

# Bridges across the Baltic: International Cooperation on Arboricultural Standards

LIINA JÜRISOO





Key / Legend  
★ Capital  
■ Main group

Scale: 1:100,000,000  
Reference Population:  
Standard possible 10°N and 10°S





# THE BALTIC SEA AREA

10 COUNTRIES



# Estonia – Latvia – Russia Cross Border Cooperation Programme within European Neighborhood and Partnership instrument 2007-2013



united by borders

Programme's aim is to make the wider border area an attractive place for its inhabitants and businesses through activities aimed at improving the living standards and investment climate.





- The overall project idea is to jointly develop efficient principles of management of green landscapes,
  - incl. natural and artificial ones, inside the cities of Tartu (EE), Rezekne (LV) and Pskov (RU).



part-financed by  
the European Union

united by borders



# EE-LV-RU Border Capitals







- Started on May 1, 2012
- Prolonged 30 months
- 10 partners



NGO



UNIVERSITY



MUNICIPALITY





CROSS-BORDER  
COOPERATION  
CENTER «LAKE  
PEIPSI PROJECT,  
PSKOV»

NGO



Peipsi Center for  
Transboundary  
Cooperation



EUROREGION  
COUNTRY OF LAKES





 Pskov State University

 **Eesti Maaülikool**  
Estonian University of Life Sciences



UNIVERSITY



**DAUGAVPILS UNIVERSITY**







# Город Псков



Rezekne City Rezekne Region



City of Good Thoughts



# MUNICIPALITY



- total budget nearly two million euros
- sponsored by
  - the ENPI CBC Estonia – Latvia – Russia Programme (90%)
  - project partner organizations (10%).



ENPI cross border  
cooperation programme



part-financed by  
the European Union

united by borders



# Specific objectives

1. Improved efficiency of urban green areas management in Tartu, Rezekne and Pskov;
2. Improved networking and experience sharing between the specialists dealing with urban green management.

# Target groups, final beneficiaries

1. Urban decision- and policy makers dealing with urban development, spatial planning and green management from Tartu, Rezekne and Pskov;
2. Leading «green» specialists from the associated municipal structures providing day-to-day green care (e.g. planting, cutting, trimming of trees, etc.);
3. Scholars from the universities located in Estonian, Latvian and Russian border area and who teach courses related to environment, such as green landscape design, GIS, environment management, urban development, urban spatial planning;
4. Environmental non-governmental organizations;

# Main activities and achieved results

- Comprehensive scientific inventories of the green areas in Pskov and Rezekne Cities created, green territories identified and two GIS-databases prepared
- New GIS-based green areas management systems prepared – for Pskov and Rezekne Cities (the Tartu green system updated)
- Nearly ten cross-border educational events: seminars, study trips and conferences attended by over 350 specialists





This document has been produced with the financial assistance of the Estonia – Latvia – Russia Cross Border Cooperation Programme within European Neighbourhood and Partnership Instrument 2007 – 2013. The contents of this document are the sole responsibility of Estonian University of Life Sciences and can under no circumstances be regarded as reflecting the position of the Programme, Programme participating countries, alongside with the European Union.

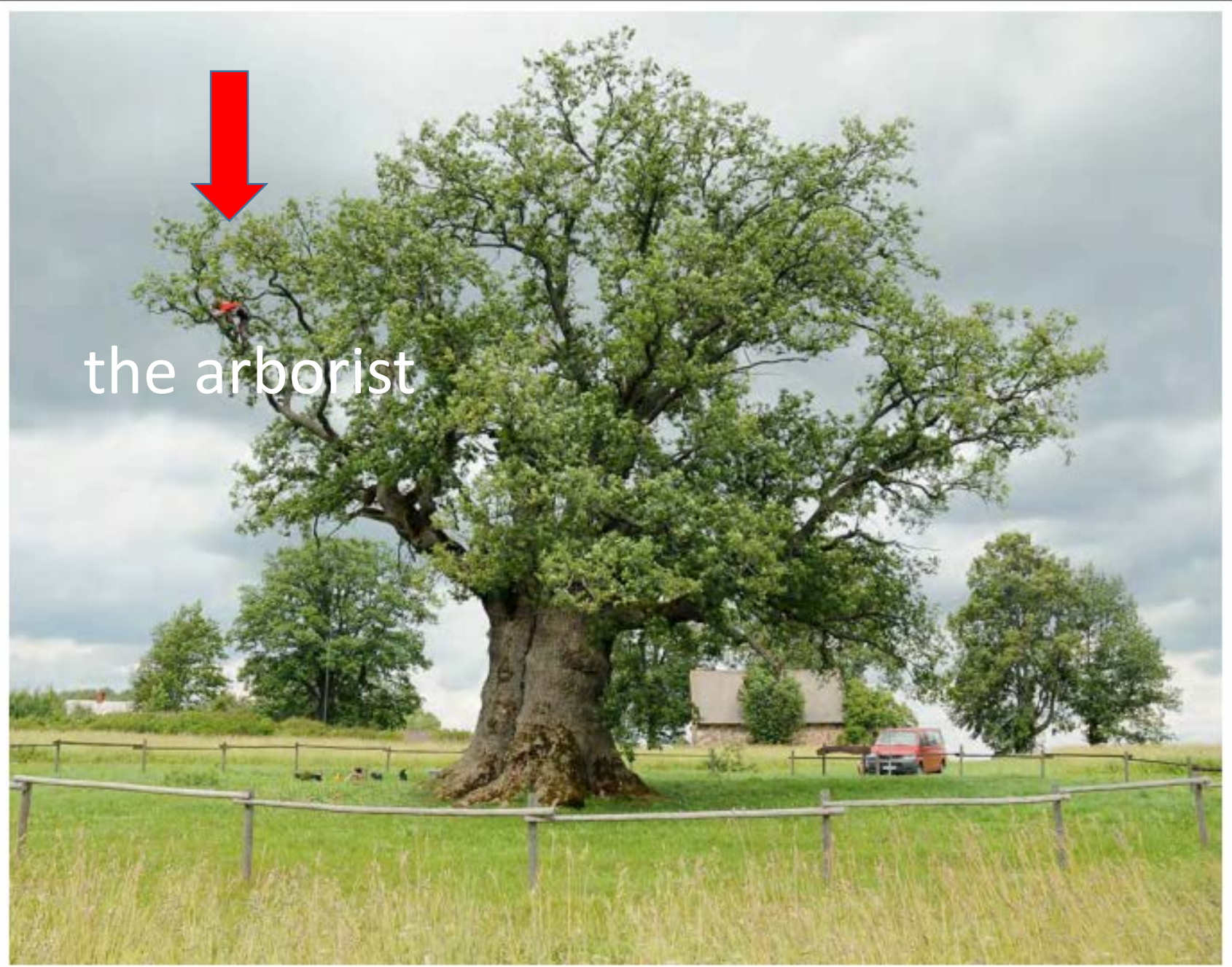


# **STUDY ON GOOD PRACTICE OF MAINTENANCE OF TREES AND SHRUBS**

# STUDY ON GOOD PRACTICE OF MAINTENANCE

- Introduction
  - CODIT and 4 walls
- Valuable and damaged trees. Protection and removal
- Tree selection, placement and maintenance

Third largest tree  
in the Baltics  
and



the arborist

1.1. Kaņepju Heritage tree and an arborist. Third largest tree in Baltics. Latvia, 57°42'05", 25°39'42"

# **VALUABLE AND DAMAGED TREES. PROTECTION / REMOVAL**

- Tree inventory
- Removal of trees
- Protection plan
- Protection works





# Numbers and passports for trees



# PROTECTION PLAN FOR THE VALUABLE TREES

Such plan must be developed beforehand, and only afterwards the construction works can be started.

- suggested protection zones
- additional survey
- technical solutions



2.6. A tree protection plan based on a tree inventory before public space renovation.

# CONSTRUCTION WORKS, DIGGING





Root control ditch.

Roots can also reach under roads and other constructions where people usually do not think they might be.



















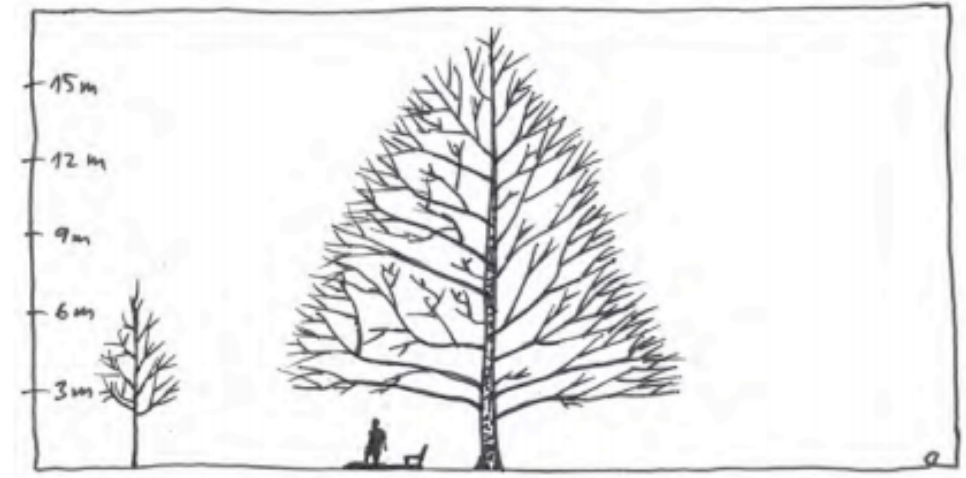


# THE RIGHT PLANT FOR THE RIGHT PLACE

## TREE DIVISION BY PURPOSE

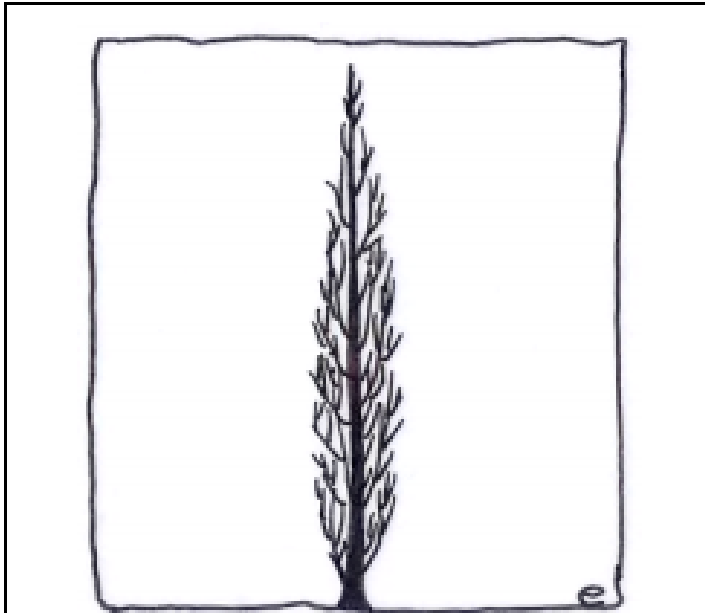
### 4.3.2. Solitary trees / Landscape trees

