



Plant Identification - Introduction

We have heard from horticultural apprentices over the years that it can be challenging to correctly identify all the different types of plants. Of course, being able to do so is a very important part of being a horticulture technician.

There are many types of plants – shrubs, trees, vines, grasses, annuals, perennials etc. – and being able to identify what a plant is by sight, by common name and by its botanical name is very important.

There are also strategies that you can use to determine what a plant is. Where is it located? What shape leaves does it have? What kind of flower does it produce?

In this module of the toolkit, we've introduced some memory or concentration games to help you learn plants by sight, by common name and by botanical name. Not only will you learn to identify plants, but you might have some fun at the same time! We have also included some strategies you can use to figure out what a plant is – if you can't immediately recognize it.

Check Your Skills

First, let's check how you feel about your plant identification skills. We'll then come back and see how you feel at the end of the module. Read each of the statements below and select the response that best describes you today.

Statements	I can do this	I would like to do this better	I can't do this
I can identify deciduous trees (common name, Latin name and by sight)			
I can identify coniferous trees			
I can identify deciduous shrubs			
I can identify evergreen shrubs			
I can identify vines			
I can identify perennials			
I can identify ornamental grasses			
I can identify annuals			
I can identify invasive species			
I can identify common plant identification strategies			



Plant Identification

There are many types of plants – shrubs, trees, vines, grasses, annuals, perennials etc. – and being able to identify what a plant is by sight, by common name and by its botanical name is very important.

There are also strategies that you can use to determine what a plant is. What shape leaves does it have? What kind of flower does it produce? Where does it grow?

Plants can be sorted, or classified, into categories in different ways. Three main ways are by how long the plant lives, if it has woody or soft herbaceous stems, and what kind of seeds it produces.

- 1) How long it lives
 - Annual – plant grows, flowers, disperses seeds and dies all in one year.
 - Biennial – plant grows for two years, flowering and dispersing seeds in the second year.
 - Perennial – plant grows continuously for many years, flowering and dispersing seeds every year

- 2) Stem types
 - a. Woody stem
 - i. Tree
 - ii. Shrub
 - iii. Vines
 - b. Herbaceous
 - i. Grass
 - ii. Flowering plant (upright and vines)
 - iii. Fern

- 3) Type of seeds
 - a. Gymnosperm – woody plants that produce “naked” seeds. Conifers like pine and fir trees are gymnosperms.
 - b. Angiosperm – flowering plants with seeds covered by an ovary (fruiting structure) Fruit trees and roses are examples of angiosperms.
 - c. Spore producer – produces spores instead of seeds – ferns are spore producers



Over the centuries, people have given names to plants according to what they look like or what medicinal or other uses they have or their colour, or any number of identifying characteristics. For example, the white birch, named for its white bark, found in many Canadian forests is also called a paper birch, because its bark can be peeled off in thin layers and used for writing on. Still others call it a shining birch. And these are just the common names used in English.

As you can see, there can be many common names for one plant, and it isn't always easy to know if two people are talking about the same plant. Therefore, we use a scientific naming system, or nomenclature, to clearly identify each plant. [The scientific naming system for animals and plants](#) was developed by the 18th-century Swedish naturalist Carl von Linné, better known as Carl Linnaeus. He created the hierarchical system of grouping animals and plants and used Latin and Greek names for the groups because these were the international languages of science at the time. Latin is still used because it is not a spoken language anymore – it never changes and is a universal language.

The full system uses a hierarchy that groups plants first by broad similarities and then by more specific similarities until it narrows down to the specific plant. A chart showing this breakdown from Class down to Cultivar can be found at <http://theseedsite.co.uk/class.html>

Most of the time, people are most concerned with the Family, Genus, Species and Cultivar information about a plant.

The system uses binomial nomenclature (2 names) for each plant. *Betula Alba* is the scientific name for white birch. *Betula* is the genus and *alba* is the species. So, whether we call it a white or paper or shining birch, if we use the scientific name, *Betula alba*, we all know which tree we are talking about. *Betula alba* belongs to the family *Betulaceae*, which also includes alders, hazels, and hornbeams.

