

The background of the cover is a vibrant stained glass illustration. It features a dense arrangement of leaves in various shades of green, yellow, orange, and pink, creating a mosaic-like effect. Two blue dragonflies with transparent wings are depicted: one in the upper left corner and another in the lower right quadrant. The entire scene is framed by a thin brown border.

Gardening After a Flood

Kate Wall

Award-winning
author of "Working
with Weeds" &
"Earth Repair
Gardening"

Gardening After A Flood



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Brisbane, Queensland

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For everyone who has experienced flooding, your garden will be wonderful again!

Huge thank you to Earthlife and to Bassett Barks for making this publication possible and free.

Acknowledgement

Throughout this book I name the products that I personally have used as part of garden restoration efforts. Normally I would not include brand names, however in this instance I want to make it as easy as possible for you restore your garden. I have also included product descriptions and detailed why I used those products, to allow you to substitute your preferred product or to help you find an alternative if the product I recommend is unavailable where you are.

One product has been a standout for me, and this is [Garden Mate](#) by [Earthlife](#). I have been using it for many years both at home and in my clients' gardens with incredible results. I like that it is easy to use and completely safe. It doesn't matter how much you apply or where you put it, it will not burn your plants or cause any harm to pets and wildlife. I also like that it accumulates in the soil and won't leach away. The result is permanent soil improvement and I have not found another single product that is its equal. After severe waterlogging I put [Garden Mate](#) on my garden to restore soil life and knew it would be the best way to restore other flooded gardens. I approached [Earthlife](#) who did not hesitate to support my efforts to help gardeners who had flooded. In the aftermath of the February 2022 floods, they have donated 15 tonnes of Garden Mate to gardeners who flooded. They also assisted me to get information to the people who needed it. They have continued working with me on this endeavour by supporting this publication, allowing it to be freely available to everyone who needs it.

Please share this book with anyone who may be needing this information.

Restoring your garden after flooding

The obvious signs of flood-damaged gardens are dead plants and layers of mud. What is less obvious is the damage flooding does to the soil. This soil damage can cause plants (especially trees) to die slowly many months after the flood, it can cause new plants to fail, and can create awful soil which is just too hard to garden in. There are steps we can take to make a huge difference in reducing the long-term damage caused by flooding to our garden and our soil.

The purpose of this book is to guide you through what can be done to minimise harm in the short term and to reverse the damage in the long term. A few simple tasks done sooner rather than later will make a huge difference to the amount of effort required to restore your garden. If you cannot get to your garden for some time following the flood, all is not lost. The advice here will still help you recreate good soil and a garden you can enjoy.

Restoring the garden is usually something you can do yourself, without needing qualified help or payouts from insurance. In a time when everything feels overwhelming, it can be very empowering to have something that you can take control of.

A garden with fresh green growth is always a thing of beauty and hope. When your world has turned to mud, don't underestimate the power of positivity that comes with a little bit of revival in the garden.

For gardeners who are trying to recover their garden after flooding, I salute you. I hope this book provides the support and know how you need to come out the other side with a better garden than before. If, after reading this, you still have questions, or simply wish to share your experience, you are welcome to email me at thegardenerswall@westnet.com.au. I will do my best to reply.

My experience

I live in Yeronga, a suburb on the Brisbane River that is highly flood prone. My first experience of flooding was in the major floods of 2011. Happily, my own home and garden did not flood, but my street was cut off by flood waters and my community devastated. I had been working in the water and wastewater industry leading up to the flood, and now found myself with little work, so I got busy helping others. The house at the end of my street had a beautiful garden before the flood. I knew if I could get permission, I could save the garden. The elderly owners never returned so I was not able to get permission, but this did inspire me to help others. I set up a volunteer group with another woman who had a mowing business and in the six months that followed we helped to restore over 150 gardens across 10 suburbs.

Afterwards I closed that chapter of my life, thinking I would never need to do it again. Sadly, I found myself doing it again in 2022. This time I had much less capacity to volunteer but have worked to connect others, source donations and make them available, and to give information and advice as far and wide as I could. I haven't been digging in as many flooded gardens this time around (although it is as difficult a job as ever!) but I have been able to speak to and advise more gardeners.

Flood recovery disappears from the news, and so it must. When it is no longer newsworthy, the real struggle begins. If you are reading this book, you already know how hard this time is. This is the stage where people lose heart and struggle to keep going. This is also the time to take heart and get into the garden.

The sooner the better

The sooner you get into the garden, the more you will save in terms of plants. But during this difficult time the garden is about more than just saving plants, it's about saving your mental health.

While you are in limbo and waiting for the chance to work on your home, make the effort to get into the garden. Rarely is the garden covered by insurance, therefore it is much less dependent on a successful claim.

Clean up the garden rather than look at mud every day. You need to see hope and a return to life. This is not hard to make happen. Plants can start to shoot green again fairly quickly with the right help.

You may not have access to a team of volunteer helpers and may find yourself alone and trying to recover. This is tough, really tough, but you can do it.

Having a safe place to live is, of course, more important than having a garden. This is not about prioritising the garden over the home. It's not one or the other. It's about doing a little bit early to make sure it all works for you when you do have time for it.

Flooding does cause significant soil damage. The severe compaction of the soil makes gardening again later very difficult. My experience of waiting six months after a flood to be able to get to some gardens meant that the soil by then was so hard that it was almost impossible to dig. Sometimes you just don't have a choice about when you can get to the garden. Follow the advice here when you can, and you will still make a huge difference.

A gardener very local to me had an amazing garden, much admired by the entire suburb prior to the flood. Eight months later, his garden is once again producing such an abundance of food that he is donating produce to the local community centre to feed others. His rose garden is once more a showstopper. He is not yet able to live in his flooded home, but he returns often enough to work in the garden, which is clearly very important to him. The vegetable garden had to be started from scratch post flood. The rose garden only needed to be tidied and pruned. (The only roses I have ever seen that have died after a flood were newly planted. They are hardy plants!)

Sandra's garden; a tale of two floods

Sandra's garden is on the bank of the Brisbane River. Usually, it's a lovely place to be. In 2011 the flooding affected both her house and garden. In 2022, only her garden was flooded.

In 2011, all her energy went into saving and restoring her home. Like most people, Sandra didn't even think about her plants. In the weeks after the flood, she got in and cleaned up the garden but didn't worry too much about it, after all, it looked okay. Six weeks after the flood, almost everything died. It took that time for the damage caused by the flood to kill the hardy native plants that made up her garden. During those six weeks root systems rotted and were no longer able to support the plant. Leaves were smothered in silt and no longer able to photosynthesise. Without help these plants didn't stand a chance. Only one plant, a bottlebrush, survived the 2011 flood.

In 2022, the flood was lower and did not come into her home. This in itself was an enormous relief, and it gave her the opportunity to really pay attention to the garden. As the flood waters receded, she followed them down the garden with the pressure hose, getting as much mud off as possible. By the time she called me in for advice three weeks later, she had done a huge amount of cleaning up. This included pressure hosing multiple times – the plants, the paths and rocks, the fences and the lawn. She also spent days scrubbing precious rock orchids by hand. She was lucky to have a friend willing to sit and help her do this. They hand scrubbed the leaves of a prostrate banksia and the flame tree as well. All of this was done in the first week after the flood. When I first saw the garden, there was still approximately 5 - 10 cm of silt covering the lower section of the garden. It had started to dry out and crack. The hoya and some of the orchids in the lower section of the garden (which had been under water for longer) were rotting and stank. The young leptospermum plants on the lower level were dead and the bottom lawn was nothing but mud.

On my advice, Sandra treated the garden with a one-off spray of Searles Root Rot (a phosphorus acid-based fungicide which is safe to use on phosphorous sensitive natives such as the banksias in her garden). She then got in and covered the entire garden generously with Garden Mate, then sugar cane mulch – even the dead lawn. Our logic was that if the lawn was to be replaced at some stage, we would need the soil to be able to support a new lawn. The [Garden Mate](#) and mulch would help the silt become incorporated into the soil and restore soil life. She sprayed it all with [Breakdown](#), not only

to aid the composting process of both the mulch and the dead plant material, but also because the mild fungicidal properties of Breakdown were valuable at a time like this. Breakdown is not recommended for use where you have planted seeds as it can reduce seed germination rates. This was a lucky side effect and reduced the amount of weed seeds germinating in the flood mud.

At the six-week mark, Sandra checked to see how much was going to die this time. The only plant she lost at this point was a large elk horn which still had silt trapped in it. Apart from the initial losses, nothing else died.

Six months later the lawn, which we thought might need to be replaced, has grown back. It is patchy, but mostly green, even though it too was mulched after the flood. The flame tree and prostrate banksia have put on strong new growth and the orchids are flowering spectacularly. The garden looked sensational. More importantly, Sandra found that her soil now had more worms in it than before the flood and was easier to dig. The work she had done on saving her soil post flood turned out to be so effective that she can see the huge ongoing benefits of caring for her soil. Her garden is doing better than ever. Unlike in 2011, flooding has not destroyed her beloved garden. It is true that she had a different focus this time around because her home didn't flood, but it also taught her how to save her garden by getting in early and knowing what to do. Far from being backbreaking, the hardest task in the entire process was the removal of the mud at the very beginning.

The clean up:

Pressure wash the garden

During the clean-up phase you probably have volunteers in your home with a pressure washer. Once the house has been hosed out, ask them if they can spare an extra hour to keep going in the garden. Get as much mud off the plants as you can. I know it sounds extreme to pressure wash plants, but it is very much needed at this point. Plants cannot photosynthesise when their leaves are covered in mud. The mud stops light reaching the leaves and clogs the tiny openings which allow gas exchange, a critical part of photosynthesis. Even the lawn should be pressure hosed to get as much mud off as possible. If you have been able to do this, and nothing else, you will save so much of your garden. When plants can breathe again, they can get back to the business of growing. Cleaning up any debris in the garden can wait until you are ready to tackle it.

Once you have done an initial mud removal, go and rest. While the ground is waterlogged, any trampling over it to try and get things done will only add to the compaction. With the possible exception of animal carcasses, everything else can wait for things to start drying out a little.

Dead animals

If you are in a rural area and have dead animals washed into the garden, they need to be dealt with quickly, which is traumatic in itself. Call your local council to assist with removing them, especially if they are large such as cows. Sadly, this is a real experience for many. Usually, your local council will assist with removal.

If you cannot get help to remove them and have to deal with them in situ, there are some things you can do. Digging a hole to bury them will be almost impossible if they are large. Your soil is now incredibly heavy and digging holes by hand almost impossible. You will need machinery, which may not be easy to organise at this stage. If you are dealing with carcasses alone and without machinery, push them to a corner of the yard and cover them with builders' (hydrated) lime – not garden lime. Builders lime will help to deal with the smell of decomposition and will dry out the carcass. Cutting open the stomach will help to prevent the build-up of breakdown gasses and increase the speed of decomposition, although is not a job anyone wants to do.

If you can, cover the carcass with a decent layer of soil or mulch. A metre deep is ideal but may not be possible so do what you can. It is ok to leave

them now and deal with them later. If you do this, it is best to leave them for six months before trying to deal with them. Unless you are in a very cold climate, the carcass should break down in six months so that only bones are left. By this stage it is much easier to clean up, and the soil is fertilised as the animal composts. If the only mulch you can get is grass clippings, sugar cane mulch or straw that breaks down quickly, you will need to top it up regularly until the job is done. Getting mulch in the immediate aftermath of a flood can be very difficult. Local farms are flooded, roads flooded, and supply chains cut. Put a call out on social media. The 2022 floods on Australia's east coast have been dubbed the Facebook floods. It was through Facebook that people helped those in need – these included rescues, checking that residents were safe and accounted for, immediate assistance with food and a place to sleep and long-term donations and recovery help. People do want to help. Tell them you desperately need a load of mulch and chances are someone will be there with a load of mulch to help you.

One other point on animal carcasses – try and move them away from dams, creeks and places where the decomposition products can end up in water. This will turn the water foul and contaminate it with harmful bacteria. If you do have dead animals close to your drinking water supply, prioritise getting the help you need to move them and protect your drinking water. If in doubt, boil your water before using it, even to wash your hands.

Cleaning up debris:

The debris can wait until you are ready. Of course, the sooner you can get to it, the sooner you get to stop looking at the mess.

When you venture into the garden, be aware that all sorts of things may have washed through, so be sensible. Closed in shoes, long pants and long sleeves are preferable. And make sure your tetanus shots are up to date.

Pieces of wood with nails float easily, but there could be all sorts of rubbish including broken glass, wire, sharp tools and chemical containers. It can be surprising what can move. Even a full water tank becomes buoyant in water. Water is the same weight as water after all. Fridges can be a real problem floating away. An object like that can cause damage to the objects it collides with. A car parked a couple of streets from me was smashed while under water when something heavy floated into it. Garden structures may have experienced collisions and no longer be stable.

