



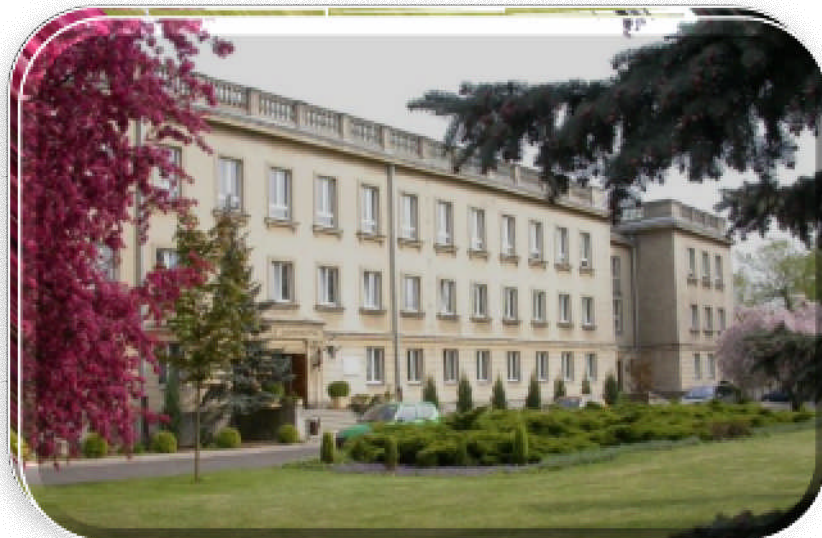
## **TECHNICAL REPORT submitted to EFSA**

**Final report on data-collection of existing data on protected crop systems (greenhouses and crops grown under cover) in Eastern European EU Member States (Poland, Hungary, the Czech Republic, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Romania and Bulgaria)**

**Contract number CT/EFSA/PPR/2008/07**

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## 1. SUMMARY

The aim of the study was to prepare the inventory of covered cropping systems for each Eastern European EU Member State (MS) at national and regional levels. All existing, available and the most recent data were collected for each Eastern European MS. The requested data on covered cropping systems were required for the preparation of a new Guidance Document (GD) on emissions from protected crops in Europe. The intention of the development of this new GD is to provide an overview of protected crop system distribution throughout Europe and to give guidance on estimating the importance of emission routes for plant protection products from these systems to environmental compartments.

The procedure agreed on by the EFSA Steering Committee for the data collection comprises the first step of gathering data which are easily available from official statistical national offices. In the second step, the data gaps identified during the first step will be filled by approaching national and regional institutions and grower associations. Data sources are included in the database under development to assure traceability of data as one part of data quality assurance. In some cases, when the data are not fully available, the assumptions and expert judgement will be used to fill in the gaps.

### Type of structures in the New EU MSs (in ha)

<b>COUNTRY</b>	<b>WG type of structure</b>	<b>Structure as given</b>	<b>Area in ha</b>
<b>Bulgaria</b>	Glasshouses	Glasshouses	642,2
	Greenhouses	Greenhouses	688,2
	Walk-in tunnels	Walk-in tunnels	338,5
	Shaded and net-houses		-
	Low tunnels		-
	Plastic shelters		-
<b>Czech Republic</b>	Glasshouses	Glasshouses, greenhouses, walk-in tunnels and other covers	-
	Greenhouses		188,5
	Walk-in tunnels		-
	Shaded and net-houses		-
	Low tunnels		-
	Plastic shelters		-
<b>Estonia</b>	Glasshouses	Area under greenhouses or mobile high cover (plastic or glass)	-
	Greenhouses		279,5
	Walk-in tunnels		-
	Shaded and net-houses		-
	Low tunnels		-
	Plastic shelters		-
<b>Hungary</b>	Glasshouses	Greenhouses, walk-in tunnels and other covers	-
	Greenhouses		1835,2
	Walk-in tunnels		-
	Shaded and net-houses		-
	Low tunnels		-
	Plastic shelters		-

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<b>Latvia</b>	Glasshouses	Greenhouses, walk-in tunnels and other covers	42,5
	Greenhouses		-
	Walk-in tunnels		79,1
	Shaded and net-houses		-
	Low tunnels		-
	Plastic shelters		-
<b>Lithuania</b>	Glasshouses	Greenhouses and other walk-in structures	-
	Greenhouses		549
	Walk-in tunnels		-
	Shaded and net-houses		-
	Low tunnels		-
	Plastic shelters		-
<b>Poland</b>	Glasshouses	Szklarnie (glasshouses)	1974,88
	Greenhouses		
	Walk-in tunnels	Plastic foil tunnels	3220,76
	Shaded and net-houses		-
	Low tunnels	inspekty (frames)	20,38
	Plastic shelters		-
<b>Romania</b>	Glasshouses	greenhouses	536
	Greenhouses		
	Walk-in tunnels	solaria	1821
	Shaded and net-houses		-
	Low tunnels		-
	Plastic shelters		-
<b>Slovakia</b>	Glasshouses	Skleniky (greenhouses)	30,99
	Greenhouses		
	Walk-in tunnels		
	Shaded and net-houses		-
	Low tunnels		0,069
	Plastic shelters		18,83
<b>Slovenia</b>	Glasshouses	Greenhouses and other walk-in structures	131,85
	Greenhouses		
	Walk-in tunnels		
	Shaded and net-houses		
	Low tunnels		
	Plastic shelters		

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## **TECHNICAL SPECIFICATION GIVEN BY EFSA**

### **1. Context**

On April 1<sup>st</sup>, 2008 the EFSA Executive Director requested the Scientific Panel on Plant Protection Products and their Residues (PPR) to develop a new EU Guidance Document on emissions from protected crop systems (greenhouses and crops grown under cover) since scientific knowledge in this field has evolved in recent years. In this context, the Working Group (WG) Emissions from protected crop systems/Fate has been created to fulfil the Terms of Reference. Within the contract signed between EFSA and the Research Institute of Pomology and Floriculture the essential data to support this task will be provided.

### **2. Objective of the assignment**

The contractor was expected to collect data in an organised and agreed structure from Member States in a determined geographic area of the EU. This procedure concerns the Eastern European region.

### **3. Scope of the assignment**

The contractor was expected to perform the following tasks:

- to collect data on protected crop systems in EU Member States in Eastern Europe by completing the attached Excel sheet with the needed information. The Member States for which data should be collected were Poland, Hungary, Czech Republic, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Romania and Bulgaria.

The level of detail should be the best currently available geographic representation at Member State level.

- To produce two reports. One short report providing the methodology for the data collection one month after signature of the contract. A second report on the process of the data-collection and the quality and validity of the data six months after signature of the contract.

- To communicate on a monthly basis on the progress in the data collection.

- As part of the second report to draft a short proposal on how supplementary data-collection in the Eastern European region could be undertaken.

### **4. Deliverables, Timing and payments**

<b>Item</b>	<b>Deadline for delivery</b>	<b>Resulting payment</b>
- Short report on the methodology for the data collection and the evaluation of the validity of the data.	Within one month from the start of activities.	Interim payment of 30% of the budget.
- Progress reports on data collection.	Reporting on a monthly basis.	-
- Delivery of the data in the agreed form and format with a explanatory report.	Within 6 months from the start of activities.	Balance payment of 70% of the budget.

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## 2. METHODOLOGY

The inventory of covered cropping systems in Eastern European EU Member States (Poland, Hungary, the Czech Republic, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Romania and Bulgaria) was performed by the staff of the Research Institute of Pomology and Floriculture (RIPF). The data were collected separately for each Eastern European EU MSs, at national and regional levels. All available data, after 2002 were collected, but preferably the most recent data were gathered, depending on their availability and validity. The origin of the data sources is clearly specified for each country and set of data (see the final presentation on “Data-collection of existing data on protected crop systems (greenhouses and crops grown under cover) in Eastern European EU Member States”. The possible types of elements which influence emissions from covered crops are included in the Master Table (see the Annex 9.2).

### **The following steps of the data collection were performed:**

1. Proposal on how the data were to be collected was presented and discussed at the Steering Group meetings devoted to data collection on protected crops. During each meeting the experts of the Panel on Plant Protection Products and Their Residues were discussing the content of the presentations on the data collected in Eastern European EU MSs. The data-collection was also presented at some of the WG meetings of “new GD on emissions from protected crops. **The group input and remarks on how to collect and process the data were taken into consideration for the data collection and for the report preparation.**
2. **Collection and processing of the data obtained from Central Statistical Offices in Eastern European EU MSs** – were completed by the **end of March 2009**. This was achieved with an official Request Letter, sent to Central Statistical Offices and Ministries of Agriculture in each country (See Appendix A). The Request Letter sent to these institutions explained that the required data were necessary for the preparation of a new guidance document on the emissions from protected crops in order to make the data available for risk assessment managers.
3. **Additionally, at the end of April the same request letter was sent** to research institutions dealing with fruit, vegetables and ornamentals. The acquired data were transformed by the staff of the contractor (RIPF) into Excel data sheets provided by EFSA.
4. **Furthermore, fruit, vegetable and ornamental grower associations were provided with the Request Letter about the data on protected crops.**
5. **Some of the data, e.g. the European statistics on protected forms of agriculture, were drawn** by the staff of the contractor (RIPF) **from the EUROSTAT Pocketbooks Agriculture Statistics, main results 2006-2007 ISSN 1830-463X.**
6. **The final report was prepared at the end of July** on the basis of the data collected, processed and reported previously to EFSA during the Steering Group meetings devoted to data collection. The quality and validity of the data were discussed on a personal level with the people working at the research institutes in each Eastern European EU country.

**The staff of the Research Institute of Pomology and Floriculture (RIPF) collected the existing data on protected crop systems in Eastern European EU MSs, in accordance with the Technical Specification given by EFSA, through:**

- Collecting the required data from Information Websites of Central Statistical Offices in each country,
- Contacting and withdrawing the requested data from International Cooperation Departments of Central Statistical Offices in Poland, Hungary, the Czech Republic, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Romania and Bulgaria,
- Contacting Ministries of Agriculture, research universities and institutes in the above-listed countries (working on fruit, vegetable and ornamentals), where some of the required data or specific details on protected crops were also available,
- Engaging the Institute's International Cooperation Office to contact representatives of the New EU MSs in Eastern Europe with a request to provide the required data and information

**A list of the organizations contacted is included in the Appendix B.**

**The procedure for gathering the required data on crops grown under cover in Poland included the following steps:**

- Collection of the data by RIPF done at the national level by contacting the Central Statistical Office in Warsaw and the Institute of Vegetable Crops in Skierniewice, where the data are available.
- The information on the types of structures, production systems, pesticide application, etc. were also collected from private producers of crops under cover who work in close cooperation with the Research Institute of Pomology and Floriculture on plant protection and cultivation measures, and nutrient management strategies.
- The majority of Polish fruit, vegetable and ornamental production under cover is mainly concentrated in the central part of Poland, where large producers of strawberry and raspberry plants under cover are located, e.g. Strawberry and Raspberry Company SADPOL – a company having more than 700 ha under cover. The owner of this company has close connections with other producers of crops under cover in Poland and in Eastern and Western European countries.
- The data were also collected during open days, conferences and seminars on fruit, ornamentals and vegetable organized by the Research Institute of Pomology and Floriculture and the Research Institute of Vegetable Crops. A list of the conferences and seminars are listed in the Appendix C.
- The collected data for Poland were entered into Excel sheets provided by EFSA.

