Enhance Your Future
Professional Training Consultants

AHCARB313

Identify trees

LEARNER RESOURCE

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TOPIC 1 – INSPECT TREE FEATURES

INSPECT THE FORM, STRUCTURES AND LOCAL ENVIRONMENT OF TREE

The first step in the process of identifying trees will be to inspect the form, structures and the local environment of the tree. This information can be collected during a visual and site inspection of the tree and will provide the foundation for the identification of the tree.

Tree identification is the process of identifying the species of the tree based on a range of factors.

FORM, STRUCTURES AND LOCAL ENVIRONMENT OF TREE

FORM

The form of the tree in most basic terms is the shape that the mature tree will grow in, all species and varieties of trees will have a specific form that they should follow when healthy and growing correctly and this information is the first part of the information that should be used when setting out to identify trees.

Common tree forms:

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EXAMINE AND DESCRIBE TREE MORPHOLOGY IN BOTANICAL TERMS

It is important that all personnel that are to be involved in the process of identifying trees are able to clearly examine and describe tree morphology in botanical terms.

TREE MORPHOLOGY

Tree morphology is the practice of the study of the external structure of plants, it covers the main organs of the plant which include the:

- Roots
- Stems
- Leaves
- Flowers

It is the study of morphology that allows us to understand the structure of trees and plants.

The focus of tree morphology is to ensure that all trees are able to be inspected and identified based on the structure and type of root and shoot system that the tree has. The root system is the underground portion of the tree and the shoot system is the part of the tree that is above ground.

EXAMINE AND RECORD FEATURES OF BUDS, PETIOLE, BRANCHLETS, BRANCHES AND BARK

It will be necessary to examine and record the features of any buds, petiole, branchlets, branches and bark as the next step of the tree identification and recording process.

