

Plant Identification

Prepared by:
Etobicoke Master Gardeners



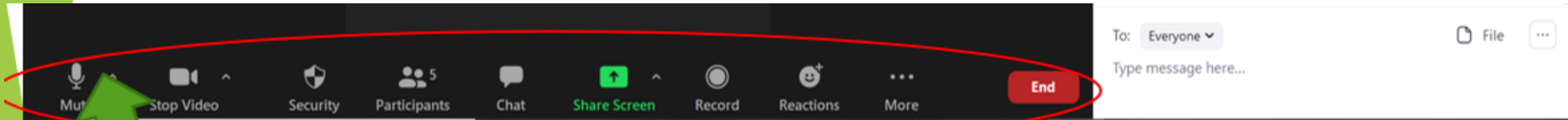
Etobicoke Master Gardeners
www.etobिकोकemastergardeners.ca

Presented with:
Humber Arboretum

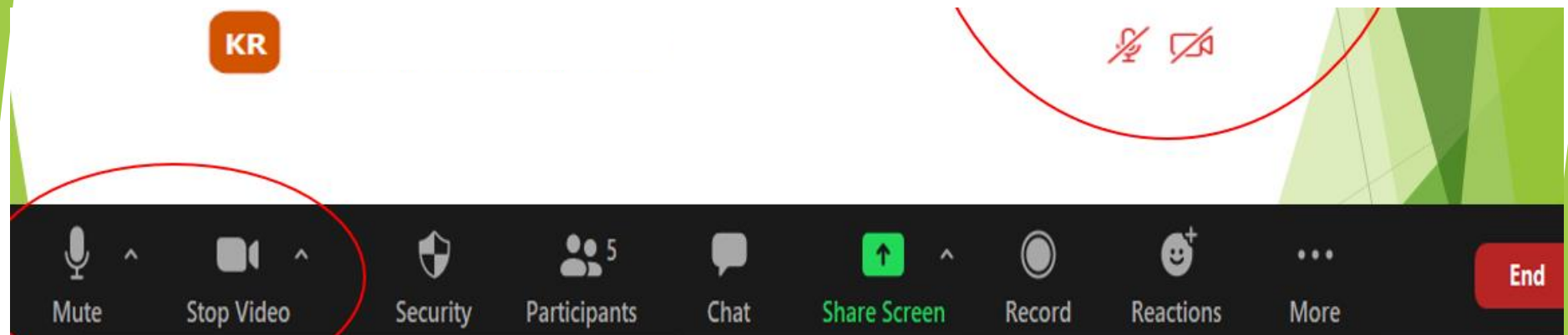
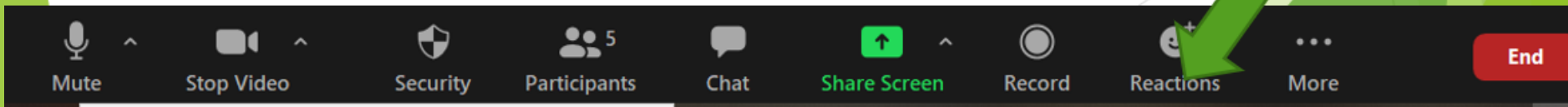


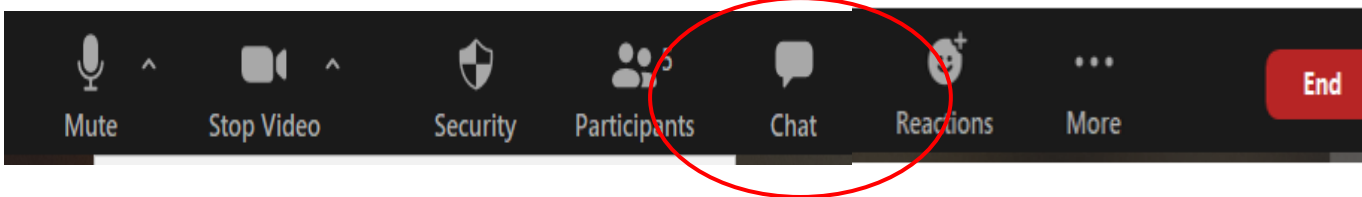
Humber Arboretum
www.humberarboretum.on.ca

Welcome to Virtual Tips & Tricks



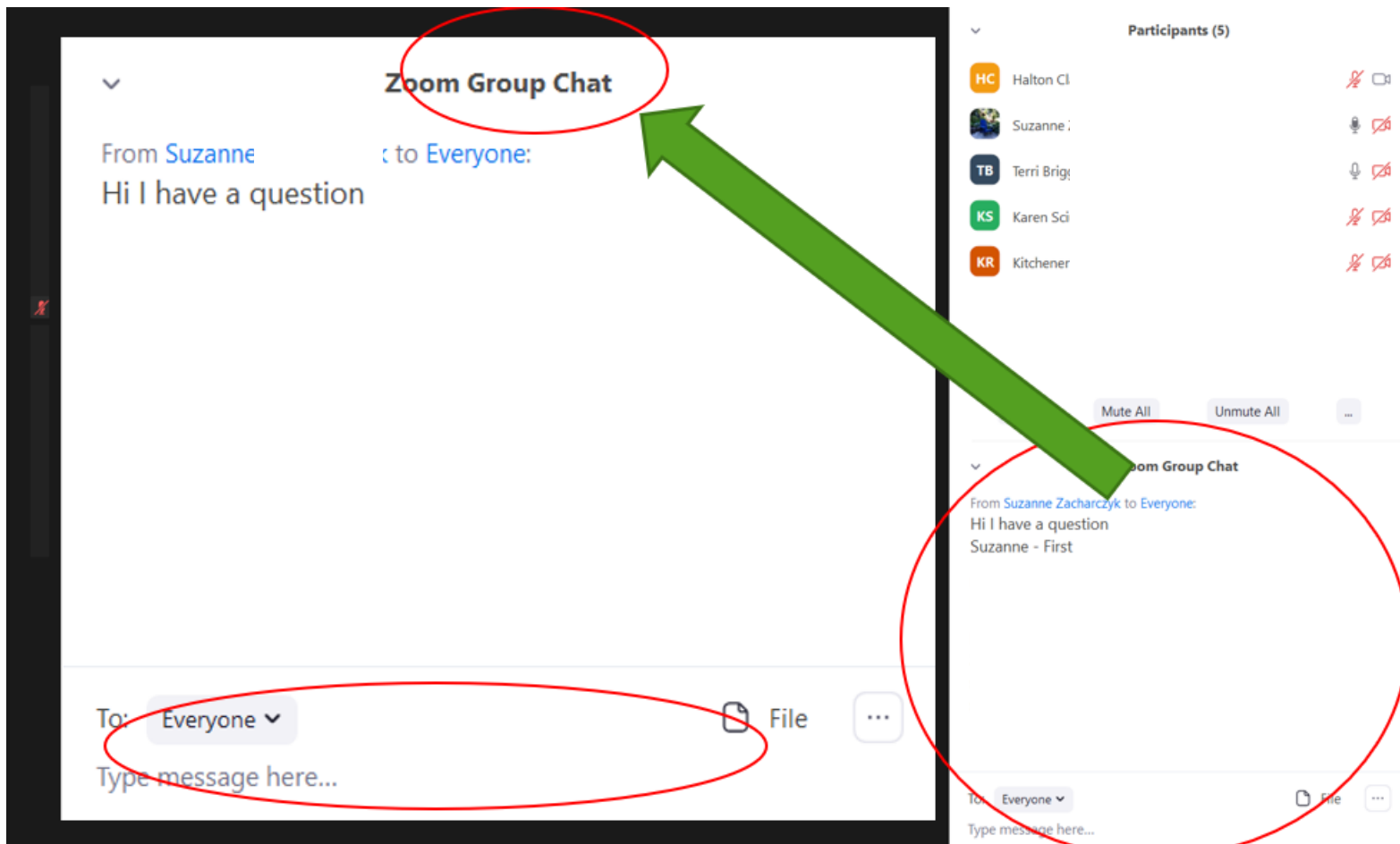
“Mouse over” the screen area to wake up the functions.





How to ask a question:

- ✓ Click on “Chat” in the functions
- ✓ Type in your question. A moderator will read it.



Master Gardeners of Ontario



Etobicoke Master Gardeners

[ABOUT US](#)

[CONTACT US](#)

[CALENDAR OF EVENTS](#)

[COMMUNITY ACTIVITIES](#)

Etobicoke Master Gardeners

Etobicoke Master Gardeners (EMG) was formed in January 2005 and is meant to cover the west side of Toronto and take in those people who want to study for the Master Gardener (MG) designation.

Meetings are held at the [Montgomery Inn](#) on the fourth Wednesday of most months from 7 to 10 p.m.

EMG comprises 36 active members: 26 Master Gardeners (MG) and 10 Master Gardeners in Training (MGIT) who are in the process of studying for Master Gardener Certification. We welcome inquiries from enthusiastic and interested individuals wishing to learn more about joining our





The Humber Arboretum consists of nearly 250 acres of public gardens and natural areas located in the Humber River watershed in North Etobicoke. Connected to Humber College North Campus, it exists as a unique tri-partnership between Humber College, the City of Toronto, and the Toronto and Region Conservation Authority (TRCA). The Humber Arboretum is free to visit and offers a variety of programming to both Humber College students and the public.

LAND ACKNOWLEDGEMENT

Humber Arboretum and Humber College are located within the traditional and treaty lands of the Mississaugas of the Credit.

Known as Adoobiigok [A-doe-bee-goke], the “Place of the Alders” in Michi Saagiig [Mi-Chee Saw-Geeg] language, the region is uniquely situated along the Humber River Watershed, which historically provided an integral connection for Anishinaabe [Ah-nish-nah-bay], Haudenosaunee [Hoeden-no-shownee], and Wendat [Wine-Dot] peoples between the Ontario Lakeshore and the Lake Simcoe/Georgian Bay regions.

Now home to people of numerous nations, Adoobiigok continues to provide a vital source of interconnection for all.

Agenda

- ✓ Introduction
- ✓ Why it is important to identify plants?
- ✓ Plant Names and Classification
- ✓ Varieties, Cultivars & Hybrids
- ✓ Plant Hardiness Zones
- ✓ Plant Structure: Stems, Roots, Leaves, Reproductive Tissue, and Flowers
- ✓ Botanical Keys, identification manuals, and online tools
- ✓ Identification: Annuals, Perennials, Shrubs, Vines, Trees, Evergreens
- ✓ Wrap Up

The background of the slide features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, creating a modern and dynamic look.

Poll Question:

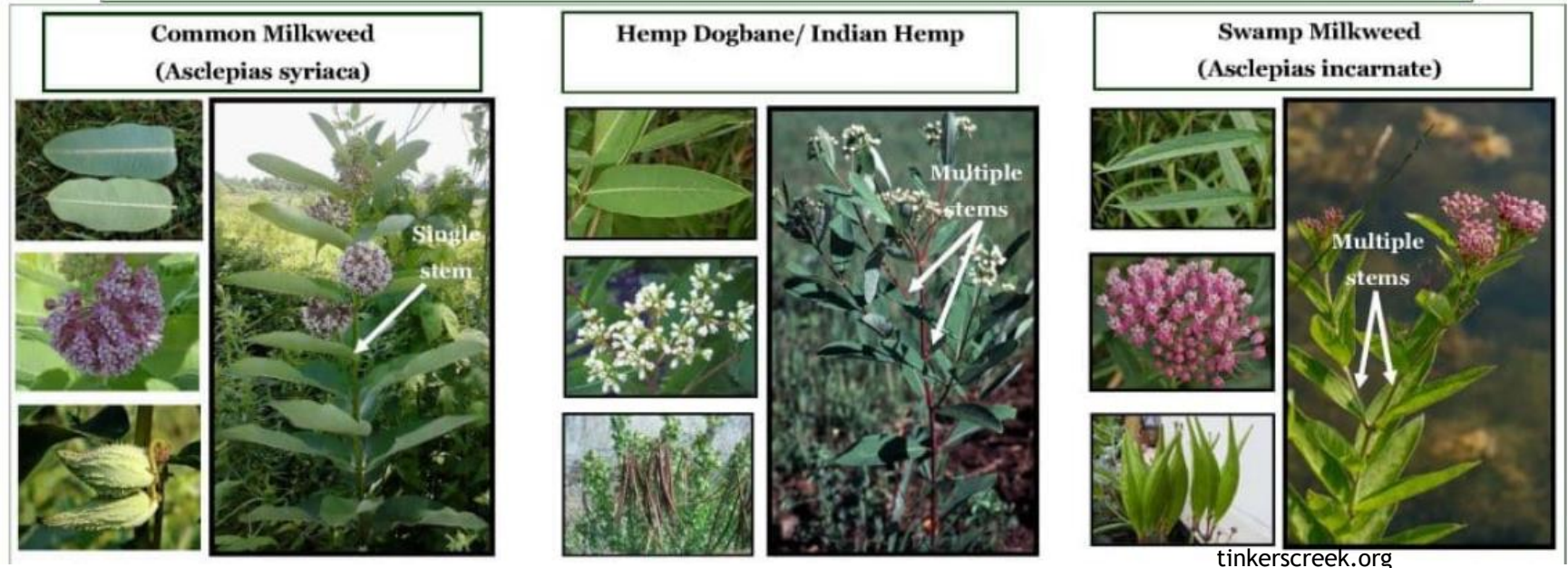
Have you ever taken any
courses / workshops on
plant identification?

