The Gardener's Journal
Reynolda Gardens of Wake Forest University
Summer 1999

Heat Relief, Early Twentieth Century Style

by Camilla Wilcox, *curator of education*

Fancy free the dreamer thinks of arbors, seats, and cool retreats…."
—*How to Lay Out Suburban Lawns* 1915

How quickly we have forgotten the pre-air conditioning days of the South, when planning for protection from the heat of the day was of utmost importance. Heat-avoiding strategies were so much a part of the design vocabulary of the early twentieth century that homes were ordinarily built with open porches designed to catch cooling breezes. Porches were shaded with fabric awnings and dense vines. Away from the house, hedges protected both plants and people from the relentless assault of the summer sun. Shade cast by mature trees was a valuable asset to any home landscape. A special shelter in a garden—either a permanently roofed one or a pergola—was not only delightful to see, but it was also absolutely crucial to the enjoyment of the garden in the summer; when covered with vines, it provided a delightful destination for a hot summer day.

A roofed shelter was considered an important element of an early-20th-century landscaped garden or yard.

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Plants for Collectors: Witch Hazels

by Kim Tilley, *assistant director*

Every year when the few witch hazels bloom in late fall at Reynolda, they're eye-catchers; and every year I look at the beautiful blooms loaded on these shrubs and ask myself why I don't have one—or many—in my own garden.

The witch hazel family, or Hamamelidaceae, contains some of the most beautiful yet underused shrubs that we can grow in our gardens. They are all the more useful because many of them grow well in a wide range of planting zones since many are American native plants.

The witch hazel (*Hamamelis species*) should be at the top of anyone's list of desirable garden plants. With beautiful flowers in late fall, winter, or early spring just when they are most needed; wonderful fragrance; attractive foliage that turns flaming colors in the fall; a free form; and very reliable nature, they are a terrific choice in woody plants. The flowers consist of four narrow, twisting petals that spiral out from the center. When in full bloom the plants produce such mass quantities of flowers they can be seen from a considerable distance, especially since most of them bloom when the shrubs are leafless.

Witch hazels require a location where they receive full sun to partial shade, with soil that is consistently semi-moist, well drained, and fairly fertile. They don't have any serious disease or pest problems and need little in the way of pruning. In fact, the main problem you are likely to have with witch hazels is choosing which one to grow in your garden. There are several different species and many hybrids with flowers that range in colors from pale yellow to deep red.

One of the most beautiful members is the Chinese witch hazel (*Hamamelis mollis*). It has an open form, reaching ten to fifteen feet in both height and width. It has beautiful heart-shaped leaves that turn

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Gardener's Journal

The Name Game: Turquoise Vine

by Camilla Wilcox

One of the most intriguing aspects of garden restoration is determining the current names of plants. Over the last eighty years taxonomists, botanists, and horticulturists have moved plants from genus to genus, species to species, and even family to family so many times that it sometimes seems an impossible task to determine where any plant belongs, botanically speaking, much less to find it in the horticultural trade or to identify it in the garden. A case in point is the turquoise vine that has grown vigorously on the main pergola and shelters for many years.

Ampelopsis brevipedunculata

Thomas Sears specified six vines each of two *Vitis* species—*henryana* known as Henry's improved grape and *coignetiae* known as crimson glory vine. Neither of these is the turquoise vine now growing on the pergola. An invoice dated April 20, 1917 from the Dreer Nursery shows that six plants of *Vitis humulifolia* had arrived at Reynolda along with numerous other plants for the greenhouse gardens. This plant was not listed on the plan, but clearly it was meant to be planted here. The number was right—Sears has listed six of each *Vitis*. I wondered, could this possibly be the turquoise vine known by an earlier name? A tracing through horticultural literature would surely answer the question.