FEATURES OF BUDS, PETIOLE, BRANCHLETS, BRANCHES AND BARK

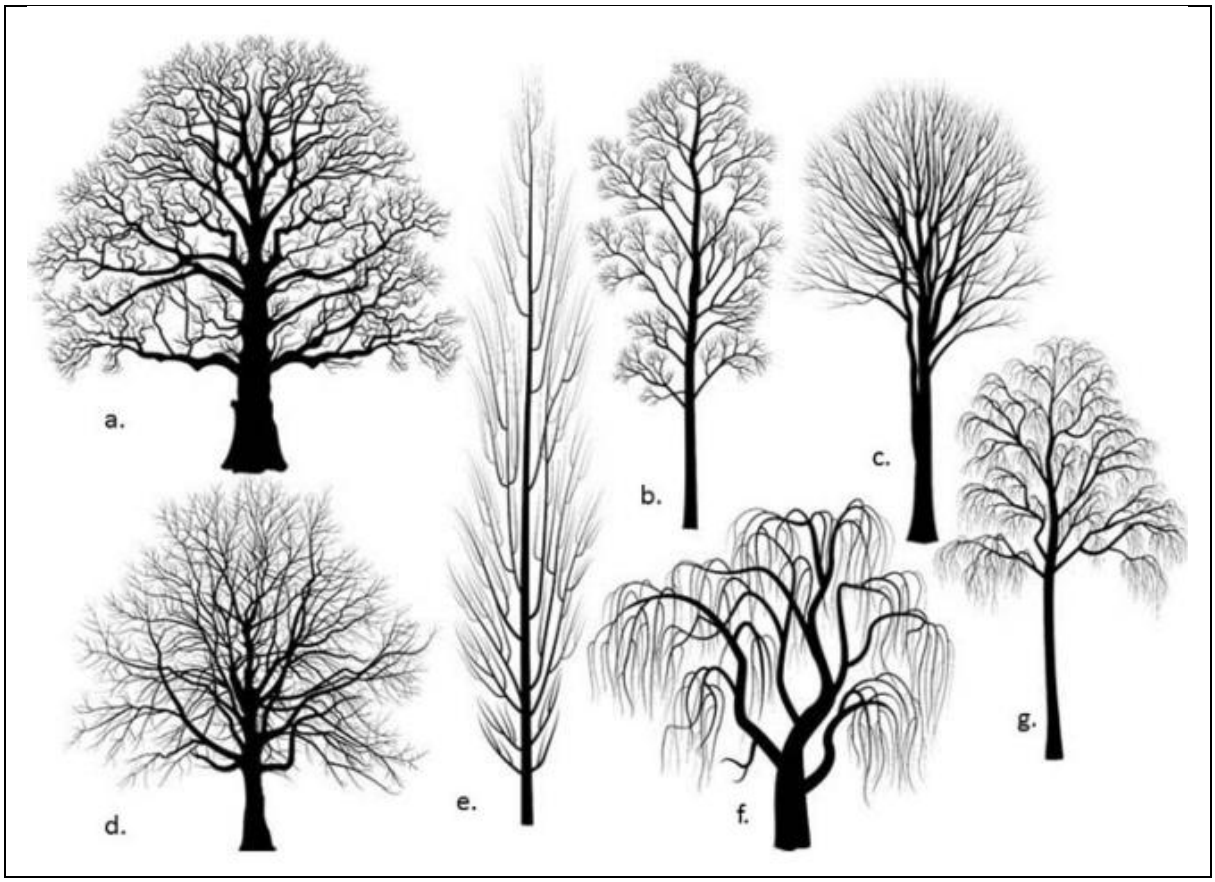
BUDS

A bud on a tree are signs of growth or potential growth that may be on a twig on a tree, there are two types of buds on trees:

- Ancillary: Ancillary buds on trees are located where the leaves on the tree meet the twig.
- Terminal: Terminal buds are located at the tip or apex of the twig.

Buds may be scaly or naked and this can be a major factor in determining the natural habitat that the tree is from.

Common branch formations:



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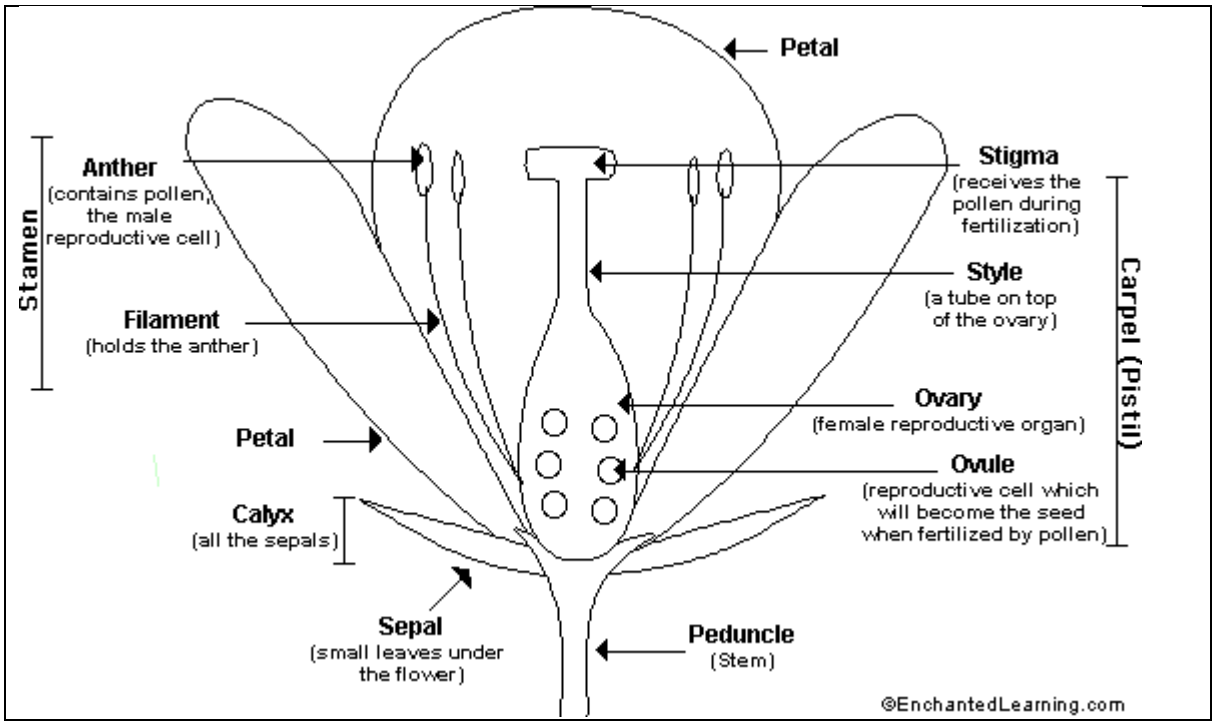
BARK

Bark, forms the outermost layer over all of the wooded portions of the tree. Bark is the tree's way of protecting itself and forms a barrier to the world.