Why it is
important to
identify plants?



Why it is important to identify plants?

So What's the Difference?



“All these plants look the same to me”

“There’s too many to tell the difference”

Why it is important to identify plants?

- ✓ Get the plant you want
 - ✓ Botanical vs Common Name
- ✓ Get the right plant for the right spot
- ✓ Safety & harm prevention at home and the wild
- ✓ Education, and knowledge transfer
- ✓ Personal satisfaction and for the 'fun of it'

Which is Poison Ivy?

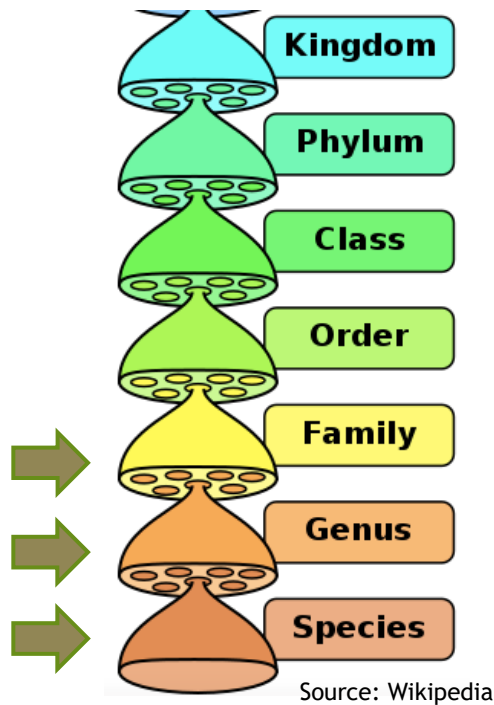




Plant Names and Classification

Classification System of the Kingdom Plantae

Simplified Illustration of classification structure



- ✓ Classify using observation of plant morphology
 - ✓ progressively similar characteristics
- ✓ System creates specific species scientific name – Binomial Name
 - ✓ Example: Red Oak tree – *Quercus rubra*
- ✓ Plants within a species
 - ✓ Very similar in appearance
 - ✓ Thrive in same habitat
- ✓ Taxonomy (plant Taxa) –
 - ✓ Follows the classification sequence
 - ✓ Evolutionary relationships

Six different species

French Marigold



English Lavender

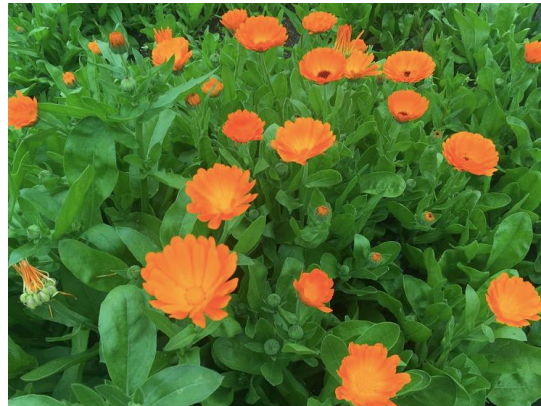


Rouge National Urban Park, Ontario

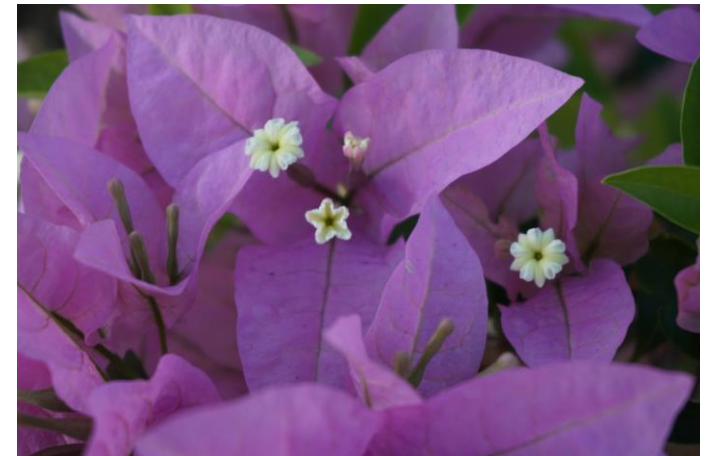
New England Aster



Gray's Sedge



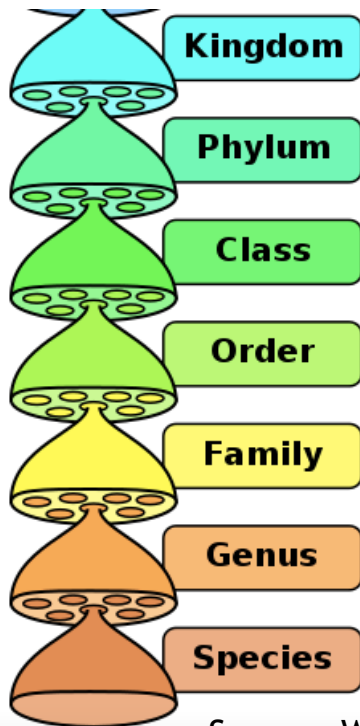
Scotch Marigold



Bougainvillea

Classification System

Sample: Family – Asteraceae



Source: Wiki Twelve species of Asteraceae from the subfamilies
Asteroideae, Carduoideae, and Cichorioideae



Tagetes

New England Aster

French
Marigold



Symphotrichum



ban Park, Ontario



Calendula

Scotch Marigold

Classification – Scientific Botanical Name



Tagetes patula

- ✓ Classification to a **Genus** then a **Species**

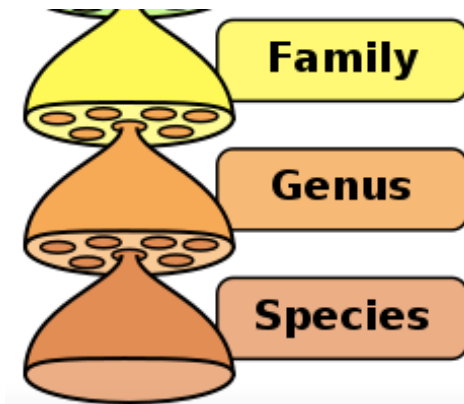
- ✓ gives the 2-word binomial name

- ✓ For common name French Marigold

- ✓ Genus = *Tagetes*

- ✓ Specific epithet = *patula*

- ✓ Description- Spreading habit



Source: Wikipedia

- ✓ Binomial or scientific name

- ✓ **Tagetes patula**



Binomial Name - Formats

- ✓ Standard format
 - ✓ 2 Latin words – Genus is first and capitalized
 - ✓ Species epithet descriptor is second and not capitalized
 - ✓ Both are written in italics
 - ✓ Sometimes the initial of the person who scientifically named the plant may be added

e.g. *Tagetes patula*

Echinacea purpurea



Binomial Name - Formats

- ✓ Shortened formats:

- ✓ For a list of plants

e.g. *T. patula*, *T. erecta*

- ✓ Refer to multiple species in a genus

Tagetes sp., *Tagetes spp*

Varieties, Cultivars & Hybrids



B. palmata
Species



B. palmata 'Dark form'
Variety

Nativars & Cultivars

Coneflowers *Echinacea* sp.



Echinacea purpurea and
Echinacea purpurea 'Alba'



Echinacea purpurea
'Pink Double Delight'

Source Can Food Insp.



Echinacea purpurea
'Hot Papaya'

Source Pintrest

Hybrids

Meyer Lemon
Citrus x meyeri



Stargazer Lily
Lilium Orientalis 'Stargazer'

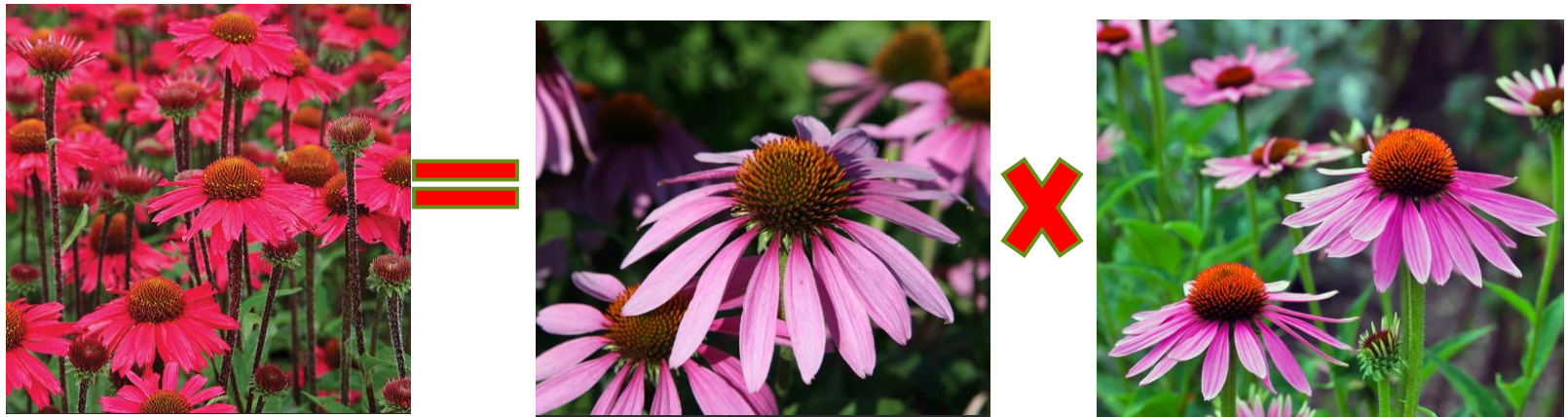
Source: Wisconsin U. Hort.

Hybrids

- ✓ Hybrid plants are created by breeding 2 plants with different taxa.



- ✓ *Echinacea* x hybrid 'Amazing Dream' from cross *E. purpurea* & *E. tennesseensis*



- ✓ *Echinacea* hybrid 'Sensation Pink' from cross of *E. purpurea* & *E. angustifolia*

Common Cultivars - Hydrangea



Hydrangea paniculata
'Limelight'



Hydrangea arborescens 'Annabelle'

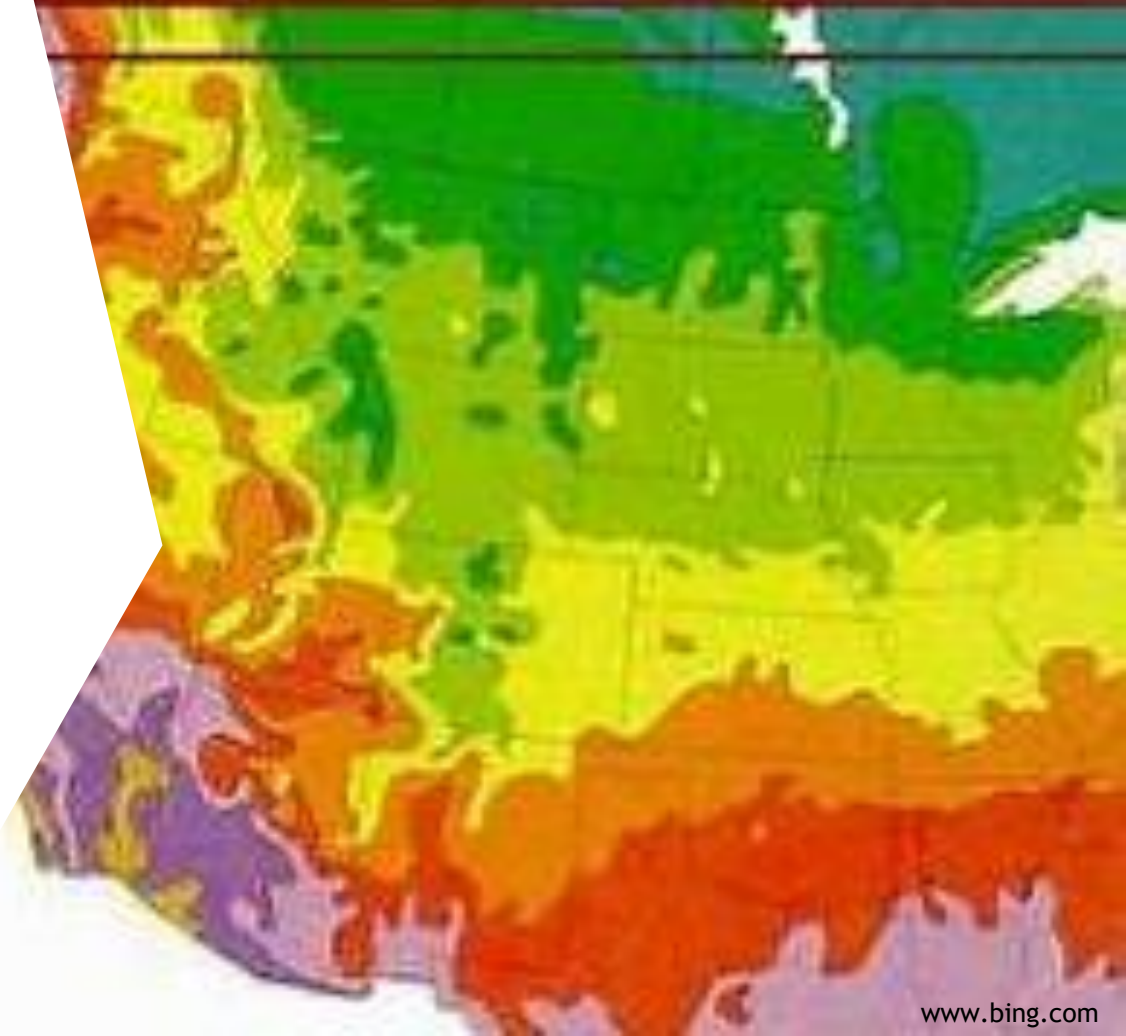


Hydrangea macrophylla
'Endless Summer'

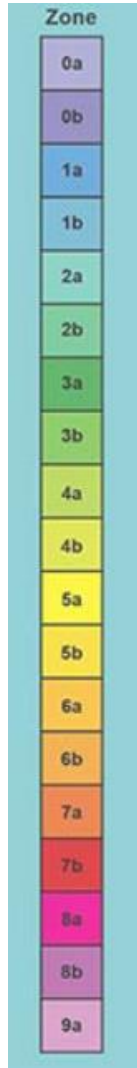
HARDINESS ZONES

what's yours?

