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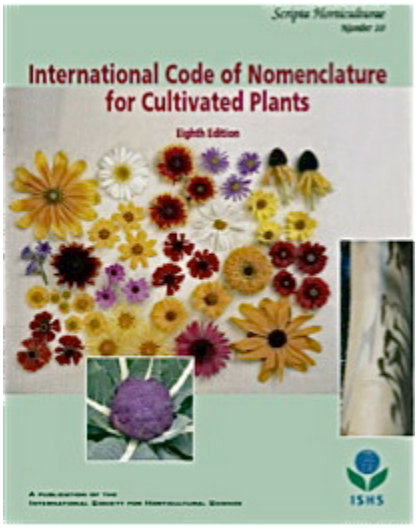

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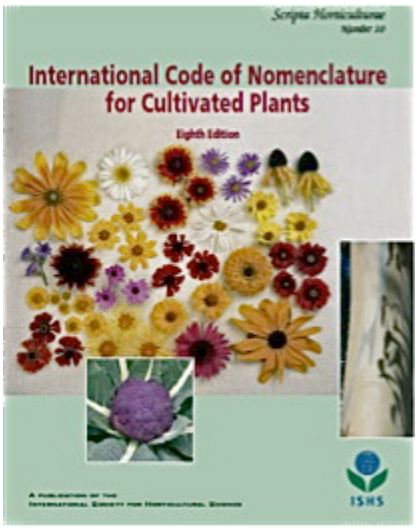
A Gardener's Guide to Plant Nomenclature, Part II

By Cathy Caldwell | January 2017- Vol.3 No.1



In the May 2016 issue we talked about Linnaeus, who developed the two-name or **binomial classification system** for plants, which was codified in his treatises, *Species Plantarum* (1753) and *Systema Naturae* (1758). Of course, the two names that are the foundation of the classification system — **genus and species —** are the key to a plant's identity. But there's more to it. This month we will clarify the terms on those tags you find stuck in the pot of that plant you're about to purchase.

If you spot an intriguing plant in a nursery, you'll likely take a look at its tag. Usually, the tag will identify the plant by its genus and species (or species epithet, a more technical term for species that you'll sometimes see in books and articles; not something we'll worry about here). Let's suppose you're looking at a boxwood; it might be labeled as *Buxus* (genus) *microphylla* (species) *,* and the tag may also include its common name, littleleaf boxwood. In fact, the Latin term "microphylla" means small-leaved. But nothing is ever simple, right? So you're often going to see a third name, and maybe even more following the genus and species name. For example, you might take a shine to a plant whose tag says: *Buxus microphylla* var. *insularis.* Now you're dealing with a variety.

Cornus florida var. rubrum

What exactly is a variety? A **variety** is a **subdivision of a species** — meaning that some minor variation has happened — perhaps a difference in color or size — from the original species. A **variety is a naturally-occurring variation of individual plants within a species.** An example of a variety is the thornless honeylocust tree, *Gleditsia triacanthos* var. *inermis*. It is a naturally-occurring thornless honeylocust. Sometimes the difference between a variety and a species is a difference in flower color. The typical white-flowered dogwood we see in Virginia is the species, *Cornus florida.* There's a naturally-occurring pink-flowered version, *cornus florida* var. *rubra.*

Most varieties will produce seeds that are true to type, which means that the seedlings grown from a **variety** will also have the same unique characteristics of the parent plant. For example, there is a white-flowering redbud that was found in nature. Its scientific name is *Cercis canadensis* var. *alba*. The varietal term "alba" means white. If you were to germinate seed from this variety, most, if not all, would also be white-flowering.

Oh, and just to make things a little more complicated, sometimes scientists decide to re-classify a plant based on a newer understanding of its relationship to other plants. That has happened to *B. microphylla* var. *insularis,* which has been reclassified by some authorities as *B. sinica* var. *insularis*.

Want to go a little deeper? If so, you might want to look at **another subdivision below the species level: subspecies**. This term is not often found in catalogs or plant tags, but just so you know, the term subspecies is also used to describe a subgroup of a species. Usually, the word subspecies is used to describe a natural population of plants with a variation from the species that is found in a particular geographical distribution or ecological range. A subspecies that you'll often find in the nursery trade is *Hydrangea anomala* ssp. *petiolaris*.

Hydrangea anomala ssp. petiolaris

Suppose you're wandering the aisles of a nursery and you find a rose with this name on the label: Rosa 'Blaze Improved ' ('Paul's Scarlet Climber' x 'Gruss an Teplitz'). Now that's a mouthful. But **the key point is** that little multiplication sign telling you that this rose is a hybrid.

Hybrid: is a genetic cross between two different species and can be the result of a series of crosses between parents. Hybrids may also occur between different genera, subspecies, varieties and cultivars. The offspring of a cross can be fertile, partly fertile or completely sterile (if a horse breeds with a donkey, the result is a mule which is almost always sterile). **Usually, the offspring of a hybrid will not be true to type.**

A plant that results from cross breeding — **a hybrid** — is identified with an **x in its name.** So that rose with

the mouthful of a name is a cross between 'Paul's Scarlet Climber' and 'Gruss an Teplitz'. So just by reading the label, you may see the family history behind your rose, though sometimes you'll just see something simpler, like Rosa x 'Blaze Improved'.

Hybrids sometimes occur naturally, but more commonly, they are the result of human efforts. The aim of a human hybridizer is to produce plants with desirable characteristics that can be sold commercially. If the hybridization yields successful results, the plant is usually given a cultivar name and you'll begin to see it in nurseries and plant catalogs. So, a successful **hybrid is also a cultivar.** For example, Meserve Holly hybrids were originally bred by Mrs. Leighton Meserve of New York by using two species, *Ilex rugosa* (prostrate holly, a low and spreading shrub holly, for cold hardiness) and *Ilex aquifolium* (English holly, a large tree holly, for foliage and berry beauty). You'll find a number of popular Meserve hybrids in most nurseries, including *Ilex* x *meserveae* 'Blue Boy' & 'Blue Girl'.

