MARKET RESEARCH OF GERMAN HORTICULTURE

Case: Netled Oy

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ABSTRACT

This Bachelor's thesis was assigned by Netled Oy. The case company wanted German horticultural industry to be researched for prospect market expansion. Netled Oy has developed LED technology based inter lighting curtain, OptoGrowia®, for plant growing in greenhouses. The objective was to find out statistical information concerning horticulture and greenhouse market in Germany. For example, acreage of greenhouse cultivation was to find out.

The thesis was implemented as a market research, which was a secondary research (also called as desk research). Mainly secondary resources, such as publications of agricultural associations, were used. The secondary sources were completed with primary sources such is an interview with the personnel of Netled Oy.

The outcomes of this thesis gave an insight for Germany and the greenhouse industry in it. Statistical data on horticulture revealed that depending on geographical location in the target country, greenhouses are built and mainly vegetables and ornamental plants were cultivated in them. There was less greenhouse acreage in Germany than in the Netherlands, and Germany imported big amounts of vegetables and other foodstuff from European countries.

Horticultural associations have up-to-date Internet pages, which makes it easy to follow and get the recent information on the industry. Market entry to Germany would be possible, since there are quite a lot of greenhouses used for vegetable and ornamental plant growing. For the start, Netled could take part in International Green Week exhibition organized in Germany and get regional contacts.

Key words: Market research, Market entry, Germany, Horticulture

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1 INTRODUCTION

Growing season for plants is short in the northern countries. This is because of a significant period of darkness, when the plants do not get enough light for photosynthesis. Greenhouses provide solution for lengthening the growing season as well as for diversifying the selection of produced fruits, vegetables, ornamental plants or seedlings. Greenhouses enable year-around plant growing and, for example, the most effective tomato famers produce tomatoes 75 – 92 kg/m^2/year. The best cucumber farms produce cucumbers 170 – 180 kg/m^2/year. (Kivioja J. 2011)

Greenhouses have to be designed carefully, so that the inside conditions optimize the plant growing. The company faces many challenges, while planning the construction and trying to create optimal plant growing environment. Plant lighting is one of those challenges, because it has to give the photosynthesis the needed amount of light without harming the plant. Lighting has to be energy efficient at the same time. Artificial lighting consumes lots of electricity, produces light pollutions and the efficiency may not be best possible. Also some of the lighting solutions may burn plant leaves if the luminaries are placed too close. (Kallioharju K. 2010.)

Conventionally, plant lighting in greenhouses is produced by high-pressure sodium lamps, fluorescent lamps, metal halide lamps or incandescent lamp. Last decade have brought LED luminaries not only to households but also to greenhouse use. LED lighting in greenhouse purposes has been tested and the test results have been really promising. Experts in agricultural businesses believe that LED lighting is potentially the next revolutionary solution in energy efficient lighting. (Kallioharju K. 2010 & BMELV 2011)

The case company, Netled Oy operates in Tampere and Honkajoki, in Finland. Opto-Growia®, the products of Netled, are LED based lighting curtains for plant growing. Johanna Kivioja from Netled stated that they have already participated Horti Fair, which is an international trade show for horticulture organized in Amsterdam, the Netherlands, and Netled got a lot of worldwide contacts there. (Kivioja J. 2011)

Entering the Dutch market is going well and Netled would be proud to present their product, OptoGrowia® Interlight, for other markets too. The next step in market expansion would be introducing OptoGrowia® to Germany, Austria and Switzerland (Kivioja J. 2011). This Bachelor's thesis will examine the German market and the results will help Netled to decide, whether they want to enter German market and would it be profitable.

Kivioja told that they would like the German market to be researched by answering some key questions. The questions concerning German horticulture are:

- What is the turnover of greenhouse production?
- How many greenhouses there are and how many hectares greenhouse farmers have in utilization?
- What plants farmers grow? Especially, what vegetables the growers have?
- What kind of lighting do German greenhouse growers have? For what plants the lighting is?
- Are there farming exhibitions in Germany besides IPM Essen?
- What are the future trends in greenhouses?

2 MARKET ENTRY

Kivioja stated that they already have some knowledge of German agricultural industry. They already know about the importance of renewable energy in Germany and that one of the international horticulture trade shows organized in Germany is IMP Essen. (Kivioja J. 2011) The case company needs still in depth researching and full understanding of the German greenhouse market. This chapter will go through theoretical part of what is needed for understanding and entering foreign market.

Kotler and Armstrong define marketing as a process, which contains five steps. The first four steps are creating value *for* customer and the last step is capturing value *from* customers. This process shows that marketing is all about communication between a company and customers. The company needs to have orientation for satisfying customers before they can expect value from them in return. The satisfaction of customer is in great importance, since it takes most of the resources much before company can expect anything in return. This marketing process starts with understanding the marketplace and customers' needs, and if the value changing has been successful in the final step the company gets profits and customer equity. (Kotler & Armstrong 2010, 29)

Creating value *for customers* and building customer relationship

1. Understand the marketplace and customer needs and wants
2. Design a customer-driven marketing strategy
3. Construct and integrated marketing program that delivers superior value
4. Build profitable relationships and create customer delight

Capturing value *from customers* in return

5. Capture value from customers to create profit and customer equity

(Kotler & Armstrong 2010, 29)

Netled has already introduced their registered and patented product for international markets, when they participated in horticultural trade show in the Netherlands. The concept of internationalizing is not unfamiliar and they could exploit the strategies what they have used for the Dutch greenhouse market.

2.1 Market research vs. Marketing research

What comes to the term of market research, it is commonly mixed with the concept of marketing research. At times the concepts are even used as they would be the same. Although the debate over the concepts has been going on from the early days of marketing, Chisnall (1992) has clarified the objective of the research to be gathering information and analyzing it so that the suppliers would understand their customer's needs better (Blythe 2008, 96). So, which ever term is used it is to help in marketing management.

Because of the ambiguousness, there is no "right" interpretation. Usually the difference of the concepts is made in the researched issue. Market research focuses on selected country or industry and customers' needs and wants in it. Marketing research goes further and deeper in selected market, trying to discover the deepest cause for a defined marketing opportunity or problem (Blythe 2008, 95).

Blythe summarizes in his book Essentials of Marketing (2008) the meanings of both argued terms each into one sentence:

- *Market research* – "Studies of consumer needs, wants, behavior and personalities in order to inform marketing decisions."
- *Marketing research* – "All forms of information-gathering used to inform marketing decisions."

(Blythe 2008, 317)

In this Bachelor's thesis, the concept of market research was more suitable, because the research was examining the characteristics of greenhouse industry. Also, the features of German customer were examined in order to meet the expectations when entering the market. Although, this final thesis report is only scratching the surface of German agriculture, it will help in the future when market analysis and competitor analysis are done.

As a process, market research is about finding useful data on prospect consumers, analyzing the information and finally presenting the results of it. The goal is data collection, sometimes also collection of information, which is useful for marketing management

decisions. The following picture shows the progress of research from defining the problem to the presentation of the usable information.