Plant Hardiness Zones

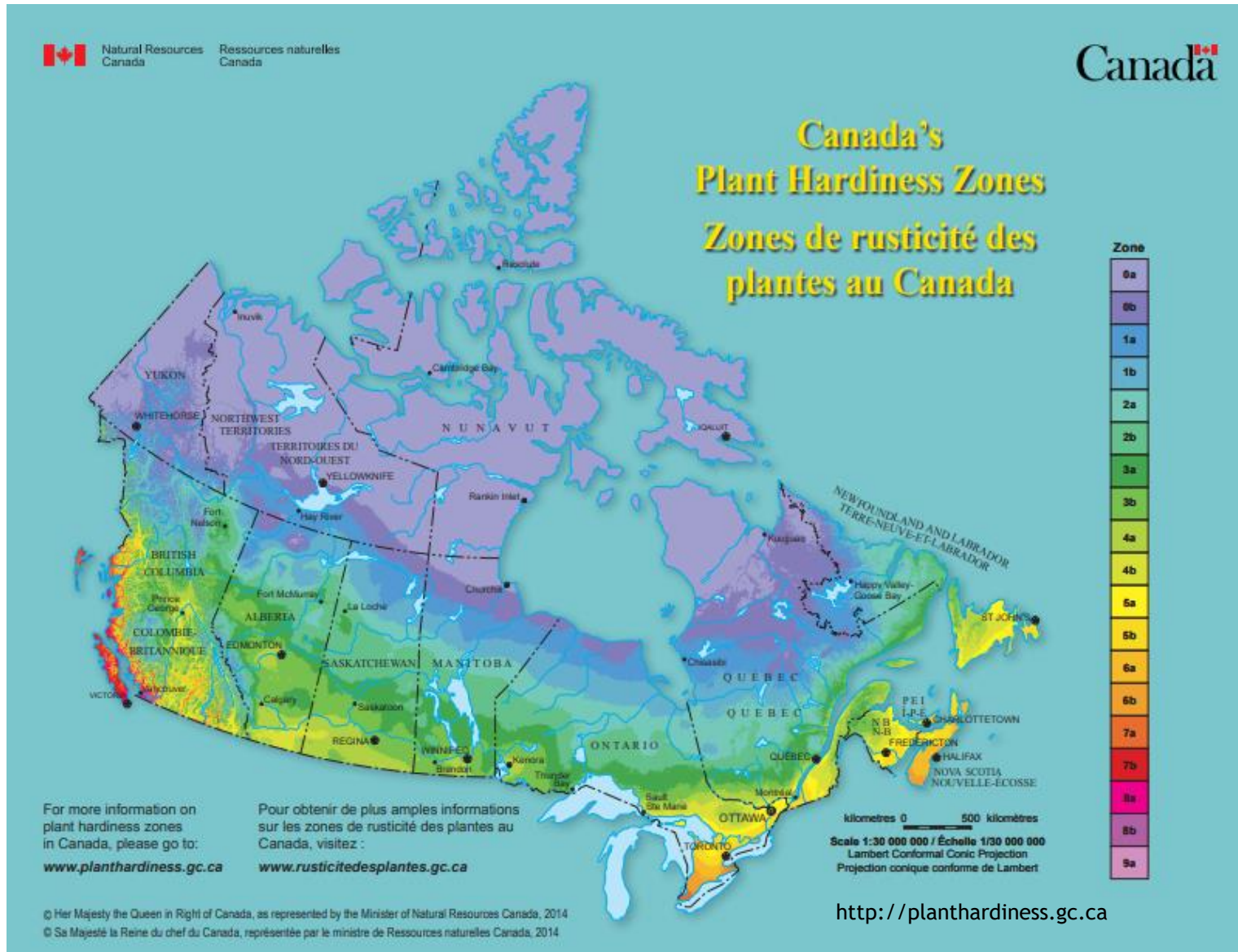


Plant Hardiness Zones - Poll Question



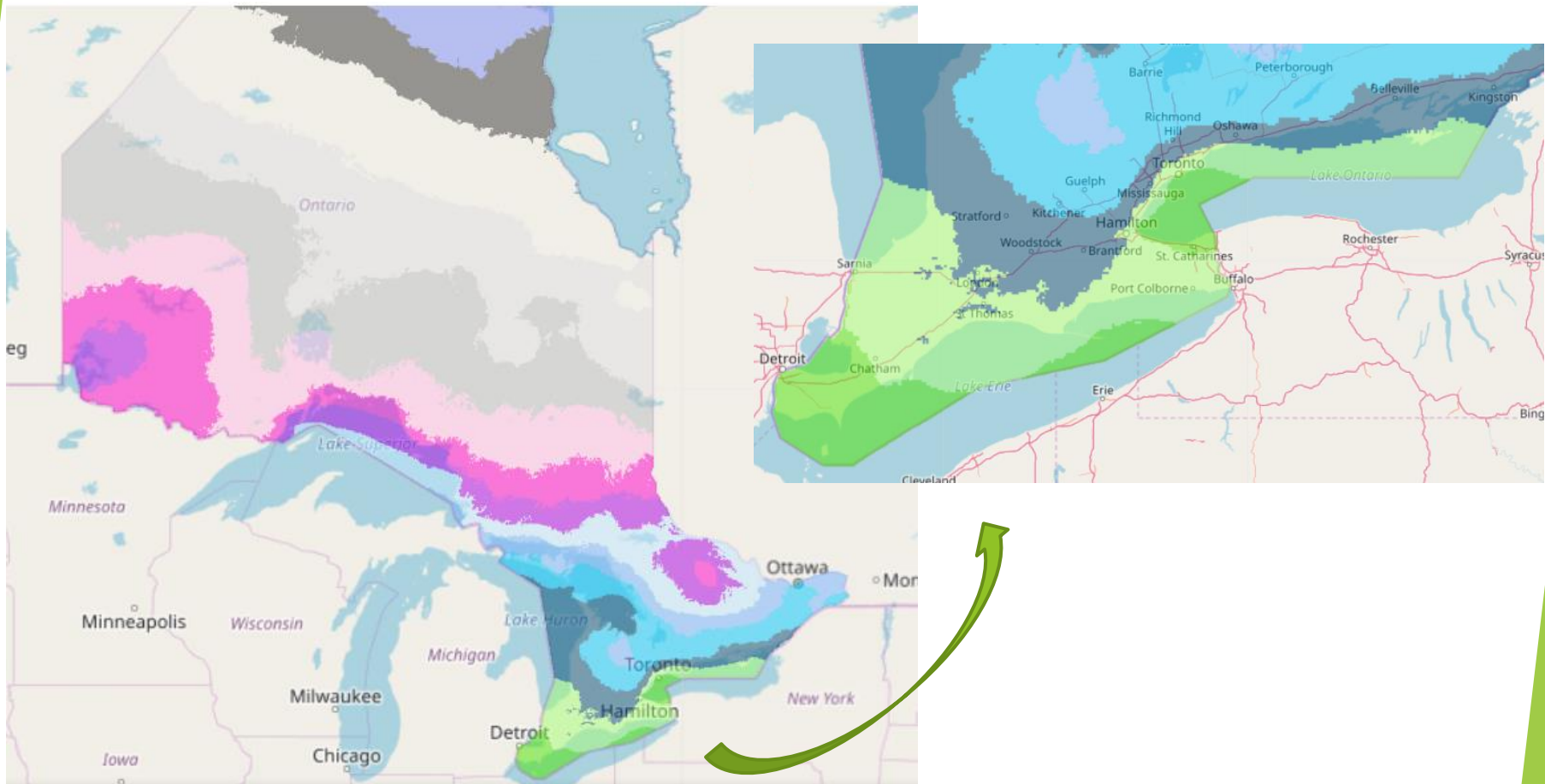
What is your growing area's
hardiness zone?

Plant Hardiness Zones

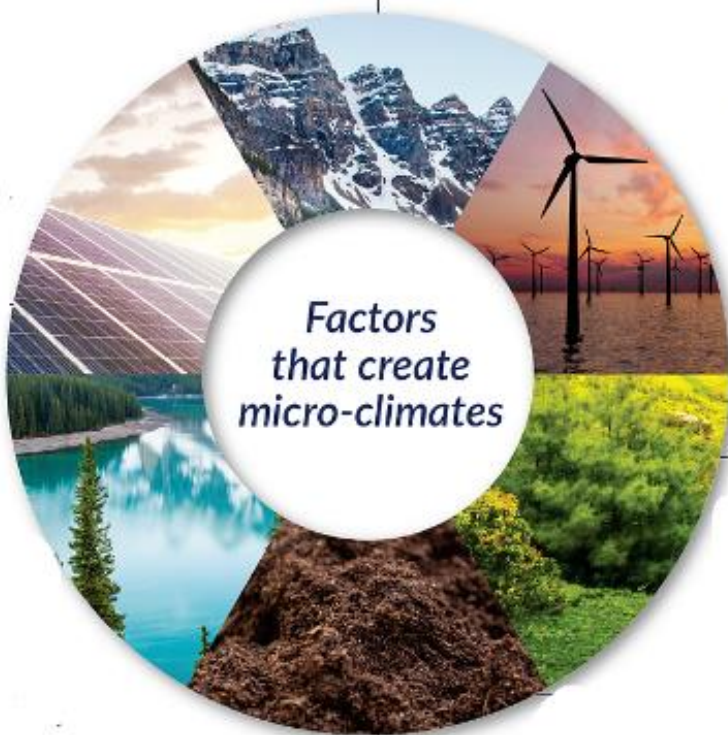


Plant Hardiness Zones - Ontario

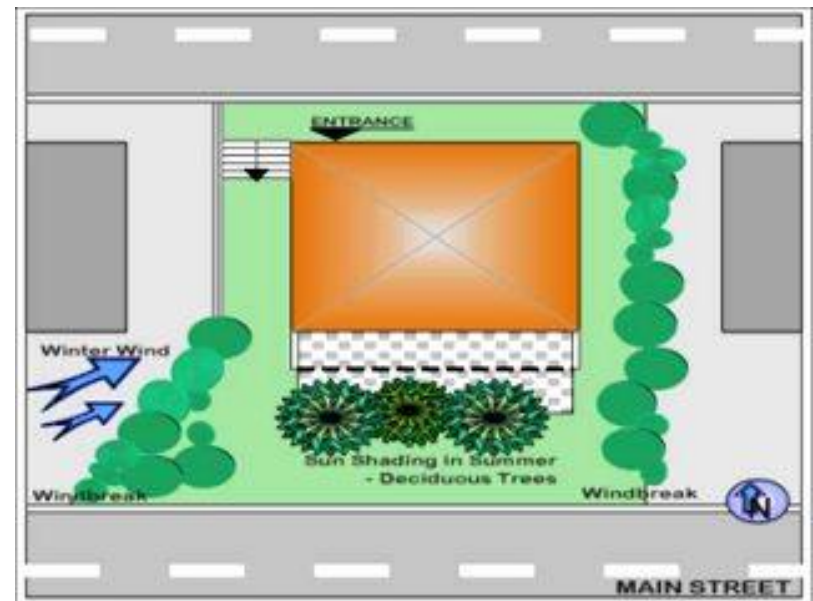
Zone 0b -53.9°C to -51.1°C	Zone 1a -51.1°C to -48.3°C	Zone 1b -48.3°C to -45.6°C	Zone 2a -45.6°C to -42.8°C	Zone 2b -42.8°C to -40°C
Zone 3a -40°C to -37.2°C	Zone 3b -37.2°C to -34.4°C	Zone 4a -34.4°C to -31.7°C	Zone 4b -31.7°C to -28.9°C	Zone 5a -28.9°C to -26.1°C
Zone 5b -26.1°C to -23.3°C	Zone 6a -23.3°C to -20.6°C	Zone 6b -20.6°C to -17.8°C	Zone 7a -17.8°C to -15°C	