If you're a vegetable gardener interested in seed-saving, it's important to know whether you're dealing with a hybrid. That's because a hybrid plant is NOT a good candidate for seed-saving: when you plant the seeds you saved from a hybrid, you end up with a random mix of traits from the grandparent plants and earlier generations. In other words, the seeds are not true to type. Now there are plenty of benefits to the newer hybrid vegetable seeds: they've often been bred for disease-resistance, and often have so-called "hybrid vigor" — stronger growth, higher yields, and even higher survival from the seedling stage. But if you want to save seeds from the vegetables you grow, you'll want open-pollinated and heirloom varieties, which will allow you to save true-to-type seed.

And vegetable gardeners will also want to know about the term "**F1 hybrid**" — a term you'll often find in seed catalogs and on seed packets. In fact, the terms "hybrid" and "F1" are **strictly defined in the seed industry. Hybrid seeds** are produced through controlled pollination, which can be a long, expensive process. A seed company chooses parent varieties that will produce first generation offspring — F1 hybrids — with the special characteristics they desire. But the seeds of the next generation will usually <u>not</u> be true to type.

Buxus microphylla var. japonica 'Green Beauty' Photo: Catherine Caldwell

Now let's go back to the nursery. Or maybe you're spending a snowy day poring over plant catalogs. You come to a boxwood identified as *Buxus microphylla* var. *japonica* 'Green Beauty." Well, you've happened upon a cultivar (and by the way, it's a pretty special cultivar because it's somewhat resistant to the dreaded boxwood blight that's running amok in our gardens these days; see Sources below).

Cultivar: A cultivar is a sub-grouping of a species and it is usually (but not always) the result of selective breeding by humans, The term cultivar is a combination of the words **cultivated** and **variety. Most cultivars are deliberate hybrids** of two plants, as we talked about above. To propagate true-to-type clones, many cultivars must be propagated **vegetatively** through cuttings, grafting, and even tissue culture. Propagation by seed usually produces something different than the parent plant, and this is an **important difference between a variety and a cultivar.**

Some cultivars originated as "sports" or mutations that were discovered in the wild. A "sport" is a naturally occurring genetic mutation that causes a sudden change in the appearance of a plant. Imagine that

you're walking in the woods and you find a native Pinxterbloom azalea, *Azalea periclymenoides* — the one with those beautiful pink flowers. But the blooms on the one you encounter are an exceptionally large size. In fact, it's so unique that you just might decide to take a cutting, and you take that cutting home and plant it. Voila! Your cutting takes hold and produces those uniquely large blossoms. The next thing you know, you're propagating more of these special plants via cuttings. Finally, you decide to give it a name — perhaps *A. periclymenoides* 'Macroflora'. Why those single quotation marks around the name? Well, that's the convention that's followed in the plant nomenclature world to indicate a cultivar.

The cultivar name is always written with single quotation marks. In technical writing, the cultivar name follows the genus and species and is always capitalized and written inside single quotation marks, but not italicized or underlined. For example, October Glory Red Maple is officially known as *Acer rubrum* 'October Glory'. And in case you were wondering, **it is possible to have a cultivar of a variety**. For example, *Cornus florida* var. *rubra* 'Cherokee Chief'.

Echinacea purpurea
Photo: Jacob Rus

Right now there seems to be a push for natives with different characteristics. You might wonder if some of these plants are truly native! You might even feel that some of these new cultivars of purple coneflowers are beginning to look a bit Frankenstein-ish.

But it just might have occurred naturally. You might wander into a meadow and find one purple coneflower out of thousands that has triple rows of petals. You could call it *Echinacea purpurea* 'Frankenflora'. You now have a cultivar, but you could also call it **a selection** as well, which is often used with natives; you can divide it, but if you grow it from seed, chances are very high that the seedlings will be the typical purple coneflower with one row of petals.

Echinacea purpurea 'Razzmatazz'
Photo: Dreamdan

These days **cultivars are planted and used much more than varieties. But the terms are often confused.** You're likely to hear a plant referred to as a variety instead of what it actually is: a cultivar. I'll let you mull this over. A good source for clarifying this variety/cultivar mish-mash is *Botany for Gardeners* by Brian Capon. Several more excellent sources are listed below.

Key Things to Remember:

- Seeds taken from species, varieties and subspecies are usually "true to type" — which means that the seeds produce a plant with the same characteristics as the parent.

- Seeds from hybrids (identified with the multiplication sign) almost never produce a plant true to type.
- In order to propagate a cultivar or a hybrid and come up with a plant true to its parent, most gardeners must either root or graft a cutting from the desired plant.
- Sometimes even plant people confuse varieties and cultivars!

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"Best Management Practices for Boxwood Blight in the Virginia Home Landscape," https://pubs.ext.vt.edu/PPWS/PPWS-29/PPWS-29-pdf.pdf. (some boxwood cultivars are much less susceptible to boxwood blight disease than others. This article contains a helpful chart showing the degree of susceptibility of a number of popular cultivars).

The Mystique of Tropical Orchids

By Patsy Chadwick | January 2017- Vol.3 No.1

Orchids have been the source of fascination and frustration to plant lovers for centuries. There's no disputing the fact that they are some of the most astonishingly beautiful flowers in existence. Their amazing jewel-like colors and compelling scents (think vanilla, which comes from the *Vanilla planifolia* orchid) tantalize us. Their exotic shapes and strange anatomical structures intrigue us. The frustration lies in not understanding their cultural requirements, which differ to some extent from those of most plants. But once you grasp a few basics about orchids, you'll see that they really aren't difficult to grow.

Orchids are believed to have evolved around 80 million years ago. They were already ancient life forms when the dinosaurs roamed the earth 65 million years ago. With approximately 25,000 species and more than 100,000 registered hybrids, orchids comprise one of the largest and most diverse flowering plant families in existence. Within such a large family, it's no surprise that considerable diversity exists in the colors, shapes, growth habits, and cultural requirements of its members. They can be found growing wild on every continent except Antarctica and in a broad range of habitats, including the deserts of Western Australia, remote Mediterranean mountaintops, and cloud forests of Central America. Approximately 200 orchid species are native to the United States, where they grow in every state including Alaska. But the greatest variety and concentration of orchid species come from the tropical and subtropical areas of South

America and Asia.

