

# Fertilizers, and Fertilizing 2

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Why do rhododendron have yellow leaves?

- Firstly, make sure that what you are seeing is not just leaf senescence – old leaves falling off at the end of their two or three year life. This happens just before winter or in summer drought.
- Yellow rhododendron leaves often represent the plant's expression of dissatisfaction with its care. Rhodos are picky about the soil you plant them in and about how much water they like. If you see your rhododendron leaves turning yellow, review each and every element of the plant's care.
- First, take a look at how well your soil drains. Rhodos don't do well in wet soil, and "wet feet" can cause rhodo leaves to turn yellow. Give the plant a deep drink, then watch how fast the water soaks into the soil. If your drainage is bad, transplant the shrub sooner rather than later to a location with well-drained soil.
- Next, test your soil's acidity with a home pH tester. If your soil is alkaline, you've found one reason for rhododendron leaves turning yellow: mineral deficiency causing chlorosis.
- Rhodos can take up too much calcium and not enough iron in alkaline soils. Chlorosis is very likely when the yellowing is mostly between the veins of new leaves. Although it is possible to acidify the soil with dolomite lime, transplanting the shrub to a raised bed might be the best and quickest solution to rhododendron leaves turning yellow from chlorosis.
- Another reason for yellow rhododendron leaves might be the way you planted the shrub. Rhododendrons should be planted with the root ball just at the soil surface. If you can't feel the root ball in the soil, you have planted it too deeply. Replant at the proper level.
- Lack of water or food may also cause leaves turning yellow. Give the plant fertilizer in late May to June, or if you did not fertilise earlier in the year, feed it immediately and at the same time, give it a good drink. If it perks up, you have found the problem!
- If none of these seem to describe your plant's problem, did you recently apply a chemicals to its leaves. Misapplied chemicals can burn foliage, also resulting in yellow rhododendron leaves.

Poor Rhodo Flower Set

- If your plant set flower buds but didn't bloom, the buds were probably frost-nipped or destroyed by cold, drying winds.

- More commonly, though, flower buds may not have formed at all, guaranteeing non-flowering rhododendrons the following spring. Among problems of rhododendron, not blooming is one of the easiest to cure.
- The most common causes and some solutions:
  - **Not Enough Light:** Although we commonly plant rhododendrons in the shade in North America in order to keep their feet cool, you've got to find a balance between shade and light. Not enough shade may overheat the plants, but not enough light and they'll lack the ability to produce the energy they need for blooming.
  - **Too Much Fertilizer:** Feed your rhododendron all you like in the spring, but by late summer, you need to cut back on both fertilizer and water to give the plant just enough stress to encourage blooming. Always watch the amount of nitrogen you're giving your plant if it seems to be growing lots of new leaves without producing any flowers – it's a sure sign you need to back off the feeding. The presence of phosphorus, like bone meal, can help offset this.
  - **Age of Plant:** If your rhododendron has never bloomed before, it may simply be too young. Every variety and species is a little different in this regard!
  - **Bloom Pattern:** Again, the species of your rhododendron matters! Some species simply don't bloom every year, or will bloom heavily one year and need another to rest before doing it again. If your rhododendron produced lots of seeds last season, that can also have an influence on blooms. Remove any spent blooms you find before they can become seed pods to ensure the plant's energy is mostly available for flower bud production rather than for seeds.

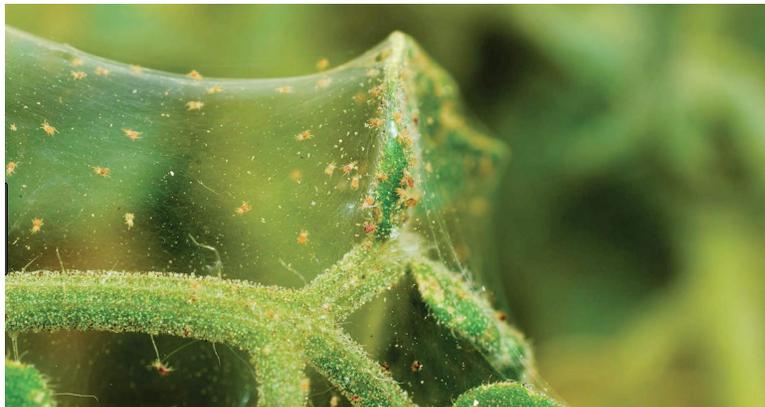
#### Winter damage of Rhodos

- Cold injury in rhododendron is caused by too much water evaporating from the leaves, without anything to replace it. When cold, dry winds blow across leaf surfaces, they tend to take a lot of extra fluid with them. Unfortunately, in the winter, it's not uncommon for this to happen when the ground is frozen solid, limiting how much water can be brought back into the plant. Without adequate water levels in their cells, the tips and even entire leaves of rhododendrons will wither and die.
- Rhododendrons attempt to protect themselves from winter dehydration by curling their leaves, allowing them to hang down. This mechanism is often effective, but there are also things one can do to help protect your rhodos from winter damage.
- Because rhododendrons root much more shallowly than many other plants, it's important to keep a thick layer of mulch over this delicate system. Ten cm (four inches) of an organic mulch like wood chips or pine needles is often adequate protection from the cold. It'll also slow water evaporation from the ground, helping your plant stay hydrated.