Plant Hardiness Zones & Planning a Garden

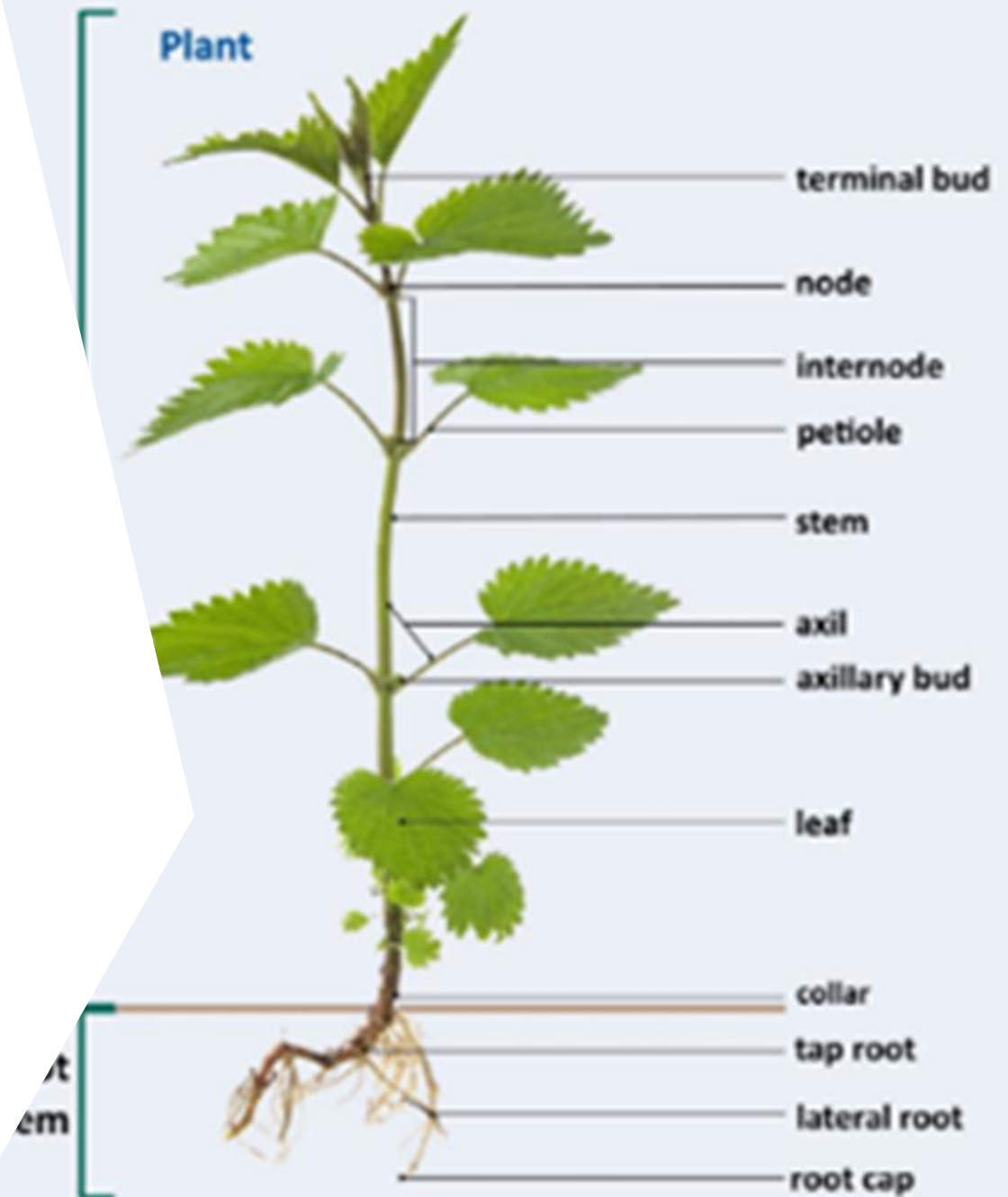


Microclimate



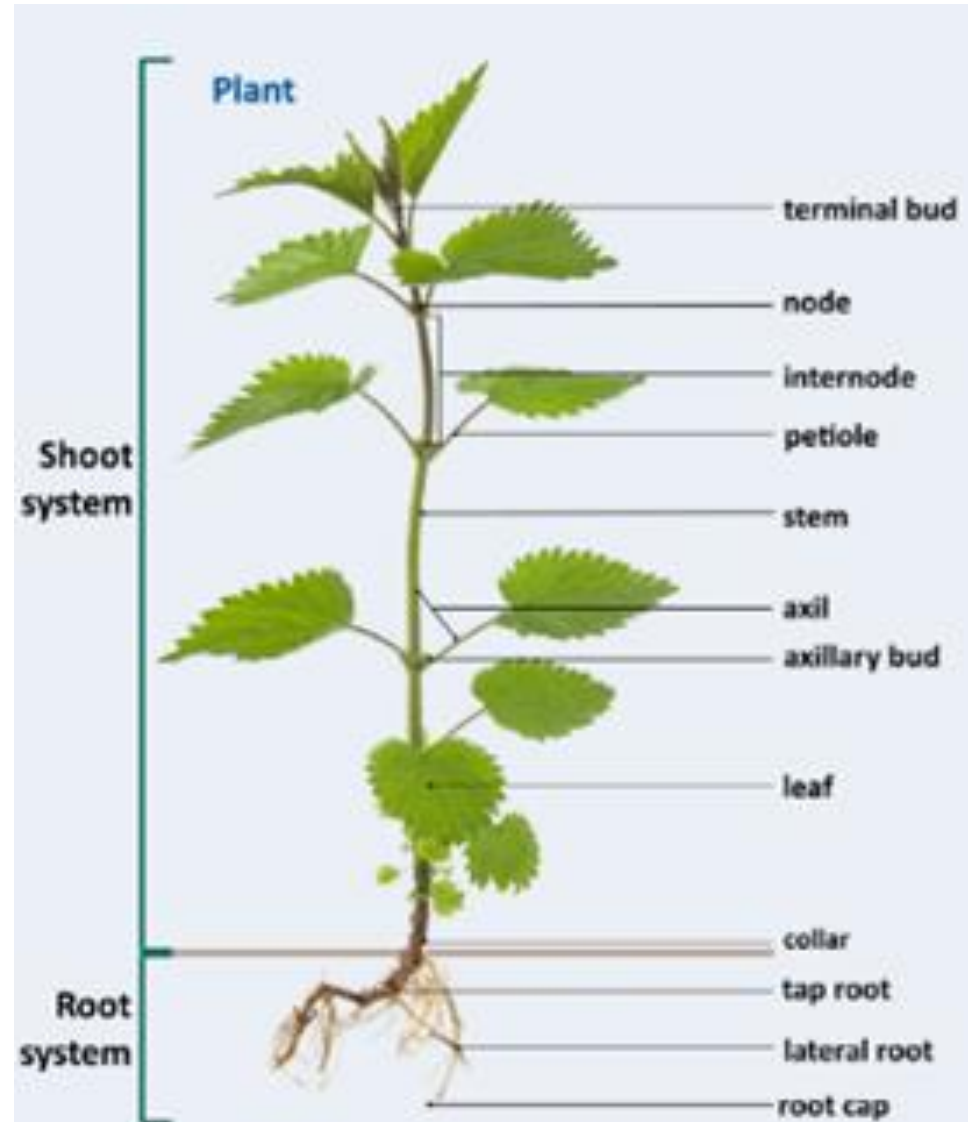
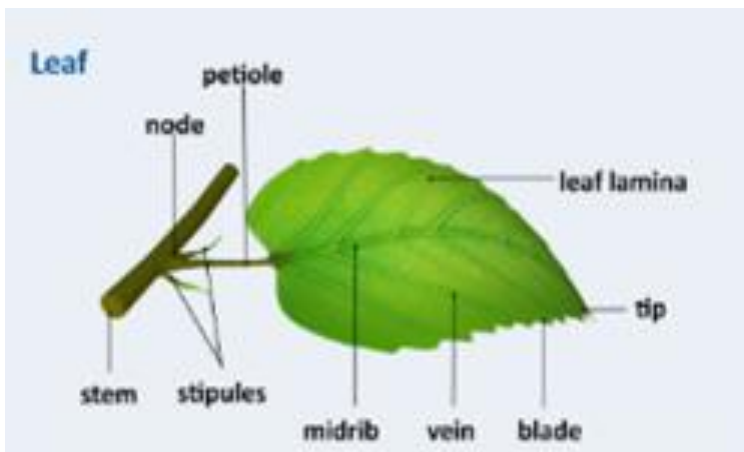
[Microclimate \(new-learn.info\)](http://new-learn.info)

Plant Structure



Plant Structure

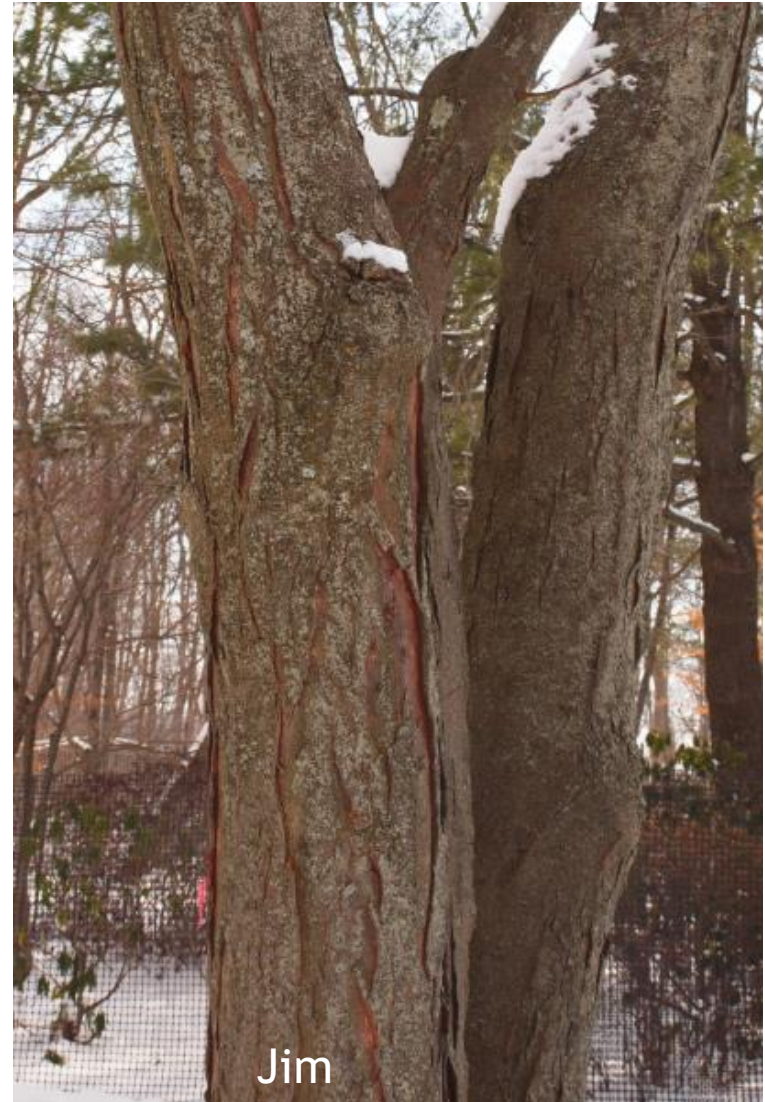
- ✓ The major parts of a plant:
 - ✓ Roots
 - ✓ Stems
 - ✓ Leaves
 - ✓ Flowers
 - ✓ Fruit (and seeds)



