

# **LUCAS 2012** **(Land Use / Cover Area Frame Survey)**

Technical reference document  
C-3 Land use and Land cover  
Classification (revised)

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DOCUMENT CHANGE RECORD			
ISSUE	DATE	CHANGE AUTHORITY / AUTHOR	REASON FOR CHANGE AND AFFECTED SECTIONS
3.5	08/02/2012	Eurostat / E4.LUCAS	Update after Training Workshops and Coordination meeting with Eurostat 03.02.2012
1.1	03/01/2013	Eurostat / E4.LUCAS	Update review at the LUCAS2012 Campaign final.
1.2	04/10/2013	Eurostat / E4.LUCAS	Clarifications and corrections related to the basic unit of observation and extended window of observation across the document. Removal of references for U364 - Nature reserves.
4.1	31/01/2025	GOPA Luxembourg S.à.r.l. Eurostat / E4.LUCAS	Updated photos, explanations and copyright information. <u>Addition:</u> B75 Other fruit tree and berries (Part II)

# Scope and Introduction

This document is part of a series of reference documents defining the framework of the Land Use / Cover Area frame statistical Survey (LUCAS). The LUCAS reference documents are continuously improved and adapted taking into account the experience from the implemented surveys and the requirements of the LUCAS data & information users.

This document gives detailed information about the land cover and land use classification system of the LUCAS survey. Information about the implementation of the survey in general and of all other parameters and the way how they should be surveyed can be found in reference document C-1 Instructions for Surveyors.

The LUCAS Survey classification has separate classification systems for land cover (LUCAS SU LC) and land use (LUCAS SU LU). Land cover is the physical cover of the Earth's surface and land use is the socio-economic function of the land.

The same classification is applied in all EU countries in the LUCAS survey. It also allows comparisons in time. It is as much as possible compatible with the existing land cover/use systems (e.g. FAO, NACE and Farm Structure Survey).

## Land cover

Land cover has eight main categories, which are indicated by letter:

- A. Artificial land
- B. Cropland
- C. Woodland
- D. Shrubland
- E. Grassland
- F. Bare land
- G. Water
- H. Wetlands

Every main category has subclasses, which are indicated by the combination of the letter of the category and digits. The most detailed class is to be used during the survey. Altogether, there are 84 classes. Each class is described by the following characteristics:

### Land Cover

- code and title of the class
- short definition of the class
- inclusions ("This class includes"),
- exclusions ("This class excludes"),
- the principle observation rule
- and the "Links with land use".

## Land use

Land use is the description of the same areas in terms of their socio-economic function. For rare and exceptional combinations, please consult Annex 4 & 5 (Matrix of combinations) of C-1 Instructions for Surveyors. Land use has 14 main categories. It has altogether 33 classes, which are indicated by the combination of the letter "U" and three digits. Each class is described by the following characteristics:

- code and title
- short definition of the class
- inclusions ("This class includes") according to the NACE classification<sup>1</sup> if it is possible,
- and exclusions ("This class excludes") with the correct land use code.

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<sup>1</sup> Statistical Classification of Economic Activities in the European Community, Rev. 1.1 (2002) (NACE Rev. 1.1)

# LUCAS survey classification comparison LUCAS 2009 - LUCAS 2012

The LUCAS 2012 Survey classification is not fundamentally different from the 2009 survey classification. Main changes are the following:

- Energy crops (e.g. Miscanthus) are assigned to B84 Permanent Industrial Crops
- In the class B43 Fresh vegetables all roots-bulbs-tubers (carrots [*Daucus carota*], garlic [*Allium sativum*], onions [*Allium cepa*], radishes [*Raphanus sativus*], red beet [*Beta vulgaris* var. *conditiva*], shallots [*Allium ascalonicum*], turnips [*Brassica rapa* var. *rapifera*]) were moved to B23 Other root crops
- The forest types according to the EUNIS classification on forests (<http://eunis.eea.europa.eu/about.jsp>) remains to be assigned under the condition that the woodland exceeds 0.5ha in size and 20m in width.
- Introduction of new LC classes:
  - Spruce (C21) and pine (C22) dominated coniferous and other coniferous (C23) woodland;
  - This implies introduction of spruce (C31) and pine (C32) dominated as well as other woodland (C33).
- Introduction of new LC classes under F00 Bare land and lichens/moss:
  - F10 Rocks, F20 Sands, F30 Lichens and moss & F40 Other bare soil.
- Suppression of classes:
  - U150 Hunting has been suppressed (moved to special status in field form)
  - U364 Nature reserve has been suppressed (moved to special status in field form).

## Land cover and land use: General explications

In general, the establishment of nomenclatures follows some principles:

- Spatial consistency: the data shall be comparable over different regions and applicable to different regions. It means that the nomenclature is applicable to any region, knowing that there will be classes without any entry because not all classes exist in all regions.
- Temporal consistency: Observation of stocks allows change detection over time, e.g. construction site of a road is a construction site and not yet a road.
- Compatibility with existing systems (e.g. FSS, NACE, FAO). This means that when defining classes, existing nomenclatures shall be taken into account. It does not mean that any class definition from another nomenclature can be taken one-to-one. There is a trade-off to be done.
- Independency from observation method. The observation method shall not interfere in the definition of the nomenclature. On the contrary, the observation method shall be chosen to enable best the data collection according to the chosen nomenclature. Of course, there is always a trade-off to be made due to time/budget constraints. This can imply the collection of data at different detail resolution level of the nomenclature, if the data collection method does not allow retrieving the level of detail expected. For example remote sensing is hard to be used for the LUCAS classification at the 3rd level of detail.

- No gaps and no overlaps:
  - Exhaustive list of categories: no category “unclassified”;
  - Each object belongs to only one category.

It means that for any type of land cover or land use, the nomenclature needs to provide a class. This implies that there shall be a possibility to include new classes, for example at a more detailed level. Hierarchical nomenclatures provide for that.

- Hierarchy of the nomenclature:

Another principle applied at the LUCAS nomenclature is that of a hierarchy in the classification system. This allows collecting information at different levels of detail. If there is no information available for a certain category at a 3rd or 4th level of the classification, there is still the possibility to extrapolate data on the upper level.

## Specific to the LUCAS classification

In LUCAS, the concept of land is extended to inland water areas (lakes, rivers, coastal areas: estuaries, lagoons). The land concept does not embrace uses below the earth’s surface (mine deposits, subways, mushroom beds, ground levels of buildings).

In the LUCAS classification, there is a clear distinction between land COVER and land USE.

**LAND COVER = physical cover (“material”) observed at the earth’s surface**

**LAND USE = socio-economic function of the observed earth’s surface**

This separation enables a greater flexibility of the classification, i.e. it allows combining different LC and LU classes to retrieve specific information. For example: sealed track within arable land that is mainly used by the farmer to access the fields can be retrieved by combining the LC A22 with the LU U111.

Detailed definitions of the categories for both land use and land cover are to be found in the following chapters.

## The basic unit and the extended window of observation

Of course, applying a classification in a defined framework of a data collection survey requires specifying a number of rules.

As the LUCAS Survey is a point survey, the size of the point in the real world needs to be defined.

The “point” (or basic unit of observation) is in fact a circle with a radius of 1,5m, corresponding to an identifiable point on an orthophoto.

As we have not only homogeneous classes that we would like to observe, for example forests (forest definition requires observing a certain area to define the crown coverage or canopy of the trees, orchards may consist in more than one tree species etc.) the LUCAS observation framework also specifies an observation area, the “extended window of observation” which is the area defined by a 20m radius around the point, for specified classes, indicated in this document.

There are many more rules defined for the data collection survey, which are detailed in the separate LUCAS Reference Document C-1 Instructions for Surveyors.

To aid in the identification of plant species, a Plant Identification Guide (LUCAS Reference Document C-5) was produced.

# Land cover Classification (LUCAS SU LC)

## A00 Artificial land

Areas characterized by an artificial and often impervious cover of constructions and pavement.

### A10 Built-up areas

Roofed constructions built for permanent purposes which can be entered by persons.

### A11 Buildings with one to three floors

Roofed constructions with one to three floors or less than 10 meters of height in total.

This class includes:

- Single-family houses
- Mobile homes
- Summer cottages
- Industrial or cultural buildings or stores of less than 10m of height
- Agricultural buildings of less than 10m of height
- Market halls
- Temporary constructions
- Visitor stations or centres of less than 10 m of height

Principles of observation:

- Basic observation unit

Links with Land Use:

A11 > U111	Small agricultural buildings, farms, stables, poultry yards
A11 > U120	Small buildings used for forestry purpose
A11 > U130	Small buildings used for fishery production
A11 > U140	Small buildings used for mining and quarrying purposes
A11 > U210	Small buildings used for energy production purposes
A11 > U22x	Small industrial plants and buildings
A11 > U31x	Small buildings used for transport purposes
A11 > U32x	Small buildings used for waste and water treatment
A11 > U330	Small buildings in construction
A11 > U340	Small buildings used for commercial purposes
A11 > U350	Small buildings used for community services
A11 > U36x	Small buildings used for recreation or nature protection
A11 > U370	Individual residential houses
A11 > U410	Abandoned buildings

**A12 Buildings with more than three floors**

Roofed constructions with more than three floors or more than 10 meters of height in total.

This class includes:

- Industrial buildings, stores, technical infrastructures of more than 10m of height
- Residential or cultural buildings of more than 10m of height
- Agricultural buildings of more than 10m of height
- Visitor centres of more than 10 m of height

Principles of observation:

- Basic observation unit

Links with Land Use:

A12 > U111	Tall agricultural buildings, farms, stables, poultry yards
A12 > U120	Tall buildings used for forestry purpose
A12 > U130	Tall buildings used for fishery production
A12 > U140	Tall buildings used for mining and quarrying purposes
A12 > U210	Tall buildings used for energy production purposes
A12 > U22x	Tall industrial plants and buildings, coking plants, blast furnaces
A12 > U31x	Tall buildings used for transport purposes: Railway stations, hangars, airport buildings
A12 > U32x	Tall buildings used for waste and water treatment
A12 > U330	Tall buildings in construction
A12 > U340	Tall buildings used for commercial purposes: garages, supermarkets, banks, stores, hotels, restaurants, offices
A12 > U350	Tall buildings used for community services: Administrative buildings, parliaments, ministries, town halls, law courts, fire brigade and police barracks, military buildings, hospitals, clinics, sanatoria, orphans, schools, universities, churches, monasteries
A12 > U36x	Tall buildings used for recreational or nature protection purposes: e.g. Libraries, Museums, Cinemas, Theatres, Stadiums, Sport halls, Visitor Centers
A12 > U370	Collective residential houses
A12 > U410	Abandoned buildings

**A13 Greenhouses**

Installations of glass, plastic or any other material which is translucent but impervious to water. If crops are identified they should be registered using the corresponding land cover category (double codification greenhouse + crop).

This class includes:

- All greenhouses, used or not

This class excludes

- Crops covered by protection fabric without raised structures

Principles of observation:

- Basic observation unit.

## Links with Land Use:

A13 > U111	Greenhouses used for agricultural production
A13 > U113	Kitchen garden
A13 > U120	Forestry
A13 > U317	Greenhouses used for storage (caravans)
A13 > U330	Construction
A13 > U340	Greenhouses used for commercial purposes
A13 > U350	Community services
A13 > U361-3	Greenhouses of botanical gardens
A13 > U370	Greenhouses attached to residential use
A13 > U410	Abandoned greenhouses

**A20 Artificial non-built up areas**

Non built-up areas characterized by an artificial and/or impervious cover of hard artificial materials, concrete, gravel.

**A21 Non built-up area features**

Non built-up area features characterized by an artificial and/or impervious cover of hard artificial materials, concrete, gravel.

## This class includes:

- Yards, farmyards
- Cemeteries
- Car parking areas, artificialised areas of railway station precincts and aerodromes
- Quays, loading and unloading zones
- Dry docks
- Open dump sites

## This class excludes:

- Bare land (F00)

## Principles of observation:

- Basic observation unit

## Links with Land Use:

A21 > U111	Farmyards and parking areas attached to agricultural buildings
A21 > U120	Yards, parking areas attached to buildings used for forestry purpose
A21 > U130	Yards and parking areas attached to buildings used for fishery purpose
A21 > U140	Yards, parking areas, storage areas used for mining, quarrying
A21 > U210	Yards, parking areas, storage areas on industrial sites for energy production
A21 > U22x	Yards, parking areas, storage areas on industrial sites
A21 > U31x	Yards, parking areas, storage areas attached to railway stations, airports, motorways,

A21 > U32x	Yards, parking areas, storage areas attached to installations of waste and water treatment
A21 > U330	Yards, parking areas, storage areas attached to installations for construction
A21 > U340	Parking areas of supermarkets
A21 > U350	Parking areas of administrations; cemeteries
A21 > U36x	Parking areas of leisure and recreation activities, tennis courts
A21 > U370	Yards and parking areas of residential zones
A21 > U410	Abandoned non built-up area features

### A22 Non built-up linear features

Non built-up linear features characterized by an artificial and/or impervious cover of hard artificial material, concrete or gravel (only linear features of more than 3m of diameter of width are to be registered).

This class includes:

- Roads, railways, runways, bridges (width >3m)

This class excludes:

- Linear features less than 3m of width (not registered as land cover)

Principles of observation:

- Basic observation unit.

Links with Land Use:

A22 > U111	Roads used for agricultural purposes and accesses to farms
A22 > U120	Roads used for forestry purpose
A21 > U130	Roads used for fishery purpose
A22 > U140	Roads or railways used for specific mining, quarrying purposes
A22 > U210	Roads or railways used for specific energy production purposes
A22 > U22x	Roads or railways used for specific industrial purposes
A22 > U31x	Roads, railways, airport runways
A22 > U32x	Roads used for specific purposes of waste and water treatment
A21 > U330	Roads used for specific construction purpose
A22 > U340	Roads used for commercial, financial and business activities
A22 > U350	Roads used for specific purposes of community services; dykes
A22 > U36x	Roads used for specific purposes of recreation and leisure, riding tracks, car racing circuits
A22 > U370	Roads used for specific access of residential areas
A22 > U410	Abandoned non built-up linear area features

## B00 Cropland

Areas where crops are planted and cultivated.

## B10 Cereals

For detailed instructions on the identification of cereals: see C-5 "Plant Identification Guide"

### B11 Common wheat

Common wheat (*Triticum aestivum*) including Spelt (*Triticum spelta*)

Areas where common wheat (*Triticum aestivum*) is planted, whether as spring or as winter wheat.

This class includes:

- Spelt (*Triticum spelta*)

Principles of observation:

- Basic observation unit

Links with Land Use:

B11 > U111 Agricultural production

B11 > U112 Fallow land

B11 > U113 Kitchen garden

B11 > U210 Energy production

B11 > U361 Amenities, museums, leisure



Source: © Hitchcock, A.S.  
(rev. A. Chase). USDA, NRCS - 1950 *Triticum aestivum*  
L. @USDA-NRCS PLANTS Database  
Figure 11.1  
Common Wheat Illustration



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Figure 11.2  
Early-stage identification: seeds / auricles



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Figure 11.3  
Hairy and blunt auricles



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Figure 11.4  
Wheat without awns



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Figure 11.5  
Wheat with awns strutting apart



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Figure 11.6  
Seed/grains of Common wheat



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Figure 11.7  
Wheat with awns / grains

## B12 Durum wheat

Areas where durum wheat (*Triticum durum*) is planted.

This class includes:

- Emmer (*Triticum turgidum*)
- Einkorn (*Triticum monococcum*)

Principles of observation:

- Basic observation unit

Links with Land Use:

B12 > U111 Agricultural production

B12 > U112 Fallow land

B12 > U113 Kitchen garden

B12 > U210 Energy production

B12 > U361 Amenities, museums, leisure



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Figure 12.1  
Long awns / stalk typical / auricles



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Figure 12.2  
Mature long awns often dark / stalk typical



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Figure 12.3  
Young spikes / stalk typical / long awns



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Figure 12.4  
Crop maturing



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Figure 12.5  
Awns often darkening during maturation



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Figure 12.6  
Varieties with black long awns



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Figure 12.7  
Harvest ready durum field



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Figure 12.8  
Seeds / grains of Durum Wheat



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Figure 12.9  
Seeds / grains of *Triticum turgidum*



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Figure 12.10  
*Triticum turgidum*

## B13 Barley

Areas where barley (*Hordeum vulgare*) is planted.

Principles of observation:

- Basic observation unit

Links with Land Use:

B13 > U111 Agricultural production

B13 > U112 Fallow land

B13 > U113 Kitchen garden

B13 > U210 Energy production

B13 > U361 Amenities, museums, leisure



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*Hordeum vulgare* L. @ USDA-NRCS PLANTS Database

Figure 13.1

Barley Illustration



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Figure 13.2

Auricles long & hairless / Ligules long



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Figure 13.3

Young plant identification: Auricles / Ligules



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Figure 13.4

Two-row barley



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Figure 13.5

Four-row barley



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Figure 13.6

Barley has very long awns



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Figure 13.7

Seeds / grains of barley



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Figure 13.8

Identification with grains



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Figure 13.9

Barley graining phase



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Figure 13.10

Crop residues with two-row barley spikes



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Figure 13.11

Barley field close to harvest

## B14 Rye

Areas where rye (*Secale cereale*) is planted.

Principles of observation:

- Basic observation unit

Links with Land Use:

B14 > U111 Agricultural production

B14 > U112 Fallow land

B14 > U113 Kitchen garden

B14 > U210 Energy production

B14 > U361 Amenities, museum, leisure



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Figure 14.2  
Seedling identification with seeds



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Figure 14.3  
Auricles very short & hairless / ligule short



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Figure 14.4  
Typical spikes and auricles hardly visible



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*Secale cereale* L. @ USDA-NRCS PLANTS Database  
Figure 14.1  
Rye Illustration



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Figure 14.5  
Typical slim spike



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Figure 14.6  
Rye grappy crop field



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Figure 14.7  
Rye field view



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Figure 14.8  
Seeds/grains of Rye



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Figure 14.9  
Rye in graining phase



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Figure 14.10  
Rye field close to harvest



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Figure 14.11  
Crop residues / spike and grains

## B15 Oats

Areas where oats (*Avena sativa*) is planted.

Principles of observation

- Basic observation unit

Links with Land Use:

B15 > U111 Agricultural production

B15 > U112 Fallow land

B15 > U113 Kitchen garden

B15 > U210 Energy production

B15 > U361 Amenities, museum, leisure



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Figure 15.2

Seedling identification with seeds



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Figure 15.3

Oats auricles absent / ligule medium length



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Figure 15.4

Early-stage identification via absent auricles



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Avena sativa L. @ USDA-NRCS PLANTS Database

Figure 15.1

Oats Illustration



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Figure 15.5

Oats typical shed



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Figure 15.6

Side view of gappy oats field



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Figure 15.7

Maturation



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Figure 15.8

Seeds/grains of Oats



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Figure 15.9

Identification with grains



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Figure 15.10

Harvest ready



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Figure 15.11

Crop residues

## B16 Maize

Areas where maize (*Zea mays*) is planted.

Principles of observation:

- Basic observation unit

Links with Land Use:

B16 > U111 Agricultural production

B16 > U112 Fallow land

B16 > U113 Kitchen garden

B16 > U210 Energy production

B16 > U361 Amenities, museum, leisure



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Figure 16.2

Red seed dressing of kernel



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Figure 16.3

First leaves / root development



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Figure 16.4

Early development / field view



© Hitchcock, A.S. (rev. A. Chase). USDA, NRCS - 1950 *Zea mays* L. @ USDA-NRCS PLANTS Database

Figure 16.1

Maize Illustration



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Figure 16.5

Leaf development



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Figure 16.6

Wide row spacing of maize field



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Figure 16.7

Male flowers of Maize



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Figure 16.8

Maize ear abloom



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Figure 16.9

Maturation



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Figure 16.10

Maize ear at the end of maturity



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Figure 16.11

Typical crop residues

## B17 Rice

Areas where rice (*Oryza sativa*) is planted.

