



Fit for climate change and biodiversity from the Lorenz von Ehren nursery

Climate change is already a reality. From worldwide observations conclusion can be drawn that long lasting droughts, torrential rain, heavy thunderstorms, heatwaves, gales and hail stones as well as pressure from pests and diseases are already on the increase. On a more local scale, in Germany up to 30% less rainfall is expected during the growing season.

The avenue trees listed here are all largely 'climate-tolerant' city tree species and known to be more able to adapt to climate change. This list supersedes previous city tree recommendations and the information is based on research compiled from the GALK street tree list (www.galk.de), the KlimaArtenMatrix for city tree species (www.die-gruene-stadt.de), the Stadtgrün 2021 research project (www.lwg.bayern.de), as well as our own 150 years of tree nursery experience.

Avenue trees from the Lorenz von Ehren tree nursery are fit for the future. We invite you to view the 'climate trees' presented here at our nursery - please make an appointment. We will also gladly give you information on the current availability of the species and types listed here.



KlimaArtenMatrix

		Hardiness			
		.1	.2	.3	.4
drought stress tolerance	1.	1.1	1.2	1.3	1.4
	2.	2.1	2.2	2.3	2.4
	3.	3.1	3.2	3.3	3.4
	4.	4.1	4.2	4.3	4.4

Grading in the KlimaArtenMatrix for city tree species (KLAAM-Stadt) with 16 ratings according to drought tolerance and hardiness; the allocation of 250 trees was undertaken on the basis of existing resilient publications of Roloff et al. and summarised in the special publication "Gehölze im Klimawandel" (Trees in climate change) at the Bund deutscher Baumschulen (German Association of Tree Nurseries) in 2009.

Grading by traffic light colours:

- „very well suited“
- „well suited“
- „suited but partially problematic“
- „very limited suitability“
- „unsuited“



Acer campestre – Field Maple

- Origin Central Europe
- Height 8 - 10 m
- Width 4 - 6 m
- Flowering inconspicuous, May
- Habit oval crown, upright form
- KlimaArtenMatrix 1.1
- Cultivars 'Elegant'; 'Elsrijk'; 'Fastigiata'
- Note mildew-resistant species



Acer cappadocicum – Caucasian Maple

- Origin Middle East
- Height 10 - 15 m
- Width 10 - 15 m
- Flowering yellow-green panicles, May
- Habit round crown
- KlimaArtenMatrix 2.2
- Cultivars 'Rubrum'
- Note dryness-resistant, autumn colours



Acer rubrum – Red Maple

- Origin Eastern North America
- Height 10 - 15 m
- Width 4 - 7 m
- Flowering conspicuous, red cluster, March-April
- Habit wide globular, egg-shaped, almost round crowned
- KlimaArtenMatrix 1.2
- Cultivars 'Red Sunset'; 'October Glory'