Plant Structure - Stems

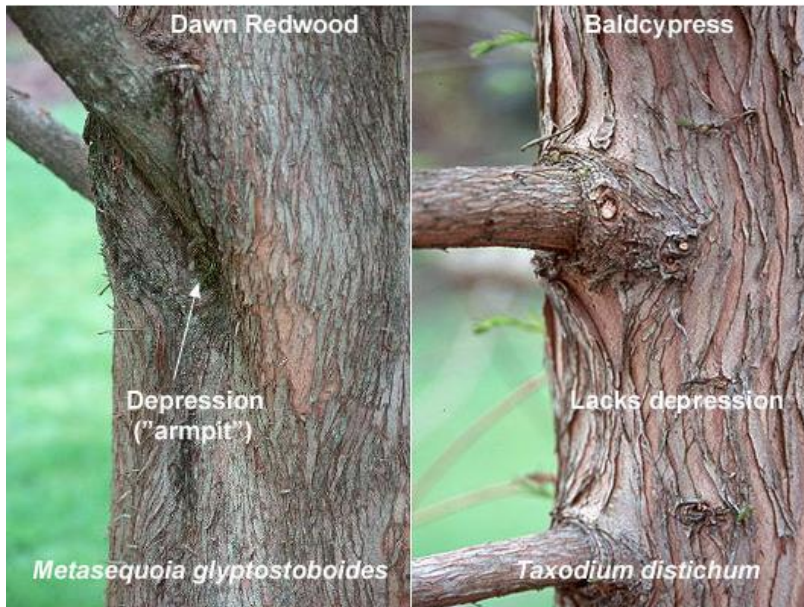
Honey Locust (*Gleditsia triacanthos*)

- ✓ Stems can be used for plant ID in some cases
- ✓ Bark can be distinctive (woody plants)
- ✓ Twigs and buds can be distinctive



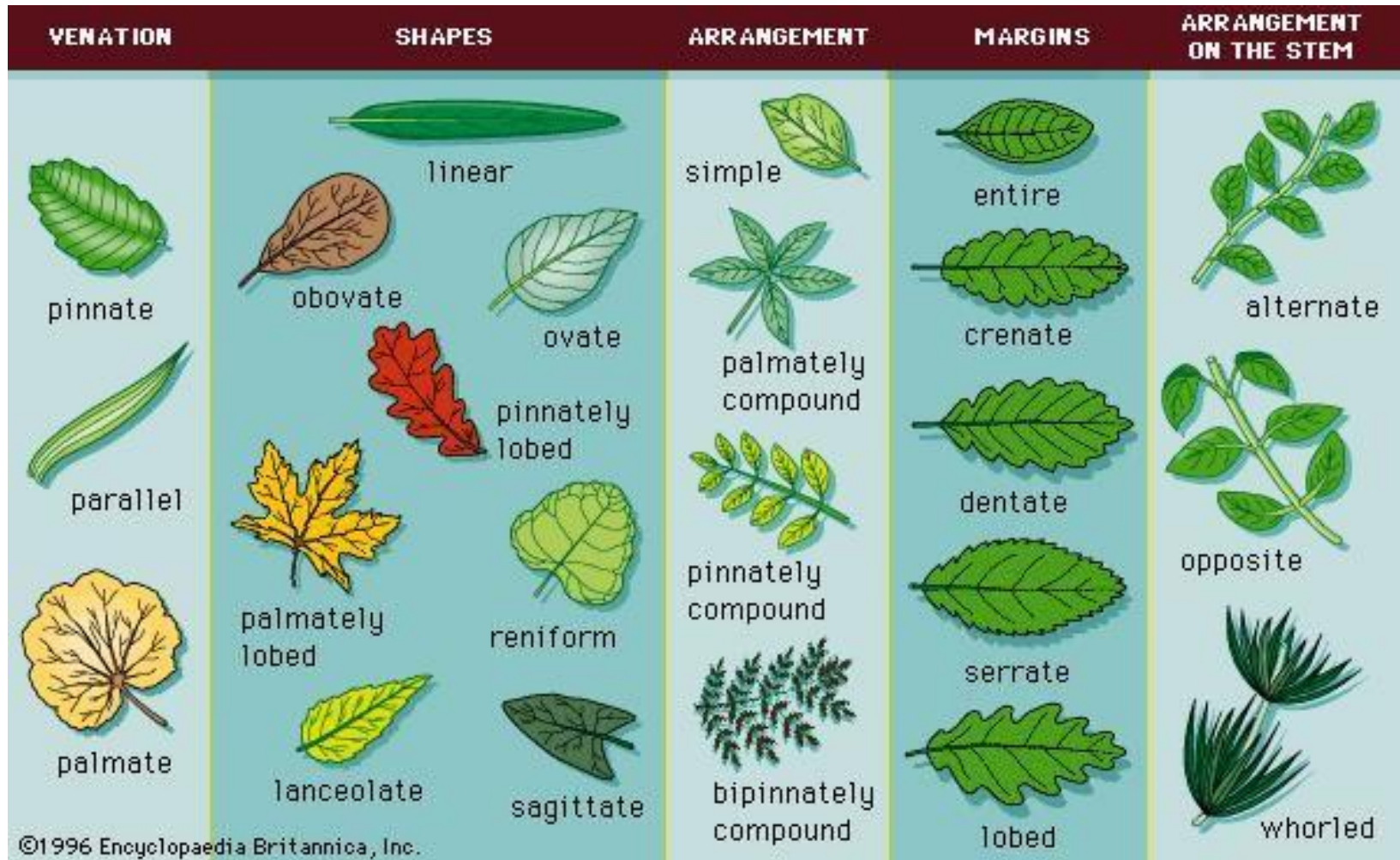
Plant Structure - Stems

- ✓ E.g. – Twigs, buds, and trunk of Dawn Redwood compared to those of Baldcypress



Plant Structure – Leaves

Leaf morphology: a set of characteristics that can be used to identify a plant



Plant Structure: Leaves

- ✓ Leaves have a distinctive shape e.g., Basswood
 - ✓ Off-centre heart shaped
 - ✓ Finely toothed edges
 - ✓ Dark green, with pale green underside
- ✓ Arranged on branches in a particular way (e.g., opposite or alternate)
- ✓ Leaves can also be hairy or have a waxy coating

Tilia americana



Plant Structure:

Leaves

- ✓ Leaves may also be divided, like this Honey Locust
 - ✓ Leaves are alternate
 - ✓ Leaves are pinnately compound
- ✓ Easy to identify by the long leguminous pods, but this only applies to female trees
- ✓ So, use bark and leaves to ID this tree



Plant Structure: Flowers

- ✓ Plants that need pollinators for fertilization need to attract them:
 - ✓ Size
 - ✓ Colour of petals or bracts
 - ✓ Scent
 - ✓ Rewards like pollen and nectar
- ✓ All of these elements are useful in plant ID



Plant Structure - Flowers

- ✓ Many plants are pollinated by wind...so flowers tend to be small

Paper Birch- *Betula papyrifera*

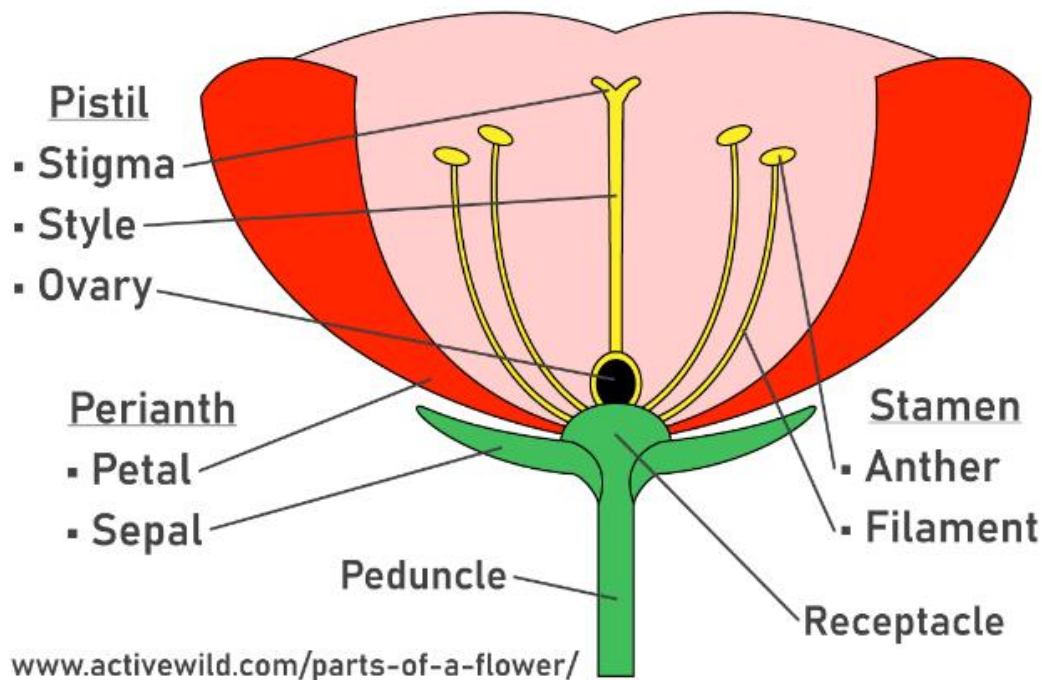


Big Bluestem - *andropogon gerardii*

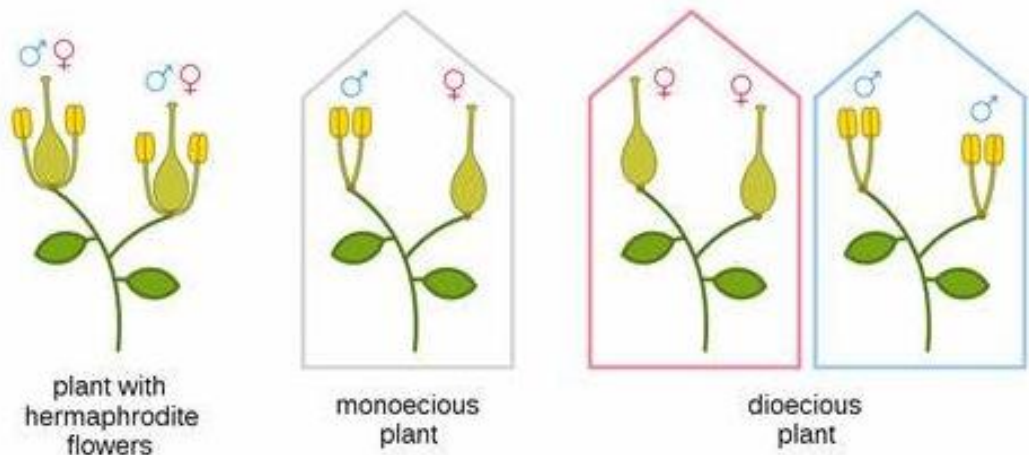


- ✓ Notice the different types of flowers on these plants
- ✓ These are all characteristics that may be used to identify the plant

Plant Structure: Flowers

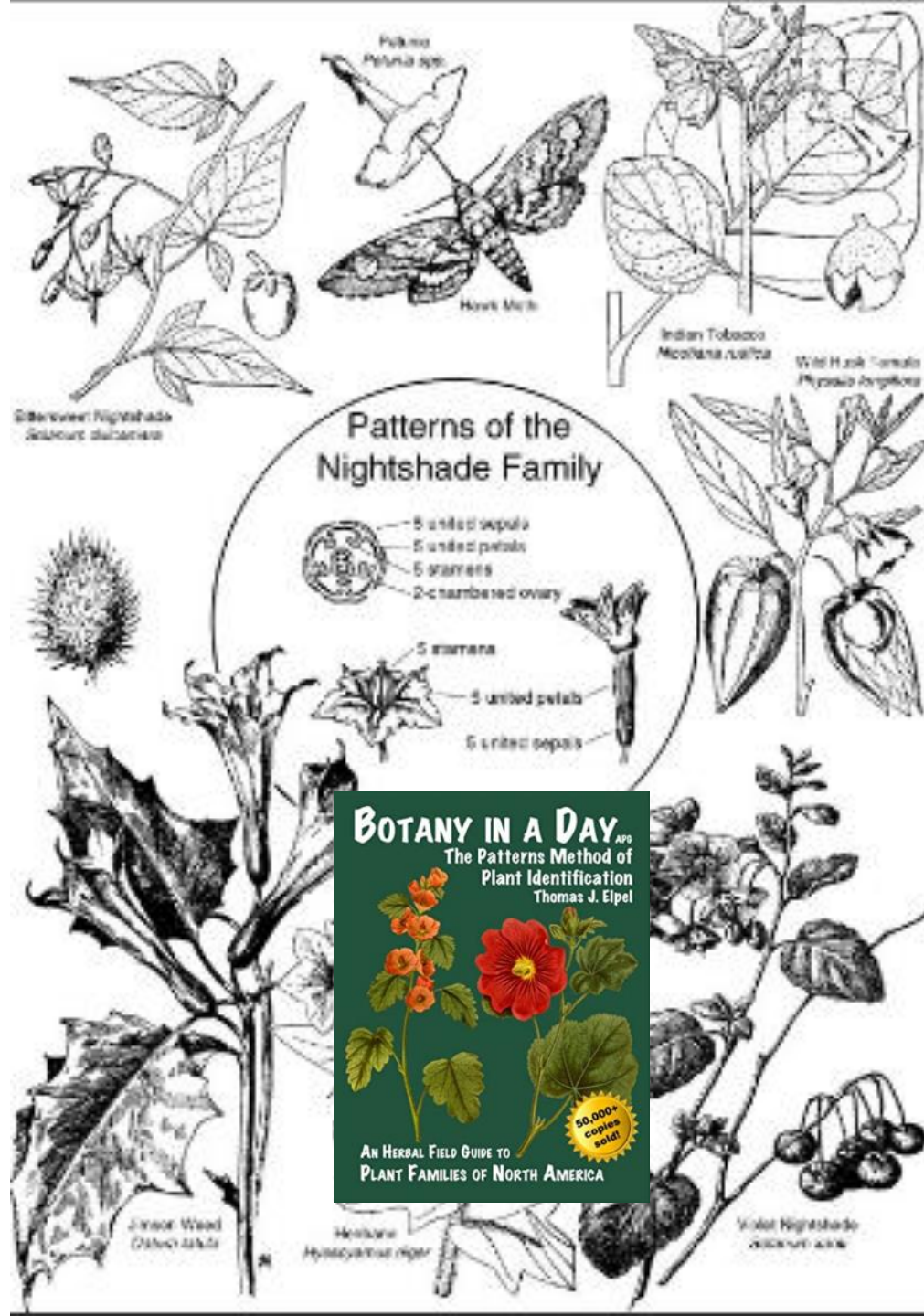


Being able to identify the components of the flower is a good way of identifying the plant



