PLANT IDENTIFICATION I
LEARNING HOW TO IDENTIFY LANDSCAPE PLANTS

Our goal: Be efficient and make a positive and correct identification using the fewest number of steps.
HOW TO DO IT?

1. Understand that plants have a unique set of identifiable characteristics. For visual identification in the field, these characteristics may be classified as micro, macro, and gestalt.

2. Identify what are the unique set of observable characteristics that may be associated with a plant species.

3. Develop a means of associating these characteristic with the plant name.

4. Practice the spelling and pronunciation of each plant name. Repetition is the key to success, just like improving at any sports activity or musical instrument.
THE NAMING OF PLANTS

There are two systems for naming plants:

1. The common system for naming plants is dynamic and is simultaneously reliant on personal and general consensus and the ‘rule of the mob’.

2. The scientific system for naming plants is based on a patterned set of rules and laws and is immune to popular opinion.
PROBLEMS WITH COMMON NAMES

• Confusing and misleading
  o Yew pine - *Afrocarpus gracilior*
    • Neither a yew nor a pine

  o Bird-of-paradise – two plants locally *Caesalpinia pulcherrima, Strelitzia regina*

  o Evergreen elm, evergreen pear
    • *Neither are totally evergreen in central Arizona*
ADVANTAGES OF SCIENTIFIC NAMES

• They are recognized as the ‘real name’ of a plant by everyone everywhere

• They are often descriptive of a plant’s character or its history

• You are assured of getting exactly the plant you want
SCIENTIFIC NAMES ARE BASED ON THE SCIENCE OF PLANT TAXONOMY

It’s the science that finds, describes, classifies, identifies, and names plants.

Taxonomy uses a system of rules that group plants into successive categories to show relationships resulting in a hierarchy.
Scientific Names

- Kingdom (Plants, Animals, Fungi, Bacteria)
- Phylum
- Class
- Order
- Family
- Genus
- species

These 2 together identify the plant. This is the Linnaean binomial system of nomenclature developed by Carl von Linne 250 years ago.
An example:
Indian rosewood

- Kingdom: Plantae
- Phylum: Spermatophyta
- Class: Eudicots
- Order: Fabales
- Family: Fabaceae
- Genus: *Dalbergia*
- Species: *sissoo*

Note: Genus name is always capitalized, species is not
FAMILIAR SCIENTIFIC NAMES

- Nerium oleander
- Aloe vera
ZEEDONIK
PLANT HYBRIDS

- **Hybrid** is the offspring resulting from cross-breeding different plants
  - *Prosopis alba* x *Prosopis chilensis*

- **Variety** (var.) is a natural variation within a species
  - *Pinus brutia* var. *eldarica*

- **Cultivar** is a cultivated variety
  - *Ruellia simplex* ‘Katie’

- **Trademarked** are bred by a nursery who owns rights to sell name of plant
  - *Eremophila maculata* ‘Valentine’™
Grapefruit is a hybrid of sweet orange and pomelo. Interestingly, sweet orange is a hybrid of pomelo and mandarin.
**Parkinsonia tree hybrids**

- Combo of three *Parkinsonia* species: *P. florida*, *P. microphylla*, and *P. aculeata*
X Chitalpa tashkentensis

• Combination of *Chilopsis linearis* and *Catalpa bignonioides*
CULTIVAR SELECTIONS

- A **cultivar** is a selection of a plant that was made under cultivated conditions (by humans versus by Mother Nature).

- The **cultivar name** is a unique name given to these plants because of some set of unusual decorative or useful characteristics.
Purple hopseed bush

Dodonaea  
Genus  
Capitalized  

viscosa  
species  
not capitalized  

‘Purpurea’  
Cultivar  
Capitalized  ‘with single quotes’
Melaleuca viminalis ‘Little John’
VARIETY SELECTIONS

• **Varieties** are a population of plants within a species that display clear differences, differences that occur in natural populations. A **variety** is a selection of a plant that was made under natural (not cultivated) conditions.
Leucophyllum frutescens var. green cloud

Never capitalized unless part of a proper name
PRONUNCIATION

• Follow guidelines for Latin or Greek
• Use commonly used pronunciation
  o Caesalpinia pulcherrima
  o Pittosporum tobira
• Give it your best shot!
• Don’t get into arguments over ‘correct’ pronunciation
PLANT IDENTIFICATION

• Scientific names (but not their pronunciation) are important for the exam.
• Some exam questions require you to know common names.
• **BUT**... Don’t rely on common names when you want something specific.
DON'T WALK BY AN UNKNOWN PLANT. NOTE IT. LEARN IT.

