



GARDEN LEARNERS

Unofficial Study Guide - RHS Level 2
Certificate in The Principles of Plant
Growth and Development.

Unit 1.

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Topic 1 – Plant Science I

Element 1 – Scientific and Common Plant Names

1.1.1 The Importance of Scientific Names and Their Use, including Formatting Conventions.

This guide offers a clear overview of why scientific names are crucial in horticulture and how to use them effectively.

It explains the limitations of common names, the principles of plant taxonomy, and the role of plant families.

You'll learn the rules of the binomial naming system, how to interpret Latin names, and how to write names for cultivars, hybrids, and natural subgroups like subspecies, varieties, and forma.

The guide also covers the difference between trade names and cultivar names, alongside a formatting recap to help you apply the conventions accurately.

Understanding the Role of Scientific Names in Horticulture

1. Why Do Scientific Names Matter?

Common names vary widely by region, culture, and even individual interpretation. For instance:

- **"Bluebell"** might mean *Hyacinthoides non-scripta* in England, *Campanula rotundifolia* in Scotland, or *Mertensia virginica* in the US.

To avoid this confusion, horticulture uses **scientific names**, which:

- Work internationally
- They are stable and unambiguous
- Show how plants are related
- Help professionals (nurseries, designers, gardeners) avoid costly mistakes

2. Introduction to Plant Taxonomy

Plant taxonomy is the science of classifying plants based on shared characteristics. It helps organise the enormous diversity of plant life into a logical system.

Plants are classified into a hierarchy:

- **Kingdom** – Plantae (all plants)
- **Phylum** – e.g., Tracheophyta (vascular plants)
- **Class** – e.g., Angiospermae (flowering plants)
- **Order** – e.g., Asterales
- **Family** – e.g., Asteraceae (the daisy family)
- **Genus** – e.g., *Helianthus* (sunflowers)
- **Species** – e.g., *Helianthus annuus* (common sunflower)

As you move down the hierarchy, plants in each group share more features. For horticulturists, the most useful levels are **family**, **genus**, and **species**.

3. Plant Families

Plant families group together plants that share similar floral structures and reproductive traits. Family names always end in **-aceae**.

Understanding plant families helps gardeners predict characteristics like:

- Flower shape
- Pest and disease susceptibility
- Growth habit

Some important examples:

- **Rosaceae** – Rose family: includes apples (*Malus* spp.), cherries (*Prunus* spp.), and hawthorns (*Crataegus* spp.)
- **Fabaceae** – Pea family: includes sweet peas (*Lathyrus* spp.), beans (*Phaseolus* spp.), and clovers (*Trifolium* spp.)
- **Brassicaceae** – Cabbage family: includes broccoli (*Brassica oleracea* var. *italica*), turnips (*Brassica rapa* subsp. *Rapa*), and wallflowers (*Erysimum cheiri*)
- **Asteraceae** – Daisy family: includes sunflowers (*Helianthus* spp.), dandelions (*Taraxacum officinale*), and echinacea (*Echinacea* spp.)

4. The Binomial Naming System

Introduced by Carl Linnaeus in the 18th century, **binomial nomenclature** gives each plant two names:

1. **Genus** – Always **capitalised** and *italicised*
2. **Specific epithet (species)** – Always **lowercase** and *italicised*
Example: *Acer palmatum* (Japanese maple)

When handwritten, use underlining instead of italics: Acer palmatum

5. What You Can Tell From Scientific Names

- **Descriptive traits:**
 - *alba* = white
 - *repens* = creeping
 - *annuus* = annual
 - *odoratus* = fragrant
- **Origins or habitats:**
 - *palustris* = of the marsh
 - *sylvatica* = of the woods
 - *lusitanicus* = from Portugal
- **Commemorations:**
 - *willmottiae* = after Ellen Willmott

6. Beyond the Species: Subgroups

Sometimes plants are split into further groups:

- **Subspecies** (subsp.): A naturally occurring population that is slightly different and often geographically isolated
Example: *Gleditsia triacanthos* **subsp.** *inermis* (Honey Locust)
- **Variety** (var.): A naturally occurring variant within a population
Example: *Salix x sepulcralis* var. *chrysocoma* (Golden Weeping Willow)
- **Forma** (f.): A minor difference, such as flower colour
Example: *Malva moschata* **f.** *alba* (White Musk Mallow)

These terms are not italicised, but the Latin names still are.

7. Cultivars (Cultivated Varieties)

- Selected by humans for desirable traits (e.g., colour, size, disease resistance)
- **Always in single quotes, capitalised, and not italicised**
- Example: *Echinacea purpurea* 'Magnus'

If the cultivar name is unknown, use cv. e.g., *Salvia nemorosa* cv.