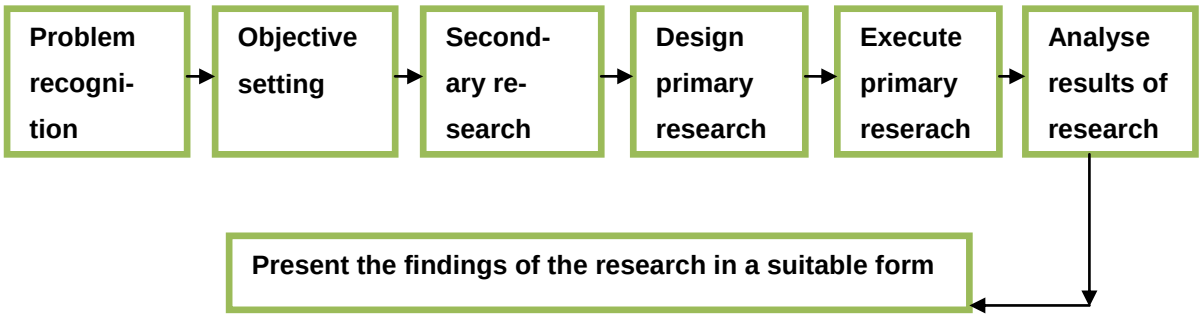


FIGURE 1. Market research process (Blythe 2008, 98, modified)

Data for this Bachelor thesis was collected mainly from secondary sources, but primary sources were to complement the report. Interview with Johanna Kivioja represents the primary source. Secondary sources for the data collection offered German government and associations' statistical information and other published statistics. Also Internet articles and other material were used as secondary sources. The German associations, which offered publications for this Bachelor's Thesis are mentioned later in chapter 5.5.

2.2 Types of research

Blythe (2008, 96) states that marketers shouldn't forget the importance of market research implementation. The target market should be researched, although cost-effectively, in order to find the best possible market for the existing product or vice versa. Researches can be carried out as:

- *Customer research*: focusing on the markets and segments in it. It researches living conditions, spare time consumption habits and trends in the market.
- *Promotion research*: measuring how effective promotion campaigns are in targeted country. By this research, the company can decide what medias would be suitable to use.

- *Product research*: finding new using purposes for existing products or developing totally new products for needs of target market. Existing products could be also developed further to meet the needs and wants of the foreign culture.
- *Distribution research*: finding and planning the best distribution channels for a product. Distribution research may be implemented with consumer research, since product availability is important there where the citizens live.
- *Sales research*: ensuring that the sales territories are equally taken care of and sales techniques are effective. Sales research also prepares the sales personnel for motivational and sufficient working.
- *Marketing environment research*: examining micro- and macroenvironment of the company. Purpose of this research is to enable the company react to the changes in the environment and stay competitive.

(Blythe 2008, 97)

In this thesis, market environment and customer research were considered, since the purpose was to find out how greenhouse industry has developed in Germany. Also today's and future trends were examined and micro- and macroenvironmental issues were gathered together in SWOT analysis, which is chapter 9. As stated in marketing environment research definition, the company has to stay competitive. In order to do so, Netled needs to follow the German agricultural publications and update constantly their knowledge about the country.

2.3 Market entry

How Netled could then enter their target country, and the German greenhouse market? When planning the market entry for the Dutch greenhouse market, Netled took part in international horticultural exhibition, Horti Fair, organized in Amsterdam. The case company is currently negotiating with a large horticultural distributor and sales representative in the Netherlands. The distribution trough the representative would save the company from large investment in distribution planning and building. (Kivioja J. 2011)

Although Netled Oy already has a ready product, let's examine what options there are for the market expansion. Blythe (2008) has listed five different ways of entering foreign market when taking product and promotion strategies into concern:

- Keeping product and promotion the same, although operating worldwide
- Adapting to local culture; changing promotion but keeping product the same
- Product changes are done but keeping promotion the same
- Both product and promotion is adapted to entered market
- Innovating new product for new market

(Blythe 2008.)

After decided how the product and promotion strategy is organized, the company has to go through the options for internationalization. Market entry strategy options are: exporting, establishing a sales office, distributing overseas or manufacturing overseas. These could be also observed from the growth point of view, where exporting is the first step becoming a multinational company, providing working places for the employees of targeted country. (Blythe 2008.)

Exporting is the least expensive and commitment to the foreign market stays small. Disadvantage is that foreign importer has control over the marketing and it may cause problems and have an effect of reputation. (Blythe 2008.) Export agents and houses unite buyers and sellers. In the case, Netled could start with contacting, for example, Deutsch-Finnische Handelskammer (German-Finnish Chamber of Commerce) and Finpro, which are operating between the German and Finnish sellers and buyers. The agencies provide expertise on German market and they give good advices for next steps in internationalization.

In the case of Netled, they already have a product they are proud to present to other markets than Finland and the Netherlands. The starting point for market expansion is that the product stays the same but the part of promotion could be determined later, as the results of the market research are analyzed and carefully measured. Before Netled is able to bring their OptoGrowia® to German market it has to fully understand German customers as well as the agriculture in Germany. The chapter five goes through these matters.

3 NETLED OY

Netled Oy (Ltd) is a Finnish company which develops and promotes a LED technology based growth lighting curtain for greenhouse purposes. Netled was founded in 2007 and the drive for starting a new company became from the needs of greenhouse growers. Agricultural lighting needed enhancement and the thought that horticulture would benefit from LED technology were the ideas for the start. (Netled Oy 2011)

The personnel of Netled have strong know-how on the greenhouse industry. The team has years of experience in commercial greenhouse growing; one of the Netled founders has grown cucumbers and tomatoes since 1987. The other founder has experience and know-how in textile technologies and he has provided his expertise in curtain design. Niko Kivioja (MSc) and Johanna Kivioja (MBA) joined the team later strengthening it with R&D project management skills and business administration. (Netled Oy 2011)

In cooperation with Tampere University of Applied Sciences engineer students they developed and implemented the LED technology to the lighting curtain. The efficiency of the new technology was tested in the winter 2008-2009 in University of Helsinki Campus Viikki. The test greenhouse grew cucumbers, and with inner lighting the production was larger and the plants remained in better condition. Testing with associate companies guaranteed reliable and objective results. (Netled Oy 2010.)

3.1 Regional INNOFINLAND prize

Innofinland organization encourages private persons, businesses and organizations to come up with new inventions and innovations. It gathers entrepreneurs, inventors, counseling organizations and other associations together to network and co-operate. Small and medium-sized companies are in special attention of Innofinland, as well as the characters of Finnish regions. (INNOSUOMI 2010.)

On 16th of November in 2010, in Rauma, Regional INNOFINLAND Prize (Inno-Suomi Satakunta 2010) was granted for Netled. The award came from OptoGrowia® lighting

curtain, fitting to the Innofinland 2010 theme, which was “innovations rising from customers needs’”. (Netled 2011)

The INNOFINLAND prizes are highly respected and it may bring recognition among the industry. According to the study of Innofinland in 2003, the innovation and the business become more known on the market, it attracts more customers and brings more orders and invitations. Naturally, the prize winning person, business or organization also receives publicity. (IINNOSUOMI 2010.) Innofinland prize is recognized by associations operating in Finland and in the case of Netled, these associations could recommend Netled for German greenhouse market.

