

Compost and Managing Salinity on the Northern Adelaide Plains

Almost a third of all agricultural land in Australia is affected by the accumulation of salts and this is increasing. Vegetable growing regions have not escaped the problem and the build-up of salts in the soil is a major problem on the Northern Adelaide Plains.

This build-up not only causes problems with nutrient release from soils, but can also cause salinisation of the soil solution, severely impacting plant growth. Local estimates suggest yields are down 20-40% on previous years and production of quality crops has proved challenging in the dry conditions. The salts are introduced largely through irrigation water, and some veggie growers without access to recycled water (with a lower salt content) may be forced to shut down their production this year.

Different crops have different salinity tolerances. As a general rule, at a soil salinity of 2 dS/m, salts in the soil won't impact the yield of most crops. When soil salinity rises to 6 dS/m most crops will be affected in some way. Testing your soil for salt levels as well as your irrigation water is essential to get a baseline on the extent of your problem.



So how can compost help with salinity?

Compost mulches conserve soil moisture by preventing evaporation. Direct sunlight can heat the soil, and with warm air moving across the soil surface, moisture is drawn up from the soil and evaporates. This brings the salts in the water closer to the surface and can cause crusting and a toxic environment for plant growth. Even a shallow layer of organic matter on top of the soil can slow down this process, conserving soil moisture, and resulting in the need for less irrigation – an outcome that will benefit every grower.

Less irrigation not only means saving money, but it also reduces the amount of salts you are adding to your soil.

One of the well-known benefits of applying compost is an improvement in soil structure and water infiltration rate of the soil. Compost reduces the bulk density of the soil, improving potential root growth, drainage and infiltration. These improvements can also reduce surface crusting and sealing and allow better infiltration of rainfall and

irrigation, and enable salts to be leached out of the top-soil with more ease. More leaching into the soil and less evaporation leads to a more hospitable growing environment.

Saline soils can be managed by incorporating products containing calcium into the soil – the most often used is gypsum. Compost can play an important role in helping gypsum spread through the soil, increasing the efficiency of your amendments.

Compost can do this for you in a number of ways. In general, biological activity in the soil is increased when compost is used – this helps to maximise the incorporation of amendments. In particular, compost can provide a food source for earthworms. Providing earthworms with food can increase their burrowing and casting activity and this helps to mix amendments into your soil.



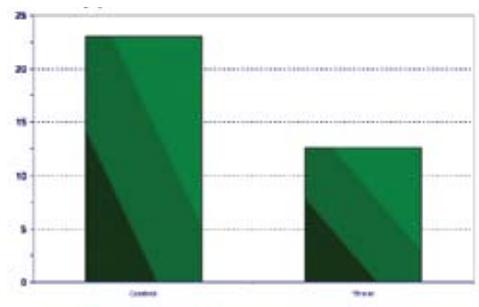
In these ways compost mulch can assist in the incorporation of gypsum to a depth in the soil where cultivation is not possible. This can provide a longer term solution to your sodicity/salinity problems. Applying mulch after your amendment can assist the penetration and effectiveness of the amendment in the soil - and give you more value for money.

An added benefit is that biologically active soils are much less likely to support disease causing organisms!

Compost can increase soil infiltration and help prevent salt accumulation

Improved soil structure can result from the increased soil organic carbon that occurs with compost use. These improvements can reduce surface crusting and sealing and allow better infiltration of rainfall and irrigation. This means that less salts will accumulate on the surface.

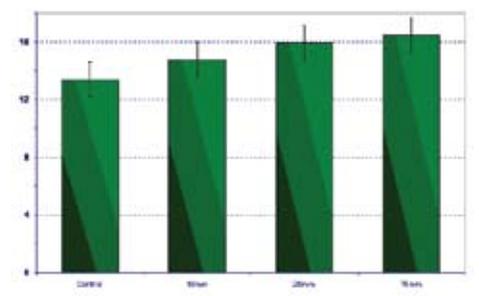
Run Off %



Compost can reduce irrigation needs

Compost can increase the ability of the soil to hold water, reducing fluctuations in soil moisture and potentially offering irrigation savings. When applying less water, growers are also applying fewer salts to their soil.

Soil Moisture %



More information

www.compostforsoils.com.au

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