Such tree crowns are also lifted (~1.8 - 2.2 m high) so they would not disturb the pedestrian movement and view. Thus, the branches above this height can be of a larger diameter as they are the first permanent branches that will not need to be further lifted, and this is the main difference from the Street trees. These are the most typical nursery trees with a single trunk and moderate size branches that are located evenly on all sides of the trunk. Such trees can also be planted alone or in groups, avenues or lines in areas where there is no traffic.



# TREE DIVISION BY THE NATURAL CROWN SHAPE

## 4.5.1. Columnar



With extremely narrow crowns these shapes are favoured by architects and landscape architects, since they can be displayed as an extension of architecture (by planting in rows and avenues) and because visually they are very



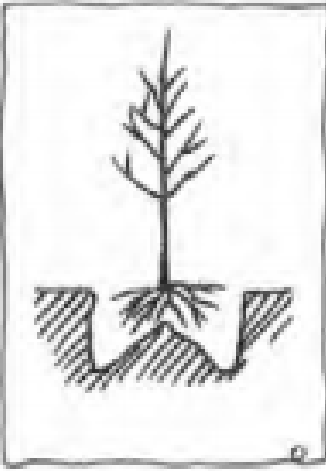
4.18. *Quercus robur* 'Fastigiata Koster', Lorenz von Ehren



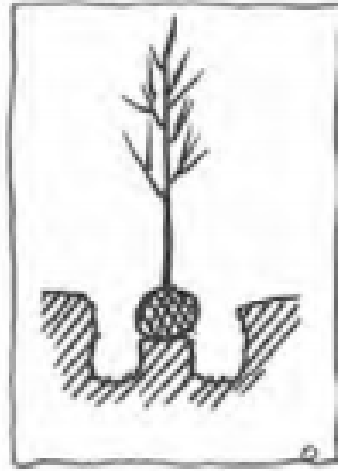
4.19. *Prunus serullata* 'Amanogawa', Lorenz von Ehren

# PLANTING

- Choosing appropriate size
- Planting time
- How to plant
- Watering



5.4. Bare root;



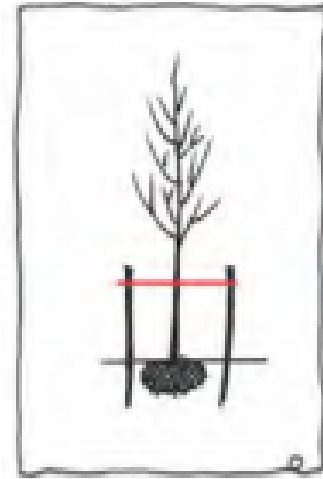
5.5. Root ball;



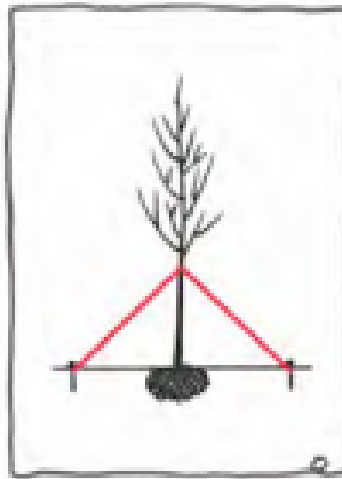
5.6. Oxygen pipes for the roots to grow in depth



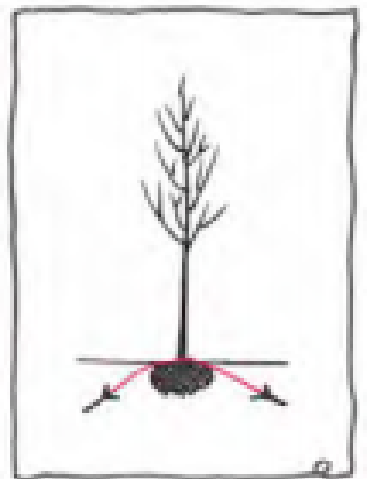
5.7. Using one stake;



5.8. Using two stakes;

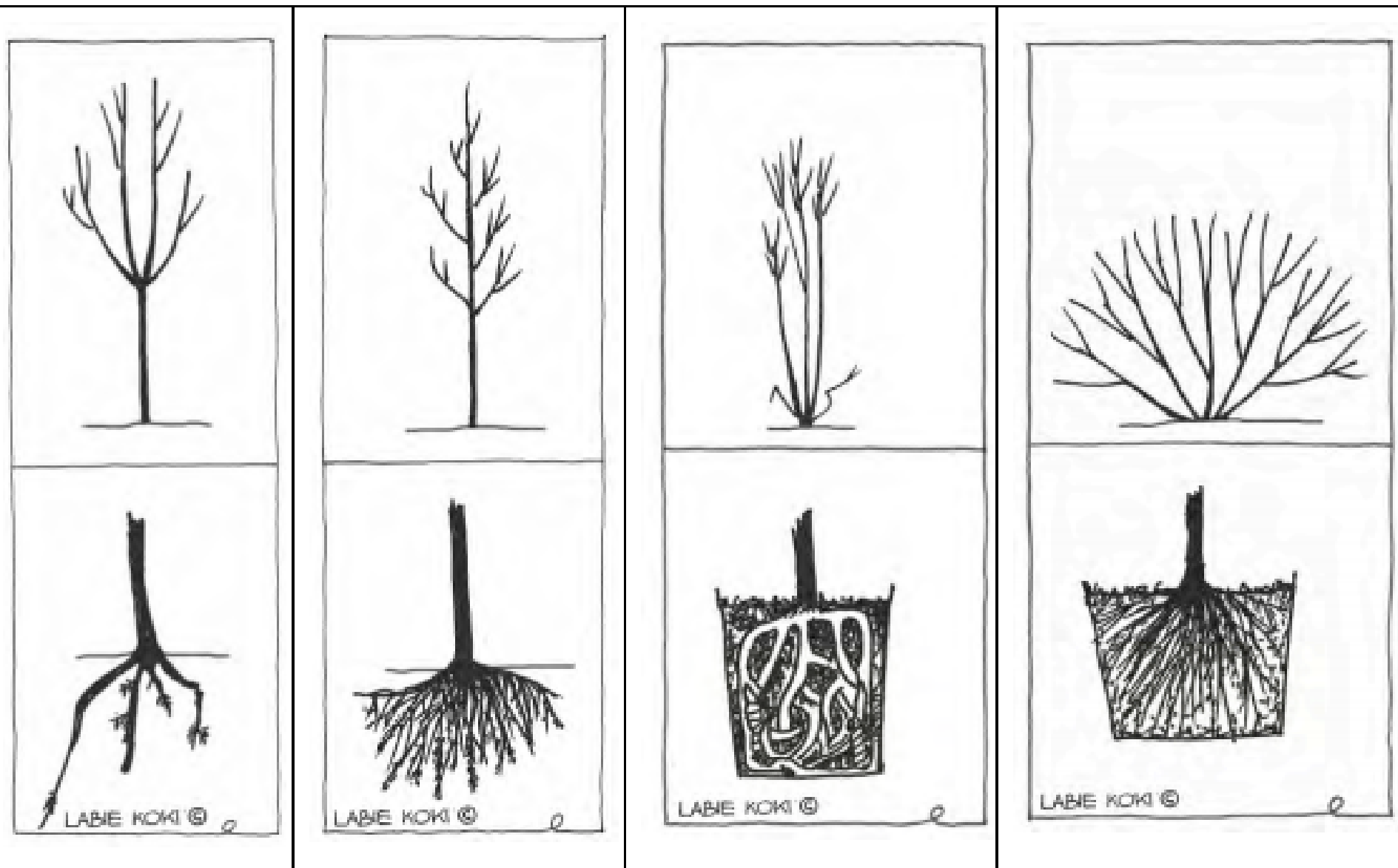


5.9.. Above the ground;



