SUSTAINABLE GARDENING AUSTRALIA

SustainABILITY SERIES

MASTERING Plant Problems ...naturally

Sometimes your garden plants seem 'sick' but you don't know what to do about it. Well don't let them die while you wonder! Using a little bit of knowledge mixed with a strong dose of common sense, you can remedy most of your plants' problems... **naturally.**

SGA sustainable gardening australia

Nature is both beautiful and complex and makes a great subject for documentaries. And one of the richest and most diverse places on the planet is in our own backyards. We gardeners focus on the beauty of the flowers, the lushness of the leaves or the majesty of the trees but rarely appreciate the complex ecosystems that they support. These include insects, spiders, other bugs, many species of fungi and bacteria and millions of named and anonymous micro-organisms. We call them collectively - problems!

Of course this is not so. Many of our garden plants are heavily reliant on the complex interaction that they have with other organisms. Legumes (peas, beans etc) rely on their symbiotic relationship with bacteria in the soil in order to grow. Rhizobacteria and trichoderma fungi protect plants by keeping other disease producing bacteria and fungi under control. Even insects and larger fauna assist us in dealing with plant problems. So just because they wiggle and shake, don't just assume nature on the move is causing your plants a problem.

What is a **Plant Problem?**

A plant problem is a gardener's problem i.e. the plant doesn't look, grow or perform as we expected it would. Maybe it was supposed to grow lushly in a shady spot but instead looks spindly and tired. It could even be covered with a black or white powdery bloom. A stone fruit tree with leaves thickened, curled or covered in orange pustules definitely suggests problems.

Before jumping to any conclusions you need to assess the situation. A tree loosing some or all of its leaves may simply be deciduous. A tree with drooping leaves may be thirsty (in summer) or waterlogged (in winter). Before you do anything:

- Confirm the plant's identify and check its position. Perhaps a sun loving plant is in a shady spot?
- Check out the soil. Maybe the plant roots are drying out or sitting in a swamp.
- Think about recent weather conditions. Could it be that high winds, hail, frost or scorching heat has damaged the plant?

Plant Nutrients

Some plant problems are caused by a nutrient imbalance – either too much or too little!

Nitrogen (N) – Too much produces soft sappy leaves. Too little causes poor growth and yellow leaves.

Phosphorus (P) – Produces strong roots but will kill many Australian native plants.

Potassium (K) – Essential for flower and fruit production and in the prevention of diseases. Deficiencies are more common in sandy soils.

Sulphur, Calcium, Magnesium, Iron, Zinc are all required in small amounts.

Plant Fertilisers

If fertilisers are necessary, feed the soil rather than the plant. This allows the plant to take up what it needs as it needs it. Choose low NPK organic fertilisers or make your own by soaking comfrey leaves, aged animal manures or garden weeds in a covered bucket of water for a couple of weeks. Strain and use the liquid to make up a fertiliser tea. Be sure to dilute to a 'weak tea' colour to avoid over fertilising. Worm leachate (wee) from a worm farm also makes an excellent plant fertiliser.

APPLE SCAB (BLACK SPOT)

WHAT: A fungal disease that attacks all apple trees including cultivars. Particularly problematic in areas with high spring rainfall. Fungal spores overwinter on fallen leaf litter and reinfect the tree in spring.

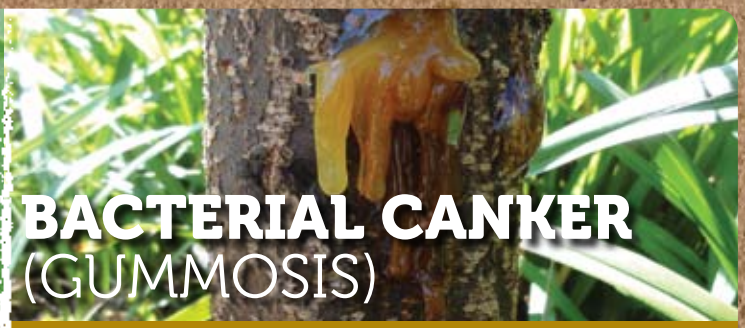
PLANTS AFFECTED: All trees in the malus genus. A similar scab appears on pear but is caused by a different fungus.

DAMAGE CAUSED: Initially tiny discoloured spots on leaves. Spots darken, blacken, enlarge and become raised and corky. Young fruit may be stunted, marked with scabs.

CONTROL METHODS: A number of control methods need to be applied and good plant hygiene is imperative.

Ongoing preventative measures include:

- Removing all fallen leaves and infected fruit and binning. Do not compost.
- Covering the base of the tree with clean mulch in spring and autumn to act as a barrier to fungal spores.
- Applying water via drippers.
- Spraying the tree in late winter at leaf burst with a fungicide e.g. copper oxychloride or lime sulphur. Repeat a fortnight later at blossom burst.
- Removing infected leaves as they appear and spraying healthy leaves with potassium bicarbonate.