Plant Classification is an easy, helpful PowerPoint presentation about the classification system that you can download.

Tips and Strategies for Learning Plant Names

There is no getting around it – learning plant names requires a lot of memorization. For anyone seeking a career in horticulture, landscaping, or floriculture it is essential that you be able to identify most commonly used plants. You will not be taken seriously as a professional if you cannot identify common plants in the landscape, greenhouse or nursery, or if you recommend a sun-loving perennial for a shady location.

You can help cement things in your brain if you also find ways to use the information regularly and review it in different ways.

A. Common Names

- a. One of the best ways to learn to identify plants on your own is to use field guides and seed/plant catalogues that have colour photos or illustrations of the plants they list. Seed/plant catalogues sometimes also give more information about specific plants that help you to remember them. They are usually divided into sections with similar plants – try focusing on one section at a time to become familiar with common plants used in landscaping and gardening.



b. Flash cards

Make flash cards with a plant photo on one side and its common name on the other. You can use the photos in those seed/plant catalogues. Practice on your own or get a friend to show you the photos while you identify the plant. Alternatively, you could write the names down in order as you see the photos, and then check your answers.

You might want to keep the flash cards with you, so you can review them at odd times throughout the day.

c. Use apps

There are a number of inexpensive apps that allow you to create your own content for revision. By working with your classmates, you can take turns to create lists that you can share and practice with. [Quizlet](#) is one worth trying out.

d. Match games

Try the match games in this Toolkit at <https://interacty.me/projects/a27df2e5208fa0f0>

B. Scientific names

a. Flash cards and apps

Use these as mentioned above but use the scientific names instead of the common names with the photos. You might consider making flashcards or games using common names with scientific names.

b. Make sure you copy the scientific names correctly. It's a bit like learning a new language, so make sure you start with the correct spellings.

c. Break the words up into sound bites so they are easier to learn. "[Small Green Things](#)" recommends making stories from the sound bites to remember the name and spelling (similar to remembering the names of new people).

d. Look up the meanings of scientific names. Botanical names are mainly Latin or Greek based and there are parts of words that are worth knowing because they will come up frequently. It also makes studying more interesting. It's helpful to have a reference book or e-book but you can search online for meanings. For example:

- *edulis* means 'edible'
- *toxicarius* means 'poisonous'
- *albus* means 'white'



- *rubrum* means 'red'
- *orientalis* means 'relating to the Orient'
- *scandens* means 'climbing'
- *pendulus* means 'hanging'
- *glabrous* means 'smooth'

[Botanical Nomenclature Guide: The Meaning Of Latin Plant Names](#)

- e. Focus on one plant genus at a time.
Focus on learning the most commonly used plants first and go genus by genus. For example, all the birches (*Betula*), then all the maples (*Acer*), then pines (*Pinus*), etc.
- f. Say the names phonetically to help remember spelling.
This helps some people. For example, when learning how to spell a word with silent letters, say the sounds for those letters when you write them down. "knee" becomes /ku - nee/

For more strategies, check out these websites:

