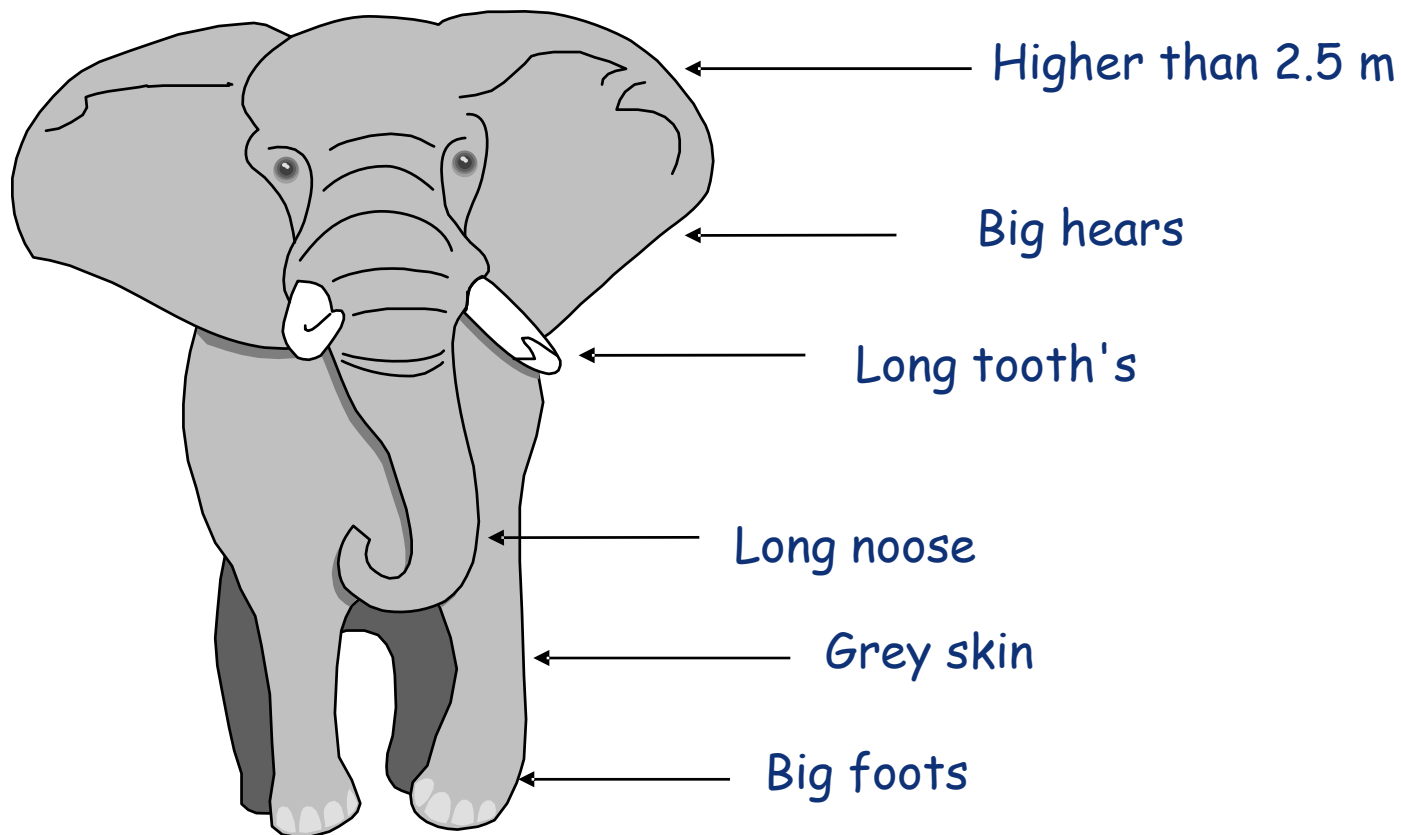




# Standardization of the land cover classes using FAO Land Cover Classification System (LCCS)

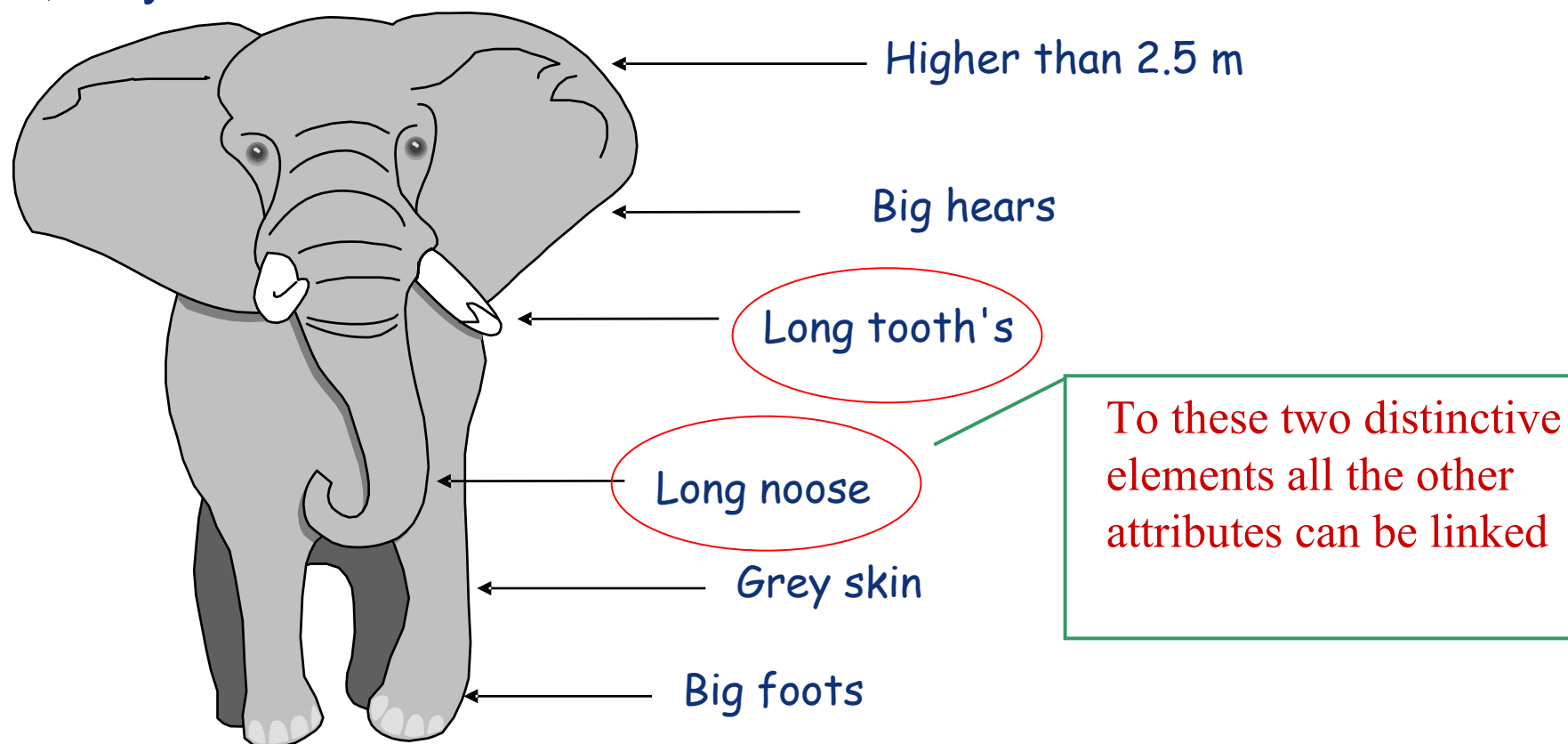
# Description vs. Classification

If a description of an elephant must be done, all the possible elements can be used



## Description vs. Classification

If a classification must be done, only few elements will be used, only the ones that allow a distinct identification.



## Land use/ land cover concepts (INSPIRE 2007)

**Land cover:** Physical and biological cover of the earth's surface including artificial surfaces, agriculture areas, forests, (semi-) natural areas, wetlands, water bodies.