PICTURE 1. The personnel of Netled Oy receiving Regional INNOFINLAND Prize. (Picture: Netled Oy)

4 OPTOGROWIA®

PICTURE 2. OptoGrowia® Interlight in tomato growing in Honkajoki, premises of KKK-Vihannes. (Picture: Netled Oy)

In today's world, climate change is one of the most discussed issue and governments and companies play their role in a fight against it. Tight environmental requirements and energy efficiency set high standards for existing technologies and one of the industries influenced by these energy efficiency trends is greenhouse industry (Kallioharju K.2010).

Traditionally, greenhouses around the world use high-pressure sodium lamps where the luminaries are concentrated towards the plants. One of the new technologies developed for greenhouse lighting is LED lamps. LED (Light Emitting Diode) technology based lighting solutions are energy saving options for greenhouses. Compared to other conventional lighting solutions, LED –unit produces more light while consuming less electricity. (Kallioharju K. 2010) With some of the existing LED technology based lighting using greenhouses are already saving up to 60% electricity compared to conventional greenhouse lighting (Leino R. 2005).

Usually, high-pressure sodium laps are installed above the canopy and by this method artificial lighting for the greenhouses are produced. Last decade has brought, not only LED luminary innovations, but also new ways of lighting for green house industry. Now the plant lighting is situated within the canopy. This new lighting method is called inner lighting and the luminaries used are called interlights. (Kallioharju K. 2010)

Netled started to develop OptoGrowia® products having greenhouse growers' needs in mind. The development team has expertise in commercial greenhouse growing and expertise has been supplemented with the help of Tampere University of Applied Sciences and Helsinki University. The development and the tests are honest and objective, due to the associate companies. OptoGrowia® Interlight has already successful results in cucumber and tomato production and another OptoGrowia® lighting solution is under development. (Netled Oy 2011.)

4.1 OptoGrowia® family of products

Energy efficiency is one of the fine features of OptoGrowia® and it has resulted after many innovations and hard work. While it consumes less electricity than conventional lighting solutions, the color of LED light can be tuned to meet the prerequisite of photosynthesis. LED luminaries in a curtain structure enable more light energy for leaves and for photosynthesis, which makes vegetables grow better. The innovation also reduces the excess light, also called light pollution, which is considered to be negative for the surroundings. Environment friendliness of the product is ensured by choosing less nature stressing materials. Materials used in OptoGrowia® are tested in order to guarantee the safety on plant production. (Netled 2011)

OptoGrowia® is controlled so that it imitates the natural growing environment. Controllability of the light curtain creates optimal growth for each vegetable, fruit or any other plant uniquely. (Netled 2011) It can be installed during the growing season, which is among the other excellent features, a positive character when launching OptoGrowia® to German greenhouse market.

OptoGrowia® family consists of two products. OptoGrowia® Interlight is for plants, which are growing tall and the lower leaves may be in the shadow of the leaves in the top. Another OptoGrowia® is meant for plants having low growth, such as salad, herbs, seedlings and flowers.

OptoGrowia® Interlight

OptoGrowia® Interlight is a patented lighting net, containing up to 10 LED strips. The strips are knitted into curtain giving light for plants both sides of it (see picture 3). It is designed so that especially in tall plants, like cucumber and tomato, also the lowest leaves get enough light. Interlight has been tested in Honkajoki, premises of KKK-Vihannes, and the results have been good. (Kivioja J. 2011)

The life cycle of tomato is usually about a year. It is planted as seedling and approximately eight weeks later it starts to produce crops. The tomato production lasts then around 10 months after which the growth is taken down and new tomato seedlings are planted. The crops are measured with a unit kg/m^2/year and effective tomato growers collect even 92 kg/m^2/year. OptoGrowia® enables tighter rows, because it gives light in the middle and both sides. (Kivioja J. 2011)

Cucumbers then again are collected during three months, when it produces crop. Its life cycle is shorter than tomatoes' and effective farms have 3-4 different growths producing cucumbers. Up to 180 kg/m^2/year can be collected from effective cucumber farms. How the cucumber growing greenhouses then benefit from OptoGrowia® Interlight? The leaves of cucumber are large and the growing cucumbers below may not get enough light. The lightning curtain also enables good quality cucumbers.

Technical Information

Length:	max. 25 m
Height:	60 cm – 1 m
Light:	Red 633 nm approximately 80%
	Blue 469 nm approximately 20%
Electricity:	1600 W, 230 VAC

(Netled 2011)

PICTURE 3: OptoGrowia® Interlight in cucumber growing. (Picture: Netled Oy)

OptoGrowia® for salad

Another product of OptoGrowia® family is designed for the productions of, for example, salads, herbs, flowers and seedling. It is a lighting curtain, where the LED luminaries have been placed only one side. It is situated above the plants (see picture 4), and it can be directed towards the growing plant.

PICTURE 4: OptoGrowia® in salad growing. (Picture: Netled Oy)

5 GERMAN MARKET

Desired target market has to be observed from different viewpoints. Kotler and Armstrong are researching the market place by dividing it to micro- and macroenvironment. Microenvironment includes factors, close to company, which are influencing company's attempt in creating value for the customer. These factors are the company itself, suppliers, marketing intermediaries, competitors, public and customers. Macroenvironment consists of demographic, economic, natural, technological, political and cultural environment – factors outside of the company. (Kotler & Armstrong, 2010) In this chapter mostly the macroenvironmental issues were considered and some factors in microenvironment were included in SWOT analysis in chapter 9.

5.1 General information on Germany

Federal Republic of Germany was holding the title of the biggest country in Europe, excluding Russia. According to Wilén (2010), the total area of Germany was 356 900 km2, of which 8 350 km2 was water. The number of inhabitants was approximately 82,22 million. Gross domestic product (GDP) in 2009 was 2 407,2 billion Euros and GDP per capita was 29 356 Euros. (Finpro 2010)

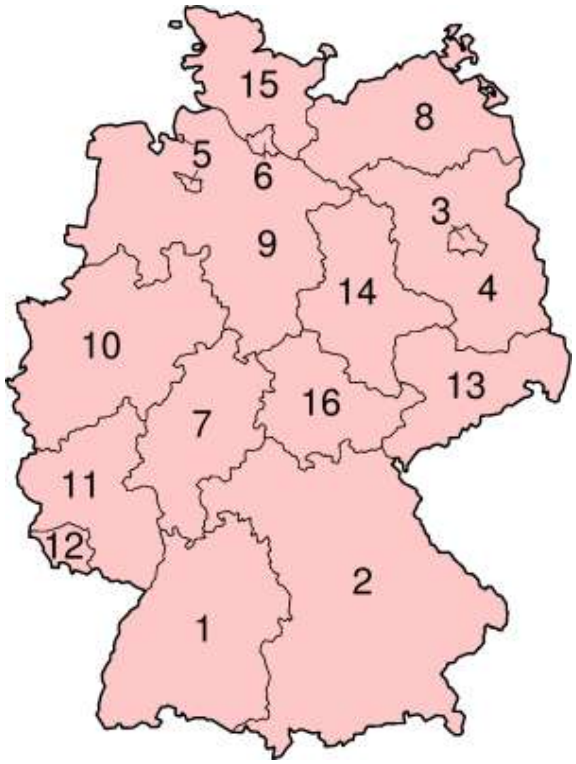
Three biggest cities in Germany are:

- Berlin (the capital) - 3,37 million inhabitants
- Hamburg - 1,75 million inhabitants and
- Munich - 1,28 million inhabitants.