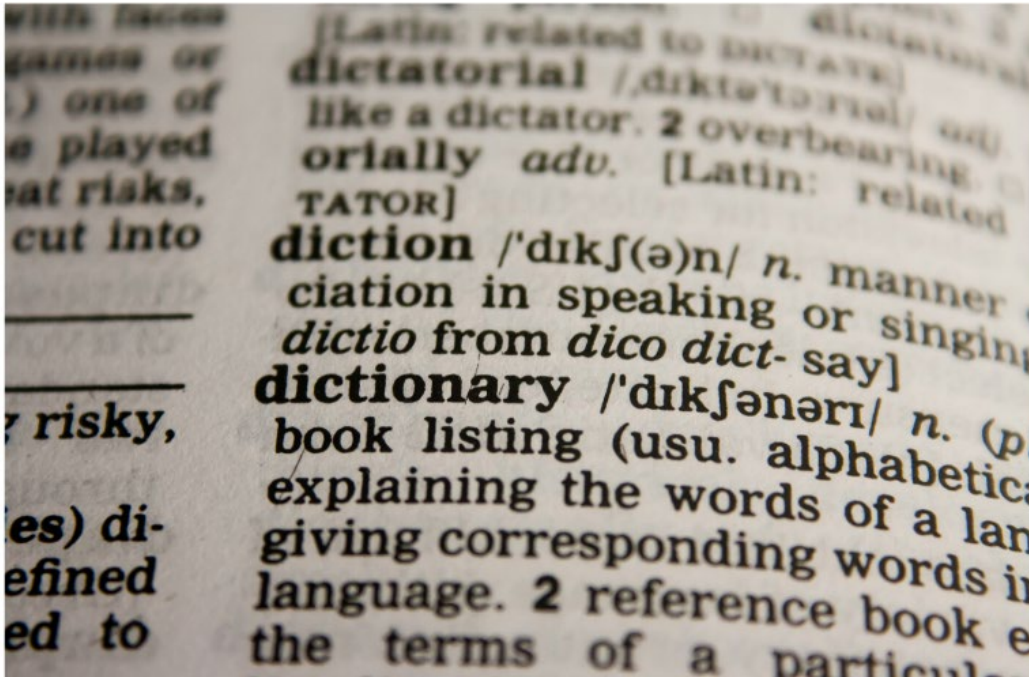
- [How to understand botanical names for beginners](#)
- [How to learn botanical Latin plant names](#)
- [10 Tips for Learning the Botanical Names of Plants](#)
- [How to Understand Plant Names](#)
- [Botanical Nomenclature Guide: The Meaning Of Latin Plant Names](#)
<https://www.gardenersworld.com/plants/gardening-for-beginners-latin-plant-names/> more meanings of Latin names

Learning Plant Names

It is impossible for anyone to learn all of the different plants and plant materials that exist. It would be like trying to learn every word in the world's biggest dictionary. When faced with a difficult problem, like learning a lot of new information, it is easier if you break the task down into smaller parts. One way of breaking a task down is to narrow your focus.

Let's say you meet a new group of people for the first time. You are introduced and you know there is an expectation for you to remember their names. This is a big task. You must break this task into smaller parts. Instead of trying to name individuals randomly, you may devise a system to group people. Perhaps there is the red group (each is wearing the colour red). This is what they have in common. Another grouping may have short hair; another grouping may all be tall people. Through grouping, you have eliminated all the unimportant factors about each person. It is easier to remember Joe, John and Mary because they have become the Reds. David, Sam and Anne are easier to remember because they are now the Talls.

We can also narrow our focus when reading. In other words, it is possible to improve your comprehension of reading passages by learning a common grouping of words. These are called sight words.



Did You Know?

In the English language, one hundred simple words make up half of all reading.

It may seem impossible, but it is true. These words are used so often, that you probably don't think about them when you are reading.

Box A - These 12 words = 1 / 4 of all reading.

Box A		
a	in	that
and	is	the



Box B has 20 words. Box A + Box B = 1 / 3 of all reading.

Box B		
all	be	have
on	they	are
but	him	one
as	for	we

Box C has 68 words. Box A + B + C = 1 / 2 of reading (Total = 100 words)

Box C				
about	come	could	other	their
were	an	her	me	here
or	them	what	back	did
much	if	then	when	been
do	into	our	must	there
where	before	down	my	just
out	this	which	big	by
first	like	new	over	two
who	from	little	right	no
up	will	call	get	now

As you can see, you do not have to know every English word in order to read most materials.

The good news is that the same is true with plant names



Did You Know?

There are over 230, 000 known plants in the world.

Canada has over 5,000 different plants.

(Source: Redpath Biodiversity Project)

To do your job well as a horticultural technician you do not need to know the names of all the plants in the world. You do not need to know the names of all the plants in your hardiness zone. But you do need to know the names of all the plants on your site.

When you are on a site, your supervisor and/or your co-workers will use plant names when they are giving you work instructions. You may be told to “move the Dahlias into the shed”. To do your job correctly, you must know which plants are the Dahlias.



Plant Names

There are thousands and thousands of different plants in the world. Plant names can be difficult to read and difficult to remember. Many of their names will be unfamiliar to you, and some of them will be difficult for you to pronounce. It is almost like learning a new language.