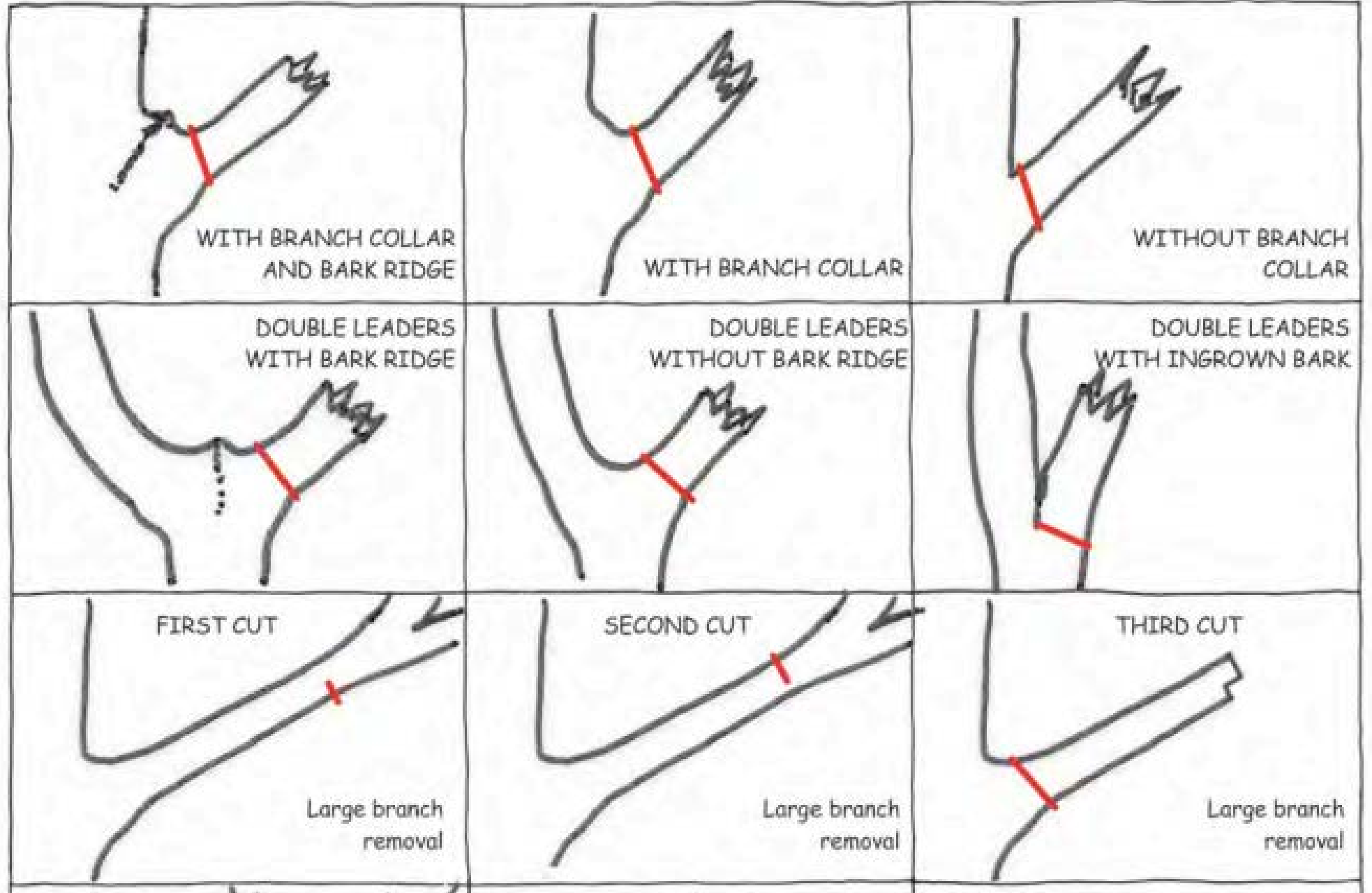
5.10. Below the ground.

# QUALITY OF TREES AND SHRUBS IN NURSERIES

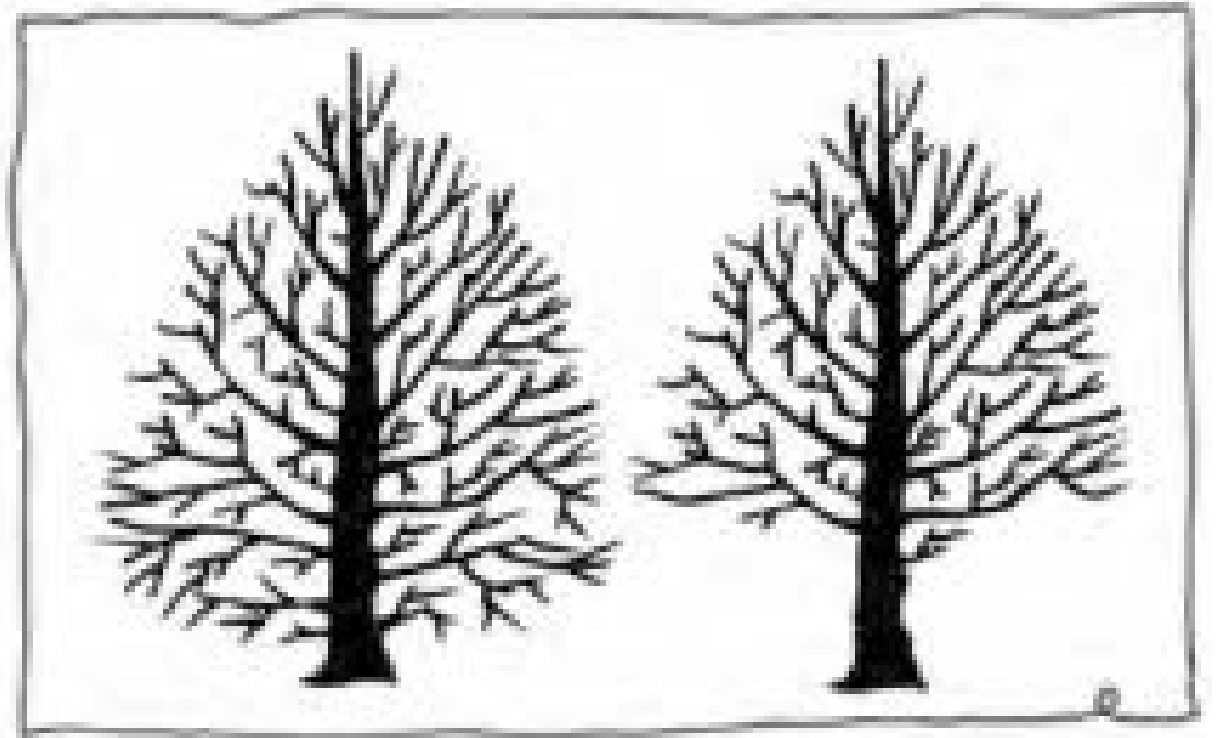
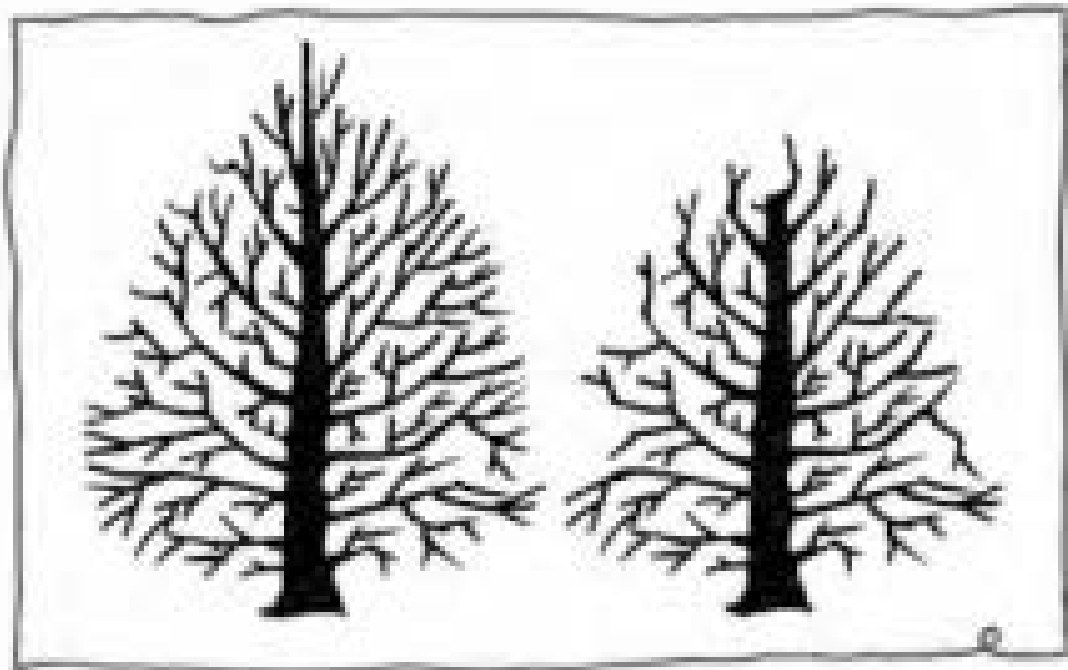
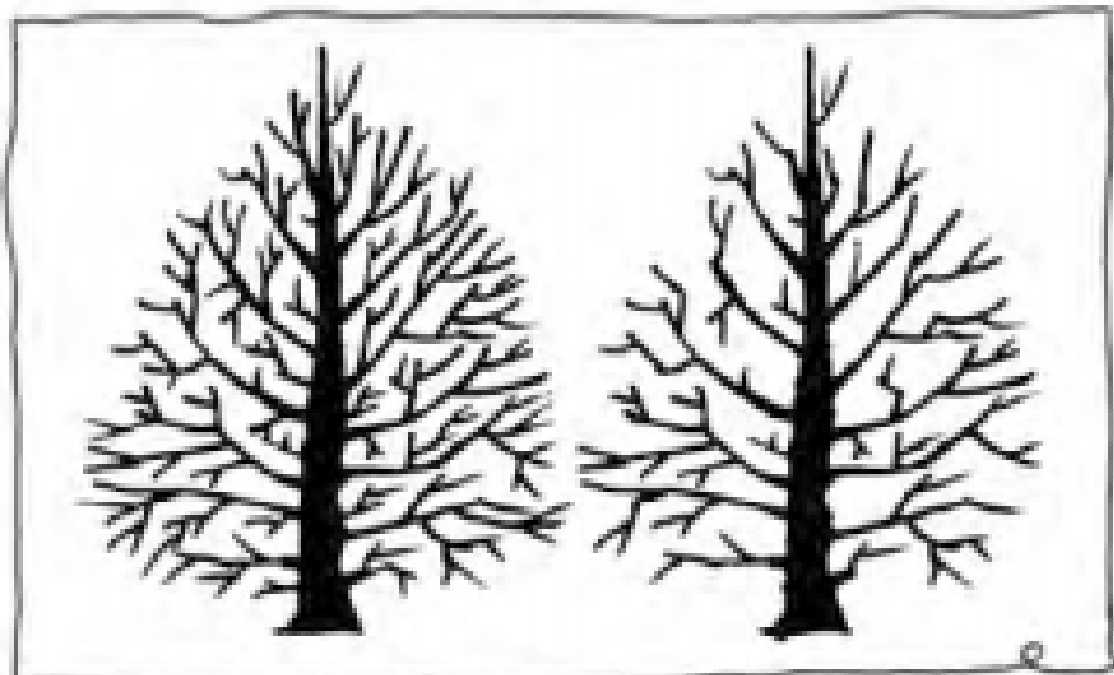