• Take a picture
• Take a piece
• Take time to learn it
PLANT IDENTIFICATION

RESOURCES

- Individual people that know their plants
- Plants Societies
- Nurseries
- Books
- Botanical Gardens and Arboreta
- Conferences and Trade Shows
- Internet
PLANT PROBLEMS
ID TOOL

• Get a 16x hand lens if you don’t already have one. You will see a whole new world
• This is as basic a tool for a landscape professional as a pair of gloves
LEAF TERMINOLOGY
LEAF TERMINOLOGY

Blade
Petiole
Winged
SIMPLE LEAF

- **Blade**
- **Petiole**
LEAF AXIL AND NODE
LEAF ARRANGEMENTS

One leaf per node

Opposite Leaves

Fascicled

Alternate Leaves

Whorled Leaves

Three or more leaves per node

Two leaves per node
LEAF TEXTURES

Glabrous

Pubescent
STIPULE

Stipule (fused to petiole)
MARGIN

Ciliate
with fine hairs

Crenate
with rounded teeth

Dentate
with symmetrical teeth

Denticulate
with fine dentition

Doubly Serrate
serrate with sub-teeth

Entire
even, smooth throughout

Lobate
Indented, but not to midline

Serrate
Teeth forward-pointing

Serrulate
With fine serration

Sinuate
With wave-like indentations

Spiny
With sharp stiff points

Undulate
Widely wavy
Patterns of Leaf Venation

Venation

- **Arcuate**: secondary veins bending toward apex
- **Cross-Venulate**: small veins connecting secondary veins
- **Dichotomous**: veins branching symmetrically in pairs
- **Longitudinal**: veins aligned mostly along long axis of leaf
- **Palmate**: several primary veins diverging from a point
- **Parallel**: veins arranged axially, not intersecting
- **Pinnate**: secondary veins paired oppositely
- **Reticulate**: smaller veins forming a network
- **Rotate**: in peltate leaves, veins radiating
Leaves come in many shapes, sizes and textures!
COMPOUND LEAVES

Pinnately Compound

Twice Pinnately Compound

Palmately Compound
COMPOUND LEAVES

*Fraxinus velutina* (Arizona ash) – 3 to 5 leaflets per leaf

*Fraxinus uhdei* (Shamel ash) – 7 to 9 leaflets per leaf

*F. velutina*  
*F. uhdei*
COMPOUND LEAVES

• Twice Pinnately Compound
COMPOUND LEAVES

Palmately Compound Leaves
ARMED STEMS
WINGED PETIOLE

CITRUS HAS WINGED PETIOLES

CITRUS LEAVES WILL HAVE EITHER A MEDICINAL ODOR, A SPICED ODOR OR A NATURAL ODOR
SELECTING NEW PLANTS

HERE ARE SOME TOP TO BOTTOM QUALITY INSPECTION POINTS TO LOOK FOR...
ROOTS

Inspect the roots first.

If the roots are not good, it does not matter how much you like the rest of the plant...

leave it at the nursery.
INSPECT FOR QUALITY

WHAT MAKES A QUALITY PLANT?

ROOTS

- Roots are not covered by ANA specs. It is up to you to be a smart shopper and inspect the roots. If a nursery won’t let you inspect the root ball, go to another nursery.
ROOT INSPECTION

• Have the roots been cut off at the bottom of the container?
• Bounce test for root development problems.
• Are there weeds growing in the root ball? Weeds are competition for water and fertilizer and a sign of poor plant maintenance at the nursery and a source of new weeds in your landscape.
• Look for kinked or girdling roots. If you buy the plant, you must correct the problem at planting.
  DON’T CUT BOUGAINVILLEA ROOTS!
IS YOUR PLANT ROOT BOUND?
INSPECT THE FOLIAGE

• LEAF SIZE – Do they look good?
• LEAF DENSITY – Are the leaves well distributed on each branch and throughout the crown? Are the branches themselves evenly distributed throughout the crown vertically and radially, or if not perfect, can it be faced for its planting location in the landscape?
• IS THERE ANY INSECT DAMAGE?
• ANY SIGNS OF DISEASE?
• ANY SIGNS OF NUTRITIONAL DEFICIENCIES?

AVOID “SHRUBS ON A STICK”
INSPECT THE TRUNKS

• Straight trunks are nice but not as important as trunk taper. Good taper is important for strength. Good taper distributes wind forces downward incrementally.
• Check for nursery stake damage to trunk.
• Branches and small stems – Look for many evenly distributed over the entire trunk. They will increase trunk taper, caliper and strength and feed the roots. Compromise with your customers regarding suckers/temporary branches for the long term benefits they offer.
INSPECT THE TRUNKS

CHECK FOR

• Co-dominant leaders
• Included bark
• Bark injury
• Topped trees or radical pruning
INSPECT THE TRUNKS

ROOT FLARE

• Locate it, inspect it, check roots from it and around it. Any girdling roots will have to be cut.
• Check plant depth in container. Beware of skinny stems propped up with mulch.
• Find a system to keep it visible for depth verification prior to granite or mulch placement.
TREESIZE SPECIFICATIONS

- ANA – Arizona Nursery Association

Arizona Nursery Association Grower’s Committee Recommended Average Tree Specifications

Included in resource list for this class
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NATIONAL TREE AND SHRUB SPECIFICATIONS

AMERICAN STANDARD FOR NURSERY STOCK
• ANSI Z60.1–2004
• Approved May 12, 2004