When learning a new language, you usually start by learning **basic** vocabulary words first. You learn the words that name people, places and things. These words are called **nouns**. Examples of nouns include sister, house and dog. Next, you may learn the words that describe these nouns such as, **big** sister, new house and **good** dog. These descriptive words are called **adjectives**.



Learning Activity – Plant Names

Take a minute to answer these questions about one person in your immediate family and one person in your distant family.

- What are their first names?
a. _____ b. _____
- What are their last names?
a. _____ b. _____
- What do they look like?
a. _____ b. _____
- Where do they live?
a. _____ b. _____
- Where were they born?
a. _____ b. _____
- How tall are they?
a. _____ b. _____

Write a paragraph describing the ways you could tell them apart.



Naming Plants

In the last exercise, we named and described people. Plants, like people, have family names, exact names and **common names**. Common names are nicknames that usually describe a feature of the plant. Most people will recognize a Bluebell by the way it looks. The plant is blue and is shaped like a bell.

Generally, common names for plants are used on a work site. However, it is important to know that plant nicknames can be different in different places. To avoid confusion and to help people communicate information about plants worldwide, a **Binomial system** for naming plants is used. Binomial means having two names. For example, *Diets bicolour*. The first name (*Diets*) tells you the plant's family name. The second name usually describes a characteristic of the plant (*bicolour*). Often, you'll see a name in quotation marks; this tells you it is a man-made variety, called a cultivar.

Person, Place or Thing

The person who discovers a new plant can give it a name. Sometimes the name is related to the person who found it, or it is named in honour of someone. For example, *Hypericum edisonianum* is named after Thomas Edison. The place where the plant is found can also be used, for example *Cornus florida*. The shape of the plant is sometimes found in its name. For example, the plant *Viburnum dentatum* (think of dentures) has toothed leaves. Sometimes the colour is used in naming. *Acer rubrum* is the Red maple (**rubrum** is Latin for red).

Learning Activity – Latin Name Game

Using a computer, tablet or cell phone, go online to:

https://www.bbc.co.uk/gardening/htbg/features/latin_names.shtml

Click on the interactive link for Latin Naming and play the Latin Name Game. Enjoy!

Reading Plant Labels

On plant labels, you will find the family name is written first. It always starts with a capital letter. *Buddleia* starts with a capital B. The descriptive or "exact" name is written second. It always starts with a small letter, for example, *dauidii*. Both names, *Buddleia dauidii*, are written in a language called Latin. Latin is the common language used for plant identification all over the world.

Many English words have Latin root words. A root word is a word or part of a word that is found in many other words. Sun is the root word of sunshine, sunlight, sunny, and Sunday. These root words often help us to find the meaning of words that may not be familiar to us. In plant names, some of the Latin descriptive words are similar to English words that you may already know. We will explore this concept further in the Learning Activity below.



Learning Activity - Resemblance

Look at the following Latin descriptive words for plants. What English words do you think they resemble? Write your answers in the space provided.

- 1. fragrantissima _____
- 2. compacta _____
- 3. californica _____
- 4. montana _____
- 5. elephan _____
- 6. mega _____
- 7. grandi _____
- 8. aquatica _____

Example of Binomial Naming

<p>This is Rosemary White. White tells you what family she belongs to. Rosemary is her exact name. Everybody calls her Rosie. In the phone book she is listed with all the other Whites as White, R.</p> 	<p>This is Buddleia davidii 'Royal Red'. Buddleia is the family or <i>generic name</i>. davidii is the <i>species</i> or kind of buddleia. 'Royal Red' is the particular kind of buddleia that has been made by humans, a <i>cultivar</i>. Everybody calls it a Buddleia.</p> 
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"Binomial nomenclature is a formal system of naming species of living things by giving each a name composed of two parts, both of which use Latin grammatical forms, although they can be based on words from other languages." - Wikipedia



Learning Activity – Difficult to Remember Names

1. Underline the family name of the following plants.
 - Hermodactylus tuberosus
 - Muscari latifolium
 - Ferraria crispa
 - Calochortus albus





