

CULTIVATION AND PRUNING OF RHODODENDRONS AND AZALEAS

Bill McMillan (based largely on notes by Ted Irving and other sources)

Contents

Introduction.....	1
The main groups of rhododendrons	2
Some Features of Rhododendrons	2
Flower Forms	2
Indumentum and Tomentum.....	2
Fragrance.....	2
Rhododendron Leaf Variation	3
Soil requirements	3
Planting – one viewpoint	3
Planting (from the ARS Website)- a slightly different viewpoint	4
Mulching.....	5
Fertilizing.....	6
Shade and Aspect.....	6
Types of pruning	6
Leaf bud pruning and dead-heading of elepidotes	6
Woody pruning of elepidotes.....	7
Woody Pruning of Mature Elepidotes – Another Approach	7
Woody pruning and deadheading of lepidotes.....	8
Pruning deciduous azaleas	8
Pruning evergreen azaleas.....	8
Pests and Problems	8
Leaf Margin Necrosis – difficult to diagnose!.....	8
Chlorosis	8
Fungus Infections.....	9
Root Weevils.....	10
Aphids and White Fly	10
Slugs, Caterpillars and Wood Lice	10
Recipe for Making Compost Tea.....	10
Summary	11

Introduction

The genus *Rhododendron* comprises over 800 species inhabiting a very wide variety of habitats and so can fit in to a variety of places in your garden. They occur in temperate, subtropical and tropical woodlands, alpine slopes and sub arctic scrub. You can grow tropical forms in your greenhouse. These notes deal only with plants that are hardy out-of-doors in southern Vancouver Island.

Rhododendrons vary in size from small rock-garden plants 10 cm high to 12 m trees. There are thousands of cultivars. Their needs therefore are varied.

A well-grown plant is sturdy, well balanced, suffers minimal damage from wind and snow, blooms profusely, and makes optimum use of available moisture. A well-balanced plant has an above ground structure that is adequately anchored and serviced by its root system. Roots must be in suitable soil and be fed correctly, or they are not enticed outward. If this happens, the superstructure may appear healthy for a time, but the root-ball remains relatively small and/or misshapen, and, in the long run, the plant will not prosper. A large root ball anchors the plant firmly, draws moisture from a

wide area and stores it efficiently. The first objective, therefore, is to achieve a happy balance between root and superstructure. To this end, the plant needs to be **pruned** and have suitable **soil, nutrient, and light and shade** conditions.

The main groups of rhododendrons

There are four main groups of rhododendrons and cultivation requirements vary from group to group so it is essential to know the group to which your plant belongs. The group may be found by reference to a standard text and is indicated on labels in the garden at HCP. The groups are:

1. sub-genus ***Hymenanthes***

- Elepidotes, largish leaves with no scales on the back; large flowers.

1a sub-genus ***Pentanthera***

- Deciduous azaleas, flowers often appear before the leaves.

2. sub-genus ***Rhododendron***

- Lepidotes, smallish leaves with scales on the back, very numerous small flowers.

•

3. sub-genus ***Tsutsutsi***

- Evergreen azaleas.

Some Features of Rhododendrons

Flower Forms

Flower shapes vary from tubular through campanulate to widely funnel shaped. Variations range from open funnel to openly campanulate to flat saucer shaped or rotate. Flower sizes range from millimeters to more than 5 centimetres, and the number of flowers in a truss from 1 to twenties. Colours range from white through pink to red, yellow to orangey or greenish yellow, and mauves to purples. Hybrids feature many colour shades but no true blues. Picotee varieties, like R. 'President Roosevelt', can be spectacular

Indumentum and Tomentum

Others features of interest include indumentum and tomentum. Indumentum is the fuzz sometimes found on the undersides of leaves. The colour varies from cinnamon to white and the texture from hairy to felt-like. These features add texture, and all season appeal. Examples are *R. yakushimanum* and its hybrids, *R. bureavii*, *R. fulvum* and 'Sir Charles Lemon'. A few rhododendrons, notably *R. yakushimanum*, and *R. bureavii* have "tomentum", where the upper surfaces of young leaves are covered with a very decorative, snow-like, white felt. Tomentum is slowly lost as the leaves mature.