Germany is divided into 16 states, called "*Länder*" and the division into states is seen in picture 5 in the next page.

German *Länder* in alphabetical order are:

1) Baden-Württemberg
2) Bavaria (Bayern)
3) Berlin
4) Brandenburg
5) Bremen
6) Hamburg
7) Hesse
8) Mecklenburg-Western Pomerania
9) Lower Saxony
10) North Rhine-Westphalia
11) Rhineland-Palatinate
12) Saarland
13) Saxony
14) Saxony-Anhalt
15) Schleswig-Holzstein
16) Thuringia



PICTURE 5. 16 States of Germany (GNU Free Documentation License, 2002)

Germany's self- sufficiency in foodstuff was 75% (2010). Domestic food production started to strongly increase in 1990's, but still importing has steadily been growing. Plants, which are not profitable to farm in Germany, are imported. Fruits were especially brought to Germany, but also vegetables, berries and mushrooms were imported. (Finpro 2010)

About 370 800 enterprises were practicing agriculture in Germany. In 2007, total agricultural area in utilization was 16 931 000 ha (see Appendix 1). The share of agriculture from the total GDP (GVA/GDP) was 0,6%. The most important agricultural areas are Bavaria (Bayern) 3 211 950 ha, Lower Saxony 2 620 130 ha, North Rhine-Westphalia 1 508 960 ha and Baden-Württemberg 1 436 960 ha (Eurostat 2007). From all of these areas, crops, dairy products, vegetables and fruits were collected. (Finpro 2010)

From the total area of Germany, almost half was used in agriculture. The large amount of agricultural land enables diverse plant production and accounts for self-sufficiency in foodstuff. The agricultural areas consist of crop production and arable farming, market gardening, fruit cultivation and wine and hop producing (BMELV 2011).

Because Germany is a big country having the Baltic Sea and the North Sea in the north and the Alps in the south, its climate varies within the country. North of the Germany is geographically plain and flat, while central and southern Germany are hilly and rise up to the Alps right in Bavaria in the Austrian border. No average temperatures could be measured totally from the country as they would not describe the weather conditions well. That is way the country has been divided into seven climatic areas: the North Sea coast, the Baltic coast, the North German Plain, the North Rhineland, the central and southern hills, the upper Rhine, and the Bavarian Alps. Summers and winters may differ from year to year, whether the country is under oceanic or continental influences. In general could be said that in the summer, the temperature in south and north do not differ, but as the winter falls, south and east have more snow and colder days than north. (BBC Weather 2011.)

5.2 Horticultural statistics

ZGV (Zentralverband Gartenbau – Central Horticultural Association) has gathered statistical information on horticultural businesses. From their publication (Appendix 2; 1(4)), produced in January 2011, was seen that in total, there are 60 000 businesses operating in horticulture, from which 34 500 are gardening businesses. Total acreage for the horticultural purposes was 210 000 ha. (ZVG 2011)

Horticultural products, such as vegetables, fruits and ornamental plants are produced in Germany but also big amounts of them are imported. As seen in Appendix 2; 2(4) inland production accounted 7,5 billion Euros while the worth of importing was 12 billion Euros. Vegetables alone were sold with 1,9 billion Euros, without VAT. (ZVG 2011)

5.2.1 Vegetable growing

Vegetable consumption per capita had increased significantly from the 1990's. The production had also grown, having 3.2 Million tons in 2004. Nevertheless, large amounts of vegetables were still imported from neighboring countries, the Netherlands being one of the important vegetable importers. (Statistisches Bundesamt 2005)

There were about 9 150 vegetable growing farms, which were farming in the acreage of 111 900 ha. Sales revenue, without VAT, in 2010 was 1.9 billion Euros. The most important vegetables grown in the open were:

- Asparagus – acreage 22 900 ha,
  from which 18 800 ha are productive
- Carrots – 10 370 ha
- Onions – 8 760 ha
- White, red and savoy cabbage – 9 410 ha

(ZVG 2011)

In greenhouses vegetables were grown in 1 325 ha. That was 0,0038% of the total land area of Germany. Most of the greenhouses were located in Baden-Württemberg, North Rhine-Westphalia and Bavaria (aid 2011).

The most important vegetables grown in greenhouses were:

- Tomatoes – 319 ha
- Corn salad – 281 ha
- Cucumbers – 216 ha
- Lettuce – 129 ha

(ZVG 2011)

Federal Statistical Office of Germany reported that in 2004 from the greenhouses the total harvest was 138 000 t, which had increased from 2000 13 %. The cultivation of tomatoes and cucumber grew in the time of four years 2000-2004. Tomatoes are said to be in the Germans favor because tomato consumption has stayed in large amounts. (Statistisches Bundesamt 2005)

5.2.2 Ornamental Plants

Germany has held the top market position in Europe in ornamental plant production. World-wide, Germany is with the USA and Japan the three largest ornamental plant markets. Bedding and balcony plants are used with large amounts, which makes the market for them exquisite in Europe. Sales volume with retail prices was 8,6 billion Euros (2009). (BMELV 2010)

PICTURE 6: Ornamental plants have a huge market in Germany. (Picture: BMELV 2011)

Federal Ministry of Food, Agriculture and Consumer protection in Germany had commissioned statistical information to be gathered concerning horticulture. The figures were got from AMI (Agrarmarkt Informationsgesellschaft mbH) and the numbers state that in 2008 ornamental plants were cultivated in 7 167 ha, from which 2 256 ha was in greenhouses. In ornamental plant growing the total number of operating businesses in was 8 600. (BMELV 2010)

The most of ornamental plant growers were in North Rhine-Westphalia, but also Bavaria, Lower Saxony and Baden-Württemberg were important areas of plant cultivation.

As in total greenhouse cultivation in Germany accounts to 3 581 ha, including only vegetable and ornamental plant productions. As a comparison, greenhouses in Finland cover up 1 722 ha of surface and in the Netherlands over 10 000 ha. The number of greenhouses in vegetable and ornamental plant growing in the Germany did not come up.

5.4 Tobacco

Hairsine wrote in Deutsche Welle in 2007 that German tobacco farms would have dark times ahead because the smoking bans around the Europe had weakened the cultivation of tobacco. In 2007 around 10 000 tons of different tobacco plants were harvested in Germany. European Union had agreed in 2004 to stop paying subsidies for tobacco farmers. (Hairsine K. Deutsche Welle 2007) The council of EU Agricultural Ministers decided to reform tobacco sector and as a result of updating the regulations, financial aids were reduced (European Commission 2009).

