

# Single Integrated Metadata Structure (SIMS v2.0)

(user oriented)

**Country:** Greece

**Compiling agency:** ELSTAT

**Domain name:** Orchard Survey

## ELSTAT metadata

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1. Contact <a href="#">Top</a>	
1.1 Contact organisation	ELSTAT (Hellenic Statistical Authority)
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<b>2. Metadata update</b>		<a href="#">Top</a>
<b>2.1 Metadata last certified</b>	September 2018	
<b>2.2 Metadata last posted</b>	September 2018	
<b>2.3 Metadata last update</b>	September 2018	

<b>3. Statistical presentation</b>		<a href="#">Top</a>
<b>3.1 Data description</b>		
<p>The statistical survey on orchards is carried out every five years according to the Council Regulation 1337/2011, in order to provide information on the cultivated areas at Regional level, thus offering a basis for decision-making concerning Common Agricultural Policy.</p> <p>The main objective of the survey is the collection of data on cultivated areas under fruit trees by species (apple trees, pear trees, peach trees, apricot trees, cherry trees, orange trees, lemon trees, small citrus fruit trees and olive trees), the number of trees, as well as other characteristics, such as variety, density of tree plantation and age.</p> <p>The survey is a sample survey and the sampling method used is the single stratified random sampling. The unit of the survey is the agricultural holding under the specific kind of fruit tree that is surveyed. The agricultural holdings under fruit trees that are included in the survey are stratified as follows:</p> <ul style="list-style-type: none"> <li>➤ by NUTS 2</li> <li>➤ by Size Class of the holding</li> </ul> <p>The survey is conducted in all EU Member States using harmonized methodology and the characteristics and variables of the survey are laid down in Community legislation.</p>		
<b>3.2 Classification system</b>		
<p>The survey refers to the following species of fruit trees: apple, pear, peach, apricot, cherry, orange, lemon, small citrus fruit and olives.</p> <p>The species of fruit and the varieties, the statistical classes on the age of the trees and the statistical classes for the density of plantation are listed in Annex I to <a href="#">Regulation (EU) No1337/2011 of the European Parliament and of the Council</a>.</p> <p>The geographical classification is related to NUTS.</p>		
<b>3.3 Sector coverage</b>		
<p>Sample survey. The survey is contacted by:</p> <ul style="list-style-type: none"> <li>• Region (NUTS 2)</li> <li>• Species of fruit trees</li> <li>• Size class of the holdings.</li> </ul> <p><u>Threshold</u></p> <p>A holding under orchard trees in order to be included into the sampling frame of the survey, should cultivate more than 0.1 stremmas (1 stremma: Greek unit of land area equal to 1,000 square meters).</p>		
<b>3.4 Statistical concepts and definitions</b>		
<p>For the purposes of the survey the following definitions shall apply:</p> <ul style="list-style-type: none"> <li>• "harvest year" means the calendar year in which the harvest begins,</li> <li>• "utilised agricultural area" means the total area taken up by arable land, permanent crops and</li> </ul>		

<p>kitchen gardens used by the holdings, regardless of the type of tenure or whether it is used as common land,</p> <ul style="list-style-type: none"> <li>• “planted area” means the area of the parcels planted with a homogeneous plantation of the relevant permanent crop;</li> <li>• “permanent crop” means a crop not grown in rotation, other than permanent grassland, which occupies the soil for a long period and yields crops over several years;</li> <li>• “plantation density” means the number of plants by area planted;</li> <li>• “age of the plant” means the number of years since the planting year, which shall be considered to be year 1.</li> </ul>
<b>3.5 Statistical unit</b>
<p>The statistical unit of the survey is the agricultural or mixed holding (a unified unit both in terms of technical and economic perspective, which is run by a unified management body and produces agricultural products).</p> <p>More specifically, the surveyed unit is an agricultural holding that cultivates fruit trees.</p>
<b>3.6 Statistical population</b>
<p>The statistical population of the orchard survey is all holdings that cultivate fruit trees (target population) and is specified according to the statistical register of agricultural holdings (Farm register) of ELSTAT.</p>
<b>3.7 Reference area</b>
<p>The survey covers the whole of the country (Greece) and the survey results are published at the level of the Region (NUTS 2).</p>
<b>3.8 Time coverage</b>
<p>Orchard survey data is available for the following years: 1982, 1987, 1992, 1997, 2002, 2007, 2012 and 2017.</p> <p>In addition, for the period 1982-1997 except of the basic survey conducted every five years, a special survey was conducted every year in order to study specific features, such as new plantings and grubblings.</p> <p>The survey results are available electronically for the years 1997-2017, while for the previous years the results are available in paper form.</p>
<b>3.9 Base period</b>
<p>Not applicable.</p>

