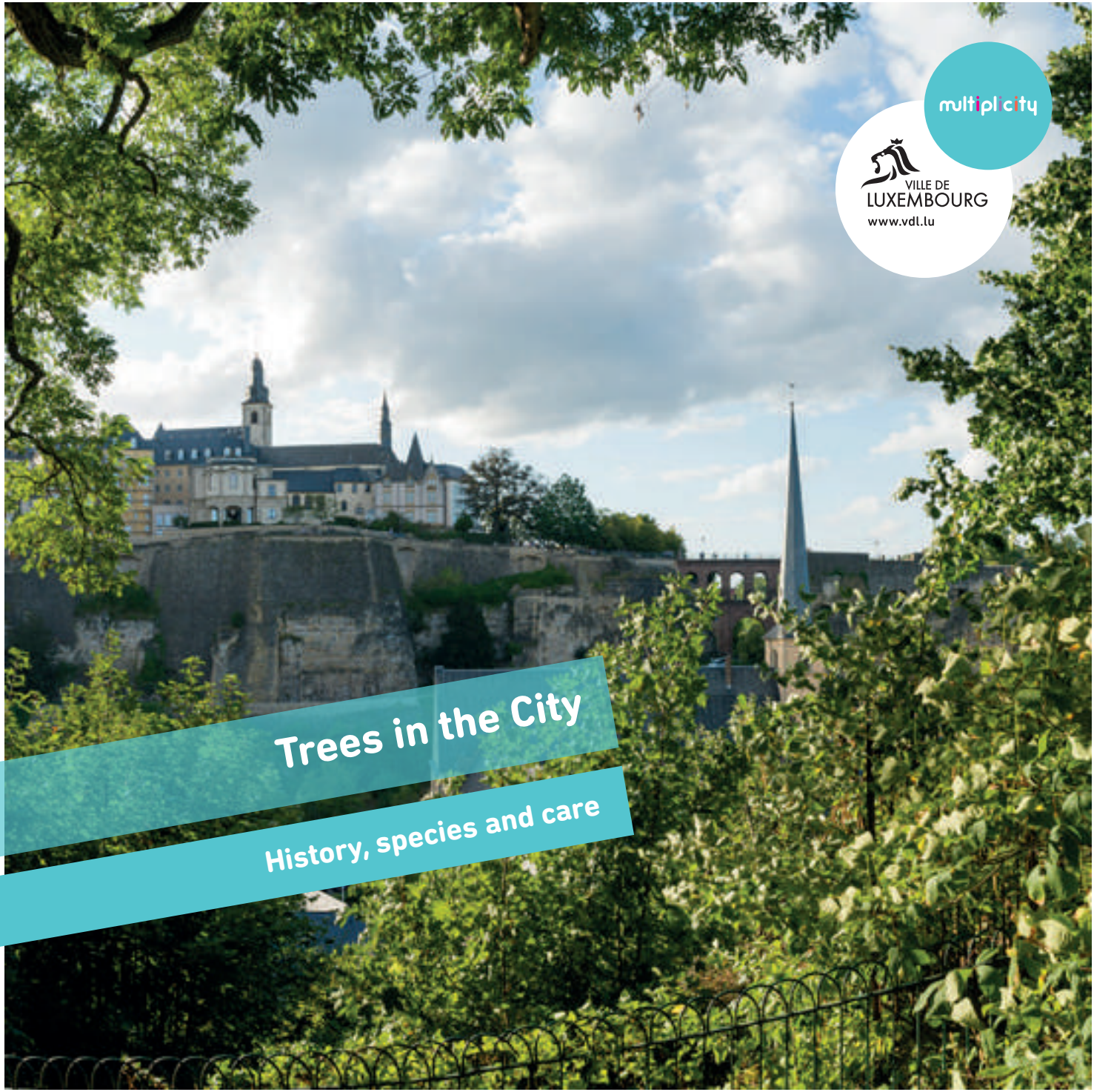
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Trees in the City
History, species and care

Table of contents

Edition notice

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In addition to the contents of this comprehensive brochure, you can visit this website to view the city map with the trees presented here and take a virtual journey through the city's parks.

◂ Pétrusse Valley in its autumn attire

Trees in Luxembourg City

Foreword

Luxembourg City has been committed to biodiversity for many years, as part of its constant endeavours to guarantee its citizens a high quality of life in an urban setting. Creating a healthy, ecologically balanced environment for city residents is one of the priorities of the College of Aldermen here in the capital of the Grand Duchy, and we know that trees have an exceptionally important role to play in the quality of life we are striving for.

However, trees don't just help make urban and residential areas look green and beautiful, they also improve air quality and help cool our streets, public squares and parks on hot summer days thanks to the shade they create and their dense crowns. They also provide an important habitat for many different species of animal.

While our capital also has its own city forest covering an area of 1,055 hectares, this brochure focuses on individual city and park trees. It tells the history of our trees and explains how they are looked after and protected, with information on the different native and non-native species growing here in Luxembourg City.

Lydie Polfer
Mayor

Maurice Bauer
Chief Alderman
Alderman for environment
and protection of nature

◂ Kinnekswiss City Park

© Luxembourg City Photothèque

◂ Horse chestnut (Aesculus hippocastanum)

A trip back in time

The Service Parcs (Parks Department) – History and role

Until the mid-18th century, parks were the private gardens of aristocrats and the wealthy. It was only with the advance of urbanisation that the concept of public parks became more widespread. In the mid-19th century, the city architect was given responsibility for looking after the city's parks, gardens and footpaths. In 1875, the City took over what is now the City Park, which was laid out by Edouard André on the site of the former fortifications. In 1939, the Parks and Cemeteries Department was established. It was renamed the Garden Department during the German occupation from 1940 to 1944. The Service Parcs has been operating as a department in its own right since 1961.

The responsibilities of the Service Parcs include maintaining parks and green spaces, looking after trees, creating floral decorations, maintaining outdoor playgrounds and sports fields, supplying compost to the residents of Luxembourg City, training apprentice gardeners and florists, and setting up Christmas trees.

▴ Édouard François André (1840-1911), French gardener and landscape designer

Trees in public places

Many photographers have enjoyed the trees in Luxembourg City's public squares over the years, capturing images that can now be viewed at the Luxembourg City Photothèque.

Place d'Armes

The Place d'Armes is at the heart of the city, and is referred to locally as the "salon of the city". Magnificent trees such as the horse chestnut[1] have adorned this square since as far back as the 1920s. At that time, these trees were already between 60 and 80 years old.

New trees were planted from 1939 onwards. At the time, limes[2] were chosen. It is no longer possible to tell what subspecies they are exactly, but they might well have been small-leaved limes[3] as these are better adapted to the climate.

Today, the Place d'Armes is home to sycamore trees[4] which are extremely robust, can withstand the heat and are easy to prune.

▲ Aesculus hippocastanum – Sapindaceae family – Soapberry

▲ Aesculus hippocastanum – Sapindaceae family – Soapberry

▲ Tilia – Malvaceae family – Mallow and Tilia Cordata

[1] Aesculus hippocastanum – Sapindaceae family – Soapberry
[2] Tilia – Malvaceae family – Mallow
[3] Tilia cordata
[4] Platanus x hispanica – Platanaceae family – Plane

▲ Platanus x hispanica – Platanaceae family – Plane

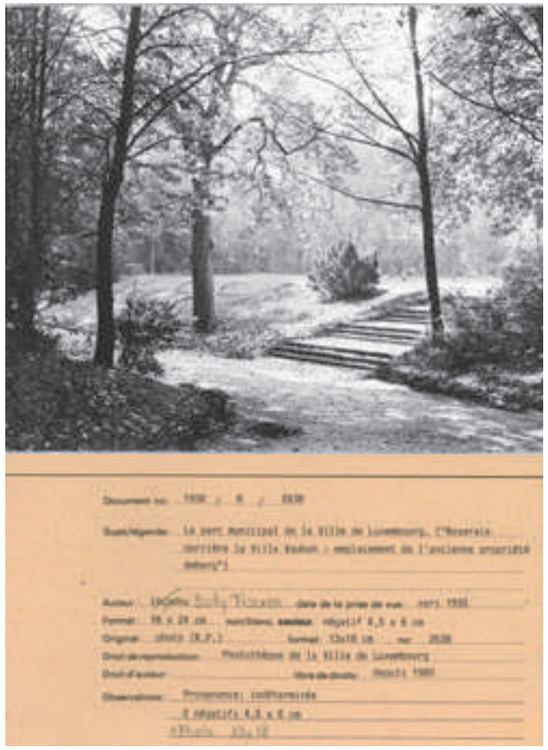
Place Guillaume II

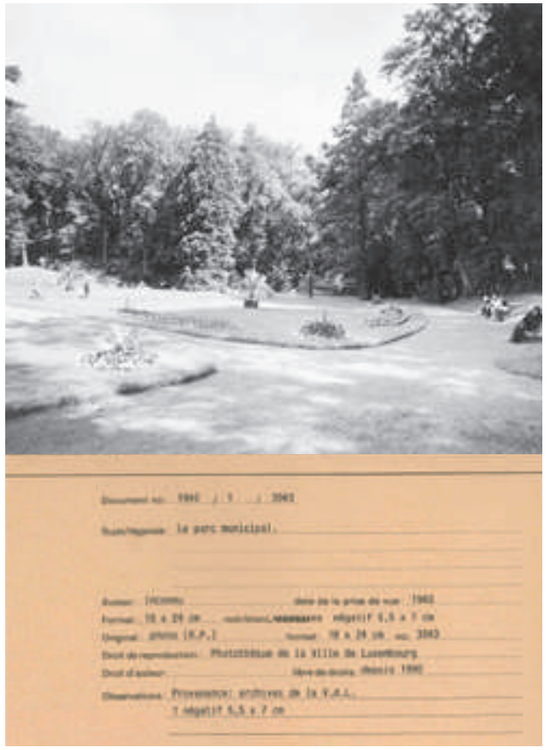
Limes were also the tree of choice when planting the Place Guillaume II (nicknamed "Knuedler") in the 1920s. As the choice of species was more limited back then, the same reliable species tended to be planted over and over again.

Place Guillaume II

The City Park

The City Park was once much more densely planted, with considerably more trees and fewer footpaths. Over time, the park was adapted to the needs of the local population.





The City Park in 1920 near today's pergola behind Villa Vauban.

Villa Vauban / City Park

The importance and impact of trees in the city

The biggest benefits for nature and the environment include:

Overview of the positive effects that trees and other forms of greenery have on the climate in the city	
AIR QUALITY	Filtering out dust and gaseous air pollutants and enriching the air with oxygen
MICRO-CLIMATE	Limiting temperature extremes (providing shade and directing air flow) Humidifying the air: for a cooler and more pleasant feel
WATER MANAGEMENT	Storing water and reducing waste-water peaks during periods of high rainfall
SAVING ENERGY	Reducing heat loss and the need for cooling
PROPERTY VALUE	Upgrading built-up areas
PHYSICAL HEALTH	Reducing stress through exercise and by stimulating the senses
MENTAL HEALTH	Well-being, identification, sense of home, feeling of belonging and togetherness
BIODIVERSITY	Habitat for many creatures
GREENHOUSE EFFECT	Carbon fixation
AESTHETICS	Improving the appearance of streets, residential areas and public spaces

It is a well-known fact that trees and green spaces are very important for good quality of life.

There are a huge number of publications out there at the moment describing the positive effects of green spaces, city trees and parks. A study by the Technical University of Berlin showed that having many small green spaces is more beneficial than having just one large park. Smaller and medium-sized green spaces spread out evenly over a wider area are more efficient because this creates fewer heat islands and improves the cooling effect. Every unsealed surface can contribute to a better climate thanks to the fact that it is unsealed.

▲ Copper beech (Fagus sylvatica "Atropunicea")

◄ Cherry tree, City Park (Prunus avium)

Avenues
Avenues are one example of unsealed surfaces. Single or double avenues of trees with large, adjoining crowns are hugely beneficial in the hot summer months and are appreciated by everyone.

Beneath the crowns of the trees, the temperature is lowered. These minimal cooling effects are due to the sun's rays being filtered by the leaves and water being evaporated by the trees.
Private front gardens, courtyards, green façades and roofs are other green spaces which have a cooling effect.


Allée Leopold Goebel


Val Sainte Croix


Rue Schiller, example of an area before unsealing


Allée Carmel


Rue Schiller, example of an area after unsealing

The positive health impacts of different types of greenery* (after Körner: quality and diversity)

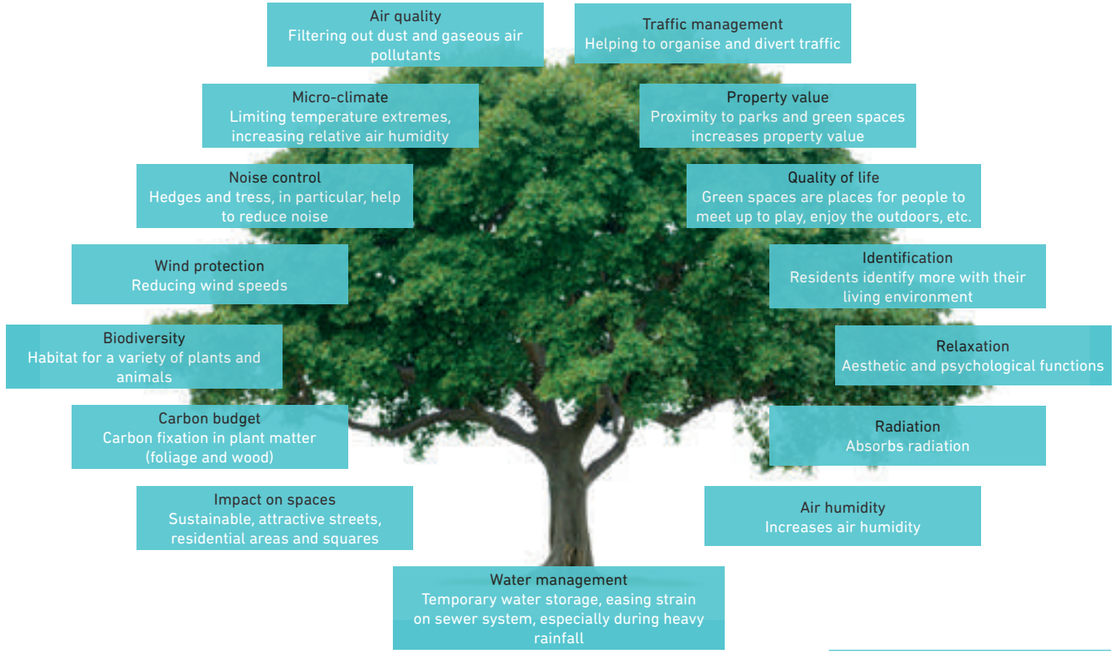
TYPE OF GREEN SPACE	PRIMARY BENEFITS
GREENERY IN THE LIVING ENVIRONMENT	Improving mental and physical well-being
	Increasing ability to concentrate
	Reducing aggression
	Increasing social interaction
	Reducing stress
PARKS	Improving mental and physical well-being
	Improved social health
	Reducing stress and encouraging relaxation
	Motivating people to get active
COMMUNITY GARDENS	Social integration
	Growing your own food through gardening
	Establishing social interaction and social integration
	Creating meaningful, satisfying activities
THERAPEUTIC GARDENS	Relieving stress, anxiety and pain in patients
	Reducing stress among hospital staff
	Muscle relaxation through stress reduction and light, suitable activities
	Shorter recovery time
	Integration of people who find it difficult to spend time outdoors for health reasons
INTERIOR GREENING	Improves air quality
	Fewer complaints such as headaches, fatigue, sore throat, dry eyes
	Reduces stress
	Increasing ability to concentrate
	Improves mental well-being
(CITY) FOREST	Reducing stress through exercise and by stimulating the senses
	Reducing stress through fresh air and a peaceful environment
	Sense of identity and purpose
	Relaxing in close proximity to nature

* Körner S., Nagel, A. & F. Bellin-Harder (2008): Grün und Gesundheit (Greenery and health). Literature study, University of Kassel, Department of Landscaping/Vegetation Technology.

