
PLANT NOMENCLATURE AND CLASSIFICATION

Bert T. Swanson and Jeff Pilla

Plant Nomenclature

Plant nomenclature is the basis for uniform worldwide identification of, and communication about, plant materials. Guidelines for the naming of plants are set forth in the International Code of Nomenclature for cultivated plants.

It is important for nursery personnel to recognize, identify, and communicate about plants by both scientific and common names. A specific plant, correctly described by only one scientific name may have a number of common names. Professionals must know about plants' relationships to each other, scientific and common names, life cycles, structures and functions. Such basic botanical knowledge is integral to the art and science of horticulture. Customers expect industry representatives to be plant "experts". The only way to assure that a specific plant is being communicated accurately is to include the scientific name in its description. The following two examples show the many common names used for a single plant:

SCIENTIFIC: Arctostaphylos uva-ursi

COMMON: Bearberry, Bog Cranberry, Mealberry
Mountain Box, Bear's Grape,
Sandberry, Creashak, Kinnikinick

SCIENTIFIC: Carpinus caroliniana

COMMON: Blue Beach, American Hornbeam

The system of scientific nomenclature used today was developed in the 1700's by the Swedish botanist Carl Linnaeus (1707-1778). Linnaeus' system placed plants into groups based on similar characteristics. Large groups are subdivided into smaller groups based on more specific characteristics. Latin, the common language of Linnaeus' time, is still the international language of scientific nomenclature. Categories commonly used to describe plants are: Family, Genus, and Species. The system, set up by Linnaeus, is the one used in HORTUS THIRD, which is the most complete plant nomenclature reference available.

The complete scientific name of a plant developed or maintained under cultivation always includes the genus and species, and variety name, if applicable. The first two names are in Latin and the latter is in words of a common language as follows:

SCIENTIFIC: Viburnum trilobum 'Alfredo'

COMMON: Alfredo American Highbush Cranberry

Plant scientific names are called binomials because they consist of two names:

1. Genus, the plural is Genera.
2. Species, the plural is Species.

The genus name describes the type of plant, i.e. maple, oak, sumac, etc. The species name describes the individual plant within the genus, i.e. red maple, white oak, staghorn sumac, etc. The genus name is always capitalized. Both the genus and species names are always underlined or italicized. The species name is never capitalized. A botanical variety name ('var. '), a form ('F') or a sub-species ('ssp. ') may be added to the binomial.

The sub-species is a sub category of the species. It is a population of plants differing from others in a species, but not enough to be called a separate species. A variety is much the same as a sub-species, but it is less different from other plants in the species. Varieties are written as follows:

SCIENTIFIC: Clematis dioscoreifolia var. robusta

COMMON: Sweet Autumn Clematis

The word 'cultivar' is a term coined by contracting the term 'cultivated variety' and is different from the naturally occurring 'botanical variety'. Cultivar names are always capitalized and are set off in single quotation marks or preceded by the abbreviation 'cv' as follows:

SCIENTIFIC: Acer rubrum 'Northwood'

COMMON: Northwood Red Maple

A hybrid is commonly produced by crossing two or more species or cultivars. Most hybrid woody plants are vegetatively propagated because they either fail to produce viable seed or fail to come true if viable seed is produced. Hybrid cultivars require long, cumbersome names if the complete parentage is recited in the scientific name. Therefore, in most cases, hybrids are named by listing the genus and the cultivar

name only. The cultivar name is preceded by a capital "X" which designates that it is a hybrid as follows:

SCIENTIFIC: Malus X 'Radiant'

COMMON: Radiant Flowering Crabapple

The scientific botanical name is key to locating all information that is written about a particular plant. In addition, knowing a scientific name aids in establishing a reputation as a professional horticulturist.

Many common and botanical names are similar. As an aid in learning, it is judicious to recognize botanical names derived from countries of origin, names of plant explorers, or English words taken from Latin. Words such as chinensis, japonica, carolinianum, and canadensis are Latinized geographical names. The name, Syringa amurensis japonica or Japanese Tree Lilac, indicates that this plant is from Japan. The names douglasii, darwinii, and sargentii are taken from plant explorer names. Equally easy to recognize are Latin descriptive names, such as nana, rubra, and nigra.