**Land Use:** Territory characterised according to its current and future planned functional or socio-economic purpose (e.g. residential, industrial, commercial, agricultural, forestry, recreational)



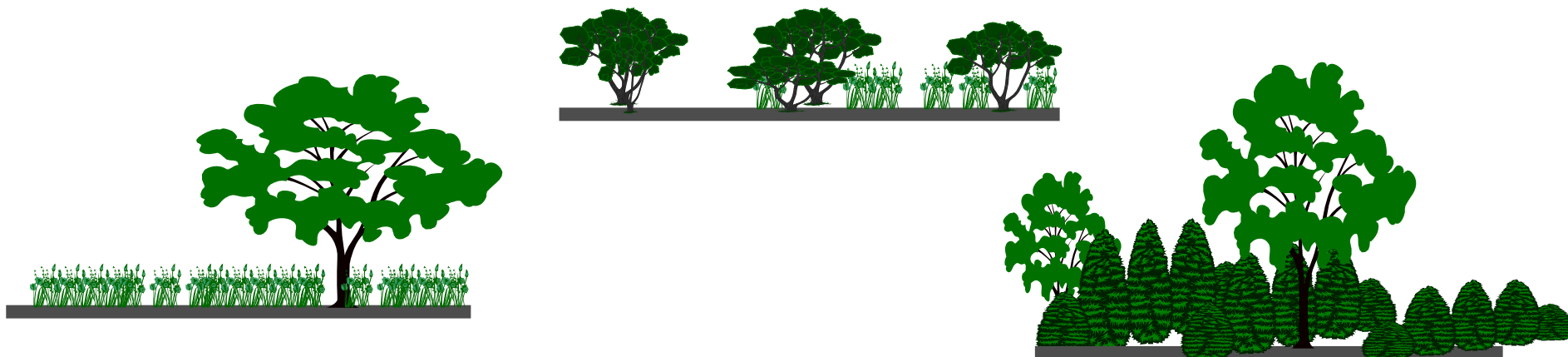
# Land use/ land cover concepts in CAP regulation

Art 44(2) Council Reg (EC) No 1782/2003

→ **The land cover concept**

Art. 49 Comm. Reg. (EC) No 796/2004

→ **The land use concept**



# Land cover concept in LPIS

Why the land cover is a crucial parameter for LPIS?

- It provides unambiguous characterization of Earth surface
- It is the easiest detectable indicator of human interventions on the land.
- It is the main feature constraining the use of land
- It is the main indicator for the productivity of terrestrial ecosystems

But land cover is also a critical parameter for environmental databases.

- Land cover changes are very relevant to environmental policy
- Land cover is the basic geographic feature that other environmental applications can use as reference base

# Land cover definitions used by EU MS in their LPIS

Country	Type of land cover/use recorded	RP	Payment scheme
DK, UK-NI	None	PB	SPS
HU	SAPS eligible/SAPS non eligible	PB	SAPS
PL	1-forest; 2-tree or bushes; 3-water; 4-roads; 5-industrial area; 6-habitats; 7-other; 8-permanent grasslands; 9-orchards; 10-arable land; 11-gardens	CadP	SAPS
DE-Bavaria	farmland, permanent grassland, permanent orchard, vineyard	FB	SPS
FI	Field, forest (forestation and environmental schema) and pasture.	FB	SPS
SE	Agricultural land only	PB	SPS
LT	<ul style="list-style-type: none"> <li>- Agricultural blocks (bl1)</li> <li>- Build-up blocks (bl2) with small areas of cultivated land</li> <li>- Miscellaneous blocks (bl3) contain all the other land cover (forests, non-eligible land, etc.)</li> <li>- Grassland blocks (bl4)</li> <li>- Orchard blocks (bl5)</li> <li>- Non-subsidized area blocks (bl2003) are abandoned and treated as ineligible area (reference year 30/06/2003) and claimed for subsidies after 30/06/2003.</li> </ul>	PB	SAPS

basic land cover categories

Standard description is necessary  
Through legend?

Distinct categorization of  
land cover is necessary  
Through classification?

