



7th INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

Academic

“CLEANER PRODUCTION FOR ACHIEVING SUSTAINABLE DEVELOPMENT GOALS”

Electric Supply and Autonomous System for a Cleaner Production of Pesticide-Free Aeroponic Food Products

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Abstract

Aeroponics allows a more efficient agriculture because the possibility to grow plants in places where conventional open-field agriculture is difficult. The use of technology allows to improve efficiency of the processes, although some energy control and irrigation system solutions must be improved. This paper presents the application of an autonomous power supply and an irrigation control system for the pesticide-free aeroponic food production. The system was designed using Matlab-Simulink-MPLAB tool to perform the control model and to be applied to the crop. Besides, a dsPIC was programmed for the irrigation cycle control algorithms using Matlab-Simulink blocks. The results show that the irrigation cycle and power supply help to maintain uniform plants in the crop, which allows a better development of the aeroponics.

Keywords: pesticide-free food, aeroponics, autonomous irrigation system, cleaner production, electric power
