

PLC-BASED CONTROL SYSTEM FOR NUTRIENT SOLUTION SUPPLY CONTROL IN DRIP IRRIGATION

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ABSTRACT

In most hydroponics farms, nutrient solution is distributed into individual crop through drip irrigation. The growers operate the pump manually according to weather condition. Under such manual control, losses of nutrient solution are often reported. An automatic control system based on Programmable Logic Controller (PLC) has been developed to reduce the losses while accurately supply the nutrient solution needed by the crop. The control system was composed of water content sensor for growing medium, PLC, and electronic relay for nutrient solution pump. A computer program was written in ladder form based on an algorithm developed to control the pump. The computer program was installed into the PLC which was the main unit in the control system. Field test had been conducted to evaluate the performance of the system in controlling the supply of nutrient solution for cucumber and tomato crops. Results showed that the control system perform well in controlling the pump for nutrient solution supply.