What washes through is very dependent on your local area. In 2011 our street had very little rubbish. In 2022 it looked like a rubbish tip. I suspect

that this was largely the contents of a nearby resident's messy yard and open garden shed. There were countless bottles of Roundup and other garden chemicals. The bottles themselves may well be sealed at the time the water picked them up, but collisions in the flood water can damage them enough to cause them to leak. If you are aware that your garden is likely to flood, please make sure you have all chemicals safely contained and not able to be washed into someone else's garden, or into water ways. A secure shed or cabinet that is bolted to a concrete platform will help to make sure that your chemicals (and tools) are still where you left them. Tools can often be washed and saved if you have somewhere to get them dry again. An old fridge that is secured to the ground and lockable can be very handy as a garden storage shed in flood prone areas. Securing it to the ground will stop it washing away and the fridge seal will keep the contents dry.

Debris can include the contents of local rubbish bins, so having gloves on hand can be useful too. If you know a flood is coming, tape your bin lid shut and tie the bin down.

Debris can be a raft for all sorts of creatures trying to escape floodwaters, so do approach it with care. Ants, centipedes, spiders, and even snakes will use floating debris to escape. Once the water recedes, they will usually get as far away as they can, but always lift debris with care just in case. This equally applies to debris left in trees and above the ground. The passengers on that debris may still be there trying to work out how to get back to the ground.

Waterlogging

Waterlogging occurs when the air spaces in the soil are filled with water, leaving no air in the soil. Plant roots and soil microbes all breathe air, so when that air is replaced with water, they drown. The longer the soil remains waterlogged, the more damage is done. Even if your garden didn't flood, but was waterlogged during extreme wet weather, you will have problems in the soil which can lead to dead plants.

The garden can develop a sour smell as soil conditions become anaerobic (no oxygen). This now creates the perfect conditions for fungal pathogens, including phytophthora species. There are many types of microbes that can live happily in these conditions, and they are associated with swamps and wetlands usually. In our gardens, the sort of microbes which thrive in anaerobic conditions are more likely to be harmful than helpful.

The immediate indication that our soil is waterlogged is the squelching underfoot. If your ground is squelchy, keep off it as much as you can. Walking on waterlogged soil squeezes water out of the soil causing compaction.

The first signs of plant damage that you will notice are excessive leaf drop, and wilting.

Many plants will recover with a few days of sunshine and the soil drying out enough to no longer be waterlogged. If the plants are still wilting after two or three days of sunshine, they could do with some help. Delicate feeder roots have begun dying off and the plant cannot take up water. It is interesting that the symptoms of damage by waterlogging are the same as the symptoms of damage due to drought. In both cases the plant is suffering a lack of water.

The longer the waterlogging goes on (either via flooding or just soil waterlogging from wet weather), the more roots will be damaged. Short term waterlogging often only impacts the topsoil, meaning deeper plant roots are not damaged. The amount of rain that the east coast of Australia received in early 2022 meant that the soil profile was waterlogged to the depth of the water table, and in many locations, this caused the water table to rise. Springs appeared in places they had never been seen before. Water continued to seep from the ground for months after the event. When the entire soil profile is waterlogged, root damage can be extensive. It also means that it does not take a lot of rain to cause the waterlogging to return.

When your plants are showing signs of stress through wilting or leaf drop, you can give them a hand to get them through this stage.

Pruning can help reduce the plant's need for water as your plant recovers. However, overly heavy pruning will reduce the plant's ability to photosynthesis and will slow its recovery, so it is a balancing act. Most garden plants can handle approximately one third of their foliage removed, but if you know that your plant would not cope with this much when healthy, it will not cope now, so be gentler. Remove any flowers so that the plant can put its energy into root growth. When plants flower, they put all of their energy into producing flowers, to be followed by seed. They stop producing new leaves or roots.

Some of these measures may well be risky. Cutting off flowers can be heartbreaking – pick them for a vase. Wherever you are residing, fresh flowers are always cheering. The reality is that if you do nothing, the plants that have already shown signs of stress are likely to die. You will not save them all, but hopefully this action will reduce your losses significantly.

You can foliar feed stressed plants with a seaweed solution, such as Seasol. Seaweed solutions are a great plant tonic, perfect for dealing with stress. They are also useful for stimulating root growth which is what is needed now. If the soil is waterlogged still, adding a small amount of water in the hose on varieties will make no difference. If you can use a spray pack to wet the leaves only, that will still help to stimulate root growth and should be repeated weekly, if possible, at this early stage. If your home was flooded, you are not likely to be able to spray your garden weekly. Don't worry, what little bits you can do will all help.

After a few sunny days you may see the garden wilt again very easily. This is time to water the garden – lightly. I know this seems counterintuitive, but there is a reason for it.

The surface layers of the soil will dry out more quickly than the deeper layers of soil. It is in this surface layer that the greatest root damage has occurred, and this is also often where the tiny feeder roots of plants are. This means that as the surface soil dries out, plants are struggling to get water. You need to treat your plants, however established they were, as if they are newly planted seedlings. They don't need a drenching or a good soak. They only need a light water, just to keep that surface layer moist. Salvias are amongst many of the drought tolerant plants I saved in my waterlogged garden this year by watering them lightly when they wilted. How long you need to keep

doing this depends on the weather to a large extent. If flooding is followed by hot dry weather, you will need to keep nurturing the garden. If there is ongoing rain and cool weather the garden might not need much help at all. If you are experiencing very cold weather following the flooding, plants are likely to go dormant or grow extremely slowly and might struggle to develop the new roots they need to recover.

Waterlogging also causes soil compaction and loss of soil life. These problems contribute further to plant stress and are covered separately in upcoming sections.

As part of the recovery from waterlogging, you will need to restore soil health. Adding organic matter to the soil will be important in the long term to create soil that has some level of resilience to waterlogging and drought. Organic matter is vital to hold both air and water in the soil. The depth and length of time of the flooding will impact on the degree of soil damage done, but a healthy resilient soil will be better able to withstand this damage. It is well worth putting in the effort to repair your soil post flood as the efforts you put in now will build resilience for future events. Soil repair post flood is discussed further in coming sections of this book.

For a more detailed understanding on how to repair soil, why it matters and the various ways to do it, please refer to my book, [Earth Repair Gardening: The lazy gardener's guide to saving the Earth](#)

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Soil microbes

In a healthy soil there are billions of microbes in addition to the tiny creatures we can see such as earthworms and pill bugs. Like the roots of plants, they need air to breathe. Obviously, waterlogging is not going to be good for them and many will die. Given that soil science has found these microbes to be as critical to the health of plants as our gut flora is to our health, this is not good news for your plants. Microbes play a key role in releasing minerals and nutrients from organic matter (compost and organic mulch) and inorganic matter (crushed rock and soil particles) and making these nutrients available to plants. They are also important in extending the plant root network and increasing the ability of plants to take up water.

What the garden really needs next in the flood recovery journey is for the soil microbes to be replenished. This should be the highest priority in any garden that has been waterlogged or flooded – if you do nothing else at all, add microbes! A healthy and diverse soil microbiota will provide bacteria which prey on fungal pathogens. Ongoing wet and hot weather, combined with the loss of natural predators and the increase in dead and rotting plant material, creates the perfect conditions for fungal pathogens to thrive. These are going to be a significant threat to the immediate recovery of many gardens.

There is a rich world of ‘good bug versus bad bug’ happening on the microscopic level in our soils, and by having a healthy soil micro-fauna we are more likely to have the good microbes which eat the bad disease-causing microbes. The risk of both plant and human diseases in the soil after flooding is greatly reduced by enriching the microbial life of your soil.

A note about commercial soil microbe products: There are many commercial products available that contain soil microbes. To find one that suits you, search for ‘soil microbe products Australia’. In 2011 I was lucky to receive a large donation of Go Go Juice by Neutrog, which I added to all the gardens we worked in. In 2022 I approached [Earthlife](#) and received donations of [Garden Mate](#). When choosing the right product for you, consider how to apply it. Anything in a liquid form needs to be diluted in a spray bottle or watering can. [Garden Mate](#) is in a powder form, so it can be laid straight on the garden. It won’t work until it is watered in, but no harm will come if you wait for rain.

Homemade compost is a great source of soil microbes – so long as your compost wasn’t flooded. If your compost was flooded it has lost microbes to

waterlogging, as has your soil. If you have access to non-flooded compost, this will be very beneficial. Bagged compost products from the hardware or garden centre are usually sterilised and therefore do not contain living microbes. If the product label does not specifically say it contains live microbes, it does not.

If you are not able to get to the garden immediately following the flooding, that is okay. Add microbes when you can. It is great to add them within a couple of weeks but adding microbes boosts soil health in any garden, flooded or not, so it is going to be valuable to do at any stage. Repeat doses can be very beneficial. If you can get a dose in early, and then repeat it in a few months that is ideal. If you can only get to this task months after the flooding, it is still hugely beneficial.

Fungicide

As we have just described, the waterlogged soil has lost lots of good microbes, leaving plants far more vulnerable to the bad microbes. Fungal pathogens are the greatest risk at this point because, not only have their natural predators been wiped out, but they also love the new conditions – wet soils low in oxygen. In addition to this, the abundance of dead and weakened plant material, including underground roots, gives them plenty to feast on. In many cases, a good tidy up of excess dead plant material (removed to a new compost is best) plus the addition of good microbes will be enough to minimise the risk of plant diseases.

The dead plant material is fine to create a new compost with. The aim is to separate the dead material from living plant material so that fungal decay on the dead material does not spread to the living plants. This collection of dead plant material is likely to include a fair amount of mud, so make sure you keep adding the usual compost materials to this new system to create a balanced mix able to break down. Keeping this compost aerated is a good idea, as most of the problem fungi thrive in low oxygen environments.

If the garden is showing significant stress, it would be a good idea to apply a general organic fungicide before any other treatment. Adding any product containing live microbes should then happen a week later. The fungicide will harm some of the soil microbes that we want, so it is best done before and separately to adding microbes.

A fungicide treatment is a one off and should not be done repeatedly. Fungicides kill the beneficial fungi that are important for plant health, so overuse is highly detrimental to plant and soil health. Ultimately, we wish to create a healthy soil that can support strong plants so there is no ongoing need for fungicides or other chemical treatments.

A fungicide treatment should be done in the first couple of weeks after flooding if possible. This is the time when plants are most vulnerable. Once things start to dry out there is less risk of ongoing fungal problems for most plants. Trees are an exception. Obviously, the weather will have an impact. In 2011 we had hot sunny weather in the aftermath of the floods. In 2022 we had ongoing heavy rain in the aftermath of the floods. The ongoing rain meant waterlogging persisted, with varying severity, for weeks. In this situation a fungicide treatment could be of benefit at any stage while things

are still damp, although earlier is preferable. Always make sure the fungicide treatment happens well before adding new microbes.

A general fungicide can be used (any that are readily available wherever you are able to get garden supplies). Always follow the directions on the label. Buy a small bottle if you can because you won't need to keep it afterwards. Once you return your soil to health you will not need to use it on an ongoing basis. If you are unable to buy a small bottle, pass the leftover product to your neighbours. Fungicide is one of the products that are in high demand in severe wet weather and can sell out, so sharing what you don't need is a good idea.

If you have not been able to treat the garden with fungicide shortly after flooding, there may not be anything to be gained by treating it later. If you have obvious signs of fungal infections on your plants down the track by all means treat them. These obvious signs will include rotting stems, especially at the base of the plant or at the growing tips, brown discolouration at the base of the stems combined with stunted growth, or mottled discolouration of the leaves usually combined with tissue damage, or excessive amounts of black spot, plant rust or sooty mould. If you do not have any of these signs of fungal pathogens in your garden down the track, there is no need to treat it with a fungicide. It will still benefit from the addition of compost and live microbes to ensure healthy soil life.

Mushrooms and interesting fungi coming up in the grass, in the mulch or on old wood are not a problem and do not need treating. These are actually a sign that you have life in your soil. In fact, they play an important role in breaking down dead organic matter and creating great soil.

Trees

While soft stemmed plants show immediate signs of stress, most trees do not. By the time a tree starts showing signs of root damage due to flooding or waterlogging, it will be too late to save it. If you have trees, it is highly recommended that you treat them with fungicide within the first couple of weeks post flood, and then microbes in a week's time. In 2011 we noticed large trees started dying about three months after the flood.

This year (2022) I was able to save almost all of my garden, even salvias, simply by adding microbes and rock minerals containing silica to open the compaction. This worked so well that I decided not to treat my own garden with fungicide, even though I was treating others. I am paying the price now. Six months after the flood, my favourite tree has died. This was not due to a one-off waterlogging incident; it was due to repeated and long-term waterlogging over the six months. I wish I had got in and treated my trees with fungicide when I was treating everyone else's! By the time my tree showed any signs of not being well, it was too late to save it.

A number of our local fig trees dropped a lot of leaves in the weeks after the flood. This is usually a drought strategy and, in this case, was also a sign of lack of water. It occurs when the roots are damaged and cannot take up the water the tree needs. Some of these trees did not get flooded by riverine flooding, but there has been so much overland flow from rain around them that the ground was completely waterlogged. These trees are now at risk of further damage from fungal pathogens. Because they showed early symptoms, it was obvious they needed help. They have bounced back well. Figs have very vigorous root systems so could grow new roots quickly. Eight months later they do react to weather changes by dropping leaves excessively, indicating that they are still in the root recovery phase. With the return of warm weather there are some fabulous fungi popping up in the mulch under these trees. Not as many as previously, but this too is a sign that the soil life is recovering.

