

# TEMPLATE

## Output factsheet: Tools

Version 1

Project index number and acronym	CE614 - SUSTREE
Lead partner	Federal Research and Training Centre for Forests, natural Hazards and Landscape - BFW
Output number and title	O.T2.1 - Database with harmonized access to national registers
Responsible partner (PP name and number)	Bavarian Office for Forest Seeding and Planting - PP9
Project website	<a href="https://www.interreg-central.eu/Content.Node/SUSTREE.html">https://www.interreg-central.eu/Content.Node/SUSTREE.html</a>
Delivery date	31.07.2019

### Summary description of the key features of the tool (developed and/or implemented)

The tool developed by SUSTREE consists of a harmonized database which contains information on the national registers of each participating country (Austria, Czech Republic, Germany, Hungary, Poland and Slovakia). It is available in PostgreSQL and csv format. The data was collected directly from the responsible of the national register of each country. To guarantee harmonization, a csv-guide was compiled which describes the format and accuracy of the data to be delivered. The database is accompanied by a documentation handbook, which gives insides into special cases and peculiarities of the data in each country.

The database is linked to the SUSTREE App SusSelect. This allows identifying the seed stands which are within an optimal seed source. Accordingly, a practitioner will know which seed stands are located within an optimal source for a region of interest, enabling him to get the right material.

Within the work package, the tool was accompanied by an analysis of climate regimes of the existing provenance regions (A.T.2.2). This analysis revealed that the regions of provenance are not a good representation of the climate, which is essential when finding optimal seed sources adapted to climate change. This information and the tool were presented to seed legislation authorities and policy makers at national and European level in the form of presentations and policy briefs (A.T2.1 and A.T2.4), since a harmonization of legislation is indispensable to allow the tool to be used transnationally. The information session peaked at the end of the project period with an information workshop for policy makers in Brussels.

## NUTS region(s) where the tool has been developed and/or implemented (relevant NUTS level)

The data for A.T2.3 was collected from Austria, Czech Republic, Germany, Hungary, Poland and Slovakia: (NUTS2)

AT11, AT12, AT13, AT21, AT22, AT31, AT32, AT33, AT34

CZ01, CZ02, CZ03, CZ04, CZ05, CZ06, CZ07

DE21, DE22, DE23, DE24, DE25, DE26, DE27

HU11, HU12, HU21, HU22, HU23, HU31, HU32, HU33

PL21, PL22, PL41, PL42, PL43PL51, PL52, PL61, PL62, PL63, PL71, PL72, PL81, PL82, PL84, PL91, PL92

SK01, SK02, SK03, SK04

For A.T2.2, additional regions were covered: France, Italy, Slovenia and Switzerland.

## Expected impact and benefits of the tool for the concerned territories and target groups

The national registers are mostly difficult to access outside of the respective country. The information contained in them varies from country to country. Additionally, they are written in the respective country language, making it difficult to be used internationally. The harmonized database of national registers developed within the SUSTREE project enables transnational access to all the relevant information. Apart from the data of the national lists, we included additional information which is not available internationally, like the last date of seed harvest. The database is held in English, for everyone to be understood. Additionally, the special cases existent in every country are explained in the documentation of the database. This information helps the user to understand the peculiarities of every country and harmonization criteria. Since the database is linked to the SUSTREE app SusSelect, a forest manager will be able to find the optimal seed source for a region of interest.

## Sustainability of the tool and its transferability to other territories and stakeholders

The harmonized database, csv-guide and documentation handbook are stored in the SUSTREE Cloud managed by the Thünen Institute, guaranteeing its existence beyond the project lifetime. The database can easily be supplemented with data from other (Central-) European countries. Using the csv-guide provided, the responsible of the national list of each country will know how to harmonize the data.

## Lessons learned from the development/implementation process of the tool and added value of transnational cooperation

The transnational cooperation allowed getting access to data which was kept nationally. Although there are other efforts trying to achieve this (see e.g. FOREMATIS), working directly with the responsible of the national register of each country allowed to get additional data not available in the national lists. Additionally, these data was up-to-date, which is often difficult to get when going through several instances.