# How to classify the land cover in LPIS?

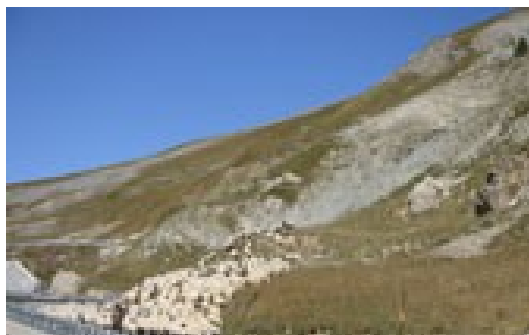
Using a systematic framework or **classification system** defining the classes and criteria used to distinguish land cover

Through a **legend**, as the expression of the classification system applied at a specific place and defined scale

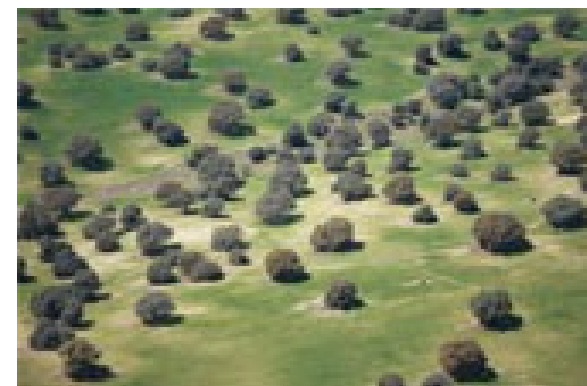
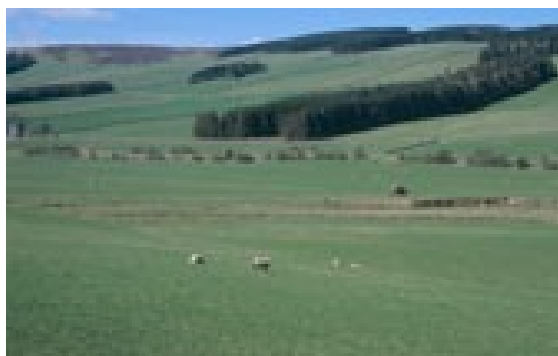
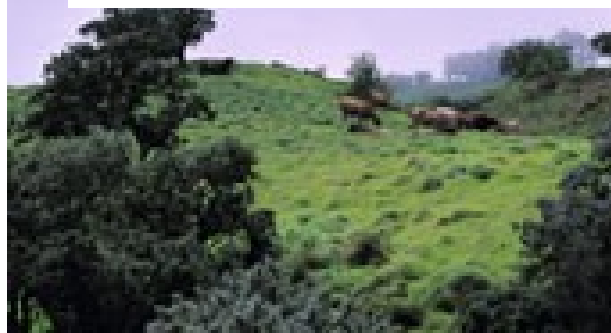
In practice many land cover mapping exercises produce legends that are a **hybrid** of land cover and land use classes



## Different grassland – same definition?



**While it is not possible to develop standard legends  
because they are specific to use (or region and scale),  
it is possible to adopt standard classification systems**



# FAO/UN Land Cover Classification System (LCCS)

It is possible to state LCCS is a new language to describe in a standardised way the different land cover features.

In a language you have words and a syntax that allow you to create a semantic concept.

The different combination of words with a given syntax give a very wide possibility of concepts generation.

## **FAO/UN Land Cover Classification System (LCCS)**

### Draft ISO Standards for Land Cover Classification

ISO 19144-1 Geographic information – Classification Systems Part 1: Classification System Structure, and;

ISO 19144-2 Geographic information – Classification Systems Part 2: Land Cover Classification System (LCCS: UN-FAO, 2005)

# The initial **Dichotomous Phase** of LCCS

Below the **Dichotomous Phase** is shown consisting of pairs of buttons of which the user can select one at the time.

Classifier used:  
**Presence of Vegetation**

**Primarily Vegetated Area(s)**

**Primarily Non-Vegetated Area(s)**

Classifier used:  
**Edaphic Condition**

**Terrestrial**

**Aquatic or  
Regularly Flooded**

**Terrestrial**

**Aquatic or  
Regularly Flooded**

Classifier used:  
**Artificiality of Cover**

Cultivated  
and Managed  
Terrestrial  
Area(s)

Natural and  
Semi-Natural  
Terrestrial  
Vegetation

Cultivated  
Aquatic or  
Regularly  
Flooded  
Area(s)

Natural and  
Seminatural  
Aquatic or  
Regularly  
Flooded Veg.