The fascination with orchids has spawned a vast number of orchid societies around the globe. In this country, the American Orchid Society (AOS) has about 30,000 members nationwide with over 500 affiliated societies worldwide, including the local Charlottesville Orchid Society. The AOS is an excellent source for information on orchid basics and other related orchid topics.

ORCHID BASICS

While there is much diversity within the orchid genus, all orchid flowers share a few common traits that are unique among floral plants. Each flower is bilaterally symmetrical (the right and left halves of the blossom are mirror images) and typically has three petals and three sepals. The bottom petal tends to be highly modified forming a greatly enlarged lip, which the flower uses to attract potential pollinators. Unlike the separate structures found in other flowers, the female pistils and male stamens of orchids are fused together in a single column.

Orchids have highly specialized root systems, which are categorized as epiphytic, lithophytic, or terrestrial.

- **Epiphytic** – Most orchids grown as "houseplants" fall into this category. The term "epiphytic" refers to the orchids' aerial roots, which are exposed to the warm, humid air and rain and anchor the plant in the tree canopy to take advantage of more light. The highly specialized thick, fleshy aerial roots are covered with a spongy substance called velamen**.** The dead cells making up the velamen layer quickly absorb water but must dry rapidly, which is why they need to be exposed to air. Otherwise, they would rot. Epiphytic orchids grow on trees or other plants for support, but they do not extract any nutrients from the host plant.
- **Lithophytic** – The specialized roots of lithophytic orchids are similar to those of the epiphytic species and also need to be exposed to the air. Instead of growing on trees, lithophytic orchids anchor themselves onto rocks. They extract nutrients from debris that falls into the rock cracks and crevices. Lithophytic orchids like high humidity and frequent watering.
- **Terrestrial** – Orchids that come from the temperate regions of the earth are generally terrestrial. They grow on the ground in leaf litter or moss on the rain forest floor but they do not extend their roots into the ground. The thick roots are shallow and covered with hairs (rather than velamen cells) that absorb water. In their natural habitat in the tropical rain forest, terrestrial orchids are shaded by the tree canopy and can tolerate lower light levels.

For purposes of propagation, orchids may be described as:

- **Monopodial** – Orchids belonging to this group grow from a single stem that increases in height with age. The leaves grow vertically on top of one another from a single growing point that rises from the roots. They cannot be divided to make more plants. Instead, they are generally propagated through tissue culture methods. *Phalaenopsis* and *Vanda* orchids are examples of monopodial species.
- **Sympodial** — Orchids belonging to this group have multiple growing points and grow horizontally, increasing in diameter with age. New growth emerges laterally from older growth. Members of this group, such as *Cattleya, Dendrobium,* and *Oncidium*, can be divided to create more orchids.
- **Keiki Forming** – Some orchids are capable of asexual propagation resulting in a clone of the parent plant. The clone, called a keiki (Hawaiian word for child), may be found attached to the stem or the flower spike. After a keiki develops several leaves and forms two- to three-inch long roots, it may be separated from the mother plant and grown as a seedling.

Orchids may be categorized as warm-, intermediate-, and cool-growing. Each category grows best in the temperature range assigned to it. However, there is considerable overlap among the categories. When selecting an orchid, it's wise to follow the instructions that come with it regarding the care and temperature range recommended for that particular species or hybrid. Unless you are a serious orchid collector with the ability to compartmentalize your home or greenhouse into specific climate zones, it may be wiser to select orchids having the same or similar growing requirements.

RECOMMENDED ORCHID SPECIES FOR THE HOME GROWER

The following orchid species are generally recommended for the home grower because they adapt well to the living conditions found in most homes.

- ***Cattleya*** (Intermediate Growing) –
  The queen of the orchids, the spectacular *Cattleya* orchid is one of the most beautiful flowers in the world. It is the orchid species customarily associated with corsages. One of the most commonly grown orchids in the home, *Cattleyas* are often fragrant and the flowers can last from two to six weeks. The plant requires a lot of light and prefers an east or west window or a slightly shaded south-facing window. Rather than aerial roots, the epiphytic, sympodial *Cattleya* has a pseudobulb, which stores water. Allow this plant to dry out somewhat between waterings.

Cattleya Orchids

- ***Cymbidium*** (Cool Growing) –
  If the *Cattleya* is the queen of the orchids, the tall-growing (up to three feet) *Cymbidium* might be considered the king of the orchids. *Cymbidium* orchids are terrestrial, sympodial orchids from Asia that grow best in a fine-grain bark mix. The flower spikes contain a dozen or more blooms, some of which are scented. The flower spikes have to be staked. Otherwise, they become top heavy with the weight of the blooms. Provide as much light as possible but shade from direct sun in summer.

Cymbidium Orchid

- ***Dendrobium*** (Cool to Intermediate Growing) –

This is a very large genus of epiphytic, sympodial orchids. Most members of this group are called *Dendrobium Phalaenopsis* because the shape of their flowers resemble those of the *Phalaenopsis* orchid. They can tolerate some sun but no direct midday sun. They do well in a west or south-facing window with diffused light (from a sheer curtain). This species grows from slim pseudobulbs, grows best when potbound, and produces offshoots (keikis).

Dendrobium Orchid

- **Miltoniopsis** (Cool Growing) – Commonly referred to as "pansy orchid" or Miltonia, this species has become very popular because of its charming, large, flat blossoms, which are available in a wide range of colors. Each flower has a butterfly-shaped design in a contrasting color in its center. It grows from pseudobulbs, which should be grown in a fine-grain bark mix. This plant needs bright light but no direct sun. It does not like temperatures above 80°F. Pansy orchids need to be kept evenly watered. Otherwise, the new leaves will begin to take on an accordian-fold appearance and will not flatten out again.

Miltoniopsis (Pansy Orchid)

- ***Oncidium*** (Cool to Intermediate Growing) – Commonly called "dancing ladies," this large, diverse genus consists of more than 1,200 species. These epiphytic, sympodial orchids may be more difficult to grow than other species, but the billowing masses of predominantly yellow flowers make growing them worth the effort. Hybrids with thick leaves can tolerate more light than thinner-leaved selections. In general, *Oncidiums* require less humidity and less frequent watering than many other orchid species.