Principles of observation:

- Basic observation unit

Links with Land Use:

B17 > U111 Agricultural production

B17 > U112 Fallow land

B17 > U113 Kitchen garden

B17 > U210 Energy production

B17 > U361 Amenities, museum, leisure



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*Oryza sativa* L. @ USDA-NRCS PLANTS Database

Figure 17.1  
Rice Illustration



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Figure 17.2  
Seeds



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Figure 17.3

First leaves / root development



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Figure 17.4

Early development / field view



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Figure 17.5

Finished tillering phase



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LUCAS 2009

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Figure 17.6  
Flooded rice field / early development stage



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Figure 17.7  
Flooded rice field with associated lentils



© European Union, CC BY 4.0  
Figure 17.8  
Maturation

**B18 Triticale**

Areas where triticale (*Triticosecale*) is planted.

Principles of observation:

- Basic observation unit

Links with Land Use

B18 > U111 Agricultural production

B18 > U112 Fallow land

B18 > U113 Kitchen garden

B18 > U210 Energy production

B18 > U361 Amenities, museum, leisure



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Figure 18.1  
Triticale spikes



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Figure 18.2  
Triticale entire plant



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Figure 18.3  
Early development / identification with auricles



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Figure 18.4  
Triticale spike development



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Figure 18.5  
Triticale field view



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Figure 18.6  
Triticale grains similar to common wheat



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Figure 18.7  
Harvest ready

## B19 Other Cereals (Part I)

Areas where other cereals are planted. The surveyor must note the cereal species in the LC plant species field.

This class includes:

- B19a - Sorghum (*Sorghum bicolor*)
  - B19b - Buckwheat (*Fagopyrum esculentum* Mill.)
  - B19c - Common, golden or proso millet (*Panicum miliaceum* L.)
  - B19d - Canary grass (*Phalaris canariensis* L.)
  - B19e - Corn-cob-mix (*Zea mays* L. harvested as humid grain)
  - B19f - Quinoa (*Chenopodium quinoa*)
  - B19g - Fonio (*Digitaria* spp.)
  - B19h - Other cereals not specified elsewhere, e.g.
    - Barnyard or Japanese millet (*Echinochloa frumentacea*);
    - Ragi, finger or African millet (*Eleusine coracana*);
    - Teff (*Eragrostis abyssinica*);
    - Koda or ditch millet (*Paspalum scrobiculatum*);
    - Pearl or cattail millet (*Pennisetum glaucum*);
- Foxtail millet (*Setaria italica*)

This class excludes:

- Common wheat (B11),
- Durum wheat (B12),
- Barley (B13),
- Rye (B14),
- Oats (B15),
- Maize (B16),
- Rice (B17),
- Mixed cereals for fodder (B54).

Principles of observation:

- Basic observation unit

Links with Land Use:

- B19 > U111 Agricultural production
- B19 > U112 Fallow land
- B19 > U113 Kitchen garden
- B19 > U210 Energy production
- B19 > U361 Amenities, museum, leisure



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Figure 19.1  
Buckwheat seeds



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Figure 19.2  
Buckwheat



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Figure 19.3

Buckwheat / blooming field



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Figure 19.4  
Buckwheat / maturation



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Figure 19.5  
Buckwheat Seeds



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Figure 19.6

Buckwheat / characteristic leaves



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Figure 19.7  
Canary grass



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Figure 19.8  
Sorghum



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Figure 19.9  
Sorghum

**B19 Other Cereals (Part II)**

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Figure 19.10

Sorghum



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Figure 19.11

Sorghum leaves (similar to Maize)



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Figure 19.12

Sorghum panicle development



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Figure 19.13

Sorghum panicles terminal



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Figure 19.14

Sorghum mature



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Figure 19.15

Sorghum bicolor / seeds



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Figure 19.16

Sorghum / Typical crop residues



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Figure 19.17

Quinoa

## B20 Root Crops

### B21 Potatoes



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Figure 21.1



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Figure 21.2

Potato first development stages



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Figure 21.3

Early growing stage / First leaves



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Figure 21.4

Typical leaf form (development)



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Figure 21.5

Early vegetation stage (side view)



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Figure 21.6

Potato field



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Figure 21.7

White blossom



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Figure 21.8

Red blossom



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Figure 21.9

Vegetation decaying



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Figure 21.10

Harvest ready potato field



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Figure 21.11

Crop residues (potatoes turning green > sunlight)

Areas where potatoes (*Solanum tuberosum*) are planted.

This class includes:

- Early potatoes and seeds

Principles of observation:

- Basic observation unit

Links with Land Use:

B21 > U111 Agricultural production

B21 > U112 Fallow land

B21 > U113 Kitchen garden

B21 > U210 Energy production

B21 > U361 Amenities, museum, leisure

## B22 Sugar Beet



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Figure 22.1

Sugar Beet



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Figure 22.2

Blue encapsulated seeds / real seed in the centre



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Figure 22.3

First leaves / Long cotyledons visible



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Figure 22.4

Early growing stage



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Figure 22.5

Typical leaf form (early development)



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Figure 22.6

Characteristic leaf form



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Figure 22.7

Sugar beet field (mostly cultivated on fertile soil)



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Figure 22.8

Beet development (early stage)



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Figure 22.9

Beet top not visible (sometime)



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Figure 22.10

Only beet top visible (sometimes)

Areas where sugar beet (*Beta vulgaris* var. *altissima*) is planted.

This class excludes:

- Fodder beat (B23)

Principles of observation:

- Basic observation unit

Links with Land Use:

- B22 > U111 Agricultural production
- B22 > U112 Fallow land
- B22 > U113 Kitchen garden
- B22 > U210 Energy production
- B22 > U361 Amenities, museum, leisure

## B23 Other Root Crops (Part I)

Areas where other root crops are planted. The surveyor must note the root crop species in the LC plant species field.

This class includes:

- B23a - Fodder beet (roots of *Beta vulgaris*)
- B23b - Fodder kale (*Brassica oleracea* L.)
- B23c - Swedes (*Brassica napus* L. var. *napobrassica* (L.) Robb.)
- B23d - Carrots (roots of *Daucus carota* L.)
- B23e - Turnips (roots of *Brassica napus* L.)
- B23f - Jerusalem artichoke (*Helianthus tuberosus* L.)
- B23g - Sweet potatoes (*Ipomoea batatas* (L.) Lam.)
- B23h - Fodder parsnips (*Pastinaca sativa* L.)
- B23i - Yam (*Discorea* sp.)
- B23j - Manioc, Cassava (*Manihot esculenta* Crantz, syn. *M. utilissima*)
- B23k - Horseradish (*Cochlearia armoracia*)
- B23l - Tuberous chervil (*Chaerophyllum bulbosum*)
- B23m - Other tropical tubers, e.g. Taros (*Colocasia esculenta*),
- B23n - Other root or tubers crops not specified elsewhere, e.g.
  - Garlic (*Allium sativum*),
  - Onions (*Allium cepa*),
  - Radishes (*Raphanus sativus*),
  - Red beet (*Beta vulgaris* var. *conditiva*),
  - Shallots (*Allium ascalonicum*),
  - Turnips (*Brassica rapa* var. *rapifera*)
  - Mangolds and beet (*Beta vulgaris* var. *alba*)

This class excludes:

- Potatoes (B21),
- Sugar beet (B22).

Principles of observation:

- Basic observation unit

Links with Land Use:

B23 > U111 Agricultural production

B23 > U112 Fallow land

B23 > U113 Kitchen garden

B23 > U210 Energy production

B23 > U361 Amenities, museum, leisure



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Figure 23.1  
Onions



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Figure 23.2  
Onions



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Figure 23.3  
Carrots



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Figure 23.4  
Carrots first leaves



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Figure 23.5  
Carrots field



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Figure 23.6  
Radishes



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Figure 23.7  
Radishes



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Figure 23.8  
Garlic



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Figure 23.9  
Garlic

**B23 Other Root Crops (Part II)**

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Figure 23.10

Red beet



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Figure 23.11

Red beet typical leaves



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Figure 23.12

Red beet

© 2013, Holger Langmaier (HolgersFotografie),  
Pixabay LicenseFigure 23.13  
Cabbage turnip

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Figure 23.14

Swedes



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Figure 23.15

Tuberous chervil (*Chaerophyllum bulbosum*)

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Figure 23.16

Topinambur (*Helianthus tuberosus*)

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Figure 23.17

Shallots (*Allium ascalonicum*)

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Figure 23.18

Cabbage turnip (red)



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Figure 23.19

Parsnips (*Pastinaca sativa*)

## B30 Non-Permanent Industrial Crops

### B31 Sunflower



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Figure 31.1

Flowering sunflower field



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Figure 31.2

Seeds



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Figure 31.3

Seeding with blue seed dressing of kernel



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Figure 31.4

First leaves / Cotyledons



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Figure 31.5

Early growing stage (cotyledons still visible)



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Figure 31.6

Early growing stage (side view)



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Figure 31.7

Leave development



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Figure 31.8

Bud of Sunflower



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Figure 31.9

Development of the bud



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Figure 31.10

Maturation

Areas where sunflower (*Helianthus annuus*) is planted.

Principles of observation:

- Basic observation unit

Links with Land Use:

- B31 > U111 Agricultural production
- B31 > U112 Fallow land
- B31 > U113 Kitchen garden
- B31 > U210 Energy production
- B31 > U361 Amenities, museum, leisure

## B32 Rape and turnip rape

Areas where rape (*Brassica napus* var. *oleifera*) and turnip rape (*Brassica rapa*) are planted.

This class includes:

- Turnip rape and other rape species

This class excludes:

- Garden turnips (B43)

Principles of observation:

- Basic observation unit

Links with Land Use:

B32 > U111 Agricultural production

B32 > U112 Fallow land

B32 > U113 Kitchen garden

B32 > U210 Energy production

B23 > U361 Amenities, museum, leisure



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Figure 32.2

Seedling with typical broad cotyledons



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Figure 32.3

First leaves / Cotyledons



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Figure 32.4

Early growing stage (side view)



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Figure 32.5

Leaf development



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Figure 32.6

Blossom



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Figure 32.7

Plant with blossom and leaves



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Figure 32.1

Blooming rape field



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Figure 32.8

Maturation



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Figure 32.9

Harvest ready

## B33 Soya

Areas where soya beans (*Glycine soja*) are planted.

Principles of observation:

- Basic observation unit

Links with Land Use:

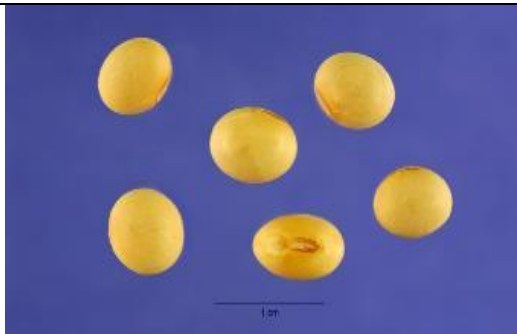
B33 > U111 Agricultural production

B33 > U112 Fallow land

B33 > U113 Kitchen garden

B33 > U210 Energy production

B33 > U361 Amenities, museum, leisure



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Figure 33.1

Seeds of Soya beans are white, yellow or dark brown



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Figure 33.2

Seeds of soya beans / early vegetation stage



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Figure 33.3

First leaves / Cotyledons



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Figure 33.4

Early growing stage



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Figure 33.5

Early vegetation stage / soya field rows



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Figure 33.6

Soya field



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Figure 33.7

Blossom



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Figure 33.8

Maturation



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Figure 33.9

Typical crop residues in the background

## B34 Cotton

Areas where cotton (*Gossypium* spp.) is planted.

Principles of observation:

- Basic observation unit

Links with Land Use:

B34 > U111 Agricultural production

B34 > U112 Fallow land

B34 > U113 Kitchen garden

B34 > U210 Energy production

B34 > U361 Amenities, museum, leisure



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Figure 34.2

Big characteristic cotyledons



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Figure 34.3

Big characteristic cotyledons (Top view / field)



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Figure 34.4

Early growing stage (side view)



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Figure 34.1

Cotton / Harvest ready



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Figure 34.5

Early vegetation stage / different leaf forms



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Figure 34.6

Typical leaf form (development)



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Figure 34.7

Cotton field



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Figure 34.8

White blossom



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Figure 34.9

Red blossom



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Figure 34.10

Maturation of cotton capsules



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Figure 34.11

Harvest ready / crop residues in the background

## B35 Other fibre and oleaginous crops (Part I)

Areas where other fibre and oleaginous crops are planted. The surveyor must note the fibre and oleaginous crop species in the LC plant species field.

This class includes:

- B35a - Flax (*Linum usitatissimum* straw)
- B35b - Hemp (*Cannabis sativa* straw)
- B35c - Poppy seeds (*Papaver somniferum* L.)
- B35d - Mustard seeds (*Sinapis alba* L., *Sinapis nigra*)
- B35e - Safflower (*Carthamus tinctorius* L.)
- B35f - Earth almond (*Cyperus esculentus* L.)
- B35g - Sesame (*Sesamum indicum*)
- B35h - Jute (*Corchorus* spp.)
- B35i - Ramie (*Boehmeria nivea*)
- B35j - Sisal (*Agave sisalana*)
- B35k - Kenaf (*Hibiscus cannabinus*)
- B35l - Bird rape (*Brassica rapa* var. *silvestris*)
- B35m - Castor beans (*Ricinus communis*)
- B35n - Other fibre and oleaginous crops not elsewhere specified.

This class excludes:

- Sunflower (B31),
- Rape seeds (B32),
- Soya (B33),
- Cotton (B34),
- Olive groves (B81).

Principles of observation:

- Basic observation unit

Links with Land Use:

- B35 > U111 Agricultural production
- B35 > U112 Fallow land
- B35 > U113 Kitchen garden
- B35 > U210 Energy production
- B35 > U361 Amenities, museum, leisure



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Figure 35.1  
Hemp (typical leave)



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Figure 35.2  
Hemp plant



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Figure 35.3  
Blooming Hemp field



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Figure 35.4  
Flax/Linseeds



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Figure 35.5  
Flax rows in early vegetation period



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Figure 35.6  
Flax flowering



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Figure 35.7  
Flax maturing



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Figure 35.8  
Poppy capsules and seeds



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Figure 35.9  
Poppy flower and capsule

**B35 Other fibre and oleaginous crops (Part II)**

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Figure 35.10  
Poppy field



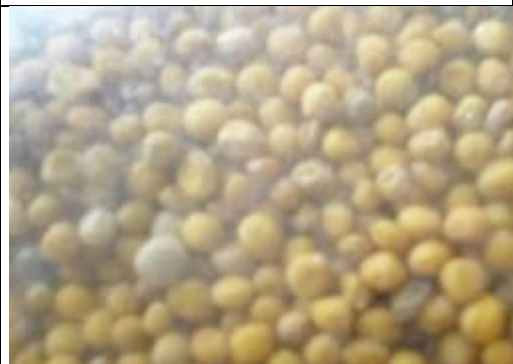
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Figure 35.11  
Poppy blooming in different colours



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Figure 35.12  
Flowering Poppy field



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Figure 35.13  
Bud of Poppy seeds before bloom



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Figure 35.14  
Mustard seeds



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Figure 35.15  
Mustard early vegetation stage



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Figure 35.16  
Mustard



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Figure 35.17  
Mustard



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Figure 35.18  
Mustard














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Figure 35.19  
Ramie



© 2005, Patrick-br, CC BY-SA 3.0  
Figure 35.20  
Sisal

## B36 Tobacco

			
	<p>© European Union, CC BY 4.0 Figure 36.2 First leaves</p>	<p>© European Union, CC BY 4.0 Figure 36.3 Tobacco field / early growing stage</p>	<p>© European Union, CC BY 4.0 Figure 36.4 Typical leave form (development)</p>
			
<p>© European Union, CC BY 4.0 Figure 36.1 Flower (lower and middle leaves harvested)</p>	<p>© European Union, CC BY 4.0 Figure 36.5 Tobacco field close to first harvest period</p>	<p>© European Union, CC BY 4.0 Figure 36.6 Tobacco planation – lower leaves harvested</p>	<p>© European Union, CC BY 4.0 Figure 36.7 Flower (lower leaves harvested)</p>
<p>Areas where tobacco (<i>Nicotiana tabacum</i>) is planted.</p> <p>Principles of observation:</p> <ul style="list-style-type: none"><li>– Basic observation unit</li></ul> <p>Links with Land Use:</p> <p>B36 &gt; U111 Agricultural production</p> <p>B36 &gt; U112 Fallow land</p> <p>B36 &gt; U113 Kitchen garden</p> <p>B36 &gt; U361 Amenities, museum, leisure</p>			
	<p>© European Union, CC BY 4.0 Figure 36.8 Tobacco field partially harvested</p>	<p>© European Union, CC BY 4.0 Figure 36.9 Tobacco plant with typical leaves</p>	<p>© European Union, CC BY 4.0 Figure 36.10 Tobacco field</p>

## B37 Other Non-permanent industrial crops (Part I)

Areas where other non-permanent industrial crops are planted. The surveyor must note the non-permanent industrial crop species in the LC plant species field.

This class includes:

- B37a - Chicory roots (*Cichorium intybus* var. *sativum*)
- B37b - Hops (*Humulus lupulus*)
- B37c - Medicinal plants
  - Common balm (*Melissa officinalis*),
  - Common lungwort (*Pulmonaria officinalis*),
  - Common mallow (*Malva silvestris*),
  - Marshmallow (*Althaea officinalis*),
  - Poison hemlock (*Conium maculatum*),
  - Pot marigold (*Calendula officinalis*),
  - Purple foxglove (*Digitalis purpurea*),
  - Soapwort (*Saponaria officinalis*),
  - Sweet chamomile (*Chamaemelum nobile*),
  - Valerian (*Valeriana officinalis*),
  - Vervain (*Verbena officinalis*)
- B37d - Spices and aromatic plants
- Anise (*Pimpinella anisum*),
- Badain, star anise (*Illicium verum*),
- Basil (*Ocimum basilicum*),
- Coriander (*Coriandrum sativum*),
- Dill (*Anethum graveolens*),
- Tarragon (*Artemisia dracunculus*),
- Fennel (*Foeniculum vulgare*),
- Garden chervil (*Anthriscus cerefolium*),
- Cumin (*Cuminum cyminum*),
- Marjoram (*Origanum sp.*),
- Parsley (*Petroselinum crispum*),
- Rosemary (*Rosmarinus officinalis*),
- Spearmint (*Mentha sp.*),
- Sorrel (*Rumex acetosa*),
- Sage (*Salvia officinalis*),
- Thyme (*Thymus vulgaris*);
- B37e - Sugar cane (*Saccharum officinarum*)
- B37f - Other non-permanent industrial crops not specified elsewhere.

This class excludes:

- Tobacco (B36),
- Permanent industrial crops (B84)

Principles of observation:

- Basic observation unit

Links with Land Use:

- B37 > U111 Agricultural production
- B37 > U112 Fallow land
- B37 > U113 Kitchen garden
- B37 > U210 Energy production
- B37 > U361 Amenities, museum, leisure



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Figure 37.1

Hops



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Figure 37.2

Hops plantations fast growing



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Figure 37.3

Hops plantation up to 5m



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Figure 37.4

Hops strobiles and typical leaves



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Figure 37.5

Hops strobiles maturing



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Figure 37.6

Thistle



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Figure 37.7

Thistle



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Figure 37.8

Thistle



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Figure 37.9  
Sage



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Figure 37.10  
Parsley with leaves and flowers



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Figure 37.11  
Parsley



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Figure 37.12  
Sugar cane



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Figure 37.13  
Chicory

## B40 Dry Pulses, Vegetables and Flowers

### B41 Dry pulses (Part I)

Areas where dry pulses are planted.

