Horticulture Identification and Judging Contest

Plant Nomenclature

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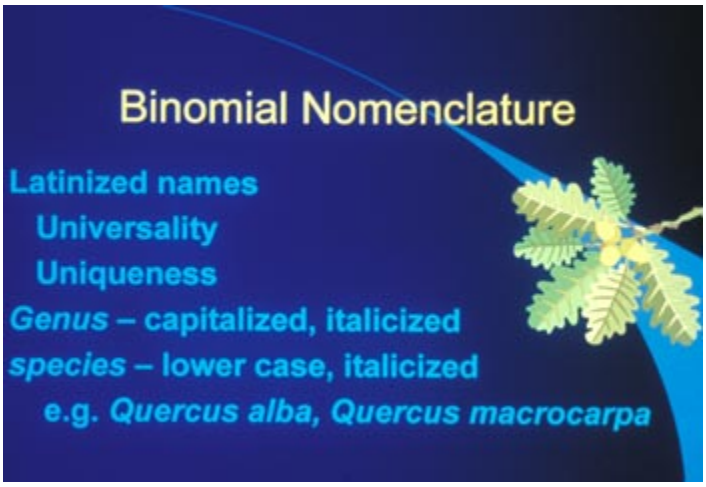
Botanical nomenclature is a relatively young science when compared to other sciences. It arose out of the need for a universal system of naming plants and other organisms. To the laymen Latinized names may seem trivial or burdensome. But, with over 200,000 types of plants described, the potential for confusion becomes immediately evident. Some very different plants share the same common name. Other plants have many different common names for the same type plant. Common names like pineapple do not indicate a true relationship. Pineapples are not related to either pines or apples.

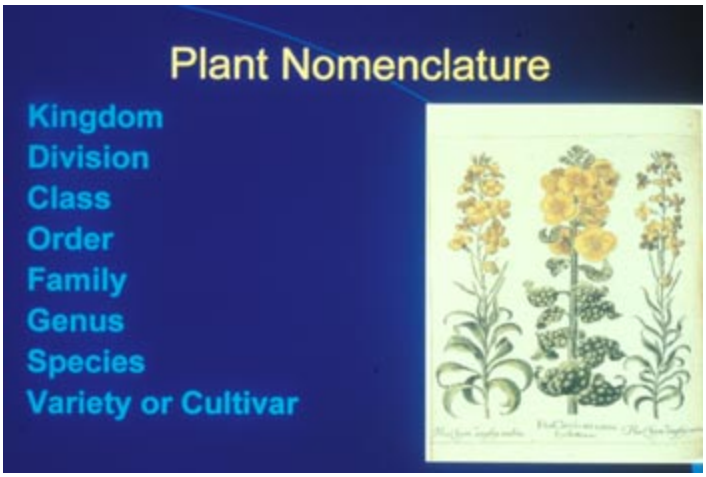


Since the beginning of spoken language, people have attached names to things important to them. A name is nothing more than a handle by which we pass along a mental image. Plants were important to early peoples for food, fiber, lumber and other products. As long as the number of objects in ones surroundings are relatively limited, there is little trouble in mastering knowledge of them. As one's range of vision increases, the need to group items becomes necessary. Names for plants changed between people of different geographical areas and languages. Being able to accurately communicate plant names between different cultures became more important as commerce increased.

Plato (427-347 B.C.) and his student Aristotle (384-322 B.C.) developed the first known procedure for systematically naming plants and animals. Their system and others were based on visual characteristics such as leaf shape and plant form. Other systems developed for naming plants relied on long, detailed descriptions. These descriptive names, generally in Latin were too long for practical use. Early botanists contributed to the base level of knowledge but failed to develop a system for naming plants that worked well. Nevertheless, these systems remained functional until the late 1600s when European explorers began to discover large numbers of new organisms that defied classification with European specimens.

The study and classification of plants remained in a confused state until **Carl von Linné** (1707-1778). It was the custom at that time for all scholars to write in Latin. Linné was so intrigued by Latinized names that he modified his own name to reflect this trait. This is why he is now best known by his Latinized name, **Carolus Linnaeus**.

Linnaeus was born in southern Sweden and educated as a medical doctor. Pharmacies were unheard of in those days so physicians had to become adept at recognizing and preserving plants with medicinal value. Linnaeus became more interested in the botanical side of medicine and specifically in the distribution of plants.



The system that Linnaeus developed used **floral characteristics to put plants into groups**. While the system has been modified greatly, it is the basis of the **binomial** (two name) system used for naming all living organisms. The study of identification, nomenclature (naming) and classification of objects is called **taxonomy**. When it deals with plants it is often called **systematic botany** and is considered to be the mother of all biological sciences.