Fragrance

Although it has little to do with pruning or cultivation, fragrance in rhododendrons is of interest.

- 1) Many rhododendrons are fragrant and also have attractive flowers. At HCP, among the elepidotes we have the species *R. fortunei*, *R. discolor*, *R. decorum*, and the hybrids 'Loderi King George', 'Loderi Venus', 'Naomi Pink Beauty', 'Van Nes Sensation' and 'Mrs. A. T. de la Mare'.
- 2) Some lepidotes are among the most fragrant of rhododendrons. Unfortunately few of these are reliably hardy out-of-doors in our area; some *edgeworthii* varieties are marginally hardy here.
- 3) Deciduous azaleas are commonly, but not always fragrant. We have a good collection of fragrant forms, including the outstanding species *R. luteum* and *R. occidentale*, and many

hybrids including 'Gibraltar', 'Snowbird', 'Bountiful', 'Irene Koster', 'and Mount St. Helen'.
4) There are few, if any, fragrant evergreen azaleas.

Rhododendron Leaf Variation



Soil requirements

Rhododendrons grow best in organic-rich, well-drained loam. Soil pH should be about 5.5. Rhododendrons will tolerate sandy loams, provided they are kept moist and clayey loams provided they are well drained. If your site is poorly drained, drainage can be improved by building up your soil into a low terrace - lifting up the surface by adding new material.

Loam is a mixture of sand, clay and humus with enough sand to prevent clumping of clay. Adding sand to a clay-rich soil will help temporarily but will not maintain good drainage over the longer term. If soil is poorly drained or alkaline I recommend instead that you build up the beds or build a retaining wall and plant your rhodos in a mix of bark mulch sand and composted soil (I use bark mulch and unscreened compost at Glendale Gardens).

Planting – one viewpoint

Rhododendrons can be planted or transplanted in fall, winter or early spring, provided that they are kept moist, but late fall or early winter is best. Roots require oxygen and must be well drained. The spaces between soil particles should contain air (oxygen) and not be full of water. Rainwater in freely draining soil passes through and, in doing so, drags fresh air behind it into the soil from the atmosphere above.

Always plant high. Place the root ball either in a very shallow hollow or on the surface. Add a ring of humus-rich soil or compost around the periphery. Mix in a few handfuls of canola meal or alfalfa pellets. Roots are shallow and will grow sideways into this hospitable medium. As successive rings of mulch are added year-by-year, a large flat root will develop. In time, the ground surface will tend to flatten out, but the bottom of the main stem should remain about 10 cm above the general level.

If your soil has been recently cultivated, plant on a low hill to allow for later compaction. The surface may drop more than 15 cm. If your soil is predominantly clay, never just dig a hole and plant your rhodo - it will drown. Instead, thoroughly amend the soil, and then place the new plant on top. Add peripheral loam and mulch as before.

If you are starting a new garden on unconsolidated fill, remember that it takes 5 years or more for fill to consolidate and your rhododendron may sink 20 cm or more. If this happens, do not then simply fill the hollow and bury the root. Dig out the plant, fill the hollow with loam, replace the plant on top, and mulch the periphery as before (be sure there is downslope drainage).

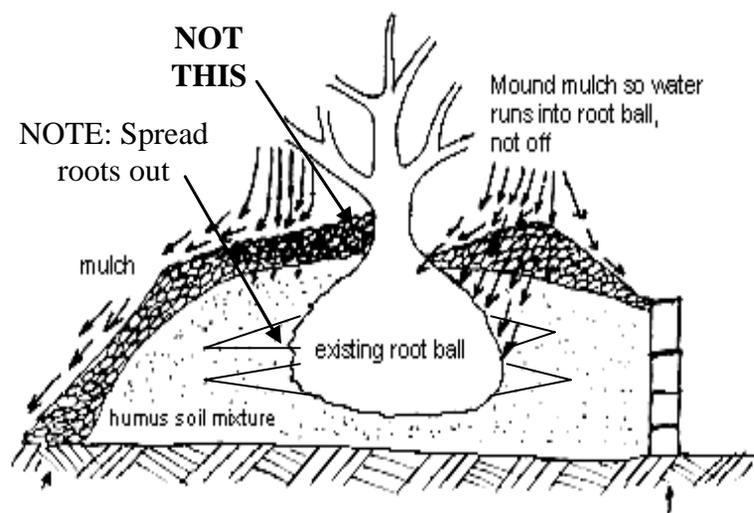
If your new plant is in a container, loosen the outside roots and remove it. If the plant is at all pot-bound, make four radial cuts down the sides and across the bottom of the root ball. From the bottom, turn out the four quadrants then plant. This exposes maximum root area to the surrounding medium.

