The Fundamentals of Rhododendron and Azalea Culture

American Rhododendron Society

Fundamentals Of Rhododendron and Azalea Culture

Botanical Classification—Rhododendrons and azaleas belong to the genus *Rhododendron* of the heath family (Ericaceae). The heath family includes the heaths and heathers, blueberries, mountain laurels, *Pernettya, Andromeda,* and several other ornamental plant groups. Most members of this family require a rather acid soil and good drainage.

Approximately a thousand species have been described within the genus *Rhododendron*. These species are currently organized into subgenera, sections and subsections, with the species in each group having certain points of similarity to each other. The species were arranged into series under an older classification system. All azaleas are rhododendrons, with deciduous azaleas belonging to one subgenus (Pentanthera) and evergreen azaleas to another subgenus (Tsutsusi).

Many of our cultivated rhododendrons are derived from Asian species which grow in the foothills of the Himalayan Mountains, western China, northern India, Burma and Assam. Others are derived from species native to Japan, Europe and eastern and western North America.

Climate—Rhododendron species are found in the wild from the Arctic regions to the Tropics, spanning a wide range of climates. In the United States, a large number of hybrids and species flourish in the Pacific Northwest, especially between the Cascade Mountains and the Pacific Ocean. A favorable climate extends down the Pacific Coast, the area getting narrower as it goes south, with the San Francisco Bay area being about the southern limit of easy culture for the large-leaved rhododendrons. Some of the Maddenia types grow quite readily in Southern California and the tropical vireyas do well in the Los Angeles Basin and along the frost-free coast. Azaleas can be grown on the West Coast from British Columbia southward to the Mexican border.

Evergreen azaleas grow also in great numbers along the Gulf Coast and throughout the South and southeastern United States, where some of the large-leaved rhododendrons are less easily grown. As hybridization and selection have resulted in newer varieties adapted to hotter and colder areas, the use of rhododendrons and azaleas in home and public plantings has moved north and inland from coastal areas of the Middle Atlantic states, as well as farther south into the Gulf states. Rhododendrons grow from southern Canada throughout the northeastern United States, but in cold areas where minimum temperatures reach -20°F (-20°C) or lower, only the hardiest varieties will thrive.

Deciduous azaleas, with their colorful blossoms, are popular. Some deciduous species and hybrids are very cold hardy and some tolerate hot conditions. At least two species of deciduous azaleas and two species of rhododendrons are native to eastern Canada and several more species are found in New England. Many species of deciduous azaleas are native to the East, Southeast and South and one species grows wild in the West. Selections can be made from these species and their hybrids which will thrive over large areas of the United States.

Throughout most of the Midwest and the Great Plains area, rhododendrons require special care and attention to the hardiness of the varieties planted. In general, rhododendrons and azaleas have similar cultural requirements with differences mainly in the types which can be grown in the more extreme climates.

Soils—Rhododendrons and azaleas grow best in light, well-drained soils with good soil aeration and an ample supply of soil moisture during the summer. They can be grown in heavy soils if special precautions are taken.

A soil high in organic matter or humus such as decayed oak leaves, pine needles or other acid-type compost is desirable for growing rhododendrons and azaleas. Most sphagnum peat moss found in garden centers today is very fine and should be used along with pine or fir bark or other organic material (1 part peat to 3 parts bark). Sphagnum peat moss is still effective in improving soil aeration and moisture retention. In hot or alkaline soil areas where rhododendrons are frequently grown in straight pine bark with little or no soil added, care should be used in obtaining a fine grade or small particle pine bark.

Rhododendrons and azaleas, in general, require an acid soil with pH about 5.5. Soils with pH higher than 5.5 should be acidified.

Plant Selection—It is best to begin with named hybrid or species rhododendrons and azaleas that are recommended for your area. The chapter of the American Rhododendron Society nearest to you can supply guidance in selecting the most suitable varieties. These plants can be purchased from your local nursery or garden center or from a reputable mail order firm. Sometimes varieties not suitable for your area are found at local discount stores or even garden centers, making care in selecting your varieties especially important.

Rhododendron plants at nurseries are available as very small plants without flower buds or as larger plants with flower buds already formed. Evergreen azalea plants usually have flower buds even if the plants are very small.