One of the most important things when collecting data from different sources is to have a clear description of the data requested (e.g. csv-guide). Even with this, some additional requests were necessary to clarify differences in data format, accuracy and definition. As mentioned above, thanks to the transnational cooperation, these requests could be done with the responsible persons directly, which saved a lot of time.

## References to relevant deliverables and web-links If applicable, pictures or images to be provided as annex

### Annex 1:

Access to the harmonized database:

- <https://gdi.thuenen.de/sustree/owncloud/index.php/s/myjdigGonYSDSyk>
- *password: sustree*

### Annex 2:

The file within the cloud (harmonized\_test.backup) can be opened with any PostgreSQL program like e.g. pgAdmin (see CE614\_SUSTREE\_D.T2.3.1\_db\_readme). Alternatively, the updated database can be used in e.g. Excel using the csv-file provided (CE614\_SUSTREE\_D.T2.3.1\_harmonized\_registers\_20190416.csv).

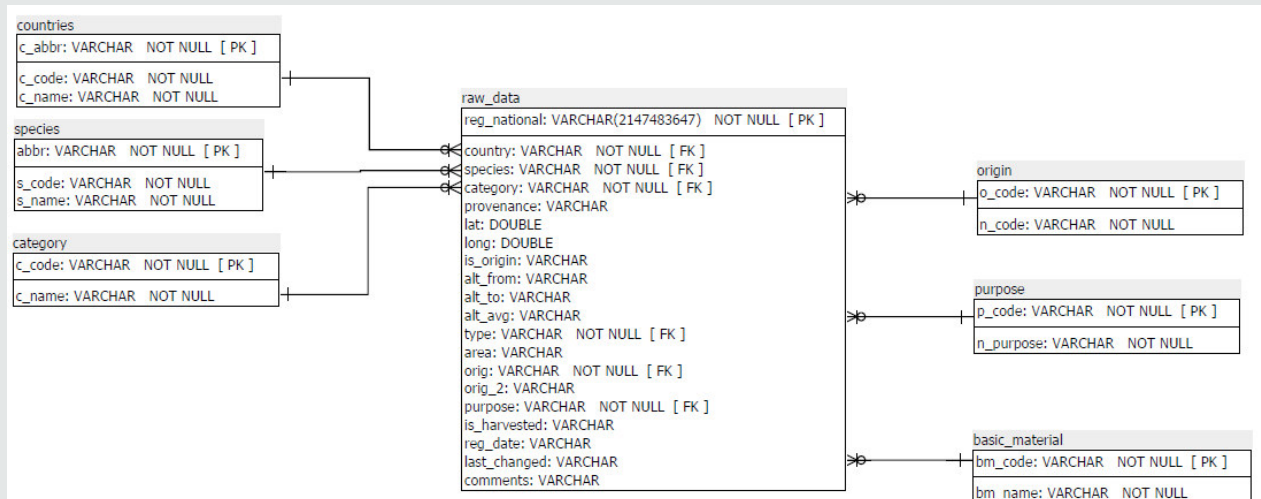


Figure 1: Overview of the structure of the database.

### Annex 3:

A pdf document describing the harmonized registers database and in the cloud a csv-guide is provided (CE614\_SUSTREE\_D.T2.3.1\_sustree\_csv\_guide\_version3\_1\_25.07.2017)

### Annex 4:

Description of the data, peculiarities of each country and the database (D.T2.3.2)



## Interreg Project CE614

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### D.T2.3.1 Establishing a common database

## National Lists CSV guide (v.3)

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*"Interreg CENTRAL EUROPE Project to improve conservation and sustainable utilization of forest tree diversity in climate change"*

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### 3 General Information

Although national regulations on forest reproductive material in all Central European countries follow the Council Directive 1999/105/EG a link between national registers is missing. The SUSTREE database for forest reproductive material is created to combine national registers following the CD 1999/105/EG with the assistance of newly developed provenance delineation models. Therefore data of National Lists of SUSTREE participating countries for the species *Quercus robur*, *Quercus petraea*, *Picea abies*, *Pinus sylvestris*, *Larix decidua*, *Fagus sylvatica* and additionally *Abies alba* are collected and merged into one database. The column description on this guide mainly follows the 'Guidelines for filling in the different columns of the national list of basic material' of the CD 1999/105/EG.