**The procedure for gathering the required data on crops grown under cover in Hungary, the Czech Republic, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Romania, Bulgaria included the following steps:**

- The investigators responsible for data collection, with the help of the Statistics Office of RIPF carried out data collection among the growers of fruit, vegetable and ornamental plants under cover in above listed Eastern European EU MSs.
- This was achieved through contacts with Statistical Offices and Research Institutes

dealing with these crops in Eastern European EU MSs. This activity was executed at the beginning of the second month from the start of activities.

- The collected data were entered into Excel sheets, separately for each country (Hungary, the Czech Republic, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Romania and Bulgaria), crop category, type of structure and cultivation system. However, the level of detail in the data collected depended on the quality and availability of the data in a given country.

### 3. Specific information for each covered Eastern European EU MSs

All the countries contacted responded to the Request Letter and sent their data on protected crops in their countries within 7-10 days, but the data received were still quite ‘rough’ and sometimes difficult to compare. However, it was possible to extrapolate the existing data to the required format of the final master table used for the data collection.

Regarding official questionnaires used by MSs to gather statistical data, all Eastern European Countries answered the Request Letter by stating that there were no public questionnaires in their countries on protected crops. It would be worth introducing the same questionnaire that is used in Western European Countries (e.g. Finland) and it could be the aim of the second call for tender regarding the collection of data on protected crops. The specific data on the type of categories, water systems, cultivation methods and plant protection are not precisely specified for Eastern Countries. The most precise data on water, soil/soil-less systems, and application method exist mainly for Poland and partly for Estonia. The structure and crop categories differ greatly between the 10 Eastern European Countries. The recipients of the Request Letter provided data for the years 2006-2008 in different formats, for differing crop categories and protective structures. The large variety in protected crop structures throughout the Eastern European Countries and the other EU Countries were thoroughly discussed by the EFSA staff and the experts during the Steering Group meetings and some Working Group (WG) meetings. The contractors, the EFSA staff and experts are fully aware of the big variability in protected crop structures in different EU MSs. Since the structure of the protecting system has an important influence on potential emissions, the future GD should include clear definitions covering the varieties of different structures.

#### **Description of assumptions to fill in gaps - Difficulties which arose during data collection and solutions undertaken to overcome them:**

<b>Difficulties/problems/critical issues for data collection</b>	<b>Solutions/assumptions/decisions undertaken by the contractor and EFSA staff</b>
Existence of official data only in Central Statistical Office, but not in any other sources.	To fulfil the task of data collection the contractor identified the other sources of data on covered crops e.g. official fruit/vegetable research institutes, growers, grower associations, consultants, publications, inspectors and advisers, certified analytical laboratories. This was done to supplement the lack of official data.
Excel sheet table and questionnaire for the data collection.	The Master Table was discussed during the WG meetings and meetings devoted to data collection with EFSA staff, the experts and the contractor.
Different categories for the	Different categories of the cropping systems were discussed and

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cropping systems, structures, application measures in different EU countries	partly adjusted by the contractor on the basis of EFSA categories to the common categorisation.
Lack of all important elements influencing emissions from covered crops	The available data were assessed by the contractor on the base of existing valid data in each country and, where necessary, based on expert's judgements. The acquired information is important for assessment of the possible emission factors in a particular country.
The method of processing and updating the data.	The data were collected, updated and processed by the contractor based on the recommendations from EFSA staff on how the data should be processed and updated.
Existence of a high level of uncertainty about the data.	All the collected data were adjusted and adopted by all the contractors into a transparent and commonly applied methodology of data collection. Data sources are always mentioned with each data entry.
Inconsistency of the data collected from different sources. Uncertain validity of the data.	The contractor asked for the data among fruit growers, fruit grower associations and experts in the field to obtain real and most accurate data e.g. consultations with experts from research institutes, literature search for comparisons of data accuracy. The contractor fully verified and assessed the data as valid, because for each set of data their source is indicated. All the discrepancies between the collected data were excluded from the final report. The criteria of data validation were specified e.g. the data coming from different sources were fully verified for their consistency and validity.
Delays in responses to the questionnaire sent to Central Statistical Offices	The contractor contacted the research institutions dealing with covered crops at the same time. Literature search.
Lack of appropriate information from a particular country.	Each Eastern European EU MSs responded to the Request Letter. The uncertain data on covered crop production/situation were estimated on the basis of expert judgement in a given country (Poland, Hungary, Romania, Czech Republic, Slovakia). Literature search.
Difficulties in completion of the Master Table.	According to the Agreement between EFSA and the contractors, the EFSA staff supported the contractor in completing the Master Table. Additional re-assessment of the data available was done by expert judgements during the meetings devoted to data collection.
Approval of the Master Table	Validation and quality check of the Master Table data prepared by the contractor will be done by EFSA experts responsible for this task.

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**Description of each additional data source is included in the appendix D. Specific available information collected for each Eastern European Member State. Detailed information can be found in the Master Table in the Appendix 9.2.**

<b>COUNTRY</b>	<b>AVAILABLE INFORMATION</b>
<b><u>BULGARIA</u></b>	<p>The statistics on covered crops in Bulgaria are not well developed yet. In the near future more data will be available after implementation of the Survey on the Production Methods in Agriculture (SAPM). All Member States should conduct this survey for the first time in 2011 or 2012, after the Agricultural Census, planned for 2010. In Bulgaria, the SAPM will be carried out by the Agrostistics Directorate in the Ministry of Agriculture and Food (MAF).            Contact persons: Girgina Nikolova <a href="mailto:Gnikolova@nsi.bg">Gnikolova@nsi.bg</a>            Sevginar Mustafa <a href="mailto:SMustafa@mzh.government.bg">SMustafa@mzh.government.bg</a>            Sources: <a href="http://www.mzgar.government.bg/">http://www.mzgar.government.bg/</a>  <a href="http://www.nsi.bg/">http://www.nsi.bg/</a>  <a href="http://www.mzh.government.bg/Default.aspx?lang=2&amp;lmid=0">http://www.mzh.government.bg/Default.aspx?lang=2&amp;lmid=0</a>  <a href="http://www.povrce.com/?P=gen&amp;A=FAO&amp;HTM=20001">http://www.povrce.com/?P=gen&amp;A=FAO&amp;HTM=20001</a></p>
<b><u>CZECH REPUBLIK</u></b>	<p>The available data for the Czech Republic were gathered from the International Information Services Section, Czech Statistical Office. The other requested data on plant protection or growing systems are not yet monitored in the Czech Republic. Fruit grower associations were not able to provide the contractor with the all the information requested.            Contact persons: Jitka Losanova (<a href="mailto:jitka.losanova@czso.cz">jitka.losanova@czso.cz</a>)            Ondrej Kosata <a href="mailto:infoservis@czso.cz">infoservis@czso.cz</a>            Jiri Sedlak <a href="mailto:sedlak@vsuo.cz">sedlak@vsuo.cz</a>            Janek Blazek <a href="mailto:blazek@vsuo.cz">blazek@vsuo.cz</a>            Jaroslav Zeman <a href="mailto:zucm@zelinarska-unie.cz">zucm@zelinarska-unie.cz</a>            Sources: <a href="http://www.czso.cz/eng/redakce.nsf/i/home">http://www.czso.cz/eng/redakce.nsf/i/home</a>  <a href="http://www.zelinarska-unie.cz">www.zelinarska-unie.cz</a>  <a href="http://www.vurv.cz/index.php?lang=en">http://www.vurv.cz/index.php?lang=en</a>  <a href="http://www.vsu.cz/index.htm">http://www.vsu.cz/index.htm</a></p>
<b><u>ESTONIA</u></b>	<p>The specific details below have been found for Estonia  <u>Greenhouse crops</u>: crops which for the whole of the period of growth or for the predominant part of it are covered by greenhouses or fixed or mobile high cover (glass or rigid or flexible plastic).  <u>Growing systems</u>:            soilless system - about 10%            closed water system - 2-3%  <u>Plant protection</u> for cucumbers, tomatoes and other vegetables - biological methods only.            Plant protection for ornamental plants - spraying, drip irrigation, recirculation.  <u>Fumigation</u> is not allowed in Estonia.            The Statistics Office of Estonia does not produce more detailed statistics in this area. However, growing of greenhouse vegetables by legal form of</p>

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	<p>holder and size of class of sown area is monitored in Estonia. Growing of outdoor and greenhouse flowers and ornamental plants by legal form of holder is also available in Estonia.</p> <p>Contact person: Aime Lauk (<a href="mailto:Aime.Lauk@stat.ee">Aime.Lauk@stat.ee</a>)</p> <p>Contact persons: Aime Lauk <a href="mailto:Aime.Lauk@stat.ee">Aime.Lauk@stat.ee</a></p> <p>Liidia Klaas <a href="mailto:liidia.klaas@emu.ee">liidia.klaas@emu.ee</a></p> <p>Sources: <a href="http://www.stat.ee/">http://www.stat.ee/</a></p> <p><a href="http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS105&amp;ti=USE+OF+ARABLE+LAND+BY+COUNTRY+AND+KIND+OF+CROP&amp;path=../I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/&amp;search=GREENHOUSE&amp;lang=1">http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS105&amp;ti=USE+OF+ARABLE+LAND+BY+COUNTRY+AND+KIND+OF+CROP&amp;path=../I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/&amp;search=GREENHOUSE&amp;lang=1</a></p> <p><a href="http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS106&amp;ti=USE+OF+ARABLE+LAND+BY+LEGAL+FORM+OF+HOLDER+AND+KIND+OF+CROP&amp;path=../I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/&amp;search=GREENHOUSE&amp;lang=1">http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS106&amp;ti=USE+OF+ARABLE+LAND+BY+LEGAL+FORM+OF+HOLDER+AND+KIND+OF+CROP&amp;path=../I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/&amp;search=GREENHOUSE&amp;lang=1</a></p> <p><a href="http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS118&amp;ti=GROWING+OF+GREENHOUSE+VEGETABLES+BY+LEGAL+FORM+OF+HOLDER+AND+SIZE+CLASS+OF+SOWN+AREA&amp;path=../I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/&amp;search=GREENHOUSE&amp;lang=1">http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS118&amp;ti=GROWING+OF+GREENHOUSE+VEGETABLES+BY+LEGAL+FORM+OF+HOLDER+AND+SIZE+CLASS+OF+SOWN+AREA&amp;path=../I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/&amp;search=GREENHOUSE&amp;lang=1</a></p> <p><a href="http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS119&amp;ti=GROWING+OF+OUTDOOR+AND+GREENHOUSE+FLOWERS+AND+ORNAMENTAL+PLANTS+BY+LEGAL+FORM+OF+HOLDER&amp;path=../I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/&amp;search=GREENHOUSE&amp;lang=1">http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS119&amp;ti=GROWING+OF+OUTDOOR+AND+GREENHOUSE+FLOWERS+AND+ORNAMENTAL+PLANTS+BY+LEGAL+FORM+OF+HOLDER&amp;path=../I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/&amp;search=GREENHOUSE&amp;lang=1</a></p> <p><a href="http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AG040&amp;ti=PRODUCTION+OF+FIELD+CROPS&amp;path=../I_Databas/Economy/01Agriculture/02Agricultural_production/02Crop_production/&amp;lang=1">http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AG040&amp;ti=PRODUCTION+OF+FIELD+CROPS&amp;path=../I_Databas/Economy/01Agriculture/02Agricultural_production/02Crop_production/&amp;lang=1</a></p> <p><a href="http://pub.stat.ee/px-web.2001/I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/AGS101.htm">http://pub.stat.ee/px-web.2001/I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/AGS101.htm</a></p> <p><a href="http://pub.stat.ee/px-web.2001/I_Databas/Economy/01Agriculture/02Agricultural_production/02Crop_production/AG_028.htm">http://pub.stat.ee/px-web.2001/I_Databas/Economy/01Agriculture/02Agricultural_production/02Crop_production/AG_028.htm</a></p>
<b><u>HUNGARY</u></b>	<p>In Hungary, information about the greenhouse production and crops grown under cover exists for specific species of vegetables, flowers, ornamentals and fruits, e.g. strawberries. All the existing sources of data on protected crops were contacted by the contractor and are summarized in the table for Hungary.</p> <p>Contact persons: Karoly Hrotko <a href="mailto:karoly.hrotko@uni-corvinus.hu">karoly.hrotko@uni-corvinus.hu</a></p>