When To Plant—Rhododendron plants should be moved with either a soil root ball, if the plants are field grown, or with their container mix, if container grown. In favorable climates, rhododendrons are transplanted almost any time of the year with reasonable success. In USDA hardiness zones 5 and colder, early spring transplanting is best. Fall planting is recommended in zones 6 and warmer.

How To Plant—When planting, first consider the nature of the soil. Modify it if necessary. This may mean working in organic matter and acidifying the soil if it is too alkaline (pH higher than 6) by adding agricultural sulfur or ferrous sulfate. The amount of sulfur to add depends on local soil conditions; therefore,

COVER PHOTOS: *Top left, R. 'Tsuneshige Rokujo', photo by Polly Hill; top right, landscape at Ned Brockenbrough's garden, Bellevue, Wash., photo by Bill Heller; bottom left, 'George's Delight, photo by Bill Heller; bottom right, R. maddenii ssp. crassum, photo by Eleanor Philp.*

it is advisable to consult with your local Extension Agent for proper rates for your soil. Don't use aluminum sulfate. Aluminum sulfate is great for hydrangeas but is toxic to rhododendron root systems.

Your plants will come burlapped or in plastic bags or containers. Remove biodegradable burlap from the root ball unless the ball starts to fall apart badly. Then lay it back from the top so all burlap is covered with soil. All plastic burlap and string must be removed. Plastic bags or containers must be removed. With container grown plants, it is especially important to cut any encircling roots and loosen the outer roots so that they will be in good contact with the soil.

Rhododendrons and azaleas are easily damaged or killed by planting too deeply. The top of the root ball should be at the surface of the ground in ideal planting sites or an inch or two above the surface of the ground or even in raised beds in less than ideal sites. Never plant rhododendrons or azaleas deeper than they were grown in the nursery as is sometimes recommended for other types of plants.

In very light, sandy, acid soil which is high in organic matter and ideal for rhododendrons, they may be planted in a hole a little larger than the root ball.

Where the native soil is less porous than the material in the root ball, the soil should be improved by adding organic matter to make it more porous. Where the soil is clay and holds water in the bottom of a dug hole or is alkaline, it is advisable to plant on top of the ground in a mound made of a mixture of soil, coarse peat moss, and bark. The mound of soil may taper off at the edges or be confined by planks or logs in the form of a planter. Such raised beds require special watering attention during the summer.

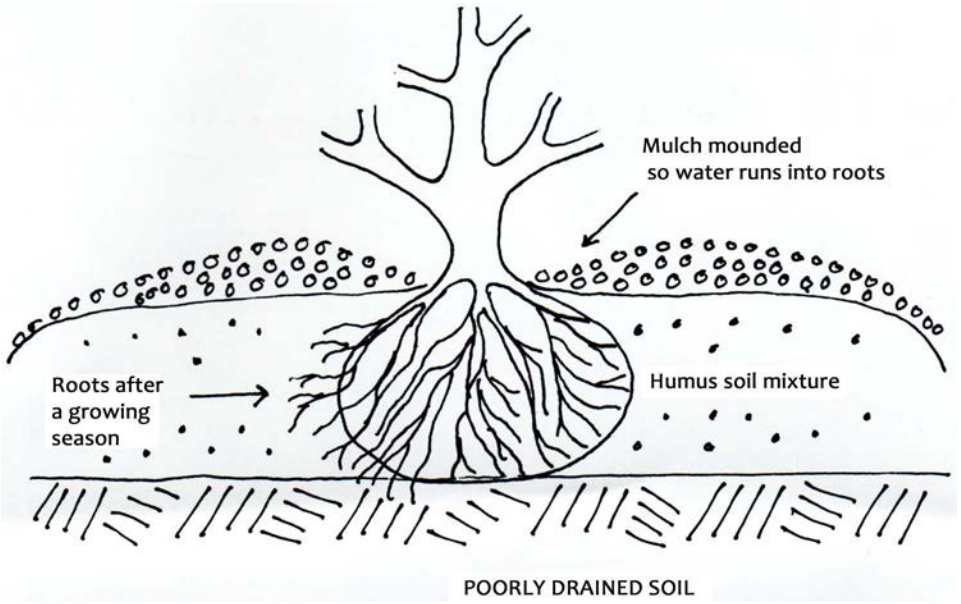


Figure 2. *If the soil is poorly drained or alkaline soil, plant the rhododendron on top of the existing soil and cover root system with a mixture of good loam and bark. Mulch with 2- to 3 inches of bark.*

In hot climates, root rot organisms flourish in wet soils and can kill rhododendrons. Under these conditions, raised planting beds that incorporate 50 percent or more fine pine bark can be helpful in suppressing *Phytophthora* root rot.