8. Hybrids

- Created by crossing two species or genera
- Use the **× symbol**, not the letter "x"

Interspecific (between two species):

Example: *Magnolia × soulangeana* (*Magnolia denudata* × *Magnolia liliiflora*)

Intergeneric (between two genera):

Example: ×*Heucherella* 'Tapestry' (*Heuchera* × *Tiarella*)

9. Trade Names vs. Cultivar Names

- **Trade names** are marketing tools: often in ALL CAPS or with ™ or ®
- **Cultivar names** are official and universal

Correct: *Hydrangea paniculata* 'Limelight'

Trade label: LIMELIGHT® Hydrangea

10. Latin Names Formatting Rules Recap

Component	Format	Example
Genus	Capitalised, italicised	<i>Acer</i>
Species	Lowercase, italicised	<i>palmatum</i>
Subspecies	'subsp.' not italicised	<i>Lavandula pedunculata</i> subsp. <i>pedunculata</i>
Variety	'var.' not italicised	<i>Hosta fortunei</i> var. <i>aureomarginata</i>
Forma	'f.' not italicised	<i>Malva moschata</i> f. <i>alba</i>
Cultivar	In single quotes, capitalised, not italicised	<i>Lavandula angustifolia</i> 'Hidcote'
Hybrid (×)	Multiplication symbol, not italicised	<i>Anemone</i> × <i>hybrida</i>

Quick Recap

- Scientific names avoid confusion caused by regional common names.
- Plants are classified hierarchically: Kingdom → Phylum → Class → Order → Family → Genus → Species.
- Family names always end in **-aceae** (e.g., Rosaceae, Fabaceae).
- The **binomial system** uses Genus (capitalised, italicised) + species (lowercase, italicised).
- Latin epithets can describe traits, origins, or honour people.
- Subgroups include **subspecies (subsp.)**, **variety (var.)**, and **forma (f.)**.
- **Cultivars** are written in single quotes, capitalised, not italicised.
- **Hybrids** use the multiplication symbol ×, not the letter “x”.

Applying This Knowledge in Practice

- Using correct Latin names avoids confusion in plant sales, design, and garden maintenance.
- Accurate naming supports **best practice** when ordering or labelling plants, ensuring the right species is planted in the right place.
- Recognising synonyms and cultivar names prevents duplication in plant records and supports sustainability through better resource management.
- Following accepted naming conventions reflects **professionalism and integrity** in horticultural work.

End-of-Section Quiz

The following multiple-choice questions are written in a style like those in Section A of your exam paper. (Please note picture-based questions are not included at this stage.)

Direct Questions

1. What does the word *alba* indicate in a plant's scientific name?
 - a. Fragrant
 - b. White
 - c. Creeping
 - d. Annual
2. Which part of the scientific name is always capitalised and italicised?
 - a. Species
 - b. Subspecies
 - c. Genus
 - d. Cultivar
3. How should a hybrid between two species be correctly written?
 - a. x *Magnolia soulangeana*
 - b. *Magnolia* X *soulangeana*
 - c. *Magnolia* × *soulangeana*
 - d. *magnolia* × *Soulangeana*

True/False

4. Common names are reliable and consistent across regions.
 - a. True
 - b. False
5. Family names in plant taxonomy always end in *aceae*.
 - a. True
 - b. False

Which of the following...

6. Which of the following are correctly formatted cultivar names?

- a. *Lavandula angustifolia* Hidcote
- b. *Lavandula angustifolia* 'Hidcote'
- c. *Lavandula angustifolia* "Hidcote"
- d. *Lavandula angustifolia* 'Hidcote'

7. Which of the following could describe natural subgroups within a species?

- a. Cultivar
- b. Forma
- c. Subspecies
- d. Trade name

Select Multiple Correct Answers

8. What are the reasons for using scientific names in horticulture?

- a. They are internationally recognised
- b. They allow for creative naming
- c. They reduce confusion between different regions
- d. They identify plant relationships

9. Which elements are italicised in botanical naming?

- a. Genus
- b. Species
- c. Cultivar
- d. Subspecies epithet

10. Which of the following plant names shows correct formatting?

- a. *Rosa* 'Gertrude Jekyll'
- b. *Rosa rugosa* var. *alba*
- c. *Rosa Rugosa*
- d. *Lavandula angustifolia* 'Hidcote'

Answer Key for Self-Checking

1. b
2. c
3. c
4. b
5. a
6. b, d
7. b, c
8. a, c, d
9. a, b, d
10. a, b, d

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