

Report Highlights - Hydrogen Peroxide Toxic to Microorganisms Causing Long Term Damage to Soil Health

Report - Journal of Hazardous Materials B69 1999 p229–243. - Hydrogen peroxide decomposition in model subsurface systems

The application of Hydrogen Peroxide as a cleaning mechanism in irrigation lines is a common practice across many crops and growing mediums.

But often many growers don't get the complete story on how a products chemistry works. As for Hydrogen Peroxide there are several negative sides that many are unaware of.



The OK & The Bad

When Hydrogen Peroxide is applied to irrigation water, like all chemistry there are 2 sides to a reaction. On one side, during decomposition of Hydrogen Peroxide, oxygen is evolved, which is good and correct....(but the oxygen only lasts a short time, 4-8 hours, doing very little.)

However, many don't realise or "forget" there is a flip side of a reaction, as on the other side of the reaction with Hydrogen Peroxide, hydroxyl radicals (OH) are produced, which are very toxic to soil organisms. These OH radicals are also far more persistent in soil than the oxygen, so the oxygen depletes rapidly, but the toxic bit doesn't.

Some have the thought to dilute the Hydrogen Peroxide, and it won't be so toxic and the oxygen will support the microbes. For this to happen application concentration would need to be < 3.2ppm to make this plausible. Application rates of Hydrogen Peroxide generally are from 50ppm to 400ppm??

It Gets Worse?

The reason Hydrogen Peroxide is used to clean irrigation lines is to aggressively oxidise the biofilm (actually all organics, living and dead) in the line (chemical oxidation). The importance being, that aggressive action also have the knock on of oxidising biofilms in the soil, this removes the soils "glue", significantly affecting soil structure, which further suppresses all soil organisms (good and bad), as well as considerably reducing nutrient cycling.

Trace Element Tie Up!

There are also two "types" of hydrogen peroxide, un-stabilised and stabilised. Stabilised breakdown slower, however, in an agronomy context, not really a good mechanism. Stabilised products contain phosphorus, the mechanism being for the PO₄ to react with the metals (Fe) and make it insoluble,

therefore removing the iron from the decomposition process slowing it down. So it slows it down but you get insoluble trace elements (on purpose) in your soil and medium – not a good thing for your crops or your wallet when you paid for the trace elements.

No Past Options – Until Now

In the past, irrigators had little option to clean your irrigation lines, so Hydrogen Peroxide was the choice for many. But today there is a solution for you, scientifically proven and tested, highly concentrated liquid, and mixes easy with fertilisers, chemicals and applied through drip, sprinklers and overheads with ease. It not only cleans irrigation systems, it aerates water and soil, increases water use efficiency, soil penetration and yield.

Learn more about **AquaMate™** - Your Irrigation Solution for More Crop Per Drop.

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Here is the reference & expansion on the above points of Hydrogen Peroxide.

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Hydrogen peroxide decomposition in model subsurface systems

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