- ✓ Look for plants with similar characteristics – especially flower parts

- ✓ E.g. nightshades
 - ✓ 5 united petals
 - ✓ 5 united sepals
 - ✓ 5 stamens
 - ✓ 2-chambered ovary



Identify Plant Patterns

- ✓ Eastern Nightshade
- ✓ Tomato
- ✓ Potato
- ✓ Pepper
- ✓ Eggplant
- ✓ Tobacco



Plant Structure: Fruit & Seeds

- ✓ This involves learning some of the basic terminology



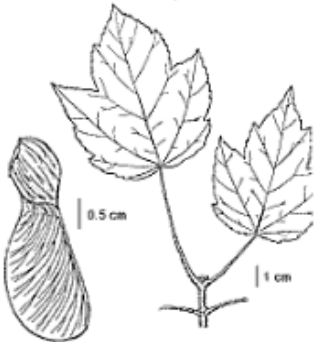
Plant Structure: Combine them!

- ✓ You can combine different characteristics to identify plants

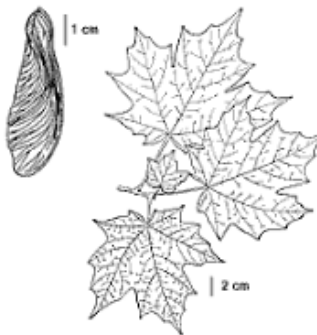
Acer ginnala (Amur Maple)



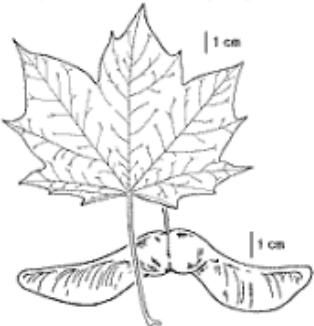
Acer rubrum (Red Maple)



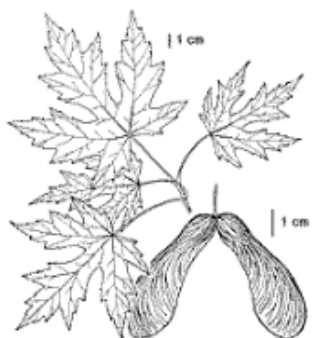
Acer saccharum (Sugar Maple)



Acer platanoides (Norway Maple)



Acer saccharinum (Silver Maple)



Acer nigrum (Black Maple)



Michigan Native Trees: The Oaks



White Oak
Quercus alba



Swamp White Oak
Quercus bicolor



Bur Oak
Quercus macrocarpa



Chinkapin Oak
Quercus muhlenbergii



Red Oak
Quercus rubra



Black Oak
Quercus velutina



Scarlet Oak
Quercus coccinea



Northern Pin/Hill Oak
Quercus ellipsoidalis



Pin Oak
Quercus palustris



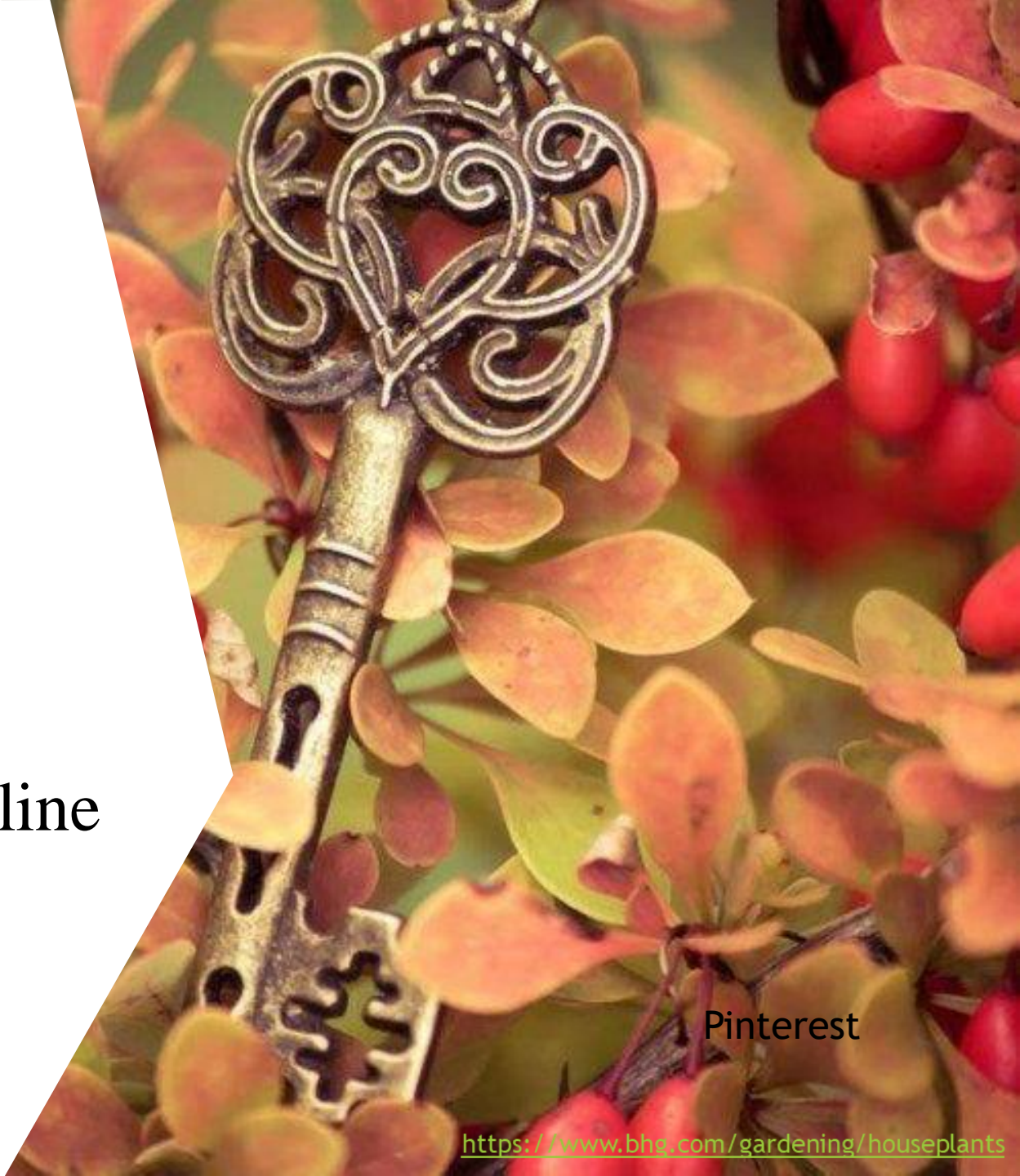
Shingle Oak
Quercus imbricaria



Shumard Oak
Quercus shumardii

e.g. leaf and acorn can be used to identify an oak

Botanical Keys, identification manuals, and online tools



Pinterest

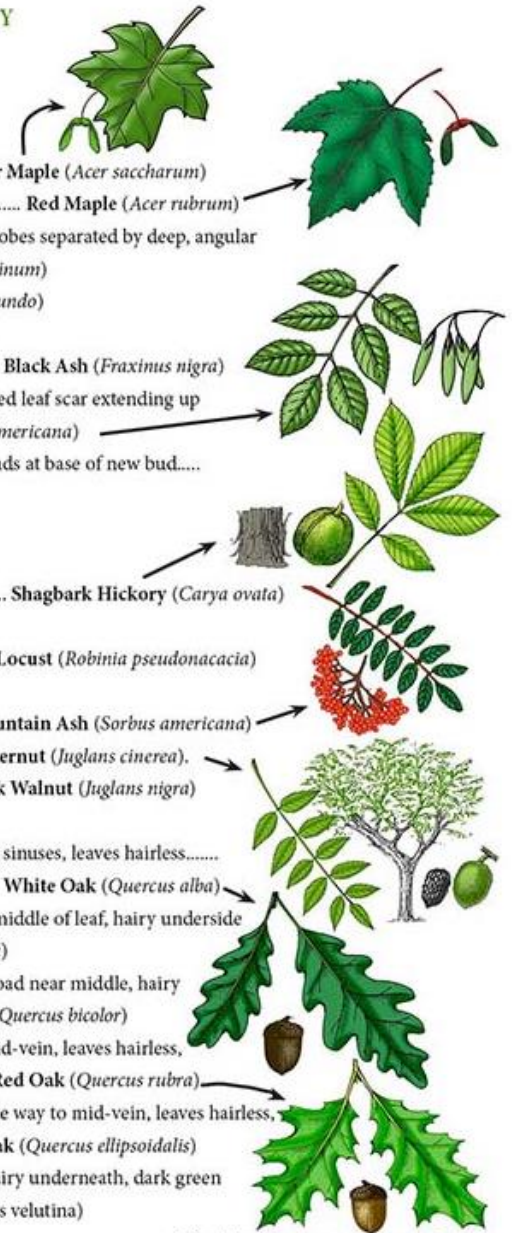
<https://www.bhg.com/gardening/houseplants>

Botanical Keys

- ✓ Dichotomous botanical keys
- ✓ Old paper-based keys are cumbersome
- ✓ Newer online keys have the advantage of added plant images.

DECIDUOUS TREE DICHOTOMOUS KEY

1. Opposite branching (2)
1. Alternate branching (4)
 2. Compound leaves (3)
 2. Simple leaves: Maple species (see a-c below)
 - a. Leaf margins smooth, 5 lobes **Sugar Maple** (*Acer saccharum*)
 - b. Leaf margins double-toothed, 3 to 5 lobes..... **Red Maple** (*Acer rubrum*)
 - c. Leaf margins single-toothed, 3 to 5 lobes, lobes separated by deep, angular openings.....**Silver Maple** (*Acer saccharinum*)
3. Three (rarely 5) leaflets..... **Box Elder** (*Acer negundo*)
3. Five to 11 leaflets: Ash species (see a-c below)
 - a. 9 to 11 leaflets, leaflets do not have petiole..... **Black Ash** (*Fraxinus nigra*)
 - b. 5 to 9 leaflets, leaflets have petiole, smile-shaped leaf scar extending up sides of new bud.....**White Ash** (*Fraxinus americana*)
 - c. 7 to 9 leaflets, leaflets have petiole, leaf scar ends at base of new bud.....
Green Ash (*Fraxinus pennsylvanica*)
4. Compound leaves (5)
4. Simple leaves (8)
5. 7 or fewer (usually 5) leaflets, egg-shaped nut..... **Shagbark Hickory** (*Carya ovata*)
5. 7 or more leaflets (6)
 6. Leaflets rounded **Black Locust** (*Robinia pseudonacacia*)
 6. Leaflets pointed (7)
 7. Leaf 6 to 8 inches long **Mountain Ash** (*Sorbus americana*)
 7. Leaf 8 to 24 inches long **Butternut** (*Juglans cinerea*),
or **Black Walnut** (*Juglans nigra*)
 8. Leaves not lobed (9)
 8. Leaves lobed: Oak species (see a-f below)
 - a. Rounded lobes, 5 to 9 deep even lobes and sinuses, leaves hairless.....
White Oak (*Quercus alba*)
 - b. Rounded lobes, pair of deep sinuses near middle of leaf, hairy underside of leaves..... **Bur Oak** (*Quercus macrocarpa*)
 - c. Rounded lobes, leaf narrow at base and broad near middle, hairy underside of leaves.... **Swamp White Oak** (*Quercus bicolor*)
 - d. Pointed lobes, sinuses extend halfway to mid-vein, leaves hairless, dull green..... **Red Oak** (*Quercus rubra*)
 - e. Pointed lobes, deep sinuses extend 3/4 of the way to mid-vein, leaves hairless, bright green and shiny.... **Northern Pin Oak** (*Quercus ellipsoidalis*)
 - f. Pointed lobes, deep sinuses, young leaves hairy underneath, dark green and shiny, leathery.....**Black Oak** (*Quercus velutina*)



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Botanical Keys using Go Botany

- ✓ *Go Botany has an easy-to-use key:*
- ✓ First-level groups:
 - ✓ Woody Plants (trees & shrubs)
 - ✓ Grasses
 - ✓ Ferns
 - ✓ Orchids
 - ✓ Aquatic plants
 - ✓ All other non-woodies

Native Plant Trust
GO BOTANY Discover thousands of New England plants

Home Simple Key PlantShare Full Key Dichotomous Key Teaching Help

Getting Started
If you're not sure what to do from here, take a look at this Help page for instructions.
[HELP](#)

Shortcut to plant groups
If you already know what group your plant is in, start with this shortcut to find your plant more quickly.
[MAP TO GROUPS](#)

Simple Key: Which group best describes your plant?
Please go through the groups in order.


