Radio wave treatment of soil for pathogen inactivation

Sturm, G.; van der Wurff, A.; Linnenbank, S.; Bonnet, J.; Koppert, A.

Publication date
2021

Document Version
Final published version

Citation (APA)
Sturm, G., van der Wurff, A., Linnenbank, S., Bonnet, J., & Koppert, A. (2021). *Radio wave treatment of soil for pathogen inactivation*. 272-272. Abstract from 18th International Conference on Microwave and High Frequency Applications, AMPERE 2021, Virtual, Online.

RADIO WAVE TREATMENT OF SOIL FOR PATHOGEN INACTIVATION

G. Sturm[1], A. van der Wurff[2], S. Linnenbank[3], J. Bonnet[4], A. Koppert[3]

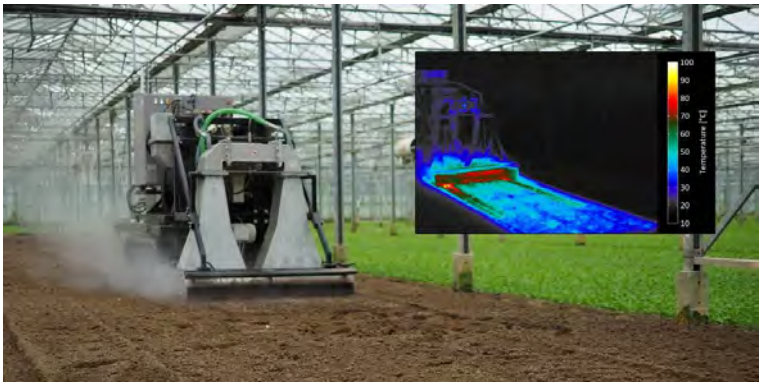
[1]*Process & Energy department, Delft University of Technology, Delft, The Netherlands*
[2]*Groen Agro Control, Delfgauw, The Netherlands*
[3]*Koppert Machines B.V., Monster, The Netherlands*
[4]*Stichting Control in Food & Flowers, Delfgauw, The Netherlands*

g.s.j.sturm@tudelft.nl, a.vanderwurff@agrocontrol.nl, s.linnenbank@koppertmachines.nl, j.bonnet@scff.nl, info@koppertmachines.nl

Agriculture and biological applications

The worldwide aim to reduce the use of fossil fuels drives research and development to find alternatives for many established technologies. In this context, radio wave treatment of soil is being developed as an alternative for steam treatment of soil in which steam is generated via fossil fuel combustion. A prototype has been developed by Koppert Machines for pathogen reduction in soil through exposure to radio wave fields at 915 MHz and 100 kW.

The prototype is effective in reducing pathogen numbers. Moreover it has an energy efficiency that is in principle comparable to steam treatment. The aim of the research project is to develop methods to best apply the system. Parametric studies are performed both experimentally in an operational glasshouse environment as well as numerically. The approach involves both the physical and biological aspects of the treatment. The effectiveness of inactivation of several pathogens was confirmed. Guidelines for soil pre-treatment and the radio wave treatment profile have been formulated; in general low humidity and a loose and porous soil improve treatment effectiveness.



This project was funded by Kas als Energiebron, i.e. the Dutch innovation and action programme of Glastuinbouw Nederland and the Ministry of Agriculture, Food and Fisheries for saving energy and sustainable energy in greenhouse horticulture.