).

Trade magazines raise awareness within the industry and are an attractive B2B medium. Regional and local formats such as farmers' and wholesale markets are an essential B2B marketing tool in both countries, which is unlikely to change in the future.

The digitization of sales and further shift to online platform use is likely an outcome of economic development and innovation in both markets. Additionally, trade magazines are transforming into digital online information sources, so the importance of online advertisements is expected to increase.

Germany	US	Chapter message
		**9: Sales Promotion:** **Germany:** Overall neutral, because of decreasing importance of trade fairs, but the increasing importance of online platforms. Focus is shifting. **US:** Overall neutral, because of decreasing importance of trade fairs, but the increasing importance of online platforms. Focus is shifting.

10. Market prospects

Germany

In general, the German organic orange market is attractive and promising.

Because of the unfavorable climate condition in Germany, domestic production of oranges will not be possible in the future. Consequently, the country will continue to depend on imports of oranges from abroad, making the German market highly attractive for exporters. Stable imports combined with the slightly decreasing exports over the last few years indicate even more so that Germany will remain one of the top importing countries in the long run. With the exception of 2020, consumption of oranges within Germany has been relatively stable. Based on the past observations, a similar trend after the COVID-19 pandemic is likely to persist, with consumption expected to decline, thus returning to pre-pandemic trends.

Additionally, the demand for organic fruits will continue to rise due to increased public health and environmental awareness - especially among younger generations. The lack of pesticides in organic oranges combined with the increasing interest of younger generations in sustainability leads to a high likelihood of increased demand for organic fruits, such as organic oranges, in the future.

The value chain contains intense competition and dominance by wholesalers. These wholesalers have high market power, which makes market entry difficult - a situation likely to continue. However, market prices have been stable in recent years, and due to the growing interest in organic oranges, the market remains attractive for exporters.

The high tariff and non-tariff barriers for third countries are likely to remain unchanged in the future, strengthening the production and import of oranges within the EU. It can be assumed that strict regulations and standards of the EU regarding packaging, labeling, and importing of organic oranges in Germany will remain unchanged. Since the EU aims to promote sustainability and environmental awareness, the rules on organic products are even likely to become stricter in the future.

Sales promotion will remain very important in Germany. Due to the consequences of the COVID-19 pandemic and the influence of digital transformation, online trade fairs will gain importance.

The United States

Similar to Germany, the US market for organic oranges will also become more attractive in the future.

Compared to Germany, the US will continue to have favorable climatic conditions for the domestic production of oranges in parts of the country. Consequently, as one of the largest producers, the US will continue to meet part of the demand for oranges through the domestic production. Nevertheless, the production of oranges has steadily decreased due to citrus greening. Such a trend will likely continue in the future. For the country to continue to meet the demand for oranges, the US market will become increasingly dependent on imports in the long run. Thus, the US market may evolve from an exporting market to the largest importing country of oranges. This development is a promising opportunity for exporters to enter the US market for oranges.

Like Germany, the overall demand for organic fruits will likely rise in the future due to increased health awareness in US society. As Generation Z is more likely to buy organic fruits, the demand for organic products will likely increase in the US.

Since the US will rely on more imports of oranges, market access is expected to improve. Accordingly, import regulations for oranges may relax in the future. However, the stringent requirements for organic products, in general, will remain unchanged.

As in the German market, wholesalers have substantial market power, affecting distribution channels and prices. Commercial practices and packaging/labeling requirements are standardized and not expected to change in the future. Trade fairs will continue to play an essential role in promoting oranges. Minimal changes can be expected due to digitalization.

Comparison & Outlook

All in all, organic fruit demand is expected to increase in both countries. However, the opportunities to import organic oranges vary.

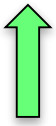
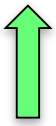
Germany is one of the largest markets for organic food consumption. The country is also the largest importing country of oranges based on its lack of domestic production. Thus, Germany offers a high potential to enter the market for organic oranges.

Similarly, the demand for organic products is consistently increasing in the US. Simultaneously, the production of oranges in the US is likely to decrease further due

to citrus greening. As such, expected increases exist for organic orange import demands. This new trend makes the US market even more attractive, as it is likely less saturated than the German market.

Consequently, both markets are desirable, while the US market has a slightly higher potential for import opportunities than the German market.

Figure 21 illustrates the summary of the market prospect outlook.