◀ ▶

Woody plants
Trees, shrubs, sub-shrubs, and lianas

[Key characteristics](#)
The outer tissues of the stems are thickened; most have [bark](#) and [winter buds](#) during the dormant season

[Exceptions](#)
Some very short shrubs can be mistaken for [herbaceous](#) plants

[Video about this group](#)

[WOODY PLANTS](#)



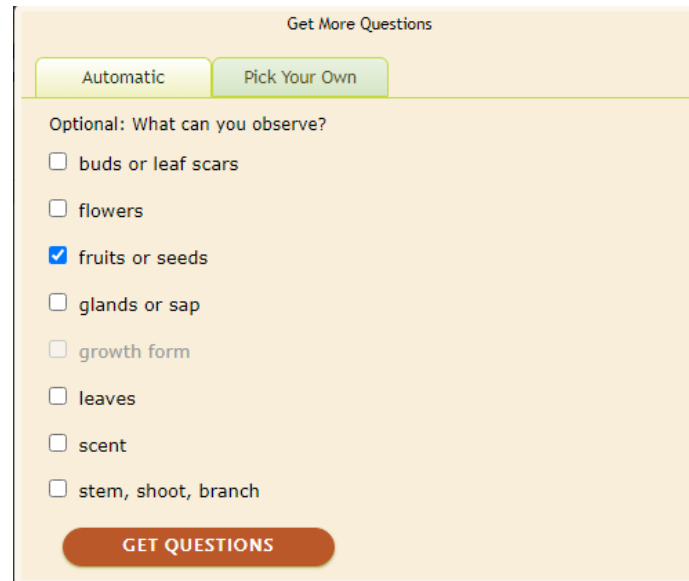
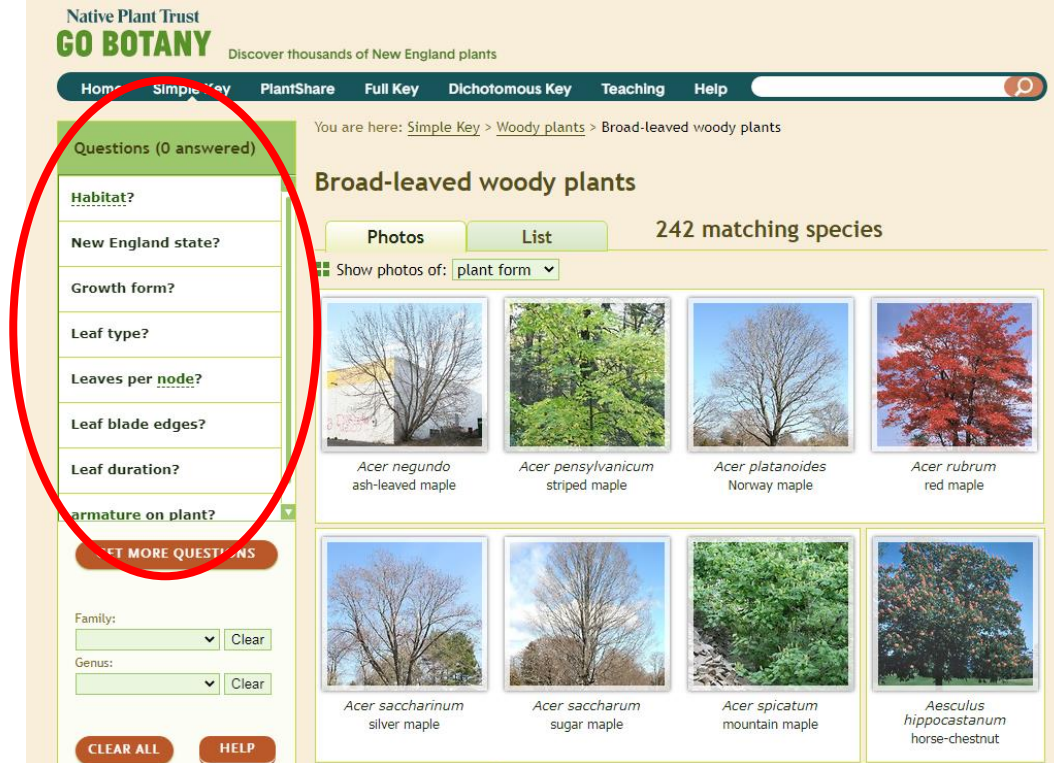
Aquatic plants
Plants with their leaves and/or stems submerged or floating in water

[Key characteristics](#)
Specialized [submerged](#) or floating leaves and tissues to withstand flooding

[Exceptions](#)

Botanical Keys

- ✓ The next level presents several questions
- ✓ Using the ID characteristics you have observed, answer as many as possible



Botanical Keys

- ✓ Continue to answer questions until your plant is obvious
- ✓ Dichotomous key is also available

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Home Simple Key PlantShare Full Key Dichotomous Key Teaching Help

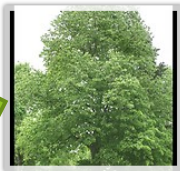
You are here: [Simple Key](#) > [Woody plants](#) > Broad-leaved woody plants

Broad-leaved woody plants

1 matching species

Photos List

Show photos of: [plant form](#)



Tilia americana
American linden

Questions (10 answered)

split open when ripe
Clear

Wings on fruit?
there are no wings on the fruit
Clear

Berry color?

Fruit type (specific)?
the fruit is a d...
with a f...
(... seed)

Nut with spines

GET MORE QUESTIONS

Family: Clear

Genus: Clear

CLEAR ALL HELP

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Home Simple Key PlantShare Full Key Dichotomous Key Teaching Help

Dichotomous Key to Families

[SEE LIST OF 185 FAMILIES IN THIS KEY](#)

What's a dichotomous key? [HELP](#)

Jump to a Major Group...

Jump to a family...

Jump to a genus...

1a. Plants typically reproducing by spores, seeds and fruits not produced; gametophyte independent of sporophyte; ferns and fern-like plants [SEE LIST OF 21 FAMILIES IN 1A](#) **GROUP 1**

1b. Plants typically reproducing by seeds, the seeds borne within a fruit or not; gametophyte dependent on sporophyte; seed plants [SEE LIST OF 164 FAMILIES IN 1B](#) **CHOOSE THIS LEAD**

SHOW ALL COUPLETS

Botanical Keys

- ✓ This involves much more botanical terminology

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Home Simple Key PlantShare Full Key Dichotomous Key Teaching Help

You are here: [Dichotomous Key](#) > Malvaceae

Malvaceae

[SEE LIST OF 16 GENERA IN THIS FAMILY](#)

1a. Plants woody, trees up to 35 m tall; peduncle of the inflorescence adnate to a conspicuous, elongate bract [Figs. [722,723](#)]; stamens pentadelphous; fruit a nut-like drupe

[CHOOSE THIS GENUS](#)


Tilia

1b. Plants herbaceous or shrubs to 6 m tall in *Hibiscus syriacus*; inflorescence without an adnate bract; stamens monadelphous; fruit a capsule or schizocarp

[SEE LIST OF 15 GENERA IN 1B](#)

[CHOOSE THIS LEAD](#)

[SHOW ALL COUPLETS](#)

 Show photos of: [plant form](#) Each photo represents **one genus** in this family.

What's a dichotomous key?

[HELP](#)

[Jump to a Major Group...](#) ▾

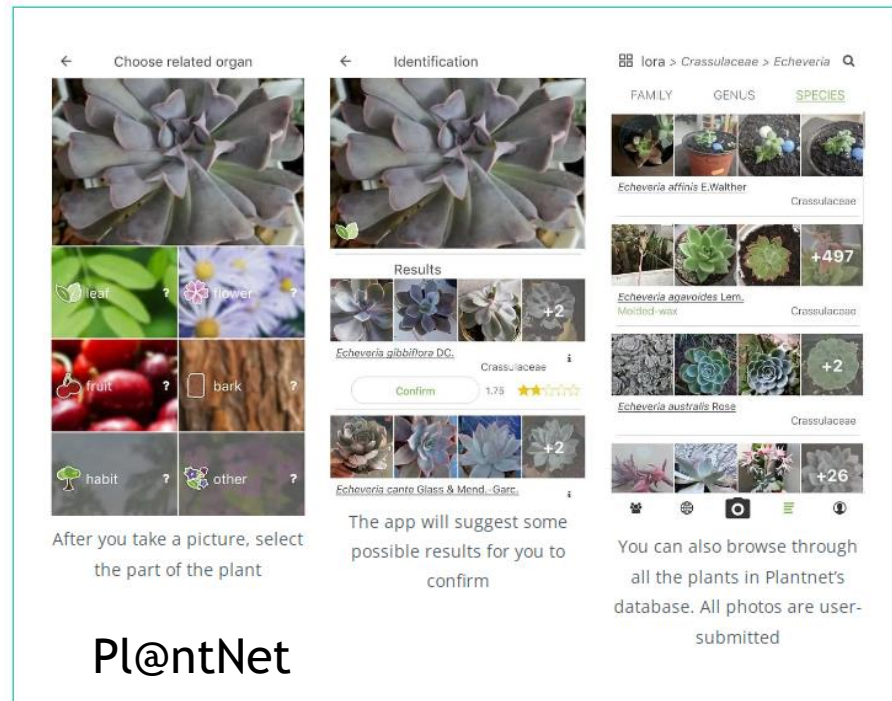
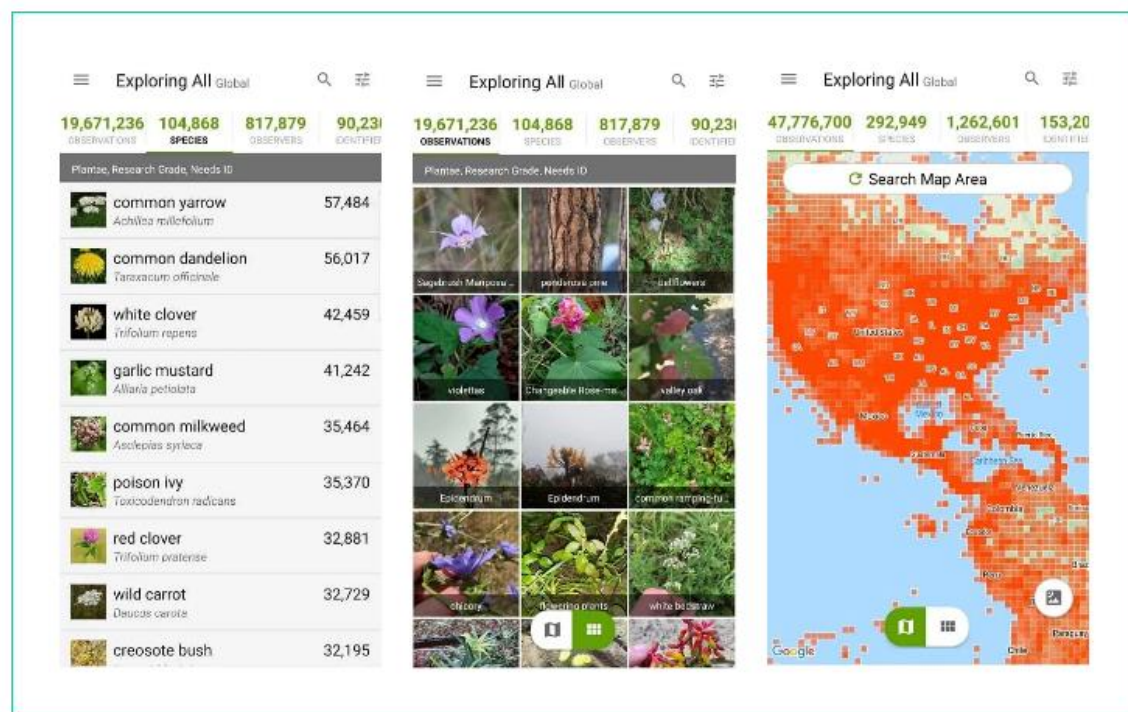
[Jump to a family...](#) ▾