This class includes:

- Dry peas, garden pea (*Pisum sativum*),
- Chickpea, garbanzo bean (*Cicer arietinum*),
- Cowpea (*Vigna sinensis*; *Dolichos sinensis*),
- Pigeon pea (*Cajanus cajan*)
- Field peas (*Pisum arvense*),
- Field beans (*Vicia faba* spp.),
- Lentils (*Lens culinaris*),
- Lentil vetches (*Vicia ervilia*)
- Vetches, spring or common vetch (*Vicia sativa*, *Vicia villosa*)
- Lupins (*Lupinus* spp.)
- Peanuts (*Arachis hypogaea*).

This class excludes:

- Soya (B33)

Principles of observation:

- Basic observation unit

Links with Land Use:

B41 > U111 Agricultural production

B41 > U112 Fallow land

B41 > U113 Kitchen garden

B41 > U361 Amenities, museum, leisure



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Figure 41.1

Field bean very early stage



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Figure 41.2

Field bean (side view)



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Figure 41.3

Flowering field beans



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Figure 41.4

Field bean bud development



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Figure 41.5

Chickpea / garbanzo bean



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Figure 41.6

Chickpea / garbanzo bean leaves



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Figure 41.7

Field pea

## B41 Dry pulses (Part II)



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Figure 41.8  
Field pea



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Figure 41.9  
Field pea



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Figure 41.10  
Field pea



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Figure 41.11  
Garden Pea pods with peas



© European Union, CC BY 4.0  
Figure 41.12  
Lentils



© European Union, CC BY 4.0  
Figure 41.13  
Flowering vetch



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Figure 41.14  
Lupin flowering (typical leaves)



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Figure 41.15  
Lupin typical leaves / maturing buds

**B42 Tomatoes**

Areas where tomatoes (*Lycopersicon esculentum*) are planted.

Principles of observation:

- Basic observation unit

Links with Land Use:

B42 > U111 Agricultural production

B42 > U112 Fallow land

B42 > U113 Kitchen garden

B42 > U361 Amenities, museum, leisure



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Figure 42.2

Early development of typical leaves



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Figure 42.3

Young tomato plantation cultivated in foils



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Figure 42.4

Drip irrigation under foils



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LUCAS 2009

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Figure 42.1

Tomatoes



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Figure 42.5

Binding up



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Figure 42.6

Different cultivation forms



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Figure 42.7

Different cultivation forms (shadowed)



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Figure 42.8

Blossom



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Figure 42.9

Maturation



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Figure 42.10

Maturation



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Figure 42.11

Several varieties (red round mature fruits)

## B43 Other fresh vegetables (Part I)

Areas where other fresh vegetables are planted. The surveyor must note the fresh vegetable species in the LC plant species field.

This class includes:

- B43a - Brassicas
  - Cabbages (*Brassica oleracea* spp.),
  - Cauliflowers (*Brassica oleracea* var. *botrytis*)
- B43b - Leaf and stalked vegetables other than brassicas
  - Artichokes (*Cynara scolymus*),
  - Asparagus (*Asparagus officinalis*),
  - Cardoons (*Cynara cardunculus*),
  - Celery (*Apium graveolens*),
  - Chervil (*Anthriscus cerefolium*),
  - Chicory (*Cichorium intybus* var. *foliosum*),
  - Cress (*Lepidium sativum*),
  - Endives (*Cichorium. endivia* var. *crispa*),
  - Garden orache (*Atriplex hortensis*),
  - Leeks (*Allium porrum*),
  - Lettuce (*Lactuca sativa*),
  - Rhubarb (*Rheum* spp.),
  - Purslane (*Portulaca oleracea*),
  - Spinach (*Spinacia oleracea*),
  - Rocket (*Eruca sativa*),
  - Watercress (*Nasturtium officinale*)
- B43c - Leguminous vegetables, including production for tins
  - Green beans (*Phaseolus* and *vigna* spp.)
  - Green peas
- B43e - Vegetables cultivated for fruit other than tomatoes
  - Melons (*Cucumis melo*),
  - Cucumbers (*Cucumis sativus*),
  - Egg-plants (*Solanum melongena*),
  - Okras (*Abelmoschus esculentus*, *Hibiscus esculentus*),
  - Peppers (*Capsicum annum*, *C. frutescens*, *Pimenta officinalis*),
  - Pumpkins (*Cucurbita* spp),
  - Watermelons (*Citrullus vulgaris*)
- B43f - Cultivated mushrooms
  - *Boletus edulis*,
  - *Agaricus campestris*,
  - *Morchella* spp.
  - *Tuber magnatum*
- B43g - Wild products (e.g.truffle, water chestnut)
- B43h - Other fresh vegetables not specified elsewhere.

This class excludes:

- Tomatoes (B42),
- Strawberries (B45),
- Horseradish (B23)

Principles of observation:

- Basic observation unit

Links with Land Use:

- B43 > U111 Agricultural production
- B43 > U112 Fallow land
- B43 > U113 Kitchen garden
- B43 > U361 Amenities, museum, leisure



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Figure 43.1

Pepper (early growing stage / foil)



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Figure 43.2

Pepper Plantation



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Figure 43.3

Pepper



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Figure 43.4

Leeks



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Figure 43.5

Leeks



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Figure 43.6

Artichoke



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Figure 43.7

Artichoke second maturation



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Figure 43.8

Artichoke blossom

**B43 Other fresh vegetables (Part II)**

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Figure 43.9

White Asparagus



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Figure 43.10

Green Asparagus



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Figure 43.11

Asparagus often protected under foil



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Figure 43.12

Asparagus post-harvest field view



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Figure 43.13

Zucchini



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Figure 43.14

Zucchini



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Figure 43.15

Zucchini



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Figure 43.16

Pumpkin



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Figure 43.17

Pumpkin



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Figure 43.18

Melon



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Figure 43.19

Melon



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Figure 43.20

Water melon

**B43 Other fresh vegetables (Part III)**

© European Union, CC BY 4.0  
Figure 43.21  
Cauliflower



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Figure 43.22  
Broccoli



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Figure 43.23  
Red cabbage



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Figure 43.24  
White cabbage



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Figure 43.25  
White cabbage



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Figure 43.26  
Brussels sprouts



© 2020, Bishnu Sarangi (sarangib), Pixabay License  
Figure 43.27  
Brussels sprouts



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Figure 43.28  
Brussels sprouts



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Figure 43.29  
Dandelion



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Figure 43.30  
Lettuce (iceberg)



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Figure 43.31  
Lettuce (diverse forms and colors)



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Figure 43.32  
Lettuce (early vegetation stage)

**B43 Other fresh vegetables (Part IV)**

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Figure 43.33

Lettuce



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Figure 43.34

Spinach



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Figure 43.35

Spinach field



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Figure 43.36

Celery



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Figure 43.37

Chilli



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Figure 43.38

Eggplant



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Figure 43.39

Eggplant

## B44 Floriculture and ornamental plants

Areas where flowers and ornamental plants are planted.

This class includes:

- Bulbs and tubers, cut-flowers: alstroemeria, amaranthus, anemone, anthurium, campanula, celosia, centaurea, cymbidium, dendranthema, dianthus, echinops, eryngium, euphorbia, forsythia, gerbera, gladiolus, helianthus, hydrangea, hyacinthus, iris, liatris, liliun, lysimachia, muscari, narcissus, papaver, paphiopedilum, protea, ranunculus, rosa, strelitzia, tulipa, veronica, zantedeschia, zinnia.
- Cut- leafage: acacia, achillea, alchemilla, arbutus, asparagus, aspidistra, aster, camellia, cedrus, cornus, cyperus, erica, gypsophila, hibiscus, hosta, ilex, limonium, melaleuca, molluccella, panicum, pennisetum, philodendrum, physalis, rhododendron, ruscus, salix, sedum, solidago, solidaster, syringe, thuya, trachelium, viburnum, weigela.
- Ornamental plants: abelia, agapanthus, araucaria, azalea, begonia, berberis, betula, bougainvillea, callistemon, chamaecyparis, chamaerops, croton, cupressus, cycas, cyclamen, cymbidium, deutzia, dimorphoteca, dracaena, eounymous, euphorbia, euryops, ficus, forsythia, grevillea, hydrangea, lavandula, leptospermum, lonicera, morus, myrtus, olea, paphiopedilum, pelargonium, petunia, phoenix, photinia, piracanta, rosmarinus, saintpaulia, scindapsus, spiraea, syngonium, viburnum, washingtonia, wisteria, yucca.

This class excludes: Nurseries (B83)

Principles of observation:

- Basic observation unit

Links with Land Use:

- B44 > U111 Agricultural production
- B44 > U112 Fallow land
- B44 > U113 Kitchen garden
- B44 > U340 Commerce, Finance, Business
- B44 > U350 Community services
- B44 > U361 Leisure (allotments)



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Figure 44.1  
Oleander



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Figure 44.2  
Lilium



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Figure 44.3  
Red tulip, typical leaves



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Figure 44.4  
Yellow tulip



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Figure 44.5  
Rose



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Figure 44.6  
Lavender



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Figure 44.7  
Narcissus



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Figure 44.8  
Narcissus

## B45 Strawberries

Areas where strawberries (*Fragaria* spp.) are planted.

Principles of observation:

- Basic observation unit

Links with Land Use:

B45 > U111 Agricultural production

B45 > U112 Fallow land

B45 > U113 Kitchen garden



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Figure 45.2  
Strawberry first leaves (new plantation)



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Figure 45.3  
Strawberry field



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Figure 45.4  
Strawberry field often protected by foil



© European Union, CC BY 4.0  
Figure 45.1  
Strawberry



© European Union, CC BY 4.0  
Figure 45.5  
Strawberry flowers



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Figure 45.6  
Strawberry field



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Figure 45.7  
Maturation



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Figure 45.8  
Strawberry field flowering



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Figure 45.9  
All stages together flowers to harvest ready fruit



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Figure 45.10  
Strawberry variety

## B50 Fodder crops

### B51 Clover

The various species of clover, annual or perennial cultivated alone.

This class includes:

- Crimson clover (*Trifolium incarnatum* L.),
- Red clover (*T. pratense* L.),
- White clover (*T. repens* L.),
- Egyptian clover (*T. alexandrinum*),
- Persia clover (*T. resupinatum*).

Principles of observation:

- Basic observation unit

Links with Land Use:

B51 > U111 Agricultural production

B51 > U112 Fallow Land

B51 > U113 Kitchen garden

B51 > U210 Energy production

B51 > U361 Amenities, museum, leisure



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Figure 51.1

Seeds



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Figure 51.2

White clover



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Figure 51.3

Early growth development of typical leaves



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Figure 51.4

Leaves developing



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Figure 51.5

Leaves



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Figure 51.6

Cloverfield before blooming



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Figure 51.7

Flowering Cloverfield



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Figure 51.8

Red flowering Cloverfield



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Figure 51.9

Red clover main characteristics



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Figure 51.10

Freshly mown



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Figure 51.11

Almost not mixed with other species



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Figure 51.12

Trifolium Resupinatum



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Figure 51.13

Trifolium incarnatum

## B52 Lucerne



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Figure 52.1  
Blooming Lucerne field



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Figure 52.2  
Lucerne main characteristics



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Figure 52.3  
First leaves (rotational crop)



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Figure 52.4  
Early development (entire plant)



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Figure 52.5  
Leave characteristics



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Figure 52.6  
Dense blooming Lucerne field



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Figure 52.7  
Lucerne as second land cover providing benefits



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Figure 52.8  
Typical leaves (differentiation with clover sp.)



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Figure 52.9  
Flowering Lucerne field (wide color range)



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Figure 52.10  
Post blooming phase



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Figure 52.11  
Flowers and mature seeds

The various types of lucerne cultivated alone.

This class includes:

- Lucerne (*Medicago sativa* L., with *M. falcata* L. and hybrids).

Principles of observation:

- Basic observation unit

Links with Land Use:

B52 > U111 Agricultural production

B52 > U112 Fallow Land

B52 > U113 Kitchen garden

B52 > U210 Energy production

B52 > U361 Amenities, museum, leisure

## B53 Other Leguminous and mixtures for fodder

Other leguminous or mixtures of predominantly leguminous (normally > 80 %) forage crops and grass plants, harvested green or as dried hay. It is accepted that legumes can be associated with graminaceous plants, i.e.

- at the time of the setting up when the germination of the legume is protected by an annual graminaceous plant
- at the time of the setting up with a view to an association between the two families of plants

Included here are:

- Annual crops belonging to other families such as the cruciferous and that are not mentioned elsewhere (rape, etc.), the California bluebell (*Phacelia tanacetifolia* Benth), if they are harvested green.
- The surveyor must note the leguminous or fodder species in the LC plant species field.

This class includes:

- B53a - Sainfoin (*Onobrychis viciifolia* Scop.)
- B53b - Sweet clover (*Lotus corniculatus* L.)
- B53c - Chickling vetch (*Lathyrus sativus*)
- B53d - Trefoil (*Medicago lupulina* L.)
- B53e - Melilot (*Melilotus alba* Lam.)
- B53f - Serradella (*Ornithopus sativus*)
- B53g - Fenugreek (*Trigonella foenum-graecum*)
- B53h - Sulla (*Hedysarium coronarium*)
- B53i - Sweet lupins (*Lupinus albus*, *Lupinus angustifolius*, *Lupinus luteus*)
- B53j - California bluebell (*Phacelia tanacetifolia*)
- B53k - Other leguminous and mixture for fodder not specified elsewhere)

This class excludes:

- Mix of cereals for fodder (B54)
- Temporary grassland (B55)

Principles of observation:

- Basic observation unit

Links with Land Use:

- B53 > U111 Agricultural production
- B53 > U112 Fallow Land
- B53 > U113 Kitchen garden
- B53 > U210 Energy production
- B53 > U361 Amenities, museum, leisure



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Figure 53.1

Good for VQC: Sample of the main species found



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Figure 53.2

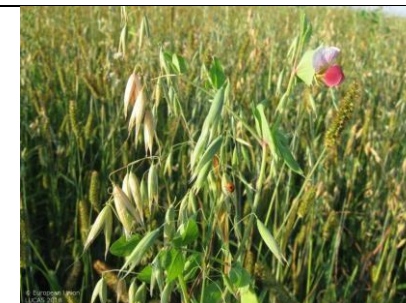
B53b – Trefoil dominated mixed with cereals



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Figure 53.3

B53b – Clover mixed with grass plants



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Figure 53.4

B53c – Vetch mixed with oats and grasses



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Figure 53.5

B53c – Vetch mixed with wheat



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Figure 53.6

B53j – Phacelia typical leaves



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Figure 53.7



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Figure 53.8

B53j – Phacelia typical flowers

 <p>© European Union, CC BY 4.0 Figure 53.9 B53k – Field peas with cereals</p>	 <p>© European Union, CC BY 4.0 Figure 53.10 B53k – Field beans with cereals</p>	 <p>© European Union, CC BY 4.0 Figure 53.11 B53k – Field beans with cereals</p>	 <p>© European Union, CC BY 4.0 Figure 53.12</p>
 <p>© 2023, Nichole Ouellette, CC BY-SA 4.0 Figure 53.13 Melilotus Albus</p>	 <p>© 2005, Tigerente, CC BY-SA 3.0 Figure 53.14 Medicago Lupulina</p>	 <p>© Image shared through Wikimedia Create Commons - Original book © Prof. Dr. Otto Wilhelm Thomé Flora von Deutschland, Österreich und der Schweiz 1885, Gera, Germany Permission granted to use under GFDL by Kurt Stueber Figure 53.15 Trigonella foenum-graecum</p>	

## B54 Mix of cereals

Mix of more than two cereals used in most cases for fodder, often as winter crop and harvested green.

This class includes:

If mixed and harvested for fodder:

- Common wheat (B11),
- Durum wheat (B12),
- Barley (B13),
- Rye (B14),
- Oats (B15),
- Maize (B16),
- Triticale (B18),
- Other cereals (B19)

This class excludes:

If only one or two species own and harvested for human consumption:

- Common wheat (B11)
- Durum wheat (B12)
- Barley (B13)
- Rye (B14)
- Oats (B15)
- Maize (B16)
- Rice (B17)
- Triticale (B18)
- Other cereals (B19)

Principles of observation:

- Basic observation unit

Links with Land Use:

B54 > U111 Agricultural production

B54 > U112 Fallow Land

B54 > U113 Kitchen garden

B54 > U210 Energy production

B54 > U361 Amenities, museum, leisure



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Figure 54.1

This makes identification easier for early stages



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Figure 54.2



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Figure 54.3

Mixture of cereals and grasses



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Figure 54.4

## B55 Temporary grassland

Land occupied by temporary and artificial pastures, occupying the ground for at least one crop year and less than five years, the seeds being either pure or mixed grass, on cropland areas. If the soil is ploughed and/if the grass is sown the same year, the grassland is very likely a temporary one and not a permanent one.

This class includes:

- Italian ryegrass
- Other ryegrasses
- Cock's foot
- Fescues
- Timothy
- Other temporary pastures on agricultural areas/cropland

This class excludes:

- Permanent grassland (EXX)
- Mix of legumes with gramineous plants for fodder (B53)
- Mix of cereals for fodder (B54)

Principles of observation:

- Basic observation unit

Links with Land Use:

- B55 > U111 Agricultural production
- B55 > U113 Kitchen garden
- B55 > U210 Energy production
- B55 > U361 Amenities, museum, leisure



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Figure 55.1

Early vegetation on arable land



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Figure 55.2

Recently elaborated land – sign for temporary LC



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Figure 55.3

Rows are signs for temporary land cover



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Figure 55.4

Fresh green grass cover



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Figure 55.5

Certain species are indicators for temporary LC












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Figure 55.6

Certain species are indicators for temporary LC

## B7 Permanente crops: Fruit trees

### B71 Apple tree

<p>Surfaces occupied by apple trees.</p> <p>This class includes:</p> <ul style="list-style-type: none"> <li>— <i>Malus pumila</i></li> <li>— <i>Pyrus malus</i></li> <li>— Abandoned apple orchards</li> </ul> <p>Principles of observation:</p> <ul style="list-style-type: none"> <li>— Extended window of observation</li> </ul> <p>Links with Land Use:</p> <p>B71 &gt; U111 Agricultural production</p> <p>B71 &gt; U112 Fallow land</p> <p>B71 &gt; U113 Kitchen garden</p> <p>B71 &gt; U361 Amenities, museum, leisure</p>	 <p>© European Union, CC BY 4.0</p> <p>Figure 71.1</p> <p>Apple fruit (typical form and leaves)</p>	 <p>© European Union, CC BY 4.0</p> <p>Figure 71.2</p> <p>Young plant</p>	 <p>© European Union, CC BY 4.0</p> <p>Figure 71.3</p> <p>Different growth forms (half stem plantation)</p>
	 <p>© European Union, CC BY 4.0</p> <p>Figure 71.4</p> <p>Leaf forms (ssp. with differences)</p>	 <p>© European Union, CC BY 4.0</p> <p>Figure 71.5</p> <p>Typical blossom</p>	 <p>© European Union, CC BY 4.0</p> <p>Figure 71.6</p> <p>Variety of blossom colours</p>
	 <p>© European Union, CC BY 4.0</p> <p>Figure 71.7</p> <p>Fruit maturation (early stage)</p>	 <p>© European Union, CC BY 4.0</p> <p>Figure 71.8</p> <p>Fruit maturation</p>	 <p>© European Union, CC BY 4.0</p> <p>Figure 71.9</p> <p>Several varieties (green mature fruits)</p>

## B72 Pear fruit



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Figure 72.1  
Pear fruit typical form and leaves



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Figure 72.2  
Young plant (with drip irrigation)



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Figure 72.3  
Different growth forms (half stem plantation)



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Figure 72.4  
Different growth forms

Surfaces occupied by pear trees.

