

The root of the problem

Tree roots block drains. That is a simple fact but tied with this fact are a host of myths and errors. As we will see almost always the problem starts with a plumbing problem caused by age, soil movement or substandard work and roots are nothing more than an indicator that there is a plumbing problem that needs fixing.

A bit about roots

First of all we need to understand some basics about tree roots. Roots grow in response to appropriate stimuli (available moisture, nutrients, oxygen and appropriate soil temperatures). Once stimulated pioneer roots elongate from just behind the tip (the root cap) and continue to elongate for several weeks.

These young pioneer roots are very small in diameter (usually smaller than a millimetre in diameter and seldom thicker than several millimetres in diameter). Once they stop elongating cells on the outside edge of the root form elongations that protrude out at right angles to the root, into small spaces in the soil around them. These single cells extensions are called root hairs and these root hairs, and associated root organs, are the primary source of water and nutrient uptake so collectively this part of the root system is referred to as absorbing roots.

As the roots continue to get older the root hairs die (usually in a few weeks to a few months) and the roots start to become woody and develop a protective layer of bark. At this

stage the roots are very ineffective at absorbing and are often referred to as "woody roots".

Myth 1: The roots have broken my pipes

This is rarely the case! If we go back to basics all roots start of a small non woody roots. These roots exert only a relatively small force. Using basic maths and physics it can be demonstrated that force exerted by the tip of tree roots is very small. The force exerted in fact is so small most tree roots would have trouble growing through a shopping bag. We see evidence of this truth in the fact that we often see plants in nurseries growing in rather thin plastic bag type pots.

Myth 2: Tree roots "seek" out water

This is a complete fallacy. Tree roots have no sensing organs so they cannot detect water that is not immediately adjacent to their surface and they certainly cannot detect that it is in pipes. Root growth is stimulated by water and ceases when conditions are not ideal; so roots do not "look" for water when conditions are dry.

This makes sense for example if you think of a young root trying to grow through hard dry clay as opposed to soft wet clay. As a result during dry periods roots actually stop elongating altogether.

Myth 3: Tree roots are aggressive

Roots take advantage of available water so when conditions are ideal roots grow faster divide more frequently and elongate more. To this extent roots are opportunistic and when conditions are ideal their growth rate can be very rapid, depending on the species of tree.

The species that tend to grow more rapidly are often described as having aggressive root systems but

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this is somewhat inappropriate. Aggressive implies emotion and intent to their growth behaviour. A more appropriate description of these trees is that they have vigorous root systems.

It's a plumbing problem!

Almost always the problem starts with a plumbing fault. Old pipes have cement or rubber joints fail, soil movement causes joints to separate and so on. Once the seal is broken water starts to seep out into the surrounding soils. Once a root comes into contact with the moist soil (remember this is just a matter of chance) then they start to grow more rapidly.

Eventually, again by chance, they will find their way through the fault in the plumbing where conditions are ideal. Once in these ideal conditions the root starts to divide rapidly to take advantage of these ideal conditions before "the dry conditions start again". Of course the conditions seldom dry out and the moist warm oxygen and nutrient rich environment continues to encourage new growth.

Over time solids gets caught in the debris and over time the roots and solids forms a plug that can completely block the pipe. Over a relatively short period of time the drain blocks and a plumber is called. To alleviate the problem many plumbers use a mechanical device (an electric eel) to macerate and remove the roots.

Using an eel sometimes results in even more damage being caused to fragile pipes resulting in the hole in the pipe getting even larger. This accelerates the problem even more. "Water jetting" or "water laser" is

"Once a root comes in contact with the moist soil then they grow more rapidly"

The Root Of The Problem cont..

also used to clean pipes. This system uses very high pressure water to cut the roots and to remove built up solids. This option is more expensive but it can handle larger roots and does not damage the pipes.

Once they have been cut new

"Removing the tree is often not a suitable alternative"

roots start to grow from the cut ends and it is only a matter of time before the roots have again blocked the pipes. Root cutting is only a temporary solution. It may be the cheapest option at that point in time but it will not solve the problem. If the faulty plumbing is not repaired then the problem will persist.

What to do?

Removing the tree is often not a suitable alternative because council consent may not be granted. In addition it is probably only a matter of time before the roots from another tree stumble across the leak. Furthermore there is often a statutory requirement for you to maintain your pipes in good working condition so the plumbing will need to be repaired regardless of whether the tree is retained or removed.

There are few options available

for repairing the plumbing depending on the site conditions and the location and extent of the problem. The simplest option may be to dig up the plumbing and to repair the pipes. Another option is to dig a long trench either end of the fault and use "pipe bursting" to replace the defective section. Often these options are not possible or suitable for a number of reasons such as :

- Buildings or other structures over the pipes or
- Digging would cause significant damage to the gardens or
- Trees would be severely damaged or would need to be removed
- There is no access for machinery and digging by hand would require too much labour
- The depth of excavation would require benching, shoring etc
- There are "T" or "Y" junctions in the portion needing to be repaired

In situations such as these the ideal situation is to have the pipes relined. This option involves using water jetting to cut the roots and clean the pipes. Once this is done then a liner is inserted and cured in situ forming a waterproof membrane.

On first impression there may be concerns as to how a thin "plastic" lining can be useful. If you recall root tips exert very little pressure and these resin linings are far stronger than a plastic film.

How about the tree?

A plumbing problem seldom persists long enough for the tree to become dependant on the leaking pipe. Once the leak is

stopped the stimulus is removed and localised root growth is returned to normal and is unable to enter the pipe.

Any of the above system will repair the fault. Cutting roots that have entered the pipe will not affect the health or stability of the tree. Cutting roots for trenching required to perform repairs however may cause significant harm or even cause structural instability of the tree. You may need consent from the local council and should seek advice from a consulting arborist if you are intending to excavate closer to a tree than 12 times its trunk diameter.

- Mark Hartley



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