### 4 File Format

This file contains information needed to submit data in a semicolon separated csv-file to the ASP. Please make sure all columns are included and in the given sequence in your document, even if they are empty.

The data types in use in the submitted csv files are listed below:

- **Integer:** Numeric value with no decimal.
- **Boolean:** Boolean value (represented as a 1 for true and a 0 for false).
- **Code:** Code value, chosen in a list of valid codes given under the type of the data.
- **String:** alphanumeric value for free text. Value must not contain special characters like the carriage return or the semi-colon.
- **Date:** Date value. The date format is YYYY-MM-DD.

"NULL" values or "NA" values should be left as empty cells.

### 5 Column description

#### 5.1 Column A – Member State

**Description:** This column contains the EU Member State abbreviation in capitals.

**Type:** String

**Condition:** Mandatory

Country	Abbreviation
Poland	PL
Germany	DE
Czech Republic	CZ
Slovakia	SK
Austria	AT
Hungary	HU

Table 1: Country abbreviations for column A

## 5.2 Column B – Tree species

**Description:** Column B is the tree species abbreviation of the seven SUSTREE species.

**Type:** String

**Condition:** Mandatory

Tree Species	Tree Species Abbreviation
<i>Abies alba</i>	aal
<i>Fagus sylvatica</i>	fsy
<i>Larix decidua</i>	lde
<i>Picea abies</i>	pab
<i>Pinus sylvestris</i>	psy
<i>Quercus petraea</i>	qpe
<i>Quercus robur</i>	qro

Table 2: Species abbreviations for column B

## 5.3 Column C – Category

**Description:** Column C is the category code listed in Table 3.

**Type:** Code

**Condition:** Mandatory

Code	Label
1	Source identified
2	Selected
3	Qualified
4	Tested (Genetically evaluated/comparatively tested/provisionally tested to be indicated in Column R)

Table 3: Category code for column C

## 5.4 Column D1 – Region of provenance

**Description:** National code or name of the region of provenance.

**Type:** String

**Condition:** Optional

### 5.4.1 Example

Austria: Innentalpen - Kontinentale Kernzone, mittelmontan

Germany: 840 27 (840: *Picea abies*, 27: Alpenvorland)

Czech Republic: 36

## 5.5 Column D2 – National register reference of basic material

**Description:** Register reference according to Council Directive 1999/105/EC. This column is mandatory for all basic material.

**Type:** String

**Condition:** Mandatory

### 5.5.1 Example

Slovakia: 20412PO-598

Germany: 91800030022

Austria: Ta 1(1.1/mm)

## 5.6 Column E/F – Latitude/Longitude

**Description:** For latitude and longitude, provide the data with the highest precision possible, (i.e. higher than degrees and minutes as requested in the national list). If you have the high-precision data in another coordinate system, provide this. If data are available as polygons, coordinates of the central point should be provided. In case of differing origin and location data please provide the coordinates of the origin of the seeds in column E/F and state the actual location data in column R.

**Type:** String

**Condition:** Mandatory

## 5.7 Column G – Location or origin data

**Description:** This column gives the information if the coordinates in column E/F belong to the actual location or the origin of the seeds. 0 for actual location and 1 for origin coordinates. This is of special interest for seed orchards, to see if the coordinates show the location of the orchard or of the provenance. In the case of seed stands, the actual location and the origin are the same and this can be set to 0.