2. Circle the describing name (species) of the following plants.
 - Hyacinthoides hispanica
 - Zephyranthes grandiflora
 - Watsonia beatricis
 - Chirita lavandulacea

3. Circle which of the following are cultivars.
 - Tradescantia pallida 'Purple Heart'
 - Gerbera jamesonii
 - Antirrhinum majus 'Trumpet Serenade'
 - Bolax gumifera

Symbols on Plant Labels

Symbols are images used to convey information to the reader. Symbols appear just about everywhere we look. Road signs, box labels and prescription labels all represent examples of labels we may find in our daily living. Symbols are a substitute for words.

In the case of plant labels, symbols are used to describe what conditions the plant needs to survive.

			
shade	full sun	partial sun	drought resistant



Learning Activity – Types of Plants

Use the Internet or gardening books to research the following:

1. List five shade plants.



2. List five full sun plants.

3. List five drought resistant plants.



Memory Use

Zoom

Hunters, scientists, astronomers and doctors all understand the importance of zooming in on an object. Hunters look through rifle scopes, focusing on their prey. Scientists peer down microscopes, studying objects that can't be seen by the naked eye. Astronomers use telescopes, getting a closer look at a star or planet that is very far away. Doctors use stethoscopes for listening only to the heartbeat. Mechanical scopes help us focus our attention on a specific object. These various types of scopes all have one thing in common: they eliminate the unimportant details and allow us the opportunity to pay attention to what is truly important. For example, in the case of hunters, the scope allows them to focus on the deer and not the surrounding trees.

We can also narrow our focus without using mechanical scopes. Our brain acts like a scope every day. It recognizes and sorts information into meaningful patterns that allow us to live our daily lives. We eliminate unimportant information and focus on the information that we need. If we had to pay attention to everything around us all the time, we wouldn't be able to do anything. For example, if you're playing a game of darts and you're looking everywhere in the room but the board, you won't hit the bull's-eye. To hit the bull's-eye, you need to focus your attention on the bull's-eye and practise throwing your darts at it. Memory works the same way.

Focus

When learning new information, you have to pay attention and learn the information, or you won't remember it. Be an active listener. For example, when people introduce themselves and you're not paying attention, you won't remember their names because you didn't learn them. Sometimes people will say, "**I have a bad memory**" when what they mean is, "**I wasn't paying attention**".

Tips to help with your memory:

- If someone tells you something, for example, the ideal weight of a package, repeat that weight out loud. Saying something out loud (numbers, names, colours) helps us to remember the information.
- Take notes in a notebook. Write the information down. If you cannot write it down immediately, write it down as soon as you get a break. Writing information helps you to remember it.
- If you have trouble writing the information, draw diagrams and pictures to help you remember. Don't worry about how "good" a drawing is, because it just needs to remind you.
- Visualize the information. Picture the information in your mind. See the number, the name, the colour, even the process of doing something in your mind. Rehearse it in your mind. Picture yourself doing the task or saying the information out loud. Visualization is a good tool.
- The more you understand something, the more likely it is that you will be able to remember it. If you don't understand, ask questions.
- To help you remember something that you are reading, try highlighting important information.

People use many different tricks to help them remember things. Memory tricks work best when you create them yourself. When something is familiar to you, chances are you will remember it better.

Learning new material is easier if you connect it to something that is familiar to you. You can use colours, shapes, smells, sounds and even how something feels to help you create links with things you already know. For example, lamb's ear is a plant that has a soft velvety leaf.



Learning Activity – Word Associations

Write the first word you think of when you read each of the words in the following list. Do not use opposites.

- | | |
|-----------|----------|
| 1. Bell | 1. _____ |
| 2. Yellow | 2. _____ |
| 3. Soft | 3. _____ |
| 4. Hot | 4. _____ |
| 5. Snow | 5. _____ |
| 6. Green | 6. _____ |



Learning Activity – Plant Match

Look at the following plant pictures. Pay attention to the shape of the plant and match the pictures to the names listed. Write the correct letter in the space provided.



