Federal Ministry
of Food
and Agriculture

Horticulture in Germany

Facts and Figures

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Macro-economic Data

Production value

Horticulture comprises the branches of ornamental plant production, including perennials, fruit and vegetable production and tree nurseries as well as horticultural services (landscaping and cemetery gardening). In macro-economic terms, commercial horticulture forms a part of agriculture, i.e. of primary production. Horticultural performance is measured by means of the production value which is determined annually for both horticultural and fruit production and for horticultural services.

In addition to sales revenues, the production value considers private consumption as well as changes in stocks. For 2012, in agriculture, a preliminary production value of about 55.7 billion € was calculated of which commercial horticulture made up 11 % (6.3 billion €). For horticultural services, which are not part of primary production, a production of value 6.3 billion € was calculated. In total and including fruit production, horticultural goods and services provided reached a production value of about 12.6 billion €.

Table 1

Sales and production values in commercial horticulture
2012 Preliminary
- based on respective prices -
(VAT not included)

Position	Billion €
Sales	
Horticulture and fruits	**6.16**
incl.: Vegetables	2.22
Flowers and ornamental plants	2.29
Nursery products	1.02
Fruits	0.63
Agriculture total	**41.62**
incl.: Hortic. & fruit prod. in %	*14.8*
Production values	
Horticulture and fruits	**6.26**
incl.: Vegetables	2.26
Flowers and ornamental plants	2.29
Nursery products	1.02
Fruits	0.69
Agriculture total	**55.66**
incl.: Hortic. & fruit prod. in %	11.2

Source: BLE

Gross value added (GVA)

As the gross value added (production value less intermediate input) is more illustrative than the production value, the Thünen Institute (TI), in 2013, published a first-time study which allows relating the added value determined in horticulture to both down- and upstream branches (horticultural clusters) .

In 2008, given a turnover of abt. 78 billion €, the horticultural cluster generated a gross value added of roughly 19.4 billion €, which puts the horticultural cluster‘s share in the gross value added at roughly 1 % in Germany. The upstream economic sectors generated 84 % of the total gross value added and over 90 % of the turnover of the horticultural cluster, while the downstream sectors generated only 3 % of the gross value added. Accordingly and at about 1.6 billion €, turnover is low (see Table 2).

In terms of gross value added, the most important economic sectors are retail (GVA = 4.2 billion €, i.e. 22 % of the horticultural cluster, at a turnover of 23 billion €) and wholesale (GVA = 3.1 billion €, i.e. 17 % of the horticultural cluster, at a turnover of 25 billion €). It should be noted that a large part of the gross value added in the fruit and vegetable sectors is due to imports.

Table 3

Economic importance of horticultural branches 2008

Name of economic sector	Turnover	GVA [1)]
	Billion €	
Retail flowers, plants, seed and fertilizer production	5.38	1.59
Horticulture and landscaping	5.97	3.31
Cemetery gardening (other horticultural services)	0.63	0.33
Vegetable production	1.84	0.93
Fruit production	0.40	0.23
Ornamental plant prod. (incl. perennials)	1.50	0.59
Nursery	1.17	0.74
Total horticultural branches	**16.88**	**7.72**
Total horticulture clusters	**78.00**	**19.35**
Share of hortic'l. branches in cluster, in %	21.6	39.9

1) GVA = Gross Value Added Source: Thünen-Institut für Betriebswirtschaft

Table 2

Economic importance of horticulture 2008

Name of economic sector	Turnover	GVA [1)]
	Billion €	
Upstream commercial sectors	**1.64**	**0.58**
including:		
Chemical Industry	0.25	0.09
Plastic industry in the broadest sense	0.26	0.08
Mechanical and tool engineering	0.28	0.07
Downstream economic sectors	**71.45**	**16.29**
including:		
Retail	23.08	4.20
Horticulture and landscaping, cemetery gardening	6.60	3.64
Wholesale	25.23	3.08
Processing	7.93	1.44
Commercial horticulture	**4.91**	**2.49**
including:		
Vegetable production	1.84	0.93
Fruit production	0.40	0.23
Nursery	1.17	0.74
Ornamental plant prod. (incl. perennials)	1.50	0.59
Sum total horticultural clusters	**78.00**	**19.35**

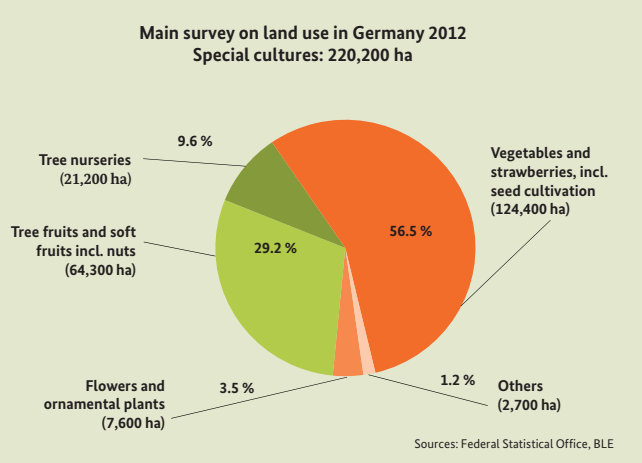
1) GVA = Gross Value Added Source: Thünen-Institut für Betriebswirtschaft

At a turnover of 16.9 billion €, all horticultural sectors generated a total gross value added of 7.7 billion € (i.e. 40 % of the horticultural cluster) with shares being as follows: landscaping 3.3 billion € (i.e. 17 % of the horticultural cluster), specialized retail 1.6 billion € (i.e. 8 % of the horticultural cluster) and cemetery gardening 0.3 billion € (i.e. 2 % of the horticultural cluster). Commercial horticulture with its sectors fruits, vegetables, ornamental plants /perennials and tree nurseries generated a GVA of almost 2.5 billion € (i.e. 13 % of the horticultural cluster). This list shows the extraordinary importance of horticulture and landscaping.

Structure

Horticultural special cultures such as fruits, vegetables, tree crops as well as flowers and ornamental plants require highly specialized skills and knowledge as regards their production. They are quite labour-intensive and will thus mostly be found in specialized businesses. In 2012, the area for special cultures, including horticulture in Germany, amounted to about 220,200 ha, i.e. to 1.3 % of the total area of abt. 17 million ha under agricultural use. With 114,000 ha, vegetable production held the largest share of the area used for special cultures.

Chart 1



Business structure in horticulture is characterized by small and medium-size holdings. Almost 90 % of them are individual operations, two thirds of which mainly operate in horticulture

Employment

The results of the study on horticultural clusters show that 700,000 people (see Table 4) are employed in the entire horticultural cluster. This corresponds to about 1.7 % of the working population in Germany. Broken down by sectors, figures are as follows:

about 98,000 people are employed in commercial horticulture, 100,000 in landscaping, about 90,000 in specialized horticultural retail trade and about 13,000 in cemetery gardening. These figures do not include the numerous seasonal workers who are employed temporarily.

Table 4

Employment in horticulture 2008

	Number	in %
Horticulture, incl. up- and downstream sectors:	**700,000**	**100**
incl.: Horticulture and landscaping	100,000	14.3
Commercial horticulture	98,000	14.0
Specialised hortic'l. trade	90,000	12.9
Cemetery gardening	13,000	1.9
Total horticultural branches	**301,000**	**43.0**

Source: Thünen-Institut für Betriebswirtschaft

Number of businesses

Most of the horticultural businesses operate in the service sector. According to data provided by the professional organisation, there were 15,427 businesses in the horticultural sector in 2010 while 9,200 businesses operated in cemetery gardening.

In 2010 a structural survey of agriculture was carried out in commercial gardening. Businesses were classified according to Standard Outputs (SO). The survey revealed a figure of about 16,100 specialised commercial horticultural operations in 2010.
4,246 businesses count as Specialised Under Glass Operations, among them 3,603 producers of flowers and ornamental plants and 466 vegetable growers.
1,043 businesses count as Specialised Outdoor Operations, among them 542 vegetable growers and 471 producers of flowers and ornamental plants.

Other horticultural holdings include 2,020 tree nurseries and 909 mixed horticultural operations. 7,820 holdings produce permanent cultures (except vineyards), among them 5,797 fruit growers and 2,023 producers of mixed permanent cultures.

Note 1

Agricultural structure survey 2010

Given the higher limits for statistic identification (formerly 2 ha, now 5 ha) as well as raised minimum limits of animal stocks and special cultures, a comparison with figures from previous years is possible to a limited extent only, also because the classification of holdings was switched to Standard Output (SO). This sometimes led to significant deviations where the determination of holding sizes and types are concerned.

Note 2

Standard Output (SO)

is a standardised figure that indicates the average monetary value (in €) of an agricultural holding's gross agricultural production. It is used in official statistics to categorise agricultural holdings according to their economic orientation. Standard Output is determined according to units of acreage per type of fruit or animal unit per type of cattle: The produced quantity is multiplied by the respective on-farm price to illustrate the gross monetary output. Calculations are based on average quantities and prices and on a reference period of five marketing years. The total Standard Output determined for a holding describes the market performance of the entire agricultural holding.