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	Anita Ferenc, Zoltán Fodor <a href="mailto:info@fruitveh.hu">info@fruitveh.hu</a> István Bondor <a href="mailto:Agrar-vidékfejlFO@fvm.hu">Agrar-vidékfejlFO@fvm.hu</a> Sources: <a href="http://www.ksh.hu/">http://www.ksh.hu/</a> <a href="http://portal.ksh.hu/">http://portal.ksh.hu/</a> <a href="http://www.akii.hu/">http://www.akii.hu/</a>															
<b><u>LATVIA</u></b>	Central Statistical Bureau (CSB) prepares statistical information for a fee in compliance with Regulation No.618 dated 23 August 2005 of the Cabinet of Ministers of Republic of Latvia “Price list of Paid Services Provided by the Central Statistical Bureau”. Data on protected crop areas and total vegetable production are available in a data base on CSB’s web pages ( <a href="http://data.csb.gov.lv/DATABASEEN/lauks/Annual%20statistical%20data/15.%20Agriculture%20forestry%20fishing/15.%20Agriculture%20forestry%20fishing.asp">http://data.csb.gov.lv/DATABASEEN/lauks/Annual%20statistical%20data/15.%20Agriculture%20forestry%20fishing/15.%20Agriculture%20forestry%20fishing.asp</a> ) Information on soils, irrigation systems and treatment methods is not available from the CSB of Latvia. The Faculty of Agriculture of the Latvian University of Agriculture ( <a href="http://eng.llu.lv">http://eng.llu.lv</a> , <a href="mailto:lfdek@llu.lv">lfdek@llu.lv</a> ) provided some additional information regarding the data on protected crops in Latvia. Contact persons: Inita Kemlere ( <a href="mailto:Inita.Kemlere@csb.gov.lv">Inita.Kemlere@csb.gov.lv</a> ) Anita Reubena Agricultural Statistics Section of Statistical Office Sources: <a href="http://www.csb.gov.lv/">http://www.csb.gov.lv/</a> <a href="http://data.csb.gov.lv/DATABASEEN/lauks/databasetree.asp?lang=1">http://data.csb.gov.lv/DATABASEEN/lauks/databasetree.asp?lang=1</a>															
<b><u>LITHUANIA</u></b>	Statistics Lithuania collects data on crop areas under glass or other (accessible) protective cover. Total production of covered crops in Lithuania, in the year 2008, in ha: Greenhouses 582 (549 - vegetables) Of which marketable producing marketable crops 266 Vegetables 233 Flowers and ornamental plants 32 Strawberries 1 Contact person: Daiva Mikalopiene ( <a href="mailto:daiva.mikalopiene@stat.gov.lt">daiva.mikalopiene@stat.gov.lt</a> ) Sources: <a href="http://www.stat.gov.lt">http://www.stat.gov.lt</a>															
<b><u>POLAND</u></b>	For Poland, the table below describes the additional information obtained through personal contacts with Dr. Adam Marosz, Doc. Dr. hab. Waldemar Treder, Dr. Katarzyna Treder (from the Research Institute of Pomology and Floriculture in Skierniewice) and Dr. Jacek Dyśko (from the Institute of Vegetable Crops in Skierniewice). Area of greenhouses and under plastic covers in Poland for 2008 (Sources: General Statistical Office + own estimates)															
	<table border="1"> <thead> <tr> <th>Area in ha</th> <th>Greenhouses</th> <th>Plastic covers</th> </tr> </thead> <tbody> <tr> <td>Total for vegetables 6150 ha</td> <td>2600</td> <td>3550</td> </tr> <tr> <td>Tomato</td> <td>1200</td> <td>2000</td> </tr> <tr> <td>Cucumber</td> <td>450</td> <td>800</td> </tr> <tr> <td>Capsicum</td> <td>50</td> <td>1200</td> </tr> </tbody> </table>	Area in ha	Greenhouses	Plastic covers	Total for vegetables 6150 ha	2600	3550	Tomato	1200	2000	Cucumber	450	800	Capsicum	50	1200
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	<p>Edible fungi (mushrooms) - cultivation area in Poland – 2007</p> <table border="1"> <thead> <tr> <th></th> <th>Area (in ha)</th> <th>Total number of households</th> </tr> </thead> <tbody> <tr> <td>Edible mushrooms*</td> <td>316</td> <td>2812</td> </tr> </tbody> </table> <p>*Agarici (button mushrooms) in Poland are cultivated in closed, controlled conditions oyster mushrooms (Pleurotus) are cultivated in both shelters and in closed systems</p> <p>Sources: General Statistical Office + estimates of the Institute of Vegetable Crops in Skierniewice.</p> <p><u>In Poland the following data are available:</u></p> <p>Structure categories: 3 construction categories: glasshouses (throughout year), plastic foil tunnels taller than 1.5 m (seasonal), and glass frames (throughout year),</p> <p>Crop categories: fruit, vegetables, ornamentals, propagation material.</p> <p>System: soil (75%), soil-less (mineral and organic growing substrates - 25%).</p> <p>Water system: closed (2%), open (98%)</p> <p>Application method: spraying/soil treatment (85-90%), drip irrigation (5%), fogging (3%), fumigation (3%), recirculation (3%), soil injection (1%).</p> <p>Frequency of application: up to 5-6 for fruit + vegetables per cycle, for flowers (6-7) per cycle.</p> <p>Contact persons: Marta Karpińska (<a href="mailto:M.Karpinska@stat.gov.pl">M.Karpinska@stat.gov.pl</a>) Adam Marosz (<a href="mailto:Adam.Marosz@insad.pl">Adam.Marosz@insad.pl</a>)</p> <p>Sources: <a href="http://www.stat.gov.pl">http://www.stat.gov.pl</a></p>		Area (in ha)	Total number of households	Edible mushrooms*	316	2812
	Area (in ha)	Total number of households					
Edible mushrooms*	316	2812					
<b><u>ROMANIA</u></b>	<p>In Romania the term SOLARIUM (plural SOLARIA) is introduced. It has the following definition: High (accessible) cover for crops (accessible shelters)</p> <p>Accessible shelters are constructions covered with plastic and no air-conditioning units, intended especially to obtain early production of vegetables (including seedlings).</p> <p>Source of the definition: Romanian Statistical Office</p> <p>Contact person: Maria Radulescu (<a href="mailto:maria.radulescu@insse.ro">maria.radulescu@insse.ro</a> , <a href="mailto:datestat@insse.ro">datestat@insse.ro</a>)</p> <p>Sources: <a href="http://www.insse.ro/">http://www.insse.ro/</a></p>						
<b><u>SLOVAK REPUBLIK (SLOVAKIA)</u></b>	<p>In Slovakia the published data are available in:</p> <ol style="list-style-type: none"> <li>1.) Statistical Yearbook of the Slovak Republic - chapter 17. Agriculture (bilingual Slovak - English)</li> <li>2.) Definitivne udaje o urode poľnohospodarských plodín, zbere ovocia a zeleniny v SR za rok 2008 (Final Data on Crops, Harvest of Fruit and Vegetables in the SR in 2008) - only in Slovak Some data are also available in the database Slovstat <a href="http://portal.statistics.sk/showdoc.do?docid=3158">http://portal.statistics.sk/showdoc.do?docid=3158</a> and at Plant Production Research Centre.</li> </ol> <p>Contact persons: Jaroslav Sedivy <a href="mailto:jaroslav.sedivy@statistics.sk">jaroslav.sedivy@statistics.sk</a> Vladimir Čičmanec <a href="mailto:Vladimir.Cicmanec@statistics.sk">Vladimir.Cicmanec@statistics.sk</a> Michal Medvecký <a href="mailto:scpv@orava.sk">scpv@orava.sk</a></p> <p>Sources: <a href="http://www.statistics.sk/">http://www.statistics.sk/</a> , <a href="http://www.uksup.sk/index.php?n=101">http://www.uksup.sk/index.php?n=101</a></p>						

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<b><u>SLOVENIA</u></b>	<p>In Slovenia the data on protected crops (horticulture, fruit plantations and protected areas) are collected and disseminated by The Statistical Office of the Republic of Slovenia on its web pages free of charge : <a href="http://www.stat.si/pxweb/Database/Environment/Environment.asp">http://www.stat.si/pxweb/Database/Environment/Environment.asp</a> and also at the Ministry of Agriculture of Slovenia.</p> <p>Contact persons: Danijela Maver (<a href="mailto:danijela.maver@gov.si">danijela.maver@gov.si</a>)          Jožica Joja Krznar, (<a href="mailto:jozica-joja.krznar@gov.si">jozica-joja.krznar@gov.si</a>)          Nikita Fajt (<a href="mailto:nikita.fajt@go.kgzs.si">nikita.fajt@go.kgzs.si</a>)</p> <p>Sources: <a href="http://www.stat.si/">http://www.stat.si/</a></p>
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#### **4. RESULTS for each Eastern European EU MSs**

All the gathered official data are considered to be valid, because they were official data withdrawn directly from the Central Statistical Offices (or their websites), Ministries of Agriculture (or their websites) or obtained via personal communications with people working at research institutes dealing with fruit, vegetable, ornamental or nursery plant production. Some general data on protected crops in the EU 27 countries were taken from the website of Eurostat.

#### **POLAND**

- Vegetable production under cover, mainly of tomato, cucumber, red pepper and lettuce, is concentrated in the central part of Poland.
- Flower production under cover is concentrated in the central part of the country. Staple species are carnations, roses, gerberas, and chrysanthemums.
- Fruit production under cover, mainly strawberry, raspberry and nursery plant material is in the central and eastern parts of the country.