This class includes:

- *Pyrus communis*
- Abandoned pear orchards

Principles of observation

- Extended window of observation

Links with Land Use:

- B72 > U111 Agricultural production
- B72 > U112 Fallow land
- B72 > U113 Kitchen garden
- B72 > U361 Amenities, museum, leisure



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Figure 72.5  
Pear orchard



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Figure 72.6  
Characteristic fruit stand



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Figure 72.7  
Characteristic fruit stand (early stage)



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Figure 72.8  
Different growth forms



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Figure 72.9  
Fruit maturation



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Figure 72.10  
Several varieties

## B73 Cherry fruit

Surfaces occupied by cherry trees (*Prunus cerasus*; *Cerasus acida*).

This class includes:

- *Prunus cerasus*
- *Cerasus acida*
- Abandoned cherry orchards

Principles of observation:

- Extended window of observation

Links with Land Use:

B73 > U111 Agricultural production

B73 > U112 Fallow land

B73 > U113 Kitchen garden

B73 > U361 Amenities, museum, leisure



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Figure 73.1

Cherry fruit (characteristic leaves / fruit stands)



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Figure 73.2

Young plant (with drip irrigation)



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Figure 73.3

Different growth forms (half stem plantation)



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Figure 73.4

Different growth forms



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Figure 73.5

Different growth forms



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Figure 73.6

Typical leaf form (ssp. differences in width, etc)



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Figure 73.7

Typical blossom



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Figure 73.8

Several varieties (red mature fruits)

## B74 Nuts-trees



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Figure 74.1

Walnut



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Figure 74.2

Walnut typical leaf form



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Figure 74.3

Almonds harvest ready



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Figure 74.4

Almonds maturing / typical leave form



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Figure 74.5

Almonds (getting ready)



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Figure 74.6

Almond tree plantation



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Figure 74.7

Pistachio tree with stone fruits



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Figure 74.8

Hazelnut maturing



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Figure 74.9

Hazelnut characteristics



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Figure 74.10

Chestnut blossom



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Figure 74.11

Chestnut characteristics

Surfaces occupied by nuts trees.

This class includes:

- almonds (*Prunus amygdalus*); chestnuts (*Castanea* spp.); hazelnuts (*Corylus avellana*); pistachios (*Pistacia vera*) walnuts (*Juglans* spp.); Abandoned nuts trees orchards.

Principles of observation

- Extended window of observation

Links with Land Use

B74 &gt; U111 Agricultural production

B74 &gt; U112 Fallow land

B74 &gt; U113 Kitchen garden

B74 &gt; U361 Amenities, museum, leisure

## B75 Other fruit tree and berries (Part I)

Surfaces occupied by other fruit trees and berries.  
The surveyor must note the fruit tree/berry species in the LC plant species field.

This class includes:

- B75a - Apricot (*Prunus armeniaca*)
- B75b - Cornel (*Cornus mas*)
- B75c - Figs (*Ficus carica*)
- B75d - Juneberry (*Amelanchier vulgaris*)
- B75e - Kiwi (*Actinidia chinensis*)
- B75f - Loquat (*Eriobotrya japonica*)
- B75g - Medlar (*Mespilus germanica*)
- B75h - Mirabellas (*Prunus insititia* var. *syriaca*)
- B75i - Peach and nectarines (*Prunus persica*; *Amygdalus persica*; *Persica laevis*)
- B75j - Persimons (*Diospyros kaki*)
- B75k - Plums (*Prunus domestica*)
- B75l - Pomegranates (*Punica granatum*)
- B75m - Oleaster (*Eleagnus* sp.)
- B75n - Quinces (*Cydonia oblonga*)
- B75o - Sloes (*Prunus spinosa*)
- B75p - Small fruit and berries
  - Blackberries (*Morus nigra*)
  - Black currants (*Ribes nigrum*)
  - Blueberries (*Vaccinium myrtillus*)
  - Cowberries (*Vaccinium vitis-idaea*)
  - Cranberries (*Vaccinium macrocarpon*)
  - Dangleberries (*Gaylussacia* spp.)
  - Dewberries (*Rubus arcticus*)
  - Gooseberries (*Ribes uva-crispa*)
  - Mulberries (*Morus alba*; *Morus rubra*)
  - Myrtle berries (*Myrtus communis*)
  - Raspberries (*Rubus idaeus*)
- B75q - Tropical fruits
  - Bananas (*Musa* sp.),
  - Avocado (*Persea americana*)
- B75r - Other fruit trees and berries not specified elsewhere
- Abandoned fruit tree orchards.

This class excludes:

- Apples (B71),
- Pears (B72),
- Cherries (B73),
- Nuts (B74),
- Strawberries (B45),
- Citrus fruits (B76, B77).

Principles of observation:

- Extended window of observation

Links with Land Use:

- B75 > U111 Agricultural production
- B75 > U112 Fallow land
- B75 > U113 Kitchen garden
- B75 > U361 Amenities, museum, leisure



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Figure 75.1

Apricot



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Figure 75.2

Apricot blossom



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Figure 75.3

Plums



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Figure 75.4

Peach



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Figure 75.5

Peach blossom



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Figure 75.6

Mirabellas

## B75 Other fruit tree and berries (Part II)



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Figure 75.7  
Raspberries



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Figure 75.8  
Red Currants



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Figure 75.9  
Red Currants



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Figure 75.10  
Black currants



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Figure 75.11  
Gooseberries



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Figure 75.12  
Red Currants



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Figure 75.13  
Blackberries



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Figure 75.14  
Blackberries



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Figure 75.15  
Blackberries



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Figure 75.16  
Buckthorn



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Figure 75.17  
Elderberry



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Figure 75.18  
Opuntia

**B76 Oranges**

Surfaces occupied by orange trees.

This class includes:

- Citrus sinensis,
- Citrus aurantium
- Abandoned oranges orchards

Principles of observation:

- Extended window of observation

Links with Land Use:

B76 > U111 Agricultural production

B76 > U112 Fallow land

B76 > U113 Kitchen garden

B76 > U361 Amenities, museum, leisure



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Figure 76.1

Orange



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Figure 76.2

Young plant



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Figure 76.3

Young tree with drip irrigation (already fruits)



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Figure 76.4

Different growth forms



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Figure 76.5

Typical leaf form



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Figure 76.6

Typical blossom



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Figure 76.7

Simultaneously flowers and mature fruits



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Figure 76.8

Fruit early development



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Figure 76.9

Fruit maturation



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Figure 76.10

Fruit maturation



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Figure 76.11

Harvest ready fruits

## B77 Other citrus fruits

Surfaces occupied by other citrus fruit trees. The surveyor must note the citrus species in the LC plant species field.

This class includes:

- B77a - Bergamot (*Citrus bergamia*)
- B77b - Citron (*Citrus medica* var. *cedrata*)
- B77c - Grapefruit and pomelo (*Citrus maxima*, *Citrus grandis*, *Citrus paradisea*)
- B77d - Lemons (*Citrus limon*);
- B77e - Limes (*Citrus aurantifolia*; *Citrus limetta*)
- B77f - Satsumas (*Citrus unshiu*)
- B77g - Mandarines (*Citrus deliciosa*, *Citrus nobilis*)
- B77h - Clementines (*Citrus clementina*)
- B77i - Kumquats (*Fortunella* sp.)
- B77j - Citrus orchards
- B77k - Other citrus fruit not specified elsewhere
- Abandoned citrus orchards.

This class excludes:

- Oranges (B66)

Principles of observation:

- Extended window of observation

Links with Land Use:

- B77 > U111 Agricultural production
- B77 > U112 Fallow land
- B77 > U113 Kitchen garden
- B77 > U361 Amenities, museum, leisure



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Figure 77.1

Mandarines



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Figure 77.2

Lemons



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Figure 77.3

Lemons



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Figure 77.4

Lime



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Figure 77.5

Grapefruit and pomelo



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Figure 77.6

Mandarines

## B8 Other Permanent Crops

### B81 Olive groves

Surfaces occupied by olive groves.

This class includes:

- Olea europea
- Abandoned olive groves

Principles of observation:

- Extended window of observation

Links with Land Use:

B81 > U111 Agricultural production

B81 > U112 Fallow land

B81 > U113 Kitchen garden

B81 > U361 Amenities, museum, leisure



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Figure 81.1

Young plant



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Figure 81.2

Young plant with drip irrigation



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Figure 81.3

Young olive tree plantation with drip irrigation



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Figure 81.4

Olive grove with soil kept free from weeds



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Figure 81.5

Olive grove with additional land cover



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Figure 81.6

Typical leaves



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Figure 81.7

Flowering



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Figure 81.8

Fruit maturation (early stage)



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Figure 81.9

Fruit maturation



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Figure 81.10

Several varieties (green mature fruits)



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Figure 81.11

Several varieties (black ones missing)

## B82 Vineyards

Surfaces occupied by vineyards.

This class includes:

- *Vitis vinifera*
- Abandoned vineyards

Principles of observation:

- Extended window of observation

Links with Land Use:

B82 > U111 Agricultural production

B82 > U112 Fallow land

B82 > U113 Kitchen garden

B82 > U361 Amenities, museum, leisure



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Figure 82.1  
Elder vineyard



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Figure 82.2  
Young plant (with drip irrigation)



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Figure 82.3  
Different growth forms



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Figure 82.4  
Different growth forms (Typical vineyard)



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Figure 82.5  
Different growth forms (special form pruning)



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Figure 82.6  
Typical leaf forms



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Figure 82.7  
Leaves and inflorescence of sapling



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Figure 82.8  
Inflorescence



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Figure 82.9  
Characteristic fruit stand (early stage)



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Figure 82.10  
Several varieties (red grape)



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Figure 82.11  
Several varieties (white grape)

## B83 Nurseries



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Figure 83-1

Nurseries / Species difficult to assess (visual QC)



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Figure 83-2

Fruit trees nurseries



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Figure 83-3

Ornamental plants nurseries



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Figure 83-4

Ornamental plants nurseries



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Figure 83-5

Trees and bushes nurseries



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Figure 83-6

Trees and bushes nurseries



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Figure 83-7

Trees and bushes nurseries



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Figure 83-8

Forest tree nurseries (Pine)



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Figure 83-9

Forest tree nurseries (Firs)



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Figure 83-10

Inside forests young trees -&gt; afforestation (Cxx)



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Figure 83-11

Non-specialized

Surfaces permanently occupied by young woody open-air seedlings for transplantation. The type of main plant/tree has to be noted as LC2.

This class includes:

- Vine and root-stock nurseries,
- Fruit tree nurseries,
- Ornamental nurseries,
- Trees and bushes for planting in gardens, parks, embankments.

This class excludes:

- Forest tree nurseries (CXX)

Principles of observation:

- Basic observation unit

Links with Land Use:

B83 > U111 Agricultural production

B83 > U113 Kitchen garden

B83 > U361 Amenities, museum, leisure

## B84 Permanent industrial crops

Surfaces occupied by permanent industrial crops. The surveyor must note the permanent industrial crop species in the LC plant species field.

This class includes:

- B84a - Reeds, canary grass (*Phalaris arundinacea*) when cultivated and not natural
- B84b - Other plants for plaiting
  - Osier
  - Rushes
  - Rattans
- B84c - Coffee
- B84d - Tea
- B84e - Other industrial plants for beverages
  - Cocoa
  - Mate
- B84f - Industrial plants for oil
  - Coconut
  - Palm
- B84g - Permanent aromatic plants
  - Black or red pepper
  - Cinnamon
  - Cloves
  - Ginger
  - Vanilla
  - Cardamom
- B84h - Permanent textile plants
  - Abaca
  - Agave
  - Kapok
- B84i - Plants for rubber and tannin
  - Hevea,
  - Red quebracho
- B84j - Rose trees cultivated for rose-oil production (not as ornamental plants)
- B84k - Other permanent industrial crops
  - Lavender (*Lavandula* spp)
  - Citronella
  - Sage
  - Quinine
  - Areca nuts
  - Mulberries for sow production
  - Carobs
- B84l - Miscanthus (*Miscanthus giganteus*)
- B84m – Willow

Principles of observation:

- Extended window of observation

Links with Land Use:

- B84 > U111 Agricultural production
- B84 > U112 Fallow land
- B84 > U113 Kitchen garden
- B84 > U210 Energy production
- B84 > U361 Amenities, museum, leisure



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Figure 84.1

Miscanthus



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Figure 84.2

Lavender



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Figure 84.3

Lavender



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Figure 84.4

Osier



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Figure 84.5

Osier



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Figure 84.6

Tea



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Figure 84.7


Coffee

## C00 Woodland

Areas covered by trees with a canopy of at least 10% (of the extended window). In addition, woody hedges belong to this class.

NB: Height of trees at maturity and width of woody features have to be assessed.

### C10 Broadleaved woodland

<p>Areas with a canopy of more than 10% (of the extended window) and composed of more than 75% of broadleaved species.</p> <p>This class includes:</p> <p>Stands with the following species:</p> <ul style="list-style-type: none"> <li>– Acacia (<i>Acacia</i> ssp.)</li> <li>– Alder (<i>Alnus</i> ssp)</li> <li>– Ash (<i>Fraxinus excelsior</i>)</li> <li>– Aspens (<i>Populus tremula</i>)</li> <li>– Beech trees (<i>Fagus sylvatica</i>)</li> <li>– Birch (<i>Betula</i> sp.)</li> <li>– Carob (<i>Ceratonia siliqua</i>)</li> <li>– Elm (<i>Ulmus</i> sp.)</li> <li>– Eucalyptus (<i>Eucalyptus globulus</i>)</li> <li>– Hedge (<i>Acer campestre</i>)</li> <li>– Hornbeam (<i>Carpinus betulus</i>)</li> <li>– Linden (<i>Tilia</i> ssp.)</li> <li>– Maple (<i>Acer</i> sp.)</li> <li>– Palm trees of the Mediterranean and Macaronesian zones (<i>Phoenix theophrasti</i>, <i>Phoenix canariensis</i>)</li> <li>– Poplars (<i>Populus nigra</i>)</li> <li>– Oaks (<i>Quercus</i> sp)</li> <li>– Rowan (<i>Sorbus aucuparia</i>)</li> <li>– Wild olive (<i>Olea europaea</i> ssp. <i>sylvestris</i>)</li> <li>– Willows (<i>Salix</i> sp.)</li> </ul>	<ul style="list-style-type: none"> <li>– Young natural stands and managed plantations having yet to reach a canopy of 10%</li> <li>– Forest nurseries</li> </ul> <p>Principles of observation:</p> <ul style="list-style-type: none"> <li>– Extended window of observation</li> </ul> <p>Links with Land Use:</p> <p>C10 &gt; U111 Agricultural use: grazing or crops in dehesas</p> <p>C10 &gt; U120 Forestry (wood production)</p> <p>C10 &gt; U210 Energy production</p> <p>C10 &gt; U340 Wooded areas connected to commercial areas</p> <p>C10 &gt; U350 Wooded areas connected to community services</p> <p>C10 &gt; U36x Wooded areas specifically managed for recreational purposes and in nature reserves</p> <p>C10 &gt; U370 Wooded areas in residential areas (urban parks)</p> <p>C10 &gt; U420 Not used wooded areas</p>	 <p>© European Union LUCAS 2022</p> <p>© European Union, CC BY 4.0 Figure C10</p>
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## C20 Coniferous woodland

Areas with a canopy of more than 10% (of the extended window) and composed of more than 75% of coniferous species.

### C21 Spruce dominated coniferous woodland

Stands where >75% of the part of coniferous trees are spruce.

This class includes:

Stands with the following species:

- Spruce (*Picea* sp),
- Christmas trees
- Young stands and plantations having yet to reach a canopy of 10%
- Forest nurseries

Principles of observation:

- Extended window of observation

Links with Land Use:

C21 > U111 Agricultural use: grazing

C21 > U120 Forestry (wood production)

C21 > U210 Energy production

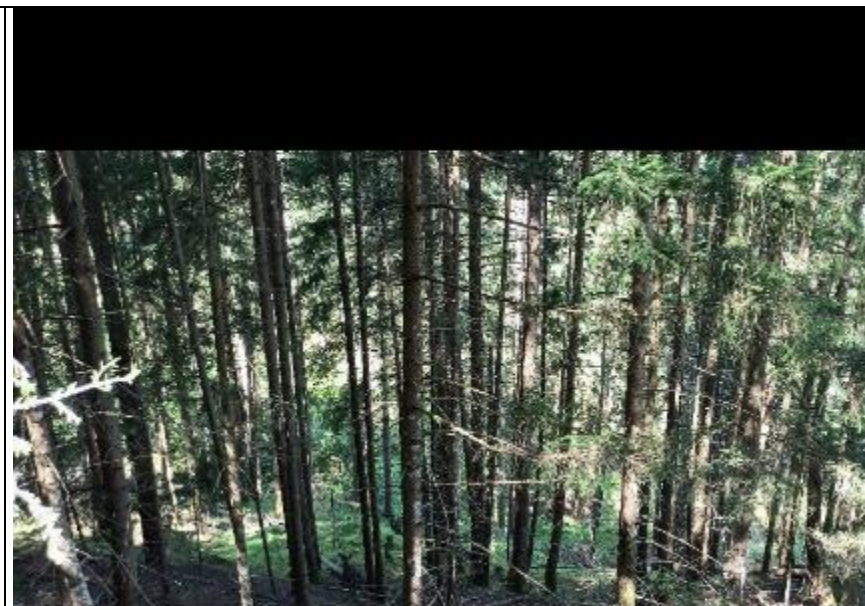
C21 > U340 Wooded areas connected to commercial areas

C21 > U350 Wooded areas connected to community services

C21 > U36x Wooded areas specifically managed for recreational purposes and in nature reserves

C21 > U370 Wooded areas in residential areas (urban parks)

C21 > U420 Not used wooded areas



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Figure C21

**C22 Pine dominated coniferous woodland**

Stands where >75% of the part of coniferous trees are pine species.

This class includes:

Stands with the following species:

- Pines (*Pinus* sp.)
  - Scots pines
  - Black pines
  - Siberian pines
  - Weymouth pines
  - Maritime pine
  - Mediterranean stone pine, etc.
- Young stands and plantations having yet to reach a canopy of 10%
- Forest nurseries

Principles of observation:

- Extended window of observation

Links with Land Use:

C22 > U111 Agricultural use: grazing

C22 > U120 Forestry (wood production)

C22 > U210 Energy production

C22 > U340 Wooded areas connected to commercial areas

C22 > U350 Wooded areas connected to community services

C22 > U36x Wooded areas specifically managed for recreational purposes and in nature reserves

C22 > U370 Wooded areas in residential areas (urban parks)

C22 > U420 Not used wooded areas

**C23 Other coniferous woodland**

Stands where no coniferous species is represented >75%.