<b>4. Unit of measure</b>	<a href="#">Top</a>
<p>Number of holdings, cultivated area in stremmas (1 stremma: Greek unit of land area equal to 1,000 square meters), number of trees.</p>	

<b>5. Reference period</b>	<a href="#">Top</a>
<p>Cultivating period from 1 November of the year preceding the year of the survey until 31 October of the year when the survey is conducted.</p>	

<b>6. Institutional mandate</b>	<a href="#">Top</a>
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## 6.1 Legal acts and other agreements

The legal framework concerning the organization and operation of ELSTAT is as follows:

- **Law 3832/2010** (Government Gazette No 38, Issue A): *"Hellenic Statistical System Establishment of the Hellenic Statistical Authority (ELSTAT) as an Independent Authority"*, as amended and in force
- **Regulation on the Operation and Administration of the Hellenic Statistical Authority (ELSTAT)**, 2012, (Government Gazette No 2390, Issue B, 28-8-2012)
- **Regulation (EC) No 223/2009 of the European Parliament and of the Council**, on the European statistics (Official Journal of the European Union L 87/164).
- **Article 14 of the Law 3470/2006** (Government Gazette No 132, Issue A): *"National Export Council, tax regulations and other provisions"*.
- **Article 3, paragraph 1c, of the Law 3448/2006** (Government Gazette No 57, Issue A): *"For the further use of information coming from the public sector and the settlement of matters falling within the responsibility of the Ministry of Interior, Public Administration and Decentralization"*.
- **European Statistics Code of Practice**, adopted by the Statistical Programme Committee on 24 February 2005 and promulgated in the Commission Recommendation of 25 May 2005 on the independence, integrity and accountability of the national and Community statistical Authorities, after its revision, which was adopted on 28 September 2011 by the European Statistical System Committee.
- **Presidential Decree 226/2000** (Government Gazette No 195, Issue A): *"Organization of the General Secretariat of the National Statistical Service of Greece"*.
- **Articles 4, 12, 13, 14, 15 and 16 of the Law 2392/1996** (Government Gazette No 60, Issue A): *"Access of the General Secretariat of the National Statistical Service of Greece to administrative sources and administrative files, Statistical Confidentiality Committee, settlement of matters concerning the conduct of censuses and statistical works, as well as of matters of the General Secretariat of the National Statistical Service of Greece"*.

The Legal Framework is detailed in the following link:

<http://www.statistics.gr/en/legal-framework>

European Legislation:

- **Regulation (EU) No 1337/2011** of the European Parliament and of the Council concerning the statistics on permanent crops and repealing Council Regulation No 357/79 and Directive 2001/109/EC.

## 6.2 Data sharing

Not applicable.

## 7. Confidentiality

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### 7.1 Confidentiality - policy

The issues concerning the observance of statistical confidentiality by the Hellenic Statistical Authority (ELSTAT) are arranged by articles 7, 8 and 9 of the Law 3832/2010 as in force, by Articles 8, 10 and 11(2) of the Regulation on Statistical Obligations of the agencies of the Hellenic Statistical System and by Articles 10 and 15 of the Regulation on the Operation and Administration of ELSTAT.