Totally, in all of the European countries, expect in Poland, tobacco production has reduced. Currently European tobacco farmers produce only 5 % of the world's raw tobacco. While the production is so low, it makes the EU the biggest importer of raw tobacco. (European Commission 2009)

Tobacco crops grow in poor quality soil and optimal temperature for plants is between 25-35°C. Tropical or subtropical climate would be the most favorable for farming but also the middle European climate suit for tobacco plants. Especially southern parts of Germany are production areas of tobacco. Still, in some cases, adjustments to the weather conditions have to be made and then the tobacco seeds are first planted to greenhouses. In the end of May, young plants, seedlings, are moved to open farm land. (BBV 2009) Statistical information on number of tobacco farms didn't come up during the thesis writing.

5.5 Horticultural Associations in Germany

There are several associations operating in Germany for the goods of agriculture and horticulture. These following associations provide information concerning the industry:

- BMELV - The Federal Ministry for Food, Agriculture and Consumer Protection
- ZVG - Zentralverbandes Gartenbau (Eng. Commercial Horticulture Association)
- BVZ - Bundesverband Zierpflanzen (Eng. Oranmental Plant Federation)
- KTBL – The Association for Technology and Structures in Agriculture
- AMI – Agrarmarkt Informations Gesellschaft mbH (eng. Agricultural Market Information Company)

- IVG - Industrieverband Garten
- Bundesfachgruppe Gemüsebau
- Fachverband Deutscher Floristen
- Landerverband Gartenbau
    - × Rheinland
    - × Westfalen –Lippe

The listed associations provide lots of up-to-date information on German agriculture and horticulture, and the Internet pages are worth reading once in a while.

Agricultural magazines such as ”ZVG Gartenbau Report“ is published by Commercial Horticultural Association ten times a year and there is introduced the current occasions organized by the associations operating in agriculture. There are newsletters provided by the associations which would benefit Netled in updating their knowledge about German agriculture. By subscribing to mailing lists the newsletter are available, but some of them are available after logging in or payment.

6 THE GERMANS AS CUSTOMERS

Wilén wrote in Finpro's country report (2010) that Finnish suppliers have generally a positive repute among German customers. Finpro listed industries, which would potentially success in German markets, and all of the industries are related to different technologies (Finpro 2010). There would possibly be market niche for OptoGrowia®, since it is using latest lighting technology and German is oriented for high technology products.

However, the market entry for new suppliers is quite slow and creating personal contact with the clients requires time and personnel resources. German clients respect well-known and trustworthy suppliers, with whom they could communicate face to face and customer service is handled with care and rapidity. For example, supplied spare parts are expected to be sent from Finland as quick as possible. (Finpro 2010)

German customers also expect that the suppliers know German language (Finpro 2010). Business is mainly done in German, depending on the size of an industry or a company. English skills are pretty good among the German business people, but it is polite to use customer's own language. German and Finnish ways of doing business are very similar, which makes it easier to adapt to German market. Though, Finnish business people have to remember to use titles when communicating with the Germans. But otherwise, both cultures expect that promises are kept and arranged schedules are followed.

The division into states, *Länder*, creates challenges because these states differ remarkably in some matters. A company, planning to bring its product or services to German market, needs to have a wide sales unit covering all the states. Usually, there is one sales representative and customer service representative for one state. (Finpro 2010)

German consumer is getting more aware of healthy eating and favors organic food. Consumption habits are changing and now the demand for organically grown foodstuff is high (Finpro 2010). Recession didn't seem to have major effect on organic food consumption (BMLV 2011),

7 TRENDS IN FUTURE

As part of the Bachelor's Thesis, trends in agriculture and horticulture were to research. The LED technology is already one of the trends, but also other relevant and horticulture related issues were found out. Environmental friendliness and awareness of saving nature are becoming more and more important. This is not only companies' responsibility but all the people in the world.

7.1 Organic Farming

Organic food sales had increased in ten years from 1.48 billion Euros to 5.85 billion Euros, told the article of Federal Ministry of Food, Agriculture and Consumer Protection in Germany. Despite of the difficult economic situation, organic food market has kept its sales almost the same (0,8% decrease). Agricultural experts think that farming with organic manners will grow considerable and there is growing demand for organic food. (BMELV 2011)

Germany has set objectives for green house gas emissions and the government is focusing on sustainable development. Organic farming is one of the strategies maintaining sustainability, since it is a harmony with nature both benefiting. In the end of 2009, organic farming area totaled up to 947 115 ha (see the table in Appendix 3), having over 21 000 organically operating holdings. The number of organic farms is increasing as well as the utilized acreage for the purposes. (BMELV 2011)

Food product consumers in Germany have become more aware of climate change and they favor more and more organic food. OptoGrowia® would fit into German organic farming industry while it consumes less electricity and strengthens the environmental friendly image of the farm.

7.2 Climate change mitigation

Agriculture is one of the biggest producers of greenhouse gases, which speeds up the climate change. Although agriculture causes changes in climate, it also is very sensitive for it. Heat waves, dryness of the soil, floods and other natural hazards have their impact in harvests. Therefore, the balance between the emissions and profitable crop productions has to be found. Climate change proposals were discussed in the International Green week in Berlin 2011 with the goal of enhancing the resistance of agricultural production. (BMELV 2011.)

Climate changes have larger impacts of forestry and crops cultivated in the open. In the greenhouses farmed products stay in optimal growing conditions even through the year and they are not is such as sensitive as other agricultural products. Still, greenhouse owners have to play their role in greenhouse gas emission reduction and think sustainable alternatives in greenhouse building, for example.

Impacts of climate changes and what do European farmers think about climate change mitigation were surveyed in 2009 by European Commission and Eurobarometer. In the same survey European Commission also wanted to know whether the farmers know what Common Agricultural Policy (CAP) is. (European Commission & Eurobarometer 2009)

The results show that 88% of German farmers think that European Union should help them in changing the farming methods towards more climate friendly. Also majority, 72 %, think that agriculture will suffer from climate changes. These percentages are pretty much the same as the average in Europe. However, the average to the question if they would be willing to pay 10% more on the products, which are produced without increasing climate change, 70 % of the Germans would while in European level just 58 % would not. (European Commission & Eurobarometer 2009, 2/4)

The Federal government has started up a project ZINEG “Zukunftsinitiative Null-Energie-Gewächshaus” (eng. Zero-Energy Greenhouse Initiative), because horticulture used one third (2008) of the fuel energy used in agriculture. The goal is to reduce fossil

originated energy to zero. The project started May 2009 and lasts until April 2014. (BMELV Climate Report 2008 & Energie Portal 2011)

The German farmers showed their interest in sustainability and they would have made investments in order to get good quality products. The interviewed people respected environment and kept it in high value. These results reflect that the Germans are highly motivated in saving the environment and reducing greenhouse gases.