This class includes:

– Stands with the following species:

- Cedars (*Cedrus* sp.),
- Cypressess (*Cupressus sempervirens*),
- Firs (*Abies* sp.),
- Douglas firs (*Pseudotsuga menziesii*),
- Larches (*Larix* ssp),
- Pines (*Pinus* sp.)
- Spruce (*Picea* sp.),
- Xerophyte conifers
  - Brutia pine,
  - Umbrella pine,
  - Aleppo pine,
  - Corsican pine
- Christmas trees
- Young stands, plantations having yet to reach a canopy of 10%
- Forest nurseries

Principles of observation:

- Extended window of observation

Links with Land Use:

C23 > U111 Agricultural use: grazing

C23 > U120 Forestry (wood production)

C23 > U210 Energy production

C23 > U340 Wooded areas connected to commercial areas

C23 > U350 Wooded areas connected to community services

C23 > U36x Wooded areas specifically managed for recreational purposes and in nature reserves

C23 > U370 Wooded areas in residential areas (urban parks)

C23 > U420 Not used wooded areas

## C30 Mixed woodland

Areas with a canopy of more than 10% and composed of broadleaved and coniferous comprising both >25% of the tree canopy.

### C31 Spruce dominated mixed woodland

Stands where >75% of the coniferous trees are spruce.

This class includes:

- Young stands, plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

C31 > U111 Agricultural use: grazing

C31 > U120 Forestry (wood production)

C31 > U210 Energy production

C31 > U340 Wooded areas connected to commercial areas

C31 > U350 Wooded areas connected to community services

C31 > U36x Wooded areas specifically managed for recreational purposes and in nature reserves

C31 > U370 Wooded areas in residential areas (urban parks)

C31 > U420 Not used wooded areas



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Figure C31

**C32 Pine dominated mixed woodland**

Stands where >75% of the coniferous trees are pine.

This class includes:

- Young stands and plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

C32 > U111 Agricultural use: grazing

C32 > U120 Forestry (wood production)

C32 > U210 Energy production

C32 > U340 Wooded areas connected to commercial areas

C32 > U350 Wooded areas connected to community services

C32 > U36x Wooded areas specifically managed for recreational purposes and in nature reserves

C32 > U370 Wooded areas in residential areas (urban parks)

C32 > U420 Not used wooded areas

**C33 Other mixed woodland**

Stands with all other coniferous species and less than 75% of spruce and/or pine trees.

This class includes:

- Young stands, plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

C33 > U111 Agricultural use: grazing

C33 > U120 Forestry (wood production)

C33 > U210 Energy production

C33 > U340 Wooded areas connected to commercial areas

C33 > U350 Wooded areas connected to community services

C33 > U36x Wooded areas specifically managed for recreational purposes and in nature reserves

C33 > U370 Wooded areas in residential areas (urban parks)

C33 > U420 Not used wooded areas

# Forest types (LUCAS SU FT)

If the forest is larger than 0.5 ha, the height of trees is above 5 m at maturity and the width of the wooded feature is more than 20 m, the surveyor has to indicate the forest cover code in the respective "LC plant species" field, according to the forest type classification of the European Environment Agency<sup>2</sup>.

A key for recognizing the forest types and a biogeographical map of Europe can be found in the ANNEXES to document C1.

## CXX1 Boreal forest

Coniferous and mixed broadleaved-coniferous forest of the Boreal (climate) zone of Europe, known also as taiga. Two conifer species, Scots pine (*Pinus sylvestris*) and Norway spruce (*Picea abies*) dominate the boreal forest zone; both of them have quite broad habitat amplitudes and may grow from very dry to wet habitats. Pine generally prevails on drier soils, in areas with a more continental climate and with a high fire frequency. Spruce, on the other hand, prevails on more nutrient-rich, mesic-moist soils, in areas with a more oceanic climate and on sites with a low fire frequency. Birch species (e.g. *Betula pubescens*, *Betula pendula*) as well as other deciduous trees, such as aspen, rowan and grey alder can be frequently found growing amongst the conifers. Admixtures of spruce or pine with birch species are also typical of the pioneer stages of the forest succession.

This class includes:

- Young stands and plantations having yet to reach a canopy of 10%

This class excludes:

- Alpine forests in Scandinavia (CX3)

Principles of observation:

- Extended window of observation

Links with Land Use:

CXX1 > U111 Agricultural use: grazing

CXX1 > U120 Forestry (wood production)

CXX1 > U350 Wooded areas connected to community services

CXX1 > U36x Wooded areas specifically managed for recreational purposes

CXX1 > U370 Wooded areas in residential areas (urban parks)

CXX1 > U420 Not used wooded areas



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Figure CXX1

<sup>2</sup> See the document: *European forest types. Categories and types for sustainable forest management reporting and policy.* EEA Technical Report No 9/2006) downloadable at [http://reports.eea.europa.eu/technical\\_report\\_2006\\_9/en](http://reports.eea.europa.eu/technical_report_2006_9/en)

## CXX2 Hemiboreal forest and nemoral coniferous forest and mixed broadleaved-coniferous forest

The hemi-boreal zone is a transitional zone between the boreal and temperate forest of nemoral Europe. It is characterized by the coexistence of boreal coniferous — on poor soils — and temperate broadleaved tree species (*Fraxinus excelsior*, *Ulmus glabra*, *Tilia cordata*, *Quercus robur*) on the most fertile soils. The structure and composition of hemiboreal forest is maintained by a complex admixture of natural and cultural disturbances.

The type is characterized by mixtures of Scots pine (*Pinus sylvestris*) and Norway spruce (*Picea abies*) with broadleaved deciduous trees such as Birch (*Betula* spp), aspens (*Populus tremula*), alder (*Alnus* sp) and rowan (*Sorbus aucuparia*). The broadleaved trees generally characterize early to mid-successional stages; with age the dominance of coniferous species increases.

This class includes:

- Young stands and plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

CXX2 > U111 Agricultural use: grazing

CXX2 > U120 Forestry (wood production)

CXX2 > U350 Wooded areas connected to community services

CXX2 > U36x Wooded areas specifically managed for recreational purposes

CXX2 > U370 Wooded areas in residential areas (urban parks)

CXX2 > U420 Not used wooded areas



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Figure CXX2

## CXX3 Alpine coniferous forest

Forests occurring in the alpine biogeographical region dominated by coniferous trees, mainly Norway spruce (*Picea abies*), Silver fir (*Abies alba*), Scots pine (*Pinus sylvestris*), Swiss stone pine (*Pinus cembra*), mountain pine (*Pinus mugo*, *Pinus uncinata*), Macedonian pine (*Pinus peuce*) and Bosnian pine (*Pinus heldreichii*). Included in this category is the forest vegetation of high altitudinal vegetation belts of the central European mountain ranges dominated by spruce (*Picea abies*), silver fir (*Abies alba*) and, under local microclimatic and edaphic conditions, termophilous pure Austrian pine (*Pinus nigra*) forests of the southern Alps.

This class includes:

- Young stands and plantations having yet to reach a crown density of 10% or 5m tree height
- Alpine forests in Scandinavia

This class excludes:

- Boreal forest (CXX1)

Principles of observation:

- Extended window of observation

Links with Land Use:

CXX3 > U111 Agricultural use: grazing

CXX3 > U120 Forestry (wood production)

CXX3 > U350 Wooded areas connected to community services

CXX3 > U36x Wooded areas specifically managed for recreational purposes

CXX3 > U370 Wooded areas in residential areas (urban parks)

CXX3 > U420 Not used wooded areas



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Figure CXX3

## CXX4 Acidophilous oak and oak-birch forest

Acidophilous oakwoods and mixed oak-birch forest characteristic of oligotrophic soils of the nemoral forest zone. The main areas of distribution of the class are the Atlantic and Continental biogeographical regions. Lowland to submountainous forests are dominated by acidophilous oaks (*Quercus petraea* and *Quercus robur*). In the wide natural range of distribution of beech trees (*Fagus sylvatica*) oakwoods are pushed back to areas with poor acid soils, with variable soil moisture or thin soil layers. Pioneers such as birch (*Betula pendula*, *Betula pubescens*) are important during the regeneration phase in the western parts of the area of occurrence. In the eastern parts pine (*Pinus* sp.) and locally spruce (*Picea* sp) can form together with oak the tree layer. In the south-western areas of occurrence some Mediterranean species can participate in the tree layer. Aspen (*Populus tremula*), rowan (*Sorbus aucuparia*), Norway maple (*Acer platanoides*), ash (*Fraxinus excelsior*), linden (*Tilia cordata*) and Wych elm (*Ulmus glabra*) can be found in the southern boreal region.

This class includes:

- Young stands and plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

CXX4 > U111 Agricultural use: grazing

CXX4 > U120 Forestry (wood production)

CXX4 > U350 Wooded areas connected to community services

CXX4 > U36x Wooded areas specifically managed for recreational purposes

CXX4 > U370 Wooded areas in residential areas (urban parks)

CXX4 > U420 Not used wooded areas



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Figure CXX4

## CXX5 Mesophytic deciduous forest

Forests, typically with mixed canopy composition, on rich and moderately rich soils. The category includes forests dominated by mixtures of Hornbeam (*Carpinus betulus*), Sessile oak (*Quercus petraea*), Pedunculate oak (*Quercus robur*), ash (*Fraxinus excelsior*, *Fraxinus angustifolia*), hedge (*Acer campestre*) maple (*Acer pseudoplatanus*) and linden (*Tilia cordata*).

This class includes:

- Young stands and plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

CXX5 > U111 Agricultural use: grazing

CXX5 > U120 Forestry (wood production)

CXX5 > U350 Wooded areas connected to community services

CXX5 > U36x Wooded areas specifically managed for recreational purposes

CXX5 > U370 Wooded areas in residential areas (urban parks)

CXX5 > U420 Not used wooded areas



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Figure CXX5

## CXX6 Beech forest

Beech forests are characterised by the dominance of beech (*Fagus sylvatica*) L. or its transitional hybrids with oriental beech (*Fagus orientalis* Lipsky) in the eastern and southern parts of the Balkan Peninsula, and along the eastern periphery of the Carpathians. These latter were described as Balkan beech (*Fagus moesiaca* Csecz.), Podolian or Moldovian beech (*Fagus podolica* Yap.) and Crimean beech (*Fagus taurica* Popl). Specific elevation range (from lowlands to submountainous, 0 to 600(–800) meters above sea level) and the lack of conifers define this type often referred to as lowland and submountainous beech forest. Important additional tree species include Norway maple (*Acer platanoides*), Sycamore Maple (*Acer pseudoplatanus*), birch (*Betula pendula*), hornbeam (*Carpinus betulus*), Sweet chestnut (*Castanea sativa*), ash (*Fraxinus excelsior*), aspen (*Populus tremula*), wild cherry (*Prunus avium*), oak (*Quercus petraea*, *Quercus robur*), rowan (*Sorbus aucuparia*), linden (*Tilia cordata*, *Tilia platyphyllos*), Wych elm (*Ulmus glabra*).

This class includes:

- Young stands and plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

CXX6 > U111 Agricultural use: grazing

CXX6 > U120 Forestry (wood production)

CXX6 > U350 Wooded areas connected to community services

CXX6 > U36x Wooded areas specifically managed for recreational purposes

CXX6 > U370 Wooded areas in residential areas (urban parks)

CXX6 > U420 Not used wooded areas



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Figure CXX6

## CXX7 Mountainous beech forest

Mountainous beech forests are defined by the altitudinal range of distribution, by the dominance of *Fagus* and, in most cases, by the presence of coniferous species (*Abies alba* and/or *Picea abies*) as important components. Locally important additional tree species include Norway maple (*Acer platanoides*), Sycamore Maple (*Acer pseudoplatanus*), birch (*Betula pendula*), hornbeam (*Carpinus betulus*), Sweet chestnut (*Castanea sativa*), ash (*Fraxinus excelsior*), aspen (*Populus tremula*), wild cherry (*Prunus avium*), oak (*Quercus petraea*, *Quercus robur*), rowan (*Sorbus aucuparia*), linden (*Tilia cordata*, *Tilia platyphyllos*), Wych elm (*Ulmus glabra*), oriental beech (*Fagus orientalis* Lipsky) and Goat willow. (*Salix caprea*) depending on trophic status and/or successional phase.

This class includes:

- Young stands and plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

CXX7 > U111 Agricultural use: grazing

CXX7 > U120 Forestry (wood production)

CXX7 > U350 Wooded areas connected to community services

CXX7 > U36x Wooded areas specifically managed for recreational purposes

CXX7 > U370 Wooded areas in residential areas (urban parks)

CXX7 > U420 Not used wooded areas



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Figure CXX7

## CXX8 Thermophilous deciduous forest

Forest dominated by deciduous or semideciduous thermophilous species, mainly Downy Oak (*Quercus pubescens*); other oaks associate with or replace (*Q. pubescens* in submediterranean woods: *Quercus faginea*, *Q. pyrenaica* and *Q. canariensis* (Spain), *Q. cerris* (Italy), *Q. frainetto*, *Q. trojana* (Greece)). The species typically associated in these oak woods are maples (*Acer monspessulanus*, *Acer opalus*, *Acer obtusatum*) and, in eastern areas, Hop-hornbeam (*Ostrya carpinifolia*), Manna ash (*Fraxinus ornus*), Oriental hornbeam (*Carpinus orientalis*). Forest dominated by thermophilous deciduous oaks, under local microclimatic or edaphic conditions, are found also far north in the Atlantic region, Pannonic and Continental regions.

This class includes:

- Other deciduous non-alluvial formations of meso- and supra-Mediterranean zone, dominated by *Fraxinus* spp., *Ostrya carpinifolia*, *Carpinus orientalis*, *Acer* spp., *Tilia* spp., *Carpinus betulus*, *Aesculus hippocastanus* and *Juglans regia*;
- *Castanea sativa* dominated forests, represented, for the most part, by old established and naturalised plantations.
- Young stands and plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

CXX8 > U111 Agricultural use: grazing

CXX8 > U120 Forestry (wood production)

CXX8 > U350 Wooded areas connected to community services

CXX8 > U36x Wooded areas specifically managed for recreational purposes

CXX8 > U370 Wooded areas in residential areas (urban parks)

CXX8 > U420 Not used wooded areas



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Figure CXX8

## CXX9 Broadleaved evergreen forest

Forests characteristic of the Mediterranean and warmtemperate humid zones of Macaronesia biogeographical regions, dominated by broadleaved sclerophyllous or lauriphylous evergreen trees. Broadleaved evergreen forests can be dominated by the evergreen sclerophyllous oaks (*Quercus suber*, *Q. ilex*, *Q. rotundifolia*, *Q. coccifera*, *Q. alnifolia*).

Cork oak and holm oak form the most widespread evergreen woodland in the Mediterranean Region.

Forest dominated by holm oak (*Quercus ilex*), are typical of the meso-Mediterranean level, but ingression to the supra-mediterranean level is also common. Holm oak woodland is often, but not necessary, calcicolous.

Cork oak (*Quercus suber*) dominated woodland has a west-Mediterranean distribution and is associated to siliceous substrates. It is usually more thermophilous and hygrophilous than holm oak woodland. In some areas, holm-oak and cork-oak woodland are closely related and the two oaks occur in mixed stands.

Arborescent formations dominated by Kermes oak (*Quercus coccifera*, *Quercus 'calliprinos'*, *Quercus 'pseudococcifera'*) or Golden oak (*Quercus alnifolia*); occurring in the Iberian Peninsula, Greece and eastern Mediterranean (Cyprus, Anatolia).

Thermo-Mediterranean woodland dominated by arborescent tree layer, often open, of wild olive (*Olea europaea* ssp. *sylvestris*), carob (*Ceratonia siliqua*) or a mixture of the two; found in southern

Spain (Andalucia, Menorca, Maiorca), southern Italy (Puglia, Calabria, Sardinia, Sicilia), Crete, Cyprus and Turkey.

Woods, often riparian, formed by palm trees of the Mediterranean and Macaronesian zones, *Phoenix theophrasti* of Crete and western Anatolia, and *Phoenix canariensis* of the Canary Islands.

This class includes:

- Young stands and plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

CXX9 > U111 Agricultural use: grazing

CXX9 > U120 Forestry (wood production)

CXX9 > U350 Wooded areas connected to community services

CXX9 > U36x Wooded areas specifically managed for recreational purposes

CXX9 > U370 Wooded areas in residential areas (urban parks)

CXX9 > U420 Not used wooded areas



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Figure CXX9

## CXXA Coniferous forest of the Mediterranean region

The category covers a wide range of xerophytic forests dominated by coniferous species (pines, firs, junipers, cypress, cedar) found in the Mediterranean, Anatolian and Macaronesian biogeographical Regions.

Woodland dominated by thermophilous Pine species (*Pinus pinaster* ssp. *pinaster*, *Pinus pinea*, *Pinus halepensis*, *Pinus brutia*). These pinewoods constitute thermo-Mediterranean pioneer formations, largely widespread in the coasts and lowlands of the circummediterranean regions. Woods dominated by Black pine (*Pinus nigra* spp), characteristic of the mountainous level of the Mediterranean and Anatolia regions. Scots pine forest (*Pinus sylvestris*) in the Mediterranean region have a mountainous and oro-Mediterranean distribution. Local treeline formations of Bosnian pine (*Pinus heldreichii* and *Pinus leucodermis*) are restricted to the southern Balkans, northern Greece and southern Italy. Fir woods (*Abies*) are distributed along the rim of the southern Mediterranean basin and western Anatolia. Woods dominated by Junipers (*Juniperus* spp.) of the Mediterranean and Anatolian mountains. Pure or mixed forests of Lebanon cedar (*Cedrus libani*) of the southern Anatolia and locally north-eastern Anatolia (subpontic forests) and endemic endangered *Cedrus brevifolia* forest of Cyprus.

This class includes:

- Young stands and plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

CXXA > U111 Agricultural use: grazing

CXXA > U120 Forestry (wood production)

CXXA > U350 Wooded areas connected to community services

CXXA > U36x Wooded areas specifically managed for recreational purposes

CXXA > U370 Wooded areas in residential areas (urban parks)

CXXA > U420 Not used wooded areas



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Figure CXXA

## CXXB Mire and swamp forest

Coniferous or broadleaved forested wetlands, located mainly in Fennoscandia with scattered occurrences on peaty soils throughout Europe. Forested wetlands consist of a heterogeneous complex of wet and moist forest types, and they are characterized by a high water table of variable duration. The terminology used to characterize them differs between countries. In Sweden, for example, swamp forests are classified as forests and not as mires if the annual forest productivity exceeds 1 m<sup>3</sup> per ha or if the tree layer has a crown projection exceeding 30 %. In Finland, however, the classification is based on botanical and hydrological criteria. As a consequence, wet and moist forests are assigned to the mire series regardless of forest productivity and tree cover. Therefore, many herb-rich vegetation types are included in this category.

The dominating trees are spruces (*Picea* sp.) and birches (*Betula* sp.) in swamps or pines (*Pinus* sp. in bogs. Swamp forests can be dominated by alder (*Alnus* sp.), birch (*Betula* sp.), pedunculate oaks (*Quercus robur*) or aspen (*Populus tremula*).

This class includes:

- Young stands and plantations having yet to reach a canopy of 10%

This class excludes:

- Peat bogs (H12)

Principles of observation:

- Extended window of observation

Links with Land Use:

CXXB > U111 Agricultural use: grazing

CXXB > U120 Forestry (wood production)

CXXB > U350 Wooded areas connected to community services

CXXB > U36x Wooded areas specifically managed for recreational purposes

CXXB > U370 Wooded areas in residential areas (urban parks)

CXXB > U420 Not used wooded areas



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Figure CXXB

## CXXC Floodplain forests

Alluvial and riparian woodlands and galleries close to main European river channels. These are species-rich often multi-layered communities characterised by different assemblages of forest dominant trees. Forest composition and structure largely depends on the frequency of flooding.

Included are those forest communities typically associated with alluvial or riparian woodlands that may constitute locally important forest types e.g. in Bulgaria, the dense forests of field elm and ashes associated to alluvial and riparian mixed forests.