Unsealed surfaces are also increasingly being used in school playgrounds. A school playground in Bonnevoie, for example, was unsealed and a large number of trees planted instead. The trees, limes and sycamores in this case, will benefit from greater "water infiltration" in the future.

Info: If you would like to install a green roof, please consult our green roof register first to find out whether your roof is suitable for greening. You will also get detailed information on the potential for rainwater retention and capturing CO_2 and particulates, plus recommendations on suitable plant species.

Benefits of green spaces in the city



School playground on Rue des Ardennes ►

Luxembourg City tree register

History

On 22 April 1992, the company that was commissioned by the College of Aldermen of Luxembourg City to reorganise the municipal gardening department recommended creating an inventory of all of the city's green spaces, including the trees planted and maintained by the gardening department.

Up until 12 April 1990, tree data had either not been compiled at all or only recorded very inadequately; there were no records, neither in paper form in a card index nor on topographical maps, as in numerous other European cities and capitals since the 1970s.

However, even before this date, a decision had been made to create a tree register with all the data the Parks Department would require to manage all the trees under their custodianship, not least given the recognised need for such a register and also in response to an academic article[5] published in a German journal.

Historical review from 1991 onwards

In the early 1990s, IT[6] was also being rolled out at the Parks Department. As a result, numerous inquiries were made to IT companies in Germany, France, Belgium and even the Netherlands.

There were only a few commercial providers around at the time, as this was an area of IT that was still in its infancy.

The software that was ultimately selected was one of the few that had a module for calculating staff requirements, making it useful for the reorganisation of the Service Parcs.

▲ "Tree register" documentation

The "GREEN", "TREE" and "PLAYGROUND" applications were also used to record relevant data on green spaces, numbers of trees and the presentation of equipment in playgrounds.

In 2007, Luxembourg City also commissioned a company specialising in aerial photography to evaluate tree locations using new aerial photographs.

Thanks to this, it took just 24 months to create a nearly complete tree register, without the need for time-consuming terrestrial surveys.

[5] Taspo – Unabhängige Fachzeitung für Produktion, Dienstleistung und Handel im Gartenbau, 12 April 1990, p.
[6] Electronic data processing

Creation of the tree register and recording of trees

A simple tree register provides information on the tree population, listing names and numbers. But the requirements for such a system go way beyond just providing information. With its large tree population, Luxembourg City has to maintain a full tree register.

The functions of the register have therefore been increased to include attributes such as the height, trunk circumference and crown diameter of each tree. This master data also includes the object numbers (location; street; district), the tree number and the year of planting.

After all, the information in a tree register only makes sense if data collection is synced with a geographical information system.

A tree's master data provides information on the following characteristics: Location, district, unique number and the person entering the data, plus tree species, crown diameter, trunk circumference, height and year of planting.

During tree inspections, especially as part of road safety inspections, any signs of damage and any measures are recorded. The general condition of the tree, the crown, the trunk, the base of the trunk and the roots are all examined.

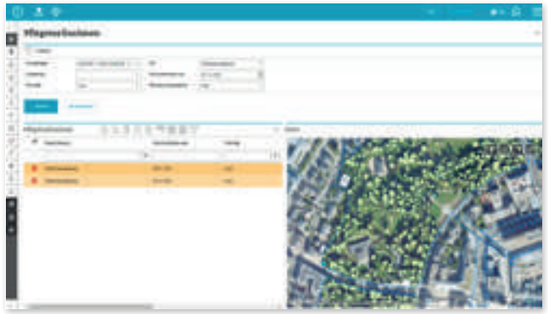
Detailed view of a data sheet from the current tree register

The tree inspector has noticed an irregularity at the base of the trunk. Ultimately, the tree had to be felled as a result because it was no longer stable.

Exposed trunk base of a sycamore:[7] The visual tree inspection gave rise to this excavation. The tree had to be felled as its stability was no longer guaranteed.

Any damages are identified and the necessary measures and follow-up checks scheduled according to urgency. Incomplete measures can be selected in the program according to technical criteria and assigned as a to-do.

Here, the maintenance filter is set to the green space 'City Park' with the selection 'Deadwood removal' and the priority 'High'. There are still two incomplete measures that can be considered for planning.



Detailed view of a data sheet from the current tree register
Example from the City Park

Dividing the city into districts

In the 1990s, when its green spaces were surveyed for the first time, the area of Luxembourg City was divided into 23 maintenance districts.

Limpertsberg, Cessange, Bonnevoie, Merl-Hollerich and Dommeldange-Kirchberg are each regarded as contiguous districts.

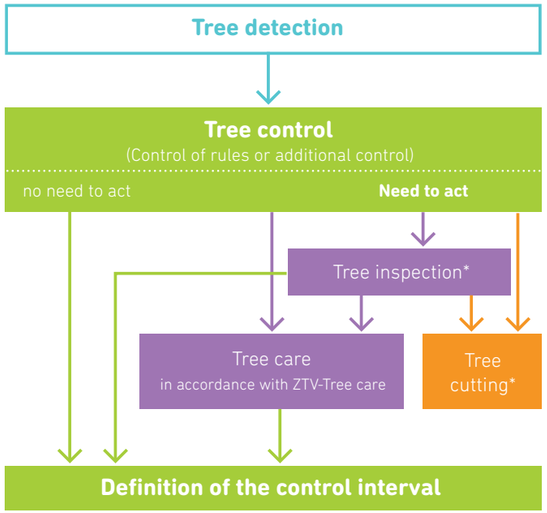
The City Park, the park in Merl and Tony Neuman Park are also separate maintenance districts. Each of these maintenance districts has its own team responsible for the maintenance of the green spaces and also for some of the trees.

Experiences, areas of focus and findings

Luxembourg City maintenance districts

[7] Acer pseudoplatanus

Tree inspections to ensure road safety



* If necessary, coordination/approval by specialist authorities (e.g. with regard to species protection/listed status)

Trees are living organisms that are usually tied to one location for decades or even centuries. Although trees have developed natural survival strategies for their own safety (e.g. stability), environmental factors can still put massive strain on or endanger trees in urban areas, and in particular on streets.

The scope and frequency of tree inspections is based on the legitimate road safety expectations in public spaces, the condition of the tree, local conditions, and the species, development phase and age of the tree.

Legitimate road safety expectations mean, for example, that busy squares, parks, streets with heavy traffic, children's playgrounds and schools should all be inspected.

According to the regulations, a basic tree inspection consists of a "professionally qualified inspection".

If this regular inspection or, where applicable, any additional inspection raises doubts about the safety of the tree (e.g. due to harmful fungi), further tree inspections must be arranged.

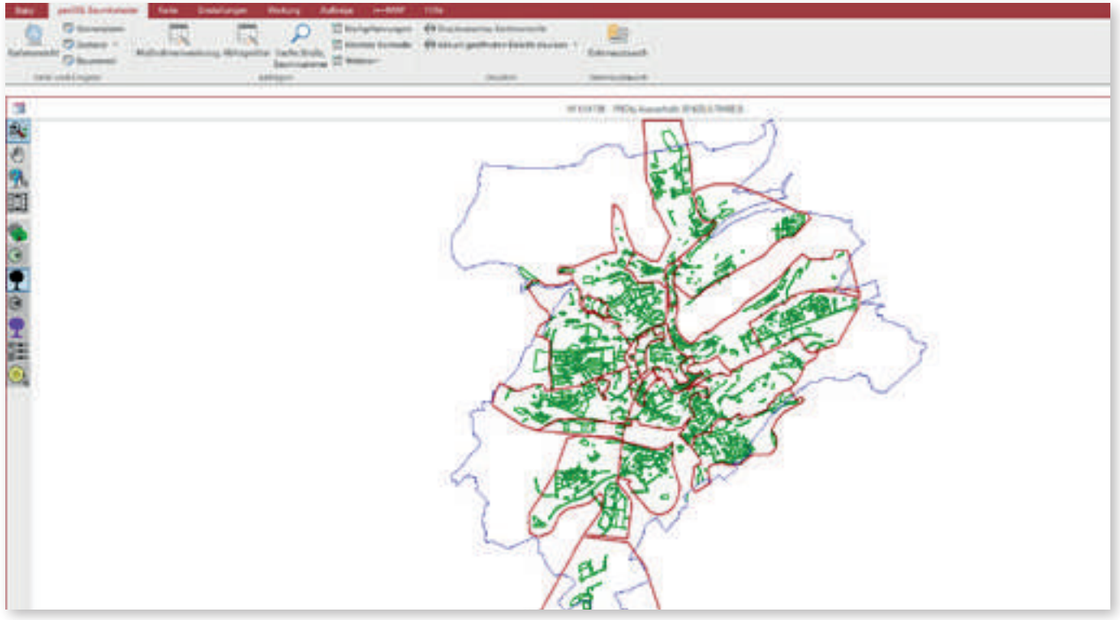
Inspectors use rubber mallets, special wood drills, resistographs and computer tomography.

Pétrusse Valley ►

Migration to 2nd application

A further stage in the development of the tree register was the transfer of all tree data from the register to new software.

This solution was ideal for Luxembourg City's requirements, as it works exactly according to the rules for road safety inspections, i.e. according to the FLL[11] tree inspection guidelines.



General view of the urban area with the maintenance districts

◂ Primeval redwoods (Metasequoia glyptostroboïdes) in Rollingergrund

[11] *Forschungsgesellschaft für Landschaftsentwicklung und Landbau (Research Society for Landscape Development and Agriculture)*

Introduction of the tree inspection guidelines for checking traffic safety according to FLL

With the introduction of the tree register, which helped make tree inspections more efficient and improved the monitoring of the number and condition of trees, the decision was also taken to apply the FLL tree inspection guidelines.

These regulations – which provide a regulatory committee comprising renowned experts with a framework for drawing up guidelines for road safety tree inspections – are now recognised and applied in Germany and, with some changes, in Austria and Switzerland. (These changes are due to national legislation, e.g. Luxembourg's amended Environmental Conservation Law of 18 July 2018/ "sur la conservation de la nature" – loi modifiée du 18 juillet 2018 concernant la Protection de la nature.)

Processes/tree inspection based on FLL tree inspection guidelines
During tree inspections, any work that has to be undertaken is recorded for each tree under 'Maintenance' according to a list of measures and the measure is assigned a priority.

All maintenance measures and pending regular checks can be filtered by name, date and priority. These filter lists, showing pending work, are used for weekly planning with the maintenance teams.

The regulations show that the FLL tree inspection guidelines standardised the requirements profile for regular inspections in 2004.

Since then, around 6,500 FLL-certified tree inspectors from Germany, Austria, Switzerland and Luxembourg have undergone testing.

Certification of Service Parcs employees as "FLL-certified tree inspectors"

The FLL began offering an independent examination for experienced specialists in 2007, at the end of which successful candidates receive the qualification "FLL-certified tree inspector". The Service Parcs' first tree inspector was certified on 20 October 2011, followed by two more on 23 October 2013.

Since then, it has been standard practice that any persons tasked by Luxembourg City with carrying out tree inspections must undergo this certification in the form of further training.

In the case of branch wounds, trunk wounds, cavities, or root and bark damage, trees must always be checked for decay or fungal infestation as these are important indicators in a tree inspection.

◂ English oak (Quercus robur – Église de Merl)

Trees and Tree Register Department of the Service Parcs

Current classification
The Trees – Tree Care and Tree Register Department is part of the Service Parcs. This team is made up of a department manager and three employees who carry out all administrative work, as well as tree inspections.
They also work together with the district teams in the North/Central/South sectors to process the list of requested fellings and requests for proposals from local tree nurseries for replenishing trees or selecting new tree varieties for new projects.

The tree maintenance teams
The tree maintenance teams consist of 9 employees, including 2 foremen and a truck driver who is responsible for transportation between maintenance assignments (removal of cuttings etc.). The employees are all trained arborists and regularly attend further training courses organised in-house within the department.

Equipment
Even if the working conditions are tough, trees still need to be maintained. The equipment for the teams consists of two aerial work platforms (climbers) that reach a working height of 27 or 45 metres, a truck with a roll-on/roll-off container system, an agricultural tractor with cable winch equipment and two powerful wood chippers.

Large aerial work platform during felling work in the City Park, maximum working height of 45 metres.

Tree canopy work in Rue Large

Crown protection work on the "Krombach oak" (Quercus robur 'Fastigiata') in Louvigny municipal park Part II at the children's playground ►

Figures
There are currently 21,407 trees recorded in the tree register (as at January 2023[8]). Tree register figures are very popular and there are ongoing efforts to show off the constantly growing number of trees. However, these figures are always in flux, moving up and down. According to the Environmental Protection Act, trees may only be felled in public areas between 1 October and 28 February with a permit. Naturally, replacement trees are ordered and planted at the same time. Trees that are planted as part of new projects are also included in the figures.

The updates cover both felling and replanting. However, electronic data entry can take up to 6 months.

Total number of tree genera
There are 92 different tree genera across the city (complete list of tree genera, varieties and cultivars can be found in the appendix to this brochure).

Maple trees (Acer; Sapindaceae), oaks (Quercus; Fagaceae), limes (Tilia; Malvaceae), ash trees (Fraxinus; Oleaceae) and sycamores (Platanus; Platanaceae) are the most common genera in the tree register by number.