Before planting, dry root balls should be thoroughly soaked in a tub of water. Under normal conditions, it is not necessary to break apart a soil root ball; however, some loosening of the outer roots may help to get the fine roots out of the existing root ball and into the new soil. This is particularly true if the plant was previously grown in heavy soil. With container grown plants, it is important to loosen and even cut some of the outer roots, especially if the plant is root bound. Cutting the roots encourages new roots to grow out into the soil. Hosing off the outer part of the soil or planting mix can be helpful in loosening roots for growth into their new planting hole.

Subsequent Care— Although rhododendrons will not tolerate stagnant soil moisture, they are shallow rooted and the roots may dry out during the summer even though deeper rooted plants show no sign of drought stress. Therefore, rhododendrons should be well watered during the summer, especially the first year after planting when the roots have not yet gotten out of the original root ball and into the surrounding soil. Rhododendron

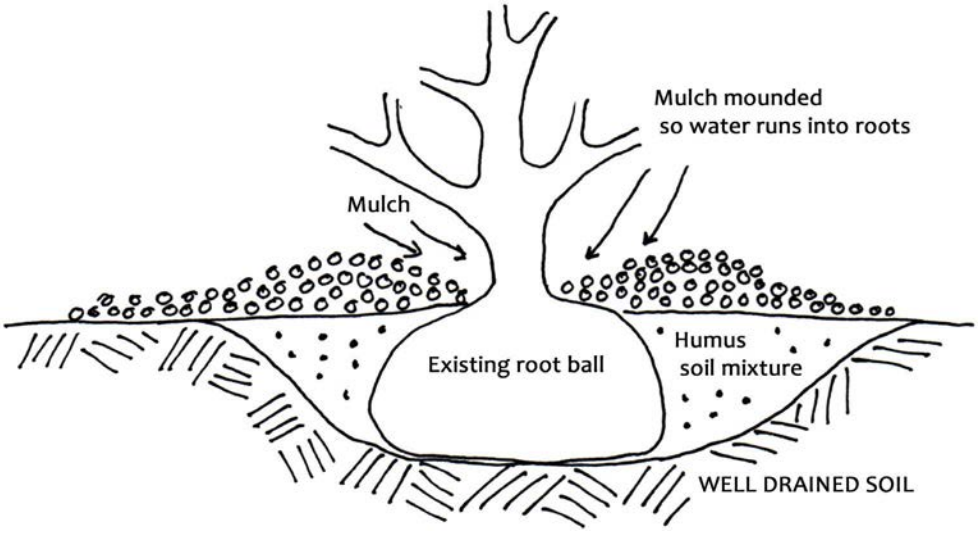
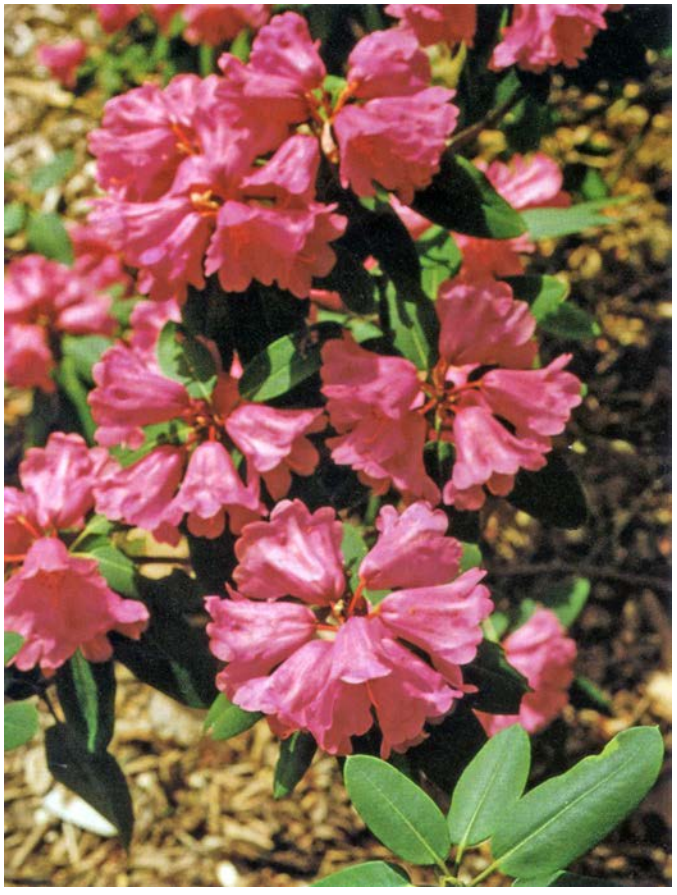