7.3 Renewable energy

Goethe-Institut released an article (2011) on Germans' urge to change for wind and hydro power, as well as solar energy and biogas. The project is called "100% Renewable Energy Regions". Long term contracts are made with energy suppliers and whenever possible wind parks for meadows are built, solar panels are constructed on the roofs and farmers use biomass for heating homes and water tanks. There were only small number of organizations and communities driving the aim forward, but as the time goes, many more was and will be joining them. (Volker T., Goethe-Institut 2011)

Federal Ministry for Environment in Germany has made National Climate Protection Initiative, which gave the start for the move of using renewable energies. Another reason was money. Prices of fuel, produced from fossils, are ruled by big international energy companies and the prices are increasing. Local farmers in Germany hope that by using alternative energy sources they would reduce the costs used in energy supply. (Volker T., Goethe-Institut 2011)

In 2010, the share of renewable energies from electricity supply of Germany increased and was 17%. Wind energy was producing the most of the electricity (6%), but biogas and photovoltaic sectors also increased their share. Solar energy nearly doubled its share and was covering 2 % of the total electricity demand. Renewable energies were used despite of the recession and recovery after that, so steady growth in it appears as a trend. (BMU 2011)

Although, the aim of the project that all the local communities would realize their importance in renewable energy suppliers is brilliant and would save environment, there is matters they have not figured solution to. What it weather conditions are not favorable and there is no sunshine or wind? Communities have to fill the electricity gaps with the power of big energy suppliers. If the electricity consumption grows or at least stays at the same level, and the alternative energy supplies produce extra energy, storage systems have to be developed. The storage problem has not yet been solved but the Agency of Renewable Energies would have to consider the options in the future. (Volker T., Goethe-Institut 2011)

8 EXHIBITIONS IN GERMANY

In 2005, ten biggest exhibition cities in Germany, measured by exhibition area, are Hanover, Frankfurt am Main, Köln, Düsseldorf, Munich, Berlin, Nürnberg, Essen, Leipzig and Friedrichshafen. (Issuu 2010. Kauppalehti)

Germany is considered to be a center point for international fairs due to location. The central location in Europe brings exhibitors and visitors from all over the world. For Finnish companies, after they have entered Nordic markets, the next and natural move is to expand to Germany. Taking part to exhibitions, market entry is easier and prospect customers and suppliers can be found.

Netled was already familiar with IPM Essen and other similar fairs were to find out. The list of exhibitions include introduction for horticultural fairs. Haus und Garten is mainly for ornamental plants and decoration, and to give a technical view for the agricultural products, AGRITECNICA was also included to the trade fair list.

8.1 IPM Essen

IPM Essen is international trade fare for plants, floristry, technical equipment and sales promotion. It promotes itself as a leading trading hub and network platform in the green sector. In 2011 the exhibition gathered 1 508 exhibitors from 47 countries and around 60 000 visitors were enjoying the 29th IPM Essen fair. For the next time the fair is held in 2012, 24th-27th January, in Essen. (Messe Essen GmbH. 2010)

IPM would be definitely worth visiting, since it provides close-up for latest trends in green sector. Innovations, trends, market orientation are discussed among people from every continent. The fair is also established in Asia and Middle East; IPM China and IPM Dubai complement the internationality of IPM and the global networking among horticulture is enabled (INDEGA 2011).

8.2 International Green Week – IGW

The IGW exhibition is established in 1926 and now in 2011 it is held for the 76th time. The organizer of the IGW is Messe Berlin GmbH. IGW features a wide selection of products: from food and drinks to agricultural and horticultural equipment and to appliances in the households. In the exhibition seminars, forums and committee meetings are offered for the visitors. (Messe Berlin 2011.) The exhibition of food, agriculture and horticulture industries is recommended also by Ministry of German agriculture and it is widely discussed in Internet articles.

The exhibition is held in every year in January. For Netled Oy the upcoming IGW exhibitions are in 2012 20th-29th January and in 2013 18th-27th January.

8.3 Haus und Garten

Officially Haus Garten Genuss, was organized this year February 9th to 13th in the exhibition premises in Essen. The fair gathers around 300 exhibitors mainly from floricultural businesses together, but also for example gardening tools and garden technology suppliers as well as interior decoration designers are profiled as exhibitors. The next Haus und Garten fair is organized in Essen in 8th-12th of February 2012.(Haus und Garten 2011)

Haus und Garten trade show is concentrating on ornamental plants and introducing the trends in decoration with flowers. If there are resources, the exhibition would be worth following. There is always the companies growing the flowers, so by taking part or just following the website of the fair, interesting contacts could be made.

8.4 AGRITECHNICA

AGRITECHNICA is exhibition for agricultural machinery products. According to the official website of the fair, this is meeting point, where innovations, trends and visions are introduced and discussed. Exhibiting in 18 halls, with more than 2300 exhibitors,

making AGRITECHNICA the world's largest fair for machinery and equipment used in agricultural purposes.

AGRITECHNICA is held for the next time 15th-19th of November 2011 in Hanover. (DLG e.V. 2011) This trade fair would bring Netled technical viewpoint for agricultural machinery. Possibly, lighting solutions in greenhouses would be seen in the fair but AGRITECNICA would not be with great importance in the beginning of the market entry plan.

However, the most important of the fairs for Netled is IPM Essen. International Green Week is also worth visiting since it is widely advertised and discussed in Medias. By taking part in these exhibitions Netled would get a bigger picture and close insight for the German agriculture.

9 SWOT

SWOT analysis is commonly used for situational cases, in which is measured, how the business is coping in its environment. Strengths and weaknesses are internal factors of the company. They are capabilities or limitations which influence the company's performance. Then there are external factors of the company. These are opportunities, which the company may use as their advantage, or threats, which create challenges to business to overcome with. The ideal situation would be that the strengths and the opportunities match, while the threats and weaknesses are eliminated or otherwise taken care of. (Kotler and Armstrong, 2008, 78)

SWOT analysis for Netled and OptoGrowia® summarizes some of the points discussed earlier in the thesis, but also gathers fresh thoughts of current situation.

The SWOT analysis for Netled Oy:

STENGTHS:

- Unique product
- Registered and patented
- Co-operation with OSRAM
- Promising results in tests
- Regional INNOFINLAND prize
- Existing need for the product
- Energy efficiency and possibility to grow plants in less space, because the light is on both sides of the curtain
- Employees having strong language skills

WEAKNESSES:

- Employee resources are relatively small
- Financial situation may not be as good as the bigger competing companies have in the industry
- LED technology might be still quite expensive
- Lacking intermediaries in Germany

OPPORTUNITIES:

- Germans have positive attitude towards Finnish businesses
- Especially technical products would have success in German markets
- German greenhouse growers are already familiar with LED lighting, however they haven't adopted it yet
- Organically grown food is trendy and German customers want to buy quality
- Climate change is making winters colder in Germany, which would increase the amount of greenhouses
- Solar panels and other sustainable alternatives for heating and electricity are in favor of the Germans

THREATS:

- Internationalization requires resources
- New innovations are slowly taken into use
- German lighting providers also have LED luminaries for greenhouse growing
- Private households continue growing their own vegetables in small green-houses, which reduces demand and sales volume

10 CONCLUSIONS

Some of the world's largest greenhouses are in the Netherlands, making it one of the most important vegetable importers of Germany. There are around 9 000 enterprises farming in greenhouses and over 10 000 ha are in greenhouse cultivation. The greenhouse acreage in the Netherlands accounts up to 0,25% of the total land area. (Wikipedia) The greenhouse market in Germany is smaller than in the Netherlands, but still bigger than for example in Finland. To make the comparison, total area of Finnish greenhouse farming was 442 ha (Maa- ja Metsätalousministeriö 2009), while in Germany there is over 3 000 ha. The number of farming enterprises in greenhouse sector in Finland was 1 722 (Maa- ja Metsätalousministeriö 2009).