Leaf drop is usually the first sign that a tree is unhappy. Another symptom to look out for is sap oozing from the trunk. This can be a sign of insect attack. Insects are more likely to attack a plant that is weak, so insect attack now can be a sign that the tree is unwell. Oozing sap can also be a symptom of phytophthora infection. Phytophthora is a group of fungal pathogens which cause severe disease and can be hard to treat. The general fungicides we used in the early stages are unlikely to be effective against phytophthora.

Phytophthora tends to kill small plants fairly quickly. Larger shrubs and trees can take months or years to die. It is one of the causes of forest dieback. Once you have it in your soil, it is almost impossible to eradicate. You will need to seek out phytophthora resistant plants for future garden success if it takes hold. It is not the only fungal disease found in gardens. Black spot on roses is also a fungal disease and is easily treatable, as are many common fungal diseases, including most of what you will find after flooding.

Extra care for trees after flooding is a worthwhile investment and is not necessarily difficult or expensive.

Clear mud and debris from against the trunk of the tree. This includes from the forks in branches if you can, as this can create points of disease entry. Trees which have low bushy branches may have a lot of mud amongst the branches that is not easily seen, or easily hosed off, from outside. It can be trapped where the branches join the trunk. Pencil pines and other conifers can be particularly susceptible to this. They are also very difficult to clean the flood silt off, so you end up with trees that are dull grey below the flood line, even after pressure washing. After both floods here in Brisbane I had conifers to rescue in different gardens. The decision was to remove the lower muddy branches to create a neat trunk. In doing so it was surprising how much mud and debris, including plastic rubbish, was trapped inside the tree's branches. It also revealed sap oozing from the trunk, a sign that the trees were suffering from fungal infection, most likely phytophthora.

Fungicide sprays applied to the leaves and soil are not helpful once the phytophthora has taken hold. The trees needed phosphorus acid injected into the trunk of the tree. This is not hard to do. Drill a small hole into the cambium layer of the tree. This is the layer of living tissue which contains the vessels which transport water and nutrients around the tree (like our blood vessels). This layer is close to the surface of the tree, depending on its size. You will only need to drill one or two centimetres deep using a fairly small drill bit. The solution can then be injected into the hole using a small medical syringe. You will not find injection instructions on your bottle as this is not generally performed by home gardeners. The amount you inject will be based on the size of the tree. A very large tree may require multiple (even as many as five) injection sites. The average small tree in a home garden will be fine with one or two at most. A 3-5ml of phosphorus acid is all that should be injected at each site. The phosphorus acid does not eradicate the disease but supports the tree to fight off the infection through its own defense mechanisms.

Fungal infections are not the only problems your tree may face after flooding. Damage to tree roots can cause a tree to become unstable, even if it is not showing signs of poor health. We tend not to think about this until the tree blows over in the next storm. We often don't think to treat a tree with a seaweed solution, mainly because we can't reach to foliar spray. Applying a seaweed-based plant tonic to the soil around the tree can help to stimulate new root growth. Make an effort to care for the soil around your tree as you do for the rest of the garden. Healthy soils are vital for healthy plants, trees included.

Pruning branches that cause the tree to be unbalanced can help reduce the stress on the tree and the risk of falling. While the soil remains waterlogged, the risk of further root damage and reduced stability of trees remains. As waterlogging subsides the tree has the chance to grow new roots and to stabilize.

If you have any concerns about your trees, please call in a qualified arborist to review them and advise you. Local tree lopping companies may or may not have an arborist working with them. Do check, as you will need this extra level of expertise to be able to advise on the health of your tree. Whilst this does include a cost, removing a dead tree can cost significantly more. Trees are (or should be) integral parts of our gardens. They provide protection for us, our gardens and our homes from weather extremes. For this reason, it is very important to choose the right tree in the first place, and to care for your trees in times of water logging or drought. I cover this topic at length in [Earth Repair Gardening](#).

Compaction

Heavy rain will cause some soil compaction, but if it is not compounded by foot traffic it might not need much remediation. The weight of flood water causes more severe compaction. The deeper the water and the longer the soil is under water, the more compaction will occur. We are all aware of how much heavier a bucket is when it is full of water – that gives you an idea that flood water is a huge weight being placed on top of your garden.

If you leave your garden untouched until you repair your home, you may well return to soil which feels more like a concrete slab than a patch of dirt. The good news is this compaction can be easily rectified if you intervene early on. If you cannot react quickly, do not despair. Follow these tips when you can, it will just take longer to recover. The key solution here is organic matter in the form of mulch. You need life to return to the soil and re-aerate it naturally. Add the microbes we discussed earlier and then cover the soil with mulch.

When soil is waterlogged, the water fills air spaces in the soil. As it dries, those spaces tend to shrink and collapse. Not only have the soil microorganisms drowned, but the structure of the soil has also collapsed, and the result is compaction. While the soil is still wet, try and avoid walking on it or trampling across it with heavy building materials. This may be unavoidable. If you mulch the soil well before you begin work on the house, the mulch will act as something of a cushion and reduce the amount of compaction. As the mulch breaks down (or is trampled into the soil if this is how it must be) it will increase the porosity of the soil and help to recreate structure. If the waterlogged soil is left exposed to the sun, it will dry faster and shrink more, increasing the compaction. If it is mulched, it will dry more slowly and will lose less of its soil structure. Mulch helps to build and retain soil structure and therefore reduces compaction of the soil, even with no other help.

If you cannot get mulch in the immediate aftermath of the flood, (and are reading this at that time) lay anything you have at hand down to protect the soil. This could even be old rugs or carpet that flooded and need to be taken out of your house. Lay the carpet face down and even a couple of layers deep for better soil protection. You will need to remove this later and dispose of it. Old carpet is not organic and does not breakdown. This is not an ideal solution, but sometimes you need to make do with whatever you can at the time.

Organic mulch is important on all soils as a source of organic matter in the soil as it breaks down. Organic matter in the soil is critical for feeding soil organisms, be they worms, pill bugs, centipedes, nematodes, bacteria, protozoa or fungi. The 'good guys' amongst all of these critters feed on organic matter in the soil, breaking it down, increasing soil fertility and storing carbon in the soil. While much of this critical soil life has drowned in the flood, for any that have survived, they will appreciate having something to eat to help them breed back up. Even better if you can add microbes under the mulch and really get things kicking along.

If you are able to mulch your garden early, you can walk away and return to your garden when the time is right for you, knowing that your soil has been quietly recovering. When you finally get to the point of recreating your garden after repairing your home, you don't want the heartbreak of not being able to dig because the ground is too hard. Taking some simple steps early in the recovery can save you this heartbreak and the cost of breaking the ground up with machinery.

I realise that this plan is all well and good for garden beds, but what about the lawn? Do exactly the same thing with the lawn. The more dead your lawn appears after the flood, the more you have to gain. If you are likely to have to re-turf at some stage, protect the soil and bring it back to life so you have good soil under the new turf. We used this philosophy on a lawn that looked completely dead two weeks after flooding. We added [Garden Mate](#), a natural product called [Breakdown](#) which helps to breakdown dead organic matter (both made by [Earthlife](#)) and then covered the lawn with sugar cane mulch to approximately 5cm thick. If we were going to have to re-turf, we would at least have great soil under there! As it happened, the grass grew back. Six months later it was a green lawn again, albeit a bit on the patchy side. Other gardeners have followed this advice and commented to me at how successful it has been in saving the lawn and reducing the need to re-turf.

If your lawn was not a manicured neat lawn to begin with it might actually be a bit tougher and more likely to survive the flooding. If you suspect that flooding might be on the horizon, let the lawn get a bit long. This allows a bit of green to be poking through the mud afterwards and recovery is much quicker. Don't worry if your lawn turns into a bit of an overgrown weedy mess in the months that follow flooding. While it is alive and growing it is aiding soil recovery. Mow without the catcher if it is not too long. The clippings need to be spread lightly over the lawn, not left in piles on the lawn. The clippings can then compost and feed the soil. Mow high. Leave a little

more green on the grass to help it to grow strongly and outcompete any weeds.

Even a weedy patch of grass can be easily turned back into a neat lawn down the track if it is simply mown regularly and not cut too short. With a little patience the lawn need not be lost and will not need replacing.

In other gardens I have had to re-turf after flooding. In one case the garden was left for six months after the flood and the soil so badly compacted that it nearly broke our team of volunteers. There was no way the elderly owners were ever going to be able to dig in it again. By this stage the soil compaction had finished off what the floods had started and was preventing all the little bits of grass from ever growing again. We had to lay new soil in order to lay the turf. It would have been a very different outcome if this garden and lawn had been mulched much earlier.

If you find yourself in this situation and are facing badly compacted soils months after flooding, all is not lost. You have two options. Hard work or patience. If you do not have time to wait for the soil to recover with the aid of compost and mulch, you will have to break it up. This will involve some young strong people who are willing to transfer their gym session to your garden, or machinery. Break open the soil to a depth of 20cm. Do not till it finely as this will make it very erosion prone and slow the process of incorporating the silt into the soil. Roughly broken up will work. Then add some compost in whatever form you can get it. Aged horse manure works very well if you have access to it. Add plenty of [Garden Mate](#), the silica in it will help enormously in creating an open structure in the soil, and the microbes it contains will bring the soil back to life. Then mulch with organic mulch of any kind. Water it all in and within a couple of weeks in warm weather you will be able to dig holes and plant into the garden. If you do not have the strong young people or the machinery, add the [Garden Mate](#), compost and mulch over the top of the compacted soil. It will take longer to be as effective, but it will still work.

A note to readers in the UK, when I refer to compost, I mean broken down organic matter such as food scraps, manures etc. I do not mean bagged potting mix, which is often called compost in the UK. Potting mix should most definitely NOT be added to the soil as it will potentially cause more problems, including making the soil hydrophobic (meaning water runs off instead of soaking in).

Most animal manures are fine to use as a source of compost for your soil except for poultry manures. They are too strong. Aged manure is required if

you are using it around existing plants. Fresh manure can burn plants. If you have little left and are not worried about the plants in the garden, fresh manure is fine because you will not be planting into it until it has started to breakdown anyway. Fresh manure will smell but the smell will be greatly reduced by covering it with mulch. Aged manures do not smell. If when you come to plant you find the manure you have added has not broken down, is warm to touch or smells, it is not ready to plant into. Give it more time to break down. Breakdown processes happen faster with moisture, so if the weather is dry, water the garden beds to speed up the composting and soil recovery process.

Silt

Silt is super fine soil particles. Silt occurs in many soils and is the basis of the 'mud' left behind by the flood. The super fine soil particles are very light so easily carried in flood waters. Flood silt is often quite nutrient rich and can be very good for building great soil. Some of the world's richest soils are floodplains. For those who have not experienced having their garden covered in flood silt, they can be surprised that it is not automatically improved. Those very fertile flood plains we hear about are not in highly developed areas with neat lawns and heavy machinery repairing homes. They are farmland which is worked by hand as soon as possible after the flood or left for nature to do her thing by growing anything that will survive, usually grasses.

Grasses, especially large clumping grasses, have fine and dense root systems which are able to grip into the fine silt. Many plants cannot grow in silty soils because the soil particles are too fine for their roots to grip on to. As grasses and similarly densely rooted plants take hold, they are able to build organic matter into the soil, making the soil more suitable for other plants.

For those of us who are looking at our beloved gardens covered in flood mud, that silt is a long way from rich fertile soil. It is awful stuff. It is very difficult to get off leaves (and everything else), and if allowed to dry on the ground, it sets like concrete.

We can however use this silt to our gardening advantage and turn it into fabulous soil. After the trauma of flooding, the least we can hope for is to end up with soil that fellow gardeners are jealous of. If we can get life back into it, the silt can be incorporated well. To do this, add microbes and then fresh mulch. Nature can then do her thing. In 2011 I was able to organise truckloads of woodchip mulch from council to be delivered to flood-affected streets, and then spent backbreaking hours spreading mulch in garden after garden with a team of volunteers.

You do need to make an effort to get the flood silt off your plants. Hopefully in the early stages of the clean up you were able to pressure wash your garden and remove as much of the silt as possible off the leaves of your plants. If you are only coming to do this months later, you will already find many plants that have struggled. The silt blocks light reaching the leaf surface and stops the plant from photosynthesising. If this is not cleaned off, the plant will languish and slowly die. Heavy rain will help, and yet is still not enough to clean heavy silt off the plant leaves. Tough plants that are not too

heavily coated will be fine, although you may need to prune off some of the worst affected branches to make the plant look good again. Other plants will need you to give more help. Sensitive plants like orchids should be cleaned well. I know of many gardeners who have sat scrubbing their beloved plants with soapy water. I have sat scrubbing plants as a flood recovery volunteer.