This table shows an excerpt with the botanical name classification in Latin:

Genus:	Acer (maple)
Species:	Platanoides (Norway maple)
Variety (cultivar)	"Emerald Queen"
Family	Sapindaceae (soapberry)

Which district has the most trees?

DISTRICT	TREES
Belair-Rollingergrund	2,063
Limpertsberg	1,875
Bonnevoie-Kaltreis	1,682
Merl-Hollerich	1,673
Dom-meldange-Weimerskirch-Kirchberg	1,513
Bonnevoie-Verlorenkost-Hamm	1,473
Mühlenbach-Beggen-Eich	1,352
Cessange	1,350
City Park	1,335
Gasperich	1,312
Pfaffenthal-Neudorf-Clausen	1,111
Cents	1,094
Gare	768
Pétrusse	511
Kockelscheuer	498
City centre	470
Tony Neuman Park	379
Merl Park	352
Laval Park	314

Subdivision into location function:
The trees are also assigned different location functions in the tree register. Trees in school playgrounds and other play areas, for example, undergo thorough inspections every year; in school playgrounds during the summer holidays from 15 July to 15 September, and in play areas in spring and/or autumn, depending on their condition and notes from the previous inspection.

The tree register currently lists 10,748 street trees, 1,861 trees in play areas and school playgrounds, 3,586 park trees and 5,212 trees that are not located on municipal territory and are maintained by national agencies.

Copper beech (Fagus sylvatica f. purpurea) in the Rue de Cents - "Schwaarzt Haus" cultural centre

[8] In 2016, the City had 19,914 trees.

Selection of tree varieties

Requirements for street trees
Street trees have the greatest potential for conflict and the greatest accumulation of stress factors. They are exposed to extreme heat and drought factors, and the sun's rays are also more intense, resulting in burns to the upper canopy.

Sealed surfaces, in particular, with their tarred and dark to black surfaces, cause additional problems for the undersides of leaves with their hot radiant heat.

Looking at historical pictures, you can see that on many streets and squares, the trees were taller than they are nowadays.

This is due to roads' underground structure today. In the past, tree roots could reach further into the ground as there were fewer pipes and the soil was far less compacted. Even if this has have negative consequences, such as roots "invading" entire underground infrastructure lines, a requirement for all underground lines was introduced several decades ago which states that: gas, water and sewage pipelines, as well as electricity, postal and internet connections, are laid in the ground.

Trees planted along roads, pavements and public squares are exposed to many negative influences, such as the water storage capacity of soils and their oxygen supply, road gritting, soil compaction and sealing, high pH values, vandalism, and damage caused by cars and construction machinery on building sites.

In the last ten years, however, it has gradually become accepted that tree pits should be enlarged underground (greater soil volume in terms of both width and depth), special substrates should be added that are conducive to root growth, and all necessary maintenance measures should be implemented, as explained in the following chapters.

Since 2005, the aim has been to increase the diversity of tree species in the city. Tree planting has been consistently planned for all existing and all new residential streets, as well as for green spaces, in order to continue increasing the number of trees.

The question of whether these species are native or non-native is less important in this regard.

Hanging beech (Fagus sylvatica 'Pendula') in Parc Laval in Eich

Selecting tree varieties, since 2007– Numbers of newly planted trees
Starting in 2007, new tree genera were introduced into the tree population, initially in small numbers only, such as on new streets or during infrastructure works (gas, sewer and water pipelines) and on new roads.

Some examples:

Belair, rue Maréchal Foch	9 Ostrya carpinifolia (hop-hornbeam)
Kirchberg, rue du Potager	5 Koelreuteria paniculata "Fastigiata" (golden rain tree)
Limpertsberg, rue Ermesinde	8 Acer monspessulanum (French maple)
Belair, avenue Gaston Diederich	24 Platanus orientalis "Minaret" (Oriental sycamore)

This list is long. Between 2007 and 2022, a total of 2,267 new trees were planted on new or refurbished roads.
Large projects such as Ban de Gasperich, where 825 trees have been added in the last 3 years, are not included in this calculation. 375 of those trees are on streets within Luxembourg City.

720 new trees were planted in Gasperich Park, the creation of which began in 2021 and which officially opened in June 2023. These will also be included in the tree register.

Trees for climate change – The big issue of our time

The concept of "trees for climate change" has become incredibly important today. But this term does not refer to the plant's capacity to stop climate change. Instead, it is about the properties of the tree that enable it to adapt to climate change.

Pescatore Park - Caucasian wingnut - Pterocarya fraxinifolia

◂ Kaltreis Park in Bonnevoie - partial view

What is a tree for climate change?

"Trees for climate change" are trees that can survive the increasing number of weather phenomena, referred to collectively as climate change or even extreme weather conditions, either better or more unscathed than our native varieties. Our native trees struggle with intense heat and drought (especially the European beech, Fagus sylvatica and the spruce, Picea abies), to mention only the more well-known species.

Why are our native trees suffering more from these extreme weather events?

◂ Ornamental cherry tree affected by heat stress in Rue des Cerisiers in Limpertsberg

Large-scale trials have been underway in many European countries (such as France, Switzerland, Germany and Denmark) for nearly two decades now in an attempt to identify species of tree that are suitable for lots of different purposes, in particular as street trees.

Sometimes, two or even three decades can pass between a tree being trialled and it subsequently being declared a so-called "tree for climate change".

Some are native species, e.g. our small-leaved lime (Tilia cordata) and lime hybrids (Tilia x europaea), English and sessile oaks (Quercus robur, Quercus petraea), the field maple (Acer campestre) and all horticultural species and cultivars derived from them.

Non-native species include, in particular, the Turkey oak (Quercus cerris), southern hackberry (Celtis australis), honey locust (Gleditsia triacanthos) and many others.[9]

However, trees for climate change are not the only ones that can still be used safely in the city today.

In Luxembourg City, there are areas with copper beeches (Fagus sylvatica), for example, which are not in the sun all day and grow well.

[9] See page 106 and 107 for the full list

What does drought stress mean for trees?

Unprecedented temperatures extremes were recorded as early as during the summers of 2003 and 2013, but since the summers of 2018-2022, the discussion around climate change has become more urgent than ever before. The drought damage to trees in the summer of 2022 is already causing many failures in weaker trees, which will have an impact over years to come.

Definition of stress: the perceived strain caused by external stimuli that is used to adapt to changing situations or environmental conditions.

In trees, drought stress refers to the stress caused by a lack of water. Drought stress is exhibited in different ways, as trees are living organisms that use different strategies to cope with a lack of water.

Different tree species deal with drought stress differently, depending on e.g. basic genetic make-up, adaptation, tolerance, endurance and avoidance.

Possible strategies: non-essential leaves or branches inside the crown die or are shed, water reserves are stored in tissue parts, texture of the leaves such as thickened epidermis or hairiness as well as felt on the underside and upper side, formation of extremely short shoots (during spring drought).

Key drought stress factors[10]

The period in which the dry season occurs in spring and summer is problematic. A dry period of more than 4 weeks without any supply of water is damaging to many tree species. Conifers, in particular, suffered enormously during the dry period in the summer of 2022.

Mock cypress in Rue Willmar, Limpertsberg. Unfortunately, many conifers have disappeared in recent years.

[10] Drought stress factors according to Roloff

The combination of this and other stress factors such as the heat and frost conditions in the soil, which primarily affect water retention capacity and oxygen supply in the root layers, and also the intense sunlight, which is increasingly causing damage to trees and leaves, puts a strain on trees.

There are also other factors such as the depth of the water shortage in the soil, the accessibility of the groundwater table, the dryness of the air in an urban area, the age of the tree, previous diseases and fungal infestation, and even the location, such as within tree grates in the urban area, raising the question of the space available for the roots and the water supply.

Another very important factor that is often forgotten or neglected is the impact of road gritting on street trees. Sodium chloride (NaCl) destroys the soil structure, the so-called colloidal complex. Although gritting in winter is not a direct trigger of drought stress, it is an important factor in the process and in its concentration. It is an antagonist of calcium and especially potassium, i.e. it prevents their absorption into the plant tissue. Potassium and magnesium are essential for the water balance in plants. This manifests itself in sensitive trees with clear marginal leaf necrosis (brownish edges).

Red beech (Fagus sylvatica) in Rue Willmar, Limpertsberg. Significant bark necrosis due to years of intense sunlight

Common hawthorn in bloom (Crataegus monogyna) ►

Tree varieties for the future

There are now many studies, lists and also planting campaigns in cities to determine the most suitable tree species in cities.

There is now a climate species matrix in Germany called KLAM* which is also used in the Netherlands (e.g. tree nurseries). This matrix rates trees according to their suitability for drought tolerance and winter hardiness using a points system.

Winter hardiness is crucial, as more and more tree species from more southerly climes are coming into cultivation. These have good drought tolerance but are not necessarily suitable for our winters.

It should also be kept in mind that the location (street – green area) and the micro-climate it produces have a small to medium effect on whether planting is successful.

It is important to understand that not every "tree for climate change" will grow well in every location!

Example: The oriental plane tree (Platanus orientalis) is native to the area from southern Europe to the western Himalayas. It has a high drought tolerance but winter hardiness is problematic. This means that it can freeze in extremely cold winters. It is often how long low temperatures last, not how low they reach, that makes the crucial difference. This similarly applies to drought.

In Luxembourg City there are beautiful specimens of Platanus orientalis in Rue Ste Zithe. They have grown particularly well over the last 8 years and are as such protected.

The following examples are based on the current test lists circulating in Europe, but also on our own experience.

Platanus orientalis - Rue Ste Zithe

Trees for climate change

1. **Small-leaved lime (Tilia cordata)**, Place du Parc, Bonnevoie
2. **Column Norway maple (Acer platanoïdes 'Columnare')**, Rue des Trévires, Bonnevoie
3. **Hungarian oak 'Trump' (Quercus frainetto 'Trump')**, Place de Roedgen, Cessange
4. **Field maple 'Queen Elisabeth'**, Rue Rosemarie Kieffer, Cents
5. **Field maple (Acer campestre)**, Allée Léopold Goebel, Belair

* Climate Species Matrix

List of trees for climate change
The most common tree genera in Luxembourg City by number are maple (Acer, 3372 trees), oak (Quercus, 1785 trees) and lime (Tilia, 2229 trees).

Quercus/species and varieties
Quercus is the Latin name for oak. Oaks are a truly enormous botanical family belonging to the beech genus (Fagaceae). In a good location, they can live for over a thousand years. Oaks are found all over the world – from North America to Mexico, from the Caribbean to Colombia and Central America, and from Eurasia to North Africa.

Oak wood is a very popular, high-quality and durable material.

The total number of oaks in Luxembourg City (all species and varieties) is 1,765.
Oak is also a drought-resistant species; this includes the English oak (Quercus robur), sessile oak (Quercus petraea), Turkey oak (Quercius cerris) and Hungarian oak (Quercus frainetto).

The total figures for the deciduous/English oak (Quercus robur) in Luxembourg City

Name	Total number
Quercus robur	1,152 trees total, of which
- Quercus robur	912 trees
- Quercus robur 'Fastigiata''	235 trees
- Quercus robur 'Fastigiata Koster'	5 trees

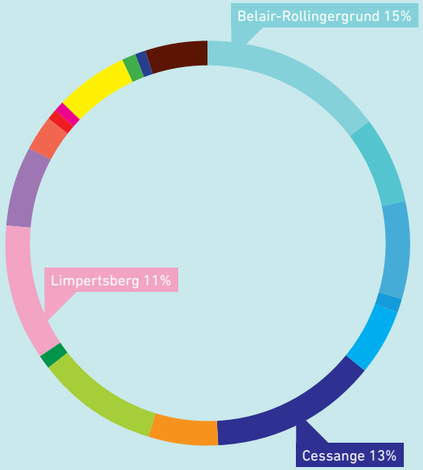
The numbers of sessile oak (Quercus petraea), Turkey oak (Quercus cerris) and Hungarian oak (Quercus frainetto)

Quercus petraea	64 trees
Quercus cerris	55 trees
Quercus frainetto	57 trees
Quercus frainetto 'Trump'	21 trees

[11] Listed by street

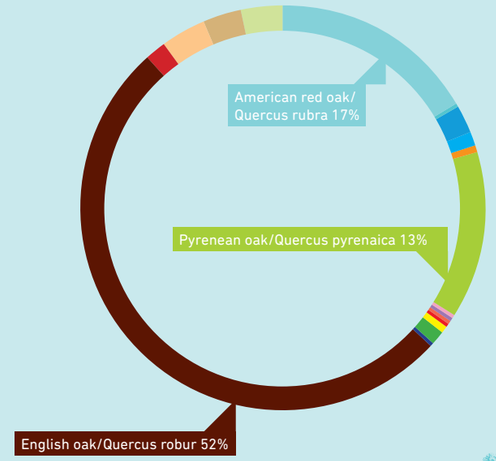
Oak stock in the sectors

Sector	Number
Belair-Rollingergrund	264
Cessange	232
Limpertsberg	193
Gasperich	173
Bonnevoie-Verlorenkost-Hamm	141
Bonnevoie-Kaltreis	119
Merl-Hollerich	114
City Park	101
Dommeldange-Weimerskirch-Kirchberg	99
Cents	96
Pfaffenthal-Neudorf-Clausen	85
Mühlenbach-Beggen-Eich	49
T. Neuman Park	23
Kockelscheuer	17
City centre	16
Merl Park	15
Pétrusse Valley	14
Laval Park	13
Gare district	1
Total	**1765**



Oak varieties

Species of tree	Number
English oak/Quercus robur	912
American red oak/Quercus rubra	293
Pyramid oak/Quercus robur 'Fastigiata'	235
Sessile oak/Quercus petraea	64
Hungarian oak/Quercus frainetto	57
Turkey oak/Quercus cerris	55
Oak/Quercus species	38
Swamp oak/Quercus palustris	26
Variety of Hungarian oak/Quercus frainetto 'Trump'	21
Chestnut-leaved oak/Quercus castaneifolia 'Green Spire'	20
Variety of swamp oak/Quercus palustris 'Green Pillar'	11
Persian oak/Quercus macranthera	9
Shingle oak/Quercus imbricaria	8
Narrow-crowned form of the summer oak/Quercus robur 'Fastigiata Koster'	5
Scarlet oak /Quercus coccinea	3
Pontine oak/Quercus pontica	2
American white oak/Quercus alba	2
Bamboo-leaved oak/Quercus myrsinifolia	1
Macedonian oak/Quercus trojana	1
Pyrenean oak/Quercus pyrenaica	1
Sawtooth oak/Quercus acutissima	1
Variety of red oak/Quercus rubra 'Aurea'	1
Variety of loquat oak/Quercus rhysophylla 'Maya'	1
Total	**1767**



Tilia/species and varieties
The name "Tilia" comes from the Greek "tilos" and means fibre. The bark fibres were once used in the production of footwear and ropes.