#### **Area of greenhouses and plastic covers in Poland for 2008 (Sources: Central Statistical Office + Research Institute of Pomology and Floriculture+Institute of Vegetable Crops )**

Area in ha	Greenhouses – (Greenhouses as WG category)	Plastic covers (Walk-in tunnels as WG category)
<b>Total for vegetables 6150 ha</b>	<b>2600</b>	<b>3550</b>
<b>Tomato</b>	<b>1200</b>	<b>2000</b>
<b>Cucumber</b>	<b>450</b>	<b>800</b>
<b>Capsicum</b>	<b>50</b>	<b>1200</b>

**Including 1500 ha of soilless cultures.**

**Ornamental plants about 850 ha**

**Strawberries and raspberries about 800-900 ha (based on personal communication)**

**Edible mushrooms – 316 ha**

**All refers to soilless and soil cultures.**

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## **BULGARIA - 2001**

### **Area of protected cultivation in ha, 2001**

Kind of protection	
Glasshouses	642.2
Plastic greenhouses	688.2
Tunnels	338.5
<b>Total</b>	<b>1 668.9</b>

Source: <http://www.povrce.com/?P=gen&A=FAO&HTM=10021>

Total production under cover in Bulgaria is estimated for about 2000 ha (2006, 2007, 2008).

## **CZECH REPUBLIC - 2007**

Crops	Hectares
Vegetables, strawberries under cover	84,91
Flowers and ornamental plants under cover	103,58

Source: Farm Structure Survey 2007

## **ESTONIA - USE OF GREENHOUSE AREA - 2007**

	Greenhouse vegetables and other plants in total	Cucumbers	Tomatoes	Other vegetables	Flowers total
Area, ha	266	84	159,2	21,3	15
Production, t	14187	6237	6634	1316	x

Source: Statistical Office of Estonia

## **HUNGARY - 2007**

Area of flowers, ornamental plants, vegetables and strawberries under glass or other (accessible) protective cover (2007).

Regions	Vegetables	Flowers and ornamental plants	Strawberries
	Hectare		
CENTRAL HUNGARY	70,5	45,0	1,2
CENTRAL HUNGARY	70,5	45,0	1,2
CENTRAL TRANSDANUBIA	5,7	12,3	0,1
WESTERN TRANSDANUBIA	17,0	21,7	-

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<b>SOUTHERN TRANSDANUBIA</b>	<b>26,8</b>	<b>12,6</b>	<b>3,0</b>
<b>TRANSDANUBIA</b>	<b>49,5</b>	<b>46,6</b>	<b>3,1</b>
<b>NORTHERN HUNGARY</b>	<b>36,6</b>	<b>20,4</b>	<b>0,0</b>
<b>NORTHERN GREAT PLAIN</b>	<b>132,6</b>	<b>20,2</b>	<b>5,2</b>
<b>SOUTHERN GREAT PLAIN</b>	<b>1 200,4</b>	<b>111,7</b>	<b>92,0</b>
<b>GREAT PLAIN AND NORTH</b>	<b>1 369,7</b>	<b>152,3</b>	<b>97,2</b>
<b>TOTAL</b>	<b><u>1 489,7</u></b>	<b><u>243,9</u></b>	<b><u>101,6</u></b>

Source: Farm Structure Survey 2007

### **LITHUANIA – 2008**

<b>Area of under cover crops, in ha, 2008</b>	
<b>Greenhouses</b>	<b>582</b>
<b>(Vegetables)</b>	<b>549</b>
<b>Of which marketable</b>	<b>266</b>
<b>Vegetables</b>	<b>233</b>
<b>Flowers and ornamental plants</b>	<b>32</b>
<b>Strawberries</b>	<b>1</b>

Source <http://www.stat.gov.lt>

### **LATVIA – 2005-2008**

<b>Area of hothouses and production</b>				
	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
<b>Usable area of glass hothouses, ha</b>	<b>44,6</b>	<b>41,6</b>	<b>40,2</b>	<b>43,4</b>
<b>Usable area of polyethylene hothouses, ha</b>	<b>87,2</b>	<b>128,5</b>	<b>68,6</b>	<b>32,1</b>
<b>Production of vegetables in all hothouses, thous. Tons</b>	<b>13,409</b>	<b>19,131</b>	<b>14,882</b>	<b>12,071</b>

Source <http://data.csb.gov.lv>

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**ROMANIA – 2007****Area of greenhouses and solaria (plastic tunnels) and production obtained, in 2007**

	area	production
	(ha)	(tones)
<b>1. total area of greenhouses and solaria</b>	<b>2357</b>	<b>-</b>
<b>2. area of greenhouses</b>	<b>536</b>	<b>-</b>
<b>3. area of solaria</b>	<b>1821</b>	<b>-</b>
<b>4. vegetables in own field</b>	<b>2170</b>	<b>68003</b>
of which:		
<b>5. – tomatoes</b>	<b>1192</b>	<b>42570</b>
<b>6. – white cabbage</b>	<b>77</b>	<b>1956</b>
<b>7. – red cabbage</b>	<b>1</b>	<b>31</b>
<b>8. – turnips</b>	<b>7</b>	<b>102</b>
<b>9. – lettuces</b>	<b>35</b>	<b>225</b>
<b>10. – spinach</b>	<b>11</b>	<b>93</b>
<b>11. – egg plants</b>	<b>170</b>	<b>4247</b>
<b>12. – radices</b>	<b>19</b>	<b>410</b>
<b>13. – peppers</b>	<b>116</b>	<b>2416</b>
<b>14. – cucumbers</b>	<b>536</b>	<b>15841</b>
<b>15. – marrows</b>	<b>6</b>	<b>112</b>
<b>16. medicinal and aromatic plants</b>	<b>11</b>	<b>19</b>
<b>17. ornamental flowers and plants – thous threads</b>	<b>34</b>	<b>15030</b>
<b>18. nursery transplants – thous threads</b>	<b>14</b>	<b>341808</b>
<b>19. fruit bushes – thous threads</b>	<b>-</b>	<b>6000</b>

Source: Romanian Statistical Office

**SLOVAKIA – 2008 Vegetables -covered crops by region**

Region	Area ha	Total yield tons	Yield per ha t/ha
<b>Slovak republic total</b>	<b>129,36</b>	<b>8 389,6</b>	<b>64,85</b>
<b>Bratislavský kraj</b>	<b>2,51</b>	<b>462,0</b>	<b>184,25</b>
<b>Trnavský kraj</b>	<b>69,07</b>	<b>1 744,7</b>	<b>25,26</b>
<b>Trenčiansky kraj</b>	<b>0,50</b>	<b>10,2</b>	<b>20,44</b>
<b>Nitriansky kraj</b>	<b>42,98</b>	<b>3 096,5</b>	<b>72,04</b>
<b>Žilinský kraj</b>	<b>no data</b>	<b>no data</b>	<b>no data</b>
<b>Banskobystrický kraj</b>	<b>4,86</b>	<b>2 176,1</b>	<b>447,98</b>
<b>Prešovský kraj</b>	<b>0,45</b>	<b>18,3</b>	<b>40,56</b>
<b>Košický kraj</b>	<b>9,00</b>	<b>881,9</b>	<b>97,99</b>

Source: Statistical Office of the Slovak Republic

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## **SLOVENIA - 2006**

### **Main area of horticultural production and number of producers under cover, 2006**

	<b>Total (outdoor and indoor)</b>		<b>Indoors/covered</b>	
	<b>Area (ha)</b>	<b>Number of producers</b>	<b>Area (ha)</b>	<b>Number of producers</b>
<b>Vegetables</b>	<b>1355,9</b>	<b>1039</b>	<b>59,5</b>	<b>361</b>
<b>Vegetable, herb and strawberry and other agricultural crop seedlings</b>	<b>10,4</b>	<b>390</b>	<b>8,3</b>	<b>336</b>
<b>Cut flowers</b>	<b>8,5</b>	<b>172</b>	<b>6,2</b>	<b>156</b>
<b>Other ornamental plants</b>	<b>98,7</b>	<b>283</b>	<b>21,5</b>	<b>258</b>
<b>Ornamental plant seedlings</b>	<b>32,1</b>	<b>55</b>	<b>5,0</b>	<b>48</b>

**Source: Horticulture Census, Slovenia, 1 July 2006 – provisional data.**

## **5. VALIDITY AND UNCERTAINTY OF THE DATA**

The most precise and valid data are presented for Poland due to the highest availability of the data and involvement of the experts in the field present in the contractor's institution. Generally, only the existing, most valid data that could be verified with other sources (personal communications, research Institutes, fruit/vegetable grower associations) are included in the report. Less information is available in the other Eastern European EU MSs. All the uncertain data or discrepancies between them were excluded from the report. All the existing, most reliable data that could be verified/justified on the basis of expert judgments are included in the report. Only the comparable/similar data originating from different sources were treated as the valid data. The level of data reliability is good and the existing data were gathered from the sources cited in the report. The collected data on covered crops are more precise than the data available at Eurostat. All the gathered and valid data will be useful for the preparation of the database on the distribution of covered crops in Europe and will be used for risk assessment.

It is very important for the second data collection (second procurement for the data collection) to generate appropriate measures so as to be able to fill in the gaps, identified during the first data collection. The valid information on covered crop systems in Europe should be delivered in a very clear message to the public/stakeholders. On the basis of the gathered information, the Eurostat should conduct the survey with the questionnaire developed by EFSA. It is very important to specify/understand, on the basis of the collected data, what is necessary for risk assessment that satisfies the stakeholder needs. Answers should be provided to how the management practices of protected crops influence the emissions. What kind of innovations should be introduced for greenhouse management in Europe for decreasing the emissions from protected crops. What kind of important factors

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should be better managed/modified for a reduction in emissions e.g. water quality, crop management inside, type of irrigation, pesticide application methods?

## **6. CONCLUSIONS FOR THE EASTERN REGION**

- On average, from 2006-2008, crops under glass of (highly) accessible covers in the New EU-10 Member States constitute about 15 000 ha. The largest area of protected crops is in Poland (7 900 ha in 2008), much smaller in Romania (2 357 ha in 2007), Bulgaria (2 000 ha in 2006-2008), Hungary (1 836 ha in 2007), and the smallest in Lithuania (582 ha in 2008), Estonia (266 ha in 2007), Slovakia (130 ha in 2008), Czech Republic (189 ha in 2007), Latvia (120 ha on average 2005-2008) and Slovenia (101 ha in 2006).

**Data based on average values of data available on total production of covered crops for Eastern European Countries for 2006-2008 (in ha)**

<b>Total production of covered crops for 10 Eastern European Countries (in ha)</b>	
Vegetables	10479,13
Ornamentals	1321,21
Fruit	902,60
<b>Greenhouses (incl. plastic-covered greenhouses)</b>	<b>5573,67</b>
Of which:	
Glasshouses	3955,36
Plastic tunnels	3300,12
Plastic shelters	48,36

- The prevailing structures in Eastern European Countries are glasshouses, plastic greenhouses, plastic tunnels, and other accessible protective covers e.g. walk-in tunnels and net-covers. In some countries, specific terms for protective structures have been introduced, e.g. the term solaria is used in Romania to describe a type of walk-in tunnel. In Latvia, there are glass hothouses and polyethylene hothouses, which corresponds to high-and low-tech greenhouses (as defined by the WG). In Slovakia, the roofed areas include hothouses, hotbeds (low-tech greenhouses) and plastic structures (low and walk-in tunnels). In Slovenia, production under cover is called indoors/covered production.