When using bark as a part of tree identification it will be necessary to examine and record a range of factors including:

- Hardness
- Texture
- Patterns
- Colour
- Distinguishing features
- Smell

Structure and function of a typical flower:



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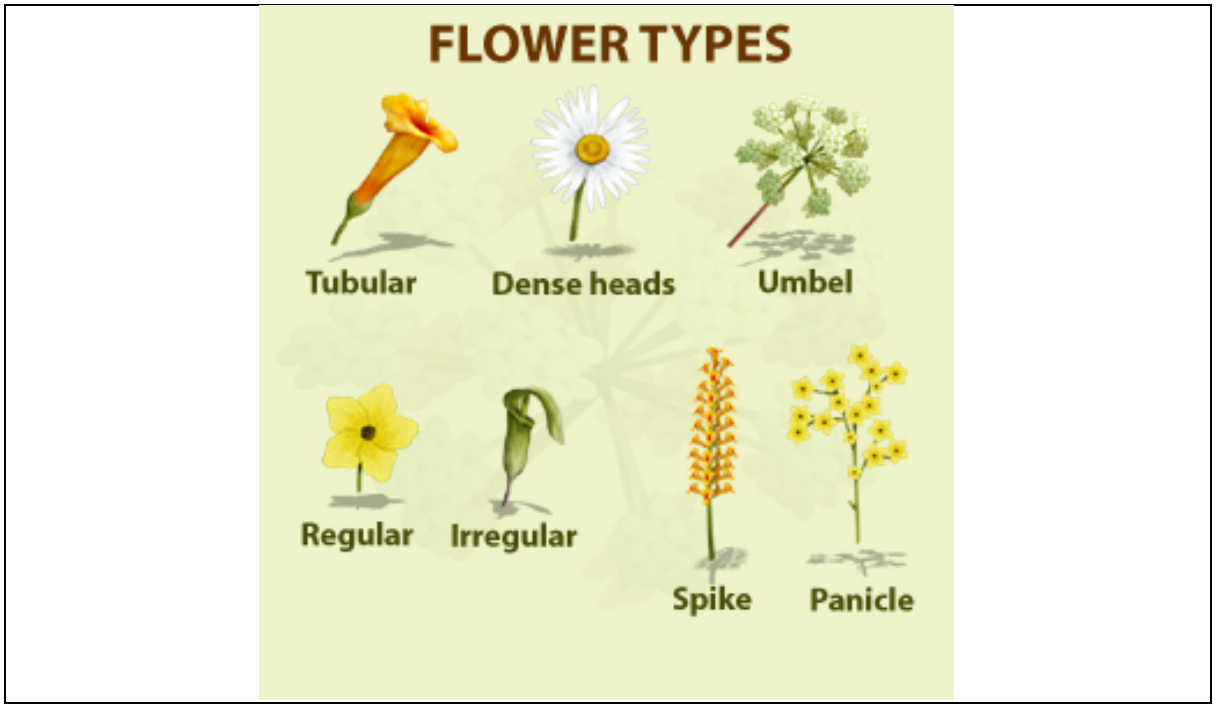
Flower types:



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USE ALL RELEVANT AVAILABLE SENSES TO ASSIST IN TREE IDENTIFICATION

It is essential throughout the process of tree identification that all available senses are used in order to enable effect use of all of the information that is available to make decisions about tree identification.

USE OF SENSORY METHODS IN TREE IDENTIFICATION

It is essential that a range of sensory methods are used in tree identification and these include:

SIGHT

Sight is a visual sensory method that uses the eyes to make visual assessments and is one of the main senses that are used during tree identification procedure. It will be necessary to visually assess the tree itself along with a range of visual materials and samples that can be used for comparison.

SMELL

Smell is a sensory method that used the olfactory components of the body through the nose. Smell can be used to identify differences and similarities between the scent of a range of tree components including:

- Fruit
- Flowers
- Crushed leaves
- Bark
- Seeds

GENERAL HEALTH AND CONDITION OF TREES

The general health and condition of trees is related to their growth patterns, sizes and structures according to the specific genus of tree, and also signs of structural damage, decay or other issues.