BACTERIAL CANKER (GUMMOSIS)

WHAT: A bacterial disease that attacks stone fruit trees, particularly apricots and cherries. Bacteria are always present on leaves of susceptible trees. Entry is through pruning cuts or damage from rain, wind or hailstorms.

PLANTS AFFECTED: Apricots and cherries but also peaches and nectarines. Particularly harmfully in young trees.

DAMAGE CAUSED: A thick, golden gummy resin exudes from the tree. Cankers (dead wood) form and growing tips die back. Fruit and leaves may be marked.

CONTROL METHODS: Prevention is the only control available with this disease. Ongoing measures include:

- Pruning trees in late summer so the tree can heal before the onset of winter.
- Cleaning secateurs with antibacterial oils e.g. eucalyptus oil before moving between trees.
- Applying water via drippers.
- If gummosis is only evident at the tips of trees, prune off well below the canker. Avoid sap coming in contact with the secateurs.
- Trees with significant amounts of gummosis in the main trunk should be removed.

BACTERIAL WILT OF TOMATOES

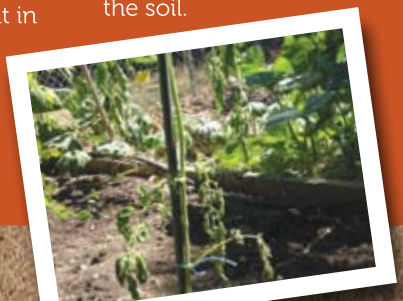
WHAT: A soil borne bacteria that rapidly kills previously healthy looking plants. No obvious leaf discolouration but the inside of the plant stem is brown and decaying. When cross sections of the infected stem are placed in water they exude a milky sap.

PLANTS AFFECTED: Solanum family (tomatoes, potatoes, capsicum, chillies, eggplants.)

DAMAGE CAUSED: Previously healthy plants wilt and die within a couple of days. Particularly virulent in hot and wet summers.

CONTROL METHODS: This disease must be prevented as it cannot be corrected once it has taken hold. Ongoing measures include:

- Sourcing clean seeds and plants from a reputable source.
- Practicing crop rotation to avoid a build up of the bacteria in the soil. Allow two years between plantings of solanums in the same bed.
- Follow a solanum crop with a mustard crop to fumigate the soil.



BLACK SPOT OF ROSES

WHAT: A fungal disease that appears as unsightly black spots on leaves. Infected leaves turn yellow and fall. Most prevalent in warm humid weather from spring to autumn.

PLANTS AFFECTED: Roses

DAMAGE CAUSED: Leaves become spotted, yellow and fall. The aesthetic value of the plant diminishes. Heavy infestations will weaken the plant and dieback can occur. Fewer flowers may result on sick plants.

CONTROL METHODS: This fungus can be controlled ay a number of methods. Ongoing measures include:

- Spraying the plant in winter with a fungicide e.g. copper oxychloride or lime sulphur. Alternate in successive seasons.
- Removing any fallen leaves and mulching the area in spring and autumn with clean mulch.
- Removing infected leaves by hand as they appear and spraying the remaining leaves with potassium bicarbonate.

BLOSSOM END ROT

WHAT: A nutrient disorder due to a calcium deficiency. Deficiency occurs for a number of reasons:

- Soil pH less than 5.5 (acidic).
- Insufficient water is available to the growing plant.
- The soil is waterlogged and high in ammonium (smells sour).
- High nitrogen fertilisers have produced excessive leaf growth drawing calcium away from the forming fruit.

PLANTS AFFECTED: Mainly tomatoes and capsicums. Also members of the squash family (pumpkins, zucchini, melon and cucumbers).

DAMAGE CAUSED: Brown, sunken areas at the blossom end of fruit.

CONTROL METHODS: A number of preventative measures can be used. These include:

- Testing the soil pH before planting seedlings. If the pH seems low add a little dolomite of lime to the soil.
- Watering regularly and deeply. Do not overwater heavy clay soils.
- Mulching with a straw mulch to conserve soil moisture in dry conditions.
- If drainage is poor, consider growing in pots.

IRON DEFICIENCY

WHAT: Iron deficiency occurs for a number of reasons:

- Soil pH greater than 7.0 (alkaline).
- The soil temperature is too low.
- The plant roots are damaged or diseased.
- Lime has recently been applied to the soil.
- The soil is waterlogged.

PLANTS AFFECTED: Citrus, blueberries and ornamentals.

DAMAGE CAUSED: Yellowing (chlorsis) between the leaf veins of young leaves. In severe cases of iron deficiency, the entire leaf turns yellow. Eventually older leaves yellow.