Some of the plants I recall scrubbing in 2011 were a cluster of palms, in particular fan palms. These are tropical species which are quite slow growing in Brisbane. The palms themselves had survived the flooding okay, but with silt covering the leaves would now languish. They were in the garden of a plant collector who had already lost so many other plants. The silt clung to the fronds, and we used a nail brush and soapy water to clean them. It was not going to be as simple as cutting off the messy fronds and waiting for new ones to grow. Being slow growing, they needed these fronds to keep photosynthesising as it could be up to a year before new fronds emerged. For plants with storage organs, such as the thick trunk of many cycads, waiting a year for new fronds is not a problem. For these young palms it would have meant the end. Things which are slow growing cannot afford the loss of leaf area as easily as can fast growing plants. For fast growing plants, simply cut off the messy leaves and let it regrow.

On a side note, plants such as cycads, succulents and cactus have adapted to survive long dry periods thanks to their thick trunks, which enable them to store water and vitality for dry times. As a result they don't do well in times of flood and intense waterlogging, and will often rot and die.

Plants such as orchids, ferns, bromeliads, staghorns and elkhorns can really block up with silt. Clean them as best you can. Where there is still silt in the base of the plant you risk losing it. The clean might leave your plant looking tatty but so long as it can now 'breathe', it can now grow fresh leaves, or in the case of bromeliads, send up fresh new pups.

Unless the silt is contaminated, you can add organic matter and turn it into great garden soil, so there is no need to try and remove it from the site. If you have returned to find large clods of silt cracking open as it dries, bundle them up and create a compost heap with them with plenty of added organic matter. Wherever possible, turn a problem into a valuable resource.

Contamination

What washes through your garden with the flood water might be rather more concerning than ants floating on debris. Contamination risks are usually quite localised. Be aware of what industries are in your neighbourhood and therefore what the risks might be for your garden. If you are entering the garden for the first time after flood waters recede, be aware of possible rubbish, including protruding nails and broken glass. Make sure you are dressed appropriately and have had your tetanus shot.

Sewerage is a common risk. For my local area, it comes from the sewerage treatment plant nearby. For residents one suburb over it comes from a development with the wrong sized pipes that cannot take flood inundation and backflows raw sewerage into nearby homes and yards. Older areas also have issues with old pipes that have not been scaled up for the increased volume as residential density increases. In these situations, you should be able to get your local council to clean up the raw sewerage and sanitise your yard. The chemicals they use to sanitise your garden will be harsh and will not discriminate between sewerage bacteria and soil biota. There are ways to avoid having this treatment, but the reality is that the flooding will also have destroyed soil biota, and this will need replacing anyway. For peace of mind, have the sanitisation treatment if it is available to you and replenish your soil microbes afterwards.

Where you have not had enough raw sewerage to warrant council assistance, you may still have a risk of contamination by sewerage. There are all sorts of nasties in sewerage, but the main risk is from faecal coliforms, in particular *Escherichia coli* (*E. coli*). These are faecal bacteria which make you sick. They can live in water, so the flood water itself will be contaminated and contact with it can result in gastric illness (vomiting and diarrhoea). The length of time that *E. coli* can survive in soil and water is highly variable. Generally, in soil it is only a few days, in water it can be up to a year. Once your soil dries out the risk of contamination from *E. coli* decreases significantly.

Environmental factors will play a part. *E. coli* has a shorter lifespan in sandy soils and in alkaline soils. An application of lime to your soil in the early days after the flood can be very beneficial in treating the risk of faecal bacteria contamination. Hydrated (builders) lime will be far more effective in treating your soil, but it will burn plants. Use it around plants which have not survived or high use areas such as lawns and use garden lime around plants you are hoping to save. The lime will also help with the acidic conditions that can develop shortly after flooding. The longer you leave the soil untreated after

the flood, the less the risk and the less need there is for treating. After a few months there is very little risk of *E. coli* in your soil at all, even without treatment. Restoring natural microbes in the soil will be very beneficial in further treating sewerage borne pathogens, as some soil microbes are predators of disease-causing bacteria.

Adding lime to the soil will be useful in replenishing soil calcium levels. Calcium is a highly soluble mineral that is easily leached out of soil. It is very important for plant health. It can be replenished through the addition of lime, dolomite or rock minerals such as [Garden Mate](#). If you are using lime to sterilise your garden, it will be beneficial to follow up with a simple pH test. I know of flooded gardeners who were somewhat overzealous with the lime to fix sewerage contamination and ended up with long term pH problems in the soil. Do make sure you follow this up with generous amounts of compost and mulch. The [Garden Mate](#) will also be very helpful if you develop pH problems as it allows plants to access the minerals they need in spite of the pH issues.

Sewerage can contain many other bacteria and viruses, but usually in very small amounts. There are always sick people somewhere, but the risk of other serious diseases is low. Low, but not zero, so some sensible caution is a good idea.

In rural areas with septic tanks, sewerage contamination is a risk although the concentrations will be much lower and more localised.

Once the risk of faecal contamination has passed, that same sewerage is actually great fertiliser. It is high in nitrogen and phosphorus. One woman, who had significant amounts of raw sewerage through her yard and had council step in to sanitise it, commented to me that she has never had so much fruit on her lemon tree. The fruit was safe to eat as it had no contact with the flood water and plants do not take up bacteria and viruses from the soil to store in their fruit. If the fruit had been in contact with the flood water directly, it would have been considered contaminated.

Other flood related contamination risks include industrial chemicals, oil and petrol and agricultural chemicals. Get to know your neighbourhood. Most of these problems will be somewhat localised. The closer you are to the source, the bigger the problem they will be. Dense vegetation which is higher than the floodwater can be very beneficial in filtering out rubbish and even petrochemicals as they float. Soluble chemicals such as salt, chlorine and many agricultural chemicals can be more insidious as they cannot be seen. These sorts of chemicals are not likely to be a risk in urban areas or country

towns unless there is industry nearby. If you have farms nearby, there is a risk of agricultural chemicals, including herbicides. They will be diluted by the flood water, and the further away you are from the source, the greater the dilution.

Petrol and oil are highly visible. Even if you are not there to see the oil slick on the floodwater, there will be a slick on the silt left behind. It is hard to clean up, and will bind with the fine silt, leaving you with contaminated soil. Keep an eye out for the tell-tale rainbow sheen on the ground when it is wet. If you have a significant amount of petrochemical contamination, the best thing you can do is leave the area exposed to sunlight. The UV light will breakdown the complex hydrocarbons into smaller molecules. Once the rainbow sheen is no longer visible, add microbes to the soil so they can finish the job. At this point add mulch and protect it from the sun.

A gardener we helped in 2011 spent days scrubbing oil off his precious orchid collection. Unfortunately, he did not get to them until a few days after the water had gone down and was only able to save around a third of them. In the case of oil, the sooner you get it off the better. It can burn leaves when the sun comes out. The garden I mentioned was given an initial scrub and treatment of fungicide followed by microbes. This was by far the most polluted of gardens we dealt with. It was then left to the sun for 6 weeks. Fungicide was reapplied, followed by more microbes and mulched heavily. Volunteers added donated plants to fill the now many bare spots. Within a year this garden was flourishing again, but it was not used for growing edibles.

Agricultural chemicals are far more likely to be an issue for you if you are close to agricultural areas. Although they are diluted by the floodwaters, they can still be problematic. It is not likely to be obvious that you have had chemicals wash through. You may start to notice that in spite of your soil repair efforts you are seeing poor recovery in your plants. This could be caused by contamination by agricultural herbicides. You may also notice fewer insects in the coming months and less worms in the soil, again despite your best efforts to improve the soil. This can be caused through both herbicides and pesticides. Hopefully the flood has diluted these chemicals sufficiently that you can overcome their effects with some extra effort. Keep up an intensive soil care regime of compost and soil microbes until you start noticing an increase in worms in the soil. Worms are a good indicator of soil health, and they are harmed by both pesticides and herbicides. When their numbers are increasing noticeably, you know the worst of the contamination in your soil has been overcome.

Herbicide residue left by the flood will be diluted but some plants are highly sensitive to it. Stunted and deformed growth are a sure sign of herbicide contamination. The greater the deformity, the higher the contamination. Do make a point of adding lime or [Garden Mate](#) to replenish soil calcium levels if you are noticing plant deformity or stunted growth, it may be caused by the leaching of minerals, particularly calcium from the soil. Herbicide contamination can occur if you live near a golf course, sports field, or large grass area that was sprayed for weeds immediately pre-flood. This is unlikely as no one should be out using chemicals if there is a lot of wet weather about. It is more likely to be an issue in storm water runoff from a single storm event. If you suspect that you have herbicide contamination you may need to find plants which are more tolerant of it by trial and error. The brassica family is far more tolerant of herbicides than are the pea family for example.

Heavy metals can be another risk and one that will not directly impact the number of worms in the soil, or plant health therefore you are not going to see any indicators that heavy metals may be present. Again, they have to come from somewhere, so find out what sort of industry is nearby to you. Heavy metals, especially lead, can be high in soils near major roads as a byproduct of so many years of lead in petrol, or where old houses have had lead paint sanded off before the risk was understood. This is not likely to become a flood contamination risk. If you have any concerns regarding heavy metals, do not eat from your garden until you can have your soil tested. In Australia you can have soil samples tested for a small fee at Macquarie University ([vegesafe](#)).

I use [Garden Mate](#) where there are contamination possibilities. The microbes it contains are valuable in helping break down complex chemical structures of contaminants, and for preying on potential biological contaminants. The selenium and calcium it contains are useful for binding heavy metals into larger particles which are less mobile in the soil and less likely to be taken up by plants. This does not make the garden free from heavy metals, nor safe to grow edibles in, but it does reduce the risk to the local environment.

You may never be completely free from soil contamination, but you should be able to get it to a point that while not suitable for growing vegetables, is perfectly safe to grow an ornamental garden and to happily and safely enjoy the space.

Fertilising

Post flood is definitely NOT the time to fertilise. Stressed plants cannot take up fertiliser, so it is likely that any fertiliser you apply now will wash away in the next rain, only to add to the pollutant load in our waterways. If you are applying inorganic fertilisers, the high salts they contain can cause additional loss of soil life.

Heavy rain will leach soil fertility. For the water to leach nutrients out of your soil, it needs to actually leave your site. This is a problem for people living on a slope, or for people with sandy soils. For everyone who has water sitting in their garden, it is sufficiently enriched with nitrogen from the air for the immediate term. Our atmosphere is made up of 80% nitrogen. Every time it rains, small amounts of nitrogen are washed out of the air. This is why things look so green after rain. If you have flooded, chances are you have experienced enough rain to have given the garden all the fertilising it needs right now.

If your soil is heavy clay, the waterlogging will ensure that nutrients are trapped in your soil. If you have sandy soil, the waterlogging will leach all goodness out of your soil, particularly if the flooding is followed by ongoing rain. This will become most evident when the ongoing rain eases and you begin replanting. The nitrogen in the ongoing rain keeps the plants going when there is nothing in the soil. Once the rain stops, so does the 'foliar feeding' that the rain provides. New plants that yellow soon after planting are struggling with the lack of nutrient in the soil. Give these plants a foliar feed regularly while you repair your soil. Instead of adding fertiliser to the soil, add compost. Fertiliser will leach from your sandy soil quickly and be wasted. The organic matter in compost will hold nutrients in the soil and help to bring life and structure back to your sandy soil.

Timing for fertilising will depend on the time of year as well as the weather. Generally fertilising can wait until things return to some sort of normal. Keep in mind that the flood silt is also nutrient rich and has added to soil fertility.

Instead of fertilising, follow the previous steps of adding microbes and organic mulch, with rock minerals if possible. By caring for your soil, you are building healthy soil which can grow healthy plants without the need for added fertiliser. If you feel that you really need to add something more in the months after flooding, add compost. Compost gives a gentle feed to plants,

but does lots of good in the soil, without the potential for adding to the stress of the plants.

When you return to your home and turn your attention back to your garden, put your focus on rebuilding your soil before you return to your usual fertilising regime. The change to soil conditions will impact on the way your plants take up fertiliser, so for now using more compost and less fertiliser will be very beneficial. I discuss composting, the role of compost in rebuilding soil, fertiliser and other soil additives and when to use them in my book [Earth Repair Gardening](#).

When you do start to fertilise again, it is much better to choose natural products over inorganic fertilisers, which use nitrogen sourced from natural gas. It could be said that products like these are adding to the climate change problem that exacerbate weather events like flooding.

Pots and pot plants

It is understandable that people may throw out things like pot plants after a flood. Fear of contamination is perfectly reasonable, as is fatigue at the thought of more scrubbing, and can lead to pots ending up on the rubbish piles. Fear not, there are some simple things you can do to initially save your pots and possibly also the plants in them.

The contamination issues discussed above all apply to pot plants that have been flooded. The most likely risk here is sewerage. As discussed in the section on contamination, once the soil has dried out, the danger from faecal coliforms reduces. This risk can be treated with an application of hydrated lime if your plant is already dead, or garden lime if your plant looks like it might make it.

Regardless of what may or may not have contaminated your pot plants, new potting mix is going to be needed.