There are a range of assessments and factors to consider when assessing the general health and condition of trees and these may include:

STRUCTURAL INTEGRITY

Structural integrity essentially refers to the overall strength of the tree low probability of trees or tree limbs to fall. Failure of trees or any of their limbs can pose major hazards to people, property and other trees, depending on the size and positioning of the tree in relation to other objects.

The following are some indicators that inspectors might look for while assessing the structural integrity of a tree.

STRUCTURAL DAMAGE

Structural damage can occur when trees are physically damaged by force. The force can be the result of one impact or a continuous damaging force that is exerted against a tree. Common types of structural damage may include:

- Lighting strike
- Poorly pruned branches
- Limbs that have failed due to low wind load limits on limbs
- Shifts in soil

DEFECTS

Defects are structural abnormalities in a tree that heighten the risk of the tree falling. Common defects that can be visually noticed in trees may include:

- Structures that impede the growth of tree limbs or roots
- Splitting weight distribution anomalies
- Root damage

SIGNS OF DEFICIENCIES

It is important to visually assess the tree for signs of deficiencies and these may include signs of:

- Structural damage
- Pests
- Leaf loss
- Growth irregularities
- Damage

HOW SIGNS AND SYMPTOMS OF DISEASES, PESTS OR DEFICIENCIES OF TREES MAY ASSIST IN TREE IDENTIFICATION

Detecting the specific signs and symptoms of diseases, pests or deficiencies of trees may assist in identification due to the fact that, specific trees may be susceptible to certain types of damage, disease or deficiencies and these factors should be explored as a part of the tree identification process.

- Write your name or initials, a unique collection number and the date and site number on the tag with a waterproof pen or pencil
- Press the sample on a herbarium sheet for around 6 weeks to allow it to dry correctly
- It is essential to ensure that the method of laying the sample is considered when pressing to ensure that all of the features of the plant will be able to be seen in the pressing and the sample will be useful
- Log one copy of the plant with local herbariums or organisation as required and keep an extra sample for yourself if desired

CONSULT FIELD GUIDES

There are a large range of industry endorsed field guides that can be used for recognising a range of plants that are known to be in a particular area. Field guides may be published from:

- The CSRIO
- Industry organisations
- Herbariums
- Local government
- Private press