- The most detailed data on crop/structure categories, cultivation systems and application methods exist for Poland and partly for Estonia. For the other Eastern European EU Countries such type of data are less specific.

- The data obtained from official Institutions in each country were additionally verified and revised on the basis of expert evaluations. Generally, the quality of the collected data was good and verified with another available sources/expert's judgements. The uncertain data which were not confirmed by the expert's judgement or another sources were completely excluded from the report. Finally, only the most certain and valid data gathered from available and cited sources in each Eastern European EU MSs and are presented in the report.

- Generally, crop grower associations did not respond to the letters of request and it was found that no official questionnaires by the Eastern European EU MSs on protected crops exist to gather official data for e.g. statistical offices. Therefore, there is a need to introduce in these countries official and publicly available questionnaires, as shown by EFSA with the example of the Finnish questionnaire.

- The highest and most sophisticated production of crops under cover was found in Poland. It relies on, compared with the other Eastern European countries, a better availability of planting material for greenhouse production, better technical means and know-how possessed by Polish fruit, vegetable and flower producers. The only limiting factor for the Polish production of crops under cover is the low economic benefit from that country's production due to high competition of imported fruit, vegetables and ornamentals on the Polish market.
- The Eastern European Countries have the capacity to increase the area of production and the quality of crops grown under cover provided all necessary conditions are firmly established, e.g. the supply of materials for building and fitting-out crop growing facilities, associations of growers of crops under cover and other relevant support.

### **Conclusions for Poland (Sources: research institutes, the Central Statistical Office)**

- According to the estimates of the Research Institute of Pomology and Floriculture and the Institute of Vegetable Crops in Skierniewice, the area allocated to crop cultivation under glass can be expected to increase by about 100 ha annually.
- The surface area of fruit and vegetable crops grown in plastic tunnels is stabilizing. In the next few years, only a small increase in the number of modern, heated tunnels should be expected. The number of 'low technology', unheated tunnels will continue to rise.
- In 2004-2008, the production potential of intensively developing farms will be increasing. Their production will also compete on the European Union market. The output of small horticultural or mixed farms, aimed mainly at the local market, may increase a little or become stable, as it is determined by the level of fruit and vegetable consumption – quite static in Poland in the last 20 years.
- The future of the Polish market of fruit and vegetables grown under cover depends, among other things, on further changes in the prices of that produce, their relation to the costs of production means and the prices of fruit and vegetables produced in countries with better climatic conditions.
- Low profitability of production, dependent on changes in the demand for fruit and vegetables on the EU market and the currency exchange rate, pose a significant threat to the levels of Polish vegetable and fruit crops grown under cover. The increased production of fruit and vegetables grown by the new members of the EU – Bulgaria, Romania, as well as the candidate country Turkey, can also become a serious challenge.
- There is a place on the Polish market also for new Spanish firms, especially in the area of building and fitting-out crop growing facilities, and also in supplying Polish producers with other means of production.
- Similar conclusions are not possible to state for another Eastern European EU MSs because less information is available for these countries. All the uncertain data or discrepancies between them were excluded from the report. All the existing data, most reliable and valid for these countries, were verified/justified on the base of expert's judgments and included into the report.

## 7. OUTLOOK

Supplementary data collection could be undertaken through direct contact at the national level with researchers and stakeholders dealing with the production of crops under cover, and by contacting growers and grower associations in each country. Therefore, an additional call for tender for gathering the missing and the most needed data would supplement the data-collection. It would be worth organising within this project a meeting involving representatives from Central Statistical Offices/governmental bodies, and researchers and producers, so that they could present the most valid, nationwide data on protected crops in their country. For the preparation of presentations, EFSA could present to the speakers/invited experts the necessary questions so as to be able to gather the missing data and fill in any major gaps for each country. The meeting output from the presentations and discussions should give more precise answers/estimates to the requested questions. In addition, on the basis of this input, a group of recognized experts could verify the acquired data and extrapolate them into the format required by EFSA. In addition an official questionnaire on crop production under cover, in a standardized form for Europe, should be proposed and introduced in each New EU Member State, where such questionnaires are generally absent.

On the basis of the gathered information the Eurostat should conduct a survey with the questionnaire developed by EFSA. Management practices should be introduced into the questionnaire because they are very important for reduction/prediction of greenhouse emissions. On the basis of the newly developed and introduced questionnaire answers should be delivered to the following questions:

- What is the area/distribution of covered crops in Europe?
- What type of structures are there in each country/European region?
- What management practices are used in different systems?
- What are the most important factors for emissions from protected crops?
- How can the grower modify these factors to reduce emissions?
- What kinds of products are applied?
- How should the emissions be reduced in different situations?
- **How is it possible to manage covered crops in Europe in a safe and environmentally sustainable way?**

## Appendixes

### Appendix A.

#### Content of the Request Letter sent to each Eastern European EU Member State:

Skierniewice, 5.03.2009.

My name is Lidia Sas Paszt and I work at the Research Institute of Pomology and Floriculture in Skierniewice, Poland. I am the person from the Institute responsible for the “Data-collection of existing data on protected crop systems (greenhouses and crops grown under cover) in Eastern European EU Member States”.

On behalf of the European Food Safety Authority located in Parma, Italy, we have to collect and process the available data from Central Statistical Offices and/or research institutions in Eastern European EU Member States on protected crops – fruit, vegetables, cut flowers, pot ornamentals, propagation materials grown in glasshouses, greenhouses, plastic shelters, shaded and net-houses, walk-in tunnels, and low tunnels. If possible, it would be good to receive also information on the above crops grown in the above systems in your country, including:

- soil or soilless systems (in % of the total production of protected crops)
- water system: closed or open
- application methods of plant protection products: spraying, fogging/fumigation, drip irrigation/recirculation, soil injection, soil treatment .

I would like to explain that the required data are necessary for the preparation of a new guidance document on the emissions from protected crops to make this data available for risk assessment managers in Europe.

**I would be very grateful for providing us with the type of the above-mentioned data or website links to the relevant data available in your country with a description of their validity by 13 March 2009.** I understand that the amount of the data is dependent on data availability, their quality and validity in your country.

Thank you very much in advance for your kind reply to my request.

With kind regards

Dr. Lidia Sas Paszt

Agrotechnical Department

Rhizosphere Lab

Research Institute of Pomology and Floriculture

Pomologiczna 18

96-100 Skierniewice

Poland

Phone no: 48 46 8345235

Mobile; 0048 503 158 903

Fax no: 48 46 833 32 28

e-mail: [lsas@insad.pl](mailto:lsas@insad.pl)

[www.insad.pl](http://www.insad.pl)

## **Appendix B.**

### **A list of the organizations contacted**

#### **1. BULGARIA**

Girgina Nikolova, Agriculture and Forestry Statistics, NSI, Bulgaria

#### **2. CZECH REPUBLIC**

Jitka Losanova, International Information Services Section, Czech Statistical Office

Jiri Sedlak, Research and Breeding Institute of Pomology Holovousy

Jiri Horak, Association of Floricultural Growers and Florists

Jaroslav Zeman, Asociacion of Vegetable Growers

#### **3. ESTONIA**

Aime Lauk, Information and Marketing Service, Statistics Estonia

#### **4. HUNGARY**

Ferenc Inantsy, Growers Association

Istvan Bondor, Ministry of Agriculture and rural Development

Gyozo Szenci, Research Institute for Fruitgrowing and Ornamentals

Szabolcs Vago, Agricultural Economics Research Institute

#### **5. LATVIA**

Anta Raubena, Agricultural Statistics Section, CSB Latvia

#### **6. LITHUANIA**

Daiva Mikalopiene, Statistic Lithuania

#### **7. POLAND**

Research Institute of Pomology and Floriculture

Jacek Dyśko, Institute of Vegetable Crops in Skierniewice

Marta Karpińska, Statistical Office of Poland

#### **8. ROMANIA**

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Maria Radulescu, Institutul National de Statistica

## **9. SLOVAK REPUBLIK**

Jaroslav Sedivy, Statistical Office of the Slovak Republic

Michal Medvecky, Plant Production Research Centre

## **10. SLOVENIA**

Danijela Maver, Statistical Office of the Republica of Slovenia

Nikita Fajt, Ministry of Agriculture of Slovenia

## Appendix C.

### A list of the conferences and seminars as occasions for data gathering in Poland

- The 13th Polish National Conference of Ornamental Plant Nurseries (3-4.03.2008),
- 52-nd Polish National Conference on the Protection of Fruit Crops (18-19.03.2008),
- Polish National Strawberry Conference (2.04.2008),
- Conference on the Economics of Producing Anthurium for Cut Flowers (21-22.04.2008),
- Conference on Improving the Quality of Eustoma Flowers and Plants ( 28.04.2008),
- 2nd National Seminar of Technologists in the Fruit and Vegetable Processing Industry (25-28.04.2008),
- Open Day in the Experimental Orchard (3.06.2008).

## Appendix D.

### Description of each additional data source.

#### **E-mail Contacts with Eastern European Countries, with Institutions and personnel involved in protected crops:**

#### **BULGARIA**

**Girgina Nikolova,**

Head of Agriculture and Forestry Statistics, NSI, Bulgaria

**Dear Mrs. Paszt,**

By agreement the Agricultural statistics In Bulgaria is allocated between two bodies - the National Statistical Institute and the Ministry of Agriculture and Food. According to this, the information that you need should be produced by the Agrostistics Directorate at the Ministry of Agriculture. They are responsible for example for Farm Structure Survey (including Agricultural Census) and also for the Crop statistics surveys, which as usual supply data that you are interesting in. Recently, they also took the responsibility on the Statistics on Pesticides, used in agriculture. As far I am aware, this kind of statistics in Bulgaria is not well developed yet. In the near future more data will be available probably after implementation of the Survey on the Production Methods in Agriculture (SAPM). Almost of Member States should conduct this survey for the first time in 2011 or 2012, after Agricultural Census, planned for 2010. In Bulgaria the SAPM should be carried out by the Agrostistics Directorate in the MAF. Nevertheless, I would recommend you, for more information, to send your data request letter on the next e-mail address: [SMustafa@mzh.government.bg](mailto:SMustafa@mzh.government.bg), who is the Head of the Agrostistics Directorate at the Ministry.

