ABSTRACT

The objective of this research is to propose a low cost, robust wireless sensor network using wireless communication technology for tea gardens. Using this network with soil moisture sensors, an improved irrigation system has been designed for tea gardens. The effect of this irrigation system on productivity of tea gardens has been discussed in detail, which shows section of tea garden with improved irrigation system has better productivity compared to section of tea garden with conventional irrigation system. The improved irrigation system depends on wireless sensor network hence the approach and methods of selecting suitable wireless sensor network has also been discussed in detail which includes discussion on embedded systems and sensor technology. There are also discussion about the conventional irrigation system, specific requirements of tea plants and tea industry in this research. Web based monitoring system is introduced for effective and quick viewing the action of solenoid valve and soil moisture data through moisture sensors. The improved irrigation system also has sufficient flexibility to meet the requirements of GSM and database creation for future reference. The major contributions of the thesis are as follows:

1. Design a model of WSN.
2. Design a database which handled the sensor collected data from the field.
3. Design a GUI for user, from which user can communicate easily with the hardware and software.
4. Design a World Wide Web based monitoring and controlling system.
5. Analysis of protocol available for low energy power consuming protocols and fast transferring in the scope of wireless sensor network. Analysis about the correlation between productivity of tea and different parameters of tea production.

Keywords: ***Wireless, ZigBee, Sensor, Communication, Embedded, GSM, GUI, World Wide Web.***