Table 5

Number of horticultural holdings 2010

Commercial horticulture according to economic orientation (SO) [1) 2)]		**16,078**
	Fruit production	5,797
	Flower and ornamental plant production	4,074
	Nurseries	2,020
	Vegetables	1,008
	Other (incl. christmas tree plantations)	3,179
Horticultural services [3)]		**24,627**
	Gardening, landscapg., sports field construction	15,427
	Cemetery gardening	9,200

1) Comparability with older data is very limited. (SO) = Standard Output is relevant for economic classification. On methodogy, see Special Series 3, Series 2.1.4, Federal Statistical Office. - 2) Incl. abt. 200 perennial producers. - 3) Data provided by horticultural association.

Sources: Federal Statistical Office, BLE, BGL, ZVG

Table 6

Total number of agricultural holdings 2012 and selected growing areas

Area and crop cultivated (Main type of usage / type of crop / type of fruit)	Holdings	Respective area
	in 1,000	in 1,000 ha
Total area in agricultural use	286.5	16,667.3
including		
Herbs, medicinal plants, plants for perfume, spice plants	0.6	7.0
Vegetables and strawberries	13.4	123.5
thereof: in the open	12.9	122.5
thereof: under glass or other accessible protective covers	2.2	1.0
Flowers and ornamental plants	6.0	7.6
thereof: in the open	4.5	5.7
thereof: under glass or other accessible protective covers	4.0	1.9
Horticultural seed production, commercial young plant prod.	0.4	0.9
Production of seeds and propagating material for grasses, root crops and other industrial plants	1.3	25.4
Fruit trees and berries, incl. nuts	14.5	64.3
and: Fruit tree orchards	13.0	56.1
as well as: Berry plantations (except strawberries)	3.1	7.6
as well as: Nuts	0.4	0.6
Tree nurseries	2.8	21.2
Christmas tree plantations	3.4	15.6
incl.: other open- air permanent crops	0.5	/
incl.: permanent crops under glass or other accessible protective covers	0.2	/

Note: Multiple answers possible.

Sources: Federal Statistical Office, Special Series 3, Series 3.1.2, 2012, BLE

Note 3

Area under cultivation and type of holding

In its special series 3, serial 3.1.2, land use by holdings, the Federal Statistical Office publishes the area under agricultural use by all agricultural holdings. (Table 6: All agricultural holdings in 2012 and selected cultivation areas). Economic orientation is not determined according to Standard Output. The statistical breakdown includes all agricultural holdings that grow horticultural products. Figures re. the size of growing areas and the number of holdings are not identical with data provided by specialised statistics because, in some cases, characteristics to be recorded and respective limits differ (see Notes 4 and 6).

Education

In 2012, almost 14,200 young people trained to be gardeners or horticulturalists. In general, the training takes three years and can be done in seven special branches.

Table 7

Number of trainees in gardening 2012 [1)]

Total (7 branches)		**14,217**
incl.:	Horticulture and landscaping	9,630
	Ornamental plant production	2,334
	Tree nurseries	936
	Cemetery gardening	495
	Vegetable production	389
	Perennials production	231
	Fruit production	204

1) Data might be distorted due to rounding differences in data sources, caused by confidentiality re. individual data. This leads to differences between the sum calculated for the 7 special branches and the total final result.

Sources: Federal Statistical Office, BLE

Following the training, there is a variety of opportunities for further training, e.g. to be a master gardener or a certified technician. Higher education is possible in horticulture and in landscaping or landscape architecture, both at universities and at universities of applied sciences. In 2012/2013, about 6,500 students were enrolled in horticulture and landscaping.

Table 8

Number of students in various fields of horticulture 2012/2013

Students	Number
Students in Horticulture	**1,822**
at Universities of Applied Sciences	1,062
at Universities and Comprehensive Univ.	760
Students of Landscaping and related fields	**4,731**
at Univ. of Applied Sciences (Landscaping)	2,926
at Universities and Comprehensive Univ.	1,805
Total	**6,553**

Sources: Federal Statistical Office, BLE

Commercial horticulture

Vegetable production

Base areas in vegetable production

In 2012, 7,220 holdings produced vegetables on a base area of 104,887 ha. Among them, 103,972 ha in the open and 915 ha under high accessible protective covers. 6,982 holdings cultivated in the open while 1,803 did so in protective environment. Statistics on base area capture holdings in detail and by size.

According to them, 3,942 holdings (55 %) operate on base areas of 0.5 to 5 ha and grow vegetables on about 7 % of the total area. In the size bracket of 5 to 10 ha, 1,136 holdings (i.e. 16 %), in the bracket of 10 to 20 ha, 952 holdings (i.e. 13 %) and in the bracket of 20 ha and more, 1,190 holdings (i.e. 17 %) cultivate 72 % of the total base area under vegetable cultivation.

Note 4

Main land use survey

Given that the minimum limits for areas to be statistically recorded were raised by the law on agriculture statistics, as of 2010, only such holdings are surveyed which grow vegetables and/or strawberries and which dispose of a minimum of 5 ha (2 ha until 2009) under agricultural use and/or of minimum animal stocks or of minimum growing areas for special cultures (e.g. vegetables). This reduces the burden especially on small holdings. Due to methodical and conceptual differences which become more apparent especially because of different recording limits, variations may occur in comparison with the results of other agricultural statistics (e.g. the survey on vegetable cultivation).

Table 9

Holdings and acreage in vegetable production 2012 according to size categories of base areas

Base area from ... to ... less than ... ha	Total		Including			
			outdoor		under high accessible protective covers incl. greenhouses	
	Holdings	Acreage	Holdings	Acreage	Holdings	Acreage
	Number	ha	Number	ha	Number	ha
less than 0.5 to 5	3,942	7,094	3,717	6,640	1,562	454
5 - 10	1,136	8,099	1,123	7,886	241	213
10 - 20	952	13,360	952	13,256	165	104
20 and more	1,190	76,334	1,190	76,190	129	144
Total	**7,220**	**104,887**	**6,982**	**103,972**	**2,097**	**915**

Sources: Federal Statistical Office, BLE

Vegetable cultivation in the open

In 2013, 6,600 holdings grew outdoor vegetables for commercial purposes on an area of 112,229 ha. Compared to 2012, the acreage decreased by 2,400 ha. The major part of the area is taken up by asparagus, carrots and onions as they comprise an average of more than one third of outdoor cultivation, while lettuces comprised almost 11 %. On the remaining acreage, a large variety of vegetable species is cultivated, of which almost 40 are captured statistically.

Note 5

Areas under cultivation and base areas

Contrary to the base areas, the areas under cultivation of vegetables and strawberries also include multiple use of an area due to preceding, intermediate and repeated cultures as well as those areas which are used for post-cultures of field crops but not primarily for vegetable cultivation. A culture's area under cultivation corresponds at least to its base area which it exceeds in case of multiple cropping. The number of horticultural holdings which cultivate vegetables and which are included in the main survey on land use exceeds that of the specialised vegetable growers included in the agricultural structure survey, because areas of non-specialised holdings are also taken into account. The vegetable survey is carried out annually. Within the framework of the general survey, in 2012, data were also collected on the additional areas under vegetable cultivation in the open and under high accessible protective covers, incl. young plants. In the interim years, data collection on base areas is limited to the raising of young vegetable and strawberry plants.

Note 6

Statistical recording limits in the survey on vegetable cultivation in 2012

The 2012 survey on vegetable cultivation only records holdings which grow vegetables on a minimum area of 0.5 ha in the open or on 0.1 ha under high accessible protective covers.

Table 10

Selected vegetable species 2013
Areas under cultivation and quantities harvested outdoors

Vegetable species	Acreage	Quantity harvested
	ha	t
Asparagus (in production)	19,634	103,107
Carrots	10,189	583,857
Pulses (total)	9,82	79,998
Onions (dry onions incl. shallots)	9,691	405,656
White cabbage	5,836	427,159
Cauliflower	4,241	123,779
French beans	4,534	47,999
Fresh peas for threshing (without pods)	4,117	23,103
Iceberg lettuce	3,431	128,917
Radishes	3,327	68,013
Spinach	3,030	53,386
Squashes (e.g. hokkaido, butternut, gourd)	2,899	59,617
Leeks	2,631	111,209
Gherkins	2,344	165,590
Lamb's lettuce	2,263	14,105
Broccoli	2,172	30,303
Bunching onions (spring onions)	2,005	87,183
Red cabbage	1,915	106,454
Other vegetable species	1,895	50,739
Kohlrabi	1,873	64,840

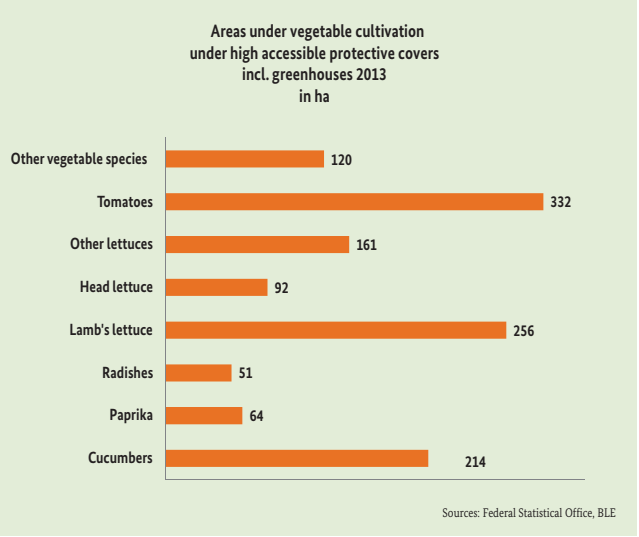
Sources: Federal Statistical Office, BLE

Note 7

Herb cultivation

As of 2010, herbs such as parsley and chives are no longer recorded in the survey on vegetable cultivation but in the main land use survey, under medicinal and herbal plants and plants used for perfume extraction (see Table 6 Total sum of agricultural holdings 2012 and selected growing areas).