**Alnus spaethii** – Purple Alder

**Origin** Cultivation (A. japonica x A. subcordata)

**Height** 12 - 15 m

**Width** 6 - 8 m

**Flowering** red-yellow catkins, (Feb.) March

**Habit** conical crown

**KlimaArtenMatrix** 2.1

**Note** very robust, tolerates warmth; good autumnal colours



**Amelanchier arborea** – Juneberry, Snowy Mespilus, Serviceberry

**Origin** North America

**Height** 6 - 8 m

**Width** 3 - 5 m

**Flowering** white clusters, May

**Habit** wide egg-shaped to round

**KlimaArtenMatrix** 2.1

**Cultivars** 'Robin Hill'

**Note** stronger growth than A. lamarckii, very tolerant of dryness



**Amelanchier lamarckii** – Snowy Mespilus, Downy Serviceberry, Juneberry

**Origin** North America, naturalised

**Height** 5 - 8 m

**Width** 3 - 5 m

**Flowering** white clusters, end of April

**Habit** initially upright later vase shaped, round crowned

**Note** tolerant of dryness, very frost-hardy, autumnal colours yellow to orange-red



**Betula jacquemontii** – Himalayan Birch

**Origin** Nepal, Northern India, western China

**Height** 10 - 15 m

**Width** 6 - 10 m

**Flowering** yellow catkins in April appear before leaves

**Habit** broadly conical later dome shaped

**KlimaArtenMatrix** 4.3

**Note** proved itself in the nursery in dry summers, quite frost-hardy



**Carpinus betulus** – Hornbeam

**Origin** Central Europe

**Height** 5 - 15 m

**Width** 4 - 8 m

**Flowering** inconspicuous, May

**Habit** fastigate types become dense pyramids, branches diagonally upright

**KlimaArtenMatrix** 2.1

**Cultivars** 'Fastigiata'; 'Frans Fontaine'

**Note** capacity to regenerate



**Castanea sativa** – Sweet Chestnut, Spanish Chestnut

**Origin** Central Europe

**Height** 10 - 35 m

**Width** 10 - 12 m

**Flowering** striking, cream-white catkins, June-July

**Habit** broad crown

**KlimaArtenMatrix** 2.2

**Note** very tolerant of heat, sensitive to frost in heavy soil





**Celtis australis** – Nettle Tree, European Hackberry

**Origin** Southern Europe, Northern Africa, Western Asia

**Height** 15 - 20 m

**Width** 10 - 12 m

**Flowering** inconspicuous, May

**Habit** round crown, irregular umbrella-shaped when older

**KlimaArtenMatrix** 1.3

**Note** is heat and drought tolerant, is considered an alternative for sycamore



**Cercis siliquastrum** – Judas Tree

**Origin** Southern Europe

**Height** 4 - 6 m

**Width** 4 - 6 m

**Flowering** striking purple-pink, April

**Habit** funnel-shaped, later spread out in umbrella shape

**KlimaArtenMatrix** 1.4

**Cultivars** 'Robin Hill'

**Note** heat and drought-tolerant, prefers areas sheltered from early sun



**Cornus mas** – Cornelian Cherry

**Origin** Central Europe

**Height** 3 - 6 m

**Width** 3 - 6 m

**Flowering** yellow umbels, (Feb.) March-April

**Habit** wide and rounded, horizontal branches

**KlimaArtenMatrix** 1.1

**Note** very healthy, heat-tolerant, extremely frost-hardy



**Corylus colurna** – Turkish Hazel

**Origin** South Eastern Europe

**Height** 12 - 15 m

**Width** 6 - 8 m

**Flowering** yellow catkins, March-April

**Habit** conical to round crown

**KlimaArtenMatrix** 2.2

**Note** water for the first years after planting, once established very tolerant of drought



**Crataegus crus-galli** – Cockspur Thorn

**Origin** North America

**Height** 8 - 12 m

**Width** 3 - 10 m

**Flowering** white, May

**Habit** wide compact crown

**KlimaArtenMatrix** 3.1

**Note** the "No. 1" Crataegus, heat tolerant and frost-hardy



**Fraxinus ornus** – Flowering Ash

**Origin** Southern Europe, Western Asia

**Height** 6 - 8 m

**Width** 4 - 6 m

**Flowering** cream-white panicles, May

**Habit** broadly domed, later funnel-shaped

**KlimaArtenMatrix** 1.4

**Note** extremely tolerant of heat and drought; relatively frost-hardy





**Ginkgo biloba – Maidenhair Tree**

**Origin** China  
**Height** 15 - 25 m  
**Width** 10 - 15 m  
**Flowering** inconspicuous, May  
**Habit** conical to almost round crown  
**KlimaArtenMatrix** 1.2  
**Note** tolerant of drought, robust



**Gleditsia triacanthos – Honey Locust**

**Origin** Eastern North America  
**Height** 12 - 15 m  
**Width** 7 - 10 m  
**Flowering** green-white panicles, June-July  
**Habit** globular, later oval  
**KlimaArtenMatrix** 1.2  
**Cultivars** inermis; 'Skyline'; 'Sunburst'  
**Note** drought tolerant