During the flood pot plants may have moved or been tipped over. Instead of just being topped up with silt, they are often missing soil as the floods have washed the potting mix away.

After the flood, bundle up your pot plants and give them a good hose down, but don't rush to throw them away. Many of the plants will survive if given a quick clean up early in the recovery. Succulents and cacti are unlikely to survive flooding, whether they are in the ground or in pots. The larger the plant, the more chances they have but even super tough agaves don't like being under water for three days and will rot. The same applies to geraniums.

Pot plants often get thrown away before the plant is given a chance to recover. Immediately post flood, they will look pretty sad and will possibly have lost a lot of leaves. If your flood has occurred in autumn or winter, you might have to wait until spring to see if they will bounce back.

If you are displaced from your home, group your pots in a sheltered part of the garden out of the hot afternoon sun but where they can get rain. Pot plants will need to be regularly watered to help them recover. You may lose them because you are not there to care for them in the recovery phase, but you may also save some just by giving them a chance.

If you can get hold of a seaweed plant tonic (Seasol or something similar), give your pot plants a dose before you leave them to their fate.

When you have the time and opportunity, repot the plants into fresh potting mix. Don't be tempted to use cheap potting mix. It is not worth using at the best of times, so definitely not worth using now. A good quality potting mix is essential for happy pot plants. The soil in the flooded pots will be leached of nutrients and compacted. It may be difficult to get out of the pots, particularly if it has dried out and set hard. If your plant is showing signs of life you may need to break away the outer part of the soil from the roots, then soak it in a bucket of water (with a dash of Seasol is a good idea) before pulling too much of the compacted soil away from the roots. You won't need to remove all of the flooded potting mix, the roots don't need scrubbing – handle them very gently. Remove enough that you can see healthy roots not covered in compacted soil. This will allow new root growth into the fresh potting mix.

The flooded potting mix that you have removed can be added to your compost, so long as you do not have chemical or oil contamination. If you do have chemical or oil contamination, it should be bagged and binned.

Pots that are too large to easily repot will need to be given care. Remove what you can of the old mix, but if it is hard and compacted this may not be easy. Don't use tools to break it up in the pot as this may just further damage your plants roots. Instead, you will need to revitalise the existing potting mix as you will need to do to the soil in the garden. Unlike in the garden, the flooded pots will have been stripped of nutrients. Treat it with Seasol. If you have access to homemade compost or worm castings that did not flood, add a layer approximately 2cm thick to the top of the flooded pot, then cover with mulch.

If you can only access bagged compost from the garden centre or hardware, only use a small amount. These products are usually concentrated and have a high nitrogen to carbon ratio. If the bag has an N:P:K on the label, technically it is a fertiliser, not a compost. Your pots do need nutrients topped up, but they do not need a full fertilising. The plants are stressed. Stressed plants cannot take up fertiliser. If you are using [Garden Mate](#) around your garden, your pots will be very happy to get some too.

In caring for your potted plants, and during repotting, they may need a prune. Cut off any damaged branches or roots. These will be weak points most readily attacked by fungal diseases. It is ok to cut off damaged roots as this will help to encourage new root growth.

Pot plants which look like they might not make it, or which are showing signs of rotting should be kept away from those that look stronger. Weaker plants are far more susceptible to disease, and you don't want to risk transferring disease amongst the healthier pot plants.

If you now don't get the chance to check on your pots for weeks at a time you may still lose some. If possible, ask someone to drop in and water them regularly for you. This bit of effort might be just what was needed to save many of them. How much you lose will depend on what plants you have in pots. Things like cycads and tree ferns will lose all their fronds (or cut them off because they are a mess) and may not reshoot until the following spring. If you are unsure if your plant will recover, give it a chance and be patient. If the pots can sit out of the way until you are ready, you can take a chance on them recovering, even if they do it slowly.

While your pots are tucked out of the way recovering, do be mindful of whether they are indoor or outdoor plants and therefore how much sun they are getting. Air flow will also be important. Don't sit them on damp soil that will remain wet and humid (unless they are indoor plants that prefer those conditions).

If you find that you have lost your pot plants, you do not need to lose your decorative pots. Pots are designed to get wet and dirty, and can be cleaned, even plastic ones. Decorative pots may get chipped or cracked during the flood. They can also be expensive to replace. If the chip is small, turn the pot to face the other direction or put a trailing plant in it to cover the chip.

If your pot is a water pot without a hole in the base, tip it over to drain as soon as you get the chance. The water in the pot could well contain live faecal coliforms. Treat these pots as water features and check that section of this book to know what to do.

Edible gardens

The most concerning aspect of edible gardening after floods is the risk of soil contamination. Please check that section and see what applies to you and what to do about it.

If your contamination is sewerage and therefore bacteria, do not eat anything that may have come into contact with flood waters in the immediate aftermath. Fruit that is peeled before being eaten is an exception. If your orange tree still has fruit on it, enjoy it, but don't use the zest. If you suspect chemical contamination which the plant may take up, harvest your lemons within a few days of the flood, before the plant has had a chance to draw up those chemicals and store them in the fruit.

Don't panic about contamination. Unless you live in an industrial area, it is likely to be minor.

If you are gardening in raised beds, you are likely to find that the floods have washed much of the soil away. There is no point rushing to replace this soil if you are displaced from your home.

Annual edibles are not likely to survive flooding. Many perennial plants and fruit trees will, depending on the severity of the flooding. Gardeners have reported bumper crops in the months following flooding, but were they safe to eat? If in doubt, don't eat this first crop post flood, but do some research into what likely contamination you have. Chances are that a bumper crop suggests the plants have been well fed, not subjected to toxicity. Both flood silt and sewerage will increase soil fertility once the risk of disease has passed. Citrus and strawberries will thrive on this. With citrus there is no risk of bacterial contamination in the soil being transferred into the fruit, so enjoy it. With strawberries there is a very high risk as the fruit are in contact with the soil. *E. coli* has been found to be able to bind to the surface of plants and can be a significant cause of food related illness. Strawberries, with their berries close to the ground are very susceptible to this. If there is a chance your flood water contained sewerage, a bumper crop of strawberries in the months that follow could well still be contaminated. Do not eat this bumper crop fresh. Washing it will not help as the bacteria is actually bound to the plant tissue. It is fine for jam making however, as by heating the bacteria to over 60°C for at least 10 minutes, the *E. coli* are killed.

Once you have eliminated possible contamination risks, get back in and restart your edible garden whenever you are ready. The added fertility from

the flooding together with the soil repair efforts described earlier will create perfect conditions for fabulous crops.

You may encounter all sorts of pest problems on your lush new crop. The flooding has thrown natural pest and predator relationships out of balance. Make sure that you also plant some quick flowering annuals as well as long term flowering plants to encourage the pollinators back to your garden. The larval stage of many of the pollinators are the predators of the problem insects.

Ongoing wet conditions will favour snails and slugs. Flooding has likely displaced many of their lizard predators. When cleaning up, consider leaving a few piles of sticks and rubble for the lizards to hide in. If this is too much of a reminder of flooding, arrange them artfully into a 'lizard lounge' placed near your vegetable patch. It may take time for them to come back, so in the meantime do keep a watch for snails and slugs. If you are growing fabulous strawberries, you may find a returning blue tongue joins the snails in eating the fruit. Nothing quite compares to keeping an eye on things! If you are not able to keep an eye on things, avoid using things like beer traps. They can get nasty if not checked regularly and become a trap for lizards and other things looking for the snails to eat. Instead try an exclusion method. Crushed eggshells, sand or other gritty surface in a ring around your plants will stop slugs and snails crossing it. Coffee grounds from your local café will work for this and are free (if you're nearby cafes didn't flood). In these instances, the grit ring will break up over time and need topping up, but if you are not there to check it, no other creatures will be harmed accidentally.

Possums can also be problematic in the garden after extreme weather events. Their natural food source has been disrupted and they are more likely than ever to come into our gardens for food. Native trees may not be flowering and fruiting as usual due to the flooding and extreme wet. Local garden fruit trees that they foraged in previously may also not be fruiting. They are more likely now to eat plants they normally would leave alone. A fresh lush vegetable garden may be too much for them to resist. Depending on where you are there may be all sorts of other hungry wildlife eyeing off your patch now. If you can, plant enough to share. If you do choose to secure your edible garden behind netting, please make sure that you only use wildlife safe netting – it should be white, and you should not be able to poke a small finger through the holes. You can find out more about wildlife safe exclusion netting [here](#). If you are able to, getting some old fruit to feed the wildlife is not a bad idea and will help get them through this lean time. Make sure you place it well away from your vegetable patch, and safely away from

roaming dogs and cats. If possible, place the old fruit as close to their natural habitat as possible to discourage them from coming into homes and getting too comfortable around humans.

If you have fruit trees with developing crops but which are struggling, remove the flowers and fruit. This will encourage the plant to put energy into new root growth. This will particularly apply to large old trees that have taken many years to get to fruiting maturity. Losing one year of fruit is not as upsetting as losing the tree completely. The stress of flooding will cause many trees to abort their fruit naturally.

Things like bananas are fast growing but should also have the fruit removed. In this case, remove the entire stem. Bananas are shallow rooted and with the ground now waterlogged they are unstable. Remove all the tall stems to prevent them coming down in the next storm and allow the suckers to come up for next year's crop.

Don't try and save flooded paw paw trees. They are fast to grow, love the wet and fast to rot from the base. They are also very easy to replace. Ask amongst friends and family, or Facebook gardening groups for seeds. Or buy a nice paw paw from the greengrocer and keep the seeds to plant.

Weeds and pests

There are a few reasons why you are likely to have a weed problem after flooding. Storm water runoff is a major vector of seed spread in nature. Lots of seeds float, so floodwaters will pick up and carry seeds, leaving them behind as the flooding recedes. Most of these seeds are probably not the plants you would choose to plant in your garden. Sometimes you may be lucky. I know of one gardener who had a fantastic crop of coriander after a major flood. These seeds probably came from someone's garden shed.

Gardeners in the vicinity of sewerage treatment plants often find large crops of tomatoes come up after flooding. The human gut does not digest tomato seeds.

Gardeners living near the produce markets found pumpkins were their major weed problem. In this case pumpkins washed away from the markets and broke apart in the flood waters or in the clean-up.

Not only have you had weed seeds washed in, you will now also have plenty of bare spaces left behind by the flooding for those weed seeds to grow in. Mulch and topsoil have been washed away, exposing weed seeds that have previously been buried so they too can now grow.

If you are able to follow the advice given so far here, you will get in and mulch over those bare spaces and flood mud as soon as you can. This mulching will re-bury many of the weed seeds and enormously reduce the number of weeds that can grow. Early mulching of the garden will be your greatest defense against them.

Spraying the area with a compost accelerator like [Earthlife's Breakdown](#) can be beneficial. [Breakdown](#) is useful in the early stages after a flood to speed up the process of breaking down dead plant material. Its anti-fungal properties are useful at this stage, as are its side effects. It will create an environment in which seeds don't germinate well.

If you haven't had the opportunity to mulch before weed seeds start growing, chances are you are left with a weed problem. In the aftermath of the 2022 flood in Brisbane I was helping to dig out large clumps of canna lily that grew from weed seeds washed in during the 2011 floods.

Don't panic about the weeds taking over the garden while you cannot get to it. While the weeds are growing, their roots are helping to assimilate the silt

into the soil. These roots will help to bring life back to the soil. As the weeds (or any plant at all) grows it exudes some of the carbon captured through photosynthesis into the soil to feed soil microbes. In turn these microbes extract minerals from the soil and make them available to the plants. This relationship between plant roots and microbes is not just great for plant health and soil health, it is an essential part of the process of storing carbon in the soil.

Often the types of weeds that do best after flooding are those with very fibrous root systems. These plants roots are able to hang on to the silt where other plants cannot. As they exude carbon into this fine silty soil to feed the microbes, it starts to build better quality soil. Let them do their job, at least until you are ready to step in and get working in the garden again. If you are able to get in occasionally and cut the tops off the weeds, this will prevent them seeding, but allow those roots to keep working for you. One of the weeds you may find thriving after floods is fleabane (*Conyza bonariensis*). Fleabane is one of those weeds with a fibrous root system able to bind silty soils and help convert the silt into healthy soil. It has some other properties that are quite useful at this time. A tea made from the leaves of the plant is a good fungicide for use in the garden. If you have cut yourself in the garden and are worried about infection wash the area with a tea made from fleabane. It has good antiseptic and anti-inflammatory properties. While it is a good medicinal plant, it is not edible and should only be used externally. If you can't make a tea with it, it is safe to rub a leaf onto the cut, insect bite or skin rash that has flared up in the garden. If this weed is thriving now, cut the tops of it off to prevent it seeding and put them to good use. Leave the roots to keep working for you in the soil.

You will also get deep rooted weeds taking hold. These are weeds that can handle the compacted soils left behind by the floods. The deep roots help to push through the compacted soils, opening the way for other plants roots to follow. Again, cut the tops off and compost them, leaving the roots to keep working for you in the short term.