Chart 2



About half of the total area under vegetable cultivation in Germany is located in three of the federated states (i.e. Laender), namely in North-Rhine Westphalia, Rhineland-Palatinate and Lower Saxony. Some Laender focus on certain vegetable species: In 2013, almost 42 % of white cabbage cultivated in Germany were grown in Schleswig-Holstein and almost 80 % of the total area under radish cultivation was located in Rhineland-Palatinate. In 2013 Baden-Wuerttemberg focused on the cultivation in greenhouses or under high accessible protective covers on almost one third of the total area under cultivation.

Vegetable cultivation under protective covers

In 2013, about 1.900 holdings produced vegetables under high protective covers, including greenhouses. Vegetables under protective covers were cultivated on 1,291 ha and tomatoes on 332 ha, followed by lamb's lettuce on 256 ha, cucumbers on 214 ha, paprika on 64 ha and radish on 51 ha. Other vegetables were grown on 161 ha and other lettuces on 120 ha.

Note 8

Supply balances for fruit and vegetables

Annually, the Federal Office for Agriculture and Food (BLE) calculates the supply balances for fruit and vegetables. As data on foreign trade are preliminary data only, the supply balances are, too. Unsold quantities are subtracted from the domestically produced quantity. They represent the amount of usable output. To determine domestic use, imports must be added to the usable output while exports must be subtracted. Food consumption is determined by subtracting, from domestic use, losses due to storage, wastage, etc. which can only be estimated. These data form the basis for calculations on average per capita consumption and degrees of self-support.

Harvest volumes in vegetable cultivation

In 2013, 3.2 million t of vegetables were grown in the open. This represents a decrease of about 0.4 million t compared to 2012. The various outdoor vegetables have different shares in the total volume harvested (see Table 10). Carrots contribute 18 % (i.e. 583,587 t), white cabbage contributes 13 % (i.e. 427,158 t) and onions, 13 %. Lettuces made for 10 % of the total volume harvested, followed by gherkins at 5 % and cauliflower at 4 %. At a volume of 106,454 t, red cabbage and asparagus contributed 3 % each. Compared to the year before, this represents an increase of more than 9,000 t.

Note 9

The degree of self-sufficiency (DSS) shows the extent to which domestic agriculture meets domestic demand (total consumption). The degree of self-sufficiency equals domestic production as percentage of total consumption of food, feedstuffs, industrial use, seeds and market losses. The DSS results as usable output is divided by the available quantity. Usable output is domestic production while the available quantity is adjusted for imports and exports.

Table 11

Supply balance forecast vegetables
(Market vegetables only)
2012/2013 [1)]

Balance sheet items	t
Production [2)]	3,830,000
- Harvest losses (10 %)	377,000
= Usable production [2)]	3,453,000
+ Imports	6,807,000
- Exports	1,467,000
= National usage	8,793,000
- Market losses	894,000
= Foodstuff consumption	7,899,000
For information purposes:	
Food consumption per capita	**96.3 kg**
Degree of self-sufficency in Germany	**39.3 %**

1) Preliminary - 2) Incl. quantities used for industrial processing.

Source: BLE

Degree of self-sufficiency and vegetable consumption

As to vegetables, the degree of self-sufficiency in Germany is quite low. In the marketing year of 2012/2013 (April/March) the preliminary degree of self-sufficiency re. vegetables (commercial production) was at 39.9 %. Preliminary per capita consumption amounted to 96.3 kg in the marketing year 2012/2013 (fresh and processed produce). Actual population figures of the 2011 census were not taken into accoun to calculate per capita consumption. Tomatoes, with more than 25.0 kg consumed per capita, range highest. Per capita consumption of carrots amounts to 8.9 kg, followed by onions with 8.9 kg, cucumbers with 6.4 kg, white and red cabbage with 4.9 kg, and lettuce and iceberg lettuce with 3.4 kg (see Table 12). The harvest quantity from 2012 is used to calculate the supply balance regarding vegetables in the marketing year 2012/2013.

Table 12

Per capita consumption of selected vegetables
2012/2013[1)]

Vegetable species	kg
Tomatoes	24.8
Onions	8.0
Carrots, beetroot	8.9
Cucumbers	6.4
White and red cabbage	4.9
Peas	1.1
Beans	2.0
Cabbage/ iceberg lettuce	3.4
Other lettuces/ salads	3.4
Cauliflower, green cabbage, broccoli	2.3
Savoy/ Chinese cabbage, kohlrabi	2.6
Celeriac	1.0
Leeks	1.3
Asparagus	1.5
Spinach	1.3
Mushrooms	1.8
Other vegetables (Broad beans, chicory, radishes)	21.2

1) Preliminary. Source: BLE

Note 10

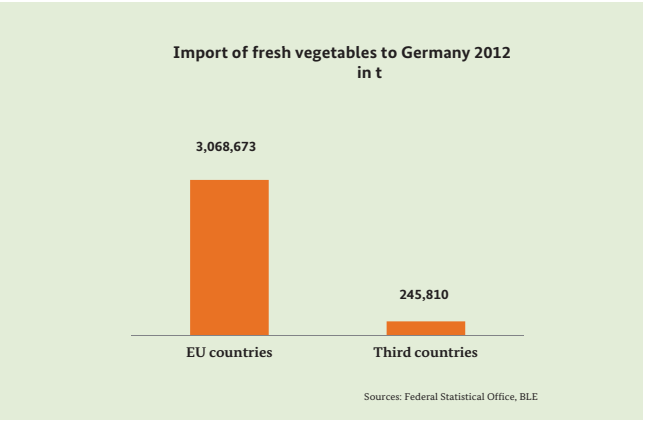
Commercial vegetable production

Harvest reports consider marketable produce only (commercial vegetable production = off-farm produce for the fresh market and for industrial use) irrespective of whether or not the produce does indeed reach the market. Private production is not recorded as it is not destined for commercial use (i.e. sales).

Vegetable imports and exports

In 2012, imports of fresh vegetables amounted to 3.07 million t. The largest amounts were imported from EU countries. Only about 246,000 t of vegetables were imported from third countries. Exports of fresh vegetables amounted to 449,000 t.

Chart 3



Fruit production (orchards)

Fruit count as special cultures, i.e. fruit (as well as vegetable) production requires a high level of special knowledge and skills as to their cultivation and both are quite labour-intensive. Hence, mostly special holdings engage in fruit (or vegetable) production.

Strawberries

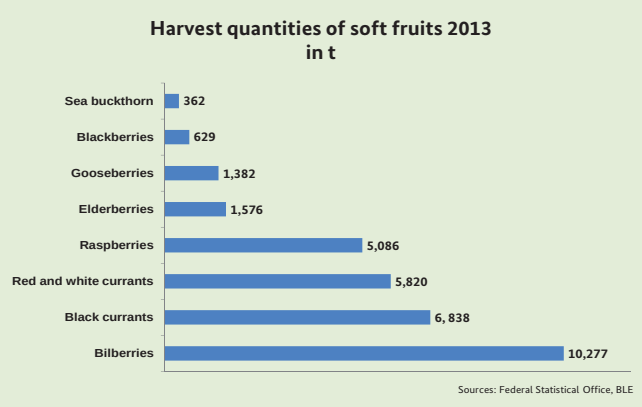
Following apples, strawberries were the second most important fruit grown in Germany. In 2013 strawberries were grown in 2,400 holdings and on an area of 19,434 ha. 15,110 ha of the total acreage were in production, 466 ha were cultivated in protective environments. 142,780 t of strawberries were harvested in the open and 6,900 t in protective environments. In 2013, the main regions for strawberry production were again located in Lower

Saxony (4,307 ha), in North-Rhine Westphalia (3,573 ha), in Baden-Wuerttemberg (3,872 ha) and in Bavaria (2,766 ha).