More precisely:

ELSTAT disseminates the statistics in compliance with the statistical principles of the European Statistics Code of Practice and in particular with the principle of statistical confidentiality.

<http://www.statistics.gr/en/statistical-confidentiality?inheritRedirect=true>

## 7.2 Confidentiality - data treatment

- ELSTAT protects and does not disseminate data it has obtained or it has access to, which enable the direct or indirect identification of the statistical units that have provided them by the disclosure of individual information directly received for statistical purposes or indirectly supplied from administrative or other sources. ELSTAT takes all appropriate preventive measures so as to render impossible the identification of individual statistical units by technical or other means that might reasonably be used by a third party. Statistical data that could potentially enable the identification of the statistical unit are disseminated by ELSTAT if and only if:
  - a) these data have been treated, as it is specifically set out in the Regulation on Statistical Obligations of the agencies of the Hellenic Statistical System (ELSS), in such a way that their dissemination does not prejudice statistical confidentiality or
  - b) the statistical unit has given its consent, without any reservations, for the disclosure of data.
- The confidential data that are transmitted by ELSS agencies to ELSTAT are used exclusively for statistical purposes and the only persons who have the right to have access to these data are the personnel engaged in this task and appointed by an act of the President of ELSTAT.
- ELSTAT may grant researchers conducting statistical analyses for scientific purposes access to data that enable the indirect identification of the statistical units concerned. The access is granted provided the following conditions are satisfied:
  - a) an appropriate request together with a detailed research proposal in conformity with current scientific standards have been submitted;
  - b) the research proposal indicates in sufficient detail the set of data to be accessed, the methods of analyzing them, and the time needed for the research;
  - c) a contract specifying the conditions for access, the obligations of the researchers, the measures for respecting the confidentiality of statistical data and the sanctions in case of breach of these obligations has been signed by the individual researcher, by his/her institution, or by the organization commissioning the research, as the case may be, and by ELSTAT.
- Issues referring to the observance of statistical confidentiality are examined by the Statistical Confidentiality Committee (SCC) operating in ELSTAT. The responsibilities of this Committee are to make recommendations to the President of ELSTAT on:
  - the level of detail at which statistical data can be disseminated, so as the identification, either directly or indirectly, of the surveyed statistical unit is not possible;
  - the anonymization criteria for the microdata provided to users;
  - the granting to researchers access to confidential data for scientific purposes.
- The staff of ELSTAT, under any employment status, as well as the temporary survey workers who are employed for the collection of statistical data in statistical surveys conducted by ELSTAT, who acquire access by any means to confidential data, are bound by the principle of confidentiality and must use these data exclusively for the statistical purposes of ELSTAT. After the termination of their term of office, they are not allowed to use these data for any purpose.
- Violation of data confidentiality and/or statistical confidentiality by any civil servant or employee of ELSTAT constitutes the disciplinary offence of violation of duty and may be punished with the penalty of final dismissal.

- ELSTAT, by its decision, may impose a penalty amounting from ten thousand (10,000) up to two hundred thousand (200,000) euros to anyone who violates the confidentiality of data and/or statistical confidentiality. The penalty is always imposed after the hearing of the defense of the person liable for the breach, depending on the gravity and the repercussions of the violation. Any elapse constitutes an aggravating factor for the assessment of the administrative sanction.

## 8. Release policy

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### 8.1 Release calendar

The orchard survey data are disseminated as soon as available. At the end of the year, ELSTAT publishes a release calendar that includes the exact press releases' dates of all statistical work for the next year.