Oncidium (Dancing Ladies Orchid)

- ***Paphiopedilum*** (Intermediate Growing) –

This terrestrial, sympodial orchid genus is commonly known as “slipper orchid.” The flower consists of a pouch-like sac with a large showy sepal at the top. The flowers tend to be mottled with spots, hairs, and stripes. While some species have plain green leaves, other species have beautifully mottled foliage. The species with mottled leaves prefer daytime temperatures in the 80s and nighttime temperatures in the 60s. The plain-leaved species prefer cooler growing conditions with daytime temperatures ranging from high 70s to low 80s during the day and nighttime temperatures ranging from 55 to 60°F.

Paphiopedilum (Slipper Orchid)

- ***Phalaenopsis*** (Warm Growing) –
  The *Phalaenopsis* or “moth orchid” is a large family of epiphytic, monopodial orchids that are easy to grow and a good choice for a beginner. It’s the most popular potted orchid species because of its long, arching sprays of flowers that remain fresh for several months. It derives the name moth orchid because the long sprays of blooms resemble a flight of moths. An east-facing window is ideal for this species.

Phalaenopsis (Moth Orchid)

- ***Vanda*** (Warm Growing) –
  This epiphytic, monopodial species produces a spray of a dozen or more flowers ranging in size from two to four inches. The flowers are sometimes dappled in appearance and come in unusual colors, including brown and blue. Vandas have large aerial roots that do not like to be disturbed by removing them from their containers. If they must be disturbed, soak the roots in water for a brief period to make them more pliable.

Vanda Orchid

CULTURAL REQUIREMENTS

To grow orchids successfully, it's important to understand their unique cultural requirements:

- **Air Movement** — Orchids like to have air circulating around their roots, which is why orchid pots have holes in the sides. Moving air lowers the leaf temperature and also helps prevent pests and diseases. During mild weather, move orchids outdoors where they will get lots of fresh air, resulting in more vigorous plants.
- **Light** – It's important to provide the correct amount of light needed by your orchid type and species. The primary reason orchids don't bloom is because of insufficient light indoors. Leaf color is a good indicator of light adequacy. Healthy orchid foliage is typically medium green or even light green with yellowish tones. Very dark green foliage indicates the plant may need more light. Orchids benefit from being moved outdoors for the summer, but introduce them to outdoor light gradually so that the leaves don't develop sunburn. Avoid placing the plant in direct sunlight. Bright dappled light works best.
- **Humidity** — Orchids prefer humid, moist air. The air in most homes during the winter months is too dry and needs to be raised to 50% or more, depending on the orchid species you're growing. A humidifier placed near the orchid is a good way to increase moisture in the air. Alternatively, place the orchid pot on pebbles in a tray. Add water until it nearly covers the pebbles but doesn't touch the pot. If you have a collection of orchids, group them together to help hold the moisture in the air. Mist plants only if the humidity is very low. Water sitting on the foliage may invite disease.
- **Water** — Improper watering is one of the main reasons many orchids do not thrive. It's important not to let the roots dry out but it's more important not to overwater. The proper method is to water thoroughly with room temperature water BUT let all the water drain out. Frequency of watering depends on the potting mix and the type of orchid you're growing but, in general, watering once per week should be sufficient. Avoid watering your orchids with water that has been softened with salt.
- **Temperature** – Orchids generally like the same temperatures as humans. However, they do not like air conditioning nor do they like temperatures above 95°F. Their maximum comfort level is around the mid-80s. As for minimum temperatures, warm-growing orchids can tolerate minimum nighttime temperatures of about 55 to 60°F. Intermediate-growing orchids can tolerate minimum nighttime temperatures of about 45 to 55°F. Cool-growing orchids can tolerate minimum winter night-time temperatures of around 32 to 45°F. Orchids thrive best if there's a 15 to 20 degree difference between day and night temperatures.
- **Growing Medium** — In choosing a growing medium for an orchid, it's important to mimic the growing conditions in nature. For example, epiphytic and lithophytic orchid roots require access to air. A medium to coarse-grain bark mix is the best choice for these orchid types. Orchids that require more consistent moisture, such as *Miltonias* and *Paphiopedilums*, thrive best in a fine-grain bark mix. Sphagnum moss is also used as a growing medium for orchids. However, it may look and feel dry on the surface but can be wet deeper inside the pot. Therefore, it's more difficult to judge whether the plant needs water. If in doubt, re-pot the plant in a bark mix. Never use traditional potting soil for tropical orchids.
- **Fertilization** — When orchids are actively growing, fertilize each time you water using water-soluble fertilizer diluted at ¼ to ½ strength. Flush the roots with fresh water monthly to remove fertilizer salts that accumulate in the pot. Any balanced fertilizer may be used, but a 15-15-15 fertilizer with calcium and magnesium works best. Before applying a fertilizer solution, wet the potting medium with plain water first.

HOW TO PROLONG ORCHID BLOOM TIME

When buying an orchid, select one with lots of buds rather than open blossoms. Then, to prolong bloom time:

- Don't allow the plant to dry out. Orchid flowers need to stay hydrated. Just don't overwater the plant.
- Do not mist the flowers. Too much moisture on the flowers can lead to disease.
- Make sure air can circulate freely around the flowers.
- Give the flowering plant indirect light according to its needs but don't place it in direct sunlight.
- Keep the room temperature on the cool side.
- Keep pollinator insects away from the orchid. Once a flower is pollinated, it begins to die.

WHAT TO DO IF YOUR ORCHID FAILS TO BLOOM

Insufficient light is the primary reason orchids fail to flower. Place the plant in an east- or south-facing window with diffused light but no direct sun. In summer, place the plant outside in a spot where it may receive a little early morning or late afternoon sun but will otherwise be in the shade.

Keep the nighttime temperatures cooler than daytime temperatures for bud set.

Check the growing instructions to see if your orchid requires a period of dryness in other to trigger bloom. Some species naturally experience a dormant (dry) season before they will set buds.