CONTROL METHODS: A number of steps can be taken to counteract this problem. These include:

- Testing soil pH and avoid planting acid loving plants in alkaline soil areas.
- Avoiding alkaline fertilisers such as poultry manures and mushroom composts.
- Ensuring good plant drainage and a warm micro-climate for susceptible plants.
- Applying iron chelates as a foliar spray (temporary remedy only).
- Applying sulphur to lower soil pH (takes a long time).

MAGNESIUM DEFICIENCY

WHAT: Magnesium deficiency can be confused with iron deficiency. The difference is that older leaves are affected rather than the younger leaves. Deficiency occurs when soil pH is less than 5.5 (acidic). It is more prevalent on sandy soils.

PLANTS AFFECTED: Citrus, raspberries, daphne, camellia, gardenia,

DAMAGE CAUSED: Symptoms are typically yellowing between the leaf veins and a V shaped green area at the base of the leaf.

CONTROL METHODS: Magnesium deficiency is relatively easy to correct by:

- Applying a foliar spray of Epsom Salts (Magnesium sulphate).
- Fertilising with a complete organic fertiliser in spring and autumn.
- Sprinkling a little Dolomite of Lime on the soil surface if the pH is too low.

PEACH LEAF CURL

WHAT: A virulent fungal disease that is a serious problem in warm humid weather.

PLANTS AFFECTED: Stone fruit trees but particularly peaches, nectarines, apricots and almonds.

DAMAGE CAUSED: Young leaves thicken and become pale. Leaves turn brown and may fall. Infection over a number of seasons weakens the tree. Infected flowers will drop from the tree and fruit production will be reduced.

CONTROL METHODS: A range of controls should be applied to minimise the disease. These include:

- Removing all fallen leaves and infected fruit from the ground and bagging. Do not compost.
- Covering the area around the tree with clean mulch in spring and autumn to act as a barrier to fungal spores.
- Applying water via drip irrigation in the early morning.
- Spraying the tree in early winter at leaf fall and again in spring at bud burst with a fungicide e.g. copper oxychloride or lime sulphur. Alternate on consecutive seasons.
- Removing infected leaves by hand as they appear and spraying the plant with potassium bicarbonate.

POWDERY MILDEW

WHAT: A fungal disease that is prevalent in shady areas during warm, humid spring and autumn weather.

PLANTS AFFECTED: Cucurbits (pumpkin, cucumber, zucchini and melons), grapes, strawberries, apples, sage, roses and other ornamentals.

DAMAGE CAUSED: Appears as a powdery white bloom on leaves, flower buds, stems and fruit.

CONTROL METHODS: This fungus can be controlled by a number of methods. Measures include:

- Avoiding high nitrogen fertilisers that produce soft, sappy growth that is easily colonised by the fungus.
- Spraying the infected plant with one part full cream milk to nine parts water when mildew appears.
- Spraying the infected plant with potassium bicarbonate.
- Applying water via drip irrigation in the early morning to avoid moisture remaining on the leaf surface overnight.
- An Australian fungus eating ladybird (Illeis galbula) and its young, feed on powdery mildew without damaging the plant tissue.

SOOTY MOULD

WHAT: A 'soot like' fungal disease that appears on plants already under stress from insect attack. Insects e.g. scales and aphids, produce honeydew secretions (frass) that allow the fungus to grow and reproduce on the affected plant parts.

PLANTS AFFECTED: A large number of productive and ornamental trees and shrubs

DAMAGE CAUSED: Plant parts appear covered in black soot, particularly leaves and stems. Unsightly and reduces the aesthetic value of the plant.

CONTROL METHODS: This fungus can be controlled in a number of ways. Measures include:

- Identifying the insects producing the honeydew secretions and removing or preventing them.
- Frass producing insects are often protected by ants so consider banding the tree with sticky traps to prevent ants from climbing up.
- Hosing the plant down with jets of water or wiping branches clean of the fungus in very young trees.

Crop Rotation

There are many soil borne diseases that can become problematic in our gardens. Preventing these diseases is critical in vegetable gardens. Crop rotation is the practice of alternating vegetable plants between different garden beds on consecutive seasons. No plant family should be repeated in the same bed on two consecutive years. If you grew solanums (tomatoes, eggplants, chillies, potatoes or capsicums) this summer you should not grow them again in that bed until two years has passed. This will reduce the risk of diseases that attack solanums from taking hold in the soil. It is okay to use that bed to grow a crop from a different plant family e.g., onions or garlic from the allium family

Certain plants also act as soil fumigants. Brassicas (particularly mustards) are recognised for their ability to exude chemicals that are toxic to soil nematodes and harmful soil fungi. For this reason brassicas are often grown in beds that previously grew solanums. However brassicas should then be rotated the following season/year as they too can succumb to soil borne fungal diseases that attack their family.