**Type:** Boolean

**Condition:** Mandatory

## 5.8 Column H1 – Altitude from

**Description:** Altitude in **meters** above sea level. This is the exact altitude or the lower value in case that a range is available.

**Type:** Integer

**Condition:** Mandatory if no altitude average is available

## 5.9 Column H2 – Altitude to

**Description:** This is the altitude in **meters** above sea level. It needs to be filled in if a range is available. If no range is available set this to NULL.

**Type:** Integer

**Condition:** Optional

## 5.10 Column H3 – Altitude average

**Description:** This is the mean altitude in **meters** above sea level. It needs to be filled in if no range or exact altitude is available.

**Type:** Integer

**Condition:** Optional. If no exact altitude (Altitude from) is available, this is mandatory

## 5.11 Column I – Type of basic material

**Description:** Basic material describes the source from which the reproductive material is collected following the codes given in Table 4.

**Type:** Code

**Condition:** Mandatory



Code	Label
1	Seed source
2	Stand
3	Seed Orchard
4	Parents of family(ies)
5	Clone
6	Clonal mixture

Table 4: Basic material codes for column I

### 5.12 Column J – Area

**Description:** For mixed stands, the effective area of the species in question in **hectare**, i.e. the percentage of the total area that corresponds to the abundance/cover of the species. Where this is not appropriate the number of trees followed by ‘T’.

**Type:** String

**Condition:** Mandatory

### 5.13 Column K – Origin

**Description:** Origin describes the autochthony of a species following the codes in Table 5.

**Type:** Code

**Condition:** Mandatory

Code	Label
1	Autochthonous/Indigenous
2	Non-autochthonous/Non-indigenous
3	Unknown

Table 5: Origin codes for column K

### 5.14 Column L – Origin\_2

**Description:** Describes the origin of basic material stated in column K as ‘non-autochthonous/non-indigenous’.

**Type:** String

**Condition:** Optional

### 5.15 Column M – Purpose

**Description:** This column describes if the forest is multifunctional (1) or for another specific purpose (2) which then should be indicated in column R.

**Type:** Code

**Condition:** Mandatory

Code	Label
1	Multifunctional forest
2	Other specific purpose

Table 6: Purpose codes for column M

### 5.16 Column N – Harvest

**Description:** This column gives the information if the stand is being harvested (1) or not (0).

**Type:** Boolean

**Condition:** Mandatory

### 5.17 Column O – Date of registration

**Description:** This column gives the date when the stand has been registered for the first time in the national register. Please use the format YYYY-MM-DD.

**Type:** Date

**Condition:** Mandatory

### 5.18 Column P – Last change of basic data

**Description:** This column gives the date when the information for the entry has been updated the last time in the national register. Please use the format YYYY-MM-DD.

**Type:** Date

**Condition:** Mandatory

### 5.19 Column Q – Remarks

**Description:** This column is for further information of column C, E/F and M.

**Type:** String

**Condition:** Optional



## Interreg Project CE614

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### D.T2.3.2 Documentation of the harmonized register

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*"Interreg CENTRAL EUROPE Project to improve conservation and sustainable utilization of forest tree diversity in climate change"*

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## 3 General Information

Although national regulations on forest reproductive material in all Central European countries follow the Council Directive 1999/105/EG a link between national registers is missing. The SUSTREE database for forest reproductive material is created to combine national registers following the CD 1999/105/EG with the assistance of newly developed provenance delineation models. Therefore data of National Lists of SUSTREE participating countries (Austria, Czech Republic, Germany, Hungary, Poland and Slovakia) for the species *Quercus robur*, *Quercus petraea*, *Picea abies*, *Pinus sylvestris*, *Larix decidua*, *Fagus sylvatica* and *Abies alba* are collected and merged into one database. The column description on this guide mainly follows the ‘Guidelines for filling in the different columns of the national list of basic material’ of the CD 1999/105/EG.