Figure 21: Market Prospects Synopsis		
Germany	**US**	**Chapter message**
		**2: Production, Trade, Consumption:** **Germany:** no domestic production, increasing imports and consumption before and during Covid-19. The situation is expected to remain stable with a slight increase in the future. **US:** continuous decrease in production, decreasing exports, and increasing imports. The situation is expected to become more attractive for potential exporters, even slightly more attractive than the German market.
		**3: Market characteristics:** **Germany:** increasing demand for organic products from consumers and companies. Due to more health-consciousness and environmental awareness, especially younger generations are interested in sustainable products. This leads to promising market prospects in Germany. **US:** increasing demand for organic products from consumers and companies. Due to more health-consciousness and environmental awareness, especially younger generations are interested in sustainable products. This leads to promising market prospects in the US.
		**4: Market Access:** **Germany:** high tariff and non-tariff barriers, strict regulations, and standards in the EU. Regulations will be adapted in the future to promote sustainability. This will make it more difficult to enter the market in the future. **US:** high tariff and non-tariff barriers, strict regulations, and standards in the US. To meet the demand for organic oranges in the US, tariff or quota regulation could be relaxed in the future. This will facilitate market entry in the long run.

		**5: Prices:** **Germany:** In recent years, there have been only a few price changes along the value chain. No significant price changes are expected in the long term. **US:** In recent years, there have been only a few price changes along the value chain. No significant price changes are expected in the long term.
		**6: Distribution:** **Germany:** Consistent dominance of big corporations in the distribution channel; but increasing attractiveness due to increasing opportunity of selling organic fruits online. **US:** Overall neutral, because there is decreasing attractiveness due to increasing dominance of big corporations in the distribution channel; but increasing attractiveness due to increasing opportunity of selling organic fruits online.
		**7: Commercial Practices:** **Germany:** Stable commercial practices are regulated by European law. No foreseeable changes across noted commercial practice areas. **US:** Stable commercial practices are regulated by national law. Thus, no significant changes are expected in the future.
		**8: Packaging and Labeling:** **Germany:** Strict European regulations regarding packaging and labeling of organic products. No changes are expected. **US:** Strict US regulations regarding packaging and labeling of organic products. No changes are expected.
		**9: Sales Promotion:** **Germany:** Overall neutral, because of decreasing importance of trade fairs, but the increasing importance of online platforms. Focus is shifting. **US:** Overall neutral, because of decreasing importance of trade fairs, but the increasing importance of online platforms. Focus is shifting.

Annex

Annex 1: Industry insights

Phone interview with an Industry Expert from the German supermarket chain REWE Group[1]

The person has two bachelor's degrees: one in Business Administration and one in Agriculture. Within Rewe Group, the person is a product manager in the "Rewe delivery service" area, including fruit and vegetables. This means that the person has insights and is industry-proof due to the degree.

The person was able to announce that the Rewe Group has its own procurement company, which, together with other retail chains, acts strongly towards producers. The company is called Eurogroup and is equally owned by Rewe Group and Coop Group. In Spain, the most important producer of organic oranges for Germany, the Rewe Group has also had its own procurement company for organic fruits since 2016: Campina Verde. Regarding transport, the interviewee was able to say, that external transport companies are used. The oranges are netted either in the country of production or in Germany. Organic oranges are often sold severally in German food retailers.

Phone interview with a former director of purchasing from one of the most prominent multinational producers of fruits and vegetables [2]

The person held several senior roles across the purchasing departments of the organization within and outside of the production sector. The discussion focused on the evolution of ordering processes, ordering procedures, required information at the time of order, and industry-standard payment terms.

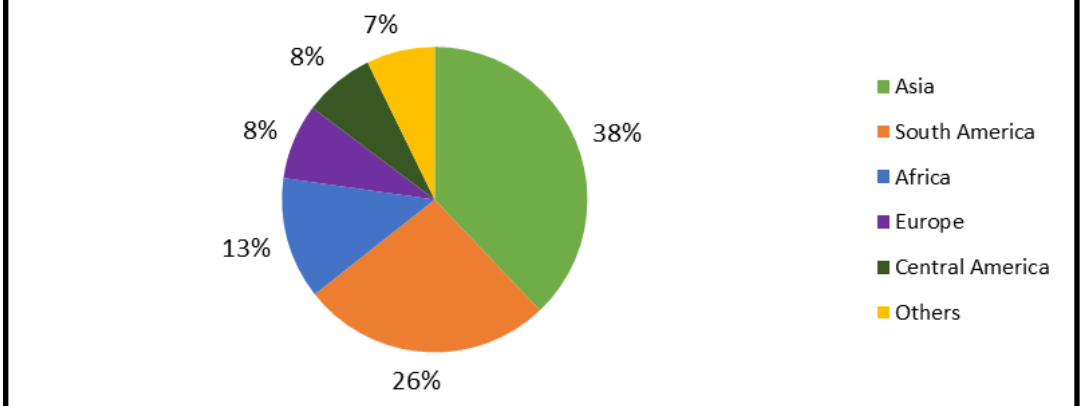
Additionally, the person noted that most processes and procedures are digitized nowadays. Previously, paperwork was used at the time of entry, during the transportation of goods process, and at delivery. They informed Team Organic Oranges of the Fruits and Vegetables Import Requirement Database and its tracking of information required such as product wright, time of year, and port of origin. Apart from that, the individual noted that electronic bank transfer is the standardized payment method. They also stated letters of credit were common. The norm was to provide thirty days for payment. However, successful histories of prior transactions often provided more favorable payment terms.