For further information on crop rotation visit the SGA website. **www.sgaonline.org.au**

Garden **Hygiene**

Many of the diseases that attack our plants do so because of poor garden hygiene practices. Prevention is the best cure when it comes to most plant problems. Make sure that you:

- Sharpen your pruning tools so cuts are clean and bark isn't torn.
- Clean your secateurs by wiping the blades thoroughly with eucalyptus oil before moving between plants.
- Keep pest insects under control as they are often transmitters of viruses between plants.
- Prune diseased or damaged wood from trees before they cause bigger problems.
- Remove fallen leaf litter and infected fruit from around the base of trees..
- Avoid putting diseased leaves, fruit or other plant parts in your compost bin.
- Minimise insecticide use so that natural predators of fungal diseases are not harmed.
- Avoid using high nitrogen fertilisers that produce soft, sappy growth that is easily colonised by diseases.
- Source seeds and plants from reputable suppliers.

Funded by the Helen Macpherson Smith Bushfires Grants Fund

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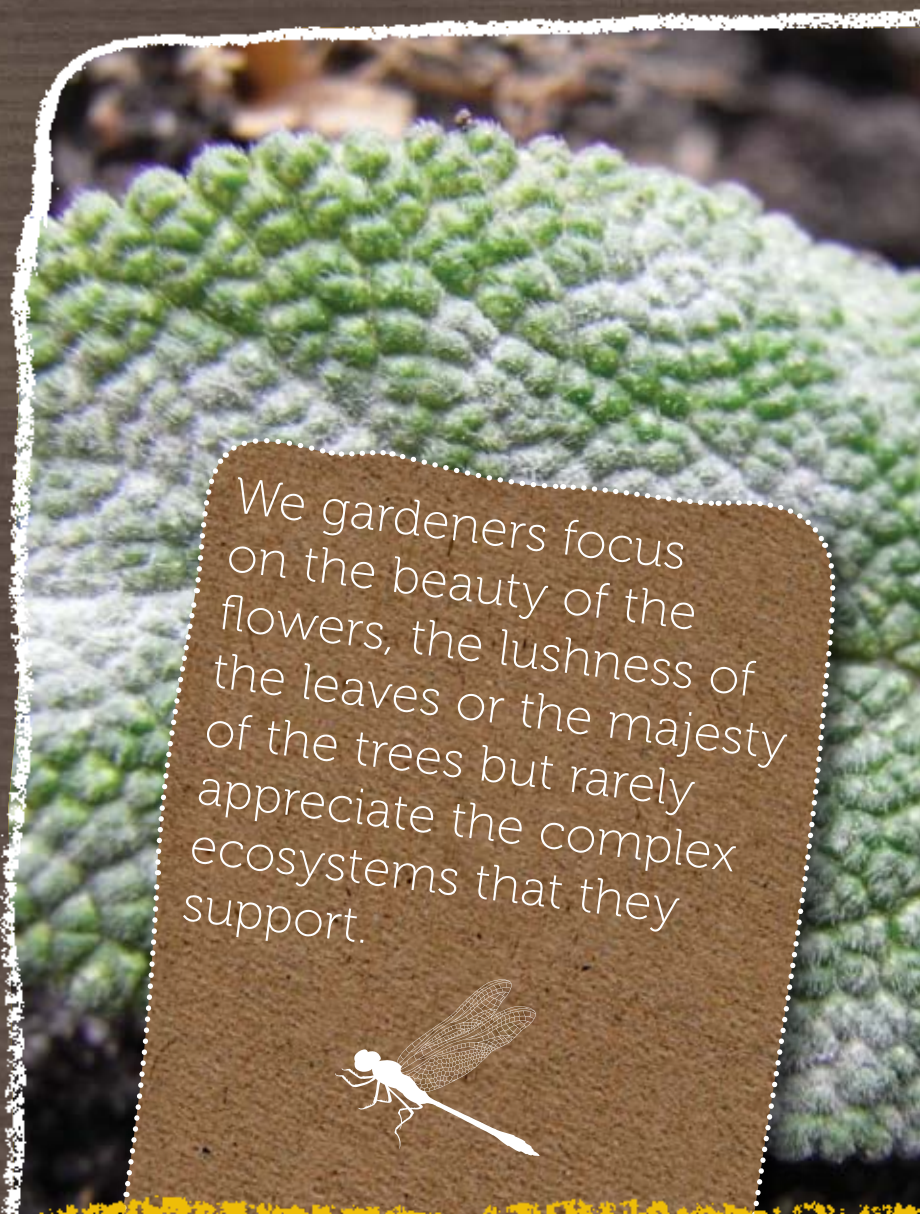

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