Best regards,

**Girgina Nikolova,**  
Head of Agriculture and Forestry Statistics, NSI, Bulgaria

-----Original Message-----

From: Mila Popova  
Sent: Monday, March 09, 2009 5:14 PM  
To: Girgina Nikolova  
Subject: FW: Data-collection of existing data on protected crop systems  
(greenhouses and crops grown under cover) in Eastern European EU MSs

-----Original Message-----

From: info  
Sent: Monday, March 09, 2009 4:46 PM  
To: Mila Popova; Bojidar Parvanov  
Subject: FW: Data-collection of existing data on protected crop systems  
(greenhouses and crops grown under cover) in Eastern European EU MSs from Statistical  
Office of Bulgaria

**Dear Mr. Gluszek,**

Such kind of information is unavailable at NSI. You may concern **MINISTRY OF AGRICULTURE AND FOOD Directorate for "Agrarian Statistics"**<http://www.mzh.government.bg/Default.aspx?lang=2&lmid=0>  
**Dissemination of Information Department**

## **CZECH REPUBLIK**

**Jitka Losanova**  
International Information Services Section  
Czech Statistical Office

**Dear Ms. Paszt,**

Please find attached the available data for the Czech republic. Other requested data as plant protection, system of growing plants or water system we unfortunately don't monitor.

Best regards,  
**Jitka Losanova**  
International Information Services Section  
Czech Statistical Office  
Na padesatem 81  
100 82 Prague 10  
Czech Republic  
Tel.: +420 274 052 347  
Fax: +420 274 052 305

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E-mail: [jitka.losanova@czso.cz](mailto:jitka.losanova@czso.cz)

and also original mail from growers association

Witam,

miestety to nie jest moja parketa. Przesilam Pana mail do P. Ludvika sekretarza Czech Fruit Union. który Panu odpowie.

Jego kontakt jest:

**Ing. Martin Ludvík**

Ovocnářská unie České republiky

Holovousy 1

508 01 Hořice

tel. a fax: +420 493 692 827

E-Mail: [unie@vol.cz](mailto:unie@vol.cz)

<http://www.ovocnarska-unie.cz>

W raz z pozdrowieniamy,

**Janek Blazek**

Research and Breeding Institute of Pomology, Holovousy Ltd.,

Holovousy 1

508 01 Horice, Czech Republic

E-mail: [blazek@vsuo.cz](mailto:blazek@vsuo.cz)

Tel.:+420-493-692821(-3)

Fax: +420-493-692833

next e-mail:

For: Slawomir Gluszek and Lidia Sas Paszt

**Dear Dr. Gluszek,**

my name is Jiri Sedlak and I am the coworker of Dr. Paprstein, who is the head of Department of Genebanks and deputy director in RBIP Holovousy. Dr. Paprstein has charged me with your request concerning existing data on protected crop systems.

Concerning the data as a whole for the Czech Republic, we think that the authority collecting this information can be "Cesky statisticky urad" (Czech Statistical Office).

Below stated link leads to their English www pages.

<http://www.czso.cz/eng/redakce.nsf/i/home>

I have also consulted your question with the Ministry of Agriculture of the Czech Republic, but I was told that they generally used Czech Statistical Office as a primary source of data.

Regarding our company Research and Breeding Institute of Pomology Ltd., we do not collect data on protected crop systems.

I hope that Czech Statistical Office and/or above stated link to their www pages can help you in your enquiry.

With kind regards

**Jiri Sedlak**

Ing. **Jiri Sedlak** Ph.D.

Research and Breeding Institute of Pomology Holovousy Ltd.

Holovousy 1

Horice v Podkrkonosi

postcode: 508 01

Czech Republic

Phone:+420 493 692 821

Fax: +420 493 692 833

e-mail: [sedlak@vsuo.cz](mailto:sedlak@vsuo.cz)

and another e-mail from growers association

**Dear Mr. Gluszek,**

I am very sorry, I am writing this answer so late, despite the fact, you need to collect appropriate information within a short time.

I write this message on behalf of OUČR (Fruit Growers Association of Czech Republic).

I am not sure, we are able to provide you with all necessary information by ourselves, so we are sending to you contacts to other, potentially more suitable, entities:

Association of Floricultural Growers and Florists - Svaz květinářů a floristů

**Jiří Horák**

GSM: 00420 724 610 605

[www.svazkvetinaruafloristu.cz](http://www.svazkvetinaruafloristu.cz)

[horak.jiri.sempra@seznam.cz](mailto:horak.jiri.sempra@seznam.cz)

Association of Vegetable Growers - Zelinářská unie ČM

Jaroslav Zeman

[zucm@zelinarska-unie.cz](mailto:zucm@zelinarska-unie.cz)

[www.zelinarska-unie.cz](http://www.zelinarska-unie.cz)

Regarding to spraying and matters concerning to pesticides, their registration, usage etc. or legislation concerned you can find information on below mentioned web-sites, or you can contact directly somebody from SRS (Plant Protection Administration).

Our organization do not provide our members (or anybody else) with information in this aspect.

[http://www.srs.cz/portal/page/portal/SRS\\_Internet\\_CS/le](http://www.srs.cz/portal/page/portal/SRS_Internet_CS/le)

It would be very helpful from your site, you could kindly send to us information, you need, from Poland or potentially also from other countries.

Best regards, **Roman Chaloupka**, on behalf of OUČR.

**Dear Mr. Gluszek,**

we have already answered Your request - it was in February - the recipient has been Dr. Lidia

Sas Paszt via Your email address. The Czech Statistical Office doesn't possess more detailed data on the topic than we sent You then (again as an attachment).

The next Farm Structure Survey will be conducted in 2010.

I suppose that You may find helpful another sources from the competence of the Czech Ministry of Agriculture - the institutes - Crop Research Institute (<http://www.vurv.cz/index.php?lang=en> ) or independent Research and Breeding Institute of Pomology Holovousy Ltd (<http://www.vsuo.cz/index.htm> ).

Sincerely Yours

**Ondrej Kosata** (Mr.)  
CZECH STATISTICAL OFFICE  
Information Service Department  
Na padesatem 81  
100 82 Praha 10  
Czech Republic  
Phone: +420 274 05 2451  
[www.czso.cz](http://www.czso.cz)  
[infoservis@czso.cz](mailto:infoservis@czso.cz)

### **ESTONIA**

The below specific details are found for Estonia

**Greenhouse crops:** crops which for the whole of the period of growth or for the predominant part of it are covered by greenhouses or fixed or mobile high cover (glass or rigid or flexible plastic)

**Growing systems:**

soilless system - about 10%

closed water system - 2-3%

**Plant protection** for cucumbers, tomatoes and other vegetables - biological methods only,

**Plant protection** for ornamental plants - spraying, drip irrigation, recirculation.

**Fumigation** is not allowed in Estonia.

### **Aime Lauk**

Senior Consultant  
Information and Marketing Service  
Statistics Estonia  
+372 6259 300  
\*REG. KPV.: 09.03.2009 \*REG. NR.: 1.5-1.1/420

### **Dear Dr. Lidia Sas Paszt**

With reference to your e-mail we are pleased to forward the links (source: Statistics Estonia, statistical database), which considers the statistical information. We would like to inform that Statistics Estonia does not produce more detailed statistics in this area.

Please find the following links:

USE OF ARABLE LAND BY COUNTY AND KIND OF CROP

<http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS105&ti=USE+OF+ARABLE+LAND+BY+COUNTY+AND+KIND+OF>

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[+CROP&path=../I\\_Databas/Economy/01Agriculture/06Structure\\_of\\_agricultural\\_holdings/02Crop\\_farming/&search=GREENHOUSE&lang=1](#)

## USE OF ARABLE LAND BY LEGAL FORM OF HOLDER AND KIND OF CROP

[http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS106&ti=USE+OF+ARABLE+LAND+BY+LEGAL+FORM+OF+HOLDER+AND+KIND+OF+CROP&path=../I\\_Databas/Economy/01Agriculture/06Structure\\_of\\_agricultural\\_holdings/02Crop\\_farming/&search=GREENHOUSE&lang=1](http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS106&ti=USE+OF+ARABLE+LAND+BY+LEGAL+FORM+OF+HOLDER+AND+KIND+OF+CROP&path=../I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/&search=GREENHOUSE&lang=1)

## GROWING OF GREENHOUSE VEGETABLES BY LEGAL FORM OF HOLDER AND SIZE CLASS OF SOWN AREA

[http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS118&ti=GROWING+OF+GREENHOUSE+VEGETABLES+BY+LEGAL+FORM+OF+HOLDER+AND+SIZE+CLASS+OF+SOWN+AREA&path=../I\\_Databas/Economy/01Agriculture/06Structure\\_of\\_agricultural\\_holdings/02Crop\\_farming/&search=GREENHOUSE&lang=1](http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS118&ti=GROWING+OF+GREENHOUSE+VEGETABLES+BY+LEGAL+FORM+OF+HOLDER+AND+SIZE+CLASS+OF+SOWN+AREA&path=../I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/&search=GREENHOUSE&lang=1)

## GROWING OF OUTDOOR AND GREENHOUSE FLOWERS AND ORNAMENTAL PLANTS BY LEGAL FORM OF HOLDER

[http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS119&ti=GROWING+OF+OUTDOOR+AND+GREENHOUSE+FLOWERS+AND+ORNAMENTAL+PLANTS+BY+LEGAL+FORM+OF+HOLDER&path=../I\\_Databas/Economy/01Agriculture/06Structure\\_of\\_agricultural\\_holdings/02Crop\\_farming/&search=GREENHOUSE&lang=1](http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AGS119&ti=GROWING+OF+OUTDOOR+AND+GREENHOUSE+FLOWERS+AND+ORNAMENTAL+PLANTS+BY+LEGAL+FORM+OF+HOLDER&path=../I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/&search=GREENHOUSE&lang=1)

Methodology and Definitions:

[http://pub.stat.ee/px-web.2001/I\\_Databas/Economy/01Agriculture/06Structure\\_of\\_agricultural\\_holdings/02Crop\\_farming/AGS101.htm](http://pub.stat.ee/px-web.2001/I_Databas/Economy/01Agriculture/06Structure_of_agricultural_holdings/02Crop_farming/AGS101.htm)

## PRODUCTION OF FIELD CROPS

[http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AG040&ti=PRODUCTION+OF+FIELD+CROPS&path=../I\\_Databas/Economy/01Agriculture/02Agricultural\\_production/02Crop\\_production/&lang=1](http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=AG040&ti=PRODUCTION+OF+FIELD+CROPS&path=../I_Databas/Economy/01Agriculture/02Agricultural_production/02Crop_production/&lang=1)

Definitions and Methodology:

[http://pub.stat.ee/px-web.2001/I\\_Databas/Economy/01Agriculture/02Agricultural\\_production/02Crop\\_production/AG\\_028.htm](http://pub.stat.ee/px-web.2001/I_Databas/Economy/01Agriculture/02Agricultural_production/02Crop_production/AG_028.htm)

e-mail from **Liidia Klaas**

Dear Slawomir,

As well as I am informed, the Statistical Office don't gather specification on vegetables, cut flowers, pot ornamentals and propagated materials grown in glasshouses, plastic shelters et cet. You can apply, of course, to the Ministry of Agriculture. E-mail: [pm@agri.ee](mailto:pm@agri.ee) Tel +372 625 6101, Fax +372 625 6200

Maybe, it will give you information you need.

Sincerely Yours

**Liidia Klaas**

and e-mail from CSB Estonia

**Dear Slawomir Gluszek,**

I sent the answer and explained that Statistics Estonia does not collect and produce so

detailed data on the given field. Unfortunately, we do not know any organization who can fill this questionnaire in Estonia. The e-mail sent March 09, 2009 is hereinafter.