[1] The person requested anonymity.
[2] The person requested anonymity.

Annex 2: Production of oranges

Annex 2. Production of oranges by continent				
Continent	2016 Quantity (kg)	2017 Quantity (kg)	2018 Quantity (kg)	2019 Quantity (kg)
1. Asia	21,685,344	22,320,101	22,881,830	26,235,783
2. South America	18,021,225	18,543,128	17,908,734	18.315.879
3. Africa	8,231,069	8,500,230	8,560,195	8,920,983
4. Europe	5,807,252	5,494,364	5,865,312	5,532,466
5. Central America	5,113,619	5,144,917	5,121,330	5,197,171
6. Northern America	5,010,381	4,175,653	3,229,578	4,384,061
7. Oceania	370,404	310,167	351,988	322,232
8. Caribbean	362,330	340,739	347,452	308,352
Total	**64,601,441**	**64,841,120**	**64,266,328**	**69,211,482**
Source: Own table based on FAO, 2020				

Annex 2. Production per continent



Own table based on FAO, 2020

Annex 3: Duties for oranges in Europe and the US

Annex 3. Duties in the EU			
Duty Type	**Name**	**Duty**	**Nature**
Ad valorem duty	EU- Western Balkan Countries (WBC) Bilateral Trade Agreement	0	
Ad valorem duty	All third countries	16	02- MFN statutory (legal/autonomous) duty
Ad valorem duty	EU - Andorra Bilateral Trade Agreement	0	13- Preferential duties: Free-trade area
Ad valorem duty	EU - Albania Bilateral Trade Agreement	0	14- Preferential duties: Free-trade area
Ad valorem duty	EU - Bosnia and Herzegovina Bilateral Trade Agreement	0	15- Preferential duties: Free-trade area
Ad valorem duty	EU - Chile Bilateral Trade Agreement	0	17- Preferential duties: Free-trade area
Ad valorem duty	EU - Algeria Bilateral Trade Agreement	0	18- Preferential duties: Free-trade area
Ad valorem duty	EU - Israel Bilateral Trade Agreement	6.4	
Ad valorem duty	EU - Iceland Bilateral Trade Agreement	0	
Ad valorem duty	EU - Korea, Republic of Bilateral Trade Agreement	0	
Ad valorem duty	EU - Jordan Bilateral Trade Agreement	0	
Ad valorem duty	EU - Lebanon Bilateral Trade Agreement	6.4	
Ad valorem duty	EU - Morocco Bilateral Trade Agreement	0	
Ad valorem duty	EU - Montenegro Bilateral Trade Agreement	0	
Ad valorem duty	EU - Former Yugoslav Republic of Macedonia Bilateral Trade Agreement	0	
Ad valorem duty	EU - Mexico Bilateral Trade Agreement	0	
Ad valorem duty	EU - Palestinian Authority Bilateral Trade Agreement	0	
Ad valorem duty	EU - Peru Bilateral Trade Agreement	0	
Ad valorem duty	EU - Tunisia Bilateral Trade Agreement	3.2	
Ad valorem duty	EU - Turkey Bilateral Trade Agreement	0	
Ad valorem duty	EU - Egypt Bilateral Trade Agreement	0	
Ad valorem duty	EU - San Marino Bilateral Trade Agreement	0	
Ad valorem duty	EU - Serbia Bilateral Trade Agreement	0	
Ad valorem duty	EU - South Africa Bilateral Trade Agreement	0	
Ad valorem duty	EU - Papua New Guinea Bilateral Trade Agreement	0	
Ad valorem duty	EU - Colombia Bilateral Trade Agreement	0	
Ad valorem duty	EU - Overseas Countries and Territories (OCT)	0	23- Preferential duties: Zone-zone duties
Ad valorem duty	EU - Eastern and Southern Africa States (ESA)	0	25- Preferential duties: Zone-zone duties
Ad valorem duty	EU - Economic Partnership Agreements (EPA)	0	26- Preferential duties: Zone-zone duties
Ad valorem duty	EU - CARIFORUM States (EPA)	16	27- Preferential duties: Zone-zone duties
Ad valorem duty	EU - Central America Bilateral Trade Agreement	0	28- Preferential duties: Zone-zone duties
Ad valorem duty	EU - SADC (Botswana, Lesotho, Namibia, Swaziland)	0	29- Preferential duties: Zone-zone duties
Ad valorem duty	EU - Cameroon Bilateral Trade Agreement	0	
Ad valorem duty	EU - Ecuador Bilateral Trade Agreement	0	
Ad valorem duty	EU - Fiji Bilateral Trade Agreement	0	
Ad valorem duty	EU - Georgia Bilateral Trade Agreement	0	
Ad valorem duty	EU - Ukraine Bilateral Trade Agreement	0	
Ad valorem duty	EU - Kosovo Bilateral Trade Agreement	0	
Ad valorem duty	EU - Canada comprehensive economic and trade agreement (CETA)	0	
Ad valorem duty	EU - Ghana Bilateral Trade Agreement	0	
Ad valorem duty	EU -Canada agreement: re-imported goods	0	
Ad valorem duty	EU - Samoa Bilateral Trade Agreement	0	
Ad valorem duty	EU - Western Sahara Bilateral Trade Agreement	0	
Ad valorem duty	EU - Japan Bilateral Trade Agreement	0	
Ad valorem duty	EU - Singapore Bilateral Trade Agreement	0	
Ad valorem duty	Least Developed Countries (LDC) duties	0	50- Preferential duties: LDC duties
Ad valorem duty	EU - Country Specific Tariff Preferences for Viet Nam	0	
Ad valorem duty	EU - Great Britain Bilateral Trade Agreement	0	
Ad valorem duty	EU - Solomon Islands Bilateral Trade Agreement	0	
Source: WTO, 2021			