Riparian forests of the boreal, boreo-nemoral and nemoral zone growing on low-lying areas and organic soils frequently flooded and close to river channels. Characteristically dominated by species of alder (*Alnus*), birch (*Betula* sp.), aspens (*Populus tremula*) and willows (*Salix* sp.).

In the Mediterranean and Macaronesian regions additions local species (e.g. *Fraxinus angustifolia*, *Platanus orientalis*, *Alnus orientalis*, *Nerium Oleander*, *Tamarix*, *Liquidambar* and *Flueggea tinctoria*) exist.

This class includes:

- Young stands and plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

CXXC > U111 Agricultural use: grazing

CXXC > U120 Forestry (wood production)

CXXC > U350 Wooded areas connected to community services

CXXC > U36x Wooded areas specifically managed for recreational purposes

CXXC > U370 Wooded areas in residential areas (urban parks)

CXXC > U420 Not used wooded areas



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Figure CXXC

## CXXD Non-riverine alder, birch or aspen forest

Non-riparian, non-marshy forest formations dominated by alder (*Alnus glutinosa*, *Alnus incana*, *Alnus cordata*), birch (*Betula pendula*, *Betula pubescens*, *Betula celtiberica*, *Betula aetnensis*) or aspen (*Populus tremula*).

This class includes:

- Young stands and plantations having yet to reach a canopy of 10%

Principles of observation:

- Extended window of observation

Links with Land Use:

CXXD > U111 Agricultural use: grazing

CXXD > U120 Forestry (wood production)

CXXD > U350 Wooded areas connected to community services

CXXD > U36x Wooded areas specifically managed for recreational purposes

CXXD > U370 Wooded areas in residential areas (urban parks)

CXXD > U420 Not used wooded areas



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Figure CXXD

## CXXE Plantations and self-sown exotic forest

The class covers forest and self-sown stands of exotic species.

This class includes:

- Eucalyptus (*Eucalyptus* spp),
- Douglas fir (*Pseudotsuga menziesii*),
- Sitka spruce (*Picea sitkensis*),
- Young stands and plantations having yet to reach a canopy of 10%

This class excludes:

- Plantations of autochthonous species

Principles of observation:

- Extended window of observation

Links with Land Use:

CXXE > U111 Agricultural use: grazing

CXXE > U120 Forestry (wood production)

CXXE > U340 Wooded areas connected to commercial area

CXXE > U350 Wooded areas connected to community services

CXXE > U36x Wooded areas specifically managed for recreational purposes

CXXE > U370 Wooded areas in residential areas (urban parks)

CXXE > U420 Not used wooded areas








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Figure CXXE

## D00 Shrubland

Areas dominated (more than 10% of the surface) by shrubs and low woody plants capable of reaching height up to 5m. It may include sparsely occurring trees within a maximum limit of 10% canopy.

In central Europe, only heath lands and some rural communities are falling into this category.

### D10 Shrubland with sparse tree cover

<p>Areas dominated (more than 10% of the surface) by shrubs and low woody plants, including sparsely occurring trees with a canopy between 5 and 10 %.</p> <p>NB: Height of trees at maturity (field 20) and width of features (field 21) have to be assessed and noted in the field form when area size is larger than 0,5 ha.</p> <p>This class includes:</p> <ul style="list-style-type: none"> <li>– Scrub land (pines, rhododendrons, maquis, matorral and deciduous thickets)</li> <li>– Heathland with gorse, heather or broom</li> </ul> <p>This class excludes:</p> <ul style="list-style-type: none"> <li>– Shrubland where tree cover is more than 10% (CXX)</li> <li>– Shrub-like crops: orchards, vineyards in production (B7X-B8X)</li> </ul> <p>Principles of observation:</p> <ul style="list-style-type: none"> <li>– Extended window of observation</li> </ul>	<p>Links with Land Use:</p> <p>D10 &gt; U111 Agricultural use: grazing</p> <p>D10 &gt; U112 Abandoned agricultural land</p> <p>D10 &gt; U120 Forestry (Wood production)</p> <p>D10 &gt; U210 Energy production</p> <p>D10 &gt; U36x Leisure areas and nature reserve</p> <p>D10 &gt; U420 Natural shrubland areas and areas outside agricultural areas not used</p>	 <p>© 2015, Josve05a, CC BY-SA 2.0 Figure D10.1 Rhododendron ferrugineum</p>	 <p>© 2007, Aqwis, CC BY-SA 3.0 Figure D10.2 Heather</p>
	 <p>© 2012, Dentren, CC BY-SA 3.0 Figure D10.3 Matorral</p>	 <p>© 2005, Markus Schweiss, CC BY-SA 3.0 Figure D10.4 Maquis</p>	 <p>© 2008, Roger Griffith, Public domain (PD) Figure D10.5 Gorse</p>

## D20 Shrubland without tree cover

Areas dominated (more than 10% of the surface) by shrubs and low woody plants. Sparsely occurring trees should not cover more than 5% of the area.

This class includes:

- Scrub land (pines, rhododendrons, maquis, matorral and deciduous thickets)
- Dwarf shrub tundra with dwarf birches and willows
- Heather and dwarf juniper vegetation
- Garrigues with strawberry trees, thyme, white rock rose, lavender and rosemary
- Heathland with gorse, heather or broom
- Spiny mediterranean heaths (phrygana)
- Xerophytic areas with succulents

This class excludes:

- Shrubland where tree cover is more than 10% (CXX)
- Shrubland where the tree cover is between 5-10% (D01)
- Shrub-like crops: orchards, vineyards (B7X-B8X)

Principles of observation:

- Extended window of observation

Links with Land Use:

D20 > U111 Agricultural use: grazing

D20 > U112 Abandoned agricultural land

D20 > U120 Forestry (Wood production)

D20 > U36x Leisure areas and nature reserves

D20 > U420 Natural shrubland areas and areas outside agricultural land not used



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Figure D20.1

Garrigues



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Figure D20.2

Phrygana



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Figure D20.3

Rosemary



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Figure D20.4

Lavender



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Figure D20.5

Succulents

## E00 Grassland

Land predominantly covered by communities of grassland, grass-like plants and forbs. It may include sparsely occurring trees within a limit of a canopy of <10% and shrubs within a total limit of cover (including trees) of 20%.

### E10 Grassland with sparse tree/shrub cover

Land predominantly covered by communities of grassland, grass-like plants and forbs including sparsely occurring trees (the canopy is between 5 and 10% and the total of the tree+shrub canopy is between 5 and 20% of the area). Fruit trees on grassland are classified with their species in as B7x in second land cover.

NB: Height of trees at maturity (field 20) and width of features (field 21) have to be assessed when area size is larger than 0,5 ha.

This class includes:

- dry grasslands
- dry edaphic meadows
- steppes with gramineae and artemisia
- plain and mountainous grassland
- wet grasslands
- alpine and subalpine grasslands
- saline grassland
- arctic meadows
- temporarily unstocked areas within forests

Principles of observation:

- Extended window of observation

Links with Land Use:

E10 > U111	Agriculture: Permanent pastures, rough grazings, alpages, meadows
E10 > U112	Fallow and abandoned land
E10 > U120	Clear cuts within previously existing forests
E10 > U210	Energy production
E10 > U31x	Associated areas of transport areas
E10 > U340	Grassland attached to commerce, finance or business areas
E10 > U350	Grassland attached to community service areas
E10 > U36x	Grassland for recreation: public gardens, golf courses, sports fields s and nature reserves
E10 > U370	Grassland attached to residential areas
E10 > U4x0	Natural grassland or abandoned grassland outside agricultural areas not used

### E20 Grassland without tree/shrub cover

Land predominantly covered by communities of grassland, grass like plants and forbs without trees and shrubland (density of tree+shrub crown is less than 5%).

This class includes:

- dry grasslands
- dry meadows and steppes
- plain and mountainous grassland

- wet grasslands
- alpine and subalpine grasslands
- saline grasslands
- arctic meadows
- temporarily unstocked areas within forests

Principles of observation:

- Extended window of observation

Links with Land Use:

E20 > U111	Agriculture: Permanent pastures, rough grazings, alpages
E20 > U112	Fallow and abandoned land
E20 > U120	Clear cuts within previously existing forests
E20 > U31x	Associated areas of transport areas
E20 > U340	Grassland attached to commerce, finance or business areas
E20 > U350	Grassland attached to community service areas
E20 > U36x	Grassland for recreation: public gardens, golf courses, sports fields s and nature reserves
E20 > U370	Grassland attached to residential areas
E20 > U4x0	Natural grassland or abandoned grassland outside agricultural areas not used

*Example of grassland without trees*



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Figure E20

### E30 Spontaneously re-vegetated surfaces

It consists of mostly agricultural land which has not been cultivated this year or the years before. It has not been prepared for sowing any crop this year. This class can also be found on clear-cut forest areas, industrial “brownfields”, storage land and of course on abandoned or unused land etc.

Main case is agricultural land not providing a crop during the entire year or abandoned earlier agricultural surfaces. It is occupied by spontaneous vegetation in case of set-aside arable land, with some tall herbs or weeds. This class applies as well for former grassland or hedge margins which are currently not used anymore but covered by tall herbs fringes. There might be some bare land pockets or crop residues and spontaneous re-grown crops of the before management period. Only surfaces which have not been deliberately sown and do not have any fodder crops like mixed cereals or are temporary grasslands classify for this land cover class.

This class includes:

- Set aside land within agricultural areas
- Unused artificial land

This class excludes:

- Other Legumes and mixtures for Fodder (B53)
- Mixed cereals (B54)
- Temporary grassland (B55)
- Grassland without tree/shrub cover (E20)
- Bare land (F00)

Principles of observation:

- Extended window of observation

Links with Land Use:

E30 > U112	Spontaneous vegetation on fallow land
E30 > U120	Clear cuts within previously existing forests
E30 > U140	Mining and quarrying if in use
E30 > U21x	Energy and industrial production surfaces with spontaneous vegetation cover if still in use
E30 > U31x	Transport, storage, water and waste treatment etc. surfaces with spontaneous vegetation cover if in use
E30 > U420	Unused, spontaneously vegetated land

## F00 Bare land and lichens/moss

Areas with no dominant vegetation cover on at least 90% of the area or areas covered by lichens.

### F10 Rocks and Stones

This class includes:

- inland rock cliffs
- areas of rock outcrop and limestone parent
- scree
- block litter and mountain top debris
- land covered with recent volcanic features.

Principles of observation:

- Basic observation unit

Links with Land Use:

F10 > U140	Scrapped or excavated areas for quarrying, mining purposes
F10 > U21x	Rocky areas attached to energy production
F10 > U22x	Rocky areas attached to industrial use
F10 > U31x	Rocky areas attached to transport areas
F10 > U330	Construction sites
F10 > U340	Rocky areas attached to commercial services
F10 > U350	Rocky areas attached to community services
F10 > U36x	Rocky areas used for recreational and leisure purposes and nature reserves
F10 > U370	Rocky areas attached to residential areas
F10 > U4x0	Rocky areas not used (inland rocks, top mountains)

## F20 Sand

This class includes:

- areas of sand, shingle and mud: beaches, dunes, sand hills
- gravel or sand banks above water level.

This class excludes:

- Intertidal areas (H23)

Principles of observation:

- Basic observation unit

Links with Land Use:

F20 > U120	Clear cuts within previously existing forests
F20 > U140	Scrapped or excavated areas for quarrying, mining purposes
F20 > U21x	Sandy areas attached to energy production
F20 > U22x	Sandy areas attached to industrial use
F20 > U31x	Sandy areas attached to transport areas
F20 > U330	Construction sites
F20 > U340	Sandy areas attached to commercial services
F20 > U350	Sandy areas attached to community services
F20 > U36x	Sandy areas used for recreational and leisure purposes and nature reserves
F20 > U370	Sandy areas attached to residential areas
F20 > U4x0	Sandy areas not used (inland rocks, top mountains)

## F30 Lichens and Moss

This class includes:

- areas covered by lichens
- areas covered by moss.

Principles of observation:

- Basic observation unit

Links with Land Use:

F30 > U120	Clear cuts within previously existing forests
F30 > U140	Scrapped or excavated areas for quarrying, mining purposes
F30 > U21x	Areas attached to energy production
F30 > U22x	Areas attached to industrial use
F30 > U31x	Areas attached to transport areas
F30 > U330	Construction sites
F30 > U340	Areas attached to commercial services
F30 > U350	Areas attached to community services
F30 > U36x	Areas used for recreational and leisure purposes and nature reserves
F30 > U370	Areas attached to residential areas
F30 > U4x0	Areas not used (inland rocks, top mountains)

## F40 Other bare soil

This class includes:

- Bare arable land

- Temporarily unstocked areas within forests (clear cuts)
- Burnt areas
- Tracks and parking areas/yards with bare land cover.

This class excludes:

- Impervious cover (A2x)
- Dune grassland (E20)
- Heaths, scrub and woods dunes (D)
- Peat bogs (H12)

Principles of observation:

- Basic observation unit

Links with Land Use:

F40 > U111	Agricultural bare land, tilled and/or prepared for seeding
F40 > U112	Fallow land with crop residue
F40 > U120	Clear cuts within previously existing forests
F40 > U140	Scrapped or excavated areas for quarrying, mining purposes
F40 > U21x	Bare areas attached to energy production
F40 > U22x	Bare areas attached to industrial use
F40 > U31x	Bare areas attached to transport areas
F40 > U330	Construction sites
F40 > U340	Bare areas attached to commercial services
F40 > U350	Bare areas attached to community services
F40 > U36x	Bare areas used for recreational and leisure purposes and nature reserves
F40 > U370	Bare areas attached to residential areas
F40 > U4x0	Bare areas abandoned or not used

*Example of bare land*



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Figure F40

## G00 Water areas

Inland or coastal areas without vegetation and covered by water and flooded surfaces, or likely to be so over a large part of the year.

Temporarily submerged islands and sandbanks are to be assigned in F classes.

## G10 Inland water bodies

Inland areas of still open water.

This class includes:

- Lakes, ponds, meres, reservoirs

Principles of observation:

- Basic observation unit

Links with Land Use:

G10 > U111	Small ponds attached to agricultural use
G10 > U130	Fish farming
G10 > U140	Gravel and sand extraction under water
G10 > U210	Energy production
G10 > U22x	Industrial bodies of water, dockyards
G10 > U313	Bodies of water used for transport
G10 > U32x	Decanters, reservoirs
G10 > U340	Bodies of water attached to commercial services
G10 > U350	Bodies of water attached to community services
G10 > U361-3	Swimming pools
G10 > U370	Swimming pools
G10 > U4x0	Abandoned or not used bodies of water

## G20 Inland running water

Inland channels of running water.

This class includes:

- Rivers
- Streams
- Springs
- Canals
- Temporary streams

Principles of observation:

- Basic observation unit

Links with Land Use:

G20 > U111	Agriculture
G20 > U130	Fish farming
G20 > U140	Gravel and sand extraction under water
G20 > U313	Rivers, canals used for transport
G20 > U361-3	Recreation, leisure, sport
G20 > U4x0	Abandoned or not used

## G30 Coastal water bodies

Water surfaces in estuaries and lagoons.

This class includes:

- Estuaries: the wide portion of rivers at their mouths subject to the influence of the sea into which the water course flows: the limit is fixed at the point where width is less than 5 km at high tide and greater than 3 km at low tide
- Lagoons: cut off from the sea by coastal banks or other forms of relief with, however, certain possible openings.

Principles of observation:

- Basic observation unit

Links with Land Use:

G30 > U130	Marine aquaculture
G30 > U140	Salt extraction
G30 > U313	Bodies of water used for transport
G30 > U361-3	Specific leisure, recreational equipment's
G30 > U420	Unused

## G50 Glaciers, permanent snow

Areas covered by glaciers (generally measured at the time of their greatest expansion in the season) or permanent snow.

Principles of observation:

- Basic observation unit

Links with Land Use:

G50 > U361-3	Ski tows on glaciers
G50 > U420	Unused

# H00 Wetlands

Wetlands are areas that fall between land and water. These are areas that are wet for long enough periods that the plants and animals living in or near them are adapted to, and often dependent on, wet conditions for at least part of their life cycle.

Wetlands are defined as land that is:

- Inundated with water on a temporary or permanent basis.
- Inundated with water that is usually slow moving or stationary.
- Inundated with water that is shallow.
- Inundated with water that may be fresh, brackish or saline.

## H10 Inland wetlands

Wetlands located in inland.

## H11 Inland marshes

Inland marshes are wetlands usually saturated around the year and seasonally flooded dominated by grasses or grasslike plants.

This class includes:

- Inland marshes
- Reeds (inland)

This class excludes:

- Peatbogs, fens (H12)
- Salt marshes (H21)
- Rice fields (B17)
- Plantations of plants for plaiting including reeds (B84)

Principles of observation:

- Extended window of observation

Links with Land Use:

- H11 > U210 Energy production
- H11 > U321 Water supply and treatment
- H11 > U4x0 Abandoned or Unused

*Example of inland marshes*



© 2020, Annette Meyer (@Nennieinzweidrei), Pixabay License  
Figure H11

## H12 Peatbogs

Bogs accumulate acidic peat, a deposit of dead plant material—usually mosses.

This class includes:

- Turf
- Peat bogs
- Fens

This class excludes:

- Mire and swamp forests (CXX)
- Alluvial forests (tree crown more than 10 %) (CXX)

- Lichens (F30)

Principles of observation:

- Extended window of observation

Links with Land Use:

- H12 > U140 Mining and quarrying: Peat extraction
- H12 < U4x0 Abandoned or Unused

## H20 Coastal wetlands

Wetlands located on marine coasts.

### H21 Salt marshes

A salt marsh is a type of marsh that is a transitional intertidal between land and salty or brackish water.

This class includes:

- Salt marshes
- Marine reeds

This class excludes:

- Inland marshes (H11)
- Salines (H22)

Principles of observation:

- Extended window of observation

Links with Land Use:

- H21 > U210 Energy production
- H21 > U4x0 Abandoned or Unused

### H22 Salines

Actively used or abandoned salt evaporation ponds and salt pans with clear parcels and embankment systems.

This class includes:

- Active or abandoned salines

This class excludes:

- Salt marshes (H21)

Principles of observation:

- Extended window of observation

Links with Land Use:

- H22 > U140 Salt extraction
- H22 > U410 Abandoned

*Example of salines*

© 2005, World Imaging, CC BY-SA 3.0  
Figure H22

## H23 Intertidal flats

Normally unvegetated mud, sand or rock flats located between high and low tide water marks.

This class includes:

- Rock, sand and mud flats affected by tides

This class excludes:

- Salt marshes (H21)
- Active or abandoned salines (H22)
- Beaches normally above the water level (F10)

Principles of observation:

- Extended window of observation

Links with Land Use:

H23 > U130 Fishing: Collect of water organisms

H23 > U420 Unused

*Example of intertidal flats*

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Figure H23

# Land use classification (LUCAS SU LU)

## U110 Agriculture

### U111 Agriculture (excluding fallow land and kitchen gardens)

Areas used for agricultural purposes (NACE Section A01).

This class includes the production of crop products and production of animal products. This class includes growing of crops in open fields as well in greenhouses. The preparation of products for the primary markets is included here. These areas are normally harvested with use of agricultural machinery (exc. delicate crops). The class also includes field construction (e.g. agricultural land terracing, drainage, preparing rice paddies etc. - NACE section F), as well as landscape care and maintenance (NACE 81.30).