Yours sincerely,

**Aime Lauk**

Senior Consultant

Information and Marketing Service

Statistics Estonia

+372 6259 300

----- Forwarded by Viive Alliksoo/Agri on 28.04.2009 11:56 -----

From: **Viive Alliksoo/Agri**  
To: Elo Lember/Agri@Agri  
Date: 12.03.2009 10:51  
Subject: Greenhouse crops data

[lsas@insad.pl](mailto:lsas@insad.pl)

[Agnieszka.Pelka@insad.pl](mailto:Agnieszka.Pelka@insad.pl)

[Barbara.Kilmczyk@insad.pl](mailto:Barbara.Kilmczyk@insad.pl)

[Slawomir.Gluszek@insad.pl](mailto:Slawomir.Gluszek@insad.pl)

Dear Lidia Sas Paszt,

**Following the greenhouse crops data in reply to your letter of 5 March 2009.**

**Use of greenhouse area, 2007**

	<b>Greenhouse vegetables and greens total</b>	<b>Cucumbers</b>	<b>Tomatoes</b>	<b>Other vegetables</b>	<b>Flowers total</b>
<b>Sown area, ha</b>	266	84	159,2	21,3	15
<b>Production, t</b>	14187	6237	6634	1316	x

**Source:** Statistical Office of Estonia

**Greenhouse crops:** crops which for the whole of the period of growth or for the predominant part of it are covered by greenhouses or fixed or mobile high cover (glass or rigid or flexible plastic)

**Growing systems:**

Soilless system - ca 10%

Closed water system - 2-3%

**Plant protection** for cucumbers, tomatoes and other vegetables - biological methods only, for ornamental plants - spraying, drip irrigation, recirculation.

**Fumigation** is against the law in the Estonia.

## **HUNGARY**

original e-mail from growers association from Mr **Ferenc Inántsý**

ferenc.inantsy@gmail.com

**Dear Mr Gluszek,**

Tank you for your letter of March 26, in which you asked for some data about the Hungarian protected crop systems. We are responsible for apple and some deciduous fruit so we have not any information about the greenhouses and crops under cover. We forwarded your e-mail

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to the organisation, which collects data in Hungary about vegetables.(Anita Ferenc or Zoltán Fodor) Their address

is: [info@fruitveh.hu](mailto:info@fruitveh.hu).

Best regards: Inánts F.

**Dear Mr Gluszek,**

Regarding the topic in question please turn to the Agricultural Economics Research Institute of the Ministry for Agriculture and Rural Development.

<http://www.aki.gov.hu/indexeng.htm>

They shall have the data, if collected in Hungary, I trust.

Best regards,

**István Bondor**

Head of Department

Földművelésügyi és Vidéfejlesztési Minisztérium

Agrár-vidékfejlesztési Főosztály

1055 Budapest

Kossuth Lajos tér 11.

Tel.: 1 301 4657

Fax: 301 5949

Ministry of Agriculture and Rural Development of Hungary

Managing Authority Department

H-1055 Budapest

Kossuth Lajos square 11.

Phone: 00 36 1 301 4657

Fax: 00 36 1 5949

**Dear Mr. Gluszek,**

according to the statistical data please turn to the Hungarian Central Statistical Office (central fax number : 36 1 345 6378, KSH: Központi Statisztikai Hivatal, [www.ksh.hu](http://www.ksh.hu)) or to the Agricultural Economics Research Institute ([www.akii.hu](http://www.akii.hu)) for more details.

Yours sincerely,

**Győző Szenci**

Director

Research Institute for Fruitgrowing

and Ornamentals

Budapest

Park u. 2

1223

Hungary

Érdi Gyümölcs- és Dísznövénytermesztési Kutató, Fejlesztő Kht. Budapest

Research Institute for Fruitgrowing and Ornamentals; Budapest, Hungary

**Dear Mr. Gluszek,**

I am sorry to inform you, but we do not have the kind of information you have requested. Since I have received your letter, I was looking for contact in this topic, which ended with not much success. I can only suggest you, to consult with Dr. László Pintér, the Deputy Head of Agricultural Statistics Department, at the Hungarian Statistic Office ([laszlo.pinter@ksh.hu](mailto:laszlo.pinter@ksh.hu)).  
Best regards

**Dr. Szabolcs VÁGÓ**

Head of Department  
Agricultural Economics Research Institute (AKI)  
Statistics Department  
1093 Budapest  
3-5. Zsil street  
Tel: 36-1-476-6083  
Fax: 36-1-476-3304  
Email: [vagosz@aki.gov.hu](mailto:vagosz@aki.gov.hu)

## **LATVIA**

**Anita Raubena**

Agricultural Statistics Section

**Dear Lidia Sas Paszt,**

The CSB of Latvia inform you that the CSB prepares statistical information for a fee in compliance with Regulation No.618 dated 23 August 2005 of the Cabinet of Ministers of Republic of Latvia “Price list of Paid Services Provided by the Central Statistical Bureau”. We would like to inform that, data on protected crop areas – areas and total vegetable production - are available in data base on the Web Page of the CSB in Table 15-7 [AREA OF HOTHOUSES AND PRODUCTION](#)

(<http://data.csb.gov.lv/DATABASEEN/lauks/Annual%20statistical%20data/15.%20Agriculture%20forestry%20fishing/15.%20Agriculture%20forestry%20fishing.asp>). Information on soils, irrigation systems and treatment methods you requested is not available in the CSB of Latvia.

Best regards,

**Anita Raubena**

Agricultural Statistics Section

Inita Kemlere

Information, Publishing and Printing Department

CSB of Latvia

and another e-mail from CSB Latvia

**Dear Slawomir Gluszek!**

In reply to your information request, we would like to inform you that the CSB has no information on the data you are interested in. You can try ask about these data in the Faculty of Agriculture of the Latvian University of Agriculture (<http://eng.llu.lv>, [lfdek@llu.lv](mailto:lfdek@llu.lv)). Possibly they can provide you with some information regarding the data you are interested in.

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With best regards,

**Inita Kemlere**

Information, Publishing and Printing Department  
CSB of Latvia

## **LITHUANIA**

**Dear Dr. Lidia Sas Paszt,**

Statistics Lithuania collects the data on crops area under glass or other (accessible) protective cover.

In the year 2008, ha

Greenhouses	582 (549 - vegetables)
Of which marketable	266
Vegetables	233
Flowers and ornamental plants	32
Strawberries	1

Statistics Lithuania hasn't other you needed information.

Best regards,

**Daiva Mikalopiene**

Chief specialist, Statistical Information Dissemination Division

Statistics Lithuania

Tel. +370 5 236 4843

Fax. +370 5 236 4939

E-mail: [daiva.mikalopiene@stat.gov.lt](mailto:daiva.mikalopiene@stat.gov.lt)

## **POLAND**

For Poland the table below describes the additional information withdrawn from personnel contacts with Dr. Adam Marosz, Doc. Dr. hab. Waldemar Treder, Dr. Katarzyna Treder (from the Research Institute of Pomology and Floriculture in Skierniewice) and Dr. Jacek Dyśko (from the Institute of Vegetable Crops in Skierniewice).

**Area of greenhouses and under plastic covers in Poland for 2008 (Sources: General Statistical Office + own estimates)**

Area in ha	Greenhouses	Plastic covers
<b>Total for vegetables 6150 ha</b>	<b>2600</b>	<b>3550</b>
Tomato	1200	2000
Cucumber	450	800
Capsicum	50	1200

Including 1500 ha of soilless cultures.

**Edible fungi (mushrooms) - cultivation area in Poland – 2007**

	Area (in ha)	Total number of households
<b>Edible mushrooms*</b>	<b>316</b>	<b>2812</b>

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**\*Agarici (bottom mushroom) in Poland are cultivated in closed, controlled conditions**

**oyster mushrooms (Pleurotus) are cultivated both: shelters and in closed systems**

**Sources: General Statistical Office + estimates of the Institute of Vegetable Crops in Skierniewice.**

The ext of e-mail from Central Statistical Office in Warsaw:

Mr Sławomir Głuszek,

e-mail: [Slawomir.Gluszek@insad.pl](mailto:Slawomir.Gluszek@insad.pl)

**Dear Mr Głuszek,**

In answer to your e-mail of 20 April 2009, the Department of Information of the Central Statistical Office wishes to inform you that data on the cultivation area and crop sizes of vegetables grown under cover, and on the cultivation area of flowers and ornamental plants grown under cover (including separate data for flowers) can be made available. Data on the cultivated areas and crop sizes for tomato, cucumber, and other species of vegetables combined, grown under cover, and also on the size of the cultivated areas with flowers under cover (for Poland), separately for 3 types of cover (glasshouses, plastic foil tunnels taller than 1.5 m, and glass frames) are published annually in the publication 'The results of plant production' – which is available on the Central Statistical Office's website: [www.stat.gov.pl](http://www.stat.gov.pl). The published information comes from surveys of horticultural production under cover, which are carried out on the forms: 'Annex No. 1 to R-08' and 'R-08/W'. So far, these surveys have not included fruit production, but only vegetables, flowers and ornamentals. As of 2009, the thematic scope of these surveys will be expanded to include cultivation areas and crop sizes for pepper, lettuce and strawberry grown under cover.

Apart from that, data is also available from surveys of the structure of agricultural farms on the cultivated area of edible mushrooms in 2007, and on the cultivated area of strawberry grown under cover, and other crops grown under cover in 2007 combined. The Central Statistical Office does not have any data on the cultivation methods used for growing crops under cover, nor any separate information on cut flowers or ornamental pot plants. Nor is there any separate data on the cultivation of various fruit species under cover (with the exception of strawberry in 2007). The conditions and costs of making data available will be possible after receiving a clearly defined order.

Yours sincerely,

**Marta Karpińska**

Główny Urząd Statystyczny

Centralne Informatorium Statystyczne

al. Niepodległości 208

00-925 Warszawa

tel. 22 608 31 64, fax. 22 608 38 69

## **ROMANIA**

In Romania the term SOLARIUM (plural SOLARIA) is introduced. It has the following definition : High (accessible) cover for crops (acesible shelters)

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Accessible shelters are constructions covered with plastic and no air-conditioning units, intended especially to obtain early production of vegetables (including seedlings).

**Source of the definition: Romanian Statistical Office**

**The photo below shows a solarium in Romania**



**Maria RADULESCU**

Director

Directia diseminare informatii statistice si relatii cu publicul

INSTITUTUL NATIONAL DE STATISTICA

FROM: Institutul National de Statistica [datestat@insse.ro](mailto:datestat@insse.ro)

TO: Slawomir Gluszek [Slawomir.Gluszek@insad.pl](mailto:Slawomir.Gluszek@insad.pl)

Lidia Sas Paszt [lsas@insad.pl](mailto:lsas@insad.pl)

Subject: statistical information on protected crops

Dear Mrs. Lidia Sas Paszt,

At your request from March, 06, 2009, we send you here attached statistical information on greenhouses and crops under cover in Romania.

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Thank you for your interest.

