**Title:** The Efficacy of Chlorine in Controlling the Spread of *Fusariun Oxysporum* in Angiosperms

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The spread of *Fusarium oxysporum* like pathogens, have been reported to be extremely difficult to remove once it spreads through a nursery, whether it is in the irrigation delivery system or in storage tanks. Free chlorine has been reported to be effective in spore inactivation. Also, many growers mix the free chlorine with nutrient solutions as a convenient method of delivery.

In this study, we investigated the speciation and lifetime of chlorine, in different types of makeup water, including reverse osmosis water, city water supply and a common nutrient solution N-P-K matrix using UV-VIS spectroscopy. Furthermore, we also studied the inactivation effectiveness, inferred from pathogen culture on potato dextrose agar, of the various chlorine species and contact time up to 50 ppm in concentration and 60 minutes respectively. Furthermore, we compared the sole capability of a filtration method to remove *Fusarium* spores versus the chemical method, with filtration pore size ranging from 200 µm to 0.2 µm.

As a matter of practical field use in quantifying the appropriate free chlorine level, we have also tabulated the ORP and pH values for a common N-P-K matrix using a handheld instrument, with chlorine levels and species data derived from UV-VIS spectroscopic measurement. The effectiveness of these ORP-pH values in providing the correct level of inactivation is also demonstrated with irrigation water sampled from a local nursery.

**Biography**

Dr. Russell Chung has completed his PhD in Electrical Engineering from Iowa State University, USA. Serves as a Techincal Director and consultant in medical, pharmaceutical, semiconductor instrumentation research and product developement.

Hirak Chavda has completed his Masters in Biotechnology from the California State University of San Marcos, USA. He is working as a research chemist at Myron L® Company, Carlsbad, California, USA.

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Category: ePoster presentation