This class includes:

#### 01.1 Growing of non-perennial crops

- Growing of cereals (except rice), leguminous crops and oil seeds
- Growing of rice
- Growing of vegetables and melons, roots and tubers
- Growing of sugar cane
- Growing of tobacco
- Growing of fiber crops
- Growing of fodder crops (including temporary grassland)
- Growing of other non-perennial crops (including industrial reed beds)

#### 01.2 Growing of perennial crops

- Growing of grapes
- Growing of tropical and subtropical fruits
- Growing of citrus fruits
- Growing of pome fruits and stone fruits
- Growing of other tree and bush fruits and nuts
- Growing of oleaginous fruits
- Growing of beverage crops
- Growing of spices, aromatic, drug and pharmaceutical crops
- Growing of other perennial crops

#### 01.3 Plant propagation

- Growing of plants for planting
- Growing of plants for ornamental purposes, including turf for transplanting
- Growing of live plants for bulbs, tubers and roots; cuttings and slips; mushroom spawn

#### 01.4 Animal production

(includes raising (farming) and breeding of all animals, except aquatic animals)

- Raising of dairy cattle (including the grazing areas)
- Raising of other cattle and buffaloes (including the grazing areas)
- Raising of horses and other equines (including the grazing areas)
- Raising of sheep and goats (including the grazing areas)
- Raising of swine/pigs
- Raising of poultry
- Raising of other animals (including the grazing areas)

#### 01.5 Growing of crops combined with farming of animals (mixed farming)

- Crop growing in combination with farming of livestock at mixed activity units with a specialization ratio in either one of less than 66%

#### 01.6 Support activities to agriculture and post-harvest crop activities

- Support activities for crop production
- Support activities for animal production
- Post-harvest crop activities
- Seed processing for propagation

This class excludes:

- Any subsequent processing of the agricultural products beyond that needed to prepare them for the primary markets
- Manufacture of food products and beverages and tobacco products (U221)
- Manufacturing of textile products (U222)
- U112 Fallow or abandoned agricultural land
- U113 Kitchen gardens

### U112 Fallow land

Agricultural land (cropland) not used for the entire year for crop production, as part of the field rotation. Also, all agricultural land which is set aside long-term is included.

This class includes:

- Set aside within agricultural areas
- Bare land for agricultural use (in other years)

This class excludes:

- Grazing of lucerne, clover, sainfoin, trefoil, black medick, etc. (U111)
- Abandoned permanent crops (U410)

### U113 Kitchen garden

Gardens, where the crops are planted heterogeneously and mainly for own consumption. These areas are mostly fenced (by metal fences or hedges) and mostly situated in residential areas or as allotment gardens.

This class includes:

- Allotment gardens
- Kitchen gardens (around the house)

This class excludes:

- Industrial agriculture U111

## U120 Forestry

Areas used for forestry purpose (NACE A02)

This class includes the production of round wood as well as the extraction and gathering of wild growing non-wood forest products. Besides the production of timber, forestry activities result in products that undergo little processing, such as firewood, charcoal and round wood used in an unprocessed form (e.g. pit-props, pulpwood etc.). These activities can be carried out in natural or planted forests.

This class includes:

- Forestry and logging
  - Growing of standing timber: planting, replanting, transplanting, thinning and conserving of forests and timber tracts
  - Growing of coppice, pulpwood and fire wood
  - Operation of forest tree nurseries
  - Logging: felling of timber and production of wood in the rough such as pit-props, split poles, pickets or fuel wood
  - Gathering of wild growing forest materials: balatta and other rubber-like gums, cork, lac, resins, balsams, vegetable hair, eel grass, acorns, horse-chestnuts, mosses, lichens
  - Support services to forestry
  - Growing of Christmas trees.

This class excludes:

- Growing of cork trees
- Further processing of wood beginning with sawmilling and planning of wood (U227).

## U130 Aquaculture and fishing

Areas used for fishing and aquaculture (NACE A03).

This class includes capture fishery and aquaculture, covering the use of fishery resources from marine, brackish or freshwater environments, with the goal of capturing or gathering fish, crustaceans, mollusks and other water organisms and products (e.g. aquatic plants, pearls, sponges).

This class includes:

- Fishing
- Aquaculture (Fish farming)

## U140 Mining and quarrying

Areas used for mining and quarrying purposes (NACE Section B).

Mining and quarrying include the extraction of minerals occurring naturally as solids (coal and ores), liquids (petroleum) or gases (natural gas). Extraction can be achieved by different methods such as underground or surface mining, well operation etc. This section includes supplementary activities aimed at preparing the crude materials for marketing, for example, crushing, grinding, cleaning, drying, sorting, concentrating ores, liquefaction of natural gas and agglomeration of solid fuels.

This class includes:

- Mining of coal and lignite
- Extraction of crude petroleum and natural gas
- Mining of metal ores
- Quarrying of stone, sand and clay
- Mining of chemical and fertiliser minerals
- Extraction of peat
- Extraction of salt
- Other mining and quarrying n.e.c.
- Mining support service activities.

This class excludes:

- Areas of waste disposal and treatment (U322)

- Processing of the extracted materials
  - Coal, oil and metal processing (U223)
  - Production of non-metal mineral goods (U224)
  - Chemical and allied industries and manufacturing (U225)
- Usage of the extracted materials without a further transformation for construction purposes (U330).

## U210 Energy production

Areas used for producing and generating energy (NACE D 35).

This section includes the activity of providing electric power, natural gas, steam, hot water and the like through a permanent infrastructure of lines, mains (supply network) and energy production plants, including renewable energy such as hydropower, solar and wind power as well as biogas. This section includes the operation of electric and gas utilities, which generate and control electric power or gas. Manufacture of gas by purification, blending and other processes from gases and production of gas for the purpose of gas supply by carbonation of coal or from by-products of agriculture or from waste.

This class includes:

- Electricity (incl. renewable energy)
- Gas
- Steam
- Air conditioning supply
- and the attached areas.

This class excludes:

- Operation of water and sewage utilities (U321).
- Typically long-distance transport of gas, water etc. through pipelines (U315).

## U220 Industry and manufacturing

### U221 Manufacturing of food, beverages and tobacco products

Areas used for production of food and beverage products and luxury foodstuff (NACE C10, 11, 12).

This class includes the processing of the products of agriculture, forestry and fishing into food for humans or animals. Some activities are considered manufacturing (for example, those performed in bakeries, pastry shops, and prepared meat shops etc. which sell their own production) even though there is retail sale of the products in the producers' own shop. It includes the manufacture of beverages and mineral water, as well as the processing of tobacco for final consumption.

This class includes:

- Manufacture of food products
- Manufacture of beverages
- Manufacture of tobacco products
- And the attached areas.

This class excludes:

- Preparation of meals for immediate consumption, such as in restaurants (U340).

## U222 Manufacturing of textile products

Areas used for manufacturing of textile products (NACE C13, 14, 15).

This class includes preparation and spinning of textile fibres as well as textile weaving, finishing of textiles and wearing apparel, manufacture of made-up textile articles and apparel (e.g. household linen, blankets, rugs, cordage etc.). It also includes all tailoring (ready-to-wear or made-to-measure), in all materials (e.g. leather, fabric, knitted and crocheted fabrics etc.), of all items of clothing and accessories. Furthermore, dressing and dyeing of fur and the transformation of hides into leather by tanning or curing and fabricating the leather into products for final consumption. And it includes the manufacture of similar products from other materials, such as rubber footwear, textile luggage etc.

This class includes:

- Manufacture of textiles
- Manufacture of wearing apparel
- Manufacture of leather and related products
- And the attached areas.

## U223 Coal, oil and metal processing

Areas used for Coal, oil and metal processing (NACE C19, 24, 25).

This class includes the transformation of crude petroleum and coal into usable products (petroleum refining), manufacture of gases as products of petroleum refineries. It also includes the activities of smelting and/or refining ferrous and non-ferrous metals and the manufacture of "pure" metal products (such as parts, containers and structures. The manufacture of weapons and ammunition is also included in this class.

This class includes:

- Manufacture of coke and refined petroleum products
- Manufacture of basic metals
- Manufacture of fabricated metal products, except machinery and equipment
- And the attached areas.

This class excludes:

- The manufacture of petrochemicals from refined petroleum (U225).

## U224 Production of Non-metal mineral goods

Areas used for manufacturing of non-metal mineral goods (NACE C23).

This class includes manufacturing activities related to a single substance of mineral origin. It includes the manufacture of glass and glass products (e.g. flat glass, hollow glass, fibres, technical glassware etc.), ceramic products, tiles and baked clay products, and cement and plaster, from raw materials to finished articles. The manufacture of shaped and finished stone and other mineral products is also included in this class.

This class includes:

- Manufacture of glass and glass products
- Manufacture of refractory products
- Manufacture of clay building materials
- Manufacture of other porcelain and ceramic products
- Manufacture of cement, lime and plaster
- Manufacture of articles of concrete, cement and plaster

- Cutting, shaping and finishing of stone
- Manufacture of abrasive products and non-metallic mineral products n.e.c.
- And the attached area.

## **U225 Chemical and allied industries and manufacturing**

Areas used for industrial and manufacturing of chemical and related products (NACE C20-22, 25).

This class includes the transformation of organic and inorganic raw materials by a chemical process and the formation of products, also the production of basic pharmaceutical products and pharmaceutical preparations, medicinal chemical and botanical products, rubber and plastic products.

This class includes:

- Manufacture of chemicals and chemical products
- Manufacture of basic pharmaceutical products and pharmaceutical preparations
- Manufacture of rubber and plastic products
- and the attached areas.

## **U226 Machinery and equipment**

Areas used for production of machinery and equipment (NACE C18.2, 26-30, 31, 32).

This class includes the manufacture of machinery and equipment: of computers, electronic products, consumer electronics, measuring, testing and navigating equipment, magnetic and optical media as well as the reproduction of recorded media, such as compact discs, videos, software on discs or tapes, records etc. This class includes the manufacture of products that generate, distribute and use electrical power, of general-purpose and special machinery, of motor vehicles and transport equipment (boats, airplanes etc.), manufacture of furniture of any but wooden material, other manufacturing.

This class includes:

- Reproduction of recorded media
- Manufacture of computer, electronic and optical products
- Manufacture of electrical equipment
- Manufacture of machinery and equipment n.e.c.
- Manufacture of motor vehicles, trailers and semi-trailers
- Manufacture of other transport equipment
- Manufacture of furniture (if of any other than wooden material)
- Other manufacturing
- And the attached areas

This class excludes:

- Areas where waste is sorted to prepare recycling of used material (U322)
- Repair and installation of machinery and equipment (U340).

## **U227 Wood based products**

Areas used for production of wood-based products and of articles of cork, straw and plaiting materials (NACE C16-18.1, 31).

This class includes the manufacture of wood products and prefabricated wood buildings. The production processes include sawing, planning, shaping, laminating, and assembling of wood products. Also included is

the manufacture of furniture, or the installation of wooden fittings and the like. This class also includes the manufacture of pulp, paper and converted paper products as well as printing of such products.

This class includes:

- Manufacture of wood and of products of wood and cork
- Manufacture of paper and paper products
- Printing and service activities related to printing
- Manufacture of furniture (if of wooden material)
- and the attached area.

## **U310 Transport, communication networks, storage, protective works**

### **U311 Railways**

Areas used for railways transport (NACE 49.1, 49.2).

This class includes:

- All types of railways
- TGV traces
- Railway stations
- Funiculars

This class excludes:

- Tramways and tram stations (U312)

### **U312 Roads**

Land areas used for roads (NACE 49.4).

This class includes:

- All types of areas used for road transportations (streets, overland roads, highways) and associated areas (e.g. rest areas)
- Car parking
- Bus stations
- Tramways and tram stations.

### **U313 Water transport**

Areas used for transport on water (NACE 50).

This class includes:

- Channels
- Rivers used for ship transportation
- Lakes
- Estuaries
- Areas used for harbours and ports.

This class excludes:

- Areas used for storage of goods (U317)

- Docks (U226).

### **U314 Air transport**

Areas used for air transport (NACE 51).

This class includes:

- Airports for people and freight transportation
- Airports with and without concrete runways

This class excludes:

- Areas used for storage of goods (U317)
- Docks for aircrafts (U226).

### **U315 Transport via Pipelines**

Areas used for transport via pipelines (NACE 49.5).

This class includes:

- Transport of oil, water, gas or other material via pipelines.

### **U316 Telecommunication**

Areas used for telecommunication infrastructures and postal services (NACE 53, partly 61.1).

This class includes:

- Postal and courier activities
- Telecommunications networks

This class excludes:

- Theatres, production studios (TV, Movies), etc. (U361).

### **U317 Storage**

Areas used for storage of goods and warehousing (NACE 52).

This class includes warehousing and support activities for transportation, such as operating of transport infrastructure (e.g. airports, harbours, tunnels, bridges, etc.), the activities of transport agencies and cargo handling.

This class includes:

- Warehousing and storage,
- Support activities for transportation.

This class excludes:

- Attached areas to land used in other categories (e.g. in U22x)

### **U318 Protection works**

Areas used for protection infrastructures.

This class includes:

- Protection infrastructure against land slides,
- Dikes.

## **U320 Water and waste treatment**

### **U321 Water supply and treatment**

Areas used for water collection, treatment and supply (NACE E 36, 37).

This class includes the collection, treatment and distribution of water for domestic and industrial needs. Collection of water from various sources, as well as distribution by various means is included. It also includes the operation of sewer systems or sewage treatment facilities that collect, treat, and dispose of sewage. Furthermore: recovering and purifying water: stations to raise water levels, for purifying waste water, decanters, spreader areas, storage (reservoir), extraction of water.

This class includes:

- Water collection, treatment and supply
- Sewerage.

This class excludes:

- Distribution of water via pipeline (U315).

### **U322 Waste treatment**

Areas used for waste treatment (NACE E 38, 39).

This class includes the collection, treatment, and disposal of waste materials. This also includes local hauling of waste materials and the operation of materials recovery facilities.

This class includes:

- Waste collection, treatment and disposal activities; materials recovery (recycling)
- Remediation activities and other waste management services)

This class excludes:

- Incineration stations for energy production (U210).

## **U330 Construction**

Areas used for construction whatever the degree of completion (NACE F).

This section includes general construction and specialized construction activities for buildings and civil engineering works. It includes new work, repair, additions and alterations, the erection of prefabricated buildings or structures on the site and also construction of a temporary nature. Thus, the construction of entire dwellings, office buildings, stores and other public and utility buildings, farm buildings etc., or the construction of civil engineering works such as motorways, streets, bridges, tunnels, railways, airfields,

harbours and other water projects, irrigation systems, sewerage systems, industrial facilities, pipelines and electric lines, sports facilities etc.

This class includes:

- Construction of buildings
- Civil engineering
- Specialised construction activities (e.g. demolition).

## U340 Commerce, finance, business

Areas used for commercial, financial and general business activities, including handicraft (NACE CX3, G, I55.1, 56, K, L, M, N).

This section includes wholesale and retail sale of any type of goods, and rendering services incidental to the sale of merchandise. It includes the specialized repair of goods produced in the manufacturing sector with the aim to restore machinery, equipment and other products to working order, as well as the provision of general or routine maintenance (i.e. servicing) on such products. This section also includes the provision of short-stay accommodation for visitors and other travelers and the provision of complete meals and drinks fit for immediate consumption. It covers financial service activities, including insurance, reinsurance and pension funding activities and activities to support financial services, as well as real estate activities. This section also includes, specialized professional, scientific and technical activities, which require a high degree of training, and make specialized knowledge and skills available to users, are covered. This section includes support general business operations (renting and leasing activities, employment and travel agencies, private security activities, service to buildings and landscape, office services.

This class includes:

- Repair and installation of machinery and equipment
- Wholesale and retail trade
- Hotels and similar accommodation
- Food and beverage service activities
- Financial and insurance activities
- Real estate activities
- Professional, scientific and technical activities
- Administrative and support service activities

This class excludes:

- Holiday and other short-stay accommodation (U363)
- Camping grounds, recreational vehicle parks and trailer parks (U363).

## U350 Community services

Areas used for public administration, local authorities, defence, education, health and social work, religion (NACE M75, O, P, Q, U).

This section includes activities of a governmental nature, normally carried out by the public administration, and extraterritorial, international organizations. This section includes education at any level or for any profession, public as well as private education. This section includes the provision of health and social work activities. Religious areas (like churches, graveyards) are falling under this category as well. Military areas belong also to this group.

This class includes:

- Veterinary services
- Public administration and defence (military)
- Education
- Human health and social work activities
- Religion
- Activities of extraterritorial organisations and bodies.

## U36 Recreation, leisure, sport

### U361 Amenities, museums, leisure

Areas used for cultural purposes, amenities and leisure, recreation, amusement and show activities (groups 59.1, 60.1, 60.2, 90, R91.0 93.2, of NACE).

This class includes:

- Library, archives, museum and other cultural activities
- Preservation of historical sites, including botanical and zoological gardens
- Creative, arts and entertainment activities
- Amusement and recreation activities, including parks and beaches
- Motion picture, video, radio and television activities.

### U362 Sport

Areas used for sport activities (group 93.1 of NACE).

This class includes:

- Sporting activities.

### U363 Holiday camps

Areas used for holidays camps (short-stay lodging e.g. apartments, camping) (NACE 55.2, 55.3).

This class includes the provision of accommodation, principally for short stays by visitors. This may take the form of apartments or flats in small free-standing multi-storey buildings or clusters of buildings, or single storey bungalows, chalets, cottages and cabins, as well as camping grounds, recreational vehicle and trailer parks.

This class includes:

- Holiday and other short-stay accommodation (holiday apartment lots)
- Camping grounds, recreational vehicle parks and trailer parks (also closed holiday camps)

This class excludes:

- Hotels (U340).

## U37 Residential

Areas used for housing purpose.

This class includes:

- Residential gardens

This class excludes:

- Hotels (U340)
- Old people homes, children homes, prisons, monasteries, convents (U350).

## U400 Unused and abandoned areas

### U410 Abandoned areas

This class consists of abandoned areas with signs or structures of previous use of any kind.

Areas belonging to the abandoned class are not in use and can't anymore be used for the original purpose without major reparation/renovation work.

This class includes:

- Abandoned industrial areas
- Abandoned transport areas (e.g. railways)
- Abandoned residential areas
- Abandoned residential gardens
- Abandoned agricultural areas, mainly permanent crops (e.g. orchards, vineyards)
- Abandoned construction sites
- Abandoned mining areas

This class excludes:

- Fallow land (U112)
- Construction sites (U330).

### U420 Semi-natural and Natural areas not in use

This class includes areas which are in natural / semi-natural state and no signs of any use are visible.

This class excludes:

- Unused land formerly developed, now vacant or derelict (U410)
- Fallow land, Agricultural land which is temporarily not used (U112)
- Grazed areas (U111).