Sincerely yours,

**Maria RADULESCU**

Director

Directia Diseminare Informatii Statistice Si Relatii Cu Publicul

INSTITUTUL NATIONAL DE STATISTICA

Bucuresti, Bd. Libertatii, 16

tel.+4021 318 18 42 int 1095

e-mail: [maria.radulescu@insse.ro](mailto:maria.radulescu@insse.ro)

<http://www.insse.ro>.

**e-mail with definition of solarium (pl. solaria)**

**FROM: Institutul National de Statistica [datestat@insse.ro](mailto:datestat@insse.ro) .**

**TO: Slawomir Gluszek [Slawomir.Gluszek@insad.pl](mailto:Slawomir.Gluszek@insad.pl)**

**Subject: Definition of Solarium**

Dear Mr. Slawomir Gluszek,

At your request from May, 11, 2009, we send you here attached the definition of solarium and a photo of it.

Thank you for your interest.

Sincerely yours,

**Maria RADULESCU**

Director

Directia diseminare informatii statistice si relatii cu publicul

INSTITUTUL NATIONAL DE STATISTICA

Bucuresti, Bd. Libertatii, 16

tel.+4021 318 18 42 int 1095

e-mail: [maria.radulescu@insse.ro](mailto:maria.radulescu@insse.ro)

<http://www.insse.ro>.

## **SLOVAK REPUBLIK (SLOVAKIA)**

**Dear Ms Sas Paszt,**

Please find enclosed data published in:

- 1.) Statistical Yearbook of the Slovak Republic - chapter 17. Agriculture (bilingual Slovak - English)
- 2.) Definitivne udaje o urode polnohospodarskych plodin, zbere ovocia a zeleniny v SR za rok 2008 (Final Data on Crops, Harvest of Fruit and Vegetables in the SR in 2008) - only in Slovak

Note:

D - confidential data

We recommend to contact Central Controlling and Testing Institute in Agriculture (ÚKSÚP) (<http://www.uksup.sk/>) as well.

Best regards,  
**Jaroslav Sedivy**  
Statistical Office of the Slovak Republic  
Analyses and Information Service Unit  
Mileticova 3  
824 67 Bratislava 26  
Slovak Republic  
tel. + 421 - 2 - 50236 335  
fax: + 421 - 2 - 55561 361  
e-mail: [jaroslav.sedivy@statistics.sk](mailto:jaroslav.sedivy@statistics.sk)  
[www.statistics.sk](http://www.statistics.sk)

Next e-mail:

**Dear Ms Sas Paszt,**  
Some data are also available in our database Slovstat  
<http://portal.statistics.sk/showdoc.do?docid=3158>  
A condition of data access is to make a record - registration (free of charge):  
Login > New user registration  
After registration and login:  
Menu > Agriculture, Forestry and Fishing

Best regards,  
**Jaroslav Sedivy**

and next e-mail from Plant Production Research Centre

**Dear Mr Slawomir Gluszek,**  
Thank you for your interest in our research establishment. We received your email in which you ask for providing information on grown crop. The Research Establishment in Kriva in Orava works on the research in growing Canadian Blueberries in the area of approximately 0,45 ha only within the research activities. Blueberries are grown without irrigating in the natural soil-climate conditions. Watering is only in a form of rain, since irrigational system is not available. The protection of the plants is carried out with herbicides. Soil manuring is done every year in spring with mineral fertilizers NPK. If you require any other information, we are at your disposal.  
Yours Sincerely, Michal Medvecký

**Michal Medvecký**

Plant Production Research Centre  
VP- Krivá 62  
027 55 Krivá  
Slovakia  
Phone no: +421 435 894 248 (7:00 - 15:00)  
e-mail: [scpv@orava.sk](mailto:scpv@orava.sk)

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and e-mail from **Vladimir Cicmanec** Statistical Office Slovakia

**Dear Mr. Głuszek,**

after checking up the matter with the colleagues responsible sorry to inform you we have not the data asked.

You can try to turn to: <http://www.uksup.sk/index.php?n=101>.

Kind regards,

**Vladimir Cicmanec**

Head of Analyses and Information Service Unit

Statistical Office of the Slovak Republic

Mileticova Street 3

824 67 Bratislava

Slovakia

phone: +421 2 50236 341

and next mail from the same source:

**Dear Mr. Głuszek,**

after checking up the matter with the colleagues responsible sorry to inform you we have not the data asked.

You can try to turn to: <http://www.uksup.sk/index.php?n=101>.

Kind regards,

**Vladimir Cicmanec**

Head of Analyses and Information Service Unit

Statistical Office of the Slovak Republic

Mileticova Street 3

824 67 Bratislava

Slovakia

phone: +421 2 50236 341

## **SLOVENIA**

**Barbara Kutin Slatnar**

Sporočilo poslal(a): Liljana Gregorič/SURS/GOV

**Dear Sir,**

I would like to inform you that all available data concerning Horticulture, Fruit plantations and data on protected areas which are collected and disseminated by The Statistical Office of the Republic of Slovenia are on our web pages free of charge :

<http://www.stat.si/pxweb/Database/Environment/Environment.asp>

For any further question you can contact us. Contact person is:

Ms. Jožica Joja Krznar, [jozica-joja.krznar@gov.si](mailto:jozica-joja.krznar@gov.si)

Best regards,

**Barbara Kutin Slatnar**

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and also e-mail from Ministry of Agriculture of Slovenia

**Dear Slawomir,**

at this time I don't have enough time to collect this data, so if you can expect some time, we will see in which way I can help you.

Best regards,

Nikita Fajt

nikita.fajt@go.kgzs.si

and answer from GSO Slovenia

**Dear Sir/Madam,**

your data inquiry has been received. We will reply in the shortest time possible. Data available in electronic format will be sent via e-mail while other data will be sent via regular mail.

Statistical Office of the Republic of Slovenia

[info.stat@gov.si](mailto:info.stat@gov.si)

**Dear Mr.Gluszek,**

I am afraid that not much of statistical data you need are available for Slovenia.

In the frame of environmental statistics a yearly survey gives data on irrigation. You can find: tables (in engl.):

[http://www.stat.si/pxweb/Database/Environment/27\\_environment/03\\_27193\\_water/04\\_27222\\_irrigation/04\\_27222\\_irrigation.asp](http://www.stat.si/pxweb/Database/Environment/27_environment/03_27193_water/04_27222_irrigation/04_27222_irrigation.asp)

questionnaire (not translated): [http://www.stat.si/doc/vprasalniki/VOD-N\\_2007.pdf](http://www.stat.si/doc/vprasalniki/VOD-N_2007.pdf)

Data on Fogging are collected but not published, it will take me some time to get them from the Env.Dpt.

Best regards

**Danijela Maver**

Agriculture, Forestry, Fishing and Hunting Statistics

Statistical Office of the Republic of Slovenia

Vožaski pot 12

1000 Ljubljana, SI

Phone: +386 1 2340 774

Fax: +386 1 2340 860

E-mail: [danijela.maver@gov.si](mailto:danijela.maver@gov.si)

<http://www.stat.si/>

## Appendix E.

### References by countries

#### **Europe in figures - Eurostat Yearbook 2008 with CD-ROM**

Cat. No: KS-CD-07-001-EN-C

ISBN: 9789279066078

Published:2008

ISSN 1681-4789

or in electronic version:

[http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-30-08-339/EN/KS-30-08-339-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-30-08-339/EN/KS-30-08-339-EN.PDF)

Agricultural Statistics - Main results - 2006-2007

ISBN: 978-92-79-08729-5

ISSN: 1830-463X

[http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-ED-08-001/EN/KS-ED-08-001-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-ED-08-001/EN/KS-ED-08-001-EN.PDF)

Agriculture - Main statistics 2005-2006

ISBN: 92-79-02955-X

ISSN: 1830-463X

[http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-ED-07-002/EN/KS-ED-07-002-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-ED-07-002/EN/KS-ED-07-002-EN.PDF)

Websites of the Eurostat:

<http://epp.eurostat.ec.europa.eu/>

<http://nui.epp.eurostat.ec.europa.eu>

#### **Abstracts from ActaHort as proceedings from Conferences on covered crops organized by Commission Protected Cultivation of International Society for Horticultural Science**

[www.ishs.org](http://www.ishs.org)

<http://www.actahort.org/books/797/>

<http://www.actahort.org/books/761/>

<http://www.actahort.org/books/747/>

<http://www.actahort.org/books/718/>

<http://www.actahort.org/books/691/>

<http://www.actahort.org/books/633/>

<http://www.actahort.org/books/797/>

<http://www.actahort.org/books/761/>

<http://www.actahort.org/books/747/>

<http://www.actahort.org/books/718/>

<http://www.actahort.org/books/691/>

<http://www.actahort.org/books/633/>

[http://www.actahort.org/books/byscw/scwcode\\_cmpe.htm](http://www.actahort.org/books/byscw/scwcode_cmpe.htm)

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[http://www.actahort.org/books/byscw/scwcode\\_pc2.htm](http://www.actahort.org/books/byscw/scwcode_pc2.htm)

[http://www.actahort.org/books/byscw/scwcode\\_cmpc.htm](http://www.actahort.org/books/byscw/scwcode_cmpc.htm)

[http://www.actahort.org/books/byscw/scwcode\\_pc2.htm](http://www.actahort.org/books/byscw/scwcode_pc2.htm)

## **BULGARIA**

Website of the National Statistical Institute

[www.nsi.bg](http://www.nsi.bg)

Website of Ministry of Agriculture

[www.mzh.government.bg](http://www.mzh.government.bg)

## **CZECH REPUBLIC**

**Statistical Yearbook of the Czech Republic 2008**

Code: **10n1-08**

<http://www.czso.cz/csu/2008edicniplan.nsf/engpubl/10n1-08-2008>

**Statistical Yearbook of the Czech Republic 2007**

Code: **10n1-07**

**Farm structure survey results in Czech Republic – 2007**

<http://www.czso.cz/csu/2008edicniplan.nsf/engp/2126-08>

Website of the Central Statistical Office of the Czech Republic:

<http://www.czso.cz>

## **ESTONIA**

**Eesti Statistika Aastaraamat. 2008. Statistical Yearbook of Estonia**

ISSN **1406-1783**

ISBN **978-9985-74-429-1**

Language: Estonian and English

Publication date: 25,07,2008

## **HUNGARY**

Agriculture in Hungary, 2007, (Farm Structure Survey),

**Preliminary Data, Budapest, 2008.**

Agriculture in Hungary, 2007 (Farm structure survey) vol. 1-2,

**Budapest, 2008.**

**Agriculture in Hungary, Farm Typology, 2007**

ISBN **978-963-235-210-7**

**Budapest, 2008.**

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[www.csb.gov.lv](http://www.csb.gov.lv)

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Publication date: 2009-02-16

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**9. Annexes: DATA****• Include data base (format to be defined)**

- 9.1. Power Point presentation “Sicilia\_10\_June” containing all collected data until 10 June 2009 (in attached file).
- 9.2. Master Table – containing all collected data in excel sheet format for each Eastern European Country (in attached file).
- 9.3. References to the Master Table (additional data in attached file).

**Annex 9.3. Official and registered references to the Master Table by countries****BULGARIA**

Data from the commercial webpage

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