The appendix provides an additional explanation for special cases that differ from the specifications in the csv-guide. The appendix is built-up as follows: every country ordered alphabetically by name is presented separately, highlighting the differences/specialties/things to consider ordered by column. Additionally, the exact definition of autochthonous and indigenous for every country is presented, since some countries make a distinction between these two categories. However, in this database we have merged both categories into only one. At the end an overview table is presented, where all the special cases are marked.

## 4 File Format

This file contains information needed to submit data in a semicolon separated csv-file to the ASP. Please make sure all columns are included and in the given sequence in your document, even if they are empty.

The data types in use in the submitted csv files are listed below:

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- **Date:** Date value. The date format is YYYY-MM-DD.

“NULL” values or “NA” values should be left as empty cells.

## 5 Column description

### 5.1 Column A – Member State

**Description:** This column contains the EU Member State abbreviation in capitals.

**Type:** String

**Condition:** Mandatory

Country	Abbreviation
Poland	PL
Germany	DE
Czech Republic	CZ
Slovakia	SK
Austria	AT
Hungary	HU

Table 1: Country abbreviations for column A

### 5.2 Column B – Tree species

**Description:** Column B is the tree species abbreviation of the seven SUSTREE species.

**Type:** String

**Condition:** Mandatory

Tree Species	Tree Species Abbreviation
<i>Abies alba</i>	aal
<i>Fagus sylvatica</i>	fsy
<i>Larix decidua</i>	lde
<i>Picea abies</i>	pab
<i>Pinus sylvestris</i>	psy
<i>Quercus petraea</i>	qpe
<i>Quercus robur</i>	qro

Table 2: Species abbreviations for column B

### 5.3 Column C – Category

**Description:** Column C is the category code listed in Table 3.

**Type:** Code

**Condition:** Mandatory

Code	Label
1	Source identified
2	Selected
3	Qualified
4	Tested (Genetically evaluated / comparatively tested / provisionally tested to be indicated in Column R)

Table 3: Category code for column C

## 5.4 Column D1 – Region of provenance

**Description:** National code or name of the region of provenance.

**Type:** String

**Condition:** Optional

### 5.4.1 Example

Austria: Innenalpen - Kontinentale Kernzone, mittelmontan

Germany: 840 27 (840: *Picea abies*, 27: Alpenvorland)

Czech Republic: 36

## 5.5 Column D2 – National register reference of basic material

**Description:** Register reference according to Council Directive 1999/105/EC. This column is mandatory for all basic material.

**Type:** String

**Condition:** Mandatory

### 5.5.1 Example

Slovakia: 20412PO-598

Germany: 91800030022

Austria: Ta 1(1.1/mm)

## 5.6 Column E/F – Latitude/Longitude

**Description:** For latitude and longitude, provide the data with the highest precision possible, (i.e. higher than degrees and minutes as requested in the national list). If you have the high-precision data in another coordinate system, provide this. If data are available as polygons, coordinates of the central point should be provided. In case of differing origin and location data please provide the coordinates of the origin of the seeds in column E/F and state the actual location data in column R.

**Type:** String

**Condition:** Mandatory

## 5.7 Column G – Location or origin data

**Description:** This column gives the information if the coordinates in column E/F belong to the actual location or the origin of the seeds. 0 for actual location and 1 for origin coordinates. This is of special interest for seed orchards, to see if the coordinates show the location of the orchard or of the provenance. In the case of seed stands, the actual location and the origin are the same and this can be set to 0.

**Type:** Boolean

**Condition:** Mandatory

## 5.8 Column H1 – Altitude from

**Description:** Altitude in **meters** above sea level. This is the exact altitude or the lower value in case that a range is available.

**Type:** Integer

**Condition:** Mandatory if no altitude average is available

## 5.9 Column H2 – Altitude to

**Description:** This is the altitude in **meters** above sea level. It needs to be filled in if a range is available. If no range is available set this to NULL.

**Type:** Integer

**Condition:** Optional

## 5.10 Column H3 – Altitude average

**Description:** This is the mean altitude in **meters** above sea level. It needs to be filled in if no range or exact altitude is available.