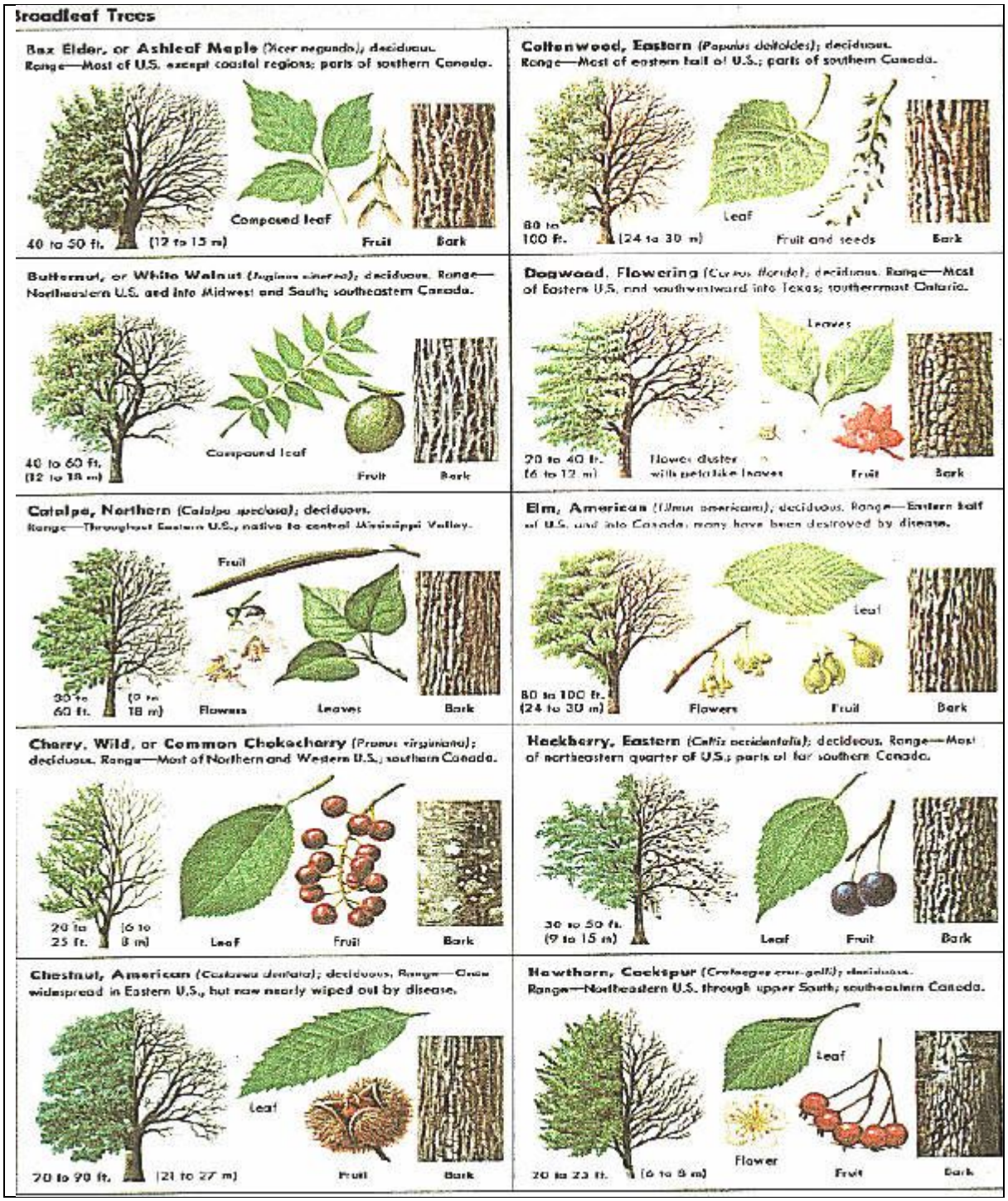
USE WORKPLACE NOTETAKING

Throughout the process of plant recognition activities a range of workplace notes and descriptions will have been collected and it is important that these are then consulted and referred to throughout plant recognition techniques.

USE PICTURES AND OTHER INFORMATION TO DETERMINE GENUS AND SPECIES OF TREES

It is essential that a range of pictures and other information that can be used to determine the genus and species of trees is used. This information may include:

Pictures, diagrams and explanations of trees:



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USE TAXONOMIC KEYS TO ANALYSE SPECIFIC CHARACTERISTICS OF TREE TO IDENTIFY SPECIES AND CULTIVAR WHERE POSSIBLE

It will be necessary to use taxonomic keys in order to identify the tree species and cultivar if available.

TAXONOMY

Taxonomy is the area of science that is concerned with the classification of things such as organisms, animals or plants. Taxonomy uses both common and scientific names to classify items scientifically.

USING TAXONOMIC KEYS TO IDENTIFY SPECIES AND CULTIVAR WHERE POSSIBLE

A taxonomic key is a scientifically designed set of statements that are aimed at identifying and categorising the specific characteristics of a tree to ensure that as the person works through the key they will come to the scientific name of the particular tree. Taxonomic keys rely on a range of key identifying factors that each of the trees may have in order to determine which group they fit into, this information will then be used to determine the exact name of the tree. A species will fit into the common identification systems where a cultivar is a variation on a species that has been created by deliberate interbreeding.

PLANT IDENTIFICATION SYSTEMS

There are a range of plant identification systems that can be used as a part of tree identification and it is important that a strong understanding of the different plant identification systems are known.

COMMON NAMES

In plant identification, the common name for plants is the non-scientific name that plants are known by colloquially.

For example, the plant Lavandula Angustifolia is known by the common name Lavender.

REFERENCE MATERIALS

Reference materials may be used in order to determine the type of habitat and food that the tree is able to produce and the types of animals, humans or insects that are able to use this type of tree for either a habitat or food.

LOCAL STATISTICS AND INFORMATION

It is important to consider a range of local statistics and information in order to determine factors such as:

- The importance of the type of tree as a food source
- The importance of the type of tree as a habitat
- The importance of the specific tree as a food source
- The importance of the specific tree as a habitat

TOPIC 5 – REPORT ON RESULTS

RECORD IDENTIFICATION ACHIEVED

Once the tree identification process is complete it will be necessary to ensure that the identification outcome is recorded.