### 8.2 Release calendar access

The release calendar is distributed to the press and is available free of charge to anyone interested. The release calendar is also posted on ELSTAT website:

<http://www.statistics.gr/en/calendar>

### 8.3 User access

More information on the results of the survey and the methodology followed can be found on the website of ELSTAT ([www.statistics.gr](http://www.statistics.gr)) at the link «Agriculture, Livestock, Fishery» > Livestock/Crops Surveys > Crop Surveys:

<http://www.statistics.gr/en/statistics/-/publication/SPG63/->

as well as on Eurostat website:

[http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search\\_database](http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database)

## 9. Frequency of dissemination

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The dissemination is on a five year basis.

## 10. Accessibility and clarity

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### 10.1 News release

Press releases are published on the website of ELSTAT in accordance with the release calendar:

<http://www.statistics.gr/en/calendar>

### 10.2 Publications

Orchard survey data are not included in printed publications.

### 10.3 On-line database

Tabulated data are available through the website of ELSTAT (See 8.3).

#### **10.3.1 Data tables - consultations**

3,308 consultations in 2017, including consultations of metadata.

### 10.4 Micro-data access

The microdata are available on request to:

[http://www.statistics.gr/en/scientific\\_provision\\_data](http://www.statistics.gr/en/scientific_provision_data)

For confidentiality reasons, access to microdata is permitted only under strict conditions and with respect of the relevant process.

## 10.5 Other

ELSTAT website:

<http://www.statistics.gr/en/home>

For historical data:

<http://dlib.statistics.gr/portal/page/portal/ESYE/>

Users can be given data not available on the website, after submitting an application to:

<http://www.statistics.gr/en/provision-of-statistical-data>

EUROSTAT website:

[http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search\\_database](http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database)

### 10.5.1 Metadata – consultations

See 10.3.1

## 10.6 Documentation on methodology

A reference to the methodology used is available at each time period:

<http://www.statistics.gr/en/statistics/-/publication/SPG63/->

### 10.6.1 Metadata completeness – rate

Metadata are complete.

## 10.7 Quality documentation

The following quality reports are available:

- Summary quality report for users, Orchard Survey, Year 2017, ELSTAT website
- Single Integrated Metadata Structure (SIMS), Orchard Survey, Year 2017, ELSTAT website.

# 11. Quality management

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## 11.1 Quality assurance

ELSTAT aims at ensuring and continuously improving the quality of the produced statistics and maintaining user's confidence in these statistics. These goals are achieved, as described in the Quality Policy of ELSTAT, through the following principles:

- Safeguard and substantiate the operational independence of ELSTAT
- Produce timely and relevant statistics using scientifically sound methods
- Establish and maintain users' confidence in the reliability of the statistics
- Safeguard the confidence of the statistical units who provide their confidential information for the production of the statistics

These quality objectives are achieved by incorporating the guidelines listed above in all the stages of collection, production and dissemination of the statistics.

## 11.2 Quality assessment

The high quality is achieved by the following procedures:

- 1) by checking the completeness of the questionnaires;
- 2) by the conduction of quality checks for data validation during the whole process of the compilation of the data;
- 3) by the conduction of logical checks in order to identify and correct any non-sampling errors (coverage or measurement errors or data process errors, etc);
- 4) Moreover, the coefficients of variation for the estimation of the main variables is calculated, in order to assess the sampling errors.

## 12. Relevance

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### 12.1 User needs

According to ELSTAT's general policy the user needs are expressed in user conferences conducted at regular intervals: <http://www.statistics.gr/en/user-conference>

ELSTAT also records the user needs through the everyday communication between the institution and the users. ELSTAT compiles its annual programs as well as the 3-year program of the Hellenic Statistical System setting as a goal the satisfaction of users needs.

Main users of agricultural surveys data are: National Accounts Division of ELSTAT, Ministry of Rural Development and Food, Universities, Research centers, European and International Organizations.

The data are used for drawing agricultural policy at national level and the Common Agricultural Policy in the framework of the Community organization of markets and agricultural products.

In addition, the data cover national needs pertaining to the elaboration of development programs in the agricultural sector, as well as international obligation of Greece.

