



ABSTRACTS

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EFFICIENCY OF POTASSIUM CHLORATE (KCLO) TO INACTIVATE PLANT PATHOGENS IN NUTRIENT SOLUTION

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Electrolyzed oxidizing (EO) water has gained interest as a disinfectant used in agriculture, medicine and food industry. It is shown as an effective antimicrobial agent for cutting boards, poultry carcasses and food processing equipment. Furthermore, the technology is applied for disinfecting pool water. In our case EO water is generated by passing a potassium chloride solution through an electrolytic cell consisting of anode and cathode electrodes separated by a dielectric membrane. Applying voltage to the electrodes results in the production of potassium hypochlorite (KCIO) solution containing free chlorine.

Subsequently to a contemplate application in hydroponic systems in greenhouse production of ornamentals and vegetables the efficacy of KCIO to inactivate fungal, bacterial or viral plant pathogens was determined and evaluated.

Eight economically important plant pathogens infecting plants in recirculating systems were selected: *Fusarium oxysporum*, *F. verticillioides*, *Pythium aphanidermatum*, *Botrytis cinerea*, *Verticillium dahliae*, *Rhizoctonia solani*, *Xanthomonas campestris* pv. *campestris*, *Pseudomonas syringae* pv. *syringae* and Pepino mosaic virus.

According to the standard (OEPP/EPPO, 2008) the efficiency of KCIO for disinfecting nutrient solutions was tested in order to prevent infection of plants by plant pathogens. Trials were conducted in vitro and test plants respectively and first trials under practical conditions were initiated. Dose-effect relations were calculated. For that purpose the coverage of the nutrient media, number of colonies and number of infected test plants, respectively was determined taking into consideration different concentrations and contact times of the chemical.

The results gained in vitro are discussed in regard to their transferability to practical conditions in particular to phytotoxic effects and water quality parameters such as pH due to the amount of free chlorine. As expected contact time and dose required to eradicate pathogens varies with pathogen species and life stage.

OEPP/EPPO, 2008: Disinfection in plant production. EPPO Bulletin 38, 311–315. doi: 10.1111/j.1365-2338.2008.01235

Key words: disinfection, water, plant pathogen, electrolyzed oxidizing