METHODS OF RECORDING TREE IDENTIFICATION

There are a range of methods that can be used for the recording of tree identification and these may include:

- Descriptions
- Written information
- Numerical information
- Descriptions of information and methods used
- Samples
- Filling out approved templates

INFORMATION THAT SHOULD BE INCLUDED IN THE TREE IDENTIFICATION RECORD

There is a range of information that should be documented about tree for inclusion in the identification record and this may include:

- Family
- Pronunciation
- Genus
- Species
- Common name
- Habitat
- Dimensions
- Foliage description
- Flower description
- Fruit
- Other important features

REFERENCES

Branch Retrieved: 29 April 2017 https://en.wikipedia.org/wiki/Branch

How to identify a tree Retrieved: 29 April 2017 http://edis.ifas.ufl.edu/fr296

Plant morphology Retrieved: 29 April 2017 https://en.wikipedia.org/wiki/Plant_morphology

Tree shape Retrieved: 29 April 2017 http://fennerschool-associated.anu.edu.au/mensuration/shape.htm

Tree inspection and assessment Retrieved: 29 April 2017 http://www.waverley.nsw.gov.au/residents/trees_and_gardens/trees_on_private_property/tree_inspection_and_assessment

General Keys to Families and Special Groups Retrieved: 29 April 2017 http://michiganflora.net/family-key.aspx#key-a

Taxonomic Keys Retrieved: 29 April 2017 https://collectionseducation.org/identify-specimen/taxonomic-keys/

Taxonomic Key Retrieved: 29 April 2017 http://www.webquest.hawaii.edu/kahihi/sciencedictionary/T/taxonomickey.php

Field guide Retrieved: 29 April 2017 https://en.wikipedia.org/wiki/Field_guide

Definitions and explanations related to tree health Retrieved: 29 April 2017 http://www.fao.org/docrep/007/y5041e/y5041e12.htm

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[i] http://www.winterhill.com.au/how-to-choose-your-tree/tree-forms.jpg

[ii] http://fennerschool-associated.anu.edu.au/mensuration/shape.htm

[iii] http://espacepourlavie.ca/sites/espacepourlavie.ca/files/styles/nocrop-gr8/public/taille-arbre-figure1_en.jpg?itok=30eChw4X

[iv] https://upload.wikimedia.org/wikipedia/commons/thumb/8/83/Fruittreeforms.png/250px-Fruittreeforms.png

[v] https://image.slidesharecdn.com/botonyproject-110430042920-phpapp02/95/root-stem-morphology-2-728.jpg?cb=1304137868

[vi] https://en.wikipedia.org/wiki/Plant_morphology

[vii] https://encgreenteam.files.wordpress.com/2010/12/ldiag1.gif

[viii] http://www.uky.edu/Ag/Horticulture/Geneve/teaching/PLS%20220/leafshapes01.pdf

[ix] https://en.wikipedia.org/wiki/Leaf_size

[x] https://s-media-cache-ak0.pinimg.com/originals/5d/77/60/5d7760178c63e98a4bdc84639ee4fe60.gif

[xi] https://s-media-cache-ak0.pinimg.com/736x/d8/c4/a2/d8c4a21baef13e49a53858a8bdbf7f16.jpg

[xii] https://image.slidesharecdn.com/leaves-120109055030-phpapp01/95/leaves-6-728.jpg?cb=1326088736

[xiii] http://texastreeid.tamu.edu/images/twigs.jpg

[xiv] http://fruitandnuteducation.ucdavis.edu/files/168914display.jpg

[xv] http://www.enchantedlearning.com/subjects/plants/gifs/Floweranatomy_bw.GIF

[xvi] http://www.arctic.uoguelph.ca/cpl/organisms/plants/biology/images/flower_types.jpg

[xvii] http://forestry.sfasu.edu/faculty/stovall/dendrology/index.php/fact-sheets-sp-916/morphology-photos/459-fruit-morphology-types

[xviii] http://www.worldbotanical.com/fruit_2.gif

[xix] https://s-media-cache-ak0.pinimg.com/originals/c0/80/78/c080782b074bf6ba93fd3fd208eae338.jpg

[xx] https://s-media-cache-ak0.pinimg.com/736x/ce/46/57/ce4657edf95c563dca556e8288fb8ec0.jpg

[xxi] https://en.wikipedia.org/wiki/Family_(biology)

[xxii] https://en.wikipedia.org/wiki/Family_(biology)