

## GARDEN MYTHS



Limestone country: England, where the lime myth was born.

# the truth about lime

Lime is a very important substance in gardening but it has been much misunderstood in Australia, says our garden mythbuster, Don Burke.

Many of our ancestors came from Great Britain and countries around the Mediterranean Sea. As you fly into England you see the White Cliffs of Dover (pictured above), giving you some hint of the type of limestone soils found there. In the Mediterranean region many

countries (like Italy, Greece and Spain) feature gravelly soils made up of more or less pure limestone. Most of the Mediterranean islands (Malta, Sicily, etc) are pure lumps of limestone. Thus it is that many of our forebears came from lime-riddled areas. Their homelands overflowed with lime. If you put

more lime on anything in your garden, you could be in real trouble. They brought this fear of lime to Australia and we copied it from British gardening books. We were told that lime from fresh concrete pots or even garden masonry walls could kill azaleas and camellias. All of this is nonsense.



Azaleas, not as lime-sensitive as the myth says.

## our lime tests prove it

Some years back, we set up tests to see how bad garden lime really was. We bought 'lime-sensitive' plants such as azaleas and various others and grew them in good quality potting mix in all sorts of pots (black plastic, terracotta, fresh-from-the-mould unpainted concrete pots, and black plastic pots

with half a cup of lime added to the potting mix). Which plants do you think did best? The humbling answer is that after four months all plants grew identically. It made no difference at all. And even the azalea roots touching the sides of the fresh concrete pots were healthy and growing.

## lime types

**GARDEN LIME** is crushed limestone (ie, a natural mineral, small lumps of rock). Chemically, it is mostly calcium carbonate ( $\text{CaCO}_3$ ). This is your middle-of-the-road, generally useful lime used to raise the pH of soils when they are too acid. Ideally, soils need a pH of around 6.5 for healthy plant growth. A pH of 7 is neutral, a pH of 5 is rather acidic and a pH of 8.5 is quite alkaline.

**DOLOMITE** is a mix of calcium carbonate and magnesium carbonate ( $\text{MgCO}_3$ ). It is especially good if your soil also needs magnesium (as well as lime).

**GYPSUM** is not a true lime, but it's a superb source of calcium. It's calcium sulphate. Gypsum is not alkaline: that is, it adds calcium but does not change the pH of the soil.

## nasty limes

There are some limes well worth avoiding in gardens.

**UNSLAKED OR QUICK LIME** is calcium oxide ( $\text{CaO}$ ). This is nasty, corrosive stuff that gets really hot when you add water. It tends to burn plants.

**SLAKED OR HYDRATED LIME** ( $\text{CaOH}_2$ ) is unslaked lime after water is added. It is also aggressive and nasty towards plants.

Unslaked and slaked limes are used to absorb water in stabilising soils for erosion control, road-building, etc. They are also used to break down dead bodies. Avoid!

## why use lime

Put simply, calcium in all its available compounds is hugely important in both soil chemistry and soil structure. If you apply normal fertilisers that look like salt, the odds are that each year your soil is becoming more acid. I measured a soil once that had a pH of 3.5 (this was caused by using sulphate of ammonia on the nearby lawn, year after year).

So, if you live in Adelaide, Perth or in other limestone-soil areas, you could argue in favour of using sulphate of ammonia as a quick pH adjuster and nitrogen booster – but not elsewhere.

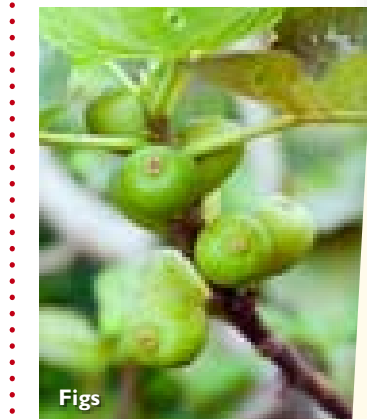
In other parts of the country, as the pH drops below 5, toxic levels of boron, copper, manganese and zinc may occur while calcium and molybdenum will become unavailable. So, using garden lime to raise the pH of the soil to around 6.5 can save the lives of many plants.

It is worth purchasing a pH testing kit from your local nursery or Bunnings store to see what the readings are in your various garden beds. Very high pH values (over 8) or very low (below 5) can lead to awful problems with many plants.

### SOIL STRUCTURE

Plant roots breathe oxygen. Healthy soils are full of cracks that range in size from large through to microscopic. All of these allow air to move freely in and out of the soil, so such soils are said to have a good 'soil structure' (ie, lots of cracks).

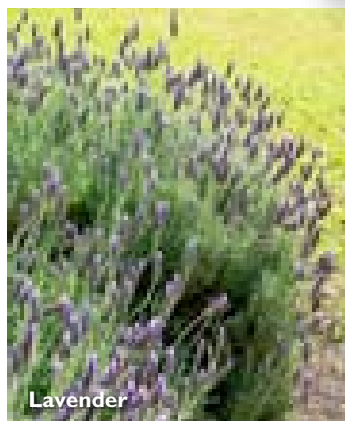
Compacted soils or soils with bad chemistry have few cracks and plant roots do very poorly in them. Calcium added



Figs



Hakea laurina



Lavender

## LIME LOVERS

Some plants adore or at least need lime. Almost all Mediterranean plants need lime: lavender, edible figs, olives, thyme, pomegranates, oleanders, rosemary, oregano. Other lime lovers include peas, beans, *Magnolia denudata*, bougainvilleas, Japanese maples, *Ceanothus*, Geraldton wax, *Cupressus macrocarpa*, lilacs, luculias, *Westringia fruticosa*, pride of Madiera (*Echium candicans*), *Hakea laurina*, *Hymenosporum flavum*.

to clay or loam soils enormously enhances the formation of cracks. You might note that sodium, from grey water, can ruin soil structure over the long haul, creating serious disasters.

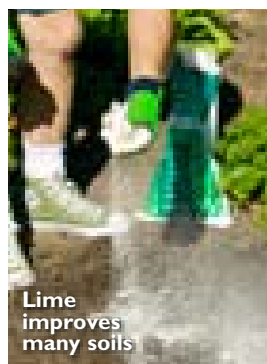
### PROBLEM SOLVING

If your clay or loam soil has a low pH (eg, 4.5) and is hard as a rock, add a handful of garden lime to the square metre plus a 10cm layer of compost and fork all this over thoroughly.

If your clay or loam soil has a neutral pH (6.5-7) but still is hard, apply one handful of gypsum per square metre. You should also add the 10cm of compost and fork the soil over

well. Liquid clay breakers work quickly but their effect lasts only a year. Gypsum and lime take longer to work, so if you use both clay breaker and gypsum you'll get the best results. Lime is rock. It is not very soluble, so

it takes around a year to work in the ground. The finer your lime the faster it works and the more it does for your soil. Gypsum is slightly-faster acting than lime, so you can tolerate it being more coarse-particled. ✨



Lime improves many soils

## the bottom line

Overall, the bottom line is this:

- Lime is not the evil enemy of azaleas and camellias.
- Key Mediterranean plants need lime to do well (see 'lime lovers', above).
- Clay soils are improved by the addition of gypsum.

Sweet & sour: for the record, alkaline soils are referred to in many old books as 'sweet soils' and acid soils as 'sour' soils.