First, a quick look at the 1936 edition of *The Standard Cyclopedia of Horticulture* by L. H. Bailey. There was no listing for *V. humulifolia*. By 1949, when *Hortus II*, compiled by L. H. Bailey and Ethel Zoe Bailey was published, *V. humulifolia* was known as *Ampelopsis humulifolia*. A second look at the 1936 reference showed that *A. humulifolia* was the name by which the plant was already known at the time. With fruit of pale yellow, this was not the vine that grows on the pergola today, but a comment

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Heat Relief

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A shelter with a permanent roof was considered to be an important element of the landscaped yard or garden. The authors of *Garden Guide, The Amateur Gardeners' Handbook* of 1925 described this type of shelter this way: "The garden house offers possibilities for the enjoyment of the mistress of the house as well as furnishing an ideal playhouse for the children….It is well to place the garden house in the shade of a large tree where it will be cool afternoons. It should be built so that it can receive air from all sides."

A pergola was also a desired component of yards and gardens large and small. Bryant Fleming, writing in L.H. Bailey's 1936 *Cyclopedia of Horticulture*, defined a pergola as a structure that supported perennial vines with vigorous growth habits. Plants were secured to columns, then trained to grow flat across the top of an open rack-like support system. (Mr. Fleming contrasted the pergola with the arbor, which he considered to be of a lighter, trellis-type construction.) The pergola was an important architectural element of the garden, one that he said should be carefully integrated into the overall landscape design. Mr. Fleming continued,"The designer or builder is safest when he considers not only his pergola but all of the architectural features of the garden as details, the character of which are to be largely determined by, or closely interrelated with the architectural treatment of the garden and its environment as a whole."

The *Cyclopedia of Horticulture* noted that a combination of garden shelters, often called tea-houses, with pergolas helps to delineate the boundaries of a garden or to call attention to garden features. An arrangement similar to Mr. Sears' 1917 design for the Reynolda formal garden appeared in the 1936 edition. The caption,"terminating a garden,"explained the placement of such a structure.

Plants for the pergola

Writers of the period were in agreement that vigorous, large-leafed perennial vines were the only suitable covers for a pergola. Since the pergola was such a standard feature of home landscapes, the authors of *Garden Guide* assumed that their readers would welcome guidance in the selection of such vines. In their view,"Nothing contributes more to the charm of the home surroundings than a good show of hardy climbing vines judiciously placed for…adorning the veranda and Summerhouse."They went on to extol the virtues of the native vine *Clematis paniculata* and to recommend it for"its wealth of beautiful foliage and masses of small, pure white, fragrant flowers which cover the upper portion of the plant in early Autumn. It is particularly useful for growing about the porch or on trellises." These authors also highlight other vines, including Dutchman's pipe, ornamental hop vines, moonflower, and morning glories, recommending them for their fast, thick growth, and large leaves. Other writers of the period agreed that these vines, as well as cypress vines, cardinal creepers, and cathedral bells, were musts for pergola plantings. In the *Cyclopedia*, however, Mr. Fleming's guidelines were somewhat more strict. He noted

that only"the larger-leafed, more heavily fruited vines [are suited] to the architecturally stronger and coarser pergola. Also vines with coarse and woody stems, such as the wisteria, the grape, the bittersweet and the like, are better adapted to the true use of the pergola, a rack upon which vines lie, not a trelliage or support up which they climb or against which they are trained."

Plants for Reynolda's pergola

Thomas Sears' choices for the central pergola and tea-houses of the formal gardens included *Clematis paniculata* as well as *Parthenocissus henryana*, the showy, silver-veined variety of Virginia creeper and *Vitis coignetiae*, also known as crimson glory vine or ornamental grape. Together these vines produced a dense cover for the walkway below and helped create a shady spot for the tables and chairs that were placed in each of the tea-houses. Boxwood hedges surrounding the shelters and pergola provided even more protection from both direct and reflected sunlight. For the two free-standing tea-houses on either side of the main structure, Mr. Sears chose Chinese wisteria and the climbing roses 'Silver Moon' and 'Caroline Testout'.

In the 1915 book *How to Lay Out Suburban Home Grounds*, Herbert J. Kellaway emphasized the desirability of owning one of these special structures."Grape or flowering vines can be grown over [it] making on hot summer days a pleasant retreat from the heat of the house."Even at Reynolda, where the family home was open and relatively cool on the hottest summer days, these shelters were a"pleasant retreat."Now restored, they are a reminder of the South before air conditioning, not so long ago.