A



B



C



D



E



F



G

1. Bleeding Heart _____
2. Bird of Paradise _____
3. Sunflower _____
4. Pitcher Plant _____
5. Elephant Ears _____
6. Venus Fly Trap _____
7. Spider Plant _____



Tricks to Help You Remember

Sometimes, how something looks, smells, sounds or feels won't remind you of something you already know. Another way to help you remember new information is to create "silly links". The sillier the link, the more likely you are to remember it. For example, if you want to remember the flower Hollyhock, you could say "my girlfriend Holly has a hawk". Here's another one: to remember the flower called peony (pee-o-knee), you could say, "don't let your dog pee on my knee". You don't have to be exact, but you do have to be silly. Let's try some more.

Learning Activity – Silly Names

Create a silly link for each of the plant names.

1. Marigold _____
2. Yucca _____
3. Petunia _____
4. Pansy _____
5. Hosta _____

Learning Activity – Memory Tricks

Organizing information into groups is another trick that is helpful when you are learning new material. It is easier to remember things in groups, instead of as a list of single items.

1. Look at the following word list for **ten seconds** and try to remember as many words as you can, in the order they are written. Cover the list and complete the activity without looking at the list.

<p>soccer</p> <p>cake</p> <p>baseball</p> <p>pizza</p> <p>basketball</p>	<p>cereal</p> <p>skating</p> <p>tennis</p> <p>popcorn</p> <p>hockey</p>
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2. List the words you remembered. (Don't peek at the list.)

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

3. It is easier to remember words that have things in common. Remembering unrelated words is more difficult. Now, look at the list again for ten seconds and see how many sports words you can remember.

Sports



- Without looking at the list again, can you think of a second group that the remaining words would fit into?

Group #2 _____

The material and learning activities in the above sections was created by Community Literacy of Ontario and the Tri-County Literacy Council (based on Curriculum originally produced by Literacy Link Eastern Ontario). These organizations have given their permission for Landscape Ontario to use this material.



Recheck Your Skills

Now that you've completed the module, let's see how you feel about your plant identification skills. Read each of the statements below and select the response that best describes you.

Statements	I can do this	I would like to do this better	I can't do this
I can identify deciduous trees (common name, Latin name and by sight)			
I can identify coniferous trees			
I can identify deciduous shrubs			
I can identify evergreen shrubs			
I can identify vines			
I can identify perennials			
I can identify ornamental grasses			
I can identify annuals			
I can identify invasive species			
I can identify common plant identification strategies			

Now you can go back to the assessment that you completed prior to starting the module and see where you feel your plant identification skills have improved and areas that you can continue to focus on.



Additional Resources

Below you will find a list of other resources you can look at to help you with your foundational skills.

5 Tips For When You Need Help Identifying A Plant

<https://nature-mentor.com/need-help-identifying-a-plant/>

Leaf Patterns

https://en.wikipedia.org/wiki/Glossary_of_leaf_morphology

Plant Identification: A Practical Approach

<https://www.wildernesscollege.com/plant-identification.html>

WorldPlants.ca: North America's Largest Plant Database

<https://worldplants.ca/>

PlantNet (Mobile App)

<https://plantnet.org/en/>

PlantSnap (Mobile App)

<https://www.plantsnap.com/>

PictureThis (Mobile App)

<https://www.picturethisai.com/>



Answer Key

Activity – Plant Names

1. Answers will vary.
2. Answers will vary.

Activity – Latin Name Game

Online learning activity.

Activity – Resemblance

1. Fragrant
2. Compact
3. California
4. Mountain
5. Elephant
6. Big
7. Grand
8. Aquatic

Activity – Difficult to Remember Names

1. Hermodactylus
Muscari
Ferraria
Calachortus
2. Hispanica
grandiflora
beatricis
lavandulacea



3. Purple Heart' and 'Trumpet Serenade'

Activity – Type of Plants

1. Answers will vary.
2. Answers will vary.
3. Answers will vary.

Activity – Word Associations

- Answers will vary.

Activity – Plant Match

1. A
2. F
3. G
4. B
5. E
6. C
7. D

Activity – Silly Names

- Answers will vary.

Activity – Memory Tricks

- Answers will vary.

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