Artificial  
Surfaces and  
Associated  
Area(s)

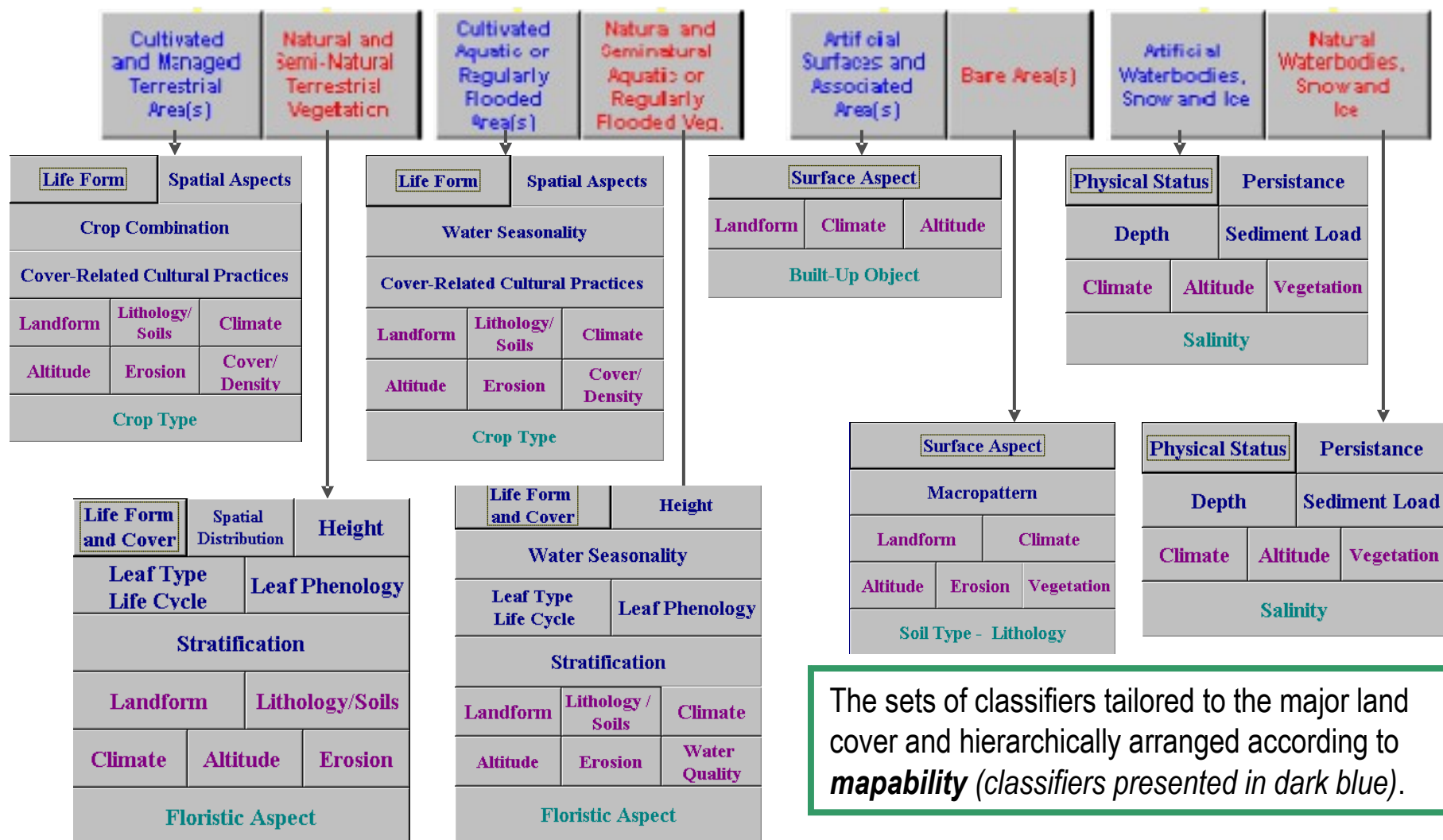
Bare Area(s)

Artificial  
Waterbodies,  
Snow and Ice

Natural  
Waterbodies,  
Snow and  
Ice



# The subsequent **Modular-Hierarchical** Phase of LCCS



# Concept for creation of a land cover class

With each classifier option selected, the string of codes grows, the class name changes and so does the code.