4.1.,4.2. Bad/good bare root plant example; 4.3.,4.4. Bad/good container plant example.

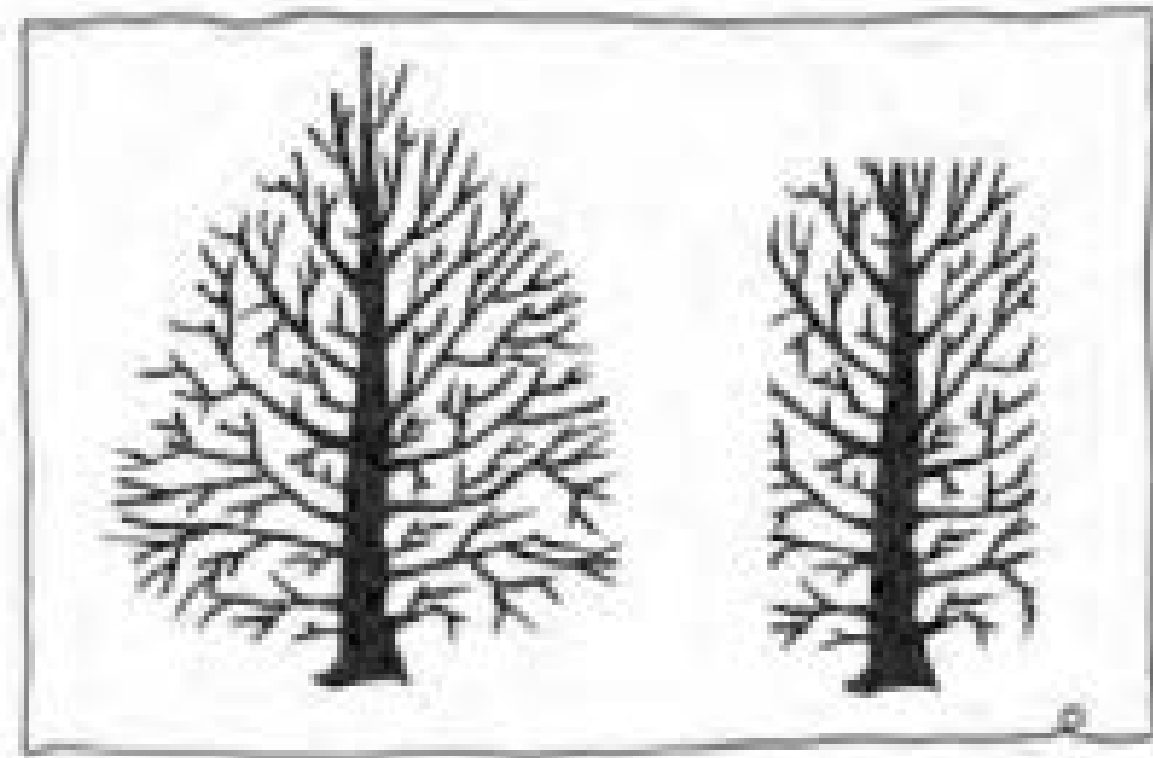
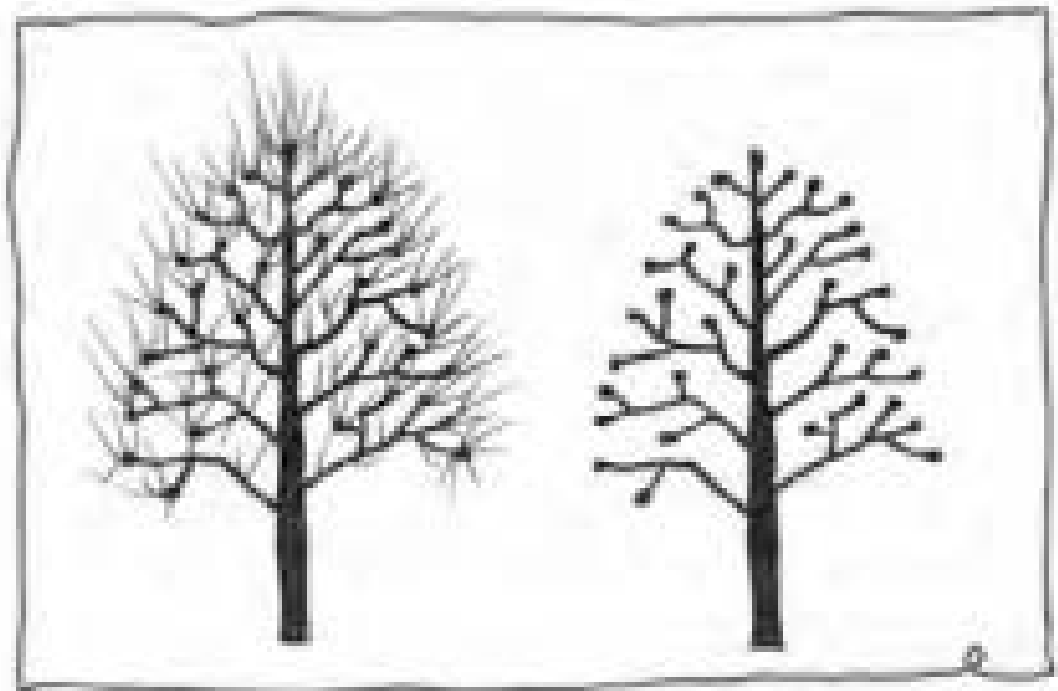
# PRUNING







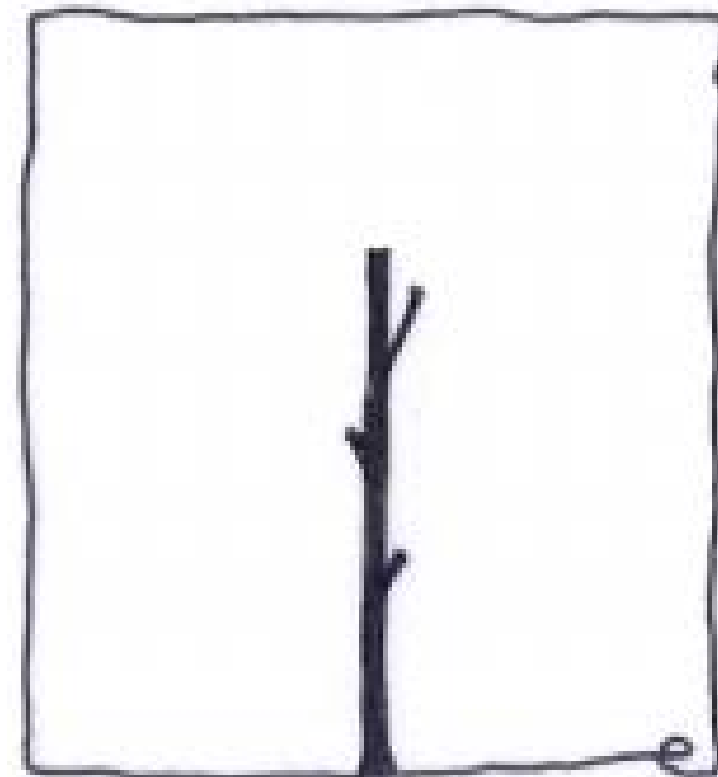
# ARTIFICIALLY SHAPED TREE CROWNS AND SHRUBS



# Pollarding in July



# IMPROPER PRUNING



# MANUAL

- intended to help the staff of local municipalities to focus their available resources in the most efficient way onto the most important maintenance activities

## URBAN GREEN SPACE MANAGEMENT

Manual for Local Municipalities Contents



# HARDINESS ZONES IN EUROPE

A hardiness zone is a geographically defined area in which a specific category of plant life is capable of growing, as defined by climatic conditions, including its ability to withstand the minimum temperatures of the zone. For example, a plant that is described as "hardy to zone 9" means that the plant can withstand a minimum temperature of  $-1^{\circ}\text{C}$ . A more resilient plant that is "hardy to zone 7" can tolerate a minimum temperature of  $-7^{\circ}\text{C}$ . These zones work best but care must be taken when considering the average annual snow cover which insulates plants from deep frost. See plants recommended for our region's climate zones in Appendix 3 at page XX.