Rhododendrons are easily moved. Begin by digging a trench about one spade deep around the drip line. Push you spade under the root all around the plant. Then pry upward and the flat root ball will pop out of the ground. Shuffle onto a board or tarp and drag to the new location.

Planting (from the ARS Website)- a slightly different viewpoint

Rhododendrons should be planted with either a root ball, if the plants are field grown, or with their container mix, if container grown. In favorable climates, rhododendrons can be planted almost any time of the year with reasonable success. In colder areas, early spring planting is recommended with early fall planting being second choice. In hot areas, fall planting is preferred.

When planting, first consider the nature of the soil. This may mean working in organic matter and acidifying the soil if it's 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 it is advisable to have the soil analysed to decide how to proceed. Do not use aluminum sulfate to acidify the soil because aluminum is harmful to the plants.



Your plants will come burlaped or in plastic bags or containers. The burlap may be left on the

root ball unless it is plastic or otherwise non-biodegradable. Open up the biodegradable burlap and lay it well back from the trunk, taking care to remove any plastic or other types of cord or string. 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 or perlite 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, bark, and sand or perlite. 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.

In hot climates, root rot organisms flourish in wet soils and can kill rhododendrons. Under these conditions, raised planting beds that incorporate 50% or more fine pine bark can be helpful in suppressing *Phytophthora* root rot. Extreme cases may require the use of fungicides such as Subdue or Aliette (may not be available in Canada).

If you dig a hole in heavy soil and fill it back with a light soil mixture, you may be creating a bucket, which will hold significant water.

Before planting, dry root balls should be thoroughly soaked in a tub of water. Under normal circumstances, it is not necessary to break apart a soil root ball; however, some loosening of the outer roots should be done 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.

Mulching

Many sorts of mulch are suitable - cow or horse manure garden compost, rotted leaves (especially oak leaves) and bark chips. Adding alfalfa or canola meal around the root limits when mulching is very beneficial.

Ted commented that he learned from bitter experience that the top of the root ball should never be heavily mulched. A thatch of mulch limits access of air, rain and irrigation water that the roots require. Mulch is often impervious and inhibits downward flow of water until it itself is fully saturated; the mulch can be wet but the roots and soil beneath remain dry. This is called "perched" water, because it sits high near the surface and does not get deep into the root. New roots then grow upward into the moist mulch and old roots starve. The plant may not die, but with a wrong-way-up root system it will not thrive. Inspect your plants for upward growing roots. If they are extensive, shave them off with a sharp spade, dig the plant out, place sandy soil or loam beneath and replace so that the original root surface is 15 cm above grade. Mulch the periphery of the root as before.

There is much to be gained aesthetically by high planting followed by peripheral mulching.

Mature plants will develop an attractive 'flare' where roots radiate out from the base of the main stem. This flare connects the plant with the soil in a firm and pleasing way

Fertilizing

Generally recommended is 10-8-6, with slow release nitrogen and micronutrients. Do not use the low nitrogen mixtures often sold as rhodo fertilizer. Norman Todd of Firwood Rhododendron Nursery recommends a regular LIGHT application about every two months between November and July, with larger amounts after blooming. Fertilize near the drip line where the active roots are and work it into the peripheral mulch. Some cultivars, 'Elizabeth' for example, readily suffer fertilizer burn and respond best to organic fertilizers. All rhododendrons appreciate a dose of fish fertilizer after blooming. Dolomite can be beneficial to rhododendrons in small quantities (Mg), but lime creates too alkaline a soil.

Alan and Liz Murray of Cobble Hill use only organic fertilizer. "Murray's Rhodo Organic Mix" is:
4 parts each of alfalfa meal, canola meal, blood meal,
2 parts dolomite,
1 part each of rock phosphate, bone meal, kelp meal and greensand.