# Annexes

## Annex 1: Third party copyright

Table 1: Third party copyright

No.	Section	Figure	Copyright	Source	License (Name)	License (Link)
1	B11 Common wheat	11.1	© Hitchcock, A.S. (rev. A. Chase). USDA, NRCS - 1950 Triticum aestivum L. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=TRAE">https://plants.usda.gov/home/plantProfile?symbol=TRAE</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
2	B11 Common wheat	11.6	© Steve Hurst. Provided by ARS Systematic Botany and Mycology Laboratory. United States, Maryland, Prince George's Co., Beltsville. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=TRAE">https://plants.usda.gov/home/plantProfile?symbol=TRAE</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
3	B12 Durum wheat	12.8	© Tracey Slotta. Provided by ARS Systematic Botany and Mycology Laboratory. Ethiopia, Bishoftu. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=TRDU3">https://plants.usda.gov/home/plantProfile?symbol=TRDU3</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
4	B12 Durum wheat	12.9	© Tracey Slotta. Provided by ARS Systematic Botany and Mycology Laboratory. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=TRTU2">https://plants.usda.gov/home/plantProfile?symbol=TRTU2</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
5	B12 Durum wheat	12.10	© Tracey Slotta. Provided by ARS Systematic Botany and Mycology Laboratory. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=TRTU2">https://plants.usda.gov/home/plantProfile?symbol=TRTU2</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
6	B13 Barley	13.1	© Hitchcock, A.S. (rev. A. Chase). USDA, NRCS - 1950 Hordeum vulgare L. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=HOVU">https://plants.usda.gov/home/plantProfile?symbol=HOVU</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
7	B13 Barley	13.7	© Steve Hurst. Provided by ARS Systematic Botany and Mycology Laboratory. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=HOVU">https://plants.usda.gov/home/plantProfile?symbol=HOVU</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
8	B13 Barley	13.11	© 2020, Yves Bernardi (ybernardi), Pixabay License	<a href="https://pixabay.com/de/photos/barley-landwirtschaft-getreide-5301771/">https://pixabay.com/de/photos/barley-landwirtschaft-getreide-5301771/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
9	B14 Rye	14.1	© Hitchcock, A.S. (rev. A. Chase). USDA, NRCS - 1950 Secale cereale L. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=SECE">https://plants.usda.gov/home/plantProfile?symbol=SECE</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
10	B14 Rye	14.8	© Steve Hurst. Provided by ARS Systematic Botany and Mycology Laboratory. Russia, Siberia. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=SECE">https://plants.usda.gov/home/plantProfile?symbol=SECE</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
11	B15 Oats	15.1	© Hitchcock, A.S. (rev. A. Chase). USDA, NRCS - 1950 Avena sativa L. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=AVSA">https://plants.usda.gov/home/plantProfile?symbol=AVSA</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
12	B15 Oats	15.8	© Jose Hernandez. Provided by ARS Systematic Botany and Mycology Laboratory. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=AVSA">https://plants.usda.gov/home/plantProfile?symbol=AVSA</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
13	B16 Maize	16.1	© Hitchcock, A.S. (rev. A. Chase). USDA, NRCS - 1950 Zea mays L. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=ZEMA">https://plants.usda.gov/home/plantProfile?symbol=ZEMA</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
14	B17 Rice	17.1	© Hitchcock, A.S. (rev. A. Chase). USDA, NRCS - 1950 Oryza sativa L. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=ORSA">https://plants.usda.gov/home/plantProfile?symbol=ORSA</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
15	B17 Rice	17.2	© Steve Hurst. Provided by ARS Systematic Botany and Mycology Laboratory. Philippines, Manila. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=ORSA">https://plants.usda.gov/home/plantProfile?symbol=ORSA</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>

16	B19 Other Cereals Buckwheat	19.1	© Steve Hurst. Provided by ARS Systematic Botany and Mycology Laboratory. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=FAES2">https://plants.usda.gov/home/plantProfile?symbol=FAES2</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
17	B19 Other Cereals Sorghum (Millet)	19.15	© Steve Hurst. Provided by ARS Systematic Botany and Mycology Laboratory. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=SOBI2">https://plants.usda.gov/home/plantProfile?symbol=SOBI2</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
18	B19 Other cereals	19.17	© 2006, Markus Hagenlocher, CC BY-SA 3.0	<a href="https://commons.wikimedia.org/wiki/File:Reismelde.jpg">https://commons.wikimedia.org/wiki/File:Reismelde.jpg</a>	CC BY-SA 3.0	<a href="https://creativecommons.org/licenses/by-sa/3.0/">https://creativecommons.org/licenses/by-sa/3.0/</a>
19	B23 Other Root Crops	23.13	© 2013, Holger Langmaier (HolgersFotografie), Pixabay License	<a href="https://pixabay.com/de/photos/kohlrabi-gem%C3%BCse-lebensmittel-kohl-176849/">https://pixabay.com/de/photos/kohlrabi-gem%C3%BCse-lebensmittel-kohl-176849/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
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21	B23 Other root crops	23.15	© 2014, AnRo0002, CC0 1.0	<a href="https://commons.wikimedia.org/wiki/File:20140630Chaerophyllum_bulbosum.jpg">https://commons.wikimedia.org/wiki/File:20140630Chaerophyllum_bulbosum.jpg</a>	CC0 1.0 UNIVERSAL	Deed - CC0 1.0 Universal - Creative Commons
22	B23 Other root crops	23.16	© 2014, AnRo0002, CC0 1.0	<a href="https://commons.wikimedia.org/wiki/File:20140908Helianthus_tuberosus4.jpg">https://commons.wikimedia.org/wiki/File:20140908Helianthus_tuberosus4.jpg</a>	CC0 1.0 UNIVERSAL	Deed - CC0 1.0 Universal - Creative Commons
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24	B23 Other Root Crops	23.18	© 2017, gate74, Pixabay License	<a href="https://pixabay.com/de/photos/r%C3%BCbe-blau-rot-gem%C3%BCse-lebensmittel-2546876/">https://pixabay.com/de/photos/r%C3%BCbe-blau-rot-gem%C3%BCse-lebensmittel-2546876/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
25	B23 Other root crops	23.19	© 2007, Goldlocki, CC BY-SA 3.0	<a href="https://commons.wikimedia.org/wiki/File:PastinakePflanzegeerntet.jpg">https://commons.wikimedia.org/wiki/File:PastinakePflanzegeerntet.jpg</a>	CC BY-SA 3.0	<a href="https://creativecommons.org/licenses/by-sa/3.0/">https://creativecommons.org/licenses/by-sa/3.0/</a>
26	B33 Soya	33.1	© Steve Hurst. Provided by ARS Systematic Botany and Mycology Laboratory. @ USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=GLMA4">https://plants.usda.gov/home/plantProfile?symbol=GLMA4</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
27	B35 Other fibre and oleaginous crops	35.13	© 2016, ivabalk, Pixabay License	<a href="https://pixabay.com/de/photos/knospflanze-mohn-sommer-ernte-1435754/">https://pixabay.com/de/photos/knospflanze-mohn-sommer-ernte-1435754/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
28	B35 Other fibre and oleaginous crops	35.19	© 2006, Eugene van der Pijl, CC BY-SA 3.0	<a href="https://commons.wikimedia.org/wiki/File:Boehmeria_nivea_1.jpg">https://commons.wikimedia.org/wiki/File:Boehmeria_nivea_1.jpg</a>	CC BY-SA 3.0	Deed - Attribution-ShareAlike 3.0 Unported - Creative Commons
29	B35 Other fibre and oleaginous crops	35.20	© 2005, Patrick-br, CC BY-SA 3.0	<a href="https://commons.wikimedia.org/wiki/File:Plantsisal.jpg">https://commons.wikimedia.org/wiki/File:Plantsisal.jpg</a>	CC BY-SA 3.0	Deed - Attribution-ShareAlike 3.0 Unported - Creative Commons
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31	B37 Other Non-permanent industrial crops	37.7	© 2018, Syrio , CC BY-SA 4.0	<a href="https://commons.wikimedia.org/wiki/File:Unidentified_Cirsium_Neist_Point_02.jpg">https://commons.wikimedia.org/wiki/File:Unidentified_Cirsium_Neist_Point_02.jpg</a>	CC BY-SA 4.0	Deed - Attribution-ShareAlike 4.0 International - Creative Commons
32	B37 Other Non-permanent industrial crops	37.8	© 2018, Syrio , CC BY-SA 4.0	<a href="https://commons.wikimedia.org/wiki/File:Unidentified_Cirsium_Neist_Point_01.jpg">https://commons.wikimedia.org/wiki/File:Unidentified_Cirsium_Neist_Point_01.jpg</a>	CC BY-SA 4.0	Deed - Attribution-ShareAlike 4.0 International - Creative Commons
33	B37 Other non-permanent industrial crops	37.12	© Hannes Grobo, Britannica, Creative Commons Attribution ShareAlike 2.5 (Generic)	<a href="https://commons.wikimedia.org/wiki/File:Sugarcane_Planting_Harvesting_Processing_Britannica">https://commons.wikimedia.org/wiki/File:Sugarcane_Planting_Harvesting_Processing_Britannica</a>	Creative Commons	Creative Commons Attribution ShareAlike 2.5 (Generic)   Britannica
34	B43 Other fresh vegetables	43.26	© 2014, Hans, Pixabay License	<a href="https://pixabay.com/de/photos/rosenkohl-r%C3%B6schen-gem%C3%BCse-gr%C3%BCn-318200/">https://pixabay.com/de/photos/rosenkohl-r%C3%B6schen-gem%C3%BCse-gr%C3%BCn-318200/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
35	B43 Other fresh vegetables	43.27	© 2020, Bishnu Sarangi (sarangib), Pixabay License	<a href="https://pixabay.com/de/photos/kohl-brassica-oleracea-">https://pixabay.com/de/photos/kohl-brassica-oleracea-</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>

				<a href="https://pixabay.com/de/photos/gesund-gr%C3%BCn-4924994/">gesund-gr%C3%BCn-4924994/</a>		
36	B43 Other fresh vegetables	43.28	© 2014, Pixabay License - Pixabay Creative Commons	<a href="https://pixabay.com/de/photos/rosenkohl-gem%C3%BCse-br%C3%BCsseler-kohl-455967/">https://pixabay.com/de/photos/rosenkohl-gem%C3%BCse-br%C3%BCsseler-kohl-455967/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
37	B43 Other fresh vegetables	43.29	© 2020, HOerwin56, Pixabay License	<a href="https://pixabay.com/de/photos/bl%C3%BCte-l%C3%B6wenzahn-wiesenblume-5164212/">https://pixabay.com/de/photos/bl%C3%BCte-l%C3%B6wenzahn-wiesenblume-5164212/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
38	B43 Other fresh vegetables	43.37	© 2017, Jason Goh (cegoh), Pixabay License	<a href="https://pixabay.com/de/photos/chili-chillipadi-bird-s-eye-chili-2693677/">https://pixabay.com/de/photos/chili-chillipadi-bird-s-eye-chili-2693677/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
39	B43 Other fresh vegetables	43.38	© 2018, Couleur, Pixabay License	<a href="https://pixabay.com/de/photos/aubergine-solanum-melongena-feld-3705548/">https://pixabay.com/de/photos/aubergine-solanum-melongena-feld-3705548/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
40	B43 Other fresh vegetables	43.39	© 2020, jhenning, Pixabay License	<a href="https://pixabay.com/de/photos/landwirtschaft-gem%C3%BCse-ernte-5484641/">https://pixabay.com/de/photos/landwirtschaft-gem%C3%BCse-ernte-5484641/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
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	B51 Clover	51.1	© Steve Hurst. Provided by ARS Systematic Botany and Mycology Laboratory. United States, Maryland, Prince George's Co., Beltsville. @USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/plantProfile?symbol=TRIN3">https://plants.usda.gov/home/plantProfile?symbol=TRIN3</a>	USDA-NRCS PLANTS Database	<a href="https://plants.usda.gov/home/usage">https://plants.usda.gov/home/usage</a>
41	B51 Clovers	51.12	© 2017, Arn, CC BY-SA 3.0	<a href="https://commons.wikimedia.org/wiki/File:Trifolium_resupinatum_4.jpg">https://commons.wikimedia.org/wiki/File:Trifolium_resupinatum_4.jpg</a>	CC BY-SA 3.0	<a href="#">Deed - Attribution-ShareAlike 4.0 International - Creative Commons</a>
42	B51 Clovers	51.13	© 2006, BerndH, CC BY-SA 3.0	<a href="https://commons.wikimedia.org/wiki/File:Trifolium_incarnatum_050606.jpg">https://commons.wikimedia.org/wiki/File:Trifolium_incarnatum_050606.jpg</a>	CC BY-SA 3.0	<a href="#">Deed - Attribution-ShareAlike 3.0 Unported - Creative Commons</a>
43	B53 Other Legumes and mixtures for Fodder	53.13	© 2023, Nichole Ouellette, CC BY-SA 4.0	<a href="#">File:Melilotus alba 019.jpg - Wikimedia Commons</a>	CC BY-SA 4.0	<a href="#">Deed - Attribution-ShareAlike 4.0 International - Creative Commons</a>
44	B53 Other Legumes and mixtures for Fodder	53.14	© 2005, Tigerente, CC BY-SA 3.0	<a href="#">File:MedicagoLupulin a02.jpg - Wikimedia Commons</a>	CC BY-SA 3.0	<a href="#">Deed - Attribution-ShareAlike 3.0 Unported - Creative Commons</a>
45	B53 Other Legumes and mixtures for Fodder	53.15	Source: Image shared through Wikimedia Create Commons - Original book source: Prof. Dr. Otto Wilhelm Thomé Flora von Deutschland, Österreich und der Schweiz 1885, Gera, Germany Permission granted to use under GFDL by Kurt Stueber	<a href="#">File:Illustration Trigonella foenum-graecum0 clean.jpg - Wikimedia Commons</a>	PDM 1.0  ***The author died in 1925, so this work is in the public domain in its country of origin and other countries and areas where the copyright term is the author's life plus 95 years or fewer.	<a href="#">Deed - Public Domain Mark 1.0 Universal - Creative Commons</a>
46	B74 Nuts-trees	74.7	© 2016, Erhan T. (reklam43), Pixabay License	<a href="https://pixabay.com/de/photos/pistazie-erdnuss-baum-1137886/">https://pixabay.com/de/photos/pistazie-erdnuss-baum-1137886/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
47	B75 Other fruit tree and berries	75.2	© 2016, naturepic, Pixabay License	<a href="https://pixabay.com/de/photos/apricot-blumen-aprikosenbl%C3%BCten-bl%C3%BCht-7185098/">https://pixabay.com/de/photos/apricot-blumen-aprikosenbl%C3%BCten-bl%C3%BCht-7185098/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>

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49	B75 Other fruit trees and berries	75.6	© 2018, utroja0, Pixabay License	<a href="https://pixabay.com/de/photos/mirabelle-mirabellen-gelb-baum-3614352/">https://pixabay.com/de/photos/mirabelle-mirabellen-gelb-baum-3614352/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
50	B77 Other citrus fruits	77.4	© 2016, AliceKeyStudio, Pixabay License	<a href="https://pixabay.com/de/photos/zitrone-baum-limette-gr%C3%BCn-natur-1121636/">https://pixabay.com/de/photos/zitrone-baum-limette-gr%C3%BCn-natur-1121636/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
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52	B84 Permanent industrial crops	84.7	Source: Image shared through Wikimedia Commons by AxelBoldt	<a href="File:Csinensis.jpg - Wikimedia Commons">File:Csinensis.jpg - Wikimedia Commons</a>	Public domain by author AxelBoldt	<a href="https://en.wikipedia.org/wiki/Public_domain">https://en.wikipedia.org/wiki/Public_domain</a>
53	CXX4 Acidophilous oak and oak-birch forest	CXX4	© 2004, Marion Phillips, CC BY-SA 2.0	<a href="https://commons.wikimedia.org/wiki/File:Wood_with_bluebells_-_geograph.org.uk_-_701019.jpg">https://commons.wikimedia.org/wiki/File:Wood_with_bluebells_-_geograph.org.uk_-_701019.jpg</a>	CC BY-SA 2.0	<a href="#">Deed - Attribution-ShareAlike 2.0 Generic - Creative Commons</a>
54	CXX5 Mesophytic deciduous forest	CXX5	© 2022, Artur Pawlak (@artelliii72), Pixabay License	<a href="https://pixabay.com/de/photos/eichenwald-wald-eichen-b%C3%A4ume-gras-7478990/">https://pixabay.com/de/photos/eichenwald-wald-eichen-b%C3%A4ume-gras-7478990/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
55	CXX6 Beech forest	CXX6	© 2011, Hans, Pixabay License	<a href="https://pixabay.com/de/photos/wald-buchen-buchenwald-bl%C3%A4tter-6897/">https://pixabay.com/de/photos/wald-buchen-buchenwald-bl%C3%A4tter-6897/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
56	CXX7 Mountainous beech forest	CXX7	© 2018, FelixMittermeier, Pixabay License	<a href="https://pixabay.com/de/photos/buchenwald-sonnenuntergang-wald-3681430/">https://pixabay.com/de/photos/buchenwald-sonnenuntergang-wald-3681430/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
57	CXX8 Thermophilous deciduous forest	CXX8	© 2016, Valiphotos, Pixabay License	<a href="https://pixabay.com/de/photos/weg-wald-natur-jahreszeit-gr%C3%BCn-1345721/">https://pixabay.com/de/photos/weg-wald-natur-jahreszeit-gr%C3%BCn-1345721/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
58	CXX9 Broadleaved evergreen forest	CXX9	© 2006, Ardo Beltz, CC BY-SA 3.0	<a href="https://commons.wikimedia.org/wiki/File:Dehesa2.jpg">https://commons.wikimedia.org/wiki/File:Dehesa2.jpg</a>	CC BY-SA 3.0	<a href="https://creativecommons.org/licenses/by-sa/3.0/deed.en">https://creativecommons.org/licenses/by-sa/3.0/deed.en</a>
59	CXXA Coniferous forest of the Mediterranean region	CXXA	© 2023, MARTINOPHUC, Pixabay License	<a href="https://pixabay.com/de/photos/kiefernwald-rocky-mountains-berge-8336624/">https://pixabay.com/de/photos/kiefernwald-rocky-mountains-berge-8336624/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
60	CXXB Mire and swamp forests	CXXB	© 2020 , Alfonsa Gabe (@Alfonsagabe), Pixabay License	<a href="https://pixabay.com/de/photos/sumpf-ven-natur-naturschutzgebiet-5266641/">https://pixabay.com/de/photos/sumpf-ven-natur-naturschutzgebiet-5266641/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
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63	CXXE Plantations and self-sown exotic forest	CXXE	© 2019, Dimitrios Gkorilas (@jimgor33), Pixabay License	<a href="https://pixabay.com/de/users/jimgor33-5579676/">https://pixabay.com/de/users/jimgor33-5579676/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
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74	H11 Inland marshes	H11	© 2020, Annette Meyer (@Nenniezweidrei), Pixabay License	<a href="https://pixabay.com/nl/photos/weide-landschap-park-vijver-5238750/">https://pixabay.com/nl/photos/weide-landschap-park-vijver-5238750/</a>	Pixabay License	<a href="https://pixabay.com/nl/service/license/">https://pixabay.com/nl/service/license/</a>
75	H22 Salines	H22	© 2005, World Imaging, CC BY-SA 3.0	<a href="https://commons.wikimedia.org/wiki/File:MaraisSalant.JPG">https://commons.wikimedia.org/wiki/File:MaraisSalant.JPG</a>	CC BY-SA 3.0	<a href="#">Deed - Attribution-ShareAlike 3.0 Unported - Creative Commons</a>
76	H23 Intertidal flats	H23	© 2017, Marisa04, Pixabay License	<a href="https://pixabay.com/z/photos/moor-peat-bog-venn-high-venn-2226019/">https://pixabay.com/z/photos/moor-peat-bog-venn-high-venn-2226019/</a>	Pixabay License	<a href="https://pixabay.com/z/service/license/">https://pixabay.com/z/service/license/</a>

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406	C10 Broadleaved and evergreen woodland	C10	© European Union, CC BY 4.0	EU	CC BY 4.0	<a href="https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011D0833">https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011D0833</a>
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408	C30 Mixed woodland	C31	© European Union, CC BY 4.0	EU	CC BY 4.0	<a href="https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011D0833">https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011D0833</a>
409	CXX1 Boreal forest	CXX1	© European Union, CC BY 4.0	EU	CC BY 4.0	<a href="https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011D0833">https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011D0833</a>
410	CXX2 Hemiboreal forest and nemoral coniferous forest and mixed broadleaved-coniferous forest	CXX2	© European Union, CC BY 4.0	EU	CC BY 4.0	<a href="https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011D0833">https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011D0833</a>
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