One group of deep-rooted weeds that you really don't want in your garden beds now are lawn grasses. If you are displaced from your home and not there to keep the grass mown, these lawn grasses can run amok. Couch and kikuyu are particularly problematic. Once they invade your garden beds, they are extremely difficult to effectively weed out. If you know there is a risk of this happening in your garden, there are some things you can do early on to reduce the risk. The best solution is to arrange for someone to come regularly and do the lawns and edges, if you can. This is not always possible. Do ask at

your local flood recovery centre if there are any volunteers able to help with lawn mowing. You can also try asking on Facebook.

If you have no options for keeping the lawn mown and edges trimmed in this time, you can slow the progress of the grass by heavily mulching or covering a strip of approximately 30cm of lawn next to garden beds. This will only work if the lawn grasses have not already invaded the garden beds. It will mean that you will come back to a strip of near dead lawn, however it is much easier to get that strip of lawn to come back strongly than it is to get the grass out of the garden beds.

If you have more grass in the garden beds than in the lawn, you may find rearranging them beneficial. Transplant grass runners from the garden beds back into the lawn to speed up your lawn recovery.

It is not uncommon to find nutgrass thriving post flood. Nutgrass loves calcium deficient, compacted soils. The exact conditions created by the flooding. It is a very difficult weed to eradicate. Very few herbicides actually work against it, and the ones that do have a significant exclusion time for growing edibles due to their high toxicity. Soil improvement is critical to success in combating nutgrass but will not eradicate it.

Most other weeds can usually be controlled very effectively through simple and safe organic strategies when you are ready to reclaim your garden from them. There is a role for herbicides, but they should be your last resort when dealing with weeds. Herbicides all cause additional damage to the soil. We need to repair the soil, so please refrain from using anything that may cause additional harm to your soil.

I can highly recommend that you get hold of a copy of [Working With Weeds: a practical guide to understanding, managing and using weeds](#) to help you to know how best to tackle the weeds that have taken hold in your garden.

In addition to weeds washing in, you may also have garden pests wash in. There is a complex predator and prey relationship happening between the insects in our gardens. The floods could well have displaced many of the good bugs, leaving nothing to fight back against bad bugs that are washed in. In the short term this can lead to increased insect attack in the garden. Plants that are stressed are more likely to be attacked by insects, so treat your garden with **Garden Mate** and Seaweed tonics to strengthen your plants up. **Garden Mate** has a high silica content. Silica is the building blocks of plant cell walls, so it can be very helpful to apply when plants need strengthening.

While most of the pests that wash in with the flood are annoying, there is a small risk that some could be seriously problematic. My local area has active fire ant nests, so flood waters here could be helping to spread fire ants. You can find out more about fire ants on the [Qld biosecurity website](#). In other areas flood waters can help spread fungal spore such as myrtle rust, or other agricultural pests and diseases. If you notice anything unusual going on in your garden in the months post flood, it may be worth investigating your local biosecurity risks. In Australia we have biosecurity management at both state and federal levels. As biosecurity threats post flood are likely to be localised, your state biosecurity department is most likely to be helpful, but you may also find the national [website](#) a useful resource.

Ponds, water features and pools

While your water feature is obviously fine with getting wet, mud is not the feature you were going for. As flood water can get trapped in water features, they do tend to fill with mud. It is not just the water vessel itself that will be full of mud, the plumbing attached to any pumps or fountains will also be affected. Any water plants you have growing in your ponds will be fine with the flooding part, so long as they are not washed away. They may not be so fine with being smothered in mud. A small amount of silt is fine, lots will smother the plant and bury the roots too deeply. A lot of water plants prefer to have their roots close to the surface of the silt layer in the pond.

While cleaning mud out of your pond is important, you also need to be aware of contamination issues. If there is any likelihood at all of sewerage contamination of your floodwaters, this risk will transfer to your pond. Faecal bacterial, in particular *E. coli*, often do not live for long in dry soil, but they can survive much longer in water. If you have any standing water that has had contact with the flood water, it may have live faecal bacteria in it, even many months later, and should be emptied, cleaned and refilled. The same applies to rainwater tanks that flooded. If you cannot empty your pond to clean it, you will need to add a sterilising agent to the water. A sterilising agent such as chlorine or bleach will be harmful to any fish you have that may have survived the flood, and also to any frogs that may have set up home there while you weren't looking. Speak to your local aquarium about appropriate treatment for the pond water that is also safe for your fish and frogs. They may also be able to do a simple water test for you, which will be useful because it will tell you a bit about the water quality of the flood water. If you cannot sterilise your pond, adjusting the water pH can help. *E. coli* is a gut bacterium that prefers an acidic environment. Raising the pH of the water can reduce its survival, as will keeping the water clean. Even without all of this, your water feature can still be a clean, safe habitat and garden feature, just not a safe place for you or your children to splash in for at least 12 months following the floods.

Aquatic animals are very sensitive to chemical contamination, so you will do well to understand what your local contamination risks are. Hopefully, it will only be silt. Fortunately, aquatic plants can be very tolerant of many contaminants, particularly emergent plants (those that have their roots in the water and their leaves above it). In nature these plants perform the important job of filtering runoff before it enters the waterways, thereby protecting aquatic life.

Contamination in your pond or water feature can come from the high nutrient levels in flood waters and flood silt. Nitrogen and phosphorus help create fertile soil, but in water, they create algae blooms. Although the algae that flourish in your water feature are unlikely to be toxic, they are a problem because they can quickly deplete the water of oxygen during the night when they do not photosynthesise. This kills aquatic life and creates sour, anaerobic conditions. If you are not ready to clean your pond, let the algae grow. It will draw nutrients and potential contaminants out of the water. So long as you don't have chemical contamination, scoop it out and throw it onto the garden or add it to create a very fertile compost. Don't let the algae take over the pond, scoop out the excess every few days to prevent severe oxygen depletion overnight.

You can continually harvest the algae as it grows to feed the garden soil but leave some in place so that it keeps growing, cleans the water and provides food for tadpoles. If you are still getting a lot of algae growth months later, you will need to get in and give the pond a good clean and consider adding more emergent plants to shade the water. Algae needs light to grow.

If your contamination is oil from a local factory or petrol station, algae will not grow in your pond. The oil coats the water and blocks oxygen exchange, killing animals and plants and destroying water quality. It will also stick to the sides when you drain the pond. If your empty pond is in direct sunlight, the UV light of the sun will help break down the oil in time, but you will still have to scrub the pond.

If frogs have found their way into your flooded water feature or pool and are happy there, chances are you have very little contamination happening of a chemical nature. There may still be risk of faecal coliforms. If you are not in a hurry, you can leave the frogs to breed happily for a while until you get around to restoring the pond. Frogs all prefer warmer weather, so will be more likely to be there if your flood occurs in the warmer times of the year. If they lay eggs in autumn, the tadpoles will probably stay as tadpoles over winter and not turn into frogs until the weather warms up in spring. You may wish to move them into a container to clean the pond and then put them back in rather than waiting for them to turn into frogs and leave of their own accord. If you do this, remember to ensure there are emergent plants for them to climb up and find their way out of the water as tiny frogs breathe air and will drown quickly if they can't climb out. If you are adding tadpoles back into a clean pond, you will need to wait a few days for the chlorine in the tap water to evaporate before returning the tadpoles. You will also need to make

sure they have food. In nature they eat algae. If the pond is too clean you may need to feed them daily with boiled lettuce.

If you have lost fish in the flood, and live in a suburban area, ask your neighbours if they have any extra pets in their pool. There was a post on our local Facebook page following the February 2022 floods, someone had found goldfish in their pool and was looking to return them. That also serves as a reminder to avoid introduced fish in our ponds which could become a threat to wildlife if they escape. Goldfish are very hardy and can become a feral pest in Australian waterways. They are already a problem pest in Western Australia and proving to be a problem elsewhere in the world, as can be seen in this [article](#).

The main issues with pools are similar to those with ponds in terms of contamination risks and the influx of silt. However, because of their size they will collect much larger debris, so you need to be very careful during the clean up. If it is too murky to see through the water, you won't be able to see the obstacles underneath and there is a significant risk of injury. The flood can wash large items into the pool, damaging pool fencing and causing structural damage to the pool itself. Your local council may require you to have the pool inspected before you refill it, as Brisbane City Council did after the February 2022 floods. A large part of the reason for this is the damage to pool fences. If your pool fence is damaged, be aware of the risk to children or pets accessing the pool unsupervised.

It is not a good idea to pump out your pool too soon after flooding. The waterlogged ground around the pool is unstable and the change of pressure between the inside and outside of the pool can cause structural damage. Wait until the soil around the pool is no longer waterlogged.

Do not use flooded pumps to pump out pools, water tanks or ponds unless you are sure it has completely dried out inside. As discussed in the following section about tools, many electrical items are undamaged by flooding, so long as they are not turned on when still wet. The pump bearings may need re-oiling and you will need to make sure it is cleaned of silt.

When it comes to cleaning up your swimming pool, most pool care websites will have information to help you. Getting the chemical balance of the water correct will be a priority before the pool is safe to swim in again. There are many pool care websites available with information to help.

What to do with flooded garden tools and products

If you are lucky, all your garden tools are still in one spot in the shed, just wet and muddy. If not, you might need to find them. I have pulled garden tools out of flood waters. They do get washed away.

The spade and garden fork are probably going to be easy to hose down and put to use in the clean up. The plastic rake could well have broken tines and may not be any good anymore. The metal rake will be fine with a hose down. The sturdier your tool, the more likely it is to survive flooding. Cheap tools are more likely to be broken by collisions in the flood water, or to rust and clog or jam up quickly. If possible, in the early stages of the clean up, get someone to clean all the garden tools and put them somewhere safe to dry thoroughly. This will reduce the risk of rusting and of secateurs seizing up. When dry give them a rub down with oil. They could probably do with a sharpen as well.

Electrical tools may be fine when they are clean and thoroughly dry. You may need to open the tool's casing to ensure the internal workings of the tool are clean of mud, and completely dry, but you shouldn't have to dismantle it. Tools like drills that have gears will probably need to be re-oiled. Battery powered tools will need a new battery, as the battery will corrode with flooding which stops it working. Don't try to use any electrical tool until it has completely dried out, otherwise you can do real damage to the tool or worse, electrocute yourself. Electrical tools must be checked by a licensed electrician before you use them again.

Some petrol power tools can be worth saving, but it will need the fuel system drained and flushed to ensure there is no water in the system. This is not something many of us know how to do these days. Your local men's shed may have just the right volunteer available to help you here. People do want to help but often don't know who to contact or how, so don't be shy about asking. Don't take my word for it, this [ABC article](#) gives a wonderful example of the ability of men's sheds to help at a time like this.

I am aware of a number of mowers that spent the days of the floods upstairs on the kitchen table to keep them dry. If that wasn't you, don't worry, you can clean and dry your mower after the flood to try and save it. It may need the spark plug replaced, and you will need to replace the fuel and oil to ensure there is no water in it. If you are draining the fuel and oil from your mower, be sure to do it carefully to limit spillage, and to dispose of it safely in

a sealed container. Don't tip the fuel onto the ground to contaminate your soil, or into floodwaters to contaminate someone else's soil.

Mowers can often be saved by taking them to your local mower repair shop for a thorough service. This is not always a popular option because of the cost and the time it takes. Your local mower repair shop could well be inundated with work right now as everyone else does the same thing. In some models it can be extremely difficult to get water out of the fuel tank and lines and it becomes easier to give up. This all takes effort and skills many of us don't have any more. The mower and other power tools are usually covered by insurance, so it might be easier to discard the flooded mower and get a new one. You do need to prioritise what you rescue and return to glory, and the mower is often not high enough in sentimental value to make it onto this list. If you are up to giving it a go, this [You Tube video](#) will be very helpful.

When it comes to a shed full of soggy, muddy garden products, you will need to sort through them and dispose of them appropriately. Bottles of chemicals that have remained sealed and intact should be fine to clean and return to the shelf. Make sure you can still read the label. If the bottle is intact but the label is no longer able to be clearly read, throw it away. You run the risk of misidentifying it later or not being able to read the correct dilution rates. Better to dispose of it now than accidentally cause harm later.

Bags of potting mix that have flooded will now contain any contamination that was in the flood waters. If you have already established that this is not a problem in your garden, your potting mix is ok to use. It will need to dry out a bit first. Potting mix generally does not contain live microbes, so this is not a factor here. The potting mix usually does contain slow-release fertiliser that will have been leached out by the flooding. When you use the potting mix, it should be topped up with a small amount of additional fertiliser (compost will do the trick).

Bags of organic fertiliser pellets will probably now be a sludgy mess. Tipping this onto the garden will burn the plants in that one spot. If you are collecting up dead plant material to compost – even as a heap in the back of the garden until you can get to it later, add the sludgy remains of the organic fertiliser pellets. The additional nitrogen will speed up the composting process, and its value will not be wasted. It will simply add extra nutrients to the compost that results.

Bales of sugar cane or straw mulch can also be composted, or even used. As with the potting mix, if there are no contamination issues, it is still fine to use.