Because all ingredients release slowly, only one application (after blooming) is needed each year. This fertilizer may be available pre-mixed at Buckerfields on Keating Cross road or Bordens Mercantile off Quadra (if not, they have the ingredients). It takes a year to become effective, so apply 10-8-6 as well the first year you use the organic mix.

Shade and Aspect

Most rhododendrons appreciate some shelter from the late afternoon summer sun. However, azaleas and small lepidote rhododendrons are the most sun tolerant, and, if kept well watered, they will grow in full sun. To bloom well, all lepidotes, azaleas, and most elepidotes need 4 to 6 hours or more of sun (preferably from mid-morning to mid-afternoon) then dappled shade for the balance of the day. Only elepidotes with very large leaves require shade all day; and even then it should be filtered not dense shade - the sort of shade cast by overarching high trees.

Try to avoid planting in frost hollows. Shelter from the cold outflow winter winds that come from the north and east is desirable. The site of the Rhododendron and Hosta Garden at the Horticulture Centre is good: trees to the east, west and north, and open to the south. The garden is slow to warm in the morning, but this encourages longer bloom life. Air circulation is good, although it tends to be a little windy in winter and early spring.

Types of pruning

There are three categories of pruning, - leaf bud pruning, woody pruning and deadheading. Most rhododendrons (the first three groups above) make new leaf in one sudden burst, immediately after flowering. In fall, if growing conditions are good, a second much smaller flush of leaves may be produced. Leaves of this second flush may be twisted and chloritic. In contrast, evergreen azaleas make leaves over a period of about a month after blooming and so can be lightly sheared immediately after blooming. The first group, elepidotes (the most common garden rhododendrons) generally do not break out into leaf freely from old wood that has been cut back. The other groups usually break freely from pruned old wood.

Leaf bud pruning and dead-heading of elepidotes

Left to their own devices, elepidotes often become open and leggy. Once established, "leginess" is difficult to correct. Several factors contribute to leginess, but the best way to avoid it is by careful

shaping in the early years. For elepidotes, shaping is best done by removing terminal leaf buds in the spring. This is generally impractical in azaleas and small leaved rhododendrons (lepidotes), because terminal buds are small and very numerous. For them, there are there are more appropriate procedures.

During the summer, terminal leaf buds develop at the end of each new shoot. In very young plants, all terminal buds are leaf buds, but in healthy mature plants most will be flower buds. Flower buds can usually be readily distinguished because they are 3 to 4 times larger. The differentiation of leaf and flower buds generally is evident by fall.

Beneath the terminal bud is a whorl of leaves, each with a small axillary leaf bud. If the terminal bud is a flower bud, then, after flowering, two or more axillary buds are activated and each produces a shoot. (The vigour of these shoots is enhanced if flowers are promptly deadheaded). Consequently, from a single blossoming shoot, two or three new blossoming shoots arise. Such is the normal healthy adult condition. However if the terminal bud is a leaf bud (the common situation in young plants or in unhealthy older ones) then, as a rule, only one shoot is produced. If this is repeated over several years, the plant becomes leggy and tends to bloom poorly.

Young plants from a good nursery will have several branches. If, you do not leaf bud prune, these branches will grow but few extra branches will develop and the plant will become leggy. However, if you remove terminal leaf buds, axillary buds beneath become activated, and produce two or more new branches. A compact, well-dressed sturdy bush develops, which is able to withstand wind and carry snow with minimal damage.

As a plant matures, an ever-increasing number of terminal buds are flower buds. Once this happens, the need to leaf bud prune diminishes. In some varieties, several sub-equal terminal leaf buds are formed. If there are three, remove the central one; if there are two, retain both. Leaf bud pruning of species with large leaves can give a “too crowded” effect. Leaf bud prunes these plants selectively and only every second year.

Woody pruning of elepidotes

Elepidotes often do not break readily from old wood, or do so unpredictably. Modest annual trimming (immediately after blooming) of all plants helps to control their sizes and shapes. Ted prunes floppy branches back to sturdy lower shoots and takes out crossing wood. He removes perhaps 5 % to 10% of the superstructure each year. This helps to prevent the superstructure outgrowing the root. Do this woody pruning before deadheading.