The classification and naming of plants now operates under a system of rules called the International Code of Botanical Nomenclature. The largest unit, called the kingdom, is divided and subdivided into successively smaller units.

These units and some examples are as follows:

Unit	**Example**
Kingdom	Plant
Division	Tracheophyta (vascular plants)
Subdivision	Pteropsida (ferns & seed bearing plants)
Class	Angiosperms (flowering plants)
Subclass	Dicotyledoneae
Order	Rosales
Family	Rosaceae
Genus	Rosa
Species	rugosa
Variety/cultivar	'Alba'
Form	---
Clone	---

The class called **Angiosperms** are plants that produce true flowers. Many plants used in the horticultural trade fall into this group. **Gymnosperms** produce seeds differently than Angiosperms and are represented by cycads, ginkgo and conifers.

The class called Angiosperm is divided into two groups or **subclasses: monocotyledons** (e.g. grass, corn, dracaena) and **dicotyledons** (e.g. beans, rose, oaks) based upon number of cotyledons in the seed (1 or 2). A subclass is divided into **orders**. Only rarely are references made to orders of plants, although it quite common among animals.

The next major division is called a **family**. It is at this point that we really begin to see distinct differences in plant habitat and appearance. Almost all family names end in **-aceae**.

When we talk about the binomial system of nomenclature it is the **genus** and **species** that we are referring to. It was Linnaeus who pioneered the use of these two scientific or Latinized names that distinguish a plant from all others.

Genus is the singular form of the word, **genera** is the plural form of genus (i.e. one genus, two genera). Species is both singular and plural (i.e. one species, two species). The word specie refers to coins. The genus is always capitalized and the species is always in lower case letters. Both of these words are either italicized or underlined (i.e. *Acer rubrum* or Acer rubrum). Italicization is preferred.

It was Linnaeus's idea for the genus to show relationship just as your last name does. The species identifies the individual like your first name does. Latin was chosen as the language of science because it is a dead language (no longer changes) rather than a language such as English that is still changing by adding words, phrases, meanings, etc. The genus is always singular, has gender (masculine, feminine, or neuter) and acts like a noun. The species generally reflects the gender of the genus and acts like an adjective to describe "which one." In Latin all nouns have gender. The gender of a noun does not reflect any attribute of a plant but is just a characteristic of the language.

Sometimes we find an individual plant in a species like *Acer rubrum* (red maple) that is unique. This individual might be more valuable because of a characteristic such as form, ultimate size, leaf color, flowering characteristics, or resistance to diseases and insects. Because of these unique characteristic(s) this plant deserves to be propagated so other people can enjoy it. To make this designation a unqiue plant is given it a unique name so it can be distinguished from other members of the species with different traits. The solution is to make it a named **cultivar**.

The word cultivar results from the combination of two words, **cultivated** and **variety**. Varieties are always naturally occurring while cultivars are propagated and grown by horticulturists and others who appreciate their unique traits. A cultivar name is always capitalized and enclosed in single quotation marks or preceded by the word cultivar or the abbreviation Cv. An example of a cultivar is 'October Glory' red maple that has better red fall color than a typical plant of the species. This name may be written in any of the following ways (in order of preference from greatest to least):

Acer rubrum 'October Glory'
Acer rubrum Cv. October Glory
Acer rubrum Cultivar October Glory

Cultivars are almost always propagated **asexually**. This means that they will all be **genetically identical**. Seedlings of a species always have some genetic variability. Cultivars grafted onto seedlings have much less variability in shape and form than a seedling. The only variability seen in cultivars grown from rooted cuttings is from environmental and cultural differences. This is

very important when a uniform grouping of plants is desired. Landscape architects, landscape designers and horticulturists frequently specify a certain cultivar because of the unique traits that this plant offers. Making the decision to use cultivars in the landscape gives predictability. We know how big they will grow, what they will look like and what problems they may or may not have.

Plants that are genetically identical are called **clones**. Many plants such as spring bulbs naturally reproduce asexually forming clumps of plants that are all the same clone.

Forms are naturally occurring groups of plants that differ from other members of the same species. We often are not able to see these differences. Examples are winter hardiness, tolerance to different soils or other environmental adaptations. The flowering dogwood is a good example of a plant with different environmental adaptations. It grows naturally from central Florida to Michigan. They are all the same species but have become adapted to entirely different climates. A flowering dogwood that evolved in Florida would not survive a Michigan winter. Likewise, a plant from Michigan may not grow well in Florida.