The small-leaved lime tree (Tilia cordata), also known as the small-leaved linden or pry tree, from the mallow family (Malvaceae, subfamily Tilioidaea), is native to Europe and can live to be well over 500 years old. The flowers provide plenty of nectar for the famous lime blossom honey.

The main use of lime wood is in sculpture, carving and wood-turning.

In various trials, the lime tree has been shown to be a species that is well adapted to dry soil and that can also withstand longer periods of heat.

The total number of lime trees in Luxembourg City (all species and varieties) is 2,213.

Here you will find an overview of the small-leaved lime tree population.

Name	Total number	Examples
Tilia cordata	940 trees	
- Tilia cordata	734 trees	
- Tilia cordata 'Savaria'	71 trees	Rue Seimetz, Limpertsberg
- Tilia cordata 'Greenspire'	70 trees	Rue des Romains, Bonnevoie
- Tilia cordata 'Roelvo'	45 trees	Val-Ste.-Croix, Belair
- Tilia cordata 'Erecta'	1 tree	Rue Large, Zentrum-Fëschmaart
- Tilia cordata 'Corinthian'	1 tree	Park Kaltreis, Hondsterrain – Bonnevoie

Acer (species and varieties)
The maple (Acer) from the soap tree family (Sapindaceae) is widespread in Eurasia, North Africa, and Central and North America.

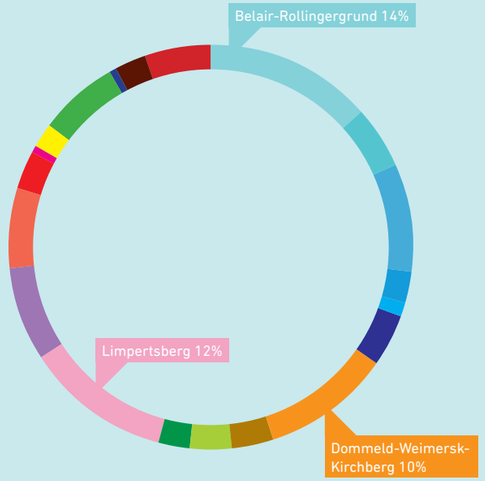
The number of maple trees in the city is 3372

The following species are of interest with regard to drought-tolerant "trees for climate change"[15]:

Name	Total number	Examples
Acer campestre/field maple	411 trees	Laval Park (two large specimens)
Acer campestre 'Elsrijk' variety of field maple	218 trees	Rue Maurice Barrès, Gasperich
Acer campestre 'Queen Elizabeth'	35 trees	Allée Léopold Goebel, Belair
Acer campestre 'Eko Effen'	21 trees	Rue Michel Louise, Weimershof
Acer buergerianum/ Trident maple	11 trees	Rue des Alouettes, Cents
Acer monspessulanum/Montpellier maple	11 trees	Rue Ermesinde, Limpertsberg
Acer campestre 'Huibers Elegant'	6 trees	Rue Nicolas Liez, Limpertsberg

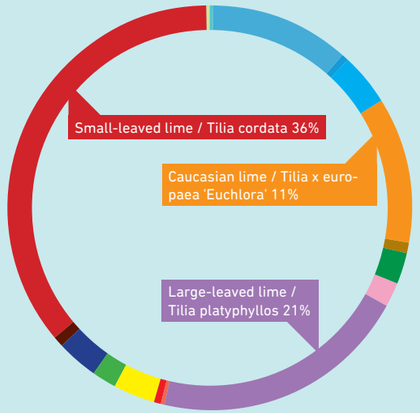
Lime trees in the sectors

Sector	Number
Belair-Rollingergrund	299
Limpertsberg	257
Dommeldange-Weimerskirch-Kirchberg	222
Bonnevoie-Verlorenkost-Hamm	194
Merl-Hollerich	168
City Park	146
Mühlenbach-Beggen-Eich	136
Pfaffenthal-Neudorf-Clausen	113
Bonnevoie-Kaltreis	109
City centre	53
Cents	27
Cessange	92
Gare district	74
Gasperich	79
Kockelscheuer	55
nn*	68
Laval Park	17
Merl Park	38
T. Neuman Park	11
Pétrusse Valley	55
Total	**2213**



Lime varieties

Species of tree	Number
Small-leaved lime / Tilia cordata	794
Large-leaved lime / Tilia platyphyllos	457
Caucasian lime / Tilia x europaea 'Euchlora'	253
Common lime / Tilia x vulgaris	249
Common lime / Tilia x europaea 'Pallida'	95
Variety of small-leaved lime / Tilia cordata 'Savaria'	71
Variety of small-leaved lime / Tilia cordata 'Greenspire'	70
Silver lime / Tilia tomentosa	54
Variety of small-leaved lime / Tilia cordata 'Roelvo'	45
Silver lime / Tilia tomentosa 'Brabant'	39
American linden / Tilia x moltkei	22
Variety of small-leaved lime / Tilia cordata Winter Orange	18
Variety of large-leaved lime / Tilia platyphyllos 'Fastigiata'	15
Common lime / Tilia vulgaris 'Pallida'	8
American lime / Tilia americana	6
Variety of American lime / Tilia americana 'Nova'	5
Henry's lime / Tilia henryana	3
Common lime / Tilia x europaea 'Vulgaris'	3
Mongolian lime / Tilia mongolica	2
Red twigged lime / Tilia platyphyllos	1
Variety of small-leaved lime / Tilia cordata 'Erecta'	1
Variety of small-leaved lime / Tilia cordata 'Corinthian'	1
Variety of American lime / Tilia heterophylla 'Prestige'	1
Total	**2213**



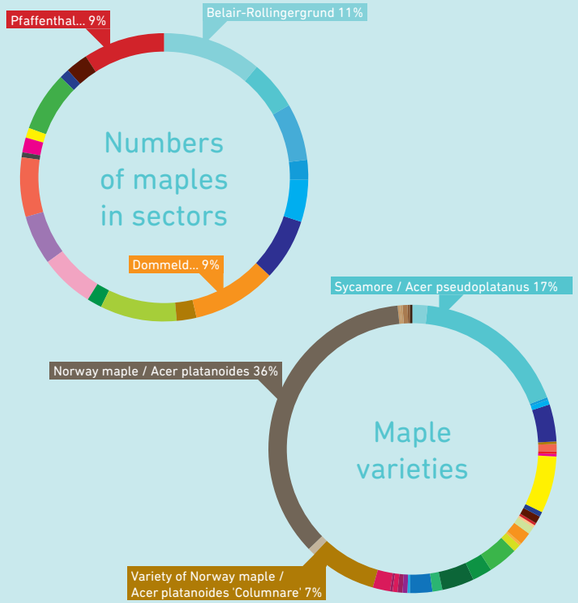
* Not assigned to any district

Name	Total number	Examples
Acer rubrum 'Scanlon'	81 trees	Rue Annette Schwall-Lacroix, Merl
Acer rubrum 'Scanlon'	44 trees	Rue Simone de Beauvoir, Kirchberg
Acer x freemanii 'Celzam'	29 trees	Rue Edouard Grenier, Bonnevoie
Acer rubrum 'Autumn Flame'	3 trees	City Park III

Acer x freemanii 'Celzam', Rue Edouard Grenier, Bonnevoie

Numbers of maples in sectors

Sector	Number
Belair-Rollingergrund	380
Dommeldange-Weimerskirch-Kirchberg	313
Pfaffenthal-Neudorf-Clausen	300
Gasperich	293
Cessange	237
Mühlenbach-Beggen-Eich	229
City Park	222
Bonnevoie-Verlorenkost-Hamm	213
Limpertsberg	203
Merl-Hollerich	186
BoBonnevoienneweg-Kaltreis	185
Cents	155
Pétrusse Valley	91
City centre	81
Gare district	79
Laval Park	60
Kockelscheuer	58
Merl Park	36
T. Neuman Park	35
nn*	16
Total	**3372**



Maple varieties

Species of tree	Number
Norway maple / Acer platanoides	1201
Sycamore maple / Acer pseudoplatanus	586
Variety of Norway maple / Acer platanoides 'Columnare'	252
Compact field maple / Acer campestre 'Elsrijk'	218
Field maple / Acer campestre	133
Silver maple / Acer saccharinum	125
Column Norway maple / Acer platanoides 'Columnare'	119
Variety of red maple / Acer rubrum 'Scanlon'	81
Red Norway maple / Acer platanoides 'Faassen's Black'	67
Variety of silver maple / Acer saccharinum 'Wieri'	66
Maple / Acer species	61
Red maple / Acer rubrum 'Sunset'	44
Variety of field maple / Acer campestre 'Queen Elizabeth'	35
Globe Norway maple / Acer platanoides 'Globosum'	31
Silvery maple hybrid / Acer x freemanii 'Celzam'	29
Variety of Norway maple / Acer platanoides 'Emerald Queen'	28
Red maple / Acer rubrum	28
Red-leaved variety of Norway maple / Acer platanoides 'Schwedleri'	27
Variety of Norway maple / Acer platanoides 'Olmsted'	23
Ornamental field maple 'Eko Effen' / Acer campestre 'Eko Effen'	21
Box elder / Acer negundo	21
Variety of Norway maple / Acer platanoides 'Drummondii'	18
Cappadocian maple / Acer cappadocicum	17
Variety of sycamore maple / Acer pseudoplatanus 'Atropurpureum'	14
Norway maple 'Royal Red' / Acer platanoides 'Royal Red'	13
Trident maple / Acer buergerianum	11
Montpellier maple / Acer monspessulanum	11
Red-leaved variety of sycamore maple / Acer pseudoplatanus 'Purpurascens'	10
Striped maple / Acer pensylvanicum	10
Hybrid of the silver maple / Acer x freemanii 'Armstrong'	9
Variety of the red-leaved Norway maple / Acer platanoides 'Crimson Sentry'	8
Variety of sycamore maple / Acer pseudoplatanus 'Leopoldii'	8
Redvein maple / Acer rufinerve	7
Variegated boxelder / Acer negundo 'Variegatum'	5
Sugar maple / Acer saccharum	5
Ornamental field maple 'Red Shine' / Acer campestre Red Shine	4
Paperbark maple / Acer griseum	4
Hybrid elm / Acer japonica 'Aconitifolium'	3
David maple / Acer davidii	3
Variety of red maple / Acer rubrum 'Autumn Flame'	3
Variety of Cappadocian maple / Acer cappadocicum Aureum	2
Amur maple / Acer ginnala	1
Yellow-leaved boxelder / Acer negundo 'Aureovariegatum'	1
Bigleaf maple / Acer macrophyllum	1
Hornbeam maple / Acer carpinifolium	1
Autumn blaze maple / Acer x freemanii Autumn Blaze	1
Cappadocian sycamore maple / Acer trautvetteri	1
Variety of sycamore maple / Acer pseudoplatanus 'Nizetti'	1
Variety of Norway maple / Acer platanoides Autumn Blaze	1
Vine maple / Acer circinatum	1
Total	**3370**

* Not assigned to any district

Other important tree species in the list of trees for climate change

Name	Total number	Examples
Alnus x spaethii/ Cultivar of alder	269 trees	Rue Chingiz T. Aitmatov, Beggen
Ginkgo biloba/ Maidenhair tree	257 trees	Rue Charles Arendt
Tilia x euchlora/ Caucasian lime (Crimean lime)	196 trees	Place du Théatre, Villa Haute
Tilia x europaea 'Pallida'/Kaiser linden	95 trees	Allée Scheffer, Limpertsberg
Tilia tomentosa 'Brabant'/Cultivar of the silver lime	39 trees	Rue des Aubépines, Merl

Alnus x spaethii / Cultivar of alder, Rue Chingiz T. Aitmatov, Beggen

Ginkgo biloba / Maidenhair tree, Rue Charles Arendt, Belair

Name	Total number	Examples
Styphnolobium japonicum/ Corded tree	120 trees	Allée du Carmel, Cents
Platanus x hispanica 'Tremonia'/ Variety of the maple-leaved plane tree	51 trees	Rue de la Vallée
Platanus orientalis 'Minaret'/ Cultivar of the oriental sycamore	32 trees	Avenue Gaston Diederich
Platanus x hispanica 'Huissen' (syn. 'Malburg')	22 trees	Place de Paris

Styphnolobium japonicum/ corded tree, Allée du Carmel, Cents

Platanus orientalis 'Minaret'/ Cultivar of oriental sycamore, Avenue Gaston Diederich, Belair

Magnolia kobus/Kobushi magnolia, Rue Jean-Pierre Koenig, Limpertsberg

Name	Total number	Examples
Magnolia kobus/ Kobushi magnolia	68 trees	Rue Jean-Pierre Koenig, Limpertsberg
Ostrya carpinifolia/ Hop hornbeam	36 trees	Rue Maréchal Foch, Belair

Ostrya carpinifolia/Hop hornbeam, Rue Maréchal Foch, Belair

Name	Total number	Examples
Celtis australis/Euro-pean nettle tree	75 trees	Rue Batty Weber, Limpertsberg
Koelreuteria panicu-lata/Golden rain tree	63 trees	Place Joseph Thorn, Merl

Koelreuteria paniculata/ Golden rain tree, Place Joseph Thorn, Merl

Celtis australis/European nettle tree, Rue Batty Weber, Limpertsberg

Name	Total number	Examples
Corylus colurna/Turkish hazel	223 trees	Rue de Cessange, Cessange
Fraxinus pennsylvanica 'Summit' / Cultivar of the 'Summit' green ash	24 trees	Boulevard Charles Simonis, Cents

Corylus colurna/ Turkish hazel, Rue Henri Heymans, Dommeldange

Fraxinus pennsylvanica 'Summit' / Cultivar of the 'Summit' green ash, Boulevard Charles Simonis, Cents

Name	Total number	Examples
Parrotia persica 'Vanessa'/Cultivar of the Persian ironwood 'Vanessa'	119 trees	Rue Mathias Hertert, Beggen
	11 trees	Rue des Gaulois, Bonnevoie

Parrotia persica 'Vanessa'/Cultivar of the Persian ironwood 'Vanessa'
Rue des Gaulois, Bonnevoie

Parrotia persica 'Vanessa'/Cultivar of the Persian ironwood 'Vanessa'
Rue Mathias Hertert, Beggen

Name	Total number	Examples
Liquidambar styraciflua / American sweetgum	218 trees in total	- 'Worplesdon' Rue du Fort Elisabeth, Gare - 'Moraine' Rue du Charly, Rollingergrund - 'Slender Silhouette' Rue Tony Dutreux, Bonnevoie
Zelkova serrata 'Flekova' / Japanese zelkova	75 trees	Rue Ausone, Cessange

Zelkova serrata 'Flekova' / Japanese zelkova, Rue Ausone, Cessange

Name	Total number	Examples
Gleditsia triacanthos/ Honey locust	59 trees	Grand-rue
Fraxinus ornus 'Mescek'/Flowering ash 'Mescek'	17 trees	Rue Ch. W. Gluck, Gasperich

Honey locust (Gleditsia triaconthos), Rue Beaumont

Gleditsia triacanthos / Honey locust, Grand-rue, City centre

Name	Total number	Examples
Sorbus commixta 'Dodong' / Japanese scarlet rowan	44 trees	Rue Adolphe Fischer, Gare
Eucommia ulmoides / Hardy rubber tree	10 trees	Rue Anatole France, Bonnevoie
Malus tschonoskii / Chonosuki crab	7 trees	Rue Lamort, Gasperich

Eucommia ulmoides / Hardy rubber tree, Rue Anatole France, Bonnevoie

What other interesting species of tree are there?