Long neglected plants, that have got out of hand or which have been heavily damaged by snow, often benefit by being cut down to the ground (coppiced). Most will quickly regenerate and you can shape the plant as it grows back. Coppiced plants may not bloom well for several years.

For plants that are not quite out of hand, but nevertheless are too leggy and need shaping, selective strong pruning of old wood can be tried. Prune back to a sturdy lower shoot or to an active bud. If this is not possible, then prune to a dormant bud. Begin by pruning a few branches one year, a few more the following year, and so on. This rather tentative procedure, sometimes does not work as well as the brutal coppicing. Often, elepidote rhododendrons that are selectively pruned do not break as readily from old wood as those that have been cut to the ground. Many elepidotes, when mature, have a tree-like form. They can be readily pruned to a single stem and the lower branches progressively removed as the plant ages. Underplantings of smaller rhododendrons can then be added.

Woody Pruning of Mature Elepidotes – Another Approach

Another approach to shaping a leggy mature plant is to remove 1 to 2 years of growth from the longest branches, step back and look at the result, then cut off whatever else is needed to get the desired shape. Crossing and shaded-out branches are also removed to improve air circulation. This

writer recommends heavy pruning in the **last part of March**, which means losing this year's flowers because buds set in the fall. New growth from plants pruned this way tends to be free of deformities. After blooming, only light pruning is recommended.

Woody pruning and deadheading of lepidotes

Lepidotes have smaller and more numerous flowers and leaves than elepidotes, so deadheading of entire plants can be prohibitively laborious. However, they break much more freely from old wood than elepidotes. As a consequence, small lepidote varieties can be lightly sheared with hedge clippers, followed by deadheading of the few spent flowers that the shears have missed. The dreary task of deadheading of larger lepidote varieties can be much reduced by modest pruning of last year's wood - cutting back the longer of last year's shoots by perhaps 20%. This removes the spent blooms and much reduces the task of deadheading. After pruning, the rest of the bush can be deadheaded. Ted notes that such modest pruning of healthy plants does not reduce blooming the following year. Because they break readily from old wood, major reshaping of large old lepidotes can be freely and confidently undertaken. Remove crossing wood. Do all this immediately after blooming, before new leaves appear.

Pruning deciduous azaleas

They break freely from old wood and so can be pruned in much the same way as lepidotes - cut back last year's wood (and so remove many spent blooms) after blooming but before new leaves develop. You may also wish to prune back stems that did not bear flowers last year. Deciduous azaleas sometimes throw long irregular shoots which are charming in the woodland setting and which you may wish to retain. If however you wish to contain growth in a more formal setting, then prune them down. They will break freely in a few weeks.

Pruning evergreen azaleas

Flowers are far too numerous to deadhead. Instead shear the entire plant lightly after blooming. After shearing, pick over the plant to remove spent blooms missed by the shears. By shearing, some early leaves will be lost, but later leaves will soon clothe the bush and the plant will not be weakened. Over several years, you can shape the bush to your taste. Evergreen azaleas, together with small lepidotes, are the easiest of all rhododendrons to prune.

Pests and Problems

Leaf Margin Necrosis is difficult to diagnose!

Possible causes:

1. cold damage
2. drought, especially during active growth
3. wind desiccation
4. poor drainage
5. roots injured or diseased
6. root ball planted too deeply
7. plant girdled by weevil larvae
8. too much fertilizer, especially if little rain hits the soil – close to the house for example
9. nutrient deficiency

Chlorosis

In chlorosis, veins are green but the rest of the leaf is yellowed. One or more of several causes can

lead to this yellowing. The most likely are poor drainage (see drainage above), or nitrogen deficiency. The latter can be remedied by regular dressings of 10-8-6 fertilizer, or application of alfalfa, canola or fish fertilizer after blooming. Other possible causes of chlorosis are magnesium deficiency, remedied by dressing with Epsom salts or iron deficiency, remedied by dressing with Chelated iron. A mix developed by Alec McCarter to combat chlorosis has 1tblsp each of ammonium sulphate, iron kelate and magnesium sulphate (Epsom salts) in 4.5 liters (1 gallon) of water. Art Lightburn uses 3 tbsps fish fertilizer, 2 tabspns Epsom Salts and 1 tblspn chelated iron in 8 litres of water.