### 12.2 User satisfaction

In order to fulfill the need of Greek users, ELSTAT carries out a User Survey. The data from this survey are posted on the portal of ELSTAT:

<http://www.statistics.gr/en/user-satisfaction-survey>

### 12.3 Data completeness

According to the users needs and the Commission Regulation (EU) No 1337/2011 concerning the statistics on permanent crops, full completeness exists.

## 13. Accuracy and reliability

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### 13.1 Overall accuracy

The results of the survey are characterized by high accuracy, since the sampling errors for the main variables are low (falls within the limits) and for the non-sampling errors efforts are made to be identified and addressed as possible.

### 13.2 Sampling error

Sampling errors, expressed as coefficient of variation (CV), fall within the limits laid down in EU Regulations.

The sampling errors of the cultivated area estimation by type of tree, in the orchard survey 2017, are presented below:

Fruit Tree	CV (%)
Apple trees	0.76
Pear trees	0.90
Peach trees	0.53



Apricot trees	0.95
Cherry trees	0.76
Orange trees	0.64
Lemon trees	1.23
Small citrus trees	0.89
Olive trees	0.40

### 13.3 Non-sampling error

#### **a. Unit non – response**

Methods employed towards reducing the non-response rate were:

- Updating the Farm Register so as to have valid contact information;
- Contacting the interviewees prior to the actual interview to ensure their presence;
- Training of the enumerators on the personal interview procedure;
- Contacting non-respondents by telephone at a later date, and if possible completing the interview, especially for large holdings and holdings belonging to exhaustively surveyed strata.

For cases where the holder refused to provide information, the interviewer had instructions to insist and inform the holder about the Greek Statistical Law that obliges the surveyed person to provide the required statistical information.

In cases in which it was impossible to collect statistical information from certain sampling units (no response, permanent absence of the holder etc.) the original sample holding was replaced by a holding from the “additional sample” according to the relevant rules that were given to interviewers.

The non-response rates (%) by type of tree for the orchard survey 2017 are presented below:

	Non-response rate (%)
Apple trees	15.9
Pear trees	11.0
Peach trees	12.9
Apricot trees	10.4
Cherry trees	9.4
Orange trees	10.5
Lemon trees	10.6
Small citrus trees	9.1
Olive trees	13.1

#### **b. Item non - response**

There was no item non-response, because even in some very rare cases where a field in the questionnaire was not filled in, the personnel of ELSTAT contacted the farm owner in order to eliminate item non-response.

#### **13.3.1 Coverage error**

Coverage errors (or frame errors) are arisen due to existing divergences between the target population and

the frame population. The surveys design was based on data from the Farm register that was compiled based on the agricultural census 2009.

#### Over-coverage

Over-coverage stems from the fact that there are units accessible via the frame but they do not belong to the target population. In orchard survey(s), the over-coverage has to do mainly with holdings that were included in the farm register, they were selected in the sample, but they did not actually exist at the time of the survey (namely, holdings that do not operate permanently or temporarily, holdings fully turned over and merged with another holding or double entries with other holdings).

These units are detected when the survey is contacted. In this case, when feasible, the initial sample holding is replaced by a holding from the “additional sample” according to the relevant rules that are given to interviewers.

#### Under-coverage

Under-coverage refers to units missing from the sampling frame. The Sampling Frame used, was the updated Farm Register of ELSTAT as this resulted from the Agricultural Census of 2009-2010 and the relevant updating procedures hence.

The Farm Register is a statistical register generated and updated periodically during the Agricultural Censuses. Furthermore, the Farm Register is updated from administrative sources (OPEKEPE), as well as other surveys conducted by ELSTAT such as the FSS (conducted every three years) and the specialized national annual agricultural surveys.

Corrections and weighting for non-coverage is difficult, because the under-coverage rates cannot be obtained from the sample itself, but only from external sources.