The share of greenhouse area from the total agricultural land in Germany is relatively small, but if there is demand for the product in Finland, there definitely would be in Germany. Certainly, there are fewer greenhouses in Germany than there is in the Netherlands, which is known for its greenhouses. The Netherlands is one of the biggest countries importing to Germany and the share of vegetables, fruits and ornamental plants is large. Netled has to consider, how they would success in German market and would they find sales representatives there as they have in the Netherlands. Co-operation and exporting with a local or international agricultural company would be an option.

Taking changing and warm weather conditions into account, Germany has quite a lot of greenhouses. The markets may not be large, but prospect customers there certainly would be. Climate changes in Germany are critical and however the climate changes, agriculture will change along. Possibly it would result as more greenhouse cultivation, or then different products will be farmed.

Germany has future in sustainable development, as they have determinedly reduced greenhouse emissions during the last decade. OptoGrowia® products would enhance the sustainable development of the greenhouse by being energy efficiency and reducing light pollution.

The benefits of OptoGrowia® are hand-in-hand with the German way of thinking about sustainable development. Saving energy and developing less environment burdening products, Germany is reducing its CO^2 print. The highways in Germany are producing more pollution, but also agricultural changes need to be done in order to make it significant. Electricity savings may be only a tiny thing in the pollution reducing list, but definitely it is important. Alternatives for heating and producing electricity are developed and perhaps OptoGrowia® would fit into that category.

Germany could be a good country to plan expansion to, also because of the Germans' positive image of Finnish companies and nature. The ways of doing business are close to each other and both are handling the customer with trust and care. Event the demand for technical products communicates possibilities for OptoGrowia® Interlight.

Trade fair participation would give a bigger and better picture of the horticultural industry in the target country. Horticultural associations in Germany and agencies between Germany and Finland have been operating for the good of internationalization. They share their knowledge and counsel in market expansion. Netled team already has a team with good know-how, but in case of lacking some information the agencies would be a backup. Co-operation with botanical gardens such as Botanical Garden in Berlin or gardening universities, for example Leipzig University, would give in depth insight for the industry. The co-operation would possibly bring recognition for Netled, and through that, they would gain trustworthiness among agricultural businesses and get prospect customers.

All in all, OptoGrowia® lighting curtain would have a market niche in Germany, since nothing alike has come up during the Bachelor thesis writing. LED technology in greenhouse lighting isn't new for the German greenhouse farmers, but with the benefits of OptoGrowia® and the know-how of Netled personnel, Netled would get success in Germany.

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Utilised Agricultural Area (ha) - Germany and Austria (division into regions)

GEO/TIME	2007	2005	2003	2000	1997	1995	1993	1990
Germany (including former GDR from 1991)	**16931900**	**17035220**	**16981750**	**17151560**	**17160010**	**17156850**	**17022080**	**17048110**
Baden-Württemberg	1436690	1446650	1445740	1473120	1447220	1478310	1468560	1465530
Bayern	3211950	3264730	3272370	3294900	3342290	3331520	3348760	3364430
Brandenburg	1334630	1346820	1329200	1347410	1345750	1337670	1285770	1268600
Berlin, Bremen, Hamburg	24760	24790	23210	24200	21580	24740	26840	27450
Hessen	778040	769080	755770	765980	775020	768170	776050	770100
Mecklenburg-Vorpommern	1348800	1349210	1348290	1362450	1349860	1350090	1305650	1298960
Niedersachsen	2620130	2626470	2626130	2661380	2674490	2678740	2702750	2707640
Nordrhein-Westfalen	1508960	1523750	1516180	1501580	1531330	1528140	1558100	1576910
Rheinland-Pfalz	716860	713760	707680	715830	718320	715400	711330	711910
Saarland	76540	77450	74100	76860	73040	71750	73340	70350
Sachsen	917200	912520	914480	917500	895730	890560	869090	838550
Sachsen-Anhalt	1172920	1171970	1166660	1172900	1165900	1145060	1045130	1113930
Schleswig-Holstein	990720	1008600	1008500	1032440	1038020	1041110	1065950	1074000
Thüringen	793710	799440	793440	805000	801060	797590	785210	762480
Austria	**3189110**	**3266240**	**3257220**	**3388230**	**3415090**	**3425130**	**:**	**:**
Ostösterreich	:	:	1138110	1147800	1162550	1164350	:	:
Burgenland (AT)	188430	189100	:	:	:	:	:	:
Niederösterreich	918360	940940	:	:	:	:	:	:
Wien	7990	8390	:	:	:	:	:	:
Südösterreich	:	:	790560	822040	836720	841110	:	:
Kärnten	290370	305960	:	:	:	:	:	:
Steiermark	457020	463930	:	:	:	:	:	:
Westösterreich	:	:	1328550	1418400	1415820	1419670	:	:
Oberösterreich	556720	565070	:	:	:	:	:	:
Salzburg	236520	267040	:	:	:	:	:	:
Tirol	435380	419070	:	:	:	:	:	:
Vorarlberg	98330	106750	:	:	:	:	:	:

Eurostat 2011. Last updated 31.1.2011, last extracted 2.3.2011

PRESSEMELDUNG (ZVG – Zentralverband Gartenbau e.V.)

1. Gartenbau in der Bundesrepublik Deutschland

Betriebe mit gärtnerischer Produktion und Dienstleistung	60 000
Davon reine Gartenbaubetriebe	34 500
Gärtnerische Nutzfläche	210 000 ha
Wirtschaftsvolumen (Verbraucherebene)	
Produktion	7,5 Mrd. Euro
Dienstleistung (geschätzt)	6,5 Mrd. Euro
Importe	12,0 Mrd. Euro
Beschäftigte	400 000
Auszubildende	17 200
Kosten für die Einrichtung eines Arbeitsplatzes im intensiven Unterglasgartenbau	ca. 200 000 Euro

2. Aus- und Weiterbildung im Gartenbau

(gerundete Zahlen)

6 000 anerkannte Ausbildungsbetriebe

120 gartenbauliche Berufsschulen

17 200 gärtnerische Auszubildende (20 % weiblich) in 7 Fachrichtungen:

- Baumschule
- Friedhofsgärtnerei
- Garten- und Landschaftsbau
- Gemüsebau
- Obstbau
- Staudengärtnerei
- Zierpflanzenbau