Bush berries

In commercial fruit production in Germany, bush berries play only a minor role. Consequently and in comparison to those for strawberries and tree Fruits, cultivation areas and volumes harvested were rather small. In 2013, 32,610 t were harvested on 7,303 ha. Of those, 7,201 ha were under cultivation in the open and 102 ha in protected environments. Bilberries are the most frequently cultivated bush berries in Germany. They were grown on 2,031 ha. Black currants followed with an area of

Chart 4



1,706 ha, raspberries with 1,070 ha, of which 79 ha were under protective covers, followed by white and red currants with 681 ha, by black elder with 580 ha, gooseberries with 225 ha, common sea buckthorn (622 ha, of which 194 ha were harvested) and by blackberries with 123 ha. At 10,277 t, bilberries yielded the largest harvest, of which 748 t were grown in protective environments. Bilberries wered followed by black currants (6,838 t), by red and white currants (5,820 t), by raspberries (5,086 t), by elderberries (1,576 t), gooseberries (1,382 t), blackberries (629 t), and by common sea buckthorn (362 t).

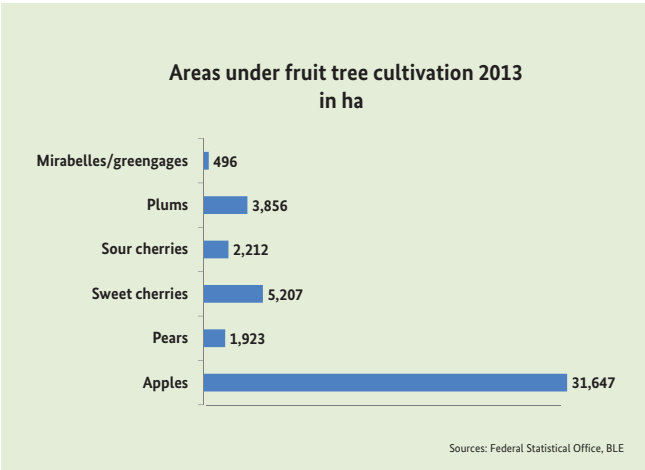
Tree fruit

In Germany, the apple is the most important tree fruit, followed by pears, sweet and sour cherries, plums as well as mirabelles and greengages. Tree fruit production concentrated on a few regions in Baden-Württemberg (15,000 ha), Lower Saxony (9,000 ha), Rhineland-Palatinate (3,700 ha) and Saxony (3,400 ha).

Cultivation areas for tree fruits

In 2013 in Germany, tree fruits were produced from about 81 million trees on almost 45,300 ha. Apples were grown on about 32,000 ha, i.e. on more than two thirds (70 %) of the area under tree fruit cultivation. In 2012, a large survey on tree fruit cultivation revealed that, compared to 2007, the number of apple trees increased by almost 6 % to 72 million. This is due to more intensive cultivation methods with smaller trees. About 87 % of apples are table apples while 13 % are destined for processing. The main apple species grown in Germany are Elstar (on 19 %) and the group of Jona varieties (with Jonagold being the most important) grown on 18 % of the acreage under apple cultivation.

Chart 5



Note 11

Harvest variations

As tree fruit harvests depend heavily on weather conditions, especially in case of frost during the flowering stage, yields vary annually. The smallest amount of 936,000 t was harvested in 2013, the largest, of 1.3 million t, in 2000. The smallest amount of apples, i.e. 786,200 t, was harvested in 2002.

The varieties Braeburn (8 %), Gala (6 %), Idared, Golden Delicious and Boskoop, grown on 3 % of the cultivation area each, count among the top 8 varieties cultivated. Cherries, after apples, range second as the most important tree fruits cultivated in Germany. Sweet cherries are grown on 5,200 ha, sour cherries on 2,300 ha. They are followed by plums cultivated on 3,900 ha and pears grown on 1,900 ha as well as mirabelles/greengages on 200 ha.

Table 13

Fruit tree cultivation 2012
Holdings, acreage and trees

Fruit tree acreage	Holdings		Fruit tree acreage [1]		Trees [1]	
from ... to ... ha	Number	in %	ha	in %	Number	in %
0.5 - 1	2,189	29.4	1,542	3.4	1,247,465	1.5
1 - 2	1,668	22.4	2,313	5.1	2,103,920	2.6
2 - 3	782	10.5	1,909	4.2	2,186,805	2.7
3 - 5	781	10.5	3,012	6.6	4,304,573	5.3
5 - 10	854	11.5	6,131	13.4	11,541,165	14.3
over 10	1,181	15.8	30,685	67.3	59,554,317	73.6
Total	**7,455**	**100**	**45,593**	**100**	**80,938,245**	**100**

1) Including new orchards not yet in production.

Source: Federal Statistical Office

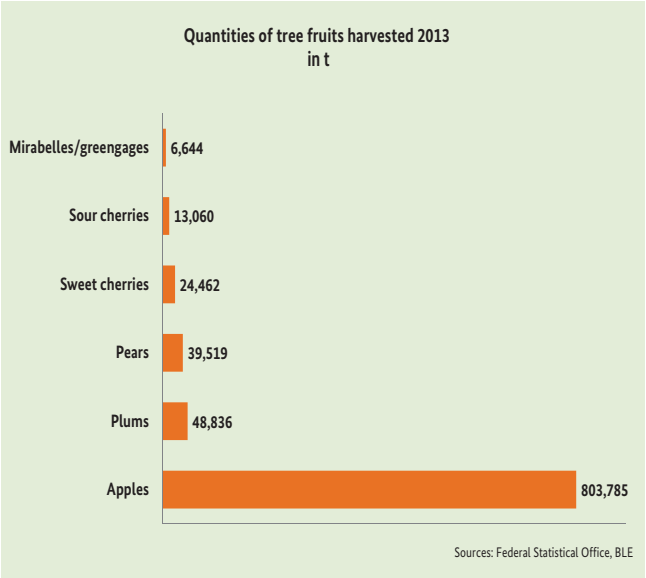
Number and sizes of holdings in tree fruit cultivation

Every 5 years, a survey on tree fruit cultivation is conducted to determine the number of holdings, the number of trees, the area under cultivation, holding sizes and amounts yielded. In 2012, nearly 7,500 holdings in tree fruit cultivation managed a growing area of more than 0.5 ha. Results (see Table 13) also contain new plantings, i.e. areas still under cultivation. About 27 % of holdings (2,035) had 81 % of the registered area (36,816 ha) under cultivation. These holdings comprise orchards of 5 ha and more, with over two thirds (67 %) of holdings falling in the category of 10 ha and more. 16 % of all holdings surveyed grew 74 % of all fruit trees in intensive commercial fruit orchards. The majority of holdings fall into the category of 0.5 to 3 ha of orchard acreage, disposing of a stock of 5.5 million trees. In the marketing year 2010/2011, fruit producers owned an average 18 ha of acreage in agricultural use, maintained by an average of 3.9 staff members. Fruits were harvested on an average 14.5 ha, of which 11 ha under apple cultivation.

Tree fruit harvest quantities

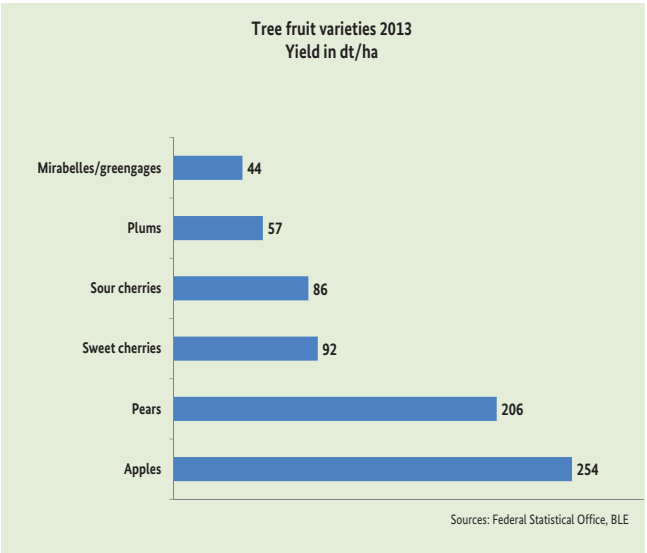
In 2013, 936,007 t of tree fruit were harvested. With 803,700 t, apples made for about 86% of the total amount of tree fruit harvested in Germany, of which fresh fruit comprised 76 % and fruit for processing 23.2 %, while 0.8 % were not harvested or marketed at all.

Chart 6



Apples were followed by plums with 48,567 t, by pears with 39,519 t, by sweet cherries with 24,462 t, by sour cherries with 13,060 t and by mirabelles/ greengages with 6,644 t.

Chart 7



Also in 2013 and with 254 dt/ha, apples provided the highest yield were fruits were concerned. They were followed by pears with 206 dt/ha, by plums with 92 dt/ha, by mirabelles/greengages with 86 dt/ ha, by sweet cherries with 57 dt/ha and by sour cherries with 44 dt/ha.

Fruit sales and marketing

22 % of the merchandise are marketed directly while 40 % are sold through sales cooperatives (producer organisations, auctions, marketing co-operatives and producer markets). 13 % of the produce are sold through wholesale and retail trade, 8 % through other bulk buyers and 3 % are distributed through supermarkets (independent retailers).