Figure 1. *To plant a rhododendron dig the planting hole wider but no deeper than the root system of the plant. Mix in peat moss and/or fine bark and good loam to the excavated soil, and backfill with amended mixture. Make sure top of root system is no lower than ground level. Add a 2- to 3-inch mulch of bark. When a rhododendron is newly planted, the roots are only in the existing ball. If the ball dries out, water will not easily move into it from the damp soil around it, since no roots have had time to grow into the new soil. The plant is dry even though there is moisture nearby. Therefore, it is important to keep the roots damp by watering until the roots grow into the surrounding soil.*

R. vaseyi 'White Find', selected form of deciduous azalea native to the eastern United States. Photo by Martha Prince.



R. oreodoxa var. fargesii 'Barto Rose', selected form of a species native to western China. Photo by Martha Prince.

roots are very fine and it takes them longer to grow out into the surrounding soil than most other kinds of plants. Because of this, the newly planted rhododendron will get its water out of its original root ball, and if this ball is allowed to dry out it is very difficult to get it wet again. The soil around the planting hole can be wet, yet the plant root ball itself can be bone dry. This is an important point to remember. Often the only way to rewet a dry root ball is to place a dripping hose at the base of the trunk of the plant and let it run for several hours. Unless you have a very wet climate, doing this weekly in addition to the regular watering the plant gets during the first growing season will help get the plant off to a good start. Don't keep the soil wet.

Some foliage droop is normal in dry weather, especially on warm afternoons, but when leaves still show signs of drooping in early morning, the plants are showing a need for water and should receive a good soaking. When air temperatures go above 95°F (35°C), or even lower for alpine types, rhododendrons and azaleas appreciate a misting to prevent desiccation of their foliage. In cold climates, watering or misting of foliage during warm days in the spring or on windy days when the roots are still frozen will help to keep rhododendrons in good condition.

A year-round mulch of some type of organic matter is desirable to conserve moisture and eliminate the need for cultivation. Because of their shallow roots, little or no cultivation should be done

R. Herklotz #5, a tropical vireya rhododendron, suitable for warm climates or greenhouse culture. Photo by Dick Cavender.

Rhododendrons and azaleas flourish in a woodland garden. *Photo by Rosalie Nachman.*

around rhododendrons. Weeds should be carefully pulled or, in extreme cases, shaved off with a sharp hoe. A fairly deep mulch of leaves, pine needles, chips, bark or other organic material will practically eliminate weed growth. (Peat moss should not be used as a mulch because it sheds water when it dries out.) The coarser the mulch the better, as water and air are admitted while the mulch still retards evaporation by providing shade and reducing wind velocity over the roots. A mulch also helps to reduce temperature extremes in the root area.

Fertilization—In fertile soils rhododendrons and azaleas can be grown well without receiving further fertilization. However, if plants are mulched with something like fresh sawdust or wood chips, there will be a nitrogen demand caused by the decomposition of these materials, and unless nitrogen is added, the plants are likely to show yellowish foliage and poor growth. In this case a fertilizer such as ammonium