HOW TO GET AN ORCHID TO RE-BLOOM

Of the commonly grown orchid species, only the *Phalaenopsis* orchid will re-bloom from the old flower spike. After the plant finishes blooming, cut the flower spike back to the second or third node on the spike. A new flower spike will eventually develop from one of the nodes, usually within two to three months.

HOW TO DETERMINE WHEN AN ORCHID NEEDS TO BE REPOTTED

Most orchids should be repotted every two or three years to ensure proper aeration and drainage. The frequency of repotting may vary depending on the type of pot, the frequency with which the plants are watered, and the growing medium used. If you're not sure whether to repot, inspect the bark mix to see if the individual particles have decreased in size, smell musty, or look moldy. As bark mixes degrade, the particles break down, becoming smaller and impeding drainage. At this point, poor drainage can cause the orchid roots to rot. Repot before this happens or if the orchid is unstable from growing out of the pot.

ORCHID PESTS AND PROBLEMS

Common insect pests of orchids include mealybugs, spider mites, scales and aphids. Most pests can be gently dislodged using cotton swabs and rubbing alcohol, particularly mealybugs and scale.

Fungal diseases are the cause of many orchid deaths. To prevent a fungal disease, do not over water the plant or allow water to stand around the roots or collect in the spaces between the leaves. Keep air circulating around the roots. Change the growing medium before it decays. If you detect a fungus, repot the plant as soon as possible.

SUMMARY

Orchids are a joy to own. Despite the perception that they are difficult to grow, they actually aren't. They simply require different care from what you ordinarily give houseplants. Pay attention to their special cultural requirements and they will reward you with weeks or months of exotic blooms.
A happy orchid is one that has:

- New leaves that are larger than the older ones
- A vigorous root system
- Green or red root tips

- Thick, turgid leaves
- Multiple bloom spikes
- No diseases or pests.

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The Ornamental Garden in January

By Patsy Chadwick | January 2017- Vol.3 No.1

It’s January and the ornamental garden lies dormant. But there’s much to see and enjoy if you just put your mind to it. Note how a coating of ice can transform a tree or shrub – even an entire forest — into a shimmery, breathtaking spectacle. Likewise, a light blanket of frost on a single leaf or seed pod can transform the ordinary into the extraordinary. For sheer magic, look for a flash of red as a single cardinal flits across a snowy landscape and delicately lands for a quick snack at your bird feeder.

Wintry Coating of Ice on Crape Myrtle Seed Pods

At the beginning of each new year, many of us resolve to improve our lives in one or more significant ways. The suggested resolutions listed below are designed with gardeners in mind.

RESOLVE TO SPEND MORE TIME WORKING IN YOUR GARDEN

Gardening is one activity that improves us in multiple ways. People who garden tend to place a high priority on their health and well-being. The exercise from working in the garden for even a half hour per day helps strengthen bones, muscles, and joints, improve balance, improve mental health and outlook, increase hand strength, and relieve stress and anxiety. The Centers for Disease Control and Prevention's article on Gardening Health and Safety Tips (cdc.gov/family/gardening) states that gardening is "an excellent way to get physical activity" and that active people are less likely than inactive people to be obese or have high blood pressure or suffer from type 2 diabetes, osteoporosis, heart disease, strokes, etc.

RESOLVE TO CONTINUE GARDENING DESPITE PHYSICAL LIMITATIONS

For the gardener with physical or age-related limitations, resolving to spend more time gardening may not seem feasible. However, with a little planning and a few modifications, it may be possible to **continue enjoying all the positive benefits that gardening provides**. For example:

- If you have issues with bending or stooping over, consider installing raised beds with sides that are wide enough to sit on. Make the bed no more than 3 to 3-1/2 feet wide so that you can safely reach into the center.

Raised Garden Beds

- If you are an arthritis sufferer, modify your garden tools using tape, foam rubber or plastic tubing to provide a better grip. Better yet, if your budget allows, invest in some ergonomically designed garden tools.
- Wear sturdy shoes and make sure walkways or paths are flat and free of obstacles such as tree roots that might cause you to trip and fall.
- Work in the garden either in the early morning or in the evening to avoid heat stroke or overexposure to the sun. Don't forget to apply sunscreen.
- Do some light stretching exercises to warm up your muscles before you start gardening.

- Vary your activities so that you don't overwork any one muscle group.
- Drink plenty of water to avoid dehydration.
- Replace high-maintenance plants with low-maintenance choices that don't require much pruning, deadheading, or staking.
- Reduce your plant inventory. If it's too much effort to care for a large perennial garden, identify the plants you love most and keep those. Replace the rest with shrubs, conifers, or small deciduous trees that provide color and interest all year round. That way, you'll still be able to enjoy your garden, but with a lot less effort on your part.

For additional information on ways to adapt your garden, see Virginia Cooperative Extension's Publication HORT-66NP, "Therapeutic Gardening," http://pubs.ext.vt.edu/HORT/HORT-66/ .

RESOLVE TO PLANT A NEW ORNAMENTAL GARDEN

If you're considering establishing a new ornamental garden, January is a good time to think about all the practical aspects this might entail. For example:

- **Assess the site of the proposed garden**. Is the soil acid or alkaline? Is it sandy, silty, or mostly clay? Does it drain well or is it moist? Is the proposed site sunny, partly sunny, or shady? Is the site windy or is it reasonably sheltered from the wind? Is the soil sandy, silty, or mostly clay? Is the site potentially subject to wildlife damage? Is there a water source nearby?
- **Define the effect you're going for.** Too many people become mired down in the conceptualization stage because they don't have a clear idea of what they want. What style of garden appeals most to you: A formal garden with perfectly symmetrical beds and hardscape features? A meadow garden planted with all natives? A mixed border of trees, shrubs, perennials and annuals? A simple perennial or annual bed? Once you settle on a concept, the design will then be easier to execute. But if you're still not sure, try visiting some public gardens and noting the plant materials and landscape features that appeal to you.
- **Develop a list of possible plants** that are suitable for the site's growing conditions. Important considerations include: time of bloom, height and width of mature plants, flower and foliage colors, and texture. Choices of specific plant varieties are very personal. The important thing is to know what effect you want to achieve. For information on growing perennials, see **VCE Publication 426-203 – Perennials: Culture, Maintenance and Propagation**.
- **Identify all the practical aspects of establishing the garden.** Ask yourself: How much time can you devote to maintaining the garden? Are you physically able to care for it? Will it have all-year round interest? Do you want to incorporate hardscape features such as trellises, walls, sculpture, or fences?