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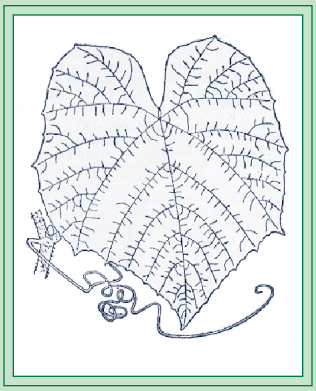
by the author raised a further question. He said that"this species has been always confused with *A. heterophylla*…." The description of *A. heterophylla* included a very important distinction between the two plants. It noted that the fruit changes"from pale lilac to verdigris color and finally bright blue or sometimes whitish."Do we have a match? So it seems. But there is still one more step to take to identify the plant by today's name. *The New Royal Horticultural Society Dictionary of Gardening* published in 1992 is now a standard name reference. If indeed the plant on the pergola were *V. heterophylla*, it is known today as *Ampelopsis brevipedunculata* and is distinguished by berries that are amethyst purple to bright blue.



Vitis Coignetiae

As a matter of horticultural interest, this plant had already been identified as *A. brevipedunculata* long before I began my historical research. Visitors to the garden in the fall, when the berries are at their showiest, often want to grow it in their landscapes. The historic context and the ongoing restoration of the garden plantings makes this further research into its genealogy important. These vines are obviously very old. The question is whether or not they should remain in place or a restoration of the original design should be undertaken. The fact is, we don't know for sure which plant should be on the pergola. There is enough evidence to retain the vines that are already there; too many questions remain to warrant their removal. Why was the plant Thomas Sears ordered not delivered? Or was the right one planted at some other time and did not survive? Or was someone at Dreer responsible for making a substitution? Or did someone confuse one *Vitis* for another? Or…? We'll probably never know the answer for sure, but in the meantime, we can enjoy the wonderful show come September.

Collecting *and* Storing Seeds

by Preston Stockton, *director*

I love February. Really. That's the time of year I get back in the nice, warm greenhouses with packs and packs of seed and begin the dream of this year's garden. Seeds are just so fascinating. They are all different sizes and shapes and colors. Calendula seeds form a perfect crescent while the hyacinth bean is jet black with a white swoosh down the side. Begonia seeds are so small they look like dust.

We start a lot of plants from seed here at Reynolda and, as all gardeners who ever look through catalogs know, seeds have gotten very expensive. Last winter we bought $465 worth of flower, herb, and vegetable seeds. So for the last several years we have concentrated on collecting and saving seed from many of our heirloom and annual plants to save money and ensure a continuing supply of some hard to find plants for the next season.

Collecting and storing seeds is easy if you understand a few things about

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Seeds

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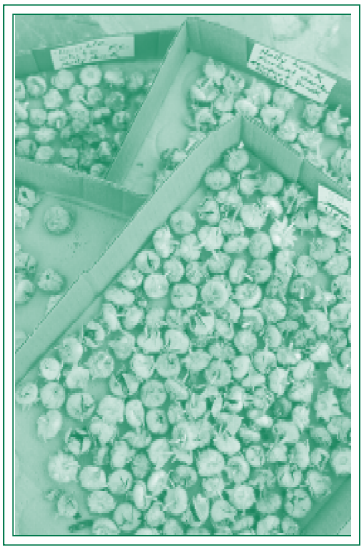
them. A seed is made up of an embryo and one or two cotyledons. The embryo is a miniature plant, complete with a radicle (root), stem, and leaves. During germination the embryo develops into the seedling. The cotyledons contain stored food such as starch, sugar, oil, or proteins for the embryo. Once a seed is mature (meaning the embryo has fully developed and the proper amount of food is stored) the seed becomes dry and, because of the dehydrated condition of its cells, is a dormant living organism. Less than 2% of its weight is water. This protects the seed from freezing or other adverse conditions. It is important that a seed not completely dry up or the embryo will die.



The length of time that a seed will remain viable, or able to germinate, depends on the species and the conditions of storage. Generally seeds store best in low temperatures. Arctic lupine seeds found in old lemming burrows in a melting glacier were determined to be 10,000 years old through carbon dating. But we have found that other seeds, such as delphinium, do not store well at all and should be sown immediately after harvesting.