Annex 3. Duties in the US			
Duty Type	**Name**	**Duty**	**Nature**
Specific duty	MFN applied duty rates	1.9 cents/kg	02- MFN statutory (legal/autonomous) duty
Ad valorem duty	Free-trade area duty rates for Canada under the NAFTA	0	10- Preferential duties: Free-trade area
Ad valorem duty	Free-trade area duty rates for Mexico under the NAFTA	0	11- Preferential duties: Free-trade area
Ad valorem duty	Free-trade agreement duty rate for Israel	0	12- Preferential duties: Free-trade area
Ad valorem duty	Free-trade agreement duty rate for Bahrain	0	13- Preferential duties: Free-trade area
Ad valorem duty	Free-trade agreement duty rate for Jordan	0	15- Preferential duties: Free-trade area
Ad valorem duty	Free-trade agreement duty rate for Singapore	0	16- Preferential duties: Free-trade area
Ad valorem duty	Free-trade agreement duty rate for Chile	0	17- Preferential duties: Free-trade area
Ad valorem duty	Free-trade agreement duty rate for Australia	0	18- Preferential duties: Free-trade area
Ad valorem duty	Free-trade agreement duty rate for Morocco	0	19- Preferential duties: Free-trade area
Ad valorem duty	Free Trade Area duty rate for Dominican Rep. and Central America (DR-CAFT	0	
Ad valorem duty	Free-trade agreement duty rate for Oman	0	
Ad valorem duty	Free-trade agreement duty rate for Peru	0	
Ad valorem duty	Free-trade agreement duty rate for Korea	0	
Ad valorem duty	Free-trade agreement duty rate for Colombia	0	
Ad valorem duty	Free-trade agreement duty rate for Panama	0	
Ad valorem duty	United States-Mexico-Canada Agreement (USMCA/CUSMA/T-MEC)	0	
Ad valorem duty	Preferential duty rate for the Caribbean Basin Economic Recovery Act (CBER	0	30- Preferential duties: Other preferences
Ad valorem duty	Preferential duty rate under the African Growth and Opportunity Act (AGOA	0	33- Preferential duties: Other preferences
Specific duty	General duty	2.2 cents/kg	80- General duty (higher than MFN)
Source: WTO, 2021			

Annex 4: Production costs for oranges in the US

Annex 4. Production costs for oranges in the US (Pta./Ha)		
	Conventional production	**Organic production**
A. Variable costs of factors of production		
A.1. Raw materials		
Irrigation water	160 000	151 600
Fertilizers	74 846	165 000
Insecticides, fungicides, herbicides, ...	135 440	12 883
Other inputs	8 000	8 000
A.2. Labour	172 790	433 412
Total variable costs of factors of production	551 076	770 895
B. Interest on working capital (annual)	16 073	19 272
C. Fixed costs		
Amortization of planting	16 800	16 800
Interest on planting	10 500	10 500
Amortization of capital for equipment	60 000	60 000
Interest on capital for equipment	15 000	15 000
Costs of replacing trees and maintaining equipment	10 000	10 000
Income from land	80 000	80 000
Taxes and insurance	40 000	40 000
Certification		1 000
Total fixed costs	232 300	233 300
D. Total costs (A+B+C)	799 499	1 023 467
Source: Caballero, 1992		

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