RESOLVE TO IMPROVE SUCCESS WITH HOUSEPLANTS

After spending the summer growing lush and beautiful outdoors, many houseplants (particularly delicate ferns) protest being moved indoors for the winter. They appear to start out well after the move but, if conditions don't suit them, some of them curl up their leaves, turn sickly yellow or crispy brown, and die out of sheer spite. Frustrating? You bet. Most likely, it's the reduced humidity or insufficient light that makes them unhappy. You can improve your success rate by selecting houseplants that are better equipped to thrive under such adverse conditions. Many succulents do well indoors during the winter months. For example:

- ***Aeonium*** – This fleshy-leaved succulent has taken the gardening world by storm with its beautiful rosettes of colorful, spoon-shaped leaves.

Available in many color variations, including green with white, pink or yellow tips and solid deep reddish-black leaves, it also comes in a variety of sizes and textures. *Aeonium* does have shallow roots, however, and requires more moisture than most succulents. So don't allow it to dry out completely. Conversely, too much water can cause root rot. For best results, place it in a sunny southern-facing window.

Aenonium 'Sunburst'

- **Jade plant (*Crassula ovata*) –** This old favorite succulent has thick, glossy green leaves and a shrub-like form.
  A few selections have attractive red margins (for example, 'California Red Tip') on the leaves, which contrast nicely with the dark green centers. Always check the soil before watering and water only when dry. If the plant starts to drop leaves, it needs water. A southern exposure works best where it can get about four or more hours of direct sunlight per day. Too little light results in weak, leggy growth. For more information on growing Jade Plant, see Clemson University publication HGIC 1507, Jade Plant.

Crassula ovata (Jade Plant)

- **Pony-tail palm (*Beaucarnea recurvate*) –**
  Not really a palm at all, this member of the agave family is actually a succulent. It gets its name from its tropical, palm-like appearance and long arching leaves that give the plant a pony-tail effect (hence the name). Indoors, it may grow one to three feet tall, but in a conservatory, it can reach 20 feet or more. It prefers bright light but is pretty forgiving if it receives lower light levels over the winter months. Pony-tail palm stores water in its bulbous-shaped trunk, so let the plant dry out somewhat between waterings. Keeping it too wet will result in root rot.

Ponytail Palm

- ***Echeveria*** –
  This astonishing succulent belongs to a large family of species and hybridized members. It is available in a broad range of glorious colors and shapes. Many of the fancy ruffle-edged hybrids mimic roses, camellias or even water lilies.
  Place *Echeveria* in your brightest window or grow it under grow lights. Otherwise, it will stretch toward the light, ruining its shape.
  Always water the soil – not the plant – and only water when the soil has dried out between waterings.

Echeveria

- ***Sansevieria*** – For the gardener with a self-proclaimed "brown thumb," this low-care plant is a particularly good choice. It tolerates low light as well as low humidity.
  Once considered old fashioned, this widely hybridized plant has made a comeback in the horticultural world in recent years. *Sansevieria* is available in two types: tall (more commonly known as Snake Plant or Mother-in-law's Tongue) and rosette (commonly known as the birds nest type). The tall type looks good either as a standalone plant or as the "thriller" in a container garden. The rosette type can be used in a dish garden or terrarium. While you have to work really hard to kill a *Sansevieria*, one way to do it is to overwater it. If you don't want to kill it, allow it to dry out between waterings. Always water to the side rather than the center of the clump.

Sansevieria 'Golden Hahnii'

- **ZZ Plant (*Zamioculas Zamiifolia*) –**
  This plant with the unpronounceable name is practically indestructible. When it comes to plant care, it doesn't get any easier than the ZZ plant.
  It prefers bright light but will tolerate low light conditions as well as dry soil and low humidity. The fleshy, oval-shaped leaves are glossy, dark green, and look almost artificial, which makes this plant a good choice for a windowless room or even a bathroom. Although it can go for a long time without moisture, do remember to water it occasionally. Like other succulents, this plant does not like soggy soil.

Zamioculas Zamiifolia (ZZ Plant)

RESOLVE TO VISIT BOTANICAL GARDENS AND ARBORETA

For something fun to do this month, make a list of botanical gardens and arboreta that you would like to visit. This country enjoys a wealth of truly amazing gardens and the mid-Atlantic states are blessed to be home to many of them. Closer to home, a number of interesting gardens exist in and around Charlottesville (with the Monticello gardens being the best known) to inspire you. But you have many other choices as well. Resolve to visit a few over the coming year as you are able. To get you started, here's a short, but by no means complete, list of gardens to think about seeing here in Virginia:

- **Boxerwood Nature Center and Woodland Garden (Lexington)** – A 15-acre property operated by the Boxerwood Education Association, a non-profit organization. In additional to being an environmental learning lab for people of all ages, the garden is home to a collection of rare and unusual trees in a naturalized woodland setting. Admission is free but donations are appreciated.
- **DeHart Botanical Gardens (Ferrum)** – A 172-acre garden and nature preserve operated by Ferrum College (in Patrick County) and open to the public free of charge as a day use hiking facility.
- **Edith J. Carrier Arboretum (Harrisonburg)** – A 125-acre urban botanical preserve located on the James Madison University campus. Admission is free.
- **Green Springs Garden (Alexandria)** – A 27-acre public park and national historic site/museum operated by the Fairfax County Park Authority. Admission is free.
- **Hahn Horticulture Garden (Blacksburg)** – A 5.8-acre garden located on the Virginia Tech campus. The garden is used as a learning resource for teaching landscape concepts, plant materials, and environmental awareness. Admission is free.
- **Lewis Ginter Botanical Garden (Richmond)** — A 50-acre property with more than a dozen themed gardens. Located on a historic property, it is rated as one of the nation's best botanical gardens. Admission is $13 for adults.
- **Maymont (Richmond)** – A 100-acre historic estate including Italian, Japanese and other specialty gardens. Admission to the grounds and gardens is free. Admission to the historic Maymont mansion is $5 (suggested donation).
- **Meadowlark Botanical Garden (Vienna)** – A 95-acre park filled with extensive ornamental gardens and native plant collections managed by the Northern Virginia Regional Park Authority. Admission is $5 per adult.
- **Norfolk Botanical Garden (Norfolk)** – A 175-acre public garden with 52 themed gardens managed by the Norfolk Botanical Garden Society. Admission is $12 per adult.
- **Oatlands Historic House and Garden (Leesburg)** – This exquisite 415-acre estate is a National Trust for Historic Preservation property and a National Historic Site. Cost of a grounds pass is $10 for adults.
- **River Farm (Alexandria)** – Headquarters of the American Horticulture Society, this historic 25-acre property overlooks the Potomac River. The land was part of George Washington's original five farms. Admission is free but donations are welcome.
- **State Arboretum of Virginia (Boyce)** – Occupies the central 172 acres of the 712-acre Blandy Experimental Farm, which is operated by the University of Virginia. It contains more than 5,000 woody trees and shrubs from all over the world. Admission to the arboretum is free.
- **Virginia Western Community College Arboretum (Roanoke)** – A 2-acre educational garden located on the Virginia Western Community College campus. Admission is free.
- **Williamsburg Botanical Garden (Williamsburg)** – A 2-acre community demonstration

garden located within Freedom Park. Admission is free.

Wood Ashes

By Cleve Campbell | January 2017- Vol.3 No.1

Aww…. the holiday season. Very few things compare with the presence of family and friends gathered around a toasty warm fire in the fireplace or wood stove. The warmth of the Yule Log on New Year's Eve has become a distant memory, leaving behind the memories — and a pile of gray ashes. But what can be done with the wood ashes that have accumulated over the holiday season? Well, it just depends.

The burning of wood releases nitrogen and sulfur as gases. And the elements of calcium, potassium, magnesium, and trace elements such as boron, copper, molybdenum, and zinc are left behind, many of which are essential to plant life. In general, t**he principal nutrients in wood ashes** are: potash (potassium) (3-8%), phosphate (1-2%), calcium (20-25%) and magnesium (2%). In terms of commercial fertilizer, a bag of wood ashes would be labeled 0-1-3 (0% nitrogen, 1% phosphate and 3% potash). Calcium is the most abundant element in wood ash and has the same effect on soil as lime — it reduces the acidity or raises the pH level of the soil. The chemical make-up varies with the type of wood burned. In general, hardwoods produce greater concentrations of chemicals than softwood.

Right off the bat, wood ash has three things going for it — it's a fertilizer, it will raise the pH of the soil, and it's cheap. Great stuff, right? Well, not so fast!

Wood ash works faster than lime. When wood ashes are applied to the soil, it raises the pH of soil, much like lime. Yet unlike lime, which can take six months or more to alter the soil pH, wood ash is water-soluble and works very quickly to change the pH.

Remember, the pH of the soil affects a plant's ability to harvest nutrients from the soil. For example, certain nutrients like iron, copper, and aluminum become **less available to plants in alkaline soil** (higher-pH

soil), while other nutrients, such as calcium and phosphorus, become **less available in acid soils** (soils with a low pH). The recommended pH range for a vegetable garden is in the range of 6.2-6.8. Therefore, wood ashes should NOT be added to the garden if soil pH falls within the recommended range. Those wood ashes could raise the pH to a point that it becomes detrimental to many garden plants. The only way a gardener can make an informed decision on adding wood ashes to the garden is by doing a soil test. The Virginia Cooperative Extension Publication 452-129 provides information on how to collect a soil sample, and soil test kits are available at your local Virginia Cooperative Extension Office, located a 460 Stagecoach Road, just off Fifth St. Extended in Charlottesville. Additional information on the value of soil testing can be found in our October 2016 issue of The Garden Shed; see the article titled Interpreting Your Soil Test.

Once you have received the results of your soil test, if the recommendation is to add lime to raise the pH, the general rule is it takes 2 pounds of wood ash to equal the neutralizing power of **1 pound of ground limestone**. For example if the lime recommendation is to add 8 pounds of lime per 100 square feet, 16 pounds of wood ash would be the equivalent.

Wood ashes should NOT be placed around certain plants; for example, blueberries that prefer more acidic soils, or potatoes, as scab disease becomes more prevalent in soils with a high pH. Potatoes are less likely to develop scab when the pH is between 5.0 and 5.2.

Do NOT use ashes that result from burning coal, pressure-treated wood, painted or stained wood, or cardboard. These materials contain potentially harmful chemicals.

Careful consideration should be made before using wood ashes in the garden. A measured application can be beneficial to increase soil pH. Over-applications of wood ash will increase the likelihood of soil-related problems. So **before you start spreading those ashes**, be sure to have your soil tested and **follow the recommendations.**

Thanks for stopping by **The Garden Shed;** we look forward to your visit next month.

Sources:

“Best Management Practices for Wood Ash as Agricultural Soil Amendment,” University of Georgia Extension, Publication No. B 1142, http://extension.uga.edu/publications/detail.cfm?number=B1142

“Soil Preparation,” Virginia Cooperative Extension, Publication No. 426-313 https://pubs.ext.vt.edu/426/426-313/426-313.html

“Using Wood Ash in the Garden,” University of Illinois Extension, http://web.extension.illinois.edu/state/newsdetail.cfm?NewsID=12505

“Soil Sampling for the Home Gardner,” Virginia Cooperative Extension Publication Number 452-129, http://pubs.ext.vt.edu/452/452-129/452-129.html

“Potatoes, Peppers and Eggplant,” Virginia Cooperative Extension Publication No. 426-413 https://pubs.ext.vt.edu/426/426-413/426-413_pdf.pdf

“Wood Ashes for Gardening,” Penn State Extension, http://extension.psu.edu/lackawanna/news/2013/wood-ashes-for-gardening