Don't worry about trying to dry it out, just spread it over an area of mud in the garden and let it get straight to work. It will break down far more quickly than if it had not been flooded, but that is ok, as it is still adding organic matter into the garden to break up the flood silt and encourage new microbial life. It is a good idea to spread these sooner rather than later. The longer they sit in a wet soggy bale, the greater the chance of fungal organisms taking hold. Mould spores can be a problem when you come to spread it, so as a precaution wear a mask. It would be a good idea to also wear a mask when using the potting mix or organic fertiliser, as fungal spores can be an issue there too.

If you have bags of garden lime, gypsum or dolomite that have flooded, you may now find they too are a solid mess. If you can break them into smallish particles, they can be added to the compost. In one hard lump they are only fit for the bin.

If your seed collection has flooded, plant them all. Some will be fine, some not, but they will no longer keep so what doesn't get the chance to grow now, never will. You may end up with a rather random assortment of flowers and vegetables growing in your 'throw out' patch, but this could be fun too. If you are displaced, they may not do well without your care, but for those that do, it is something you would not otherwise have had. And the local bees will be grateful. It also gives you an opportunity to collect a fresh lot of seed for when you are ready to sow it in a more orderly way.

When and how to replant

Replanting the garden is a very personal choice and there will be multiple factors to consider. There is no rush. With the soil cared for under mulch, you can take comfort knowing that you will be able to dig holes and put new plants in when the time is right. If you have not followed all the soil care steps outlined previously in this book, you will find replanting at any stage exceptionally difficult. Do not try to replant without having put some effort into restoring your soil. The sooner you do this the better, but it is never too late to start.

If you are not back in your home, you will not be there to care for new plants. Care for what you have saved as best you can, and replant when you are home and ready to.

Replanting will also depend on what the weather is doing post flood. Extremes of hot and cold weather are not ideal for planting regardless of flood impacts.

When it comes to replanting, you can focus on replacing everything you have lost, or you can change styles completely. It's a very personal choice. Regardless of the style of planting you go for, I very much hope you keep on enjoying your garden. One of the reasons for writing this book is that sadly, it is not uncommon for gardeners to give up on their gardens when things just don't work after floods.

There are a few things you can do to make sure that replanting is going to work.

Firstly, don't spend too much money on the initial rounds of new plants. I had a caller when doing radio talkback recently who asked why his newly replanted garden was all dying very quickly, seven months after the floods. He had sandy soil that he had done nothing to improve in those seven months. The flooding had leached all goodness out of the soil and the new plants were literally starving to death. Those first few plants will tell you a lot about whether or not your soil is ready. If it is too hard to dig the hole because the soil is still too compacted, the soil will be too hard for the plants to push their roots through. Spend more time improving your soil first (if in doubt, add compost). If your new plants are yellowing and dying easily, your soil has a problem. It could be salt or chemical contamination, it could be nutrient leaching, or it could be pH problems caused by another source of contamination. If you limed your garden heavily early on after the flood to

treat sewerage contamination, you may find that has caused ongoing pH problems in your soil. If you suspect this is the case, do a simple pH test and add compost to buffer any pH issues. At this point you need to go back and work on your soil more before you gamble with any more newly purchased plants. I have said this before, but, if in doubt, add compost. It is far and away the safest and most effective way to improve your soil. When adding compost be careful with bagged varieties sold in garden centres. If it has an N:P:K ratio on the bag, it is a fertiliser, not strictly a compost. Nitrogen levels should be reasonably low (less than 5%) in compost, as it is the carbon component and all the wonderful diverse ingredients that we want now for soil improvement, not high nitrogen levels.

Hopefully you have been able to get hold of some plant donations to help you get your garden growing again. If not, ask! Make contact with your local garden club, even if they are not particularly close. All people who want to help will do so far more enthusiastically if they can use their skill set, whatever that may be. For garden club members, that is growing plants. If you are in Australia, you can find your local gardening club on the [Garden Clubs of Australia website](#). You may also find that a nearby unaffected suburb can be accessed through their Facebook page and ask if some people are willing to donate some plants from their gardens. The huge advantage of these locally donated plants is not just that they are free, they are doing well in a nearby garden, so they are likely to be happy in your garden as well. A word of caution though – if the plants are very small and delicate, they may struggle to get going unless you are there to give them extra care. Hardy plants that are not too small are more likely to cope.

Regardless of what style of garden you are hoping to recreate, be aware of future weather conditions. There may be ongoing wet conditions in the short term, but in the long term, drought will return. It may be very tempting to go plant shopping at the local aquarium (most of the plants they sell don't like to grow under water, but do like wet soil), but think about creating a resilient garden for the long term. Every bit of effort you put into your soil now is not just building better results in the short term, it is creating a resilient garden well into the future. Organic matter in the soil is vital to ease waterlogging during wet years but is also vital for holding water in the soil during dry times. To get organic matter into the soil, add compost and mulch with organic mulch. I discuss this and the need for the resilience it helps to create at length in my book, [Earth Repair Gardening](#).

As part of the replanting process, take the time to check the garden layout and see if improvements could reduce damage from future floods. In

particular, look for areas that were eroded by fast flowing flood or storm waters. Slowing the water flow at ground level will greatly reduce the damage caused by the flooding in your garden. While we want the flooding to go away as quickly as possible, fast flowing water causes far more damage than does slower flowing water. Slowing the flow of water down with dense plantings will not trap flood water in your garden, but it will reduce the damage caused to your garden.

Clumping plants with deep or fibrous root systems are extremely valuable for slowing the flow of water. They can also act as traps for much of the debris carried by the flood water. Mat rushes ([lomandra species](#)) are ideal for this job. Varieties which grow to approximately one metre high will slow flood water, trap debris and hold soil in place. They are one of the best erosion control plants you can use. They can be used very effectively on creek and riverbanks for stabilisation. In addition to the original species, which can be purchased cheaply from your local Landcare or native nursery, there are many cultivated hybrids with different forms available for gardeners.

Consider planting clumping plants on the high side of your garden to slow water flows entering your garden. This can be the difference between future flooding washing away your gravel and garden beds completely, or just covering them with water.

Planting clumping plants in the area where flood or storm water exits your garden can also be very valuable. Not only does this reduce damage to land below your own, but it can trap your gravel, mulch and odds and sods of yours that the flood would otherwise have taken with it.

If your experience of flooding was many meters deep, these one, or two meter plantings will offer little protection from the main ravages of the flood water but they will protect the garden from the ravages of receding flood waters. You can pair them with dense plantings of taller shrubs such as callistemons or lily pillies for slowing down deeper flood waters, although we certainly hope you never have to experience anything like this again.

A small farm that I visited and assisted with post-flood advice recently is situated along a bend in a creek. It is a very beautiful location, but prone to flooding. In one of the four floods they experienced in early 2022, the flood water was so ferocious it took their farm outbuildings with it. Thankfully it was an organic farm, so was not loading the flood waters with potential contamination. They were already in the process of replanting trees along the creek banks but have now increased the density and priority of these tree

plantings. The trees will not stop the flooding, but they will greatly reduce the damage caused by flooding by slowing down the pace of the water as it moves into and over their farm. They are also exploiting the weeds washed in from previous floods. They have numerous clumps of Queensland arrowroot (*Canna edulis*) from seeds washed in during the 2011 floods. They are dividing these clumps to create borders around their fields where they can. The canna is a useful source of biomass to compost and boost the soil but is also valuable for slowing down flood waters and giving greater protection to their beautiful soil.

If you are planting trees to slow down flood waters, make sure you plant them in clumps, never in rows or as a single tree. A single trunk or row of trunks will bear the brunt of the force of the water and is likely to be damaged. A clump of trees will slow down the flow of the water as there is no direct path through the clump and in doing so will cause far less damage to the trees.

Community gardens

All the information included here applies equally to community gardens. There are some significant differences between community and private gardens which will impact on how the recovery is carried out.

As there is no home there, you are less likely to have anyone helping to clean up and pressure wash mud in the early days after the flood.

Human dynamics can get complicated at times like this, when ownership is undefined and the participation voluntary. This gets even more difficult if members of the volunteer team have had their homes flooded and their attention is needed elsewhere.

One thing that distinguishes community gardens from private land is public liability insurance. Community gardens are usually incorporated groups led by a committee using council land. There are rules of incorporation that are in place to protect committee members from litigation. If they are not followed, public liability insurance cover can be jeopardized and individual members run the risk of being directly liable.

Common sense needs to prevail, which is not always easy in times of great emotional stress. The garden committee must be aware of and approve of clean-up activities in order for public liability insurance to be valid, and to protect members from possible litigation if something goes wrong. Flood clean up carries risk. If you are working with volunteers, please take the necessary safety measures – sturdy closed in shoes, gloves, masks, long pants and long sleeves, hat and clean water. Before you begin any work in the community garden, ascertain what your contamination risks are (please revisit this chapter if you need to). Community gardens are often located in marginal land that was spared from development for some reason. Knowing why the land was still available can be useful in determining what risks you could now be faced with. Hopefully you are aware of any contaminated site risks before you began the garden, and therefore flooding will not be exacerbating any previous contamination problems.

As most community gardens prioritise food growing, contamination potential needs to be investigated thoroughly.

By the time you are ready to clean up the community garden it may be weeks or months after the flood. In this time the mud has probably dried out and set hard, it is too late to bother trying to pressure wash it. Tidy the garden as best

you can and then mulch it as soon after the floods as you can. You can remove dead plant material to the compost heap or just mulch heavily over the top, particularly if you are not ready to do much more than that at this stage. Scatter around seeds of a cover crop such as mustard to encourage roots in the soil and to provide food for bees. If you can, sprinkle with Garden Mate, it will make a huge difference. If it is possible to do all this, take time out to reassess the situation while the soil recovers. When you are ready to get back into the garden, you should have rich healthy soil to come back to.

You can still follow these steps if your garden is all in raised beds. Turn raised beds into temporary compost heaps until you are ready to add fresh soil and begin again. The short-term composting will bring much life and nutrition back to the remaining flooded soil, and extra composting never goes astray.

One of the heartbreaks for community gardens is also the loss of tools, gardening products and your community library. If you are able to access recovery grants, make a secure shed that can't float away a priority. Half the battle is still having those tools to clean up after the event. Your supply of mulch is fine to use if you still have it. Bales of sugar cane mulch and straw tend to float away readily. Any soggy mulch left will compost quickly and feed the soil.

An old fridge or chest freezer which is lockable to prevent the door being knocked open is also useful, so long as the door seals are not too damaged. These can be a useful place to store chemicals, power tools, seeds and books. And they can usually be sourced for free fairly easily. The old fridge will need to be bolted to the floor. While it is keeping water out, the air stays in and it can float. A friend was telling me of a great adventure he had trying to rescue a mate's houseboat from flood waters on the Brisbane River in 1974. They had to be towed by a bloke in a tinny who was collecting fridges that were floating down the river.

Once you are ready to get busy in the community garden again, put a call out for donations. I was able to set up one community garden again thanks to a man who was moving from a house to a unit and offered to donate the contents of his garage. Not only did it include useful gardening tools, there were jars of nails, rolls of twine, stakes and all those little bits and bobs a garden shed needs. These really add up if you have to buy them, but someone always has half a ball of string or a half-used packet of nails they are happy to donate.

I was also able to donate plants, **Garden Mate** and Seasol to get this community garden up and running again once they had established that they had no contamination issues to contend with.

You may also find that the Manual Arts class at your local high school is happy to help you fix damaged raised garden beds, sheds or timber benches. People really do want to help and often have no idea how. We are doing them a favour by asking, nicely of course, and sometimes the answer will be 'no'. But for the times when the answer is 'yes', it is worth the effort to ask.

Saltwater floods

Most of the floods we deal with are fresh water. Everything I have discussed so far in this book applies to recovering gardens from inundation by freshwater. However not all floods are freshwater. Saltwater (seawater) inundation and flooding can occur in coastal situations or along tidal creeks during storm surges caused by cyclones or hurricanes, king tides or tsunamis.

King tides during storms or riverine flooding can exacerbate flood levels. As the tide pushes upriver, the flood water is unable to travel down river, and so flooding can spread further and lasts longer. This does not necessarily mean that you have saltwater flooding. Coastal developments and canal estates are most likely to have problems with saltwater flooding.

Saltwater floods are still able to carry contamination, particularly as they recede, although this contamination is usually highly diluted and most of it ends up in the ocean. The salt is the contaminant of concern with this type of flooding.

As with freshwater, the longer the saltwater sits in your garden the more harm it does. Generally, most saltwater flooding is able to escape with the next low tide. Not many of our garden plants are tolerant of salt. Even fewer are tolerant of sitting in salty water.

If your garden is in a seaside location with constant sea breezes carrying salt spray, it will have a reasonably high tolerance to the saltwater. The longer your plant has been growing there, the more it has adapted to salty conditions and the more likely it will tolerate a short inundation. It is the newly planted plants that will suffer the most.

For gardens a little further away from the shore front, the plants are less likely to cope. If you live close to the ocean and your saltwater flooding is directly from the ocean, chances are you will have a fairly sandy soil. It will be easy for salt to be flushed out of this soil with heavy rain, or watering in the aftermath of saltwater flooding. Salt is highly soluble so where you have free draining soils, it can be easily washed out. Give the garden a good soak with fresh water to flush out excess salt before you begin the soil care activities described in this book.