Trees that are already being tested in other cities:

- Tilia americana 'Redmond', Tilia mongolica
- Ulmus minor 'Sarniensis'
- Ulmus 'Rebona'
- Zelkova carpinifolia
- Quercus hispanica
- Fraxinus ornus 'Obelisk'
- Acer truncatum

Selecting new tree varieties

In future, it will be important to ensure healthy mixed planting that includes both trees for climate change and native species.

On Rue Anatole France, mixed planting has been carried out for the first time. Previously, entire streets were planted with just one type of tree in order to ensure an aesthetic appearance thanks to uniform crown development and even growth, and also to make pruning simpler. One of the disadvantages, however, was that if one tree was affected by a disease, it would spread to all trees of the same species.

This is why, in future, attempts will be made to plant streets with several tree genera and species, as has recently been the case on Rue Anatole France.

The following trees have been planted:

10 gutta-percha trees
(Eucommia ulmoides – new genus, tree for climate change)

8 chestnut-leaved oaks
(Quercus castaneifolia 'Green Spire' – heat-tolerant tree)

8 red-leaved Norway maples
(Norway maple 'Royal Red' – drought tolerant – red-leaved)

7 kobushi magnolias
(Magnolia kobus – drought and heat tolerant – white flowering)

7 Japanese pagoda trees
(Styphnolobium japonicum – very drought tolerant tree, flowers July through August)

Stress factor: the sun

There were also signs of trees having been burnt by the sun in the summer of 2022, as seen here on a Hungarian oak (Quercus frainetto) on Rue René Weimerskirch in Gasperich.

Stress factor: road gritting

As already mentioned, road gritting also contributes to the problem of drought stress. Although improvements have already been made in how roads are gritted in winter thanks to today's modern road vehicles, which use optimised application technology to accurately dose the quantity and spread, there are still places where not enough care is taken to spread the correct amount.

Hungarian oak (Quercus frainetto) in the City Park ►

◂ Copper beech (Fagus sylvatica f. purpurea)

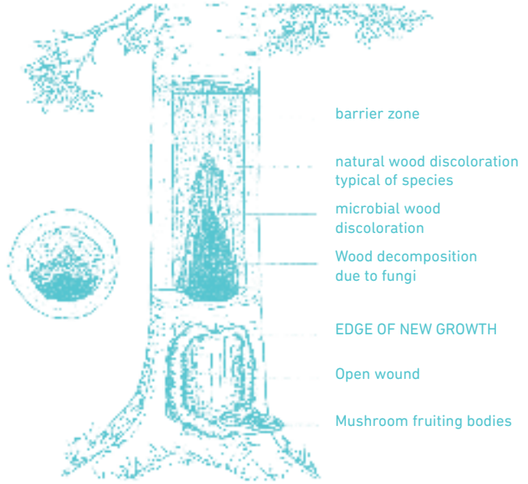
Tree care and biology

The CODIT principle

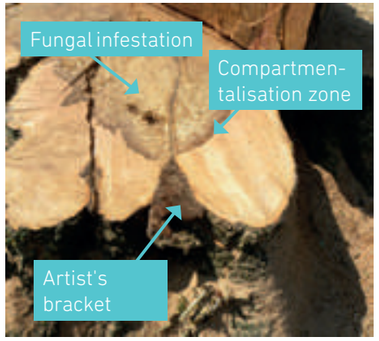
With every cut, injury or other intervention in the wood of a tree, there is a biological wound reaction. The work of American biologist and plant pathologist, Alex L. Shigo, in the[1980s] opened up a new perspective on pruning and an understanding of the biology of trees.

The CODIT principle (Compartmentalisation of decays in trees) emerged, i.e. the ability of a tree to effectively "compartmentalise" or contain a wound (opening) in order to prevent further damage. Such damage could include penetration of fungal spores, bacteria or even air.

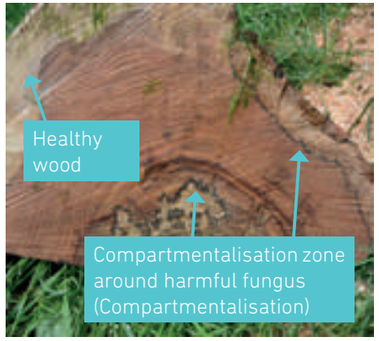
Oak, lime and maple are good at compartmentalising. Conifers and birches are among those that are less good.



▲ Model of successive changes in the trunk wood of a beech after previous bark injury at the base of the trunk (after Shigo; in: Butin, 1983)



Fungal infestation in the trunk



Maple-leaved plane Platanus x hispanica (canopy form), Place Sauerwiss, Gasperich ►

The aim of young tree care is to fulfil a later function,
e.g. street tree. (Training and pruning)
Extract: FLL-ZTV Baumpflege [Tree care], 2017 edition

The importance of tree roots

▲ Source: www.urbanvegetation.de (Dr Markus Streckenbach)

Trees get the nutrients they need through their roots. Unfortunately, since roots are partially or entirely hidden, most people don't know much about this system and are unaware of its importance. Roots form the essential foundations of all plants, including trees, ensuring the uptake of water and nutrients and providing stability to both the plant and the surrounding soil. The underground life of roots takes the form of a rich, diverse ecosystem that is fragile yet also capable of regenerating and is in constant conflict with the urban space.

Unfortunately, construction activities continue to cause significant damage to the root systems of trees time and again.

Root damage at a construction site

◄ Common ash "Fraxinus excelsior" – City Park (Kinnekswiss)

Young tree planting

... simply planting trees is not enough, looking after these trees also takes time and money...[12]

Purchase of high-quality plants from quality nurseries
Autumn is without a doubt the preferred planting season. The soil retains sufficient warmth late into autumn and, if re-planted, the trees and shrubs can replace lost roots for the next season.

Quotes for trees are requested from nurseries from August onwards. Once the orders have been placed, deliveries are made between the end of October and the beginning of December. The trees are unloaded at the Parks Department and stored in a specially designated area. They are then grouped according to district, and by street if applicable, so that the gardening teams can start planting on-site as quickly as possible.

The street trees in Luxembourg City are predominantly planted with a trunk circumference of 16/18 cm as these dimensions ensure the greatest growth potential. Older and larger trees are used only occasionally as they become more difficult and take longer to grow as they increase in size. Large trees are only planted in exceptional cases, e.g. if there is enough space and the crown of a larger tree would be more effective.

Street trees ready for planting in Reckenthal / Service Parcs

Rue Anatole France in Bonnevoie / Unloading at the building site

Large trees are only planted in exceptional cases, e.g. if there is sufficient space and a large crown would look more impressive overall.

Planting of three sycamores on Place Guillaume II

Planting of English oaks on Place Philippe, Belair

Planting of 2 maple-leaved planes (Platanus x hispanica) in Cessange, Kirchplatz, 2003

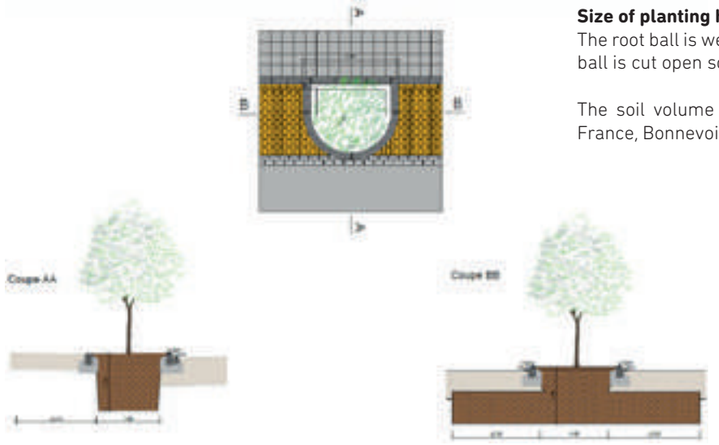
Large tree planting on Place Guillaume II in November 2022

[12] Quote from Prof Dirk Dujesiefken

Preparation – size of planting hole
The more space is available for the roots, the more they can develop. Aside from the water storage properties of the substrate, this is the best way to avoid drought.

For several years now, the Service Voirie (Department of Streets) has set aside just over 15 cubic metres of root space per tree for street trees planted at purpose-built "tree sites".

The FLL requires a standard tree hole of 12 cubic metres. In the city, ideal conditions can be created for root development and thus also for tree growth.



Size of planting hole
The root ball is well developed. As soon as the tree is standing, the ball is cut open so that the roots can grow into the soil.

The soil volume here is around 40 cubic metres (Rue Anatole France, Bonnevoie)

◂ Sketch, Service Voirie, City of Luxembourg

Planting depth
A good approach for determining the planting depth is to mark the original height with a visible point (the tree is planted as it was in the nursery).

If it is planted deeper, it is possible that the substrate or the soil will sink a little, with the end result that the tree will be sat too deep in the ground, which may cause growth and developmental disorders. It is therefore better to plant a little higher than too low.

Substrates used
The substrate used to fill the tree sites for street trees is sourced from a company in the Eifel region (short delivery distances) and consists of the volcanic components sand and clay.

The "humin" substrate has a grain size of 0-32 and is enriched with humic substances (decomposed organic matter), which prevents the leaching of nutrients. This soil composition, combined with an optimum pH value, facilitates good rooting.

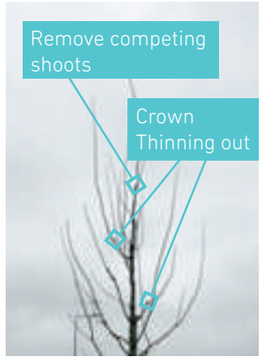
Pruning

Pruning, including formative pruning/training, is crucial to the future development of trees in urban areas.

Pruning is a very controversial topic among experts and non-experts alike. Some people talk about emotional pruning, along the lines of "I cut the tree so that it looks good" or "Everyone cuts they way they want".

The fact is that every cut made is an intrusion into the physiology (trunk, branch formation, root system) and metabolism of the tree. This means that removing branches fundamentally interferes with a tree's metabolism (loss of leaves for photosynthesis – loss of roots – uptake of water and nutrients).

Example of pruning:



The timing of pruning also plays a role from a tree biology perspective, as the tree tissue is best able to seal off the wound during the vegetation period.

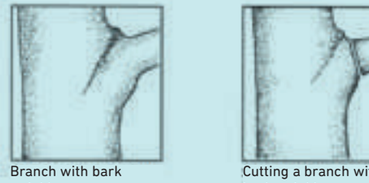
Cutting times

- according to ZTV ('Additional Technical Contract Conditions and Guidelines for Tree Care - Standard Regulations for Tree Care') possible all year round, but if possible not **during permafrost below -5° C** (in winter: damage is more visible in defoliated crowns, crown shape is easier to recognise, nature conservation reasons (tree is a nesting and breeding tree for birds).
- from a tree biology perspective during the vegetation period, as trees are at their most active physiologically **from March to October** (therefore good reaction capacity).

For bleeding tree species, pruning from September onwards is advisable.

(Source: FLL-ZTV Baumpflege)

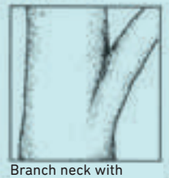
The cut direction is also very important, with the branch ring being particularly relevant here.


Branch with bark wrinkle

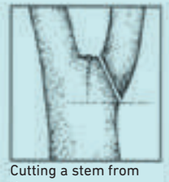

Cutting a branch with a bark wrinkle

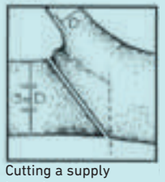

Cutting a branch without bark wrinkle


Cutting a dead branch


Branch neck with encrusted bark

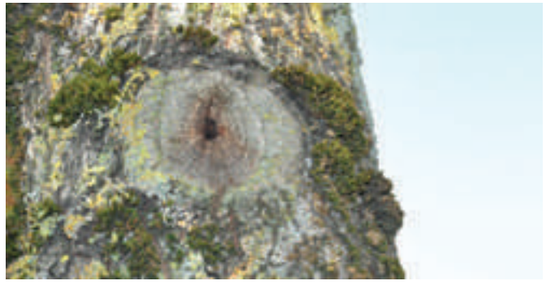

Cutting a branch with inlaid bark


Cutting a stem from the same row


Cutting a supply branch

◂ Good / bad "tree wound healing":

▴ Removal of branch at branch attachment, correct cut



Good incision: the wound was completely sealed.

This example shows that the cut parallel to the trunk has damaged a lot of regenerative tissue and there is no/insufficient regeneration.

Pruning compensates for the loss of root mass during transplanting in the nursery.

New tree genus on Rue Anatole France in 2023: Eucommia ulmoides (Hardy rubber tree) being planted.

Eucommia ulmoides (Hardy rubber tree) after pruning.

This may involve cutting away the lower branches of young trees at an early stage to increase load-bearing capacity. The crown can only develop further after 2 to 3 years of good growth.

Good structure of a young lime tree on Rue Seimetz in Limpertsberg. At this point, the tree has been pruned and trained. How it continues to grow will indicate how much work is needed (corrections through pruning) for the tree to reach the final phase of its growth.

Protecting trunks

Lime (Tilia), maple (Acer) and beech (Fagus) are sensitive to excessive sunlight. In summer, temperatures of over 45 degrees Celsius can develop on the surface of the bark, which in turn results in heat cracks.

Frost crack can also occur in winter if the sun raises the temperature on the surface of the bark on cold, frosty winter days.