Note 12

BMEL Farms Accountancy Data Network for horticultural holdings and fruit growers

The accounting results of the BMEL Network of test enterprises for horticultural holdings and fruit growers are published annually, for growers to analyse their economic situation and to benchmark it against other holdings. The BMEL Farms Accountancy Data Network reveals that, in the marketing year 2010/2011. 7 % of all holdings incurred losses. About 4 % achieved a profit of less than 10,000 €. Yet, a good 47 % of holdings achieved profits of more than 50,000 €.

Self-sufficiency and fruit consumption

For the marketing year of 2012/2013 (see Table 16), the preliminary consumption of market fruits in Germany amounted to about 5.6 million t, which corresponds to a per capita consumption of about 67.8 kg and represents 0.5 kg less than in the previous year.

Table 14

Fruit consumption broken down by species
2012/2013 [1)]

Fruit species	kg per capita
Apples	25.0
Pears	2.3
Cherries	2.1
Plums, mirabelles, greengages	1.0
Apricots	0.9
Peaches	3.6
Currants, goose- and raspberries	1.5
Strawberries	3.5
Blackberries, bilberries, cowberries	2.1
Table grapes	5.3
Bananas	10.9
Other fresh fruit	9.4
Fruit total	**67.8**

1) Preliminary. Sources: Federal Statistical Office, BLE

Table 15

Fruit supply broken down by species
2012/2013 [1)]

Fruit species	Net year of import	National consumption[2)]	Share from national production
	1,000 t	1,000 t	%
Apples	1,217	2,127	42.8
Pears	168	199	15.5
Sweet cherries, sour cherries	150	181	17.2
Plums, mirabelles, greengages	57	92	38.7
Apricots	80	80	-
Peaches	320	320	-
Currants	29	39	26.1
Gooseberries	16	16	-
Raspberries	68	73	6.1
Strawberries [3)]	166	314	47.2
Blackberries, bilberries, cowberries	174	182	4.8
Table grapes	458	458	-
Bananas	949	949	-
Other fresh fruit [4)]	824	824	-
Fruits total	**4,645**	**5,855**	**20.1**

Note: Re. market fruit production, the total share of national fruit production does not include apricots, peaches or gooseberries, because, as of 2006, data on harvest volumes are no longer collected, including products made with berries and fruits.
1) Preliminary. - 2) Food consumption, processing, feedstuffs and unutilized quantities. - 3) Not including captive use of self-supporters. - 4) Melons, pineapples, avocadoes, figs, mangoes.

Sources: Federal Statistical Office, BLE

At a per capita consumption of about 25 kg, the apple is the most important domestic fruit. To that figure, the consumption of fruit from meadow orchards (Streuobstwiesen) and small and kitchen gardens, estimated at about 25 kg per capita, must be added as it is not included in the consumption and supply balance. Domestic fruit production does not meet domestic demand.

In the marketing year of 2012/2013, the preliminary degree of self-sufficiency in market fruit production was at 20 %. For plums, mirabelles and greengages, the degree was at about 39 %, strawberries about 47 %. Currants met 26 % of the demand, while both sweet and sour cherries met 17 %.

Note 13

Preliminary supply balances shall be updated as soon as definitive data on foreign, i.e. external trade are available (about one year later). Supply balances are published both in the Statistical Yearbook for Food, Agriculture and Forestry and online at:

www.bmel-statistik.de

Table 16

Supply balance forecast fruits
(excl. citrus fruit, dried fruit and small fruits)
(Market fruit production)
2012/2013 [1) 2)]

Items	t
Production	1,262,000
Post-harvest losses	83,000
Usable production	1,179,000
Import	7,357,000
Export	2,681,000
Domestic/national use	5,859,000
Food consumption	5,557,000
For information purposes:	
Per capita food consumption	**67.8 kg**
Degree of self-support in Germany	**20.1 %**

1) Preliminary. - 2) Incl. quantities used for industrial processing.

Source: BLE

Note 14

Citrus fruit are not produced in Germany, due to climatic growing conditions. They need to be imported. In the marketing year 2012/2013 the preliminary per capita consumption of citrus fruit amounted to 34.2 kg.

Fruit import and export

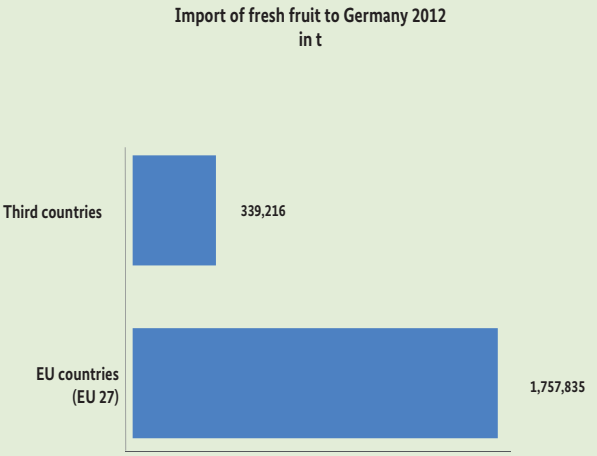
Fresh fruit imports in 2012 amounted to 2.10 million t. Of those, 1.76 million t were imported from EU countries and 339,216 t from third countries. Exports of fresh fruit play only an insignificant role as only 263,000 t of fresh fruit were exported.

Note 15

Nuts

Nuts include walnuts, hazelnuts, almonds, Brazil nuts, Cashew, pistachios, chestnuts, peanuts and coconuts. Statistic surveys in Germany do no longer register walnuts and hazelnuts, as they are commercially cultivated on a small number of areas only. Hazelnuts are mainly imported from Turkey, while walnuts are mostly imported from the USA. Per capita consumption of nuts amounts to ca. 4 kg per year.

Chart 8

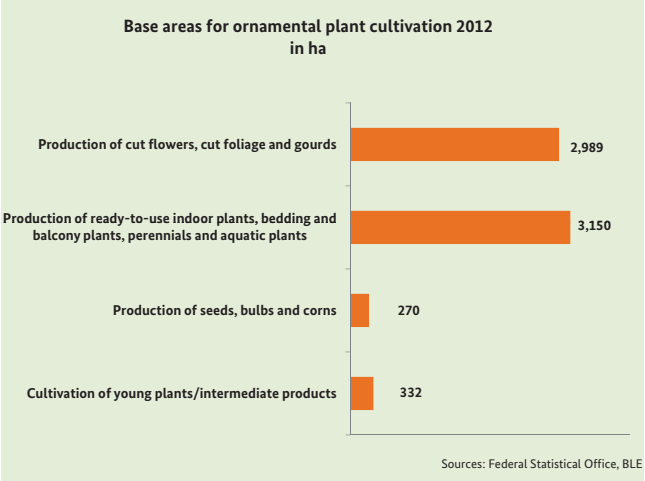


Sources: Federal Statistical Office, BLE

Flowers and ornamentals including perennials

Base areas for flowers and ornamental plants are surveyed every 4 years. In Germany, in 2012, 4,449 holdings produced ornamental plants on a base area of 6,741 ha. Among them, 3,091 holdings cultivated 4,893 ha in the open while the base area under glass amounted to 1,848 ha, managed by 3,672 holdings.

Chart 9



Note 16

Young plants/intermediate produce

Young plants are seedlings or cuttings which, during the reporting period, were/are sold to other producers or holdings for further cultivation. Intermediate products are plants which need to undergo partial cultivation periods before being ready to use and which were/are sold, during the reporting period, to other producers or holdings for further cultivation.

Note 17

Finished products

Finished products are plants which are sold to the final consumer, directly or via resellers, at the development stage they have reached at the production site/holding. Young plants/intermediate products also count among finished products if they are sold to the final consumer as is, i.e. even though they have not yet reached their final stage of cultivation.

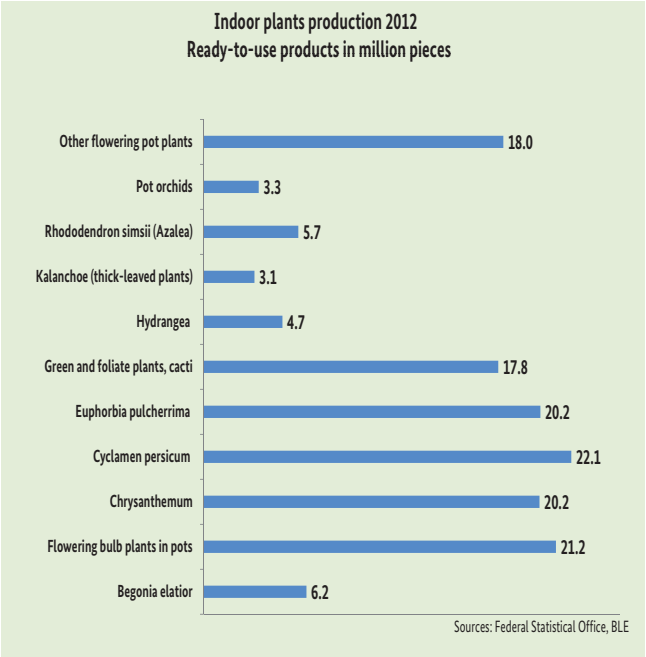
Finished products and young plants/ intermediate products

In 2012, ornamental plants, bedding and balcony plants, perennials and aquatic plants, as finished products, were cultivated on a base area of 3,150 ha. Cut flowers, cut greenery and ornamental gourds, as finished products, comprised 2,989 ha thereof. Young plants and/or intermediate products were grown on 332 ha while seeds, bulbs and tubers were produced on a base area of 270 ha.