Fungus Infections

Mildew can be a serious problem in some years. Virulent strains of mildew began to appear in our area about 1990. Whole plants were defoliate by midsummer. Fungicide sprays can be effective (every two weeks after new leaves appear). However, for those, like me, who do not like to spray, a better solution is to choose mildew-resistant rhododendron varieties. It is also important also to site your plants where there is good air circulation, good drainage and, for most rhododendrons, several hours of sun a day. Above all it is important to have healthy well-fed plants.

As in all local gardens, mildew is present at Glendale gardens (HCP), but we have not yet had a really bad general infection. The garden slopes gently south and the surrounding trees have been limbed upward to allow good air drainage. It is often quite windy in late spring and early summer when new leaves are forming, and although this is troublesome for the larger leaved plants, on balance it seems to be advantageous.

Since the renovation of the Rhoda Garden began in 1995, individual plants that have been badly infected have been progressively removed. This does not mean that all varieties currently in the garden are resistant, and some may be less resistant in your garden. Nevertheless if you are looking for disease resistant plants you may find it helpful to inspect our collection and judge for yourself the relative health of different varieties. In general, Ted Irving found that the following rules for elepidote rhododendrons apply at Glendale and in his own garden:

- 1) Plants with thick indumentums (e.g. 'Sir Charles Lemon', *R. yakushmanum* and its hybrids) are resistant.
- 2) *R. williamsianum* and most of its hybrids (e.g. 'Moonstone', 'Jock', 'Brocade' 'Brickdust') are resistant.
- 3) Most hybrids of *R. strigillosum* (e.g. 'Taurus', 'Grace Seabrook') are resistant.

Of course there are also many other resistant varieties. Susceptible types include species of the Cinnabarina and Campylocarpa subsections and their hybrids. I like some of the plants enough that I grow them anyway and try to site them and provide conditions that minimize mildew formation.

Late summer mildew is common on some deciduous azaleas, as it is for example on phlox, and can destroy the fall colours. Insufficient or irregular watering could be part of the cause. Among deciduous azaleas, there is a great deal of variation in resistance, and we have progressively removed the more susceptible varieties at Glendale, now we have only a few plants that become infected. Although the Glendale garden plants are not entirely free of mildew, our named collection, especially those that have been in the garden for many years, are relatively resistant and could therefore help you select resistant varieties.

Root Weevils

Expect to find root weevils wherever there are conifers. The adults feed on leaf edges and produce a scalloped effect. Larvae, which overwinter in the ground, feed on roots. Chemical controls exist but since adults feed at night, they can be 'hand picked' with a flashlight. On plants with a major stem, a wrap covered with Stickyfoot can be effective. Some people put down crumpled newspaper (Weevil Hotels) as you might for earwigs, then dispose of the weevils that crawl inside. There are chemical controls for larvae but also nematodes that parasitize the larvae. The nematodes are relatively expensive, so we have applied them only to affected plants. For them to be effective, the soil must generally be warm (about 13°C or 55°F) but newer varieties of nematodes are apparently less temperature dependent. I have been told that a solution of 1 cup of lysol in 4 litres of water can be poured on the soil around the plants to control grubs.

Aphids and White Fly

Aphids and White Fly feed on the new growth of some rhododendrons. Spraying with water may help, or the new foliage can be treated with Safer's soap.

Slugs, Caterpillars and Wood Lice

Slugs and wood lice are generally not a major problem but will feed on the new growth of young plants, especially those in pots. Safer's has an animal-safe product for slugs and traps with dry corn meal can be used to control wood lice. Caterpillars, especially leaf rollers, attack new growth on some rhododendrons. Physical removal avoids the need for pesticides.

Recipe for Making Compost Tea

Updated Sept 2007 from HCP Horizons Vol.18 no. 4 August/September 2002

*this may help you avoid the need to use fungicides to combat mildew. See also

http://soilfoodweb.ca/making_tea.html for information and one source, or contact Earth Elixir for information about their product (www.earthelixir.com).