The newly planted trees in the city are all, without exception, treated with white paint to provide optimum protection. This paint consists of organic and inorganic binders, white dye, silicon dioxide, water, emulsifiers and granulated building materials. The product used is certified as non-toxic for plants, humans and animals and can therefore also be used in playgrounds. (Regulation (EC) No 1272/2008).

The white coating on trees reflects the sun's rays so that the trunk is not exposed to all of the radiation.

Trunk protection on a small-leaved lime, Tilia cordata 'Roelvo'.

Due to the sunlight and the drought stress, the trunk is torn open lengthwise. Although the tree is attempting to heal the damage, there will always be a 'wound' inside its trunk. This will remain a weak point, offering the tree less stability than an intact trunk would over the following decades.

Irrigation

▲ Turkey oak (Quercus cerris) Marché-aux-poissons, City centre

Irrigation systems – like here in Rue Sigefroi in the city centre – have many advantages. The tree is supplied with water over a controlled period, while controlling the volume helps to save huge amounts of water.

For some years now, "irrigation bags" have also been available, which can be used to water trees in various volumes (from 50 to 150 litres).

Advantage: These bags can be refilled quickly and the tree has a defined amount of water supplied to it.

Disadvantage: As these bags stand on the ground and have small water outlets at the bottom, they stick together easily when the ground is wet and the water only seeps into the ground very slowly if at all.

Edible chestnut – Castanea sativa – Cessange Park ►

Parks and green spaces

Luxembourg City is home to 15 green spaces that are classified as parks or park-like green spaces. This brochure takes a closer look at the three largest and best-known parks and the populations of trees in each. Information on the 12 other parks can be found online at arbres.vdl.lu

▲ Magnolia – cultivar Magnolia 'Susan' – Pescatore Park, Ville-Haute
◄ Fern-leaved red beech – Fagus sylvatica 'Asplenifolia' – Parc Pescatore, Ville-Haute

The City Park

Size
The City Park, which is divided into 4 sections, covers an area of around 19 hectares.

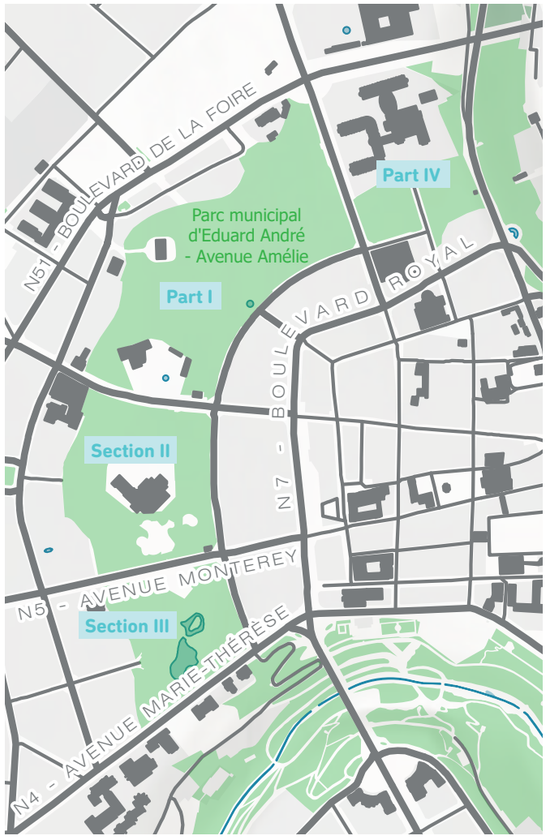

© Luxembourg City / David Laurent

History
Designed according to the plans of famous landscape architect Edouard André, this historical park was built between 1871 and 1878 on the former fortifications of the city's western defensive ring. It should be noted that when work began in 1871, Luxembourg City had a population of just 14,500.

Today, the historic City Park serves a variety of functions. The lower third is home to a water area with shooting fountains, while in the second there is a large play area with water games and a pirate ship, and the final third, with the Kinnékwiss, provides space for open-air events. It is also home to the Villa Vauban Museum, with its well-maintained garden, which is also worth a visit.

The park's individual, small green havens are also important for people who come seeking an oasis of calm or wanting to have a rest on a park bench in the shade of the trees.

Location (map)



Tree population
For the first tree plantings in the winter of 1872-1873, mainly genera such as Norway maple (Acer) and sycamore maple (Acer pseudoplatanus) were used.

The total tree population as at 2 September 2022 was 1,299 trees for the 4 sub-areas.

In figures:

Part I (Parc Supérieur section)	624 trees (28 April 1991: 769 trees)	8.99 ha
Section II (Villa Louvigny section)	351 trees (2 September 1991: 467 trees)	5.11 ha
Section III (Edmond Klein section)	224 trees (8 March 1991: 319 trees)	3.32 ha
Section IV (Pescatore section)	100 trees	1.61 ha

During the period since the first count for the tree register in 1991 until today, there has been a decrease of 256 trees. It is important to note, however, that the tree population before 1991 was so dense that in many places reforestation or replanting was simply no longer possible.

30 trees had to be felled due to the excavation of the fortress wall on Avenue Monterey, also known as Réduit Lambert, in the City Park and because of the enclosure of the water to create a pond. The City Park has been undergoing restoration since 1993 based on historical documents, largely returning the park's facilities and tree population to a more natural, historical state.

At the same time, the tree population is also affected by natural influences. One example is so-called Dutch elm disease which is caused by a fungus transmitted by a beetle.

Other trees were severely weakened by the extreme summers of 2003, 2013 and 2018-2022 and the resulting lack of water, and have subsequently contracted a harmful fungi due to a decline in their vitality.

However, the many gaps appearing in the tree population have created opportunities to plant more trees. Every year, around 20 to 25 new trees are planted, mainly isolated trees, also known as solitary trees. Group and mixed plantings are also carried out each year. The assumption is that the tree population will have been replenished in 10 years and its composition will have been rejuvenated.

Greening activities such as tree felling and replanting are generational processes.

Special features

Blossoms of the handkerchief tree (Davidia involucrata – Nyssaceae family) in the City Park, Section II – Villa Louvigny section.

The Krombach oak, a cultivar of the fastigiate oak (Quercus robur 'Fastigiata', Fagaceae family) was named in honour of the pharmacist J. H. Guill. Krombach (planted in 1875, source: Wikipedia).

The hornbeam (European/common hornbeam; Carpinus betulus L.; Betulaceae family) on the Kinnékswiss received special attention during its lifetime. It had been listed as a "remarkable tree" (arbre remarquable) for decades and radiated a special charm as a solitary tree with its beautiful, multi-stemmed crown.

Sadly, the hornbeam died in spring 2015 and has since fully disintegrated. However, its offspring, seedlings from the seeds mobilised with the last of the tree's strength in 2014, are currently growing at rapid speed and will be worthy replacements for their mother in the coming decades.

The two giant sequoias (Sequioadendron giganteum - Cupressaceae family) are also remarkable trees. They were planted when the City Park was built and are estimated to be around 150 years old.

They are 37 metres tall, with a crown diameter of approx. 13 metres and trunk circumference of 7.53 metres when measured at a height of 1 metre from the ground.

It is 36.50 metres tall, with a crown diameter of approx. 11.50 metres and trunk circumference of 5.95 metres when measured at a height of 1 metre from the ground. (Source: Luxembourg City Photothèque)

Another remarkable tree is the horse chestnut (Aesculus hippocastanum – Sapindaceae family) which was planted in 1921 to mark the birth of HRH Grand Duke Jean.

The horse chestnut also produces beautiful flowers which unfortunately often go unnoticed as they grow at great heights.

Neuman Park

Size
Neuman Park has the largest expanse of green space in Limpertsberg. Covering 4.55 hectares, it is a unique horticultural highlight among the city's parks.

History – Origins
Originally covering an area of 1 hectare, landscape architect Henri Luja was commissioned to create this garden by its owner, notary Tony Neuman.

Alphonse Hollman, a gardener employed by Neuman, took over the garden in 1959 and dedicated himself to its planting and design with such enthusiasm for horticulture and the collection of shrubs and perennials that the park still boasts a significant number of shrubs and other plant collections today.

Location (map)

Tree population
380 trees, not including large bushes.

Special features
Neuman Park is the only park with a particular tree population. The most unusual and remarkable trees are briefly presented here.


Common box (Buxus sempervirens)


The giant sequoia (Sequoiadendron giganteum - Cupressaceae family), number 68, has the largest trunk circumference.

Further projects
Example: Creation of a new rhododendron garden at the park entrance.


Last updated in 2019


Soil work and additionally planting work later in 2020

Completed planting and first flowering in spring 2021

Other remarkable trees:
The copper beech (Fagus sylvatica 'Atropunicea' - Fagaceae family) tree number 112 was already growing on this site before the garden was developed.

Douglas fir (Pseudotsuga menziesii)

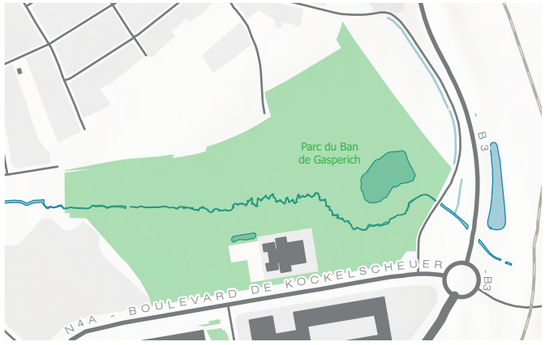
Copper beech – Fagus sylvatica 'Atropunicea' ►

Gasperich Park

Size
With a surface area of 14.86 ha, this park, which was inaugurated in 2023, is one of the largest in the City of Luxembourg. Its size is equivalent to 23 football pitches.

History
Gasperich Park was created by landscape designers Mersch Ingénieurs-Paysagistes SARL based on the masterplan developed in 2004 for Ban de Gasperich as a whole. Detailed planning began in 2012 with the aim of designing a natural green space that would offer a wide range of activities and bring significant ecological benefits to the city.

Situation (plan)



© Stefan Useldinger

The view from Rue W.A. Mozart of the distinctive Cloche d'Or skyline.

View of the new Parc du Ban de Gasperich (looking toward Howald)

Tree population
As the park has only just been created, the record of the trees growing there is not yet complete. It will be several years before the final tree population can be recorded; trees will be added or some tree species may have to be replanted if they fail to thrive in their current position.

Common hornbeam on the playground (Carpinus betulus)

Red horse chestnut (Aesculus x carnea ‚Briotii')

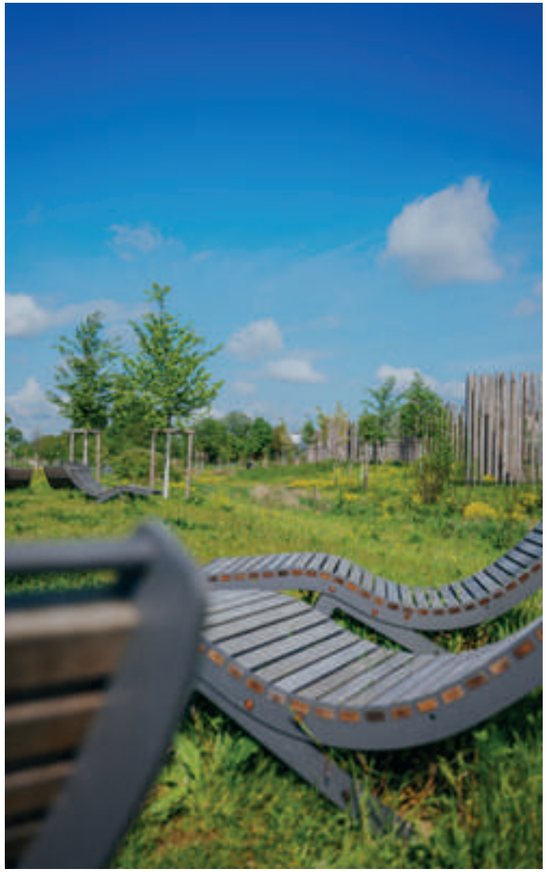
The north section of the park includes an extensively cultivated orchard with a number of different tree species.

In figures

The number of trees is currently as follows:
Deciduous trees: 510 trees
Conifers: 50 trees
Fruit trees: 75 trees
Woodland trees: 2100 trees

The promenade is interspersed with a series of footbridges. The pond is fed by the Ban de Gasperich retention basin.

Particularités
The park, which was developed along the renaturalised Drosbach stream, is primarily intended to support biodiversity in the southern part of the city. Alongside the green spaces, the pond is another important ecological aspect. It is fed by rainwater, which is collected in a reservoir in *Ban de Gasperich*.



All across the park, wooden loungers offer visitors a place to rest and relax

The promenade along Boulevard de Kockelscheuer, which is lined with Spaeth alders (Alnus spaethii) and Norway maples (Acer platanoides). ►

Protecting trees on construction sites

On building sites, large trees that have taken 80 to 120 years to reach their current size and crown spread can often be damaged by just a few hours of construction activity to such an extent that they die, either immediately or some time later, due to irreparable damage or their vitality and appearance being severely affected.

It is their mostly invisible roots that ensure the life and survival of a tree, which forms an inseparable whole throughout its life made up of the crown, trunk, roots and surrounding soil.

Any interference with the area around the roots will have consequences for the visible part of the tree.

Since a tree's roots are not usually visible, people often don't think about how to properly protect them. However, it is important to ensure that both a tree's trunk and roots are sufficiently protected in order to ensure the survival and health of the tree as a whole.

Where there was no protection.

Young trees should always be protected just as much as old trees. Building work can cause irreparable harm to young trees which might then stop growing properly.

An attempt was made to set up a trunk guard. However, no consideration was given to the root environment and, contrary to the recommendations, building materials were stored next to the tree,

◂ Examples of non-existent tree protection

Trees on building sites

Luxembourg City's Tree Protection Charter

In 2014, the City of Luxembourg drew up a charter for the protection of trees on building sites. This charter has since been presented to every construction company in order to ensure that trees on building sites are always properly protected and are not at risk of harm.

It is difficult or even impossible to predict how tree roots will spread using mathematical formulas. The safest method is to dig by hand so as not to damage any roots. While this method is more expensive, any additional costs are justified by the values that should be calculated for trees before breaking ground on any building site.

Exposed roots must also be protected from frost and drying out, otherwise this extra effort will be wasted. If the roots are damaged, this will result in larger gaps in the tree's vascular system.

Thanks to the Tree Charter, trunk protection has already become a widely established practice, but there is still a need for awareness-raising when it comes to protecting the roots, which are crucial to stability, as well as water and nutrient supply.