In 2012, a total of 3,155 holdings produced about 1.2 billion bedding and balcony plants as well as perennials to be sold to the final consumer as finished products. 2,012 holdings produced 142 million indoor plants. Cut flowers were cultivated by 2,403 enterprises on 3,100 ha. The majority of producers of indoor plants are located in the federated state of North-Rhine Westphalia where over 40 % of the production areas and about 40 % of the acreage under glass are located.

The Lower Rhine area is the most important production region for ornamental plants in Germany, followed by the federated states of Bavaria, Lower Saxony and Baden-Wuerttemberg (Upper Rhine and the vicinity of Stuttgart). But ornamental plant production also has a long tradition in Hamburg and in the eastern parts of Germany, i.e. in the regions of Erfurt, Dresden and Meißen.

Chart 10



Cyclamen make up 15.5 % of the total of 142.3 million indoor plants produced as finished products to be sold directly to the final consumer. Followed by flowering bulbous plants in pots (such as narcissus, hyacinths and tulips) at about 21.2 million plants and by poinsettia with more than 20.2 million plants and by chrysanthemum at 20.2 million plants as well as green and foliage plants and cacti with 17.7 million plants.

Almost 65 million plants, i.e. 46 % of all indoor plants produced in Germany, were cultivated in North-Rhine Westphalia, followed by Lower Saxony with 25.8 million (18 %), Baden-Wuerttemberg with 12.7 million (8.9 %), Bavaria with 11.4 million (8.0 %) and Rhineland-Palatinate with 8.4 million plants (5.2 %).

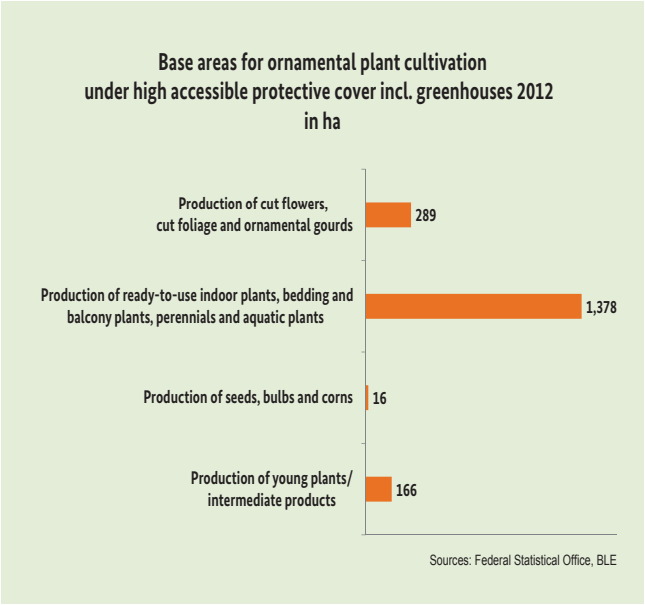
Violets and pansies made up the largest share of the 1.2 billion bedding and balcony plants as finished products with 284.7 million pieces produced, followed by perennials with 156.9 million and Scots heather with 100.3 million, primroses with 95.3 million, pelargonium with 88 million and begonia, excluding Elatior, with 87.5 million pieces produced. More than half of all bedding and balcony plants produced in Germany (56.4 %) as well as perennials (almost 700 million pieces) originated in North-Rhine Westphalia. Baden-Wuerttemberg (6.7 %) and Bavaria (6.3 %) followed.

Chart 11

Producers of ornamental plants under high accessible protective covers incl. greenhouses

In 2012, protected production of indoor plants, bedding and balcony plants, perennials, aquatic plants, as finished products, occurred on a base area of 1,378 ha, followed by the production of cut flowers, cut greenery and ornamental gourds on 289 ha. Young plants were bred or produced as intermediate produce, on a base area of 166 ha while seeds, bulbs and tubers were cultivated on an area of 16 ha.

Chart 12



3,672 holdings cultivated a total base area of 1,848 ha under high accessible protective covers incl. greenhouses, with 35 % of them doing so on an area of up to 0.2 ha each. About 47 % cultivated a base area ranging between 0.2 and 0.75 ha.

Table 17

Holdings with base areas for ornamental plant production 2012 under high accessible protective covers incl. greenhouses

Total base area from ... to ... under ... ha	Holdings		Base area	
	Number	in %	ha	in %
under 0.03	39	1.1	0.6	0.0
0.03 - 0.05	40	1.1	1.5	0.1
0.05 - 0.075	58	1.6	3.5	0.2
0.075 - 0.10	39	1.1	3.3	0.2
0.10 - 0.20	1,115	30.4	155.3	8.4
0.20 - 0.30	589	16.0	138.3	7.5
0.30 - 0.40	428	11.6	142.9	7.7
0.40 - 0.50	283	7.7	122.0	6.6
0.50 - 0.75	427	11.6	251.7	13.6
0.75 - 1.00	182	5.0	153.4	8.3
1.00 - 2.00	348	9.5	458.4	24.8
2.00 - 4.00	101	2.8	257.6	13.9
4.00 - 10.00	22	0.6	121.4	6.6
over 10.00	1	0.0	38.5	2.1
Total	3,672	100	1,848.4	100

Sources: Federal Statistical Office, BLE

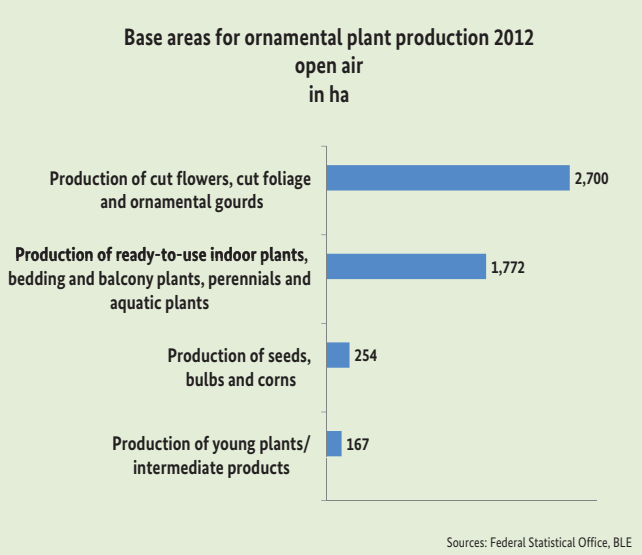
Ca. 14 % of ornamental plant growers cultivated a base area that ranged between 0.75 and 2 ha. Almost 2.8 % of them cultivated an area between 2 and 4 ha while ca. 0.6 % of the growers disposed of a base area of 4 ha and more.

According to sizes, the entire area under cultivation can be divided into the following size categories: Almost 9 % fall into the category of 0.2 ha and less; about 35 % fall into the category ranging from 0.2 to 0.75 ha. Almost 33 % belonged in the category ranging from 0.75 to 2 ha. About 14 % of the base area were cultivated by holdings of 2 to 4 ha while ca. 9 % cultivated an area of 4 ha and more.

Growers of ornamental plants in the open

In 2012, cut flowers , cut greenery and ornamental gourds were grown on a base area of 2,700 ha, followed by indoor plants, bedding and balcony plants, perennials and aquatic plants which were grown, as finished products, on 1,772 ha. The protected production of young plants and of intermediate produce occurred on an area of 167 ha. Seeds, bulbs and tubers were cultivated on a base area of 254 ha.

Chart 13



In 2012, 3,091 growers cultivated a base area of 4,893 ha in the open. Almost 30 % of them disposed of an area of 0.2 ha and less, i.e. 1 % of the outdoor total area. 22 % of the holdings fell into the size category of 0.2 to 0.5 ha, comprising 5 % of the total base area. 30 % fell into the category of 0.5 to 2.0 ha and cultivated 18 % of the outdoor areas. About 16 % of growers had 2 to 10 ha at their disposal and cultivated produce on 40 % of the total base area. Roughly 3 % of the growers cultivated 10 ha and more, i.e. 36 % of the total base area.