##### **13.3.1.1 Over-coverage – rate**

	Over coverage rate (%)
Apple trees	10.1
Pear trees	13.1
Peach trees	9.3
Apricot trees	13.2
Cherry trees	8.5
Orange trees	8.9
Lemon trees	11.8
Small citrus trees	8.2
Olive trees	6.0

##### **13.3.1.2 Common units – proportion**

Not applicable

#### **13.3.2 Measurement error**

Measurement errors occur during the data collection and make the recorded values of variables to be different than the true ones. Their causes are commonly categorized as:

- Survey instrument: Questionnaire or other measuring instrument used for data collection may lead to recording of wrong values,
- Respondent: Respondents may, consciously or unconsciously, provide erroneous data
- Interviewer: Interviewers may influence the answers given by respondents.

Generally, measurement errors can be regarded as random errors and contributes in the increase of the variance. This extra variance (interview variance) is linked with the data collection process and also has

large effect on the accuracy of survey characteristics.

In the livestock surveys, the data collection method used was face-to-face interview completing paper questionnaires. The collection method applied ensured the high quality of the information gathered, since the interviewers assisted the respondents, and carefully checked the filled in questionnaires, before leaving the holding.

The interviewers participated in the survey were private collaborators. Before the initiation of the survey, the interviewers attended a training seminar. The scope of the seminar was to enable the interviewers to: a) fully understand the definitions of the survey characteristics in order to avoid the respondent bias, (b) correctly fill in the questionnaire, and (c) efficiently check for errors by applying logical checks.

The structure and the size of the questionnaire were designed to be user-friendly for the interviewers and the questions were formulated in a clear and simple language, using appropriate vocabulary. Additionally, documents containing useful instructions were compiled, analyzing all the questions of the questionnaire. This activity aimed at collecting fully filled in questionnaires, with no missing variables.

The support and supervision of the data collection and the data processing were decentralized in the regional offices of ELSTAT. In regional offices the staff was involved in coding, checking for the detection of measurement errors, logical checks and comparisons of the survey data with other sources of statistical information.

After performing all final checks for identifying non-sampling errors, the database was ready for the extrapolation weighting process and the plausibility checks after tabulation. These checks included comparisons of data with relevant data of previous years and of other surveys.

#### **13.3.3 Processing error**

Processing errors (e.g. coding, data entry) are detected and corrected after a series of logical checks has been implemented.

#### **13.3.4 Model assumption error**

No model is applied.

## **14. Timeliness and punctuality**

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### **14.1 Timeliness**

The results of the survey are available before the end of the year following the survey year.

### **14.2 Punctuality**

The data are produced within the deadlines specified in EU Regulation.

## **15. Coherence and comparability**

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### **15.1 Comparability - geographical**

The definitions of variables are common throughout EU Member States, thus the survey produces fully comparable results among the EU countries.

#### **15.1.1 Assymetry for mirror flows statistics – coefficient**

### **15.2 Comparability over time**

The comparability of results for different years is ensured by means of using the same data collection methods and the same definitions of the survey variables.

### 15.3 Coherence cross-domain

#### 15.3.1 Coherence – sub annual and annual statistics

Orchard survey 2017 data have been compared with FSS (Farm Structure Survey) 2016 data. The frame for both FSS and Orchard Survey is the statistical farm register maintained by ELSTAT. This register has resulted from the agricultural census (2010) and is updated on the basis of the crop and livestock surveys and the FSS.

Some differences recorded in the results of the two surveys can be attributed to:

- The different sampling design of the two surveys. Namely, the significance of the specific characteristics in the FSS sampling procedure is rather small; thus the extrapolation factors are quite different between the two surveys. Therefore even if the raw data for the same sample unit are the same, the resulting values might be quite different.
- FSS 2016 has covered a number of holdings coming from Payment and Control Agency for Guidance and Guarantee Community Aid - OPEKEPE (IACS), which have not been covered by the Orchard Survey 2017, since at the sampling stage of the orchard survey (September 2017) ELSTAT farm register was not yet updated on the basis of FSS 2016 results.

