Remote Operation of an Automated Greenhouse

T. A.Walpita[1], L. Udawatta[2], J. M. L. C. Piyathilaka[I], R. M. T. C. B. Ekanayake[I] and A. R. Nihrniya[I]

[1]Uva Wellassa University, Sri Lanka
[2]University of Moratuwa, Sri Lanka

Environmental conditions have a significant effect on plant growth. All plants require certain conditions for their proper growth. Therefore, it is necessary to bring the environmental conditions under control, in order to have those conditions as close to the ideal as possible. In order to create an optimum environment, the major climatic and environmental parameters such as temperature, humidity, light intensity and ground water need to be controlled. Greenhouses play a major role in agricultural sector as they can be used to grow plants under controlled climatic condition for optimum production. Automating a green house envisages monitoring and controlling of the climatic parameters which directly or indirectly govern the plant growth and hence their produce. Automation is the process of controlling industrial machinery and processes, there by replacing human operators.

The information was obtained from multisensory station and was transmitted to the computer. Finally the information was sent to the actuation network. The aim of this project was to construct a greenhouse model, which can automatically control microclimatic parameters inside the greenhouse. This model was based on the sensor readings, which related to several factors in light intensity, humidity and temperature. An automated greenhouse brings about the precise control needed to provide the most proper conditions of plant growth.

An Automated Greenhouse Monitoring System was implemented by three types of sensors namely photodiodes, a temperature sensor and a humidity sensor. The values obtained from these systems were transmitted to the computer and the user can set the values through a computer interface. These sensors were interfaced to a microcontroller which functioned as the main control unit. According to the parameters set in the computer interface built controller maintains the greenhouse at the pre-set levels.

Key words: Greenhouse, Automation