Table 18

Holdings with base areas for ornamental plant production 2012
in the open

Total base area from ...to ... under ... ha	Holdings		Base area	
	Number	in %	ha	in %
under 0.03	216	7.0	3.3	0.1
0.03 - 0.05	159	5.1	5.7	0.1
0.05 - 0.075	158	5.1	8.9	0.2
0.075 - 0.10	76	2.5	6.4	0.1
0.10 - 0.20	308	10.0	39.5	0.8
0.20 - 0.30	182	5.9	41.8	0.9
0.30 - 0.40	314	10.2	102.6	2.1
0.40 - 0.50	188	6.1	80.5	1.6
0.50 - 0.75	365	11.8	210.6	4.3
0.75 - 1.00	150	4.9	125.5	2.6
1.00 - 2.00	408	13.2	535.3	10.9
2.00 - 4.00	282	9.1	765.0	15.6
4.00 - 10.00	200	6.5	1,197.5	24.5
over 10.00	85	2.7	1,770.3	36.2
Total	3,091	100	4,892.8	100

Sources: Federal Statistical Office, BLE

Flower and ornamental plant consumption

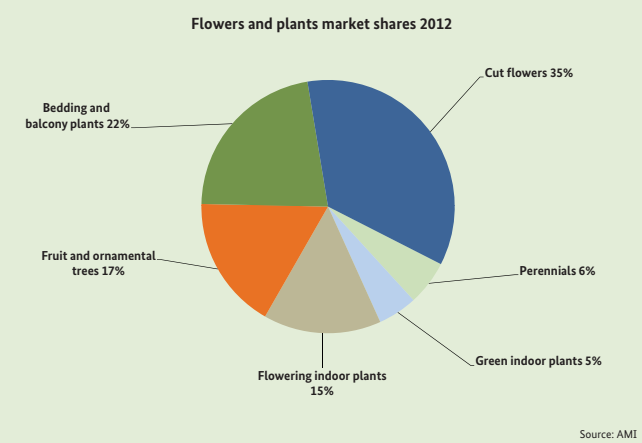
According to estimates of the AMI (Agrarmarkt Informations-Gesellschaft mbH) more than 8.66 billion € (retail prices) were spent on flowers, ornamental plants and shrubs in 2012; which translates to an annual per capita consumption of about 106 €. Ca. 37 € were spent on cut flowers, almost 24 € were spent on bedding and balcony plants and roughly 22 € on flowering indoor plants, while 18 € were spent on shrubs and 6 € on perennials.

Table 19

Most frequently bought flowers and ornamental plants 2012						
Ranking	Bedding and balcony plants	Market volume ca. 1.95 bn € Shares in %	Flowering house plants	Market volume ca. 1.28 bn € Shares in %	Cut flowers	Market volume ca. 3.03 bn € Shares in %
1	Geranium	17	Orchids	38	Rose	42
2	Pansies	9	Poinsettia	7	Tulip	19
3	Common heather	8	Amaryllis	5	Chrysanthemum	5
4	Petunia	6	Cyclamen	5	Carnation	4
5	Primula	5	Azalea	4	Amaryllis	4
						Source: AMI

Best-sellers among flowers and ornamental plants are determined annually. The market volume for bedding and balcony plants in 2012 amounted to ca. 1.95 billion €. Geranium, at 17 %, had the largest share thereof, while flowering indoor plants held a market share of ca. 1.28 billion € and orchids comprised 38 %. The market volume of cut flowers amounted to ca. 3.03 billion €, with roses making up 42 % thereof.

Chart 14



Import and export of flowers and plants

Preliminary figures reveal that Germany imported flowers and plants worth about 2.25 billion € in 2013. With 914 million €, cut flowers, cut greenery and ornamental foliage made for the largest share thereof, followed by potted plants with 666 million €, tree nursery products with 243 million €, and bedding and balcony plants and outdoor perennials with 195 million €. Other imports amounted to 239 million €. Most products were imported from the Netherlands, while lesser quantities were imported from numerous other countries. During the winter months in particular, with conditions in Europe being rather unfavourable for the cultivation of cut flowers, flowers are imported from Kenia, Ecuador, Colombia and other non-EU countries, among others. In 2013, according to preliminary figures, export turnover in Germany amounted 764 million €. Potted plants worth 184 million € were exported, followed by tree nursery products, at about 174 million €, by bedding and balcony plants and outdoor perennials at almost 160 million €. The remaining export volume mounted to 246 million €.

Chart 15

Chart 16

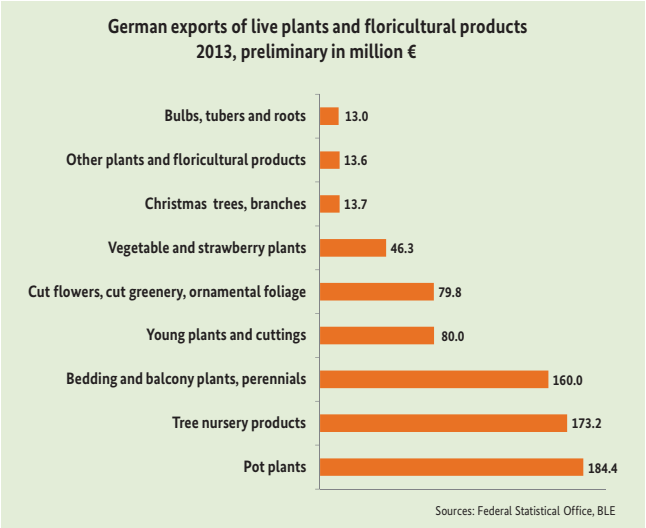
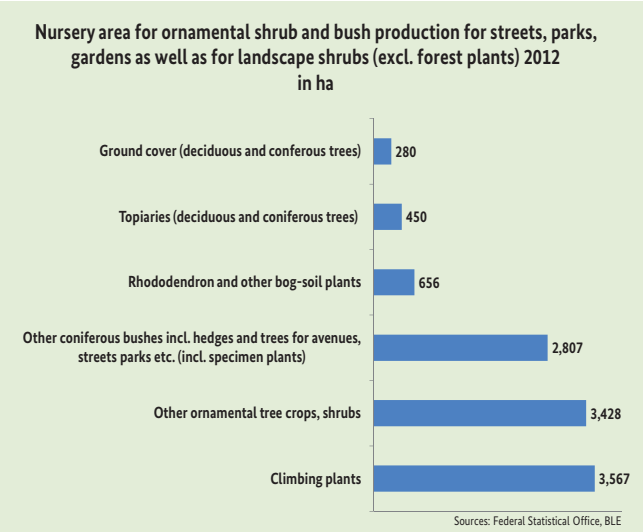


Chart 17



Tree nurseries

Growing areas

In 2012 in Germany, an area of over 21,753 ha was used for open air tree nurseries. About 10 % of the area in horticulture is thus cultivated by tree nurseries. 1,977 ha were used as container area and as acreage under high accessible protective covers incl. greenhouses (see Table 20 below).

In 2,241 holdings, various types of deciduous and coniferous plants were propagated and raised, among them trees for avenues and parks, flowering tree crops, fruit trees, ornamental shrubs, ground covers, roses as well as hedges and climbers. The largest share of the total area is used for the production of ornamental shrubs and trees. The largest cultivation areas in Germany are located in northern Germany (Lower Saxony and Schleswig-Holstein), followed by North-Rhine Westphalia, Bavaria, Baden-Wuerttemberg and Brandenburg.

Table 20

Nursery acreage 2012

	Total		**Including**: container acreage and acreage under high accessible protective cover incl. greenhouses	
	area ha	holdings number	area ha	holdings number
Rootstocks	408	271	3	22
Grafting	971	583	134	279
Ornamental bushes and shrubs for streets, parks, gardens + landscape shrubs	11,532	1,840	1,541	1,055
Forestry plants	2,180	315	16	29
Coniferous trees for christmas tree cultivation	724	315	7	21
Other nursery areas	5,937	1,505	276	203
Total	**21,753**	**2,241** [1)]	**1,977**	**1,154** [1)]

1) As multiple answers were possible, total sums appear inaccurate.

Sources: Federal Statistical Office, BLE

Import and export of tree nursery products

Tree nurseries produce for both the national market and for export which has risen signifcantly in recent years. According to preliminary evaluations, in 2013, exports of nursery trees amounted to 173 million €, i.e. to about 23 % of all exports of the sector of live plants and floricultural products. Export volumes of nursery trees even amounted to more than 180 million € in 2012. High-quality plants are an important success factor in that context. Switzerland, Austria, France, the Scandinavian countries, the Benelux states, Poland, Czechia, the Ukraine and Russia are among the main importing countries. Exports also go to the USA, Canada and Japan.

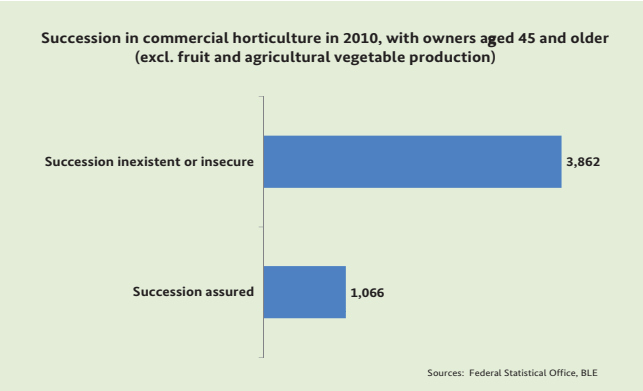
Chart 18

Business succession and structural change

Business succession in commercial horticulture

Structural change affects agriculture in general and commercial horticulture in particular. According to the Agriculture Census in 2010, there were 8,258 commercial horticultural holdings in Germany (excluding fruit and field vegetable production). Conclusions drawn from this survey show that in 3,330 holdings owners were aged 45 years and younger while they were aged 45 and above in 4,928 holdings. Business succession in holdings with owners aged 45 and older is assured in only 1,066 businesses. The remaining 3,862 holdings have either no-one to succeed the actual owner or succession is insecure.