**Koelreuteria paniculata – Golden-rain Tree**

**Origin** Eastern Asia  
**Height** 6 - 8 m  
**Width** 4 - 6 m  
**Flowering** striking yellow panicles, August  
**Habit** wide crown, later umbrella-shaped  
**KlimaArtenMatrix** 1.3  
**Note** tolerant of heat, for sheltered areas



**Liquidambar styraciflua – Sweet Gum**  
**Origin** South Eastern North America  
**Height** 12 - 15 m  
**Width** 4 - 8 m  
**Flowering** inconspicuous, May  
**Habit** narrowly pyramidal, later oval crown  
**KlimaArtenMatrix** 2.3  
**Cultivars** 'Worplesdon'  
**Note** fantastic autumnal colours



**Magnolia kobus – Kobus-Magnolia, Magnolia Tree**

**Origin** Japan  
**Height** 8 - 10 m  
**Width** 4 - 6 m  
**Flowering** striking white floral stars, April  
**Habit** conical  
**KlimaArtenMatrix** 3.2  
**Note** robust and healthy avenue tree, trunk protection recommended



**Malus Hybrids – Flowering Crab Apple**

**Origin** Europe, American cultivation  
**Height** 5 - 8 m  
**Width** 4 - 5 m  
**Flowering** striking white, rose or red, May  
**Habit** oval crown, overhanging branches  
**Cultivars** 'Evereste'; 'Red Sentinel'  
**Note** new and very healthy species available





**Mespilus germanica – Medlar**

**Origin** Central and Southern Europe, Western Asia  
**Height** 3 - 5 m  
**Width** 3 - 5 m  
**Flowering** white, individually, end May-June  
**Habit** irregular spreading crown  
**KlimaArtenMatrix** 2.2  
**Note** small tree, tolerant of heat



**Metasequoia glyptostroboides – Dawn Redwood**

**Origin** China  
**Height** 20 - 30 m  
**Width** 6 - 8 m  
**Flowering** inconspicuous, May  
**Habit** conical crown  
**KlimaArtenMatrix** 3.1  
**Note** very healthy, prefers moist soils



**Nyssa sylvatica – Tupelo, Black Gum**

**Origin** Eastern North America  
**Height** 15 - 20 m  
**Width** 8 - 12 m  
**Flowering** inconspicuous, pale green, May  
**Habit** conical crown, flattened when old  
**KlimaArtenMatrix** 2.2  
**Note** unique autumnal colours



**Ostrya carpinifolia – Hop Hornbeam**

**Origin** Southern Europe, Western Asia  
**Height** 10 - 15 m  
**Width** 8 - 12 m  
**Flowering** green-yellow catkins, end March-May  
**Habit** conical to ovoid, later round crown  
**KlimaArtenMatrix** 1.1  
**Note** very heat-tolerant



**Parrotia persica – Persian Ironwood**

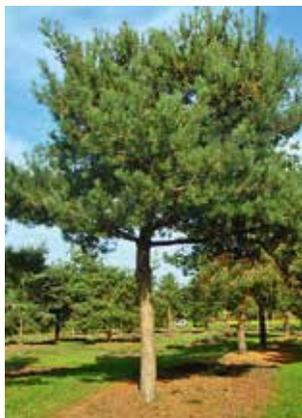
**Origin** Northern Persia  
**Height** 5 - 7 m  
**Width** 5 - 10 m  
**Flowering** orange-red, February-March (April)  
**Habit** oval to semicircular compact crown  
**KlimaArtenMatrix** 2.2  
**Note** very healthy, dry to moist locations



**Pinus mugo – Mugo Pine, Mountain Pine**

**Origin** Europe  
**Height** 4 - 8 m  
**Width** 2 - 4 m  
**Flowering** striking, yellow, May  
**Habit** wide conical crown  
**KlimaArtenMatrix** 2.1  
**Note** tolerates cutting well, small evergreen tree