Seeds need three things to germinate—water, optimum temperature, and air. When a mature, viable seed comes in contact with water, it soaks up large quantities like a sponge. Water molecules fit into spaces between the cellulose proteins and other substances in the dry cell wall and protoplasm. As the cell components absorb water in a process called imbibition they soften and swell. When a seed is fully imbibibed, it is almost twice its original size. The seed coat splits, allowing in more water and air, and germination begins. Obviously, it is not only important to store seed in a cool but also a dry location. Many times when I start seeds in the greenhouse I have to go back and recover them with soil because they swell so dramatically within the first few hours and push themselves out of the soil.

The key to collecting seeds is to leave them on the plant until they have matured. Depending on the species and time of bloom, this could be as early as April or as late as October. In general, pods or capsules that hold the seeds expand and darken in color as seeds become mature. When we collect hyacinth beans at Reynolda Gardens, we wait until the pods feel fat to the touch and start to dry before collection; otherwise, the seeds will not be properly mature and will not germinate the next spring. Be careful not to wait too long to harvest your seeds or they may be lost through dispersion or eaten by animals or insects. We often fight the chipmunks for the seed of the black hollyhock that we grow at Reynolda.

After seeds are collected, spread them out on newspaper to dry in a well ventilated room with low humidity. When they are sufficiently dried, remove any chaff or stalks. You want the seed as clean as possible before storing. This not only reduces the volume of material to be stored but also cuts down on possible mold spores and insects that can lead to seed deterioration.

We store seeds here at Reynolda in all sorts of airtight containers—film canisters, sealable plastic bags, jars, etc . Be sure to clearly label each container with the plant name and collection date. Then the seeds go into the refrigerator. The normal temperature of a refrigerator, 34- 41 degrees F., is perfect for storage. This lower temperature will reduce the respiration rate of the embryo, thus prolonging the viability of the seed. In general, we do not like to store seeds for more than one year, but I have stored many varieties including *digitalis, liatris,* and *ipomoea* and have had a good germination rate after five to seven years.

Collecting and storing your own seed is an easy and inexpensive way to provide your favorite flowers and vegetables for your garden every year. It is also a great way to share with friends and neighbors.

A Raptor-ous Encounter

by Seth Krautwurst, *horticulturist*

Last December while I was working on setting straight the bluestone paths in the formal gardens, an unexpected visitor dropped in for lunch. Just beyond the privet hedge at the south end of the garden was a hawk, looking down at a gray squirrel grasped firmly in her raptorial feet.

The hawk was surprisingly calm as I approached within twenty-five feet. She was focused on her meal and in no hurry. I had ample time to observe her identifying characteristics and, after doing some subsequent research, I concluded that this hawk was an immature female Cooper's hawk, *Accipiter cooperii*.

Cooper's hawks are one of three North American members of the subfamily Acciptrinae, or accipiters. Accipiters are generally found in forested areas and have short rounded wings and long tails adapted for maneuvering through the woodland.Their typical flight pattern consists of several rapid wing beats and then a glide.

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The Horticulture Detective: On the Hunt for Cherry Trees

by Tom Pratt, *greenhouse manager*

Each of us must weather the storms of life and hard knocks. The same scenario holds true for the plantings in our gardens. Whether it's the smallest, most tender annual we plant each year or it's the tallest, most mighty oak tree on the property each living plant falls prey to the elements in plant life each day. The one significant planting group at Reynolda Gardens that has suffered its share has been our ornamental weeping cherries.

From the earliest conception of the formal garden, the Japanese weeping cherries were a highlight. An article in a spring 1951 issue of the *Winston-Salem Journal* quotes greenhouse supervisor of thirty-three years I. S. Disher as commenting that "a friend just back from Japan…had been told in Japanese garden circles that the best collection of this type of 'weeping' cherry tree was to be found at Reynolda, U.S.A." According to the article, fifty trees arrived at the Reynolda estate in February of 1918 via the Andorra Nurseries near Philadelphia. Mr. Disher was on hand to receive the trees, most of which were then carefully planted in the garden.