750 Gärtnerinnen und Gärtner, die sich auf die Prüfung zum "Gärtnermeister" vorbereiten

300 Fachschüler mit dem Bildungsziel

"Staatlich geprüfter Techniker"(gerundete Zahlen)

7 580 Studenten Gartenbau und Landschaftsarchitektur davon

- 1 040 Studenten/innen an Fachhochschulen (Gartenbau)
- 1 010 Studenten/innen an Universitäten (Gartenbau)
- 3 420 Studenten/innen an Fachhochschulen (Landschaftsarchitektur)
- 2 110 Studenten/innen an Universitäten (Landschaftsarchitektur)

3. Gemüsebau in Deutschland

APPENDIX 2: 2 (4)

(Stand: 31.10.2010)

Zahl der Gemüsebau-Betriebe	ca. 9 150
• darunter Gemüsespezialbetriebe	2 000
Gemüseanbaufläche (ohne Kräuter)	111 900 ha
• davon Ernteverfrühung durch Folien etc.	ca. 26 000 ha
Unterglasfläche	1 325 ha
Verkaufserlöse (ohne MwSt.)	1,9 Mrd. Euro
• davon Spargel	ca. 300 Mio. Euro
• davon Champignons	120 Mio. Euro
Pro-Kopf-Markt-Verbrauch Gemüse	90,7 kg
Selbstversorgungsgrad (Markt)	37,8 %

Wichtigste Gemüsearten:

Freiland:

• Spargel (18.800 ha = ertragsfähig)	22 900 ha
• Möhren und Karotten	10 370 ha
• Speisezwiebeln	8 760 ha
• Weiß- und Rotkohl sowie Wirsing	9 410 ha
• Frischerbsen	4 445 ha
• Blumenkohl	4 490 ha
• Eissalat	4 360 ha
• Buschbohnen	3 800 ha
• Spinat	3 150 ha
• Radies	3 375 ha
• Gurken	2 875 ha
• Porree	2 310 ha
• Kohlrabi	2 330 ha

Unter Glas:

• Tomaten	319 ha
• Feldsalat	281 ha
• Gurken	216 ha
• Kopfsalat	129 ha

4. Obstbau

Betriebe mit Obstanbau	13 700
über 1 ha	ca. 7 000
davon Obstbauspezialbetriebe	2 400
Produktionswert (Durchschnitt der letzten fünf Jahre)	1 Mrd. Euro

Obstanlagen APPENDIX 2: 3 (4)

Fläche Baumobst	48 000 ha	Fläche Beerenobst	19 000 ha
• Davon u.a. Äpfel	31 700 ha	• Davon u.a. Erdbeeren	12 800 ha
• Süßkirschen	5 400 ha	• Johannisbeeren	2 100 ha
• Sauerkirschen	3 200 ha	• Himbeeren	1 200 ha
• Pflaumen und Zwetschen	4 500 ha	• Heidelbeeren	1 400 ha
• Birnen	2 100 ha		

5. Zierpflanzenbau

Betriebe mit Anbau von Zierpflanzen (gesamt)	8 600
• davon reine Zierpflanzenbetriebe	5 880
Auszubildende	3 100
Grundflächen (gesamt)	7 150 ha
• davon Freiland	4 900 ha
• unter Glas	2 250 ha
Selbstversorgungsgrad	
• Beet- und Balkonpflanzen	76 %
• Topfpflanzen	61 %
• Schnittblumen	19 %
• Zimmerpflanzen	41 %
Umsatz Gesamtmarkt (Einzelhandelspreise)	8,6 Mrd. Euro
• davon Zimmerpflanzen	1,8 Mrd. Euro
• davon Schnittblumen	3,0 Mrd. Euro
• davon Gartenpflanzen	3,8 Mrd. Euro
Importe (Importpreise) *Schätzungen	2,47 Mrd. Euro
• davon Schnittblumen	1,18 Mrd. Euro
• davon Topfpflanzen, incl. Jungpflanzen	923 Mio. Euro
Sonstige	
Exporte * Stand 2009	450 Mio. Euro
davon Topfpflanzen, incl. Jungpflanzen	371 Mio. Euro
davon Schnittblumen,	79 Mio. Euro

Wichtigste Lieferländer nach Deutschland

- für Topfpflanzen
  - Niederlande
  - Dänemark
  - Italien
  - Belgien
  - Spanien
- für Schnittblumen
  - Niederlande
  - Italien
  - Kenia
  - Ecuador

Pro-Kopf-Ausgaben pro Jahr (2010) ca. 105 Euro

6. Stauden

APPENDIX 2: 4 (4)

Staudenarten und –sorten insg.	über 8 500
in Betrieben des Bundes dt. Staudengärtner durchschnittlich	1.200
Betriebe bundesweit	ca. 200
Auszubildende (2010)	273
Jahresproduktion	220 Mio. Stück
Selbstversorgungsgrad	84 %
Umsatz Gesamtmarkt (2009)	475 Mio. Euro
(privater und institutioneller Verbrauch zu Einzelhandelspreisen)	6 Euro/Kopf
Anteil Stauden an Gesamtausgaben Pflanzen und Blumen	5,6 %

7. Baumschulen

Betriebe mit Gehölzanzucht	ca. 3 400
Davon Vollerwerbsbetriebe	ca. 2 100
Beschäftigte	ca. 25 000
Auszubildende	ca. 1 400
Gesamtproduktionsfläche (2004) Davon	25 520 ha
• Davon Ziergehölze	12 840 ha
• Davon Forstgehölze	3 450 ha
• Davon Obstgehölze	1 390 ha
• Davon sonstige Flächen	7 680 ha
Marktvolumen 2003 (Großhandelsebene)	0,78 Mrd. Euro
Import 2003	ca. 140 Mio. Euro
Export 2003	80 Mio. Euro
Pflanzenbestand 2003	1,2 Mrd. Stück

Stand: Januar 2011
Quelle: Zentralverband Gartenbau e.V., Bonn; Bund deutscher Friedhofsgärtner im Zentralverband Gartenbau e.V., Bonn; Bundesfachgruppe Gemüsebau, Berlin; Statistischen Bundesamtes; ZMP/CMA-Warenstromanalyse; der BMELV; der KTBL und der AMI - Agrarmarkt Informations-Gesellschaft mbH

Original report of Zentralverband Gartenbau e.V. available at:
http://www.g-net.de/download/daten_faken/Gartenbauzahlen.pdf

Organic Farming in Germany		
Year	**Number of holdings**	**Farmland; Hectares**
1996	7 353	354 171
1997	8 184	389 693
1998	9 213	416 518
1999	10 425	452 327
2000	12 740	546 023
2001	14 702	634 998
2002	15 626	696 978
2003	16 476	734 027
2004	16 603	767 891
2005	17 020	807 406
2006	17 557	825 538
2007	18 703	865 336
2008	19 813	907 786
2009	21 047	947 115

Note: Due to a change in coverage in Thuringia 2003 numbers are not fully comparable with previous years.

(BMELV 2011. Modified.)