R. 'Honsu's Baby. This low-growing plant covers itself with dainty flowers. *Photo by Herb Spady.*

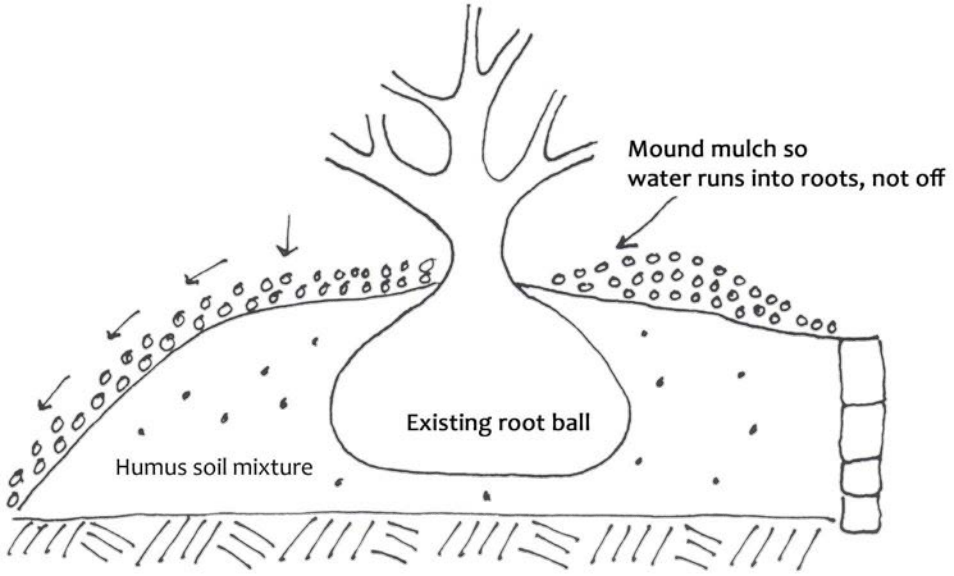


Figure 3. If the soil is poorly drained or alkaline soil, an option is to plant the rhododendron on top of the soil with a retaining wall for support. Cover the root system with a mixture of good loam and bark. Mulch with 2 to 3 inches of bark, mounding the mulch so the water runs into root area.

sulfate should be added. It is safer to use mulches other than those containing fresh sawdust or woodchips; then you don't have to be concerned with exactly how much extra fertilizer to add, as excess fertilizer can harm your plants by "burning" the roots.

For rhododendrons planted in less fertile soils, a complete fertilizer designed for acid-loving plants may be applied in late winter or early spring. Be careful to use only the amounts recommended for rhododendrons and azaleas, which normally require less fertilizer than plants such as grasses and vigorous shrubs. In cold climates, nitrogen fertilizer should not be applied after late June as it may promote new lush growth susceptible to winter damage. Recent research indicates that plants reasonably well supplied with nutrients, including nitrogen, are more resistant to low temperatures than those that are starved.

Phosphorus in fertilizer tends to favor early production of flower buds. If your soil is deficient in phosphorus and since phosphorus does not readily move through the soil, phosphorus should be incorporated into the soil at planting time if needed.

Magnesium in the form of Epsom salts is sometimes recommended for rhododendrons. Magnesium is an essential element and lack of it will cause yellowish areas between the leaf veins on older leaves. If the leaves are a solid green the addition of Epsom salts would not be useful.

Lack of iron causes much the same symptoms as a lack of magnesium, but with the younger leaves showing yellowing between the veins. Iron deficiency is frequently caused by too high a soil pH, often the result of mortar or mortar building debris in the soil near the roots. A soil pH test should be performed to see whether high pH is a problem and if it is the soil should be acidified. For a quick solution, ferrous sulfate can be added to the soil or chelated iron can be sprayed on the foliage, but the pH should be corrected for long term good growth.

Calcium is also essential to good rhododendron growth. Calcium can be obtained either from gypsum or from agricultural lime. Gypsum will not raise soil pH, while lime will; therefore, lime is not generally recommended in areas with a pH above 5.5.

Protect From Low And High Temperatures—Select and plant varieties adapted to climatic conditions in your area. ARS hardiness ratings, found in some publications, give an indication of minimum temperatures that a well established plant can be expected to survive without damage. There is presently no rating for maximum high temperature adaptation. Though hardiness ratings are available in some ARS publications, your local chapter of the American Rhododendron Society is an excellent source of information on rhododendrons that grow best in your local area. The ARS Executive Director whose address is listed on the back of this booklet can put you in touch with your closest chapter. Many chapters can provide lists of plants they recommend and all can share information on recommended plants regardless of whether they have a published list.