**Type:** Integer

**Condition:** Optional. If no exact altitude (Altitude from) is available, this is mandatory

## 5.11 Column I – Type of basic material

**Description:** Basic material describes the source from which the reproductive material is collected following the codes given in Table 4.

**Type:** Code

**Condition:** Mandatory

Code	Label
1	Seed source
2	Stand
3	Seed Orchard
4	Parents of family(ies)
5	Clone
6	Clonal mixture

Table 4: Basic material codes for column I

## 5.12 Column J – Area

**Description:** For mixed stands, the effective area of the species in question in **hectare**, i.e. the percentage of the total area that corresponds to the abundance/cover of the species. Where this is not appropriate the number of trees followed by 'T'.

**Type:** String

**Condition:** Mandatory

## 5.13 Column K – Origin

**Description:** Origin describes the autochthony of a species following the codes in Table 5.

**Type:** Code

**Condition:** Mandatory

Code	Label
1	Autochthonous/Indigenous
2	Non-autochthonous/Non-indigenous
3	Unknown

Table 5: Origin codes for column K



### 5.14 Column L – Origin\_2

**Description:** Describes the origin of basic material stated in column K as ‘non-autochthonous/non-indigenous’.

**Type:** String

**Condition:** Optional

### 5.15 Column M – Purpose

**Description:** This column describes if the forest is multifunctional (1) or for another specific purpose (2) which then should be indicated in column R.

**Type:** Code

**Condition:** Mandatory

Code	Label
1	Multifunctional forest
2	Other specific purpose

Table 6: Purpose codes for column M

### 5.16 Column N – Harvest

**Description:** This column gives the information if the stand is being harvested (1) or not (0).

**Type:** Boolean

**Condition:** Mandatory

### 5.17 Column O – Date of registration

**Description:** This column gives the date when the stand has been registered for the first time in the national register. Please use the format YYYY-MM-DD.

**Type:** Date

**Condition:** Mandatory

### 5.18 Column P – Last change of basic data

**Description:** This column gives the date when the information for the entry has been updated the last time in the national register. Please use the format YYYY-MM-DD.

**Type:** Date

**Condition:** Mandatory

### 5.19 Column Q – Remarks

**Description:** This column is for further information of column C, E/F and M.

**Type:** String

**Condition:** Optional

## 6 Appendix

### 6.1 Specifications per country

#### 6.1.1 Austria (AT)

- Column C: Category – Only “selected” available
- Column E/F: Latitude/Longitude – Coordinates are collected in Gauss-Krüger system and converted to WGS in degrees and minutes. Therefore, closely located stands of the same species may overlap in their coordinates. In mixed stands, different species may be collected; therefore, stands of different species may have the exact same coordinates.
- Column I: Type of basic material – Only “stands” available
- Column K: Origin – Only autochthonous material available
- Column P: Last change of basic data – Austria does not record the last change of basic data in their register.

#### Definition of autochthony:

The definition of autochthony follows the OECD Seed and Plant Scheme: Autochthonous stand is one which has been continuously regenerated by natural regeneration. The stand may be regenerated artificially from reproductive material collected in the same stand or autochthonous stands within the close proximity.

#### 6.1.2 Czech Republic (CZ)

- Column E/F: Latitude/Longitude – The coordinates provided have a precision of only one decimal place and represent the mid-point of the natural region in which the stand is located. Therefore, for the Check Republic there are in total only 41 coordinate points and most stands overlap.
- Column J: Area – The area of two stands has not been recorded in the field and is therefore not available in the database.
- Column K: Origin – In the original register, it was differentiated between autochthonous and indigenous stands. For the SUSTREE harmonized database, these two categories were merged into one.
- Column L: Origin\_2 – For seven stands which are non-autochthonous/non-indigenous, the origin is unknown and therefore not stated.
- Column O: Date of registration – 92 stands in the register have been approved long time ago, and the date not registered; therefore, no information on registration date is available.