## Example “Natural and Semi-Natural Terrestrial Vegetation (A12)” :

<u>Classifiers Used:</u>	<u>Boolean Formula:</u>	<u>Standard Class Name:</u>	<u>Code:</u>
Life Form & Cover	A3A10	Closed Forest	20005
Height	A3A10B2	High Closed Forest	20006
Spatial Distribution	A3A10B2C1	Continuous Closed Forest	20007
Leaf Type	A3A10B2C1D1	Broadleaved Closed Forest	20095
Leaf Phenology	A3A10B2C1D1E2	Broadleaved Deciduous Forest	20097
2nd Layer: LF, C, H	A3A10B2C1D1E2F2F5F7G2	Multi-Layered Broadleaved Deciduous Forest	20628
3rd Layer: LF, C, H	A3A10B2C1D1E2F2F5F7G2 F2F5F10G2	Multi-Layered Broadleaved Deciduous Forest With Emergents	20630

# Classification of LPIS land cover using LCCS

## Arable land

**Basic classifier: Cultivated and Managed Terrestrial Areas**

**Life Form:           Herbaceous**

**Spatial Aspect – Field size:           N/A**

**Spatial Aspect – Distribution:       N/A**

**Spatial Aspect – Crop Combination:       Multiple Crops**

**Cover-related Cultural Practices - Water Supply: Rainfed**

**Cover-related Cultural Practices – Cultivation Time Factor: Fallow**



Classified used	Boolean Formula	Standard Class Name	Code
Herbaceous Crops	A3XXB5C2D1D8	Herbaceous Crop(s), with Fallow System	10660



# Classification of LPIS land cover using LCCS

## Family gardens

**Basic classifier: Cultivated and Managed Terrestrial Areas**

**Life Form: Herbaceous (non-graminoids)**

**Spatial Aspect – Field size: Small**

**Spatial Aspect – Distribution: Continuous**

**Spatial Aspect – Crop Combination: Multiple Crops**

**Cover-related Cultural Practices - Water Supply: Irrigated**

**Cover-related Cultural Practices – Cultivation Time Factor: Permanent**



Classified used	Boolean Formula	Standard Class Name	Code
Herbaceous Crops	A5B2B5C2D3D9	Permanently Cropped Area With Small Sized Field(s) Of Irrigated Non-Graminoid Crop(s)	11135

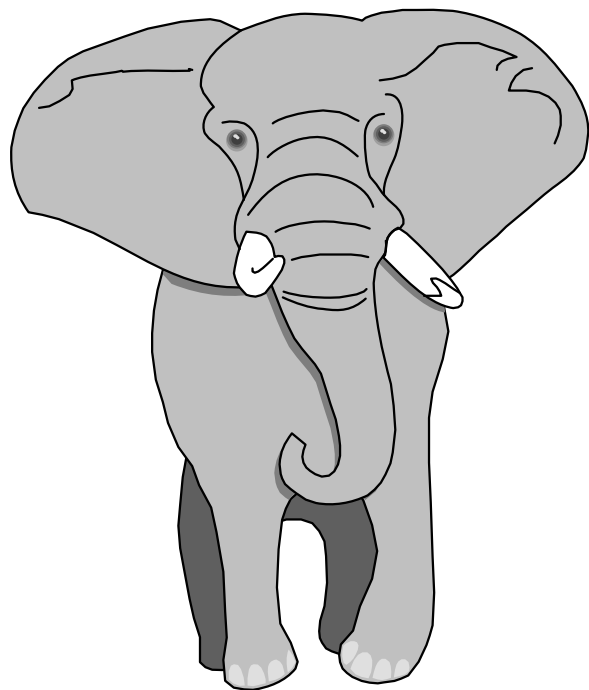
## Final Remarks

**LCSS is a concise language, it uses the minimum set of classifiers to characterise a land cover feature.**

**Does this framework enable us to delineate something that is a better representation of the maximum eligible area, than the land use delineation?**



# Thank you for your attention!



Look Sancho! An elephant!

No, master.

This is an

A3A10B2C1D1E2F2F5F7G2