The Vegetable Garden in January

By Cleve Campbell | January 2017- Vol.3 No.1

Well, 2016 has come and gone. While in the midst of cleaning out the garden back in October, the seed catalogs began to show up in the mail box; now there's time to look them over. Can spring be far behind? For the vegetable gardener, winter is a time to look back and to look forward. What's that old saying? — "Don't put off until tomorrow those things you can do today." January brings an opportunity for reflection and to get prepared for a new year with new gardening opportunities. Following is my to-do list for January:

- **Look back and learn from 2016**. This means: get rid of all those 2016 seed catalogs, review old seed order forms as a reference for new seed orders. and review the garden journal for what worked and didn't work. What! –no garden journal? Make a New Year's resolution to start a 2017 garden journal. This can be a valuable tool in planning the new garden and deciding what varieties to plant. Remember that when it comes to a garden journal, the more information noted in the journal, the better.
- **Complete seed catalog orders now** before specific desirable varieties sell out. Order early in the month to take advantage of promotional offers of free seeds or discounts for early orders. As you review seed catalogs choose disease-resistant varieties., They not only make gardening easier and more enjoyable, they reduce expenses and environmental pollution from pesticides.
- **Perform seed inventory** and **run a germination test on "old" seeds stored** from previous years to see if they still sprout. A little online research located numerous sites, including various seed companies that offer information on home seed germination testing. One such site, Oregon State University, offered basic and simple instructions for "How to Test Your Stored Seed for Germination". Handle seed packets carefully. Don't try simply rubbing the packet to determine a "feel" count as this can break the protective seed coating, thus reducing germination.
- **Begin collecting containers** that can be used for transplants, such as styrofoam cups and yogurt and sour cream containers.
- **Clean crusty clay pots** with a vinegar/bleach solution. To make the solution: add 1 cup each of white vinegar and household bleach to a gallon of warm water and soak the pots. For heavily-crusted pots, scrub with a steel wool pad after soaking for 12 hours.
- **Clean and inventory seed flats**; soaking flats in a **bleach solution — a ratio of 10 parts water to 1 part bleach —** will kill disease-causing microorganisms.
- If you are **spreading the ashes from your fireplace** or wood-burning stove in your garden, be aware that, over time, you are **raising the pH of your soil**. It may be time to have your soil tested for the pH before applying more wood ashes. For more information on wood ashes, check out this month's Garden Shed article titled "Wood Ashes".
- Review All-America Selections web site for new 2017 vegetable winners for possible planting candidates.
- Save plastic mesh bags in which onions and oranges usually come; they make idea storage sacks for air-drying onion, garlic and shallots.
- Inspect garden tools such as garden sprayers and tillers. It may be hard to locate some needed parts, but by starting now, you will have them ready when you need them at the beginning of the

gardening season. Sharpen those tools now, or better yet, bring them to the Piedmont Master Gardener Annual Spring Plant Sale on **May 13, 9-12 am** at the IX Complex in Charlottesville. We plan to have a vendor present who will sharpen your tools and knives etc., at a very reasonable rate!

Thanks for stopping by **The Garden Shed.** We are looking forward to your visit next month. In the meantime, we wish you and you family and safe and happy new year.

Kale Salad

By Cate Whittington | January 2017- Vol.3 No.1

It’s no wonder that kale is still a trendy vegetable, figuring prominently on menus around the country, after making its debut as the great Superfood nearly a decade ago. A member of the Brassica family, kale is low in calories, high in fiber, and nutrient-rich, supplying copious amounts of calcium, iron, Vitamins A, C, and K, as well as cancer-fighting antioxidants.

Varieties of kale differ in both flavor and appearance. All varieties tend to be a bit bitter, so choose the youngest leaves you can find. Kale ribs are tough and should be removed for nearly every recipe, certainly salads. Toss the stems or use them in soup broths.

Curly Kale, the most common variety, is bright or dark green with ruffled leaves. Its close cousin, Red Kale, has the same frilly appearance, but is dark red in color as its name suggests. Break the curly leaves into edible portions, toss them lightly with olive oil and salt, and bake them for 5 minutes. Children of all ages love this easy, healthy, and delicious snack—zero calorie kale chips.

Lacinato, also known as Dinosaur or Tuscan Kale, has dark blue-green, puckered leaves on long, slender stalks. This slightly sweeter kale was a staple in Jefferson’s Monticello garden and works well in salads, soups, and stews.

Red Russian Kale has flat, red-tinged leaves resembling those of the oak. Sweeter and tenderer than most kales, it is a good choice for salads and fruit smoothies. Just be sure to discard the tough, woody, fibrous stems.

Redbor Kale, a hybrid growing to 3 feet tall, resembles rainbow chard with its dark red stalks. Like Salad Savoy, the frilly cabbage-like rosette-forming kale, Redbor is grown mostly for ornamental purposes, though both types are edible and make pretty garnishes.

So, what’s the best variety of kale to use in preparing a salad? I have used both the curly and lacinato kales with equal success. I do recommend buying whole leaves as opposed to bagged greens because it is important to discard the ribs, and that is a much easier task when the kale is not pre-chopped. The other key to a good kale salad, in my opinion, is massaging the leaves. Massaging breaks down the cellulose structure and produces a sweeter, silkier kale. You may tear the leaves apart into bite-sized portions or use the French chiffonade technique–stacking, rolling, then slicing the leaves on the diagonal to form ribbons. Toss the the

leaves with a little olive oil, salt, and lemon juice (optional dressing ingredients include minced garlic, red pepper flakes, Tamari, honey, parmesan cheese). Then, lovingly rub the leaves with your hands for about 5 minutes.

When adding ingredients to your salad, the choices are endless. I love a touch of citrus—orange or grapefruit slices. Apple, pear, and black currants are good fruit options as well. Avocado, sun-dried tomatoes, and feta cheese are popular additions. Toss seeds and/or nuts of any kind on top to add a delightful crunch. There is no right or wrong to a kale salad. Feast on the tastes you love the most and you will still receive plentiful goodness from the hearty greens that form the heart of your salad.

Resources:

"Popular Types of Kale and Their Health Benefits"
http://www.onegreenplanet.org/popular-types-of-kale-and-their-health-benefits

"Ultimate Guide to Using Different Types of Kale" by Amy Sowder www.chowhound/food-news