**Pinus sylvestris – Scots Pine**  
**Origin** Europe  
**Height** 10 - 30 m  
**Width** 5 - 10 m  
**Flowering** light yellow, May  
**Habit** starts conical, later umbrella-shaped crown  
**KlimaArtenMatrix** 1.1  
**Note** very adaptable and tolerant of heat



**Quercus petraea – Sessile Oak**  
**Origin** Central Europe  
**Height** 20 - 35 m  
**Width** 15 - 20 m  
**Flowering** inconspicuous, May  
**Habit** domed to round crown  
**KlimaArtenMatrix** 2.2  
**Note** heat-tolerant and long-lived



**Quercus cerris – Turkey Oak**  
**Origin** Southern Europe, Asia Minor  
**Height** 20 - 25 m  
**Width** 8 - 15 m  
**Flowering** inconspicuous, April-May  
**Habit** rounded to upwardly arched crown  
**KlimaArtenMatrix** 1.2  
**Note** frost-hardy, drought-tolerant



**Robinia pseudoacacia – Robinia, Locust Tree**  
**Origin** Eastern North America  
**Height** 15 - 25 m  
**Width** 7 - 12 m  
**Flowering** striking white clusters, end of May  
**Habit** oval to round crown  
**KlimaArtenMatrix** 1.1  
**Note** tolerant of heat; not too heavy soils



**Quercus palustris – Pin Oak**  
**Origin** Eastern North America  
**Height** 15 - 20 m  
**Width** 10 - 15 m  
**Flowering** inconspicuous, May  
**Habit** conical to asymmetrical  
**KlimaArtenMatrix** 2.2  
**Note** likes warmth and is frost-hardy



**Sophora japonica – Pagoda or Scholar's Tree**  
**Origin** China, Korea  
**Height** 15 - 20 m  
**Width** 12 - 15 m  
**Flowering** cream-white panicles, August  
**Habit** round crown, later more umbrella-shaped  
**KlimaArtenMatrix** 1.2  
**Cultivars** 'Regent'  
**Note** counts as top ten tree for drought tolerance





### Sorbus aria – Whitebeam

- Origin** Europe
- Height** 6 - 12 m
- Width** 4 - 8 m
- Flowering** white umbels, May
- Habit** wide and loose, conical to round crowned
- KlimaArtenMatrix** 1.1
- Cultivars** 'Magnifica'
- Note** extremely heat-tolerant



### Taxodium distichum – Swamp Cypress

- Origin** South Eastern North America
- Height** 20 - 25 m
- Width** 4 - 6 m
- Flowering** inconspicuous, April
- Habit** conical to cylindrical
- Note** very healthy and robust, prefers moist locations



### Tilia platyphyllos – Broad-leaved Lime

- Origin** Central Europe, various selections
- Height** 25 - 30 m
- Width** 15 - 25 m
- Flowering** yellow umbels, June-July
- Habit** narrowly pyramid-shaped, later ovoid
- KlimaArtenMatrix** 3.1
- Cultivars** 'Örebro'



### Tilia tomentosa – Silver Lime

- Origin** South Eastern Europe
- Height** 20 - 25 m
- Width** 12 - 15 m
- Flowering** white-yellow umbels, end of July
- Habit** conical to ovoid later round crown
- KlimaArtenMatrix** 1.2
- Cultivars** 'Brabant'
- Note** very robust and minimal aphid attacks

### Ulmus hollandica – Dutch Elm

- Origin** Europe, various selections
- Height** 12 - 18 m
- Width** 6 - 8 m
- Flowering** light green bunch, March-April
- Habit** narrow to compact conical
- KlimaArtenMatrix** 4.1
- Cultivars** 'Columella'; 'Lobel'
- Note** robust and resistant, cultivars are considered as fungal resistant

### Zelkova serrata – Keaki, Japanese Zelkova

- Origin** Japan
- Height** 15 - 25 m
- Width** 8 - 12 m
- Flowering** inconspicuous, April
- Habit** wide upright, later round to umbrella-shaped crown
- KlimaArtenMatrix** 2.2
- Cultivars** 'Green Vase'
- Note** important street tree in Japan