Plants imported from many different countries can be used in urban areas, selected for their different aesthetic properties. While the urban heat island effect keeps cities 1–3 degrees above the average temperature of the surrounding countryside, species and cultivars should be chosen from similar hardiness zones, or from the next less-hardy zone on the hardiness spectrum, if they are to survive extreme winter conditions often found in the Baltic regions. When importing plants which are generally hardy, ensure that they have been grown in a suitable hardiness zone as they will acclimatise to the local conditions much better.



# APPENDICES

## SPECIES SUITABLE FOR PLANTING ACCORDING TO CLIMATE ZONES

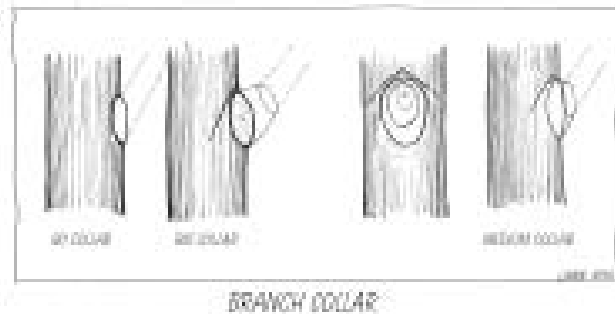
109

Zones >	1	2	3	4	5	6	7
<i>Conifera</i>							
<i>Abies alba</i>					*		
<i>Abies balsamea</i>				-			
<i>Abies concolor</i>				-			
<i>Abies fraseri</i>				-			
<i>Abies holophylla</i>				-			
<i>Abies koreana</i>				-			
<i>Abies lasiocarpa</i>				-			
<i>Abies sachalinensis</i>				-			
<i>Abies sibirica</i>				-			
<i>Abies veitchii</i>				-			
<i>Chamaecyparis lasiocarpa</i>						*	
<i>Chamaecyparis nootkanensis</i>						*	
<i>Chamaecyparis pisifera</i>					*		
<i>Juniperus chinensis</i>				-			
<i>Juniperus communis</i>			*				
<i>Juniperus conferta</i>				-			
<i>Juniperus davurica</i>				-			
<i>Juniperus horwoodii</i>				-			
<i>Juniperus spissuriana</i> (syn. J. media)				-			
<i>Juniperus sabina</i>			*				
<i>Juniperus scopulorum</i>				-			

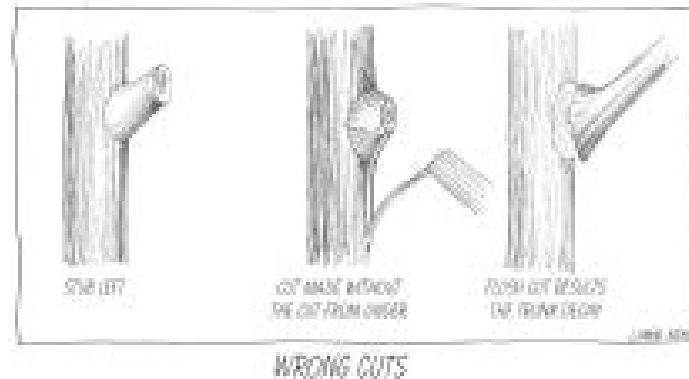
If the collar of the branch is removed during pruning, the chances of the trunk becoming infected by decay and corker-causing microorganisms are greatly increased.

Flush cuts should not be made; instead, cuts should be made just outside the branch collar. A branch collar is the swollen area at the base of the branch that sometimes has a back ridge.

Improper cuts:



In case the branch is heavy, these cuts are necessary. The first cut should be made 30–50 cm from the trunk, starting from below the branch and cutting upwards to prevent tearing when the branch is removed. The second cut is made about 5 cm from the first, away from the trunk, to remove the main part of the branch, cutting



from the top. The third cut is made at the branch collar and enables a good final cut to be made with no risk of tearing the bark.

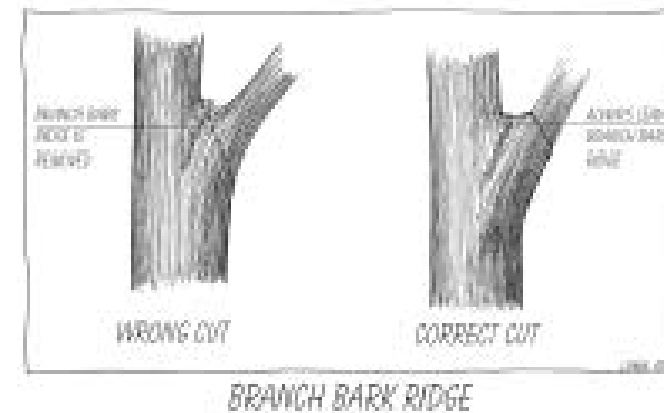


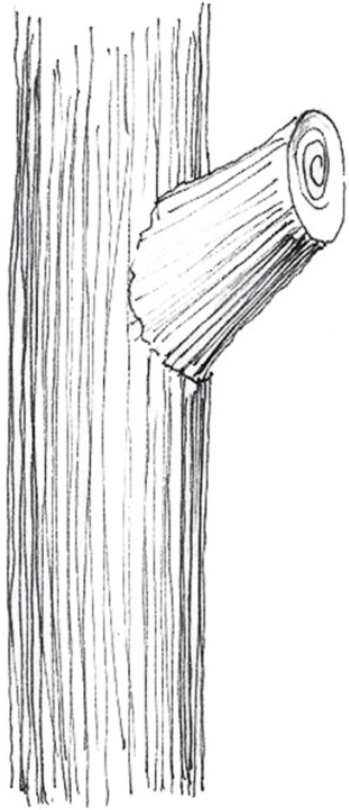
Co-dominant branches should be removed as soon as possible.



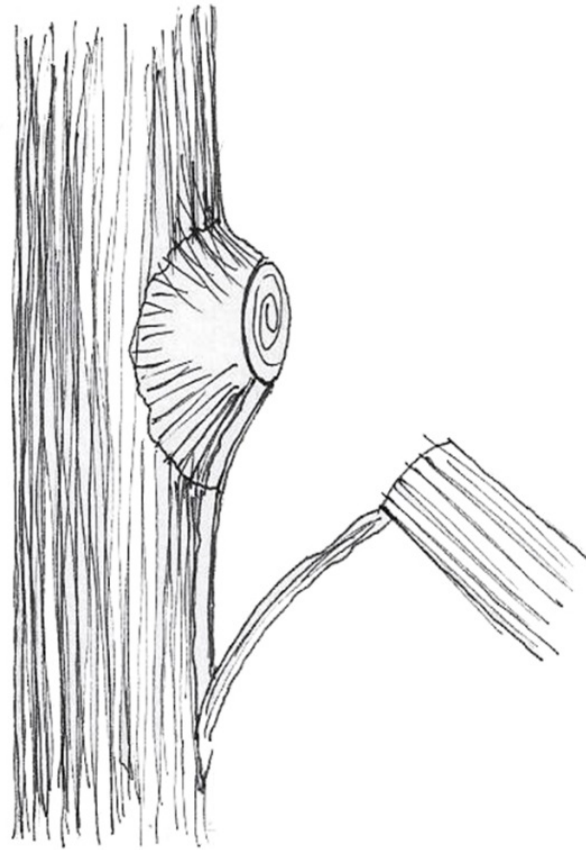
A healthy, durable connection of branches (the scar reaches upwards):

Branches may crack apart (grown back):

