

Compost for solving soil problems

In almost every orchard there will be a patch of trees that do not perform as well as the rest. In this scenario, the “one size fits all” management approach isn’t giving the best results, and a bit of extra care is needed to turn these trees around.

Compost and compost mulches can improve the performance of your orchard by targeting the problem patches in your block. Addressing poor tree growth and production with compost can improve the efficiency – and profit – of your orchard. The first step is to identify the underlying cause of your problem patches - here we’ve outlined a few scenarios where compost and compost mulches can help.

Shallow soils

Trees don’t have much to work with on shallow soils, as the amount of soil they can exploit for water and nutrients is limited. To add to the problem, the top 5-10cm will be exposed to temperature and moisture extremes if the soil is bare. Healthy root growth is not encouraged in this environment. Applying a compost mulch can help protect the soil against extreme temperatures while at the same time conserving soil moisture. This makes it easier for plant roots to establish and source vital water. Compost mulch applied to shallow soils immediately increase the amount of soil and nutrients available to plant roots.



Poor infiltration

Water is such a precious resource and the last thing you want to see is water running off your soil and away from your trees - or evaporating into thin air! Applying compost mulch in these situations will give outstanding results and the benefits can last for years to come. Compost mulch improves soil structure by stimulating biological activity in the soil and increasing the incorporation of organic matter. This creates pores in the soil which allow water to penetrate deeper into the soil profile. On sloping sites, water can often move across the soil surface instead of infiltrating, and it can take valuable top soil and nutrients along with it. With improved infiltration, water will move more rapidly into the soil, minimising run off. An increased rate of infiltration has been recorded up to ten years after application of compost mulch. Compost mulch can provide a long term solution to poor infiltration and pull your under performing trees into line.

Hard soils

Hard soils make it difficult for plant roots to establish and take up nutrients, as considerable energy is used just trying to penetrate the soil. Look out for hard soils surrounding wheel tracks, as soil compaction can be caused by high levels of vehicle traffic. Root growth can be restricted altogether in particularly hard soils.

Compost can make a big difference to hard soils – compost provides extra food for soil microbes which improve soil structure. As the microbes increase in numbers and activity, they create soil crumbs and pores in the soil which decreases soil hardness. With this improvement in soil structure, other soil fauna like earthworms are better able to penetrate the soil and work their magic. Both fine and coarse textured compost can be used to reduce soil strength. Apply a layer 25mm deep of fine textured compost or for coarse compost use a 50-75mm deep layer. This will help to reduce soil hardness, improve root growth and increase nutrient uptake. It’s also good to know that even when you can’t see the compost on the surface any more it is still hard at work in the soil profile.

Saline soils

Saline soils are a problem for many growers. Soil salinity can arise with the use of saline irrigation water or through a lack of water infiltration that would normally leach salts out of the soil. In either case, compost can help. Applying compost mulch conserves soil moisture and reduces the need for irrigation. As irrigation water is generally the source of most salt, reducing irrigation will help to reduce the amount of salt going into your soil. Compost mulch can also insulate your soil and reduce evaporation – this helps to make the most of your water in years of low rainfall. Reducing evaporation will also stop salts from accumulating on the soil surface and hampering root growth and establishment. Compost mulch will improve the structure of your soil and increase water infiltration - making the most of any available water to flush salts deeper into the soil profile.

Sodic soils

Sodic soils have high levels of exchangeable sodium, a high PH and are very difficult to manage. These clay soils are very hard when dry and extremely sticky when wet. A soil analysis can diagnose soil sodicity – talk to your agronomist about conducting a soil analysis on your problem patches.

Sodicity is generally fought with the application of gypsum. Gypsum increases the amount of exchangeable calcium in the soil, may be slow to act and may not penetrate well into the soil profile. Using compost mulch in partnership with gypsum can have give excellent results. If compost mulch is applied on top of a gypsum band, the movement of gypsum into the soil is substantially increased. Organic matter in mulch stimulates microbes and soil fauna that create channels and pores in the soil. The gypsum can then move through these pores and channels with rainfall and irrigation, helping to combat sodicity more rapidly. Earthworm activity can also increase with the application of compost mulch. Earthworms ingest soil and gypsum, mixing them together, resulting in fast and thorough incorporation of gypsum deep into the soil profile.

Erosion prone soils

Wind, rainfall and mechanical damage can all have an impact on erosion prone soils. Compost mulch can effectively protect your soil from these impacts and decrease the chance of erosion. Compost mulch will also protect your soil against extremes of temperature and moisture– this means that soils microbes and fauna will remain active and provide you with long term improvements in soil structure. Root growth will also be enhanced and your trees will reap the benefits. A 50 -75mm layer of compost mulch will protect your erosion prone soil.

Lime induced chlorosis

In conjunction with iron-chelates, compost mulch can reduce the incidence of lime-induced chlorosis in your orchard. Research by CSIRO has shown that compost mulch and iron- chelates working together demonstrated a significant reduction in leaf yellowing in a pear orchard. These products alone were not effective but when compost mulch was partnered with iron-chelate great results were achieved. Compost mulch applied over a layer of iron-chelate on the soil surface provides more moderate conditions for root growth in the topsoil. Compost mulch smooths out the extremes in temperature and moisture the topsoil encounters and encourages root growth in this region. Roots growing near the surface can then access the iron chelates which are necessary to prevent chlorosis.

Pull your problem patches into line with precision compost application.

For more information on using composts and compost mulches in your orchard, contact Compost for Soils - contact@compostforsoils.com.au or see www.compostforsoils.com.au



An initiative of Compost Australia

For more information and a list of quality suppliers, go to

www.compostforsoils.com.au

the resource for compost users