A view of the Garden when the Japanese cherry trees were at their peak, 1948. Photo Courtesy Howard Arnold.

The eighty-one years of hard knocks from weather, insects, disease, and vandalism have taken their toll on our cherry tree collection. Of the forty-four original trees planted only one remains today in the formal garden. Located at the northeast corner of the northern half of the garden, it is very much scarred from its years of life at Reynolda. The other twenty-three Japanese cherry trees currently in the formal garden are of different varieties or flower colorations from the original trees. Some of these trees were gifts; others were propagated in-house. Attempts to propagate the original cherry tree have failed.

Over the past two plus years, the gardens have been going through a rebirth of renewal and restoration. Our garden visitors see the changes and most comment on how they love the new look; however we're not quite finished here. Remember our forty-four original cherry trees? Well the hunt is on to find their closest replacements. Tracking a source has been tougher that we had anticipated. In some cases we have found the original variety, but the flowers were not the deep pink color of the original trees.

The original genus and species of the cherries that were planted at Reynolda are not clearly known. In 1981 Gardens director Preston Stockton sent branch samples as well as slides of the original trees to the National Arboretum in Washington D.C. for identification. Botanist Frederick G. Meyer responded and without question identified our original cherry tree plantings as *Prunus subhirtella forma pendula*. Michael A. Dirr's book *Dirr's Hardy Trees and Shrubs* describes the *pendula* variety as"a wild and wooly weeping tree in youth, but calms down with age to produce a rather elegant, dapper, stately character." The *subhirtella* species is one of the earliest to bloom and also one of the hardiest of the flowering cherries in the Japanese group. Well represented here over the years, the *pendula* spring show has been spectacular. A weeping growth habit, coupled with usually pink and sometimes white flowers, frames out the formal garden in a wondrous display.

The staff's search for the cherry trees will soon be over, and replacement cherries will be planted in their original sites. The following spring will come and we'll all enjoy what was meant to be.

A little of Reynolda for your home

Here are some points to consider in choosing and caring for a Japanese weeping cherry tree.

1. Check for a grafting point on the tree. This may be at the tree base or at the top crown of the tree. Look for a poor union graft or unusual sap flow, either of which indicates poor health.

2. Keep in mind the mature height and crown spread of about twenty-five to thirty feet when selecting a planting site.

3. Prune to shape and thin early in the life of the tree. Remove sucker sprouts as they appear.

4. Use a complete general purpose fertilizer in early fall or spring. Note: too much fertilizer will encourage disease and decrease floral display.

5. Pests include aphids, borers, scale, and tent caterpillars. Apply soap and oil sprays in late fall or early spring before bud break.

6. When deciding on your cherry tree, take your time in the selection process. Be choosy. The hunt can often be very rewarding.

Red-tailed hawks are also often sighted at Reynolda Gardens.

Hawk

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Females are about one third larger than males; otherwise, their appearance is essentially the same. Accipiters feed mostly on birds and small mammals and are usually wary of human presence; however, when they are feeding they are focused on the meal and less skittish.

The Cooper's hawk at Reynolda Gardens had a brownish back and brown vertical streaks on the underside characteristic of an immature Cooper's hawk. The eyes of the immature Cooper's hawks are yellow, not red/orange as in the adult.

Due to shifts in pesticide use and education efforts by conservationists and wildlife biologists, the Cooper's hawk has experienced a comeback in recent years. Serious decline began occurring as early as the 1930s. Due to its reputation as the chicken hawk, the Cooper's hawk was routinely shot on sight. Better understanding of predator-prey relationships through education and laws protecting raptors have curtailed unnecessary killing of these birds. DDT, no longer in use in the U. S., once weakened the eggs of raptors, greatly reducing the number of successfully hatched young.

Cooper's hawks are known as short-distance migrants. Every fall hawks that summer as far north as Canada begin to migrate to warmer climates following the Appalachian mountains. Hawks are counted for four months as part of the "hawk watch" program which ends each year in mid-December. Last year the total included 1,121 Cooper's hawks, more than three times the annual average. The previous record for Cooper's was set in 1989 at 786 birds. This is encouraging news. The stabilizing effect that birds of prey have on ecosystems benefits us all.