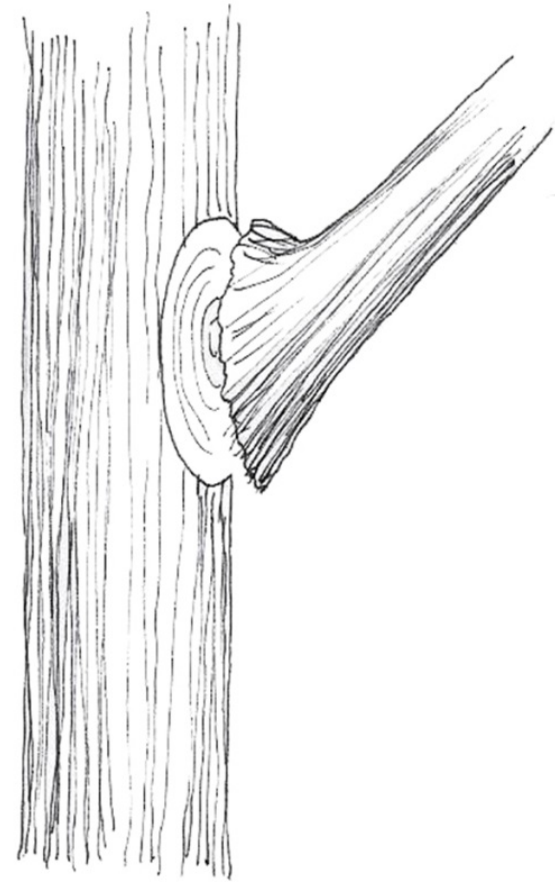




STUB LEFT



CUT MADE WITHOUT  
THE CUT FROM UNDER



FLUSH CUT RESULTS  
THE TRUNK DECAY

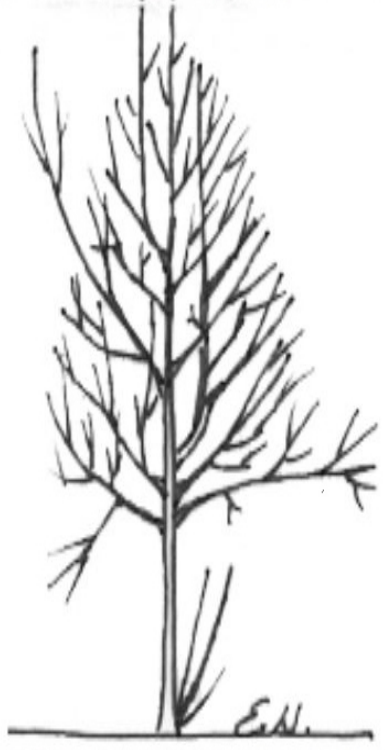
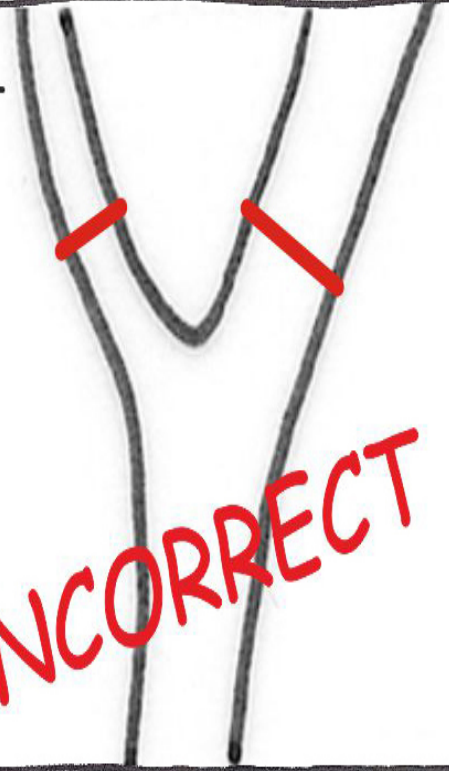
LABIE KOKI

## WRONG CUTS



HEADING CUT

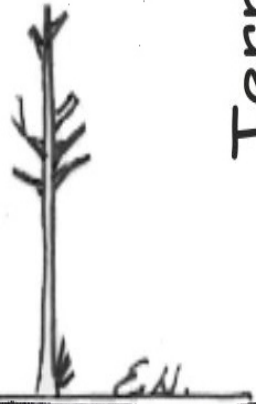
**INCORRECT**



Before

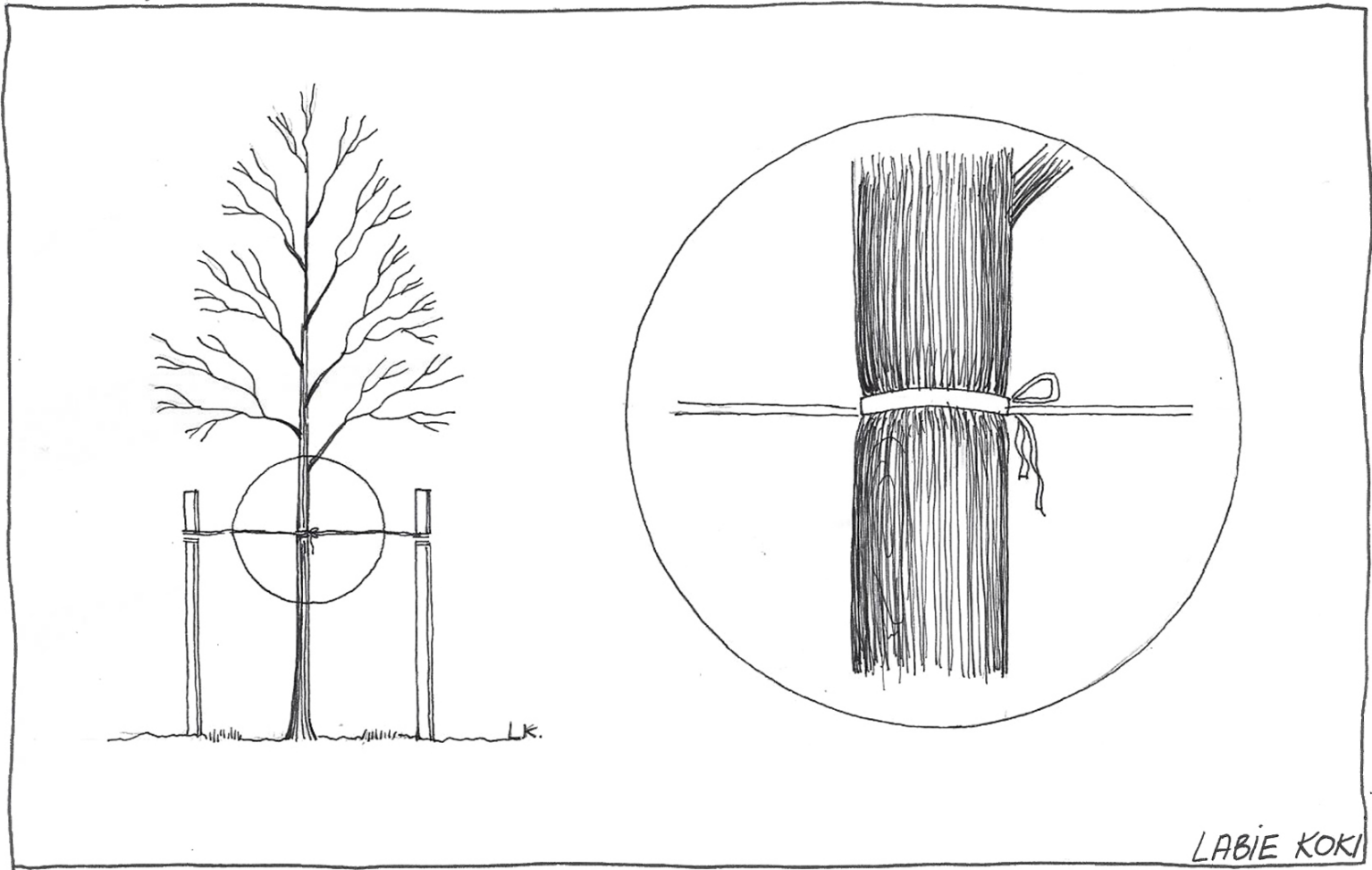


Bad






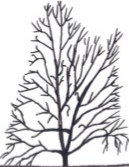
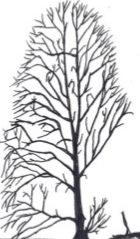







Terrible

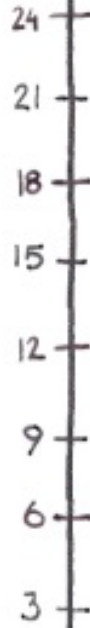
# TREE SUPPORT



*TREE SUPPORT SHOULD BE CHECKED REGULARLY*

	YOUNG TREE	PRIMATURE TREE	MATURE TREE	OLD TREE
TREE IN A FOREST				
	FOREST TREES ARE USUALLY GROWING UP RAPIDLY IN THEIR EARLY YEARS, AND THEY FORM A SINGLE TRUNK AND TEMPORARY BRANCHES OF SMALL DIAMETER	CONTINUES TO DEVELOP A STRAIGHT TRUNK UP TO A HEIGHT OF 0-20 m, WHERE THE FIRST SCAFFOLD BRANCHES APPEAR.	UNFORTUNATELY, THE LARGE SCAFFOLD BRANCHES AND MULTIPLE TOPS ARE OFTEN CREATING UNSTABLE AXILS. THE TREE REACHES ITS MAXIMUM HEIGHT AND CONTINUES TO GROW ONLY IN THICKNESS.	HUGE WOUNDS ARE FORMING WHEN ANY OF THE LARGE SCAFFOLD BRANCHES OR CODOMINANTS ARE FAILING. THE CROWN OF TREE IS SHRINKING AND THE TREE IS SLOWLY DEGRADING BEHIND OTHER TREES THAT ARE SUSPENDING THE WINDS.
UNTENDED LANDSCAPE TREE				
	WITHIN UNRESTRICTED LIGHT CONDITIONS, ALL BRANCHES, EVEN THE LOWEST, ARE TRYING TO BECOME SCAFFOLD BRANCHES, TREE FORMS MULTIPLE STEMS AND COMPETITIVE CODOMINANTS.	ANY OF THE TOO LARGE LATERAL BRANCHES OF CODOMINANTS CAN FAIL EVEN AT THIS AGE DUE TO UNSTABLE AXILS, THUS, CREATING HUGE WOUNDS	IN SUCH CIRCUMSTANCES, THE TREE USUALLY DOES NOT GROW AS HIGH AS IN THE FOREST, BUT IT MAINTAINS THE BRANCHES TO THE GROUND. DECAY IS FIGHTING WITH THE CODIT. TREE IS HAZARDOUS.	THE FIGHT ALWAYS ENDS IN FAVOUR OF DECAY, BUT FOR FEW MORE TIMES THE TREE RESTORES A LOW, THICK AND UNSTABLE CROWN. THANKS TO THE FOURTH CODIT BARRIER, A LIME IN THIS STATE CAN LIVE FOR A NUMBER OF RE-GROWTH PHASES/CYCLES.
WELL-TENDED LANDSCAPE TREE				
	THE WORK BEGUN IN NURSERY IS CARRIED ON FORMING A SINGLE TRUNK WITH EVENLY DISTRIBUTED SMALL-DIAMETER SCAFFOLD BRANCHES. CROWN RAISED TO HEIGHT OF 2-5 M.	CUT OUT THE DRY AND CROSSING BRANCHES, SHORTEN THE EXCESSIVELY LARGE ONES WITH UNSTABLE ANGLES. THE LIVE BRANCHES LARGER THAN 5cm ARE NOT REMOVED.	THE TREE HAS REACHED ITS MAXIMUM HEIGHT AND CONTINUES TO GROW IN WIDTH. ARBORISTS CARRY ON THE TREE MAINTENANCE - USE SHORTENING CUTS TO RAISE THE COW.	REMOVE LARGE DIAMETER DRY OR DYING BRANCHES. BY APPROPRIATE PRUNNING, THE CROWN HEIGHT IS REDUCED PROPORTIONATELY TO THE TRUNK STABILITY. AS A RESULT, THE OLD TREE IS STABLE, SAFE AND AESTHETICALLY NICE.