Even with recommended varieties, plant performance will be improved with reasonable protection from drying winds. In some northern areas gardeners protect rhododendron plants by building a windbreak around them or covering them with burlap or other protective material during the worst part of the winter.

In the so-called ideal rhododendron areas there may occasionally be damage by early fall or late spring frosts. In the Pacific Northwest, for instance, there are rhododendrons which will start blooming in February and others which follow along all spring. These early bloomers may be quite hardy in bud, but the open flowers will be damaged if there is frost. These plants are usually planted in a protected place and may be covered during a frosty night.

Partial shade is desirable in most cases; in hot dry areas it is essential. There are a few varieties which simply will not tolerate full sun, developing quite yellowish leaves under such conditions. There are many others which, in a reasonably favorable climate, make a better shaped plant, and set many more flower buds if grown in almost full sun. The beginner, without definite knowledge as to the requirements of a variety, will do well to plant rhododendrons in locations where the plants will receive shade in the afternoon.

Dead-Heading—It is desirable, with the large flowered rhododendrons, to remove the withered flower clusters after the blooming season. This is fairly easily done as the central axis of the cluster, usually called a truss, will break free from the plant with a quick snap of the thumb pushing on the side. With the smaller flowered rhododendrons and azaleas, dead-heading is hardly feasible and in general unnecessary.

Dead-heading is usually done to make the bush look more attractive, to reduce prevalence of fungus and to prevent a heavy set of seed. If it is not possible to remove the old flowers, it is usually not too detrimental, but flowering

the next year may be reduced.

Pruning—Normally very little pruning is needed. If a plant grows out over a walk or needs to be restricted for some reason, it may be pruned back moderately without fear that the plant as a whole will be damaged. It is often possible to do this pruning during the blooming season and have flowers for the house. Light maintenance pruning at the time "dead-heading" is done can help keep the plant in shape. Light to moderate pruning done at the time the plant is flowering or immediately thereafter will not affect flower bud formation for the following year. Sometimes, as the plant starts to grow, only one growth bud at the end of a stem will begin to expand. If this single bud is broken out just as it starts to enlarge, it will cause two or more dormant buds at the end of the stem to immediately expand, making a bushier plant. Again, this will not affect bud set for the coming year. Old, leggy plants may need pruning, but often these are better replaced with smaller newer varieties. Old plants, however, can be cut back severely and still recover, although it may be a while before they bloom again.

Insect & Disease Control—Many weeds are suppressed by a mulch, but perennial weeds should be eliminated before planting if at all possible. This is sometimes done by chemical weed killer, although advice should be sought from your local Extension Agent before attempting it.

Local advice should also be sought for control of insects and diseases, as these vary around the country. A common insect pest in the warmer areas is the lace bug which works on the underside of the leaf. The tiny young nymphs move around on the underside of the leaf and suck the juices causing a yellowish spotting. If there are many insects, the whole leaf will turn white. They may be controlled with an insecticide such as Malathion, Cygon or Orthene, or summer oil or Safer's soap.

Another widespread insect pest is the root weevil. This may be one of several different species. The damage done by the adults shows up as notches chewed in the edges of the leaves. Greater damage, however, is done after the adult lays eggs on the ground under the plant. These eggs hatch into larvae which feed on the roots and stem, often completely girdling (removing a ring of bark) and killing the plant. Control is difficult because the adults move around freely, often laying eggs under plants on which they have not chewed. By the time root damage is noticed, it is too late to save the plant. Symptoms of a girdled plant are much the same as a dry plant, since the plant can no longer supply moisture from its roots to its top. The insecticide Orthene offers some control. Consult your local Extension Agent for other suggested insecticides.

In certain areas a stem borer may cause damage to azaleas and rhododendrons. The adult beetle, which usually appears in June, makes two girdles at the tip of the growing shoot about 1/2 inch apart and inserts an egg between the girdles. The larva bores downward, expelling frass from holes cut through the stem and pupates in the crown of the plant, just below the soil surface. The weakened stems are easily broken off and die. The girdled tips should be cut off as soon as observed. Be sure to cut low enough to eliminate the tiny borer whose threadlike brownish tunnel can be seen just below the girdles.