[Jump to a genus...](#) ▾

Phone Apps

There are many options:

- ✓ iNaturalist
- ✓ PlantSnap
- ✓ LeafSnap
- ✓ Pl@ntNet



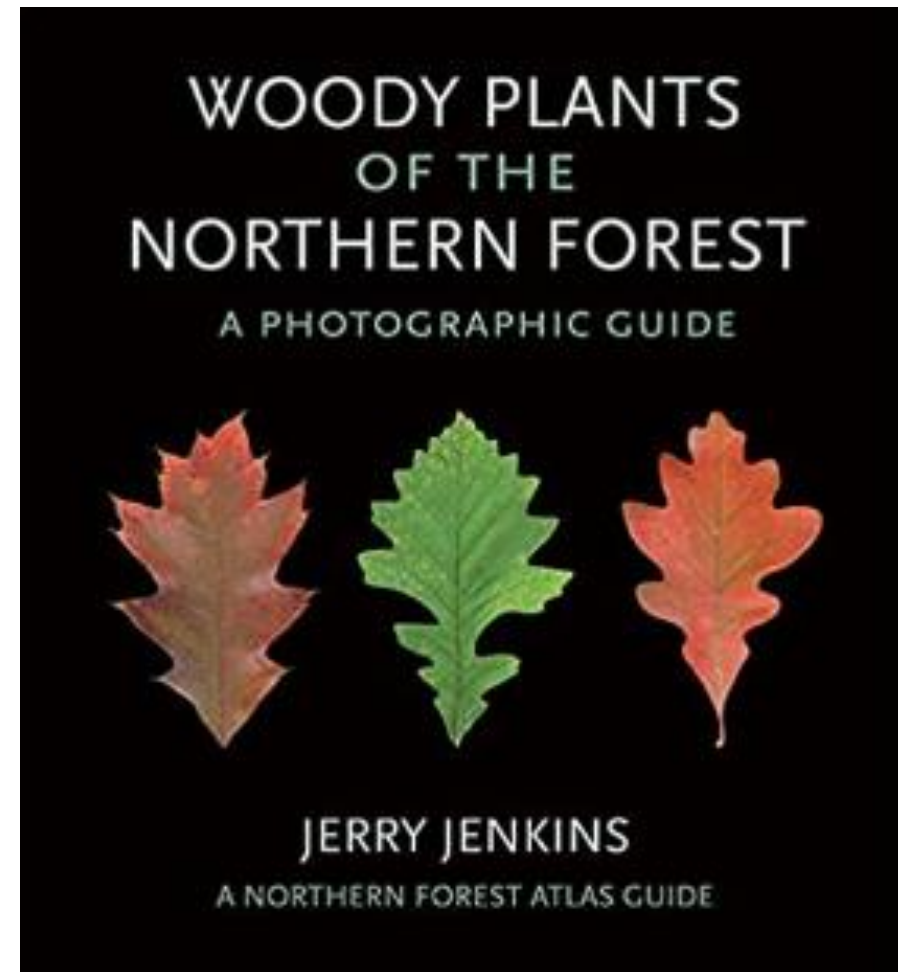
iNaturalist

Pl@ntNet

Poll Question:

Have you used a phone app, and were you successful in identifying your plant?

Manuals and other sources

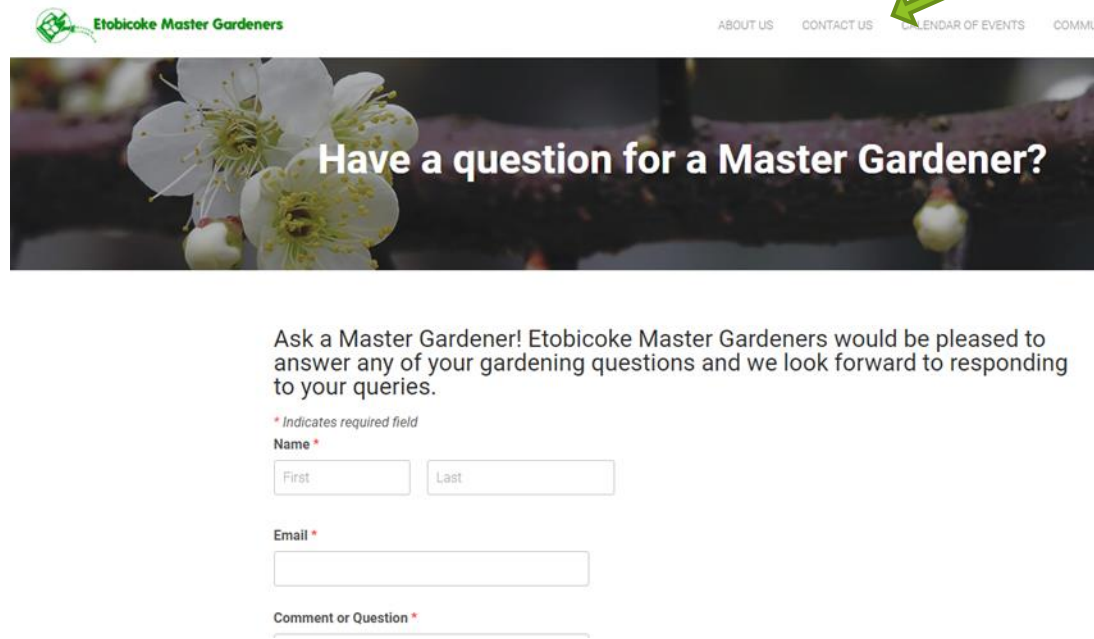


VISUAL GLOSSARY



Etobicoke Master Gardeners - Ask Us!

Plant identification, or any gardening related questions you may have



The screenshot shows the Etobicoke Master Gardeners website. At the top left is the logo with a magnifying glass over a plant. To the right are navigation links: ABOUT US, CONTACT US, CALENDAR OF EVENTS, and COMMUNITY. A green arrow points to the 'CONTACT US' link. Below the navigation is a banner image of white flowers with the text 'Have a question for a Master Gardener?'. Under the banner is a text block: 'Ask a Master Gardener! Etobicoke Master Gardeners would be pleased to answer any of your gardening questions and we look forward to responding to your queries.' Below this is a form with the following fields: 'Name' (with sub-fields 'First' and 'Last'), 'Email', and 'Comment or Question'. A red asterisk indicates required fields.

Etobicoke Master Gardeners

ABOUT US CONTACT US CALENDAR OF EVENTS COMMUNITY

Have a question for a Master Gardener?

Ask a Master Gardener! Etobicoke Master Gardeners would be pleased to answer any of your gardening questions and we look forward to responding to your queries.

* Indicates required field

Name *

First Last

Email *

Comment or Question *

Identification:
Annuals, Perennials,
Shrubs, Vines,
Trees, Evergreens



Identification: Annuals
Calibrachoa (Million Bells) or
Browallia (Bush Violet)?



Identification: Perennials
Solidago flexicaulis (Zigzag Goldenrod) or
Alliaria petiolata (Garlic mustard)?



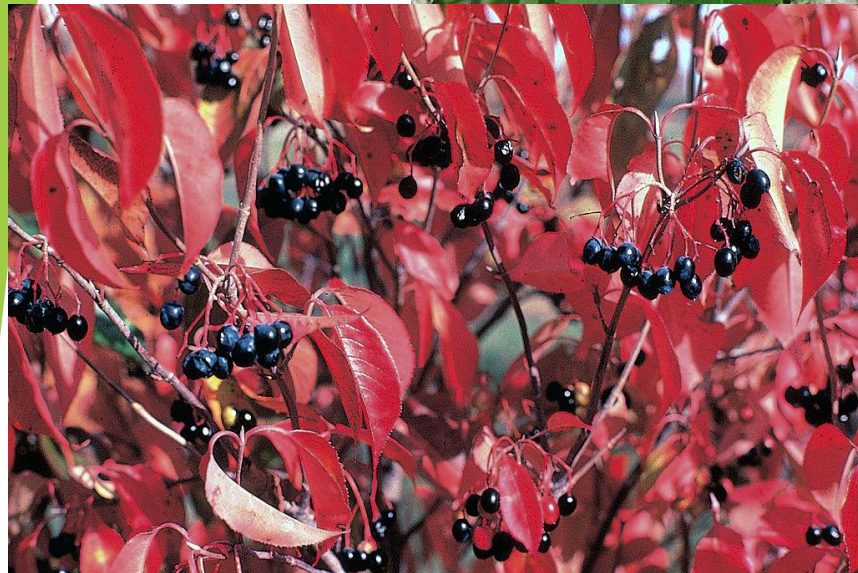
Identification: Vines

Hedera helix (English Ivy) or
Parthenocissus quinquefolia (Virginia Creeper)?



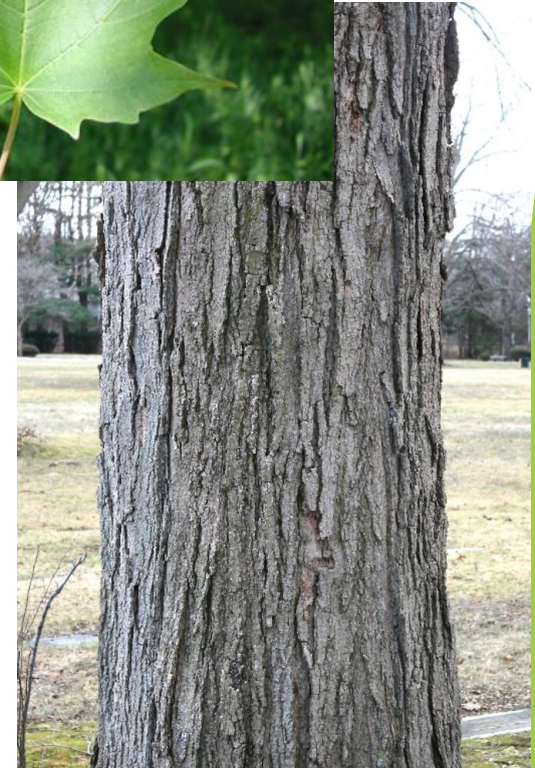
Identification: Shrubs

Viburnum lentago (Nannyberry Viburnum) or
Euonymus alatus (Burning bush)?



Identification: Deciduous Trees

Acer platanoides (Norway Maple) or
Acer saccharum (Sugar Maple)?



Identification: Evergreens *Abies* (Fir) or *Picea* (Spruce)?



Wrap Up





Etobicoke Master Gardeners



**HUMBER
ARBORETUM**

2023 Eco-Garden Community Workshop Series

Saturdays 10:00 AM to Noon

Virtual Sessions via Zoom

February 25: Plant Identification

March 4: Growing Your Own Food

April 15: Native Plants

April 29: Invasive Plants, Control, and Alternatives

June 10: Pollinator Friendly Gardening

October 14: Pruning

November 18: Indoor Plants

In-Person at the Humber Arboretum

February 4: Winterwood:
Winter Tree Identification Tour

May 6: First-hand Look at
Invasive Plants, Control, and
Alternatives Tour

October 21: Pruning Workshop

Free, but space is limited & registration is required:
[Humber.ca/arboretum/emg](https://humber.ca/arboretum/emg)



Botanical keys, identification manuals & online tools

- ✓ Important to use trusted sources such as university sites and not just any site
- ✓ Manual of Woody Landscape Plants by Michael A. Dirr
- ✓ University of Guelph www.uoguelph.ca
- ✓ Penn state extensions www.extension.psu.edu
- ✓ Minnesotawildflowers.info
- ✓ NC extension plants.ces.ncsu.edu/plants
- ✓ iNaturalist www.inaturalist.org
- ✓ PlantSnap www.plantsnap.com
- ✓ LeafSnap www.leafsnap.app
- ✓ Go Botany www.gobotany.nativeplanttrust.org
- ✓ Pl@ntNet_identify www.identify.plantnet.org

References

- ✓ Etobicoke Master Gardeners www.etobicokemastergardeners.ca
- ✓ Master Gardeners of Ontario www.mgoi.ca
- ✓ <https://gobotany.nativeplanttrust.org/>
- ✓ <https://gobotany.nativeplanttrust.org/simple/>
- ✓ <https://gobotany.nativeplanttrust.org/dkey/>
- ✓ <http://www.ontariofieldnaturalists.ca/FieldGuides/Plants.html#Ont>
- ✓ Botany in a day, Thomas J. Elpel, HOPS Press, 2010
- ✓ Woody Plants of the Northern Forests: A Photographic Guide, Jerry Jerkins, Cornell U Press, 2018

Where can you find presentation materials?

Visit the EMG website, under Community Activities,
Humber Arboretum, Workshop Materials



[ABOUT US](#)

[CONTACT US](#)

[CALENDAR OF EVENTS](#)

[COMMUNITY ACTIVITIES](#)

[EMG MEMBER LOGIN](#)

Etobicoke Master Gardeners

www.etobicokemastergardeners.ca

Etobicoke Master Gardeners

Thank you!

Questions