YOUNG TREE



PRIMATURE TREE



MATURE TREE



OLD TREE



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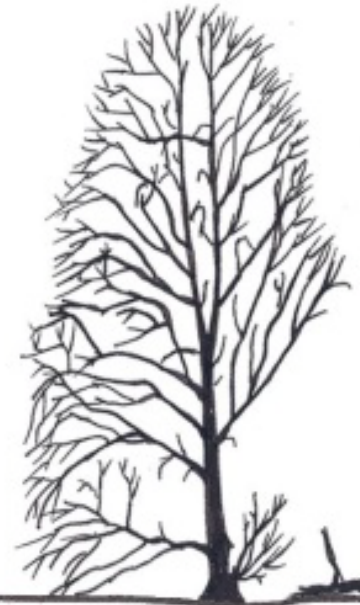
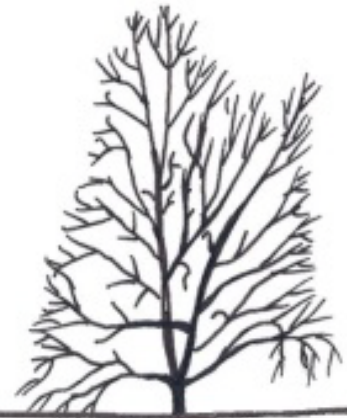
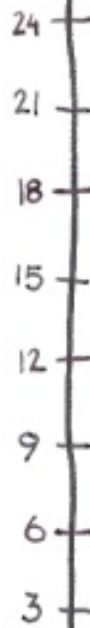
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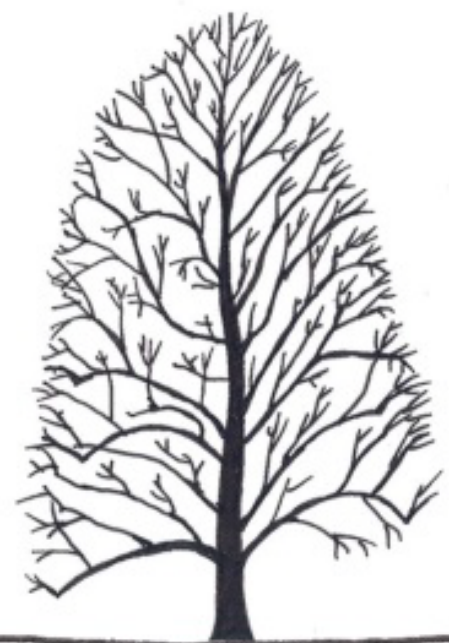
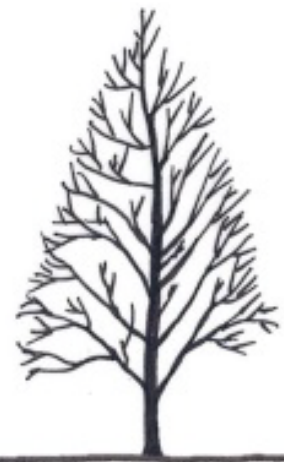
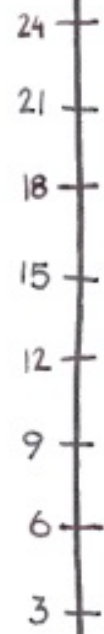
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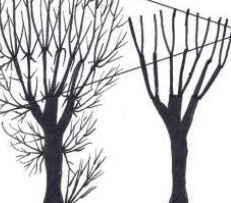












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<p><b>WRONG</b></p> <p>1st YEAR</p> 	<p><b>WRONG</b></p> <p>~5th YEAR</p> 	<p><b>WRONG</b></p> <p>~10th YEAR</p> 	<p><b>WRONG</b></p> <p>~15th YEAR</p> 
<p>QUITE OFTEN WE SEE THAT NOTHING IS BEING DONE WITH THE CRIPPLED TREE AFTER TOPPING. IT GROWS FOR A FEW YEARS, AND THEN THEY USUALLY TOP IT AGAIN A BIT HIGHER THAN BEFORE.</p>	<p>IN 3-7 YEARS TIME LARGE BRANCHING APPEARS ON THE LIMB-TOPS, AND THEN IT IS AGAIN TOPPED, HIGHER AND HIGHER THAN BEFORE.</p>	<p>AS TIME MOVES ON, THE TREE SEEMS TO BIG AGAIN, AND IT IS TOPPED AGAIN - HIGHER THAN BEFORE.</p>	<p>IN 10-20-30 YEARS TIME THE TREE GROWS BIGGER AND DISTURBS, SO THE DECISION IS MADE TO TOP IT LOWER THAN PREVIOUSLY, CREATING UNACCEPTABLY HUGE WOUNDS AGAIN.</p>
			
<p>IF YOUR TREE HAS BEEN MISTREATED AND TOPPED, DONT WAIT LONG - ALREADY AFTER 1 GROWTH SEASON THE IDEAL SHAPE SHOULD BE CHOSEN AND THE FIRST STEPS OF POLLARDING STARTED. ( SHOULD BE DONE BY PROFESSIONALS)</p>	<p>ONCE A YEAR WHEN THE TREE IS DORMANT IT SHOULD BE PRUNED, LEAVING STRONGEST TWIGS GROWING IN THE PREFERRED DIRECTION. SPACING BETWEEN BRANCHES SHOULD BE AT LEAST 20 CM (OPTIMAL - 50CM).</p>	<p>EACH YEAR BRANCHES SHOULD BE SHORTENED, THE NEW GROWTH CAN REACH 1 M EACH SEASON, BUT IT SHOULD BE KEPT UNDER 0.5 M. PRUNING TILL THE BUD ON THE DESIRABLE DIRECTION FOR THE NEXT YEAR'S GROWTH.</p>	<p>EVENTUALLY, THERE WILL BE A BEAUTIFUL AND SAFE TREE WITH A CONSTANT SIZE, SMALL WOUNDS, AND RATHER EASY MAINTENANCE. WHEN THE SHAPE IS CREATED, WE ONLY NEED TO PRUNE THE ANNUAL GROWTH. (PROFESSIONAL ASSISTANCE IS NOT REQUIRED)</p>
			
<p>IT IS POSSIBLE TO CREATE VERY LOW POLLARDED TREES, BUT NEVER LOWER THAN PREVIOUSLY TOPPED! OTHERWISE, WE WOULD BREAK THE CODIT WALLS AND HARM THE TREE.</p>	<p>ONCE A YEAR BY THINNING AND SHORTENING THE NEW GROWTH A PHOTOSYNTHESIS - FRIENDLY SHAPE IS CREATED ( MUSHROOM - SHAPE, UMBRELLA, TABLET, ETC.)</p>	<p>IN FEW YEARS TIME, THE STRONGEST SHOOTS CAN BE LEFT ON THE SIDES. ALL POLLARD HEADS SHOULD BE AT THE SAME HEIGHT SO NONE OF THEM WOULD PERISH.</p>	<p>THE BASIC SHAPE SHOULD BE CREATED BY A PROFESSIONAL, WHILE FURTHER ANNUAL PRUNING CAN BE DONE BY ONESELF - IN THE DORMANT SEASON USING BYPASS SHEARS AND STABLE LADDER.</p>