In some areas aphids, mites, scale insects or leaf eating caterpillars may cause some damage and may be controlled with a spray if they appear. Contact your Extension Agent for recommended chemicals, rates and timing of sprays.

There are several important diseases of azaleas and rhododendrons. They can usually be avoided if the following practices are observed: 1) Purchase and plant healthy plants; 2) Plant so that the plants have excellent drainage by planting high in well drained soil; 3) Mulch to conserve water; 4) Provide cold protection and shade if needed, and moisture when needed as well as nutrients based on a soil test; 5) Prune out dead and dying stems and remove from the vicinity of the plant; and 6) Where experience indicates the need, apply fungicides to prevent *Ovulinia* petal blight, fungus leaf spots and root rot or branch wilt.

Root rots that occur in some landscapes cannot be controlled once active in rhododendrons. Every effort should

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be made to prevent them from occurring. Planting in well drained soils or raised beds will prevent root rot.

Petal blight occurs in the spring and early summer and is now nearly everywhere. The fungicide Bayleton has provided the most satisfactory protection when applied to the flower buds as they begin to show color.

Die-back of azalea and rhododendron caused by the fungi *Phomopsis* and *Botryosphaeria* may be serious diseases. Protection from desiccating cold winter winds and adequate watering of the plants during prolonged dry periods help to prevent these diseases. Any diseased or dead branches should be pruned out with pruning shears which have been dipped in 70 percent rubbing alcohol solution or 10 percent household bleach solution between cuts to avoid the spread of disease.

Powdery mildew caused by two different fungi occurs primarily on the leaves of certain hybrid deciduous azaleas. Usually the disease occurs late in the summer. Rust diseases that attack the leaves of rhododendrons and deciduous azaleas appear as yellow pustules primarily on the lower side of the leaves. Usually, rust appears late in the summer and chemical control is probably not practical. Mildew resistant cultivars are available.

Propagation—Beginners will normally secure their plants from a nursery and so the subject of propagation is relatively unimportant here. However, rhododendrons frequently become a hobby plant and many hobbyists want to do some propagating for themselves.

Rhododendrons can be rooted from layers. A low branch is pegged down into a trench and covered with two or three inches of soil. Usually, removing a 1-inch band of bark completely around the branch will hasten rooting which may require several months to a year.

Most rhododendrons are now grown from tissue culture plantlets or from cuttings. Cuttings are taken July to October and rooted in a mix of sphagnum peat moss, and sand or perlite or both, under mist with bottom heat and with the use of root inducing hormones or in containers enclosed by polyethelene plastic.

Use In The Landscape—Rhododendrons can be planted in the yard as specimen plants. However, it is usually better to consider the rhododendron as a part of the landscape and plant it in a border or foundation planting with other shrubs. Rhododendrons should be grouped to achieve certain effects, considering size, color, season of bloom and other characters. Usually the taller growing plants should be towards the back of the planting, medium sized ones in front, and low growing rhododendrons or other plants around the edges.

Evergreen azaleas look nice grouped together in masses with varieties that bloom at the same time and colors that blend with each other. Somewhat the same is true for deciduous azaleas and rhododendrons in order to avoid a too "spotty" picture.

In laying out a planting, thought should be given to the size of the plants. There is a great difference in the ultimate size of rhododendron and azalea varieties, and if they are not planted with this in mind the rapid growing ones will soon shade out the slow growing ones. Estimates as to mature size may be obtained from various catalogs or from the ARS rating tables. A too aggressive variety may take more than its allotted space which may mean moving out the ones being crowded. Fortunately, rhododendrons are relatively easy to move because the root system is quite fibrous, compact and shallow.

Varieties to Plant—One of the most important factors to consider for success with rhododendrons is selecting the most suitable varieties to plant when planning your garden.

Your local chapter of the American Rhododendron Society is your best source of information for selecting the plants that will be the most easily grown and satisfactory rhododendrons and azaleas for your garden. There are books and publications available from the Society that will be helpful in selecting and growing rhododendrons and azaleas, but the most valuable information and guidance is available from your local chapter, as local chapter members are the most familiar with your particular area.

Revised, 2000, by H. Edward Reiley, Woodsboro, Maryland.

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