There are as many different recipes for making compost tea as there are people making it. However, to make a quality tea several criteria must be met:

1. Compost tea must be made using a high quality compost or manure. This means it has been aged properly at a high temperature in order to ensure that weed seeds, as well as animal and plant pathogens, are killed. Proper aeration is necessary to promote the growth of aerobic bacteria, which are more desirable than anaerobic bacteria, which may have by-products potentially damaging to plants.
2. Compost tea must have high microbial numbers and diversity. Compost that is rich in microbe populations can result in tea with the same qualities. Compost tea microbiology is most influenced by oxygen availability, nutrient availability, and the initial microbiology of the compost used to make the tea.
3. Compost tea must be made using clean water that is chlorine and pesticide free. Allow tap water to sit out for a day and refrain from using containers or sprayers that have previously been used for pesticides in order to maximize microbial numbers and diversity in the tea.
4. Compost tea must be allowed to "brew" for sufficient time in order for microorganism populations to grow and develop. What is considered sufficient time varies from recipe to recipe, but generally it should be allowed to work for three to eight days.

5. Compost tea must be kept aerated. During the brewing process it is important to stir the water regularly in order to keep oxygen levels high in the tea. Stirring two or three times a day is usually considered sufficient.

6. Compost tea must be stored properly and used in a timely fashion.

Unlike wine, compost tea does not typically improve with time! It should be used as soon as possible and should be stored in such a manner so that it receives agitation and ventilation regularly.

Once the tea maker has satisfied all the basic requirements for a good compost tea, he or she may have some fun with creating the perfect recipe.

Either homemade or commercially bought compost or well-composted manure or a combination thereof may be used. Some people choose to supplement their tea with simple sugars such as honey, molasses, or syrup to "feed" the microorganisms; others like to fortify the tea with kelp or other sources of micronutrients.

Most people use a large bucket and a burlap sack (a very large tea bag!) to make the tea for home use; however, a quick glance at the internet will reveal many types of brewing machines that may be purchased to make and apply compost tea on a larger scale.

Foliar applications of the tea may be done using a pesticide sprayer (that has not been used for pesticides) or even a hand-held misting sprayer. Applications to the rhizosphere may be poured directly onto the soil around the root zones of the plants.

Usage: spray the 'tea' on foliage and soil as leaves emerge and again after they mature

Summary

For healthy rhododendrons, WASH the LaDS.

Norman Todd uses the acronym **W.A.S.H.**, to describe the basics of rhododendron culture:

W- for **Water**, because our climate does not follow the monsoon pattern of the original rhodo home: a wet summer and a dry winter. Rhodos here need one inch of water per week, which can be given by hosing for one minute two times every seven days in season.

A- for **Acid**. A pH of 5.5 is ideal, and mercifully, this condition can be created where it does not exist. For example, remember the remedial use of iron sulfate as an acid enhancer.

S- for **Shade**. An average of half a day of sun is the ideal for a proper setting of flowers buds.

H- for **Humus**. Bark mulch is especially suitable, for it gives the right pH (5.5), and unlike peat moss, facilitates an airy environment beloved by the rhodo roots.

I would add the **LaDS**:

L – for **Loam** soil in an ideal case

a – for acid soil to reinforce its importance

D – for good **Drainage** which is essential for plant health

S - for **Shallow Planting** another essential for plant health.

Some Useful References (available via Amazon.ca)

Cox, Kenneth, N. E. 2005
Rhododendrons and Azaleas. A Colour Guide
The Crowood Press Ltd

Cox, Kenneth 1998
Rhododendrons – A Care Manual
Laurel Glen Publishing, San Diego, California

Cox, P. A. & Kenneth, N. E. 1997
The Encyclopedia of Rhododendron Species.
Glendoick Publishing
(the 'Bible')

Cullen, James
Hardy Rhododendron Species: A Guide to Identification 2005
Timber Press
(useful but a bit limited if you are trying to key out really uncommon species)

Harold E. Greer 1996
Greer's Guide to Available Rhododendrons: Species and Hybrids – Third Edition
Offshoot Publications, Eugene, Oregon
(the best general guide to available plants but may be superceded soon)

Homer E. Salley and Harold E. Greer 1992
Rhododendron Hybrids (Includes Selected, Named Forms of Rhododendron Species) - Second Edition
Timber Press Inc., Portland, Oregon

McGuire, J.F.H. and Robinson, M.L.A. 2009
Pocket Guide to Rhododendron Species
Kew Publishing, Royal Botanic Gardens, Kew
(this one is pricy)