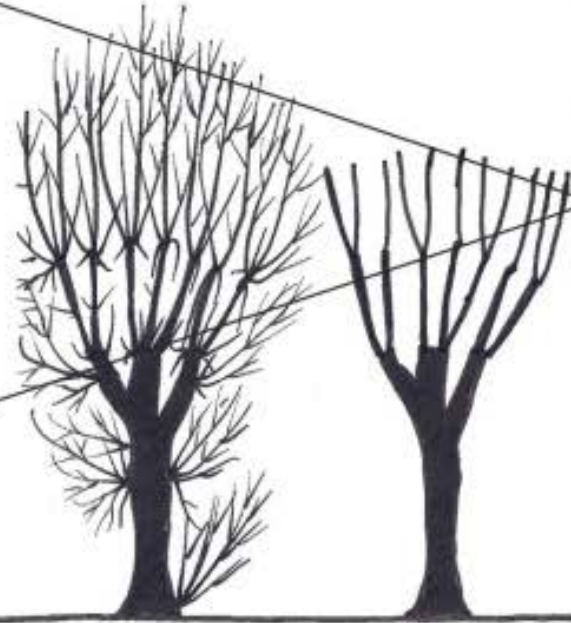
**WRONG**

1st YEAR



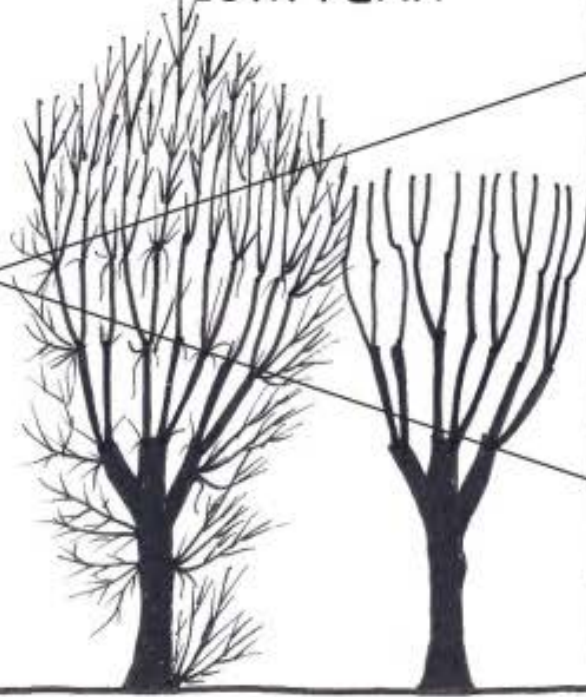
**WRONG**

~5th YEAR



**WRONG**

~10th YEAR



**WRONG**

~15th YEAR

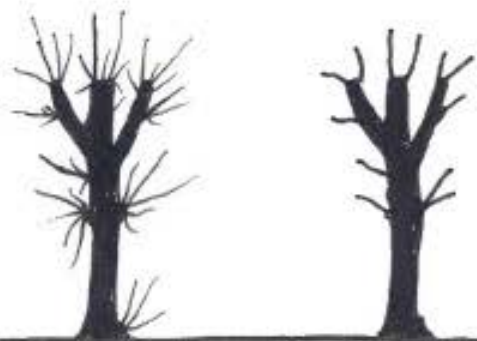


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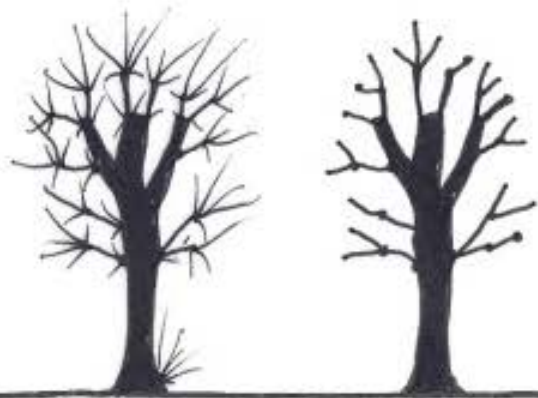
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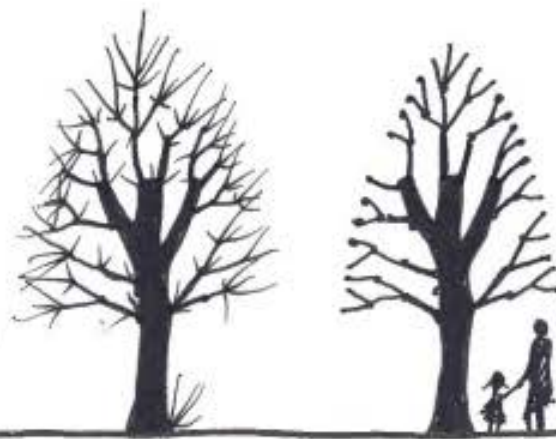
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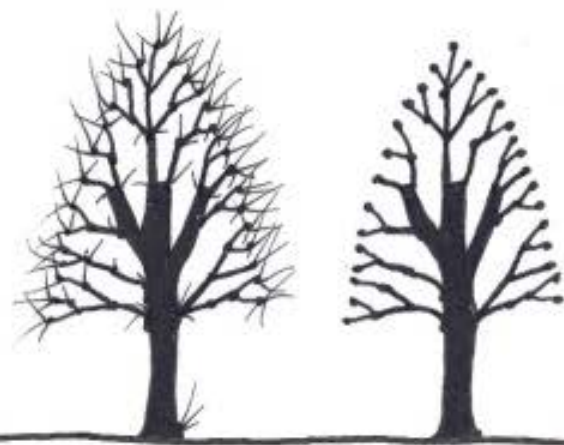
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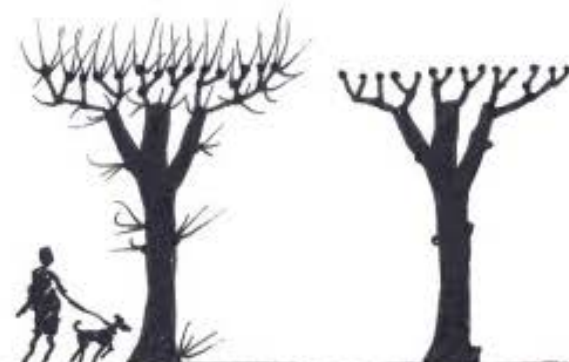
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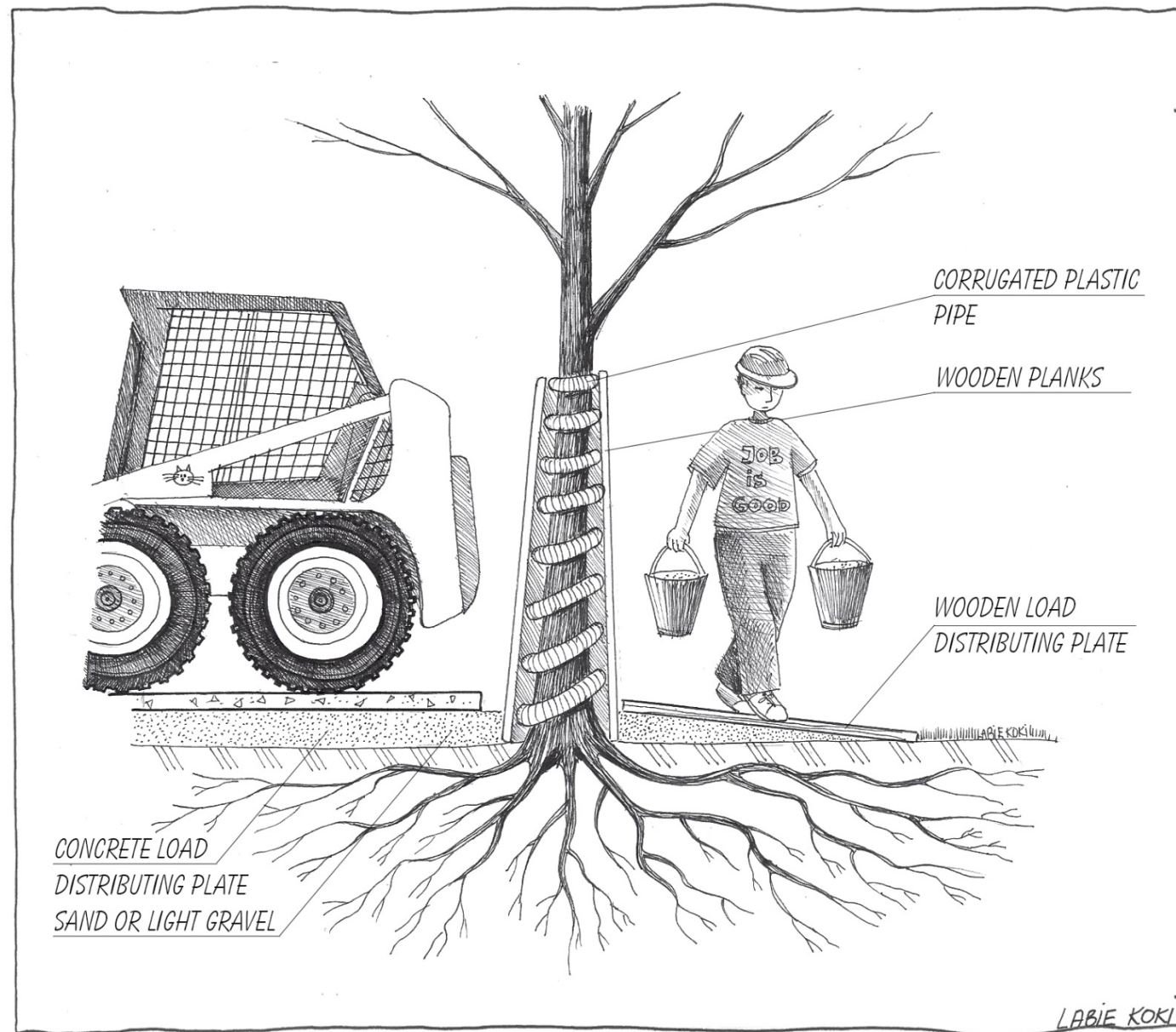


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PROTECTION AT CONSTRUCTION SITES

# **Study Course on Green Management developed by Estonian University of Life Sciences**

- Lawns and meadows
- Shrubs, climbers, roses
- Borders and other planting areas
- TREES
- INVENTORY

## Teema 1

### LAWNS AND MEADOWS

Maintenance of lawns after construction

Maintenance of lawns

Schedule

Meadows




 Maintenance of lawns after construction


 Maintenance of lawns

 Study of good practice in the management of lawns, grasslands, flower meadows and plantings with perennials in urban parks of Europe

 Fotogallery of meadows

 Videogallery of maintaining lawns

 Task

 Task upload



# Tree inventory with digital tools

## A. Introduction

### 1. Objective of the following exercise

The aim of this part of the course is to familiarize the students with the workflow of conducting tree inventory with the help of digital tools. Inventory will be conducted using the following software and field work tools:

- ArcGIS for Desktop (<http://www.esri.com/software/arcgis/arcgis-for-desktop>)
- ArcGIS ArcPad (<http://www.esri.com/software/arcgis/arcpad/>)
- handheld fieldwork computer Trimble Juno 5B (<http://www.trimble.com/mappingGIS/juno5.aspx>)
- laser distance meter (Leica Disto)

### 2. Digital tools are useful



# KNOWLEDGE ABOUT DISEASES

- NEW DISEASES
  - DED
  - ASH DIEBACK
  - OAK DIEBACK
  - etc

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