Chart 19



Trends re. structural change in ornamental plant production?

According to the survey carried out by the German Federal Statistical Office in 2012, 4,449 holdings cultivated ornamental plants on 6,741 ha. Even though the 2012 survey cannot be directly compared to the survey carried out in 2008, a trend is visible: The base area has slightly decreased by 426 ha or was not registered. The situation regarding the number of holdings is different: 48 % (i.e. 4,142 holdings) in 2008 were either no longer registered by this statistical survey or could no longer be registered because they were closed down. The last survey, carried out in 2008, registered 8,591 holdings which cultivated products on a base area of 7,167 ha.

Horticultural services

Gardening and landscaping

In 2012, 9,630 trainees (68 %) were employed in gardening and landscaping and made for the majarity of trainees in horticulture. Taken together, the remaining six special branches trained 4,587 young people (32 %) to be gardeners. In 2013, 16,522 special holdings in gardening and landscaping employed about 103,550 people. The number of holdings has steadily risen during the past decade. In 2003, for instance, only 12,320 special holdings were registered. The client strucure in gardening and landscaping in 2013 looks as follows:
56.0 % private households, 17.7 % public sector, (public) housing 11.0 %, industry 6.1 %, general contractors 4.6 %, others 4.1 %. Gardening, landscaping and sports field construction achieve the highest turnover (i.e. 77 %) for the new construction of outdoor installations (parks, green spaces, sports installations and private kitchen gardens).

Chart 20

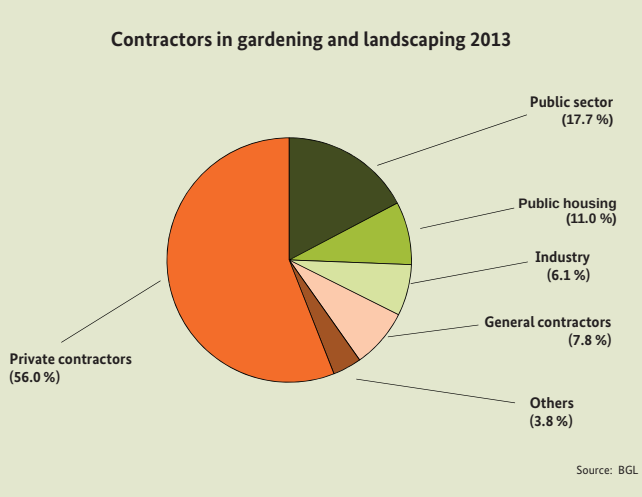
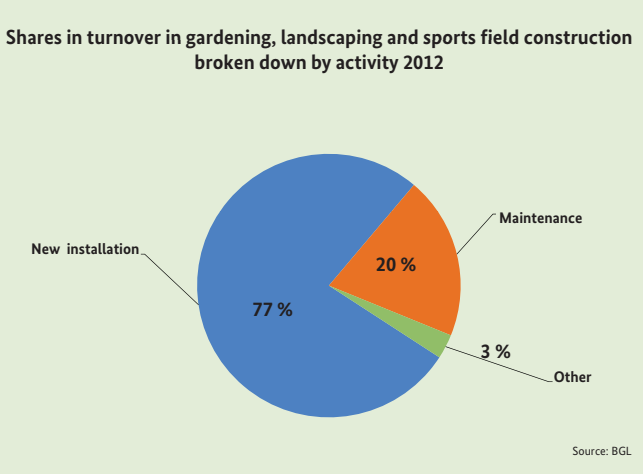


Chart 21



20 % thereof are generated by maintenance work 3 % by other activities. During the past decade, the sales trend increased by almost 2.3 billion €. While sales amounted to 4.42 billion € in 2003, they had risen to 6.33 billion € in 2013.

Chart 22

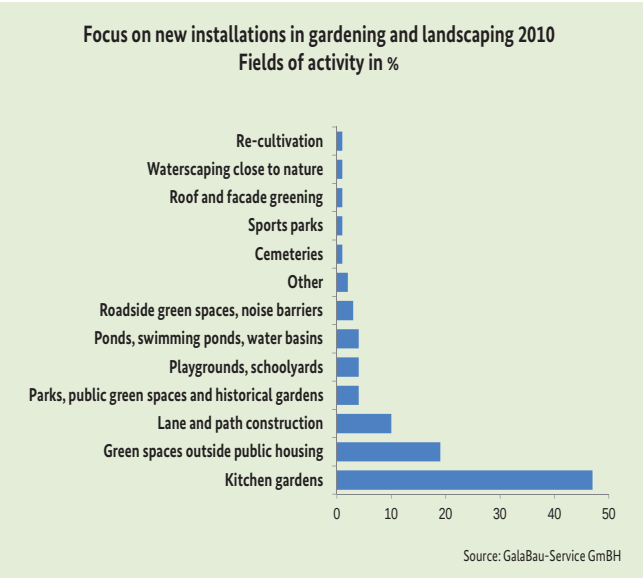
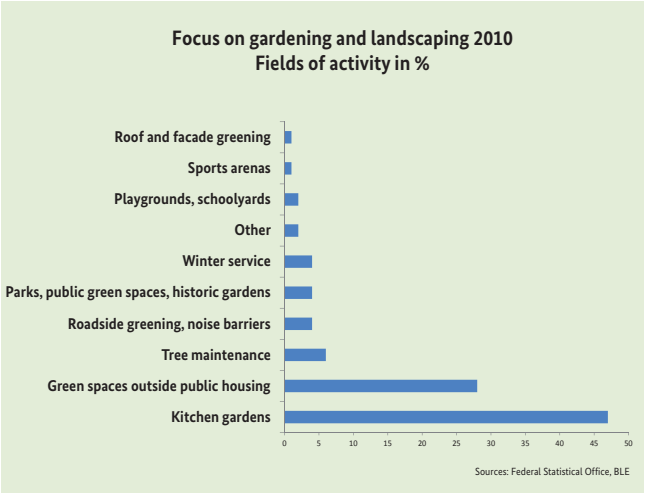


Chart 23



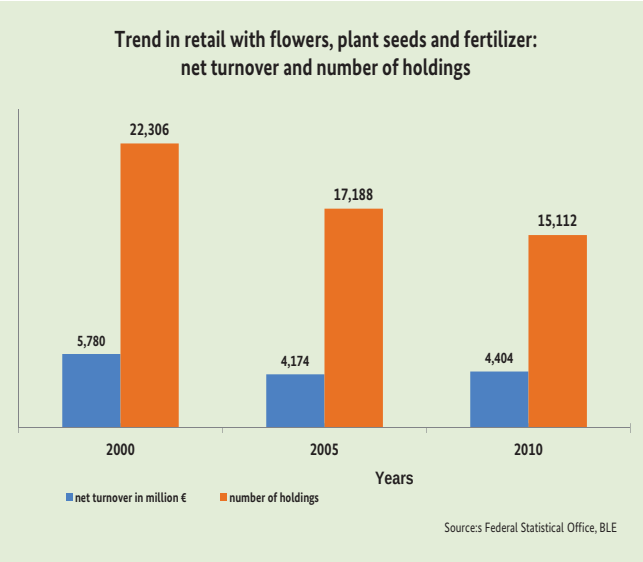
Horticultural special trade and retail

Retail in flowers and plants, including specialised garden centres and holdings selling to the final consumer, define the distribution type of garden centres and specialised floral trade. According to the sales tax statistics of 2010, 15,112 holdings achieved net sales of 4.4 billion €. Compared to 2000, the number of holdings fell by about 7,200 producers while net sales fell from about 5.9 billion € to 4.4 billion €. Average net sales per holding in 2010 amounted to about 291,000 €.

Cemetery gardening

According to information given by the professional association, 9,200 holdings in 2012 worked in cemetery gardening. About 30,000 people were employed in cemetery administrations and ca. 20,000 worked in garden centres. In 2012, 495 people, i.e. about 3 % of all trainees, trained to be cemetery gardeners. Cemeteries in Germany occupy ca. 361 square kilometres of green spaces. There are ca. 32 million gravesites on about 32,000 cemeteries in Germany. Over 80 % of the sites are decorated with flowers. A total of 245,856 contracts for permanent gravesite care have been signed. Such contracts expire after an average duration of 14 years. The total volume of services rendered by cemetery gardeners (establishing, maintaining, planting and decorating gravesites) amounts to about 1.76 billion €.

Chart 24



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