Black Spot on Roses

by John Kiger, *horticulturist*

Caring for roses is a laborious task. One must constantly monitor for insect infestation, symptoms of diseases, and—oh yes, let's not forget the never-ending task of deadheading or removing spent blooms. Black spot is a common problem that rose growers face each year. Learning about the causes and control of black spot should help you control it.

What is black spot? Simply put, it is a fungus. It thrives when temperatures, between 60 and 80 degrees combine with humid, rainy conditions. It usually begins in early spring, pauses briefly during the hot summer months, and ends in mid-fall. It usually appears on the surface, but it can also inhabit the underside of leaves, showing up as round to irregular shaped, black blotches with fringed edges. If left unattended, the leaves of the plant will turn yellow and fall off. With a hand-held lens, one can see the small black blisterlike spore producing bodies. The spores are generally transferred from one plant to another by water, rain, overhead watering, and wind. In an existing rose garden, the fungus overwinters on infected leaves and in the canes. Once new growth emerges, rain splashes the microscopic spores onto the new growth. Under ideal environmental conditions, the spores can germinate and infect in one day. New spores can infect leaves, flowers, and canes of other plants within ten to eleven days after the initial outbreak.

The good news is that black spot can be controlled; however, if it is already present, the best you can hope for is to keep the new growth from becoming infected. First remove all leaves that have fallen from around the plants. Put the gathered leaves into a trash bag and discard. Do not put them in a compost bin. At seven to ten day intervals, thoroughly spray the plants with a fungicide. You might choose to use a product like Daconil 2787, which can be purchased at any lawn and garden center and is labeled for homeowner use. Remember, follow the label directions exactly and continue your spray program if rain is persistent. Stop spraying when summer conditions are hot and dry. Always be sure to spray both sides of the leaves.

If using a commercial fungicide isn't for you, you might try one of the nontoxic combinations made up of ordinary household ingredients. In my research I found contrasting opinions as to whether this mixture works or not. Its success seems to depend on the climate one lives in and upon the diligence of the gardener. If you would like to experiment for yourself, simply follow this recipe.

Organic rose spray for black spot: Mix one to one and a half tablespoons of baking soda and two tablespoons of horticultural oil in one gallon of water. If horticultural oil isn't available, use a few

drops of Ivory Liquid. Mix the ingredients thoroughly and apply once a week. Respray if rain occurs. Again, remember to spray both sides of the leaves. The combination of ingredients in this mixture has a twofold purpose. The baking soda alters the Ph of the leaves, making them less susceptible to infection, and the horticultural oil or Ivory Liquid, works as a sticking agent to bind the mixture to the leaves.

Growing healthy roses

In addition to spraying weekly, there are other things you can do to help reduce black spot:.

1. Keep the foliage dry. Wet leaves are an invitation to black spot. If possible, water plants using a soaker hose or a hand-held wand and watering manually at the base of the plants.

2. Plant roses in a sunny location. Roses require at least six hours of sunlight each day. Sunny locations assist in drying of the plants after a rainfall. Also avoid planting in dense surroundings, such as closely planted shrub borders or enclosed courtyards, to allow adequate air flow.

3. Sanitation. As petals and leaves fall, infected or not, remove these and discard as previously described. Spraying will not be as effective if proper sanitation practices are not followed. Deadhead and weed regularly.

4. Feeding. Feed roses at least three times during the growing season. The first feeding should begin in early spring as new growth begins. You can use one to two cups of 10-10-10 sprinkled around the base of the plant, or you could try an organic fertilizer. Organic fertilizers are water insoluble. The organic material is assimilated by soil microbes and released as nutrients. The timing of the release of nutrients is determined by three environmental factors—moisture, temperature, and of course, the presence of soil microbes. Soil temperature plays an immense role in the use of organic materials, since nutrient-producing microbes go dormant when the soil temperature descends below 52 degrees. So, on deciding on which method to use, remember that both are effective but both have drawbacks. While 10-10-10 will act immediately, regardless of soil temperature, it is prone to leaching out of the soil. An over-application can "burn" plants. Organic fertilizers last much longer in the soil and are safer to use due to the lower salt content.