#### 15.3.2 Coherence – National Accounts

Since the survey is conducted every five years, the results can be used by National Accounts only to cross-check the annual data sources used.

### 15.4 Coherence - internal

All correlating variables are coherent with each other.

## 16. Cost and burden

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The cost of the survey is approximately 50,000 euro. The cost mostly pertains to the remuneration of external survey workers. No financial burden on the owners of the agricultural holdings that are surveyed. The questionnaires are designed to keep respondent burden low and to ensure good quality of the information collected. The total length of interviewing is in average 18 minutes for the complete fulfillment of the survey questionnaire.

## 17. Data revision

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### 17.1 Revision policy

The released data have undergone several checks and are not subject to revisions.

The surveys follow the revision policy of ELSTAT:

<http://www.statistics.gr/documents/20181/a49dca9a-dacf-4b52-b5df-b156216cb354>

### 17.2 Revision practice

ELSTAT revision policy is followed.

## 18. Statistical processing

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## 18.1 Source data

The survey on orchards compiles statistics on area and number of fruit trees (apple trees, pear trees, peach trees, apricot trees, cherry trees, orange trees, lemon trees, small citrus fruit trees and olive trees). An individual survey is conducted for each species of the above trees and the corresponding data are tabulated and released.

The survey is a sample survey and the sampling method used is the single stratified random sampling. The unit of the survey is the agricultural holding under the specific kind of fruit tree that is surveyed. The agricultural holdings under fruit trees that are included in the survey are stratified as follows:

- by NUTS 2
- by size class of the holding. In each region (NUTS 2), the holdings are stratified into L = 10 size classes (L=13 size classes in the case of olive trees), according to their size, determined by their area under the specific kind of fruit trees in the updated farm register, as follows:

Size class	Area under fruit trees except olive trees (in stremmas)	Area under olive trees (in stremmas)
1	0.1 - 1.9	0.1 - 1.9
2	2.0 - 3.9	2.0 - 3.9
3	4.0 - 5.9	4.0 - 5.9
4	6.0 - 9.9	6.0 - 9.9
5	10.0 - 19.9	10.0 - 19.9
6	20.0 - 29.9	20.0 - 29.9
7	30.0 - 49.9	30.0 - 49.9
8	50.0 - 69.9	50.0 - 69.9
9	70.0 - 99.9	70.0 - 99.9
10	100.0 +	100.0 – 149.9
11		150.0 – 219.9
12		220.0 – 349.9
13		350.0 +

Holdings with trees belonging to the last size class – 10<sup>th</sup> for fruit trees except olive trees and 13<sup>th</sup> for olive trees - are surveyed exhaustively.

The sampling fraction for the agricultural holdings by kind of fruit trees in the orchard survey 2017, is presented in the following table:

Fruit Tree	Sampling fraction (%)
Apple trees	4.6
Pear trees	6.8
Peach trees	4.4
Apricot trees	5.5
Cherry trees	4.0
Orange trees	1.9
Lemon trees	2.7
Small citrus trees	3.5
Olive trees	0.4

## 18.2 Frequency of data collection

Every five years.

## 18.3 Data collection

The data are collected by means of personal interviews with the owners of the holdings, which fall within the survey sample, on the basis of a specially designed questionnaire.

The designing of the questionnaire ensures that it satisfies both national and Community needs for statistical information. It covers all variables stipulated in EU Regulations.

The questionnaire was designed taking into account the needs of main users (Eurostat, Ministry of Rural Development and Food) as well as the needs of National Accounts Division of ELSTAT.

Data are collected by well-trained survey workers, thus ensuring correctness and efficiency of data collection.