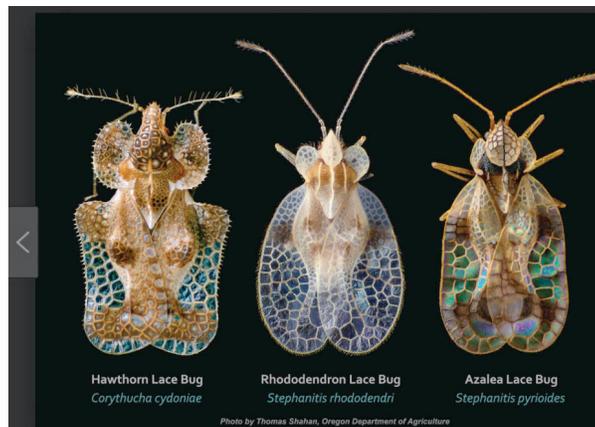
- Make sure to give your plants a long, deep drink on warmer days so they have a chance to recover from cold snaps – not usually a problem on VI.
- A windbreak made from burlap, lattice or a snow fence can help slow drying winds, but if your plant is already planted in a protected area, it should be safe enough from winter damage.

## Insect Damage on Rhodos

- Of the few rhododendron insect problems that exist, most can be handled first through prevention or subsequent treatment with neem oil.
  - **Spider mites** – Spider mites feed off of bud and leaf sap, leaving leaves yellow or bronzed.



- **Lace bugs** – If the upper sides of leaves are speckled green and yellow, then lace bugs may be at work. The tiny lace bug does most of its damage in the spring and summer and tends to be most problematic on rhododendrons that have been planted in sunny locations. The young insects feed on sap and leave small drops of black excrement in their path.



• **Weevils** – The adult black vine weevil is a night-feeding insect that is about 5-10 mm (0.2-0.4 in) in length. It is most prevalent from May through September. The weevil feeds on leaves creating a C-shaped notch around the leaf margin. Although the damage is not attractive, it presents no serious risk to the bush. However, action is necessary to mitigate damage by the larva of the next generation. The larvae cause most damage by feeding on the roots and girdling the lower stems, disrupting the flow of nutrients and water through the plant, and their feeding may result in the death of a small plant. The larvae are legless, C-shaped, and are white with reddish brown heads. They occur at a depth of 1.5 to 40 cm (3/4 to 16 in) in the soil around the roots .



### Fertilizing

- Like all plants, rhododendrons require adequate nutrients to grow and flower at their best, and these nutrients in young plants may be provided from some form of fertilizer. Whether you use organic or “chemical” is your choice. Applied in proper amounts, either type will produce healthy plants. A properly fed plant is hardier and will withstand more cold than one that is under-fed.
- Commercial rhodo products suggest that a 10-6-4 (nitrogen, phosphate, potash; N-K-P) formula is good. While phosphate promotes bud set, a plant can only use a certain amount. Unlike nitrogen, phosphate and potash do not disappear from the soil, but build up little by little with successive fertilizing.
- The alternative is all organic mix of 4-2-2. Borden’s has calcium, magnesium and sulphur through the dolomite lime and the complete spectrum of trace elements contained in the other seven ingredients.
  - 10 kg is \$18.4; 20 kg is \$29.99
- Where the soil is not frozen all winter, like on Vancouver Island, roots can grow through the winter. Fertilizer can thus be applied after the plant goes dormant (stops growing above ground) sometime between late November and January, a second time in February/March, and a third time in April/May.

- No fertilising should occur after the plants flower, as that is when stems and leaves grow. If then fertilised, they may grow too leggy and may still even be growing in the fall when these tissues should be hardening off.
- For most garden situations the old rule of “**once before they bloom**” and “**once after they bloom**” is still a sensible approach.
- Large old plants that have had mulch for years do not need fertilizing.

#### Epson Salts

- Epsom salt helps improve flower blooming and enhances a plant's green color. It can even help plants grow bushier. Epsom salt is made up of hydrated magnesium sulfate (magnesium and sulfur), which is important to healthy plant growth.
- Magnesium sulfate is pH neutral, so it won't harm your soil. The crystals break down into water, magnesium, and sulfur – three components which are beneficial in some way to most plants.
- A foliar spray can be used during the growing season. Add two tablespoons (30 cc) of Epsom salt to a gallon (four l) of water and use a tank sprayer to apply the mix once a month, substituting the spray for a regular watering. Use one tablespoon (15 cc) per gallon of water if you apply Epsom salt spray more often than once a month.