Trees in green areas and street trees may also fall over during storms. Despite regular tree inspections, nature is and remains unpredictable.

Tree protection in a school playground, Rue des Ardennes, Bonnevoie

These roots have been irreparably damaged. They are exposed and will dry out.

Playground, Rue Alfred Kowalsky, Pfaffenthal

Full list of trees in the tree register

Abies alba / Common silver fir
Abies concolor / Colorado fir
Abies grandis / Grand fir
Abies nordmanniana / Nordmann fir
Abies pinsapo / Spanish fir
Abies veitchii / Veitch's silver fir
Acer buergerianum / Trident maple
Acer campestre / Field maple
Acer campestre 'Eko Effen' / Field maple 'Eko Effen'
Acer campestre 'Elsrijk' / Field maple 'Elsrijk'
Acer campestre 'Queen Elizabeth' / Field maple 'Queen Elizabeth'
Acer campestre 'Red Shine' / Field maple 'Red Shine'
Acer cappadocicum / Cappadocian maple
Acer cappadocicum 'Aureum' / Cappadocian maple 'Aureum'
Acer cappadocicum 'Rubrum' / Cappadocian maple 'Rubrum'
Acer carpinifolium / Hornbeam maple
Acer circinatum / Vine maple
Acer davidii / Père David's Maple
Acer tataricum subsp. ginnala / Tatarian maple
Acer griseum / Paperbark maple
Acer japonicum 'Aconitifolium' / Full moon maple
Acer macrophyllum / Bigleaf maple
Acer monspessulanum / Montpellier maple
Acer negundo / Box elder
Acer negundo 'Aureovariegatum' / Box elder 'Aureovariegatum'
Acer negundo 'Variegatum' / Box elder 'Variegatum'
Acer palmatum / Japanese maple
Acer pensylvanicum / Striped Maple
Acer platanoides / Norway maple
Acer platanoides 'Autumn Blaze' / Norway maple 'Autumn Blaze'
Acer platanoides 'Columnare' / Norway maple 'Columnare'
Acer platanoides 'Crimson Sentry' / Norway maple 'Crimson Sentry'
Acer platanoides 'Drummondii' / Norway maple 'Drumondii'
Acer platanoides 'Emerald Queen' / Norway maple 'Emerald Queen'
Acer platanoides 'Faassen's Black' / Norway maple 'Faassen's Black'
Acer platanoides 'Globosum' / Norway maple 'Globosum'
Acer platanoides 'Olmsted' / Norway maple 'Olmsted'
Acer platanoides 'Royal Red' / Norway maple 'Royal Red'
Acer platanoides 'Schwedleri' / Norway maple 'Schwedleri'
Acer pseudoplatanus / Sycamore maple
Acer pseudoplatanus 'Atropurpureum' / Sycamore maple 'Atropurpureum'
Acer pseudoplatanus 'Leopoldii' / Sycamore maple 'Leopoldii'
Acer pseudoplatanus 'Nizetii' / Sycamore maple 'Nizetii'
Acer pseudoplatanus 'Rotterdam' / Sycamore maple 'Rotterdam'
Acer rubrum / Red maple
Acer rubrum 'Autumn Flame' / Red maple 'Autumn Flame'
Acer rubrum 'Scanlon' / Red maple 'Scanlon'
Acer rubrum 'Franksred' / Red maple 'Sunset'
Acer rufinerve / Redvein maple
Acer saccharinum / Silver maple
Acer saccharinum 'Laciniatum Wieri' / Silver maple 'Laciniatum Wieri'
Acer saccharum / Sugar maple
Acer heldreichii subsp. trautvetteri / Redbud maple
Acer x freemanii 'Armstrong' / Armstrong maple
Acer x freemanii AUTUMN BLAZE ('Jeffersred') / Autumn blaze maple ('Jeffersred')
Acer x freemanii CELEBRATION ('Celzam') / Celebration maple ('Celzam')
Aesculus flava / Yellow buckeye
Aesculus flava 'Vestita' / Yellow buckeye 'Vestita'
Aesculus hippocastanum / Horse chestnut
Aesculus hippocastanum 'Baumannii' / Horse chestnut 'Baumannii'
Aesculus hippocastanum 'Pyramidalis' / Horse chestnut 'Pyramidalis'
Aesculus hippocastanum 'Umbraculifera' / Horse chestnut 'Umbraculifera'
Aesculus indica / Indian horse chestnut
Aesculus parviflora / Bottlebrush buckeye
Aesculus x carnea / Red horse chestnut
Aesculus x carnea 'Briotii' / Red horse chestnut 'Briotii'
Ailanthus altissima / Tree of heaven
Albizia julibrissin / Silk tree
Alnus cordata / Italian alder
Alnus glutinosa / Common alder
Alnus glutinosa 'Pyramidalis' / Common alder 'Pyramidalis'
Alnus incana / Grey alder
Alnus incana 'Aurea' / Grey alder 'Aurea'
Alnus incana 'Laciniata' / Grey alder 'Laciniata'
Alnus × spaethii / Spaeth alder
Amelanchier arborea 'Robin Hill' / Snow Rock Pear 'Robin Hill'
Amelanchier lamarckii / Juneberry
Aralia elata / Angelica tree
Aralia elata 'Golden Umbrella' / Angelica tree 'Golden Umbrella'
Araucaria auraucana / Monkey puzzle tree
Berberis x ottawensis 'Superba' / Variety of red leaf barberry
Betula utilis subsp. albosinensis / Chinese paper birch
Betula utilis 'Doorenbos' / Himalayan Birch 'Doorenbos'
Betula nigra / River birch
Betula papyrifera / Paper birch
Betula pendula / European silver birch
Betula pendula 'Dalecarlica' / European silver birch 'Dalecarlica'
Betula pendula 'Tristis' / European silver birch 'Tristis'
Betula pendula 'Youngii' / European silver birch 'Youngii'
Broussonetia papyrifera / Chinese paper mulberry
Buxus sempervirens / Common boxwood
Calocedrus decurrens / Californian incense cedar
Carpinus betulus / Common hornbeam
Carpinus betulus 'Fastigiata' / Common hornbeam 'Fastigiata'
Carpinus betulus 'Frans Fontaine' / Common hornbeam 'Frans Fontaine'
Carpinus japonica / Japanese hornbeam
Carya illinoinensis / Hardy pecan
Castanea sativa / Sweet chestnut
Castanea sativa 'Glabra' / Sweet chestnut 'Glabra'
Castanea sativa 'Pyramidalis' / Sweet chestnut 'Pyramidalis'
Catalpa bignonioides / Indian bean tree
Catalpa bignonioides 'Nana' / Indian bean tree 'Nana'
Catalpa x erubescens 'Purpurea' / Purple-leaved Indian bean tree
Cedrus atlantica / Atlas cedar
Cedrus atlantica 'Glauca' / Blue atlas cedar
Cedrus atlantica 'Glauca Pendula' / Weeping blue atlas cedar
Cedrus deodara / Himalayan cedar
Cedrus deodara / Cedar of Lebanon
Celtis australis / European nettle tree
Celtis occidentalis / Common hackberry
Cephalotaxus harringtonia / Japanese plum yew
Cercidiphyllum japonicum / Katsura tree
Cercis canadensis / Eastern redbud
Cercis canadensis 'Forest Pansy' / Eastern redbud 'Forest Pansy'
Cercis siliquastrum / Judas tree
Chamaecyparis lawsoniana / Lawson's cypress
Chamaecyparis lawsoniana 'Glauca' / Lawson's cypress 'Glauca'
Chamaecyparis nootkatensis / Alaska yellow-cedar
Chamaecyparis nootkatensis 'Pendula' / Alaska yellow-cedar 'Pendula'
Chamaecyparis pisifera / Sawara cypress
Cladrastis kentukea / American yellowwood
Cornus controversa / Giant dogwood
Cornus controversa 'Pagoda' / Giant dogwood 'Pagoda'
Cornus kousa 'Summer Stars' / Japanese flowering dogwood 'Summer Stars'
Cornus kousa var. chinensis / Chinese flowering dogwood
Cornus mas / Cornelian cherry
Corylus avellana / Hazel
Corylus colurna / Turkish hazel
Crataegus coccinea / Scarlet hawthorn
Crataegus crus-galli / Cockspur hawthorn
Crataegus laevigata / English Midland hawthorn
Crataegus x media 'Paul's Scarlet' / Hawthorn 'Paul's Scarlet'
Crataegus laevigata 'Plena' / English Midland hawthorn 'Plena'
Crataegus x lavalleei 'Carrierei' / Hybrid cockspur thorn 'Carrierei'
Crataegus monogyna / Single-seeded Hawthorn
Crataegus monogyna 'Stricta' / Single-seeded Hawthorn 'Stricta'
Crataegus x lavalleei / Hybrid cockspur thorn
Crataegus x mordenensis 'Toba' / Morden hawthorn
Cryptomeria japonica / Japanese cedar
Cupressus glabra / Arizona cypress
Cydonia oblonga / Common quince
Davidia involucrata / Handkerchief tree
Elaeagnus angustifolia / Russian olive
Eucommia ulmoides / Hardy rubber tree
Tetradium daniellii / Bee-bee tree
Fagus grandifolia / American beech
Fagus orientalis / Oriental beech
Fagus sylvatica / Red beech
Fagus sylvatica 'Atropunicea' / Red beech 'Atropunicea'
Fagus sylvatica 'Asplenifolia' / Red beech 'Asplenifolia'
Fagus sylvatica 'Dawyck' / Red beech 'Dawyck'
Fagus sylvatica 'Dawyck' / Red beech 'Dawyck'
Fagus sylvatica 'Fastigata' / Red beech 'Fastigiata'
Fagus sylvatica 'Pendula' / Red beech 'Pendula'
Fagus sylvatica 'Purple Fountain' / Red beech 'Purple Fountain'
Fagus sylvatica 'Purpurea' / Red beech 'Purpurea'
Fagus sylvatica 'Rotundifolia' / Red beech 'Rotundifolia'
Fraxinus americana / White ash
Fraxinus americana 'Autumn Applause' / White ash 'Autumn Applause'
Fraxinus americana 'Autumn Purple' / White ash 'Autumn Purple'
Fraxinus angustifolia / Narrow-leaved ash
Fraxinus angustifolia 'Raywood' / Narrow-leaved ash 'Raywood'
Fraxinus excelsior / Common ash
Fraxinus excelsior 'Diversifolia' / Common ash 'Diversifolia'
Fraxinus excelsior 'Geessink' / Common ash 'Geessink'
Fraxinus excelsior 'Jaspidea' / Common ash 'Jaspidea'
Fraxinus excelsior 'Maxima' / Common ash 'Maxima'
Fraxinus excelsior 'Nana' / Common ash 'Nana'
Fraxinus excelsior 'Pendula' / Common ash 'Pendula'
Fraxinus excelsior 'Westhof's Glorie' / Variety of ash
Fraxinus ornus / Flowering ash
Fraxinus ornus 'Mecsek' / Flowering ash 'Mecsek'
Fraxinus ornus 'Obelisk' / Flowering ash 'Obelisk'
Fraxinus pennsylvanica / Green ash
Fraxinus pennsylvanica 'Patmore' / Green ash 'Patmore'
Fraxinus pennsylvanica 'Summit' / Green ash 'Summit'
Fraxinus pennsylvanica 'Zundert' / Green ash 'Zundert'
Ginkgo biloba / Maidenhair tree
Ginkgo biloba 'Fastigiata' / Maidenhair tree 'Fastigiata'
Ginkgo biloba 'Princeton Sentry' / Maidenhair tree 'Princeton Sentry'
Ginkgo biloba 'Saratoga' / Maidenhair tree 'Saratoga'
Ginkgo biloba 'Tremonia' / Maidenhair tree 'Tremonia'
Gleditsia triacanthos / Honey locust
Gleditsia triacanthos f. inermis / Honey locust 'Inermis'
Gleditsia triacanthos 'Skyline' / Honey locust 'Skyline'
Gleditsia triacanthos 'Sunburst' / Honey locust 'Sunburst'
Gymnocladus dioica / Kentucky coffee tree
Hamamelis x intermedia 'Diane' / Hybrid witch hazel 'Diane'
Heptacodium miconioides / Seven-son flower
Hippophae salicifolia 'Robert' / Willow-leaved sea buckthorn 'Robert'
Ilex aquifolium / Common holly
Ilex x altaclerensis / Large-leaved holly
Juglans ailantifolia var. Cordiformis / Heartseed walnut
Juglans nigra / Black walnut
Juglans regia / English walnut
Juniperus chinensis / Chinese juniper
Juniperus communis 'Hibernica' / Common juniper 'Hibernica'
Koelreuteria paniculata/ Golden rain tree
Koelreuteria paniculata 'Fastigiata' / Golden rain tree 'Fastigiata'
Koelreuteria paniculata 'September' / Golden rain tree 'September'
Laburnum anagyroides / Common laburnum
Larix decidua / European larch
Larix kaempferi / Japanese larch
Liquidambar styraciflua / American sweetgum
Liquidambar styraciflua 'Moraine' / American sweetgum 'Moraine'
Liquidambar styraciflua 'Moraine' / American sweetgum 'Moraine'
Liquidambar styraciflua 'Silver King' / American sweetgum 'Silver King'
Liquidambar styraciflua 'Slender Silhouette' / American sweetgum 'Slender Silhouette'
Liquidambar styraciflua 'Worplesdon' / American sweetgum 'Worpelsdon'
Liriodendron tulipifera / Tulip tree
Liriodendron tulipifera 'Fastigiatum' / Tulip tree 'Fastigiatum'
Maclura pomifera / Osage orange
Magnolia denudata / Yulan magnolia
Magnolia 'Galaxy' / Magnolia hybrid 'Galaxy'
Magnolia grandiflora 'Galissonnière' / Southern magnolia 'Galissonnière'