Definition of autochthony:

Forest stand or seed source coming from natural regeneration; it can be artificially regenerated when using the local seed harvest from the very same or neighboring stand/seed source.

Definition of indigeneity

The same as autochthonous, but established artificially within the same provenance.

### 6.1.3 Germany (DE)

The data from Germany contains only data from Bavaria, since every federal state in Germany manages his own national register and it is problematic to access the data, especially high-precision location data and additional parameters not included in the national lists (“Date of registration”, “Last change of basic data” and “Harvest”).

Definition of autochthony:

A stand or seed source, continuously regenerated by natural regeneration, or in exceptional cases a stand established by artificial regeneration with seeds from the same or closely neighboring, autochthonous stands.

Definition of indigeneity

An autochthonous stand or seed source, or a stand or seed source established through artificial regeneration with seeds from the same provenance region.

### 6.1.4 Hungary (HU)

The data from Hungary only contains the data from the National List, without the additional parameters “Date of registration”, “Last change of basic data” and “Harvest”.

Column E/F: Latitude/Longitude – The original coordinates of the seed stands are mostly spanning polygons, resulting in many cases with latitude and longitude ranges instead of exact values. Therefore, the centroids of these polygons were calculated and uploaded to the SUSTREE database.

Column O: Harvest – Not available.

Column P: Date of registration – Not available.

Column Q: Last change of basic data – Not available.

Definition of autochthony:

Not provided

### 6.1.5 Poland (PL)

Column D1: Region of provenance – The seed orchard with the National Register Number MP/3/41268/05 is located directly on the border between two provenance regions. Therefore, this stand is associated to both provenance regions (So30, So32).

Column H: Altitude – For 78 entries the altitude was not recorded in the field, so “Altitude from” and “Altitude average” are both missing in the database for these stands.

Column P: Last change of basic data – For 174 entries, the last change of basic data is older than the date of registration. The last change of basic data is firstly set to the date when the request of registration is done. The date of registration is the date when the registration is effective. If no change has been made after registration, the last change of basic data may be older than the date of registration. This is the case for 174 entries in the database.

Definition of autochthony:

A tree (stand) that grows not farther as it could naturally by natural regeneration, i.e. it is the same as the original tree stand or the directly neighboring area.

Definition of indigeneity

The tree (stand) grows in the same provenance region as the original tree stand. For both only one generation is taken into account. Therefore, autochthonous and indigenous stands exist also for e.g. North American species.

#### 6.1.6 Slovakia (SK)

Column D2: National register reference of basic material – In the original register, each register number may be composed of several stands or in other words, several stands may have the same register number. These stands are located within the same provenance region, the same altitudinal region and in immediate vicinity to each other. Master certificates are issued with the register number but without the exact specification of the stand, since these may be seen as sliver polygons of the same stand. To avoid discrepancies, in the SUSTREE database we included only the biggest stand for each register number, which best represents the stand conglomerate.

Column P: Last change of basic data – For 474 entries the last change of basic data is older than the date of registration. This is because the data may have been actualized some time before the official decision of registration was done, i.e. the registration process may have taken longer than the data recording process.

Definition of autochthony:

An autochthonous stand or seed source is one which normally has been continuously regenerated by natural regeneration. The stand or seed source may be regenerated artificially from reproductive material collected in the same stand or seed source or from autochthonous stands or seed sources in the close proximity.

Definition of indigeneity

It is the same as autochthonous, but may be additionally used for stands or seed sources raised artificially from seeds, whose origin is situated within the same region of provenance.

### 6.2 Overview table

	AT	CZ	DE	HU	PL	SK
Column A						
Column B						
Column C						
Column D1						
Column D2						
Column E						
Column F						
Column G						
Column H(1,2,3)						
Column I						
Column J						
Column K						
Column L						
Column M						
Column N						
Column O						
Column P						
Column Q						

Table 7: Overview of special cases for every country  
 Fields filled with red color represent specialties concerning the data within the respective column of each country.