- When rhododendron leaves start to turn yellow between the green leaf veins, your rhododendron is suffering from chlorosis from a lack of iron or magnesium. When older leaves on the shrub turn yellow, then develop reddish-purple blotches and brown edges, the plant is suffering from magnesium deficiency. A foliar spray as described can correct the problem. **Epsom salts are only needed when rhododendrons suffer from magnesium chlorosis.**



- Iron chlorosis generally affects younger growth on the plant.
- Epson salt granules can also be sprinkled on the ground when fertilizing – 17 cc/ m<sup>2</sup> (1 tablespoon per nine ft<sup>2</sup>)
- Its cheapest to buy it in bulk – 50 lb bags at Shar-Kare cost \$37, 4 lb for \$8!

#### Other Elements

- **Iron:** 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 test should be performed to see whether high pH is a problem and if it is the soil should be acidified. For a quick but temporary solution, ferrous sulfate can be added to the soil or chelated iron can be sprayed on the foliage, but the soil pH should be corrected for long term good growth.
- **Calcium:** 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.

#### Ph – an explanation!

- To simplify what pH is, it's basically a measurement comparing how many hydrogen ions we have in our soil versus a handful of other nutrient ions — mainly calcium, magnesium, potassium, sodium and aluminum. The more hydrogen proportionally we have, the lower our pH is and the more “acidic” it is. The more of the other nutrients proportionally we have, the higher our pH is, and the more “alkaline” it is.
- If your soil pH is low, the common advice would be to add lime to raise the pH of our soil, usually with dolomite lime.
- The calcium and magnesium in the lime will knock some of the hydrogen out of the way, giving proportionally more of these minerals, therefore raising the pH, at least in the short term.
- So the problem is not that dolomite lime won't raise the pH, but that our pH test did not tell us if we actually needed calcium and magnesium. Perhaps we already have too much magnesium, or too much calcium. It's almost certain that we don't need both in the ratio that dolomite lime gives us. Adding more of the wrong nutrient is just going to make things worse. For example, too much magnesium causes some major compaction, among other things.
- Some high pHs are due mostly to sodium and potassium, and they actually still need calcium and perhaps magnesium. We wouldn't know that if we just used the pH number as our basis for liming.
- The pH does give us a clue that we may have a nutritional and microbial imbalance in our soil, but this gives us no information as to why that may be so. As such, it alone is of very little use to us.
- It is not that pH isn't important to plants and microbes. Knowing the pH value, however, doesn't help us much with soil management decisions, and it certainly shouldn't be used to determine how much lime to add to the soil. pH is the result of the elements in our soil, not the cause.

- Now, the reason we like to know the pH is that most nutrients, particularly the most essential nutrients, are most readily available to plants somewhere in the 6-7 pH range, gradually decreasing as the pH gets further up or down the scale. For some plants, a potential problem is that some micronutrients become more available outside this range, especially in low pH soil, sometimes to toxic quantities.
- So it's not that the acidity of a low (e.g., 4.5) pH soil is harmful in of itself, it's that then most nutrients aren't as available to plants, and a few may be too available.
- Also, plants that are considered "acid-loving" like rhodos don't actually love hydrogen. Instead, there are various benefits they may get out of a lower pH soil. They may just need certain trace minerals in abundance, and those trace minerals are more available in acidic soil, or they may just need a certain fungal (mycorrhizal)-dominated soil. Fungi decrease soil pH, so it may be that these plants don't care at all about the pH, and they just want their specific fungi.

#### Back then to Dolomite Lime

- Gardening soil should have a calcium to magnesium ratio of somewhere between 7:1 (sandier soils) and 10:1 (clay soils). Outside of this range, your soil will often have drainage problems, your plants will often have health problems and insect and disease problems, and you will have weed problems. Thus, don't add too much dolomite lime.
- Dolomitic lime is a natural rock, and is calcium magnesium carbonate ( $\text{CaMg}(\text{CO}_3)_2$ ), with about 50% calcium carbonate and 40% magnesium carbonate, giving approximately 22% calcium and at least 11% magnesium.
- The difference between dolomite lime and lime ( $\text{CaCO}_3$ ) is that dolomitic lime also contains magnesium carbonate and some other minor materials.
- A wide selection of the native rhododendron species originating in Asia grow in mountains of dolomite limestone where the pH approximates 6.0. The addition of dolomite lime to our plantings darkens foliage color and increases flower buds.
- Gypsum, the common name for calcium sulphate, is another type of fertilizer that can be used to improve the quality of the rhododendrons, if calcium level is too low.

#### Other Fertilizers

- **Coffee grounds** can be mixed directly into the soil to help balance alkaline soil or give a boost of acidity for plants that prefer a lower pH, like hydrangeas or rhododendrons. Additionally, as coffee grounds decompose, they release elements that support plant growth.