Full list of trees in the tree register

Magnolia kobus / Kobushi magnolia
Magnolia liliiflora 'Nigra' / Lily magnolia 'Nigra'
Magnolia 'Susan' / Magnolia hybrid 'Susan'
Magnolia macrophylla / Bigleaf magnolia
Magnolia x loebneri 'Merrill' / Loebner Magnolia 'Merrill'
Magnolia x soulangeana / Saucer magnolia
Malus baccata / Siberian crab apple
Malus baccata 'Street Parade' / Siberian crab apple 'Street Parade'
Malus 'Boskoop' / Apple tree 'Boskoop'
Malus coronaria 'Charlottae' / Sweet crab apple 'Charlottae'
Malus domestica / Apple tree
Malus domestica 'Danziger Kantapfel' / Apple tree 'Danziger Kantapfel'
Malus floribunda / Japanese flowering crab apple
Malus 'Rudolph' / Ornamental apple 'Rudolph'
Malus domestica 'Goldrenette von Blenheim' / Apple tree 'Goldrenette von Blenheim'
Malus kansuensis 'Liset' / Apple hybrid 'Liset'
Malus domestica 'Luxemburger Renette' / Apple tree 'Luxemburger Renette'
Malus domestica 'Rheinische Schafsnase' / Apple tree 'Rheinische Schafsnase'
Malus domestica 'Rheinischer Bohnapfel' / Apple tree 'Rheinischer Bohnapfel'
Malus domestica 'Rote Goldparmäne' / Apple tree 'Rote Goldparmäne'
Malus ROYAL RAINDROPS ('JFS-KW5') / Ornamental apple ROYAL RAINDROPS ('JFS-KW5')
Malus spectabilis / Asiatic apple
Malus sylvestris / Crab apple
Malus 'John Downie' / Ornamental apple 'John Downie'
Malus toringoides / Cut-leaf crab apple
Malus tschonoskii / Chonosuki crab
Malus 'Weißer Klarapfel' / Apple tree 'Weißer Klarapfel'
Malus 'Wiesenapfel' / Apple tree 'Wiesenapfel'
Malus x purpurea / Flowering crab apple
Malus x purpurea 'Profusion' / Apple hybrid 'Profusion'
Mespilus germanica / Common medlar
Metasequoia glyptostroboides / Dawn redwood
Morus alba / White mulberry
Morus nigra / Black mulberry
Nyssa sylvatica / Tupelo
Nyssa sylvatica 'Red Red Wine' / Forest tupelo 'Red Red Wine'
Ostrya carpinifolia / Hop hornbeam
Parrotia persica / Persian ironwood
Parrotia persica 'Vanessa' / Persian ironwood 'Vanessa'
Paulownia tomentosa / Princess tree
Phellodendron amurense / Amur cork tree
Picea abies / Common spruce
Picea abies 'Inversa' / Common spruce 'Inversa'
Picea omorika / Serbian spruce
Picea orientalis / Oriental spruce
Picea pungens / Colorado blue spruce
Picea pungens 'Glauca' / Colorado blue spruce 'Glauca'
Pinus armandii / Armand Pine
Pinus cembra / Swiss stone pine
Pinus heldreichii / Bosnian pine
Pinus mugo / Swiss mountain pine
Pinus nigra subsp. nigra / Black pine (Austrian pine)
Pinus parviflora 'Glauca' / Japanese white pine 'Glauca'
Pinus ponderosa / Ponderosa pine
Pinus strobus / Weymouth pine
Pinus sylvestris / Scots pine
Pinus wallichiana / Bhutan pine
Platanus occidentalis / American sycamore (plane)
Platanus orientalis / Oriental sycamore
Platanus orientalis 'Minaret' / Variety of Oriental sycamore
Platanus x hispanica / Maple-leaved plane (London plane)
Platanus x hispanica 'Alphens Globe' / Maple-leaved plane 'Alphens Globe'
Platanus x hispanica 'Huissen' / Maple-leaved plane 'Huissen'
Platanus x hispanica 'Pyramidalis' / Maple-leaved plane 'Pyramidalis'
Platanus x hispanica 'Tremonia' / Maple-leaved plane 'Tremonia'
Populus alba 'Nivea' / Snowy poplar 'Nivea'
Populus balsamifera / Balsam poplar
Populus lasiocarpa / Chinese necklace poplar
Populus nigra / Black poplar
Populus nigra 'Italica' / Black poplar 'Italica'
Populus tremula / European aspen
Populus tremula 'Erecta' / European aspen 'Erecta'
Populus x canadensis / Canadian poplar
Prunus dulcis 'Dürkheimer Krachmandel' / Almond 'Dürkheimer Krachmandel'
Prunus avium / Wild cherry
Prunus avium 'Aggregat' / Cherry tree 'Aggregat'
Prunus avium 'Hedelfinger Riesenkirsche' / Wild cherry 'Hedelfinger Riesenkirsche'
Prunus avium 'Plena' / Wild cherry 'Plena'
Prunus avium 'Sunburst' / Wild cherry 'Sunburst'
Prunus cerasifera / Cherry plum
Prunus cerasifera 'Pissardii' / Cherry plum 'Pissardii'
Prunus cerasifera 'Nigra' / Cherry plum 'Nigra'
Prunus domestica / Common plum
Prunus domestica 'Hauszwetsche' / Plum 'Hauszwetsche'
Prunus domestica subsp. syriaca / Mirabelle plum
Prunus x eminens 'Umbraculifera' / Globe cherry
Prunus lusitanica / Portuguese laurel cherry
Prunus padus / Bird cherry
Prunus sargentii / Sargent cherry
Prunus 'Accolade' / Cherry blossom 'Accolade'
Prunus x schmittii / Schmitt's cherry
Prunus serotina / Black cherry
Prunus serrula / Birchbark cherry
Prunus serrulata / Japanese flowering cherry
Prunus serrulata 'Amanogawa' / Japanese flowering cherry 'Amanogawa'
Prunus serrulata 'Kanzan' / Japanese flowering cherry 'Kanzan'
Prunus 'Kiku-shidare-zakura' / Japanese flowering cherry 'Kiku-shidare-zakura'
Prunus 'Royal Burgundy' / Japanese flowering cherry 'Royal Burgundy'
Prunus 'Kiku-shidare-zakura' / Japanese flowering cherry 'Kiku-shidare-zakura'
Prunus serrulata 'Shirofugen' / Japanese flowering cherry 'Fugenzo'
Prunus serrulata 'Taihaku' / Japanese flowering cherry 'Taihaku'
Prunus x subhirtella Snow Fountains® ('Snozofam') / Weeping Higan Cherry Snow Fountains® ('Snozofam')
Prunus subhirtella / Winter-flowering cherry
Prunus subhirtella 'Autumnalis` / Winter-flowering cherry 'Autumnalis'
Prunus x blireana / Double-flowering plum
Prunus x yedoensis / Yoshino cherry
Pseudotsuga menziesii / Douglas fir
Pterocarya fraxinifolia / Caucasian wingnut
Pterocarya fraxinifolia 'Heereplein' / Caucasian wingnut 'Heereplein'
Pyrus calleryana / Callery pear
Pyrus calleryana 'Chanticleer' / Callery pear 'Chanticleer'
Pyrus communis subsp. caucasica / Garden pear
Pyrus communis / Common pear
Pyrus communis 'Conference' / Common pear 'Conference'
Pyrus communis 'Madame Verte' / Common pear 'Madame Verte'
Pyrus communis 'Pastorenbirne' / Common pear 'Pastorenbirne'
Pyrus communis 'Schweizer Wasserbirne' / Common pear 'Schweizer Wasserbirne'
Pyrus pyraster / European wild pear
Pyrus pyraster / European wild pear
Pyrus salicifolia / Willow-leaved pear
Quercus acutissima / Sawtooth oak
Quercus alba / White oak
Quercus castaneifolia 'Green Spire' / Chestnut-leaved oak 'Green Spire'
Quercus cerris / Turkey oak
Quercus coccinea / Scarlet oak
Quercus faginea / Portuguese oak
Quercus frainetto / Hungarian oak
Quercus frainetto 'Trump' / Hungarian oak 'Trump'
Quercus ilex / Holm oak
Quercus imbricaria / Shingle oak
Quercus macranthera / Persian oak
Quercus myrsinifolia / Chinese evergreen oak
Quercus palustris / Swamp oak
Quercus palustris 'Pringreen' / Swamp oak 'Green Pillar'
Quercus petraea / Sessile oak
Quercus phellos / Willow oak
Quercus pontica / Pontine oak
Quercus pubescens / Downy oak
Quercus pyrenaica / Pyrenean oak
Quercus rysophylla 'Maya' / Loquat leaf oak 'Maya'
Quercus robur / English oak
Quercus robur 'Fastigiata' / English oak 'Fastigiata'
Quercus robur 'Koster' / English oak 'Koster'
Quercus rubra / Red oak
Quercus rubra 'Aurea' / Red oak 'Aurea'
Quercus trojana / Macedonian oak
Quercus x bimundorum 'Chrimschmidt' / Hybrid oak 'Chrimschmidt'
Quercus x hispanica 'Fulhamensis' / Spanish oak 'Fulhamensis'
Quercus x turneri 'Pseudoturneri' / Tuner's oak 'Pseudoturneri'
Quercus x warei / Regal prince oak
Robinia hispida / Rose acacia
Robinia x margaretta CASQUE ROUGE ('Pink Cascade') / Robinia × margaretta 'Pink Cascade'
Robinia pseudoacacia / Black locust
Robinia pseudoacacia 'Bessoniana' / Black locust 'Bessoniana'
Robinia pseudoacacia 'Frisia' / Black locust 'Frisia'
Robinia pseudoacacia 'Monophylla Fastigiata' / Black locust 'Monophylla Fastigiata'
Robinia pseudoacacia 'Pyramidalis' / Black locust 'Pyramidalis'
Robinia pseudoacacia 'Tortuosa' / Tortuosa black locust
Robinia pseudoacacia 'Umbraculifera' / Umbrella black locust
Robinia pseudoacacia 'Unifoliola' / Black locust 'Unifoliola'
Salix alba / White willow
Salix alba 'Liempde' / White willow 'Liempde'
Salix alba / Goat willow
Salix alba / Goat willow
Salix x rubens / Basket willow
Salix matsudana 'Tortuosa' / Corkscrew willow
Salix pentandra / Laurel willow
Salix x sepulcralis 'Chrysocoma' / Weeping golden willow
Sambucus nigra / European elder
Sequoiadendron giganteum / Giant sequoia (redwood)
Sequoia sempervirens 'Ilia Martin' / Coast redwood 'Ilia Martin'
Sequoia sempervirens 'Winter Blue' / Coast redwood 'Winter Blue'
Styphnolobium japonicum 'Princeton Upright' / Japanese pagoda tree 'Princeton Upright'
Sorbus americana / American mountain ash
Sorbus aria / Common whitebeam
Sorbus aria 'Lutescens' / Common whitebeam 'Lutescens'
Sorbus aria 'Magnifica' / Common whitebeam 'Magnifica'
Sorbus aria 'Majestica' / Common whitebeam 'Majestica'
Sorbus aucuparia / European mountain ash (rowan)
Sorbus aucuparia 'Edulis' / European mountain ash (rowan) 'Edulis'
Sorbus aucuparia 'Fastigata' / European mountain ash (rowan) 'Fastigiata'
Sorbus ulleungensis 'Dodong' / 'Olympic Flame' rowan
Sorbus domestica / Service tree
Sorbus intermedia / Swedish whitebeam
Sorbus latifolia / Broad-leaved whitebeam
Sorbus torminalis / Wild service tree
Sorbus vilmorinii / Vilmorin's rowan
Sorbus x thuringiaca / Mountain ash
Sorbus x thuringiaca 'Fastigiata' / Mountain ash 'Fastigiata'
Styphnolobium japonicum / Japanese pagoda tree
Styphnolobium japonicum 'Regent' / Japanese pagoda tree 'Regent'
Sycopsis sinensis / Chinese fighazel
Syringa josikaea / Hungarian lilac
Syringa vulgaris / Common lilac
Taxodium distichum / Swamp cypress
Taxus baccata / Common yew
Taxus baccata 'Fastigiata' / Common yew 'Fastigiata'
Thuja occidentalis / Eastern white cedar
Thuja plicata / Western red cedar
Thuja plicata 'Excelsa' / Western red cedar 'Excelsa'
Thuja plicata 'Zebrina' / Western red cedar 'Zebrina'
Tilia americana / American lime
Tilia americana 'Nova' / American lime 'Nova'
Tilia cordata / Small-leaved lime
Tilia cordata 'Corzam' / Small-leaved lime 'Corinthian'
Tilia cordata 'Erecta' / Small-leaved lime 'Erecta'
Tilia cordata 'Greenspire' / Small-leaved lime 'Greenspire'
Tilia cordata 'Roelvo' / Small-leaved lime 'Roelvo'
Tilia cordata 'Savaria' / Small-leaved lime 'Savaria'
Tilia cordata 'Winter Orange' / Small-leaved lime 'Winter Orange'
Tilia henryana / Henry's lime tree
Tilia heterophylla 'Prestige' / American basswood 'Prestige'

Full list of trees in the tree register

Tilia mongolica / Mongolian lime
Tilia platyphyllos / Large-leaved lime
Tilia platyphyllos 'Fastigiata' / Large-leaved lime 'Fastigiata'
Tilia platyphyllos 'Rubra' / Large-leaved lime 'Rubra'
Tilia tomentosa / Silver lime
Tilia tomentosa 'Brabant' / Silver lime 'Brabant'
Tilia x europaea 'Pallida' / Common lime 'Pallida'
Tilia euchlora / Caucasian lime (Crimean lime)
Tilia x europaea 'Pallida' / Common lime 'Pallida'
Tilia x europaea 'Vulgaris' / Common lime 'Vulgaris'
Tilia americana 'Moltkei' / American lime 'Moltkei'
Tilia x europaea / Common lime
Toona sinensis / Chinese mahogany
Tsuga heterophylla / Western hemlock
Ulmus minor subsp. minor / Narrow-leaved elm
Ulmus minor subsp. minor 'Sarniensis' / Narrow-leaved elm 'Sarniensis'
Ulmus 'Clusius' / Dutch elm 'Clusius''
Ulmus 'Columella' / Dutch elm 'Columella'
Ulmus glabra / Scotch elm
Ulmus laevis / European white elm
Ulmus 'Lobel' / Dutch elm 'Lobel'
Ulmus 'Plantijn' / Dutch elm 'Plantijn'
Ulmus x hollandica / Dutch elm
Ulmus x hollandica 'Commelin' / Dutch elm 'Commelin'
Ulmus 'Lobel' / Dutch elm 'Lobel'
Viburnum rhytidophyllum / Leatherleaf virburnum
Wollemia nobilis / Wollemi pine
x Sycoparrotia semidecidua / Semi-deciduous parrot tree
Zelkova carpinifolia / Caucasian zelkova
Zelkova carpinifolia 'Verschaffeltii' / Caucasian zelkova 'Verschaffeltii'
Zelkova serrata / Japanese zelkova
Zelkova serrata 'Flekova' / Japanese zelkova 'Flekova'

Useful links
arbres.vdl.lu
www.fll.de
www.bdb.de (Association of German Nurseries)
www.citree.de (selection of urban tree varieties)
www.die-grüne-stadt.de

London plane tree (Platanus x hispanica) Cessange Park ►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