Although the number of names to learn may seem overwhelming, it is very important that nursery and landscape professionals know the correct botanical and accepted common names of plants. True professionals know and correctly use the scientific nomenclature of plants.

Contracts, Patents and Trademarks

Naming of plants and individual plant names are influenced by various procedures or vehicles used to provide breeders or discoverers of plants some protection for their discovery and the rights to the profits from their discovery. These processes or vehicles include contracts, patents, trademarks, and others.

Contracts are based on common law rights of the plant breeder who negotiates a contract with a producer for a newly named cultivar. The cultivar under contract can only be sold under the contract name of that cultivar and only by the company signing the contract. Royalties are shared between the producer and the plant breeder.

A plant patent is a legal monopoly granted by the U.S. government to the plant discoverer, which permits the breeder or discoverer to prevent anyone else from producing or selling that patented plant for 20 years from date of application. No one can propagate or sell this patented plant without paying royalties to the

discoverer. Patented plants are sold under the name specified in the approved patent documentation.

A plant Trademark™ or Registration® provides a third, and more recent, means of providing legal protection to plant breeders. Because cultivar names are intended to be used freely for identification purposes and trademarks are restricted to use by an authorized person only, a cultivar name may not be considered a trademark. This creates some identification and marketing confusion as identical plants can be coded with different names as shown below:

<u>Genus</u>	<u>Cultivar</u>	<u>Registered or Trademark</u>
<u>Acer</u>	'Celzam'	Celebration®
<u>Betula</u>	'Cully'	Heritage®
<u>Ilex</u>	'Chamzin'	Nordic™
<u>Physocarpus</u>	'Monlo'	Diabolo®

Trademarks improve the marketability of a plant by providing a "catchy" name as well as legal protection of the product. Retailers can purchase a license to use the trademark with the fees being paid to the breeder. As more trademark names are assigned, proper identification of plants with a single internationally accepted name will become more difficult and confusing if full scientific nomenclature is not understood and adhered to.

Plant Classification

In addition to plants being named and identified according to specific characteristics, plants are also classified according to their life cycles: annual plants, biennial plants, and perennial plants. An annual plant is a plant that completes its life cycle in one year. It is a plant that grows vegetatively from seed, then forms flowers and produces seed, and then dies all in a single growing season or annually. Examples of annuals are cereal grains, beans, garden peas, marigolds, and petunias.

Biennial plants are plants that generally need two growing seasons to complete their life cycle. During the first season, the seeds germinate and the subsequent plants produce only vegetative growth, often as a rosette. In the second season, the plants produce flowers and fruits, and then die. Examples of biennials include foxglove, parsnips, hollyhocks, and money plant.

Perennial plants are plants that live for several years.

They may be either herbaceous or woody plants. Herbaceous perennials die back to the ground each year, but their roots survive. Each season, new vegetative growth arises from the root system. Examples of herbaceous perennials are daffodil, Hosta, iris, and peony. Woody perennials have persistent stems that remain for many years. Examples of woody perennials are maple, forsythia, pine, and rhododendron. Woody perennials are further categorized based on leaf retention. Plants such as sugar maple, that lose all of their leaves at the end of the growing season, are deciduous plants. Evergreens are woody plants that do not lose their leaves or needles all at once. However, in August, needles of evergreens that are four to seven years old often turn yellow and abscise. This annual discoloration and needle drop is a natural occurrence. New or younger needles are retained throughout the winter. Narrowleaf evergreens are plants with needle-like foliage such as in white pine, or scale-like foliage as in juniper. Broadleaf evergreens are plants with expanded, leaf-like foliage, such as 'PJM' Rhododendrons, Azaleas and Boxwood. The larches compose a special group of plants with deciduous, needle-like leaves.

Plants also can be classified by habit. Trees are defined as plants that can be grown with a single trunk and are more than 20 feet tall. A shrub is a plant that usually has more than one stem at the ground level and is not taller than 20 feet. Some trees may grow with several stems, and some shrubs may be pruned to a single stem. Vines are climbing or trailing plants that require support to grow upright. Groundcovers are prostrate or spreading plants that create a horizontal plane in the landscape.