

Soil Compaction

The Problem

Soil compaction is caused by large crystalline mineral structures accumulating in the surface layers of the soil. Calcium Bicarbonate, Sodium Chloride and iron oxides are the main culprits.

Roots blocked

These larger molecular structures have more free bonds and a large gravitational attraction and freely bind together with other chemicals creating crystals that are too big to pass into the plant and instead block the root capillaries. These very reactive structures grab nitrates, phosphates and other nutrients that may be present in the soil and water source making them unavailable to plants.

Algae grows

This collection of large crystals together with more bicarbonate from the chemical fertilizers forms the ideal conditions for algae growth which adds to the compaction.

Add in direct pressure from footsteps and machinery and you have a successful recipe for chemical compaction.

The Solution

How Hydrosmart works

The Hydrosmart computer generated resonance frequencies break down all the minerals in the irrigation water to sub 4 micron particles making them small enough to penetrate even the most heavily compacted soil.

Soil gets healthier

The resonance frequencies remain active in the water for several days and progressively break down the existing mineral crystals in the soil. These tiny particles have much fewer bonds available to react with and so take a long time to build back into large reactive crystals. Every time you irrigate with Hydrosmart water the frequencies break the minerals down again and so the soil health continually improves from season to season.

The nutrients return

Breaking down of the large crystals turns them into bite sized bio-available pieces and clears the root capillaries. As the Calcium bicarbonate breaks down, calcium becomes available in this tiny particle form which the plants can readily absorb. This in turn facilitates the uptake of potassium for healthy cell growth, and magnesium for the chlorophyll which drives photosynthesis, thus re-establishing the natural growing process.

As the crystals dissipate, the soil becomes less compacted and much less fertilizer will need to be added to maintain healthy growth.

The Treatment Process

For bare compacted soil it would be advisable to pre-water with Hydrosmart treated water. This will get to work to remediate the soil prior to seeding or planting. Aerating or hoeing the soil will of course be beneficial.

Immediate results

For established and planted soils Hydrosmart will quickly begin to breakdown the surface layers of the soil. A noticeable change in plant growth will occur within about 2-4 weeks depending on the level of compaction. Residual surface water and run off will be less obvious the longer the treatment is applied and will culminate in uniform soil absorption. At this point the volume of irrigation water can be reduced. For heavily compacted soil this stage is likely to be reached, in part or in full, within 2-4 months.

Reducing fertiliser

Depending upon the nutrient levels in the water source the plants will noticeably respond to the increased availability of these nutrients. When this begins to occur it will be a good indicator to beginning looking at reducing the volume of additional fertilizers and nutrients. This stage can be reached within just a month but could take 2 or 3.

On-going effects

In the long term Hydrosmart will penetrate to lower soil levels continually improving the soil health as it allows nutrients to penetrate the soil, excess chemicals to pass through and worms to return.