If you live near a tidal creek that has caused saltwater flooding, you are more likely to have heavy soil, which is much harder to flush salt out of. Generous amounts of freshwater are required, either as rain or from the tap. It can be

hard to bring yourself to add more water to an already waterlogged garden, so before doing this, perhaps dig some escape channels to get the flushed water out of the garden quickly. Once you have done what you can, follow the soil repair advice given earlier in this book. The rock minerals and compost will help to bring new life into the soil and buffer the salt toxicity.

If there is no ongoing rain after the flooding, keep the garden well-watered. The salt water will have burned the sensitive feeder roots, so your plants can suffer water stress very easily. Ongoing watering will keep any salt left behind mobile in the soil and will continue to flush it out.

In the weeks and months following a saltwater flood (longer in colder climates), keep an eye out for yellowing leaves or browning around the edges of the leaves, particularly if the plant is not generally doing well. This is a sign that it has been salt damaged, in addition to the flood stresses described earlier. DO NOT fertilise a salt stressed plant. You may inadvertently be adding more salt, especially if you are using inorganic fertiliser. Add compost instead to give your soil and your plant the support they need.

If the saltwater flooding was not prolonged, you may actually find many plants thrive. Sea water contains a lot of minerals in addition to the salt. I knew of a gardener who carried buckets of sea water up to water his tomatoes every day, with huge success. Tomatoes are not salt tolerant plants, but they loved the minerals in the sea water. Given that he lived by the beach, his sandy soil would have leached nutrients quickly, so salt build up was not an issue. Do not try this if you have heavy soil.

Saltwater is highly corrosive. Even if your saltwater flooding was brief, you may find metal garden ornaments and garden tools rusting quickly in the aftermath. To save these, make sure you wash them very well with fresh water to remove any salt residue before beginning any repairs.

Volunteering to help others

This section is written specifically for those who wish to help others. I have done a lot of flood recovery volunteering and have also coordinated others to help out, and there are a few points to be aware of. You have wonderful intentions, but misplaced good intentions are not helpful.

First and foremost, ASK FIRST. Please do not enter someone else's property without permission. The place may look like a complete disaster, but it is still someone's home and that needs to be respected. I will not even enter to mow the lawn without permission from the owner.

Looting is sadly too common in the aftermath of disasters. This includes looting during the evacuation, the clean up and then stealing building materials during the rebuild stage. Do not take it personally if someone is not keen on having strangers around.

It can be very tempting to raid the piles of rubbish put out as part of the clean up. There is so much great stuff in there that could be saved. Again, it is a good idea to ask first and respect that these items are (usually) not being thrown away because they are not wanted. Often, they are being thrown away as the home needs to be emptied to allow for rebuild, and there is nowhere to store things that need to be cleaned and dried. I pulled a gorgeous armchair off a pile of rubbish. It was too beautiful to throw away. I gave the owners my phone number and address and they helped me load it into my car as it was wet and heavy. I was able to drag it into the sun and then out of the rain for days to dry it out, then give it a good clean and replace a leg on the footstool that went missing in the flood, before storing it safely until it could be returned to its owners. It was synthetic so was actually quite easy to clean but did need to be put out in the sun for drying. The owners could never have done this because they had to suddenly live with friends in another suburb. They were exceedingly grateful to have their beloved chair rescued and returned to them. I'm very glad I stopped and asked if I could help them. It may not seem much to rescue and restore one item for someone, but it all makes a big difference when you have lost so much.

Another aspect of helping that we need to be aware of is timing. Often there is an outpouring of help in the early days after a disaster, but there is nowhere for donations to be stored. Keep in touch, your help will be needed and appreciated in the months to come.

As I have outlined here, there are some huge benefits to getting into the garden as soon as possible. This is a time when the owners quite possibly are displaced and are busy trying to work out what to do next. It can be very helpful to explain to them what you are wanting to do to help them and then ask if they will give you permission to go into their garden to clean it up for them. In doing so, don't be too enthusiastic. Do what is needed and nothing more. Pile what seems to be rubbish in a tidy spot for them to sort and decide what to keep and what not to. We need to respect that this is their garden. It is not for us to impose our own style on to them. Do not put plants in unsolicited. Wait until they are ready and then offer them plants and let them choose what they do and don't like. By all means, keep in touch and be there to continue helping as the months go by and they are ready for more help. I have made some wonderful life-long friendships in this way.

One job that is often needed on an ongoing basis is lawn mowing. If people are displaced and have lost their mower, it is impossible for them to mow the lawn themselves. If you can, buddy up with a flooded garden nearby. Every time you mow your lawn, theirs probably needs doing as well. Keeping the lawn mown is valuable for a number of reasons. The more cared for the place looks, the less likely it will be targeted by looters. For the owners coming back to work on the house on weekends, coming to an overgrown lawn can be disheartening. It can make it feel like they are not making progress and there is too much still to do. If they come to a neat(ish) lawn, the entire project can feel more achievable, and it can make a big difference in giving them the hope they need to keep on. Yet another reason to keep the lawn under control is to stop the lawn grass spreading into the garden beds. Lawn grass has deep roots which, when combined with the compacted soil, are almost impossible to get out of the garden beds once they have taken hold. Lawn grasses can be one of the most difficult weeds to get out of garden beds and many a garden bed has had to be abandoned once the grass got into it.

Please also be considerate with your donations. If something is too old and dirty for you to use in your garden, it is not fair to donate this. We have had stained hats and broken hose fittings donated, which had to go in the bin.

When donating plants, there are also some things to be aware of. Please do not donate plants which are listed as environmental weeds, or which you have a lot of because they have become weeds in your garden. You may have enough to spare but this is only passing a problem on to someone else. Please also avoid donating very small plants which need more care. These may be appreciated in six to twelve months' time as people are back in their homes and ready to focus on their gardens, but in the short term will not be able to

be cared for and will die. I have been working together with our local plant legend, June, to have plants available for donations. June has been able to nurture a lot of the small plants that have been donated and have them ready to give away when they are bigger. Many others just had to be composted. Our strategy has been (and continues to be) to have a collection of donated plants amongst the plants June normally has for sale. When people who flooded come in, they can choose the plants they like for free. This allows us to continue to care for plants, but to also have a selection to allow people to choose the plants they like best.

In 2011 I had plant donations at my home for many months, which became awkward as I don't have much space. By the time I stopped this, I had a bundle of the plants no one wanted that ended up going into my garden or the compost. I was okay with those left-over plants because it meant someone had the choice to take something they liked better.

In addition to weed status, also be aware of any biosecurity issues when donating plants. There are restrictions on movement of plants such as bananas in order to control disease spread. In donating plants from Brisbane to Lismore in early 2022, I had to ensure all donated plants were treated for fire ants and a permit obtained in order to move plants out of a fire ant zone. I happily complied; I did not want to risk passing on any more problems to a flood ravaged community!

When helping people who have been through a disaster of any sort, please be aware that they may be emotional or sensitive, as we would be if we were going through something similar ourselves. Be gentle, respectful and allow people the opportunity to say 'no' to help.

As a person who wishes to help out, thank you for reading the information contained here and informing yourself on how to help. And thank you hugely for being a wonderful human being.

Six months (or more) later

A single application of compost, [Garden Mate](#) and mulch at any stage after flooding will be hugely beneficial. Repeated applications will be even better, particularly for creating a garden which is resilient to future flood or drought events.

The time it takes your garden to fully recover will largely be dependent on the weather conditions that follow the flood. Ongoing heavy rain will cause prolonged waterlogging, which can fast track decline in some plants but delay decline in others.

Mild or cold weather following an Autumn flood will slow the development of new roots. Plants that have suffered root damage due to flooding and waterlogging may struggle to cope when hot and dry conditions return, whether that is two months or a year later. One of the first indications that your plants have not fully recovered is wilting. Hot dry weather will cause plants to wilt regardless of flood history, so what you are looking for now are plants that wilt more easily than they once did. This is due to the reduced root systems of plants that have suffered extreme water logging. These plants need to be nurtured through their first summer after flooding, as they did when they were first planted. It takes time and a lot of care for them to grow a strong and resilient new root system.

You may notice that new growth on established trees, shrubs and palms is stunted or deformed. Go back and check the section on contamination here first, to rule out possible herbicide contamination. Prolonged heavy rain, which sometimes follows flooding, can cause nutrients to leach from the soil and leave some plants starving. Heavy feeders such as palms can be very susceptible to this, and I have seen golden cane palms affected this year. One gardener noticed that the new fronds forming eight months after the flood were deformed. She treated the soil around them with [Garden Mate](#) and happily there are now new fronds emerging which are completely unaffected. Mineral and nutrient deficiencies post flood will vary according to the state of your soil pre flood but will very likely include a calcium deficiency. Calcium is soluble and is easily leached out of soils during flooding. If you have done nothing to rectify this you may see slow recovery, new growth that curls in on itself, increased fungal problems or brown tips to leaves. This calcium deficiency can be corrected using lime, dolomite or [Garden Mate](#). [Garden Mate](#) is a rock mineral product so is also useful for restoring many other minerals that have also become depleted by the flooding.

Other signs that your plants are still recovering include insect attack. This particularly applies to trees and large shrubs, plants which previously were not prone to insect attack. As mentioned in the weeds and pests section, insect populations have been affected by the weather as well, so predator and prey relationships have been disrupted. It is not uncommon to see problem insect populations boom after extreme weather events. In your garden these plant munchers will be particularly attracted to stressed plants. Do not rush for pesticides, as this can make the problem worse by also killing the good bugs. Instead, take this opportunity to repeat your soil improvement efforts. Healthy soil will produce naturally strong and healthy plants without the need for additional pest control. It will also be beneficial to plant lots of fast-growing flowers to attract the good bugs, and perhaps add a bird bath or feeder to encourage the natural predators of the bad bugs back into your garden.

In this summer of 2022 here in Brisbane, we are noticing a reduced number of pollinators. Butterflies and other pollinators have been in noticeably smaller numbers as we had an unusually cold and wet winter following flooding early in the year. Particularly noticeable are the absence of blue banded bees, that nest in the ground. On a more positive note, we are not seeing nearly as many grasshoppers. They also lay eggs in the soil, so flooding has reduced their numbers noticeably.

With extreme weather becoming the new normal, gardeners will need to increasingly give nature a helping in hand in the garden. Working towards creating a more resilient garden will be very rewarding. Extreme weather does not mean we give up on gardening, it means we do it differently - smarter, and more sustainably. There are many ways of doing this, they are covered in my book [Earth Repair Gardening](#).

Your post-flood garden

I am very aware that for everyone reading this book, your circumstances are different and therefore when and how you can get back into your garden will vary. What matters most of all is that you *do* get back into your garden and can enjoy it again. Make caring for your soil a priority at whatever point you are able to. The key to a successful post-flood garden lies in the care you have given the soil. It is never too late to start caring for and improving your soil.

You may need to be flexible about how you go about what is suggested here. Use what is available to you. Gardening is suddenly not as simple as a quick trip to the garden centre. The losses in the garden initially can be heartbreaking, especially to any devoted gardener. Gardens are constantly growing and evolving, this is just another step in the evolution of your patch. The time will come when you are once again experiencing the joy of seeing new things succeed and the garden thriving once more. That time is not in the far distant future, it is as soon as you get in and make it happen. For any gardener going through challenges, weather induced or otherwise, keep gardening. A garden is always worth the effort. I will be gardening alongside you in spirit and am wishing you all the best with your wonderful garden.

ABOUT THE AUTHOR

[Kate Wall](#) is a gardening professional based in Brisbane. Her career changed from Environmental Science (with scientific qualifications in Environmental Biology) to professional gardening after the 2011 floods when her local community was badly affected. Kate's volunteer efforts to restore flooded gardens saw her earn a number of awards including a prestigious "Ray Phippard Fellowship" from the Lions International. This culture of caring has set the theme for Kate's approach to gardening as she works towards improving people's lives through making gardening a pleasure and a success.

Kate specialises in teaching people to garden in harmony with nature, ensuring beautiful and highly successful gardens for gardeners of all levels of experience. By working with nature, Kate focuses on a very sustainable approach to gardening which is not only better environmentally, but also makes the job at hand so much easier. She is a keen proponent of subtropical gardening. She encourages gardeners to understand and appreciate our unique climate and to use it to our advantage, regardless of the style of garden. Kate has her own highly successful subtropical cottage garden, producing food, herbal medicine and an incredible abundance of flowers and joy.

Kate is one of Australia's leading weed educators. Her first book, "Working With Weeds" received an Award of Merit from the Australian Institute of Horticulture in 2021.

Kate received the Anita Boucher Award for Outstanding Achievement in Horticulture in 2022.

Kate is an active member of both the Queensland Herb Society and the Horticultural Media Association of Australia. She is a regular speaker at gardening events.

Books by Kate Wall:

Working With Weeds; A practical guide to understanding, managing and using weeds. 2019

Earth Repair Gardening; The lazy gardener's guide to saving the Earth. 2021

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