



Water Issues

Turning bad water into good olives



European technology to deal with corrosion from highly mineralized water and high temperature has been used to treat bore water for irrigating olives on a grove in the Adelaide Plains.

Olivegrower Nick Fassos has a grove of 500 trees which were being irrigated with mains water. The property, between Balaklava and Port Wakefield, had a bore which was too salty to use with levels of around 6500 ppm of total dissolved solids.

In 2003 he purchased a Hydrosmart 40 mm Digital unit to treat the bore water and began irrigating only with the treated water.

After four years of solid use of the treated saline bore water he has found that the trees have grown at a better than expected rate, are healthy and are producing good tasting olives.

This is an example of how a Hydrosmart system can be a cost-effective electronic water treatment system that can provide an answer to many of the water quality challenges faced by olivegrowers in Australia.

The Hydrosmart system uses antenna wrapped around the water pipe to focus specific computer-generated frequencies into the water flow. This breaks down the salts and minerals into sub 4-micron particles and in some cases, into their component parts, and prevents development of the large crystals that are implicated in many of the problems associated with using water with high levels of dissolved salts for irrigation.

The technology was developed in Europe to counter corrosion cause by a combination of highly mineralized water and high temperatures, but the research on which it is based is not yet available in the public domain.

The major corrosion problem they needed to address was chloride attack of metal surfaces and structures. With the use of a particle accelerator they were able to pinpoint a specific resonant frequency that could be used to disrupt the chloride attack process and thus prevent corrosion. They then repeated the process for 15 other problem elements commonly found in water, determining the specific resonant frequency for each.

Although this research was done for the purpose of preventing corrosion, it was quickly realised that this sort of treatment could have applications in all sorts of areas where water is involved and this lead to the development of Hydrosmart.

This water treatment system is based on a micro-processor-based computer. The computer digitally generates the specific resonant frequencies extremely accurately and delivers them to the antenna in complex sequences. This allows particular problem groups of compounds in the water to be targeted. The antennas are wrapped around the pipe carrying the water and cause no flow restriction to the water.

While Hydrosmart technology appears to be similar to the use of magnetic field technologies, its uses a very different mode of operation. Hydrosmart's computer-generated resonant frequency approach is a dynamic system that is able to accurately target specific salts and minerals dissolved in the water. Magnets by their very nature only use a static field.

Benefits to horticulture

Hydrosmart provides a wide range of benefits in horticultural situations especially where the water is highly mineralised, a common problem with bore water.

The problems that the Hydrosmart treatment solves include scale build-up in irrigation systems that causes drippers to block, algae growth in dams, iron and iron bacteria, chemical soil compaction, salinity in bore water and the build-up in the soil of these salts to levels that are detrimental to plant growth and health.

All of these issues have been successfully and naturally resolved in hundreds of vineyards and in other branches of horticulture including, hydroponics (lettuce and tomato), stone fruit, strawberries, almonds and olives. The breakdown of minerals and nutrients into much smaller bio-available particles improves plant growth with healthier, more disease-resistant plants and excellent yields of higher quality, increased tonnage and great tasting fruit and vegetables.

Irrigation systems

Hydrosmart's computer generated resonance frequencies produce a chemical-free scale prevention and de-scaling system that is effective on all the minerals present in our water supplies (including soluble iron and sodium chloride).

It does this by changing large, reactive mineral crystals into tiny non-reactive particles, effectively preventing scale from forming. The resonance frequencies remain active in water for several days and progressively break down any already existing scale or bio-films.

The irrigation system no longer requires maintenance, eliminating the cost of replacing calcium-blocked drippers and there is no need for any acid de-scaling which improves soil health as acid kills soil bacteria.

Enhance plant growth and reduced growing problems

Whenever plants are irrigated with mineralised water treated by Hydrosmart there is a significant improvement in plant growth and reduction in growing problems.

This is a result of the Hydrosmart treatment breaking down large complex molecules in the water in combination with the treated water also releasing previously unavailable nutrients in the soil. These molecules and nutrients are broken down into bio-available simplex elements such as calcium, potassium, magnesium and manganese. These bite-size particles are easily transported throughout the plant eliminating growing problems such as tip burn and blossom-end rot. Not only are the plants healthier but the overall harvest is improved both in terms of fruit quality and tonnage with significant improvements in fresh weight, taste, colour and shelf life.

The efficient transpiration within the plants causes the sugars to be mobilised at optimum levels and there is an increase in the plant's resistance to disease and insect damage.

The soil will progressively improve with a significant reduction in chemical usage (less fertiliser and wetting agents).

Iron issues

Iron dissolved in irrigation water could be an essential nutrient to plants but instead it oxidises on contact with the air and blocks drippers, filters and spray nozzles, and it contributes to scale build-up in the pipes. These result in decreased efficiency of equipment, increased maintenance and in many cases, expensive replacement of drippers.

The Hydrosmart treatment renders the iron non-reactive preventing it from oxidising so it remains in solution. In the process it also gets broken down into smaller particles making the iron much more available to plants as an essential nutrient in the manufacture of chlorophyll.



Before Hydrosmart treatment.



After Hydrosmart treatment.

Above is a vineyard dam with equally high levels of iron and salinity. Here the unit has been switched off and on purely for demonstration purpose. The effect is in fact instantaneous when the unit is switched on. The pictures clearly show the high-level watermark of the dam and show how the treated water has removed the staining from the concrete below the water line.

Healthy plants in high salinity water

Hydrosmart technology is resolving salinity issues for commercial growers in a variety of soil types and salinity levels in a totally sustainable way with salinity levels in the soil decreasing.

Salts collect in the soil through successive irrigations and their large molecular structures block root capillaries and grab passing nutrients in a process that starves the plant.

The resonance frequencies break down the salts and other minerals into sub 4-micron, bite-sized nutrients and change many of them into bio-available simplex elements such as the calcium, potassium and manganese that the plants has been starved of. Efficient photosynthesis resumes and sugars are mobilised at optimum levels allowing the plants to resume healthy new growth. The results is no salt toxicity problems and a progressive improvement in soil structures.

Hydrosmart currently has units working in settings ranging from pastoral properties and vineyards and olive groves to universities and luxury city hotels, in applications from irrigation with salt water to scale prevention in hot water systems and chlorine reduction from pools. It is truly smart science that doesn't cost the earth.

You can visit www.hydrosmart.com.au for more details.