5. Mulching. Pine needles make an excellent mulching material. Not only does it help the soil retain moisture, but it also helps keep weeds at a minimum.

6. Plant disease resistant varieties. There are roses available that are resistant to black spot; however, "resistant" does not mean that plants are immune. If proper spraying and sanitation practices of surrounding plants are adequately performed, then the resistant varieties should perform well. The list at right is a small sample of these varieties. To acquire a list with a larger selection contact your local cooperative extension office.

7. Pruning. Prune your roses beginning in late February or early March. Remove and discard all dead canes and open the center of the plant to increase air movement. Many rose plants, including most hybrid teas, may be pruned to around ten to sixteen inches tall. Others, such as climbers, hybrid perpetuals, and tea roses require more specialized pruning techniques.

Some Resistant Varieties

Floribundas and grandifloras
Angel Face
Betty Prior
First Edition
Fashion
Ivory Fashion
Mirandy
Sonia
Sunsprite
Rose Parade
Love

Miniatures
Baby Betsy
McCall
Little Artist
Rainbow's End
Rose Gilardi

Shrub roses
All that Jazz
Carefree Wonder

Hybrid teas
Carla
Charlotte
Armstrong
Forty-Niner
First Prize
Duet
Granada
Miss All American Beauty
Peace
Pink Peace
Portrait
Pristine

Interesting Internet sites
www.herbsociety.ors
www.muscanet.com
www.gardenguides.com
www.homearts.com
www2.garden.org/nga
www.vg.com
www.gardengate.com
www.pallensmith.com
www.gardens.com
In some cases you may have to type http:// first.

Gardener's Journal

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Witch Hazel

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clear yellow in the fall, keeping the shrub interesting over a long period. But the flowers are the reason we plant this witch hazel. It blooms in large quantities from February through March; flowers are a golden yellow with a strong fragrance. It is hardy to zone 5.

The range of hybrids between the Chinese witch hazel and the Japanese witch hazel (*H. japonica*) is known as *H. x intermedia*. Because they are even hardier than *H. mollis*, they rank as a best-all-around shrub for our gardens. They share many of the witch hazel characteristics. They are large shrubs, ten to twenty feet high, with attractive fall foliage and wonderfully scented flowers in late winter. The flowers vary from yellow to orange and red. 'Arnold's Promise' is an outstanding plant with large yellow flowers that cover the shrub in February and March. Another desirable *H. x intermedia* variety is 'Jelena'. Its flowers are deep orange with a hint of red. Other varieties worth mentioning are 'Moonlight', 'Primavera', and 'Sunburst', all blooming in pale or bright yellow shades.

Of the several native witch hazels, *H. vernalis* is the most commonly grown. Although it has smaller flowers, its display is just as striking as the others because there are so many flowers. The shrub is tough and reliable to zone 4. It grows to around ten feet in height and flowers in February and March. Other notable varieties are 'Sandra' with new foliage flushing out in spring a vibrant purple, 'Red Imp' which has a good deep red color, and 'Squib' which has flowers of brownish yellow.

Two native species are distinct from all other witch hazels in that they bloom in the fall rather than the spring. *H. virginiana*, a shrub that is widespread in the eastern woods, is hardy to zone 3 and is the toughest of the witch hazels. It can grow quite large, to twenty feet or more in a favorable site. It has several qualities that make it a shrub I recommend: excellent yellow fall color, abundant flowers in October and November, and a strong fragrance. Unfortunately it tends to bloom before its leaves have dropped in the fall, causing its flowers to sometimes be hidden a little. Still this is a shrub that deserves wider use. *H. macrophylla* is a closely related species that has great potential. In the wild it is found south of *H. virginiana* on the coastal plain and well into Florida. Although it is winter-hardy only to zone 6, it's more tolerant of our hot temperatures. In trials at the J. C. Raulston Arboretum at North Carolina State, *H. macrophylla* has shown great promise as a shrub for the South, with its magnificent yellow fall color and pale yellow flowers in late autumn.

WAKE FOREST UNIVERSITY

Reynolda Gardens

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