## 18.4 Data validation

The data are validated by means of logical checks. During data processing any errors are identified and fully corrected. Special emphasis is placed on the errors that may have major impact on the results. After identifying the errors, they are further checked and cross-checked in cooperation with the owner of the holding in order to confirm that it is an error or it is just about an unusual price. At the same time, data are checked for completeness, accuracy and consistency of the correlating variables. Data processing and validation of data are carried out either during or after data entry.

The data are compared with the data of previous years and if major inconsistencies are identified, further checks are carried out.

## 18.5 Data compilation

After the conduct of automated checks, completeness and coherence checks and cross-checks, and with the use of appropriate imputation methods, the data of the sample are extrapolated for the total number of holdings.

More specifically, the survey characteristics are estimated as follows:

### ***a. Symbols***

If index  $i$  is the selection order of an agricultural holding with fruit trees from the sampling frame in the stratum  $h$  (stratum=crossing of stratification criteria) and if  $y$  is one of the survey characteristics, the following can be defined:

$y_{hi}$  : is the value of the survey characteristic  $y$  of the agricultural holding with fruit trees in the order  $i$  and in the stratum  $h$ ,

$Y_h$  : the sum of the values of the characteristic  $y$  of all agricultural holdings with fruit trees covered by the survey and belonging to stratum  $h$ ,

$Y$  : the sum of the values of the characteristic  $y$  of all agricultural holdings with fruit trees covered by the survey. That is:

$$Y = \sum_h Y_h$$

where:

$N_h$  : is the number of all agricultural holdings with fruit trees covered by the survey and belonging to stratum  $h$

$n_h$  : is the initial sample size in the stratum  $h$

$m_h$  : is the number of respondent units in the stratum  $h$

$r_h$  : is the response rate for stratum  $h$  ( $r_h = \frac{m_h}{n_h}$ )

$w_{hi}$  : the extrapolation factor of the agricultural holding with fruit trees of order  $i$  belonging to stratum  $h$ .

That is:

$$w_{hi} = 1 / (\text{Probability of the unit } i \text{ to be selected in stratum } h) \cdot r_h^{-1} = \frac{N_h}{n_h} \cdot \frac{n_h}{m_h} = \frac{N_h}{m_h}$$

### **b. Estimation process**

The estimation of magnitudes  $Y_h$  and  $Y$  is based on the following formulas:

$$\hat{Y}_h = \sum_{i=1}^{n_h} w_{hi} \cdot y_{hi}$$

$$\hat{Y} = \sum_h \hat{Y}_h = \sum_h \sum_i w_{hi} \cdot y_{hi}$$

The estimations of the variances for  $\hat{Y}_h$  and  $\hat{Y}$  are calculated using the following relations:

$$V(\hat{Y}_h) = \frac{N_h(N_h - m_h)}{m_h} S_h^2 \quad \text{where: } S_h^2 = \frac{1}{m_h - 1} \left[ \sum_{i=1}^{m_h} y_{hi}^2 - \frac{(\sum_{i=1}^{m_h} y_{hi})^2}{m_h} \right]$$

$$V(\hat{Y}) = \sum_h V(\hat{Y}_h)$$

The coefficient of variation (%) of the  $\hat{Y}$  is given by the following relation:

$$CV(\hat{Y}) = \frac{\sqrt{V(\hat{Y})}}{\hat{Y}} \cdot 100$$

### **18.5.1 Imputation – rate**

In case of difficulties (no response, permanent absence of the holder etc.) the original sample holding was replaced by a holding from the “additional sample” according to the relevant rules that were given to interviewers. When this was not feasible, to address the problem of non response a limited number of imputations was applied.

	Imputation rate (%)
Apple trees	1.9
Pear trees	2.2
Peach trees	3.1
Apricot trees	2.4
Cherry trees	1.2
Orange trees	0.9
Lemon trees	2.4
Small citrus trees	2.1
Olive trees	0.4

<b>18.6 Adjustment</b>
<b><u>18.6.1 Seasonal adjustment</u></b>

<b>19. Comment</b>

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